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**FINAL Archaeological Inventory Survey for the Proposed  
Queen Ka'ahumanu Highway Widening Phase 2 Project,  
Kalaoa, Kalaoa-'O'oma, 'O'oma 2, Kohanaiki, Kaloko,  
Honokōhau 1-2 and Kealakehe, North Kona District,  
Hawai'i Island**

**TMK: (3) 7-4-008, 7-3-009 & 7-3-043**

**Prepared for  
Department of Transportation  
State of Hawai'i**

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## Management Summary

<b>Reference</b>	Archaeological Inventory Survey for the Proposed Queen Ka‘ahumanu Highway Widening Phase 2 Project, Kalaoa, Kalaoa-‘O‘oma, ‘O‘oma 2, Kohanaiki, Kaloko, Honokōhau 1-2 and Kealakehe, North Kona District, Hawai‘i Island, TMK: (3) 7-4-008, 7-3-009 & 7-3-043 (Monahan et al. July 2012)
<b>Date</b>	July 2012 (Revised)
<b>Project Number</b>	KALAOA 13
<b>Investigation Permit Number</b>	Cultural Surveys Hawai‘i (CSH) conducted fieldwork for this project under annual Hawai‘i State Historic Preservation Division (SHPD) permit nos. 10-10 (2010), 11-17 (2011) and 12-04 (2012)
<b>Project Location</b>	The project area is located in the <i>ahupua‘a</i> (land divisions) of Kalaoa, Kalaoa-‘O‘oma, ‘O‘oma 2, Kohanaiki, Kaloko, Honokōhau 1-2 and Kealakehe, North Kona District, Hawai‘i Island. It consists of an approximately 300-ft. (foot) wide right-of-way (ROW) that includes the existing Queen Ka‘ahumanu Highway; the project area starts (in the south) at approximately 1150 feet (350 m) south of Kealakehe Parkway (approximate Station 1110+00) and ends (in the north) at approximately 1700 feet (518 m) north of Keāhole Airport Road (1000 feet (304.8 m) + taper length; approximate Station 252+00).
<b>Land Jurisdiction</b>	The State of Hawai‘i owns the land within the ROW. Lands extending west of the ROW including “Big Cave” site 29275 are privately owned by Midland Pacific Building Corporation
<b>Agencies</b>	State of Hawai‘i, Highways Division, Department of Transportation (HDOT); Federal Highway Administration (FHWA), U.S. Department of Transportation; Hawai‘i State Historic Preservation Office (SHPO), Department of Land and Natural Resources
<b>Project Description</b>	The proposed undertaking consists of widening the Queen Ka‘ahumanu Highway (highway) from two lanes to four lanes from Kealakehe Parkway to the Keāhole Airport Access Road. Ground disturbance associated with the proposed project will include grading and filling of portions of the ROW. Most of the major ground disturbance is proposed for the <i>makai</i> side of the existing highway. Grading and construction limits are included in Figure 17 to Figure 27.
<b>Project Acreage and Area of Potential Effects (APE)</b>	The project area is approximately 5.2 miles (8.37 km) long and 300 ft. (91.4 m) wide, or approximately 190 acres (76.9 ha). Of this total area, approximately 50 percent consists of the existing highway and previously-disturbed land along both the <i>mauka</i> and <i>makai</i> highway shoulders. Therefore, the total area of undisturbed land that was surveyed amounts to approximately half, or 95 acres (38.4 ha), of the ROW. The entire undisturbed portion of the project area was surveyed for historic properties. In addition, the entire previously disturbed area on the <i>mauka</i> side of the existing highway was also systematically

	<p>surveyed as a check and assurance that no historic properties were present. On the <i>makai</i> side, survey transects (oriented north-to-south) were conducted so that all previously disturbed areas were visually confirmed to be disturbed. Later, during supplemental survey efforts conducted with the consulting parties (Monahan and Wilkinson 2012; Monahan and Yucha 2012), identification and inspection efforts were not conducted by systematic transects but, rather, on a more selective basis focusing on areas of interest to the consulting parties.</p> <p>For the purposes of this archaeological inventory survey, the Area of Potential Effects (APE) consists of the highway ROW plus areas potentially affected by the proposed undertaking, including, but not limited to, the Kaloko-Honokōhau National Historical Park and the Honokōhau Settlement National Historic Landmark (SIHP 50-10-27-4138), which are immediately adjacent to the project area in Honokōhau and Kaloko Ahupua‘a.</p> <p>Following consultation between FHWA and the ACHP it was agreed that the “Big Cave” (SIHP 50-10-27-29275) and the intervening land located west of the ROW would not be included within the APE. Site 29275 is included within this Archaeological Inventory Survey and is described in Appendix C of this study.</p>
<b>Historic Preservation Regulatory Context</b>	<p>This revised Archaeological Inventory Survey addresses comments in a Chapter 6E-8 and Section 106 SHPD review (dated July 9, 2012, Log No 2012.1443, Doc No. 1206MV26) of an earlier (May 2012) draft.</p> <p>This document was prepared to support the proposed project’s historic preservation review under Hawai‘i Revised Statutes (HRS) Chapter 6E-8 and Hawai‘i Administrative Rules (HAR) Chapter 13-275. Due to federal (FHWA) funding, this project is a federal undertaking, requiring compliance with Section 106 of the National Historic Preservation Act (NHPA), the National Environmental Policy Act (NEPA), and Section 4(f) of the Department of Transportation Act. Therefore, this document is also subject to SHPD review pursuant to 36 CFR Part 800 and the <i>Secretary of the Interior’s Standards for Identification, Standards for Evaluation and Standards for Archeological Documentation</i>.</p> <p>In 1995, CSH conducted an archaeological inventory survey of the current project area (Walsh and Hammatt 1995), identifying 17 historic properties within the project area (as it was known at that time). The survey report was reviewed and accepted by the SHPD (Log No.: 15956, Doc. No.: 9511PM28) dated November 22, 1995.</p> <p>In 1996, the FHWA and HDOT produced a Final Environmental Assessment (FEA), issued a Finding of No Significant Impact</p>

	<p>(FONSI) and determined the proposed project “will not have any significant impact on the human environment.”</p> <p>In 1999, a Final Archaeological Treatment Plan (FATP) and a Memorandum of Agreement (MOA) were completed to memorialize mitigation and protection measures for 12 historic properties identified by CSH (Walsh and Hammatt 1995).</p> <p>Recently, staff working for the National Park Service (NPS), including the Honokōhau Settlement National Historic Landmark, the Kaloko-Honokōhau National Historical Park and the Ala Kahakai National Historic Trail, raised concerns about archaeological features or sites they believed were overlooked during previous surveys. These NPS concerns were raised in response to the HDOT’s 2008 reissuance of the Finding of No Significant Impact (FONSI) for the proposed project.</p> <p>In response to NPS concerns, CSH was contracted in 2010 to conduct supplemental archaeological inventory survey of the project area, the results of which were reported in an archaeological inventory survey (AIS) report by Monahan et al. (2011). The objective of the study by Monahan et al. (2011) was to conduct a complete re-survey of the entire Phase 2 project area. In 2011, the resulting AIS was accepted by the SHPD in a letter (Log No.: 2011.1140, Doc. No.: 1104TD12) dated April 27, 2011, <i>under the condition that other consulting parties, in particular the NPS and NHOs, were satisfied with the report.</i></p> <p>When it became clear, through continuing consultation, that the other consulting parties were <i>not</i> satisfied with the report, CSH undertook two supplemental studies of the project area (Monahan and Wilkinson 2012; Monahan and Yucha 2012). These studies, which included a limited amount of fieldwork investigation with the NPS and NHOs, yielded additional historic properties that have now been added to the subject AIS report. The subject AIS report, therefore, is an integration of information from three main documents: the original 2011 AIS by Monahan et al. (2011) and the two supplemental survey reports cited above.</p>
<b>Document Purpose</b>	<p>This AIS investigation was prepared in consideration of the <i>Secretary of the Interior’s Standards and Guidelines for Archeology and Historic Preservation</i>, and was conducted to identify, document, and make National Register of Historic Places (National Register) and Hawai‘i Register of Historic Places (Hawai‘i Register) eligibility recommendations for the project area’s archaeological cultural resources<sup>1</sup>.</p> <p>In consultation with the SHPD, this investigation was also designed to fulfill the State requirements for an AIS per Hawai‘i Administrative Rules (HAR) Chapter 13-13-276. The investigation includes an</p>

	<p>undertaking-specific effect recommendation and treatment/mitigation recommendations for the cultural resources recommended National/Hawai‘i Register eligible. This document is intended to support project-related historic preservation consultation among stakeholding federal and state agencies, interested Native Hawaiian groups and individuals, and community groups.</p>
<b>Fieldwork Effort</b>	<p>Fieldwork for this project was conducted under State archaeological fieldwork permit nos. 10-10 (2010), 11-17 (2011) and 12-04 (2012) issued by SHPD, per HAR Chapter 13-282, in accordance with the standards described in HAR Chapter 13-276. Fieldwork for the AIS by Monahan et al. (2011) took place between August 5, 2010, and October 6, 2010, for a total of approximately 40 person days. Note, these totals include site visits and field inspections conducted in the context of consultation efforts related to this project, as well as standard archaeological survey fieldwork. Chris Monahan, Ph.D., is the principal investigator for this project. Mindy Simonson, M.A., and Trevor Yucha, B.S., served as field directors for different phases of the work that resulted in the AIS report by Monahan et al. (2011).</p> <p>Fieldwork for the supplemental archaeological inventory survey of possible historic properties identified by Native Hawaiian organizations (NHO) for the North Segment of the project (Monahan and Wilkinson 2012) was conducted on November 13, 2011 (CSH archaeologist Chris Monahan), January 4, 2012 (Monahan), and January 19–20, 2012 (CSH archaeologists Sarah Wilkinson and Oliver Bautista). In addition to these CSH archaeologists, NHO representative Isaac Harp participated in all field activities described here. Other individuals who participated in some of the supplemental archaeological inventory survey fieldwork include: Keola Lindsey (OHA), Fred Cachola (NHO), Nainoa Perry (NHO), Russell Paio (NHO), John Nickelson (FHWA), Sterling Chow (HDOT), Mike Vitousek (SHPD/DLNR), James Arnold (Goodfellow Brothers, Inc.).</p> <p>Fieldwork for the supplemental archaeological inventory survey of possible historic properties for the South Segment of the project (Monahan and Yucha 2012) was conducted on March 29, 2012, by CSH archaeologists Trevor Yucha and Oliver Bautista, NPS archaeologists Tyler Paikuli-Campbell and Rick Gmirkin, and NHO representatives Jacob Harp and Isaac Harp (note, Isaac Harp was only able to be in the field on this day for a brief amount of time due to other commitments). In addition, the following individuals participated in the fieldwork: Jason Tateishi (R.M. Towill) and Rodney Lawrence (Goodfellow Brothers, Inc.). In response to an NPS letter dated April 25, 2012, reviewing and commenting on the Monahan and Yucha (2012) report, CSH (Oliver Bautista) conducted one additional day of fieldwork with the assistance of NPS archaeologist Tyler Paikuli-</p>

	<p>Campbell and James Arnold (Goodfellow Brothers, Inc.).</p> <p>In order to address NPS and SHPD concerns further supplementary fieldwork was undertaken from July 9 to 12, 2012 by CSH archaeologists Ena Sroat, B.A., Oliver Bautista, B.A. and Johnny Dudoit B.A.</p>
<b>Number of Historic Properties Identified<sup>1</sup></b>	<p>Seventy-five (75) historic properties are addressed in this revised Archaeological Inventory Survey report. 74 of these sites are within the designated APE and one additional historic property (the “Big Cave” SIHP 50-10-27-29275) on neighboring private property is addressed in the present Appendix C in an effort to address SHPD concerns. Most of these sites within the project area (n=55) have not been formally described in prior reports, and are reported here for the first time. The remaining 20 historic properties have been described in prior reports, although some of these are trails whose previously described portions are not located in the current project area.</p> <p>Of the 55 newly-identified historic properties, 35 were first described in the May 2011 AIS by Monahan et al. (2011). Twenty (20) were identified during supplemental survey efforts working with the consulting parties (cf. Monahan and Wilkinson 2012; Monahan and Yucha 2012).</p> <p>In response to review comments from the Office of Hawaiian Affairs (OHA), two sites originally included in the Walsh and Hammatt (1995) survey (SIHP #s 02238 and 19944) are not located within the current project area. SIHP # 02238 is located within the national park, not the project area, and SIHP # 19944 is located <i>makai</i> of the project area at the northern end of the project area. Also, SIHP # 19946 (a <i>mauka-makai</i> trail), identified during Walsh and Hammatt’s (1995) survey and included as an “interim preservation” site in the Final Archaeological Treatment Plan (1999), has in fact now been relocated and is addressed in this study. This trail site had been erroneously given a new designation which has now been deleted in favor of the initial SIHP designation.</p>
<b>Historic Properties Recommended Eligible to the National / Hawai‘i Register of Historic Places<sup>2</sup></b>	<p>All 75 historic properties discussed in this AIS are recommended eligible for the National and Hawai‘i Register of Historic Places (see Table 26 for a complete listing of significance evaluations). In general, all 75 historic properties are recommended eligible under Criteria D and E. All trails are also eligible under Criterion C. Two specific trails (“Road to the Sea” and “Trail to Honokōhau”) are also eligible under Criterion A. Finally, the Māmalahoa Trail is also eligible under Criteria A and B.</p>
<b>Effect Recommendation</b>	<p>Under Hawaii State historic preservation review legislation, CSH’s project-specific effect recommendation is “effect, with proposed mitigation commitments.” Under federal historic preservation review legislation a project effect recommendation of “adverse effect” is</p>

	warranted, with the understanding that the proposed mitigation measures (described below) will be carried out to mitigate the undertaking's potential effect on Hawai'i and National Register-eligible cultural resources.		
<b>Mitigation Recommendation</b>	In order to minimize the proposed project's potential effects on significant cultural resources, the following mitigation measures are recommended (see Table 27 and Table 28).		
	<b>Item</b>	<b>Action (SIHP #)</b>	<b># Sites</b>
	1	<b>Burial Treatment Plan</b> —Preservation in Place (22415, 29275*) *This site is outside the APE; Discussions with the private land owner are on-going	2
	2	<b>Preservation</b> (10154, 19943, 19950, 19951, 28780, 28781, 28788, 28789, 28790, 28792, 28797, 28799, 28802, 28806, 28810)	15
	3	<b>Preservation &amp; No Further Work</b> (19945—two petroglyphs will be preserved; no further work for remaining features at this site)	1
	4	<b>Avoidance During Construction</b> (19946, 28794, 28801, 28803, 28804, 28805, 28809, 29337, 29341, 29342, 29343, 29347)	12
	5	<b>No Further Work</b> (06432—note, damage to 06432 will be minimized by way of archaeological and cultural monitoring 29338)	2
	6	<b>Relocation</b> (19947, 29346)	2
	7	<b>Relocation &amp; Preservation</b> (28808—Relocation of 2 features, Preservation of 3 features)	1
	8	<b>Data Recovery (Excavation/Dismantling)</b> (19949, 22417, 28778, 28785, 28786, 28800, 28807, 28811, 28812, 28814, 28815, 29332, 29333, 29334, 29335, 29345, 29336, 29339, 29340, 29344)	20
	9	<b>Data Recovery (Archival Research) &amp; Partial Preservation</b> (00002, 10714, 15324, 18099, 19952, 19953, 19954, 22507, 28774, 28782, 28787, 28784, 28791)	13
	10	<b>Data Recovery (Archival Research) only</b> (22418)	1
	11	<b>Data Recovery (Collection &amp; Curation of Portable Artifacts)</b> (29348, 29349)	2
	12	<b>Data Recovery (Excavation) &amp; Preservation</b> (19948, 28783, 28813, 29272)	4
		<b>TOTAL</b>	<b>75</b>

	<p>In general, the objective of this mitigation program is to protect and preserve as many historic properties as possible, and to obtain additional information at significant sites that cannot be avoided by current construction plans. The mitigation program includes: Archaeological and Cultural Monitoring (Section 7.2.1), Data Recovery (Section 7.2.2), Preservation and Avoidance During Construction (Section 7.2.3), Relocation (Section 7.2.4), Burial Treatment (Section 7.2.5), and Other Proposed Mitigation (7.2.6)</p> <p>A Memorandum of Agreement (MOA) will be prepared for execution that outlines actions to be taken (mitigation measures) to ensure documentation and protection of historic properties found within the highway corridor. In addition. The MOA shall stipulate specific actions to be taken to mitigate potential impacts to historic properties.</p>
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<sup>1</sup>In historic preservation parlance, cultural resources are the physical remains and/or geographic locations that reflect the activity, heritage, and/or beliefs of ethnic groups, local communities, states, and/or nations. Generally, they are at least 50 years old, although there are exceptions, and include: buildings and structures; groupings of buildings or structures (historic districts); certain objects; archaeological artifacts, features, sites, and/or deposits; groupings of archaeological sites (archaeological districts); and, in some instances, natural landscape features and/or geographic locations of cultural significance.

<sup>2</sup>Historic properties, as defined under federal historic preservation legislation, are cultural resources that are at least 50 years old (with exceptions) and have been determined eligible for inclusion in the National Register of Historic Places based on their integrity and historic/cultural significance in terms of established significance criteria. Determinations of eligibility are generally made by a federal agency official in consultation with SHPD. Under federal legislation, a project's (undertaking's) potential effect on historic properties must be evaluated and potentially mitigated. Under Hawai'i State historic preservation legislation, historic properties are defined as any cultural resources that are 50 years old, regardless of their historic/cultural significance under state law, and a project's effect and potential mitigation measures are evaluated based on the project's potential impact to "significant" historic properties (those historic properties determined eligible, based on their integrity and historic/cultural significance in terms of established significance criteria, for inclusion in the Hawai'i Register of Historic Places). Determinations of eligibility to the Hawai'i Register result when a state agency official's historic property "significance assessment" is approved by SHPD, or when SHPD itself makes an eligibility determination for a historic property.

<sup>3</sup>Cultural resource significance is evaluated and expressed as eligibility for listing on the National and/or Hawai'i Register. To be considered eligible for listing on the National and/or Hawai'i Register a cultural resource should possess integrity of location, design, setting, materials, workmanship, feeling, and association, and meet one or more of the following broad cultural/historic significance criteria: "A" reflects major trends or events in the history of the state or nation; "B" is associated with the lives of persons significant in our past; "C" is an excellent example of a site type/work of a master; "D" has yielded or may be likely to yield information important in prehistory or history; and, "E" (Hawaii Register only) has traditional cultural significance to an ethnic group, includes religious structures and/or burials.

<sup>4</sup>Under Hawai'i State historic preservation review legislation, there are five potential forms of historic preservation mitigation: A) Preservation; B) Architectural Recordation; C) Archaeological Data Recovery; D) Historical Data Recovery; and E) Ethnographic Documentation (HAR Chapter 13-275-8).

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## Section 1 Introduction

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### 1.1 Project Background

On behalf of the Department of Transportation, State of Hawai'i (HDOT), SSFM International requested that Cultural Surveys Hawai'i, Inc. (CSH) prepare this revised archaeological inventory survey (AIS) for the review of the State Historic Preservation Division (SHPD) in support of certain HDOT improvements to the Queen Ka'ahumanu Highway in Kalaoa, Kalaoa-ʻOʻoma, ʻOʻoma 2, Kohanaiki, Kaloko, Honokōhau 1-2 and Kealakehe, North Kona District, Island of Hawai'i (TMK (3) 7-4-008, 7-3-009 & 7-3-043 / Queen Ka'ahumanu Highway). This revised Archaeological Inventory Survey addresses comments received in a Chapter 6E-8 and Section 106 SHPD review (dated July 9, 2012, Log No 2012.1443, Doc no. 1206MV26) of an earlier (May 2012) draft.

The project area, which is depicted in Figure 1 (U.S. Geological Survey 7.5-minute Keāhole Point and Kailua topographic quadrangles), Figure 2 (TMK maps) and Figure 3 (aerial photograph), measures approximately 5.2 miles (27,456 ft, ) in length by 300 ft in width, or approximately 190 acres (76.9 ha).

The Queen Ka'ahumanu Highway Widening Project (Phase 2) includes the design and construction services to widen Queen Ka'ahumanu from the existing two (2) lanes into a four (4) lane divided highway within the 300-foot right-of-way (ROW) between Kealakehe Parkway and the Keāhole Airport Access Road. Major features of the project include: construction of new pavements and pavement markings; drainage systems; sidewalks; traffic signal systems and traffic signs; guardrails and landscape plantings; highway lighting plus the relocation and installation of utilities. The project proponent—the HDOT—will also address any mitigation of impacts to archaeological sites within the project limits, and will provide temporary and permanent BMP (Best Management Practices). Finally, the project proponent is the responsible party for the process of all permits required to complete the project in conformance with appropriate Federal, State and local standards.

According to the project proponent, the specific project limits are as follows (Figure 4):

- Start: the transition area from the Queen Ka'ahumanu Highway Widening Phase 1 Project located approximately 1150 feet (350.5 m) south of Kealakehe Parkway (approximate Station 1110+00) to
- End: approximately 1700 feet (518.1 m) north of Keāhole Airport Road (1000 feet (or 305 m) + taper length; approximate Station 252+00).
- All work would fall within the State's 300-ft (91.4 m) existing right-of-way.

Earlier in the project conception, it was divided into two segments—North and South—for pragmatic reasons related to construction schedules (see Figure 4). This division of the project area is now obsolete, although two important reports describing supplemental survey work with consulting parties include this north/south distinction in their titles and organization (i.e., Monahan and Wilkinson 2012; Monahan and Yucha 2012).

## 1.2 Project Acreage and Area of Potential Effects (APE)

The project area is approximately 5.2 miles (8.37 km) long and 300 ft. (91.4 m) wide, or approximately 190 acres (76.9 ha). Of this total area, approximately 50 percent consists of the existing highway and previously-disturbed land along both the *mauka* and *makai* highway shoulders. Therefore, the total area of undisturbed land that was surveyed amounts to approximately half, or 95 acres (38.4 ha), of the ROW. The entire undisturbed portion of the project area was surveyed for historic properties. In addition, the entire previously disturbed area on the *mauka* side of the existing highway was also systematically surveyed as a check and assurance that no historic properties were present. On the *makai* side, survey transects (oriented north-to-south) were conducted so that all previously disturbed areas were visually confirmed to be disturbed. Later, during supplemental survey efforts conducted with the consulting parties (Monahan and Wilkinson 2012; Monahan and Yucha 2012), identification and inspection efforts were not conducted by systematic transects but, rather, on a more selective basis focusing on areas of interest to the consulting parties.

For the purposes of this archaeological inventory survey, the Area of Potential Effects (APE) consists of the highway ROW plus areas potentially affected by the proposed undertaking, including, but not limited to, the Kaloko-Honokōhau National Historical Park and the Honokōhau Settlement National Historic Landmark (SIHP # 50-10-27-4138), which are immediately adjacent (west) to the project area in Honokōhau and Kaloko Ahupua'a.

The SHPD review letter (dated July 9, 2012, Log No 2012.1443, Doc no. 1206MV26) asked for reconsideration of the APE in the vicinity of the "Big Cave" (SIHP 50-10-27-29275). Following consultation between FHWA and the ACHP it was agreed that the "Big Cave" (SIHP 50-10-27-29275) and the intervening land located west of the ROW would not be included within the APE.

## 1.3 Historic Preservation Regulatory Context

This revised Archaeological Inventory Survey addresses comments received in a Chapter 6E-8 and Section 106 SHPD review (dated July 9, 2012, Log No 2012.1443, Doc no. 1206MV26) of an earlier (May 2012) draft. A summary of how and where comments were addressed attended the re-submission of this study to the SHPD.

This document was prepared to support the proposed project's historic preservation review under Hawai'i Revised Statutes (HRS) Chapter 6E-8 and Hawai'i Administrative Rules (HAR) Chapter 13-275. Due to federal (FHWA) funding, this project is a federal undertaking, requiring compliance with Section 106 of the National Historic Preservation Act (NHPA), the National Environmental Policy Act (NEPA), and Section 4(f) of the Department of Transportation Act. Therefore, this document is also subject to SHPD review pursuant to 36 CFR Part 800 and the *Secretary of the Interior's Standards for Identification, Standards for Evaluation and Standards for Archeological Documentation*.

In 1995, CSH conducted an archaeological inventory survey of the current project area (Walsh and Hammatt 1995), identifying 17 historic properties within the project area (as it was known at that time). The survey report was reviewed and accepted by the SHPD in a letter (Log No.: 15956, Doc. No.: 9511PM28) dated November 22, 1995.



In 1996, the FHWA and HDOT produced a Final Environmental Assessment (FEA), issued a Finding of No Significant Impact (FONSI) and determined the proposed project “will not have any significant impact on the human environment.”

In 1999, a Final Archaeological Treatment Plan (FATP) and a Memorandum of Agreement (MOA) were completed to memorialize mitigation and protection measures for 12 historic properties identified by CSH (Walsh and Hammatt 1995) in partial fulfillment of the requirements of Section 106 of the National Historic Preservation Act (NHPA).

## 1.4 Document Purpose

This AIS investigation was prepared in consideration of the *Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation*, and was conducted to identify, document, and make National Register of Historic Places (National Register) and Hawai'i Register of Historic Places (Hawai'i Register) eligibility recommendations for the project area's archaeological cultural resources.

In consultation with the SHPD, this investigation was also designed to fulfill the State requirements for an AIS per Hawai'i Administrative Rules (HAR) Chapter 13-13-276. The investigation includes an undertaking-specific effect recommendation and treatment/mitigation recommendations for the cultural resources recommended National/Hawai'i Register eligible. This document is intended to support project-related historic preservation consultation among stake-holding federal and state agencies, interested Native Hawaiian groups and individuals, and community groups.

Recently, staff working for the National Park Service (NPS), including the Honokōhau Settlement National Historic Landmark, the Kaloko-Honokōhau National Historical Park and the Ala Kahakai National Historic Trail, raised concerns about archaeological features or sites they believed were overlooked during previous surveys. These NPS concerns were raised in response to the HDOT's 2008 reissuance of the Finding of No Significant Impact (FONSI) for the proposed project.

In response to NPS concerns, CSH was contracted in 2010 to conduct supplemental archaeological inventory survey of the project area, the results of which were reported in an archaeological inventory survey (AIS) report by Monahan et al. (2011). The objective of the study by Monahan et al. (2011) was to conduct a complete re-survey of the entire Phase 2 project area. In 2011, the resulting AIS was accepted by the SHPD in a letter (Log No.: 2011.1140, Doc. No.: 1104TD12) dated April 27, 2011, *under the condition that other consulting parties, in particular the NPS and NHOs, were satisfied with the report.*

When it became clear, through continuing consultation, that the other consulting parties were *not* satisfied with the report, CSH undertook two supplemental studies of the project area (Monahan and Wilkinson 2012; Monahan and Yucha 2012). These studies, which included a limited amount of fieldwork investigation with the NPS and NHOs, yielded additional historic properties that have now been added to the subject AIS report. The subject AIS report, therefore, is an integration of information from three main documents: the original 2011 AIS by Monahan et al. (2011) and the two supplemental survey reports cited above.

## 1.5 Scope of Work

The following scope of work satisfies the Department of Land and Natural Resources / State Historic Preservation Division's (DLNR/SHPD) requirements for an archaeological inventory survey [per HAR Chapter 13-276]:

1. Community consultation included contacting knowledgeable members of the community and requesting information on historic and cultural issues related to the property.
2. A complete ground survey of the entire project area for the purpose of site inventory. All sites were located, described, and mapped with evaluation of function, interrelationships, and significance. Documentation included photographs and scale drawings of selected sites and complexes. For this draft report, all sites have been assigned temporary field numbers. CSH has obtained State Inventory of Historic Properties (SIHP) numbers for this report.
3. Limited subsurface excavation at sites whose function was indeterminate and at which CSH believed testing would assist in determining function.
4. Research on historic and archaeological background, including search of historic maps, written records, and Land Commission Award documents. This research focused on the specific area with general background on the Ahupua'a and district and emphasized settlement patterns.
5. Preparation of this archaeological inventory survey report which includes the following:
  - a. A topographic map of the survey area showing the boundaries of all historic properties;
  - b. Descriptions of all historic properties with selected photographs, scale drawings, and discussions of function;
  - c. Historical and archaeological background sections summarizing prehistoric (pre-Contact) and historic land use as they relate to the project areas historic properties;
  - d. A summary of historic property categories and their significance in an archaeological and historic context;
  - e. Recommendations based on all information generated that will specify what steps should be taken to mitigate impact of development on the significant historic properties - such as data recovery, preservation and burial treatment.

## 1.6 Environmental Setting

### 1.6.1 Natural Environment

The project area is 300 feet in width along a 5.2 mile corridor. The project area lies between approximately 0.5 to 1.25 miles from the coastline at elevations of between 60 feet Above Mean

Sea Level (AMSL) to 140 feet AMSL (at the north end). Rainfall in the project area averages between 20 to 30 inches per year and temperatures range from an average minimum of 62-68 degrees Fahrenheit to an average maximum of 78-82 degrees (Armstrong 1973:57-58).

The land surface is comprised predominately of undissected 'a'ā and pāhoehoe lava flows. The *Soil Survey of the Island of Hawaii* describes 'a'ā lava terrain as having “practically no soil covering and is bare of vegetation, except for mosses, lichens, ferns, and a few small *ohia* trees. . . . This lava is rough and broken. It is a mass of clinkers, hard, glassy sharp pieces piled in tumbled heaps” (Sato et al. 1973:34). The same study describes pāhoehoe lavas as “a billowy, glassy surface that is relatively smooth. In some areas however, the surface is rough and broken and there are hummocks and pressure domes” (Sato et al. 1973:34). Figure 5 depicts the main soil types in the project area. Besides the 'a'ā flows (rLV on the figure) and the pāhoehoe flows (rIW), the highway also crosses a few areas of Punaluu Extremely Rocky Peat, 6-20 percent slopes (rPYD). This soil series consists of very shallow, well drained organic soils, which formed in organic material mixed with minor amounts of basic volcanic ash over pāhoehoe lava.

Vegetation in the project area is identified as “Fountain Grass Grassland” in *The Botanical Survey of West Hawai'i Boundary Review* (Char & Char Associates 1992, quoted in Head and Rosendahl 1993:2). This vegetation type typically consists of low tufts of grass with scattered shrubs and a few trees. Specific plants commonly observed within the project area include: *pili* grass (*Heteropogon contortus*), Guinea grass (*Panicum maximum*), fountain grass (*Pennisetum setaceum*), *wilelaiki* or Christmas-berry (*Schinus terebinthifolius*), *klu* (*Acacia farnesiana*), *koa haole* (*Leucaena glauca*), *kiawe* (*Prosopis pallida*), and *lantana* (*Lantana camara*). In areas of Punaluu Stony Peat, common vegetation includes *koa haole* and Guinea Grass.

The NPS has pointed out that the natural environment immediately adjacent to the project area on either side of the existing highway is important to take into consideration given the proposed project's potential impacts. The NPS is particularly concerned about the ocean and shoreline resources, including the many anchialine pools as well as the fishponds at Kaloko and 'Aimakapā.

## 1.6.2 Built Environment

The Queen Ka'ahumanu Highway extends through bare pāhoehoe and 'a'ā lava flows. There are two commercially developed areas adjacent to the *mauka* (inland) side of the highway in Honokōhau for a gas station and quarry, and in Kaloko for the Kaloko Industrial Park. On the *makai* side of the project area, there are several adjacent, developed areas and access roads leading into them including (from south to north): Honokōhau Harbor, Kaloko-Honokōhau National Historical Park, Shores at Kohanaiki, the Nature Energy Laboratory of Hawai'i Authority (NELHA) and the Kona International Airport. Additionally, there are planned or proposed developments on the east side of the existing highway, and adjacent to the project area, such as the West Hawai'i Business Park and the Kaloko Makai planned community.

Approximately 50 percent of the project area consists of the existing highway and previously-disturbed land along both the *mauka* and *makai* highway shoulders. Previous disturbance in the project area appears to be primarily the result of the original highway construction (both sides of the existing highway) and utility pole installation (*mauka* side). Therefore, the total area of undisturbed land that was surveyed amounts to approximately half, or 95 acres, of the ROW.

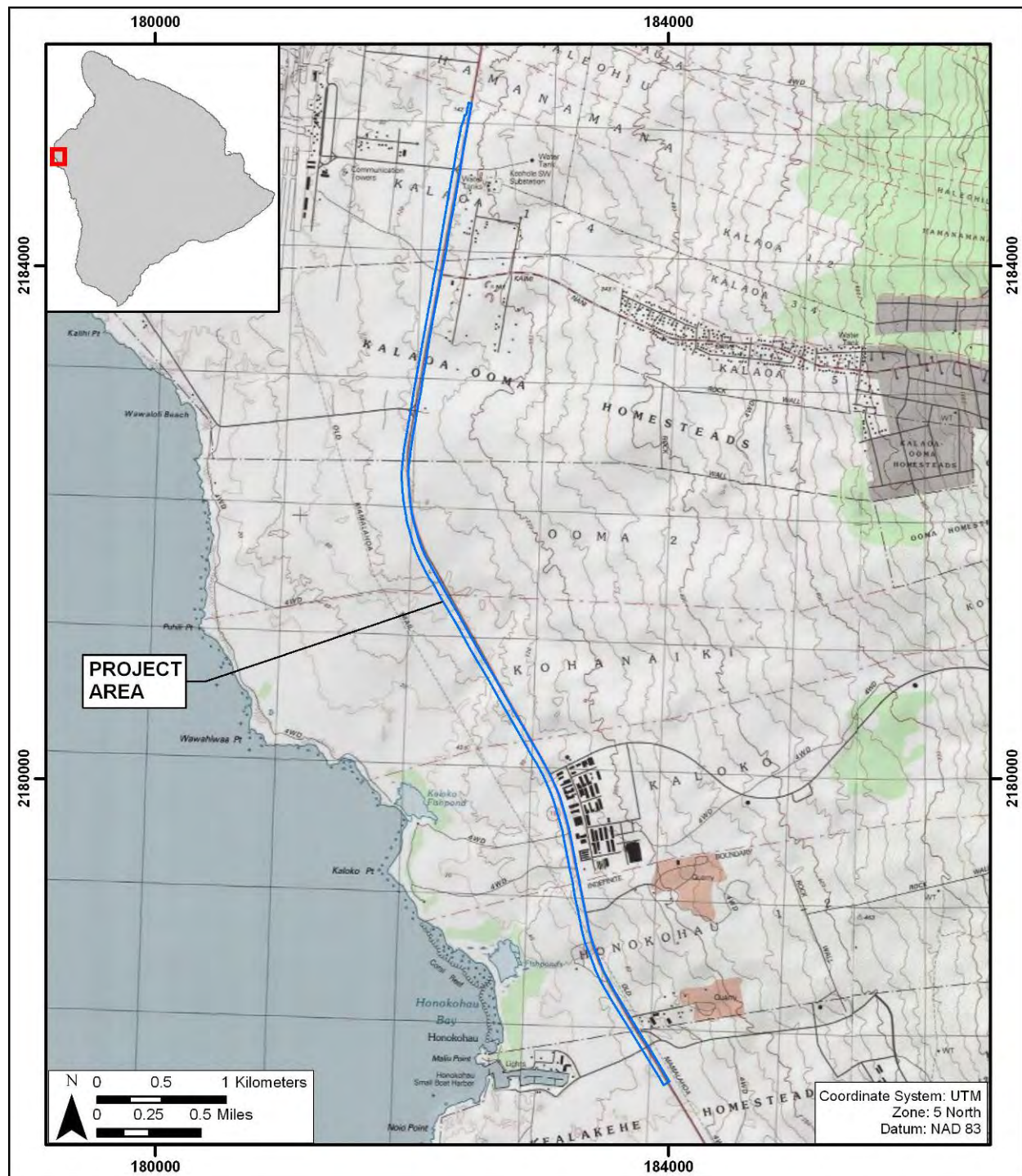


Figure 1. 1996 U.S. Geological Survey 7.5 minute topographic map (Keāhole Point and Kailua Quadrangles), showing the project area portion of the Queen Ka'ahumanu Highway





Figure 2. Tax Map Keys, showing the project area portion of the Queen Ka'ahumanu Highway (Hawai'i TMK Service)



Figure 3. 2005 aerial photograph of Kona, showing the project area portion of the Queen Ka'ahumanu Highway (source: U.S. Geological Survey Orthoimagery)



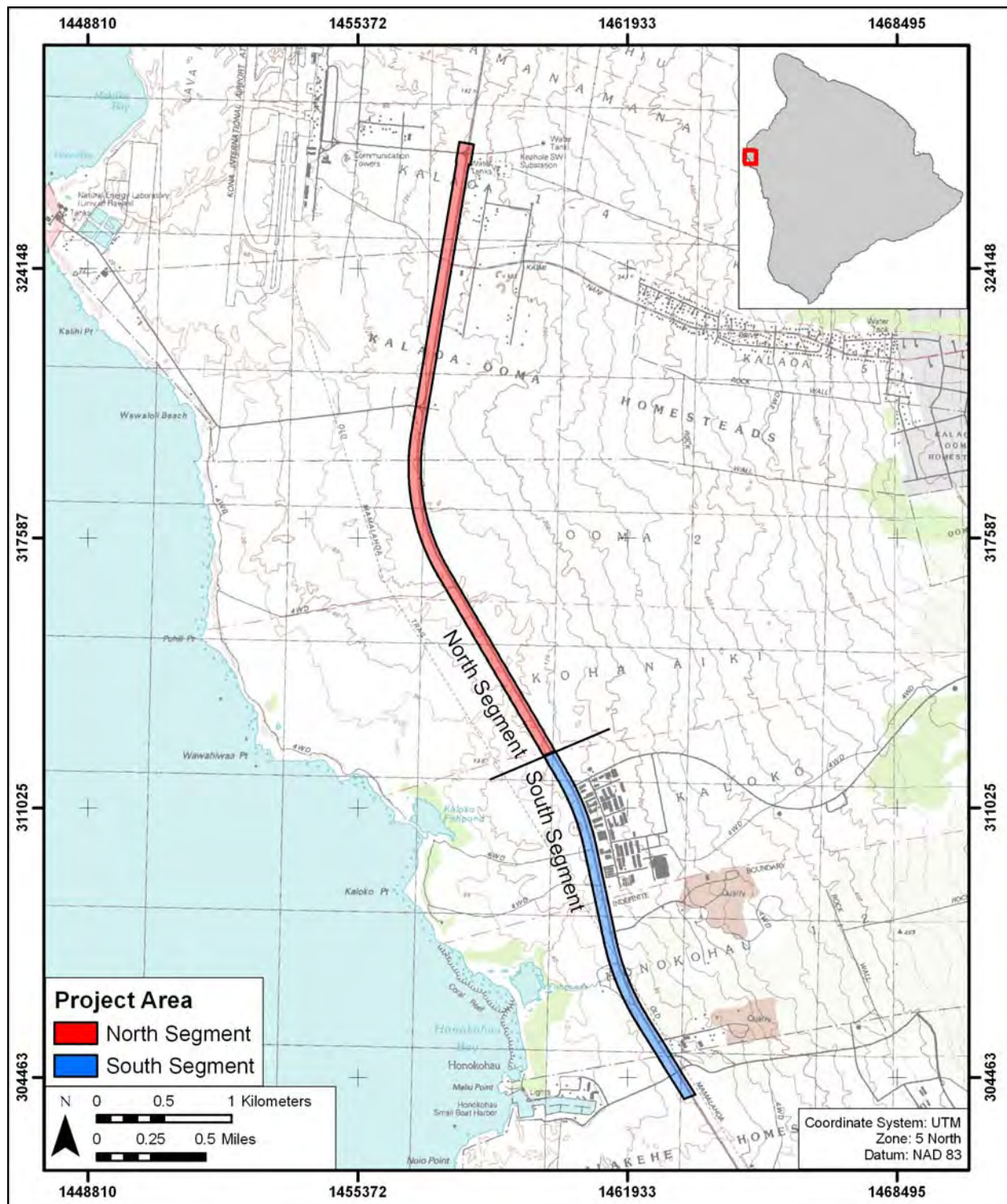


Figure 4. Schematic depiction of the now-obsolete North and South Segments of the project area; as described above, earlier in the project conception, it was divided into two segments, which are no longer relevant

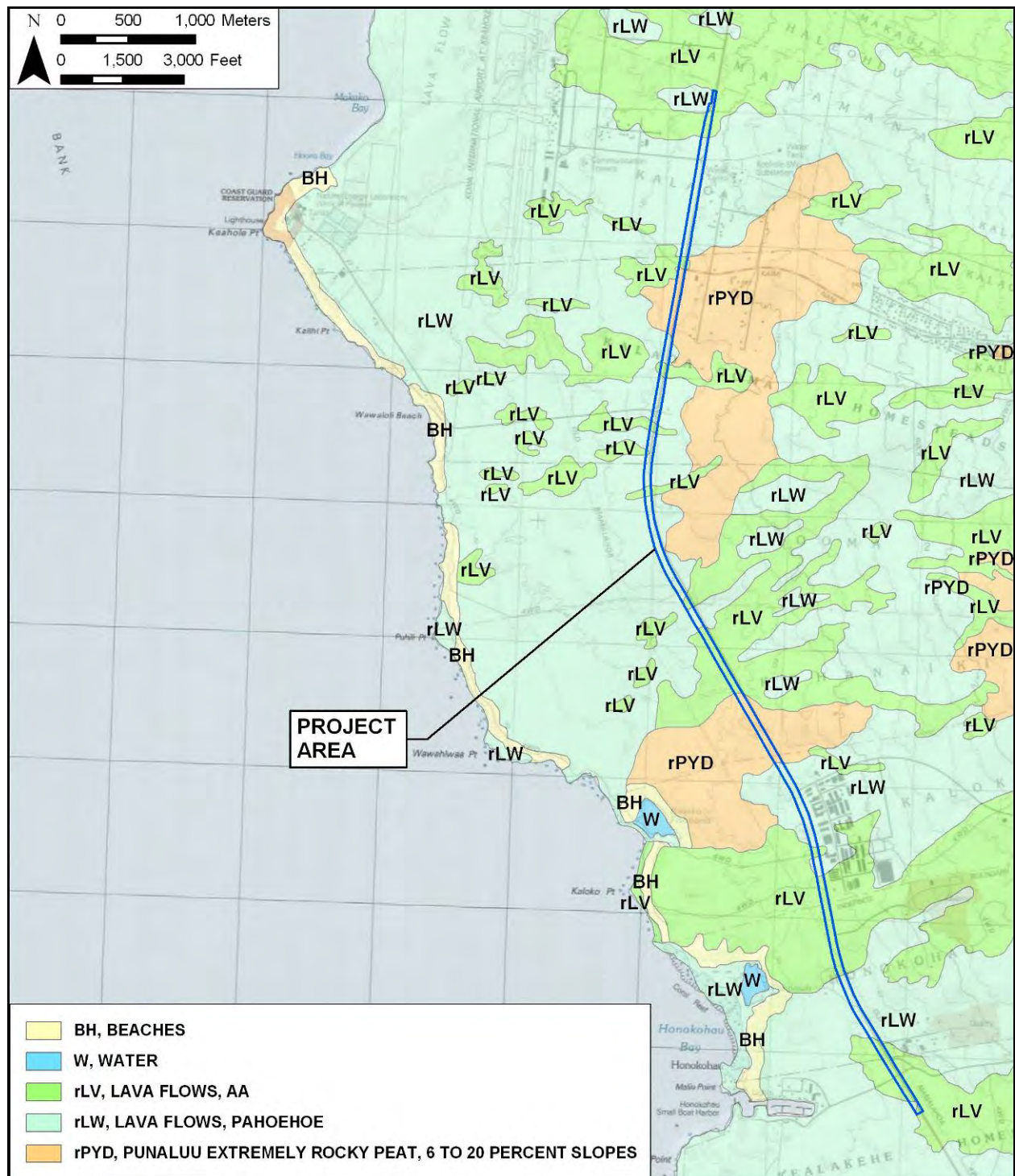


Figure 5. U.S. Department of Agriculture soil classification for the project area (Sato et al. 1973)



## Section 2 Methods

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### 2.1 Fieldwork

#### 2.1.1 Monahan et al. (2011) AIS

Fieldwork for this project was conducted under State archaeological fieldwork permit nos. 10-10 (2010), 11-17 (2011) and 12-04 (2012) issued by SHPD, per HAR Chapter 13-282, in accordance with the standards described in HAR Chapter 13-276. Fieldwork for the AIS by Monahan et al. (2011) took place between August 5, 2010, and October 6, 2010, for a total of approximately 40 person days (Table 1). Note, these totals include site visits and field inspections conducted in the context of consultation efforts related to this project, as well as standard archaeological survey fieldwork. Chris Monahan, Ph.D., is the principal investigator for this project. Mindy Simonson, M.A., and Trevor Yucha, B.S., served as field directors for different phases of the work that resulted in the AIS report by Monahan et al. (2011). The primary goal of the investigation was to identify, document and evaluate archaeological features and sites that were not previously identified within the project area in 1995.

Fieldwork consisted of pedestrian inspection and historic property documentation of the entire project area. The pedestrian inspection of the project area was accomplished through systematic sweeps oriented parallel to the highway (i.e., north-to-south). The interval between the archaeologists was generally 10-15 m. Surface cultural resource documentation included tape and compass plan view maps, digital photographs and written descriptions. Surface cultural resources boundaries were defined in terms of the geographic extent of the feature or features that comprise the historic property. The boundary of each of these cultural resources was defined as the geographic extent of the component feature(s) and/or structure(s). Tape and compass drawn site maps (later digitized), photographs and each site location were recorded using GPS receivers. GPS historic property/feature location and boundary information was recorded with a Trimble ProXR unit, which provides submeter horizontal accuracy.

#### 2.1.2 Monahan and Wilkinson (2012) Supplemental Survey with NHOs-North Segment

Fieldwork for the supplemental archaeological inventory survey of possible historic properties identified by Native Hawaiian organizations (NHO) for the North Segment of the project was conducted on November 13, 2011 (CSH archaeologist Chris Monahan), January 4, 2012 (Monahan), and January 19–20, 2012 (CSH archaeologists Sarah Wilkinson and Oliver Bautista). In addition to these CSH archaeologists, NHO representative Isaac Harp participated in all field activities described here. Other individuals who participated in some of the supplemental archaeological inventory survey fieldwork include: Keola Lindsey (OHA), Fred Cachola (NHO), Nainoa Perry (NHO), Russell Paio (NHO), John Nickelson (FHWA), Sterling Chow (HDOT), Mike Vitousek (SHPD/DLNR), James Arnold (Goodfellow Brothers, Inc.).

#### 2.1.3 Monahan and Yucha (2012) Supplemental Survey with NPS and NHOs-South Segment

Fieldwork for the supplemental archaeological inventory survey of possible historic properties for the South Segment of the project was conducted on March 29, 2012, by CSH archaeologists

Trevor Yucha and Oliver Bautista, NPS archaeologists Tyler Paikuli-Campbell and Rick Gmirkin, and NHO representatives Jacob Harp and Isaac Harp (note, Isaac Harp was only able to be in the field on this day for a brief amount of time due to other commitments). In addition, the following individuals participated in the fieldwork: Jason Tateishi (R.M. Towill) and Rodney Lawrence (Goodfellow Brothers, Inc.). In response to an NPS letter dated April 25, 2012, reviewing and commenting on the Monahan and Yucha (2012) report, CSH (Oliver Bautista) conducted one additional day of fieldwork with the assistance of NPS archaeologist Tyler Paikuli-Campbell and James Arnold (Goodfellow Brothers, Inc.).

#### **2.1.4 Supplemental Survey Post NPS and SHPD reviews of May 2012 draft AIS**

A May 2012 draft of this Archaeological Inventory Survey was reviewed by the National Park Service (June 14, 2012) and the State Historic Preservation Division (July 9, 2012; Log No. 2012.1443, Doc No. 1206MV26) as well as a concerned Native Hawaiian Organization (Makani Hou o Kaloko-Honokohau, dated June 12, 2012). In consideration of these comments another round of fieldwork was carried out over four days (July 9 through 12 2012) by CSH archaeologists Johnny Dudoit, Oliver Bautista, and Ena Sroat (representing 10-person days) for the purpose of supplementary field documentation

#### **2.1.5 Future Work**

At the instruction of the SHPD, CSH shall physically mark each site recommended for preservation, including the burial site designated SIHP # 22415, with a metal site tag affixed to bedrock (i.e., non-portable lava rock) with a stainless steel nail. Each site tag will be etched with its SIHP number. The location of each site tag will be graphically depicted on plan view maps included in the preservation plan for this project.

#### **2.1.6 Subsurface Excavation / Dismantling of Features**

Limited subsurface excavation and dismantling of rock features was conducted at five suspected burial features (testing showed that one of these sites, SIHP # 22415, contained human skeletal remains; the other four did not). It is important to note that subsurface testing / dismantling was conducted with the permission of the SHPD and in consultation with descendant families. Subsurface testing methodologies were dependent upon the size and dimensions of each historic property. Subsurface testing methodologies included the excavation / dismantling of 1.0 by 1.0 m test units near the center of SIHP #s 22415 and 28781; partial excavation of SIHP #s 28794 and 28803; and full excavation / dismantling of SIHP #s 28804.

Prior to excavation, a photograph of each historic property was taken to aid in post-excavation reconstruction. When applicable, a test unit grid, constructed of surveyor's nails and string, was constructed in an effort to demarcate each test unit and maintain consistent and vertical test unit side walls. The initial stage of excavation involved the removal of the top layer of rocks, which exhibit natural weathering, lichen growth, and sun damage. The top layer of weathered rocks was placed on a tarp near each site to aid in post-excavation reconstruction. The remainder of the material within each site or test unit was piled on a separate tarp near each site. When sediment was encountered within a test excavation, the sediment was collected using a trowel and dustpan and sifted through a 1/8-inch mesh screen over a tarp.

The depth of excavation at each site was largely dependent on the type of substrate and presence or lack of cultural material within each test excavation. Excavation of SIHP # 22415 was halted upon the identification of human remains at 70 cm below surface. Excavation of SIHP # 28781 was halted at approximately 65 cm below surface due to increased and significant collapse of the test unit sidewalls, which compromised the site's overall integrity (the substrate that was observed within SIHP # 28781 was interpreted as natural, unmodified 'a'ā clinker). Excavation of SIHP #s 28794, 28803 and 28804 was halted at the exposure of solid bedrock.

In all cases, excavation proceeded by removing natural stratigraphic layers, typically beginning with the uppermost constituent rock layer followed by underlying soil-sedimentary layers. Arbitrary levels were not used during excavation for this project.

No photographs were taken of the human remains exposed in the excavation at SIHP # 22415.

## 2.2 Methods Used to Determine a Site and its Boundaries

This was an unusual project in the level of scrutiny by the SHPD, NPS and NHOs. CSH knows from past experience that in such 'a'ā flows as dominate the project area many archaeological properties truly can be exceedingly subtle and we are deferring to the greater experience and wishes of the NPS (and to a lesser extent NHOs) in declaring several of the sites herein listed to be sites at all. CSH field records document our field archaeologists' views, after field inspections with NPS archaeologists, that many sites designated herein are: "at least in my opinion, natural features of the 'a'ā flow, of which there are thousands of examples in every direction." When a field archaeologist is unconvinced there is a site present at all the determination of site boundaries may be somewhat subjective. Again we defer to the greater experience and wishes of the NPS (and to a lesser extent NHOs) in the presentation of site boundaries. In most cases the sites indicated, such as a depression in the 'a'ā, are quite small and the site boundaries are not problematic. In many cases, sites indicated by the NPS (and to a lesser extent NHOs) could have been constructed by one person in two minutes if they were in fact constructions/excavations at all. In some cases, trail sites have been indicated in areas of somewhat discolored lava with patches of somewhat discolored lava intermittently present in several directions and extending for some distances. Such "trails" could in fact be better understood as "travel corridors" that were always somewhat "braided" because no clear trail could ever be clearly discerned and the terrain was open to multiple interpretations of the easiest path of traverse. The presence of goat trails and natural vagaries in lava color and texture complicates matters further. CSH means no disrespect to the NPS and NHOs in pointing out that we may not always agree with the site designations reported here. Even though the CSH field staff were quite experienced in the field archaeology of North Kona we do indeed appreciate that the institutional memory of Kaloko-Honokōhau National Historical Park (established in 1978) and of the *kama'āina* families who have been on these lands for centuries have true and valid insights that may not be immediately apparent to the *malihini* (one unfamiliar with a place or custom).

## 2.3 Laboratory Methods

No cultural materials or midden were collected during this project, thus no laboratory work was conducted.

## 2.4 Document Review

Background research included a review of previous archaeological studies on file at the State Historic Preservation Division of the Department of Land and Natural Resources; review of documents at Hamilton Library of the University of Hawai'i, the Hawai'i State Archives, the Mission Houses Museum Library, the Hawai'i Public Library, and the Archives of the Bishop Museum; study of historic photographs at the Hawai'i State Archives and the Archives of the Bishop Museum; and study of historic maps at the Survey Office of the Department of Land and Natural Resources. Information on Land Commission Awards was accessed through Waihona 'Aina Corporation's Māhele Data Base ([www.waihona.com](http://www.waihona.com)).

## 2.5 Consultation

Consultation was undertaken for the project to comply with HAR Chapter 13-275 and 13-276 of Hawai'i state law and Section 106 of the National Historic Preservation Act (NHPA). To date, project-specific consultation has been conducted with the National Park Service and the Hawai'i State Historic Preservation Division (see Table 1). CSH anticipates additional consultation will be necessary with the Office of Hawaiian Affairs (OHA) and with the Hawai'i Island Burial Council (HIBC) to address concerns about the burial site (SIHP # 22415) in the project area and the other mitigation plans.

On 5 August, 2010, CSH (Monahan and Simonson) conducted an initial site visit with National Park Service (NPS) staff. The objective of the field inspection with NPS staff was to observe archaeological features believed to have been overlooked during past surveys. During this site visit, CSH recorded numerous archaeological features and noted NPS concerns and observations that have been incorporated into the results of this study.

On 6 October 2010, CSH (Monahan) led a field inspection with the SHPD of two archaeological features (SIHP #s 22415 and 28780) that were suspected to be burials. Present from SHPD at the field inspection were Theresa Donham (archaeologist) and Analu Josephides (cultural specialist). Also present at the request of CSH was Cynthia Nazara (cultural monitor), who is familiar with the descendant families from the project area. The primary objective of the field inspection was to obtain guidance from the SHPD regarding testing of possible burial sites. Consultation with descendant families about these issues is ongoing.

On 10 January 2011, CSH (Monahan) and representatives of the project proponent met with Theresa Donham (State archaeologist) at the SHPD's Hilo office. Topics of discussion included the SHPD's review letter of a previous version of this report.

On 1 February 2011, CSH (Monahan) and representatives of the project proponent met (by teleconference) with representatives of the NPS. Topics of discussion included the NPS's review letter of a previous version of this report.

On 4 February 2011, CSH (Monahan) met with archaeologists from the NPS at its Kona office regarding specifics of the current archaeological inventory survey.

Additional consultation with the NHOs specifically dealing with the fieldwork for the supplemental archaeological inventory survey of possible historic properties identified by Native Hawaiian organizations (NHO) for the North Segment of the project began on November 13,

2011, and has continued via multiple emails, phone calls and meetings. Although less intense than for the North Segment, some consultation has recently taken place between CSH and the NHOs for the South Segment work as well.

Additional consultation with the NPS specifically dealing with the fieldwork for the supplemental archaeological inventory survey of possible historic properties for the South Segment of the project took place in April and May, 2012.

Relevant information obtained during consultation efforts is included in the Results section of this report (see individual site descriptions).

Table 1. Fieldwork Conducted During this Project

Date	Specific Objectives	Comments
8/5/10	Initial site visit with National Park Service (NPS) staff.	NPS staff took CSH (Monahan and Simonson) on a tour of most of the lands adjacent to the National Park. CSH recorded numerous archaeological features and noted NPS concerns and observations.
8/10/10	CSH (Simonson) documented Site - 22415, the burial site (rock platform) immediately south of the visitor center entrance.	At the request of the client, CSH also visited two previously-identified (from the 1995 CSH survey) sites (SIHP 15324 and 19945) to check their location relative to the current construction plans.
9/9/10 to 9/24/10	CSH (Monahan, Simonson, Yucha and field crew) conducted the archaeological survey work covered under the current contract.	On 9/9 & 9/10, two senior CSH archaeologists traversed the entire project area marking sites to be systematically recorded by the field crew of 4 archaeologists, who conducted their work from 9/14/10 through and including 9/24/10.
10/6/10	CSH (Monahan) led a field inspection with SHPD of SIHP #s 22415 and 28781 that were identified as possible burials. SIHP # 22415 was confirmed to be a burial; SIHP # 28781 was not.	Present from SHPD at the field inspection were Theresa Donham (archaeologist) and Analu Josephides (cultural specialist). Also present at the request of CSH was Cynthia Nazara (cultural monitor), who is familiar with the descendant families from the project area.
10/7/10	CSH (Monahan) worked with Goodfellow Brothers, Inc. GIS specialist to re-locate and GPS previously-identified sites in and near the project area.	n. a.
11/8-9/10	CSH (Yucha directing one field technician and working with cultural monitor Cynthia Nazara) conducted limited subsurface excavation and dismantling of rock features at five suspected burial features.	This subsurface testing / dismantling was conducted with the permission of the SHPD and in consultation with descendant families.
1/17-18/11	On 1/17, CSH (Yucha directing one field technician) surveyed entire <i>mauka</i> portion (narrow strip approximately 50 ft in width) of project area. On 1/18, CSH (Monahan directing Yucha and one field technician) revisited every previously identified site in the ROW	No sites were identified in the <i>mauka</i> portion of the project area, which has been completely disturbed by previous installation of utility infrastructure. All previously identified sites, except for one (SIHP 19946) were relocated and inspected.
11/13/11 1/4/12 1/19-20/12	Conduct supplemental survey of the North Segment	Results reported in Monahan and Wilkinson (2012) and current report
3/29/12 5/1/12	Conduct supplemental survey of the South Segment	Results reported in Monahan and Yucha (2012) and current report
7/9-12 12	Supplemental site mapping and photography	Supplemental survey to address NPS, SHPS and NHO concerns

## Section 3 Traditional and Historical Background

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This section summarizes aspects of the traditional and historical importance of the project area, which includes descriptions of place names and *wahi pana* (legendary places), *‘ōlelo no‘eau* (poetical sayings) and significant historical events and persons.

### 3.1 *Wahi Pana* (Place Names)

*Wahi pana* (“legendary place” Pukui and Elbert 1986: 376) or “place names” are an integral part of Hawaiian culture. “In Hawaiian culture, if a particular spot is given a name, it is because an event occurred there which has meaning for the people of that time (McGuire and Hammatt 2000:23).” The *wahi pana* are then passed on through language and oral tradition, thus preserving the unique significance of the place. Hawaiians have named a wide variety of objects and places, including points of interest that may have gone unnoticed by persons of other cultural backgrounds. Hawaiians have named taro patches, rocks and trees that represented deities and ancestors, sites of houses and *heiau* (places of worship), canoe landings, fishing stations in the sea, resting places in the forests, and the tiniest spots where miraculous or interesting events are believed to have taken place (Pukui et al. 1974:x).

The primary compilation source for place names in this section is the online database of Lloyd Soehren’s (2010) *Hawaiian Place Names*. Soehren has compiled all names from the mid-nineteenth century land documents, such as Land Commission Awards (LCA) and Boundary Commission Testimony (BCT) reports. The Boundary Commission testimony lists boundary points for many (but not all) of the *ahupua‘a*. The names of *‘ili ‘āina* (land units within an *ahupua‘a*) and *‘ili kū* (land units rewarded separately from a specific *ahupua‘a*) are compiled from the testimony in Māhele Land Commission Awards, from both awards successfully claimed and from those rejected. Place names found by the authors on U. S. Geological Survey maps (U.S. Geological Survey) and Hawai‘i Survey Registered Maps (RM) have been added to the Soehren database.

The Soehren database includes place name meanings from the definitive book on Hawaiian place names, *Place Names of Hawai‘i* (Pukui et al. 1974). Where Pukui et al. (1974) do not provide a translation, Soehren often suggests a meaning for simple names from the *Hawaiian Dictionary* (Pukui and Elbert 1986). Thomas Thrum (1922) also compiled a list of place names in the 1922 edition of Lorrin Andrews’s *A Dictionary of the Hawaiian Language*, although these meanings are considered to be less reliable than those in *Place Names of Hawai‘i*.

Many of these place names are shown on historic maps (Figure 6, Figure 7, Figure 8 and Figure 9). In many cases, the exact locations of place names are not known, only their general location between two other points along an *‘ahupua‘a* boundary. These cannot be placed accurately on any maps, so their position is only noted in the following place name tables.



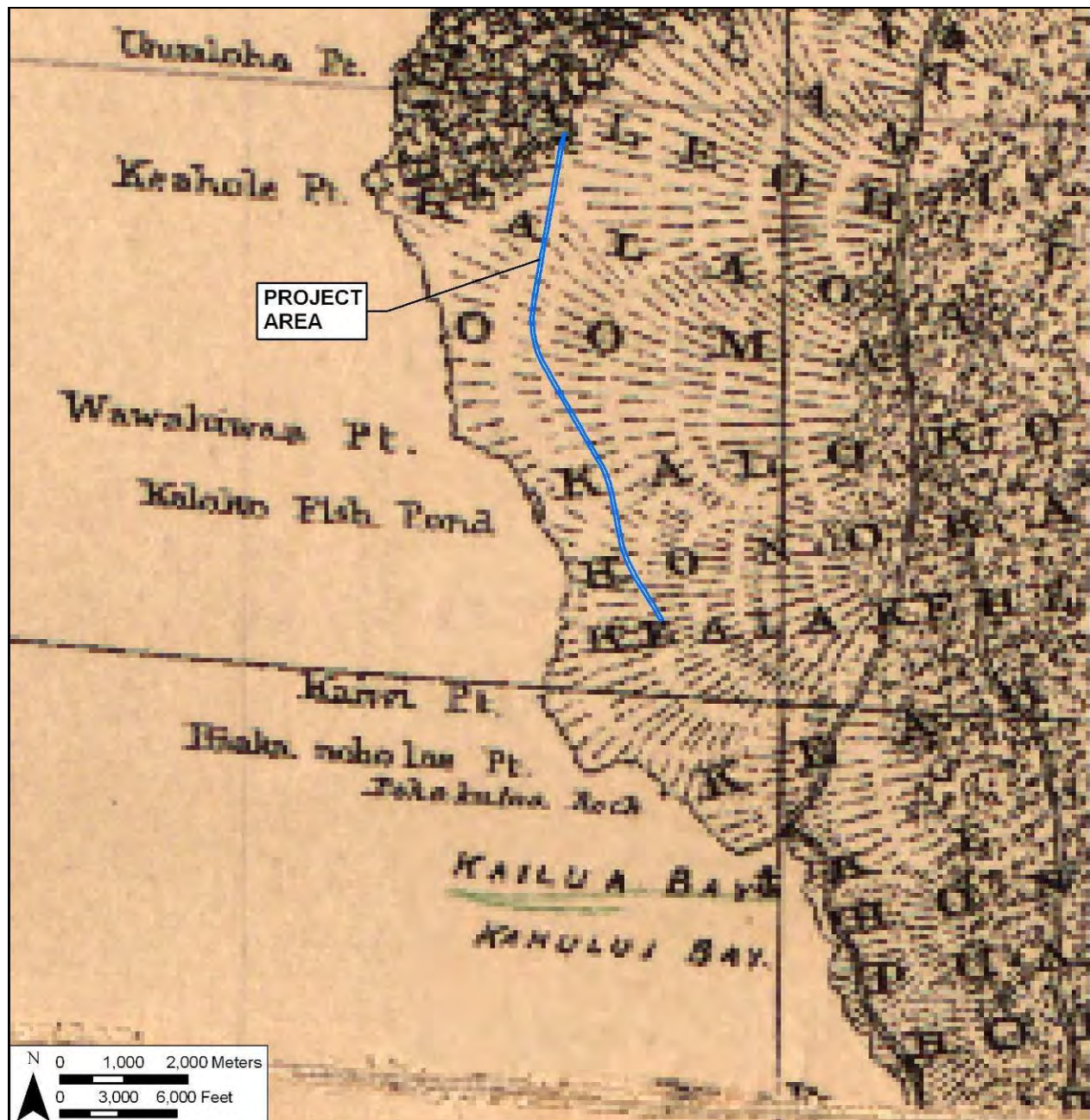


Figure 6. 1886 map of Hawai'i (portion), by W. A. Wall, depicting the project area through Kealahou, Honokōhau, Kaloko, 'O'oma, and Kalaoa (south to north); note coastal place names



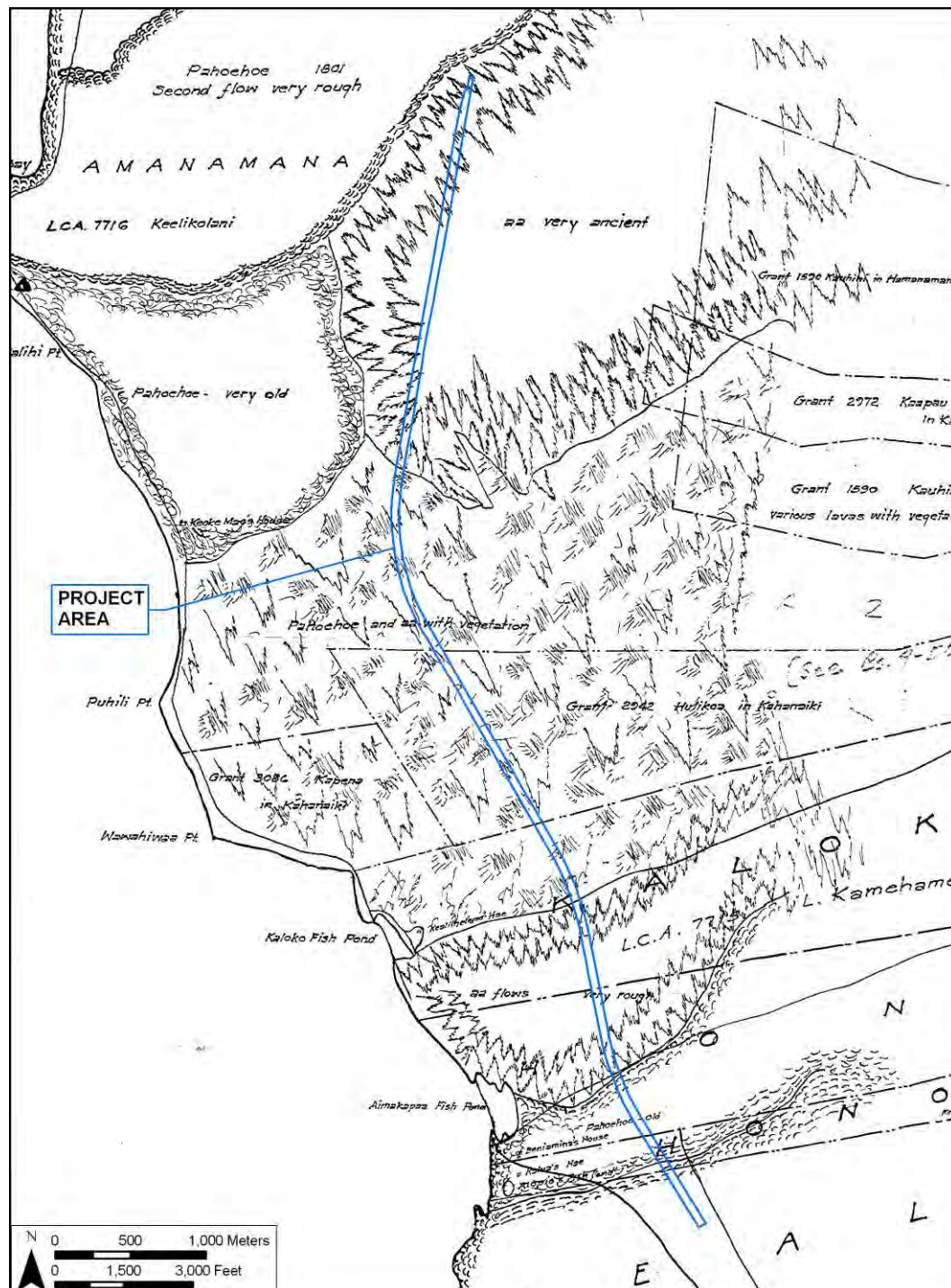


Figure 7. 1891 map (portion, Registered Map No. 1280), Kailua section of Kona (Hamanamana to Puapuaa) by J.S. Emerson; note *mauka-makai* trails in Kaloko and in Honokōhau I (SIHP # 18099, also known as the “Trail to Honokōhau”); also note trail (SIHP # 21588) originating from south side of ‘Aimakapā Fishpond connecting (out of the image to the south) with the Māmalahoa Trail

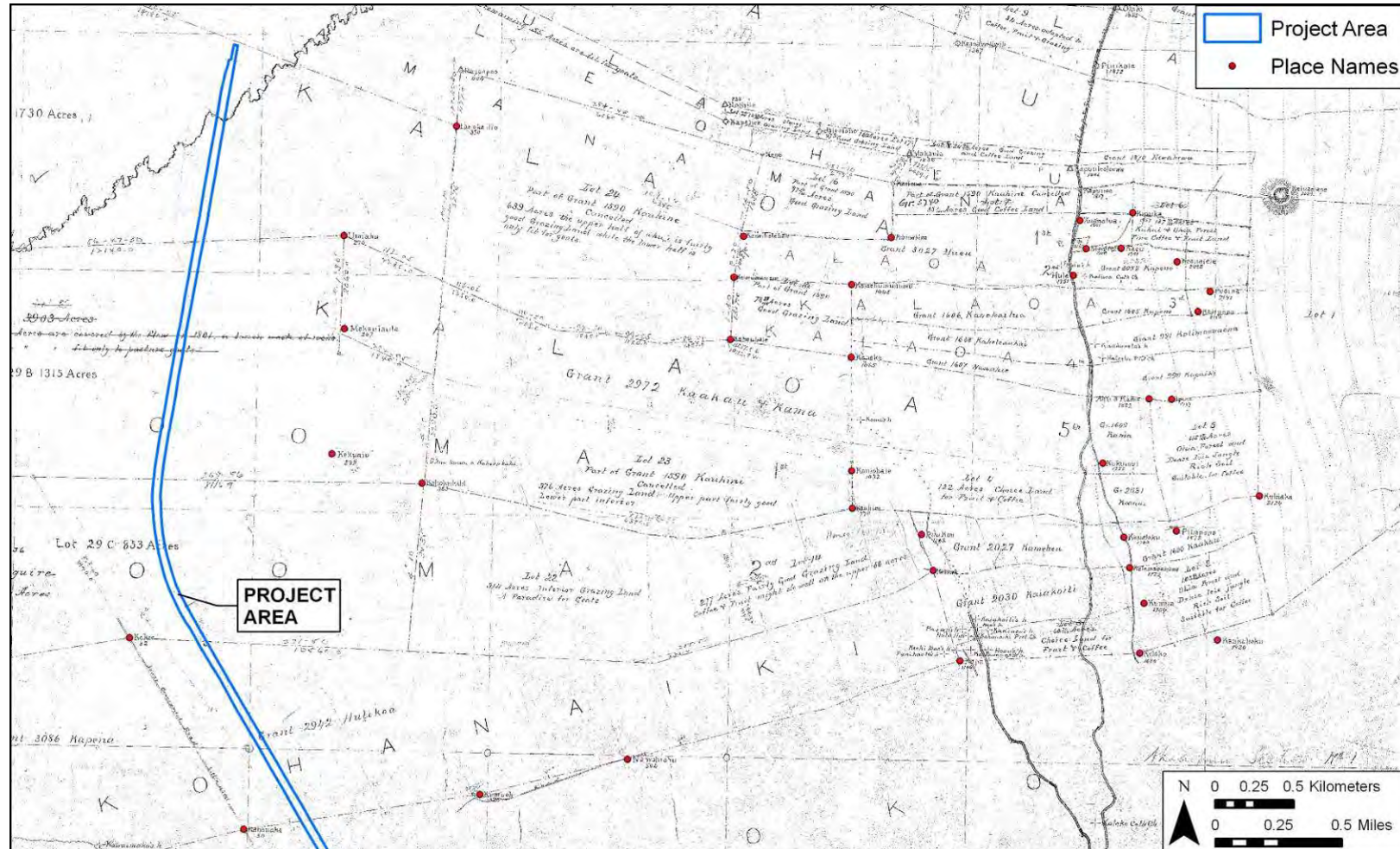


Figure 8. 1888 map (portion) by J. S. Emerson of the Akahipuu Section of Kona, Hawai'i (Honokōhau to Haleohiu), depicting triangulation station names, on the corners of land grants, listed by the surveyor (Hawai'i Land Survey Division, Registered Map No. 1446)



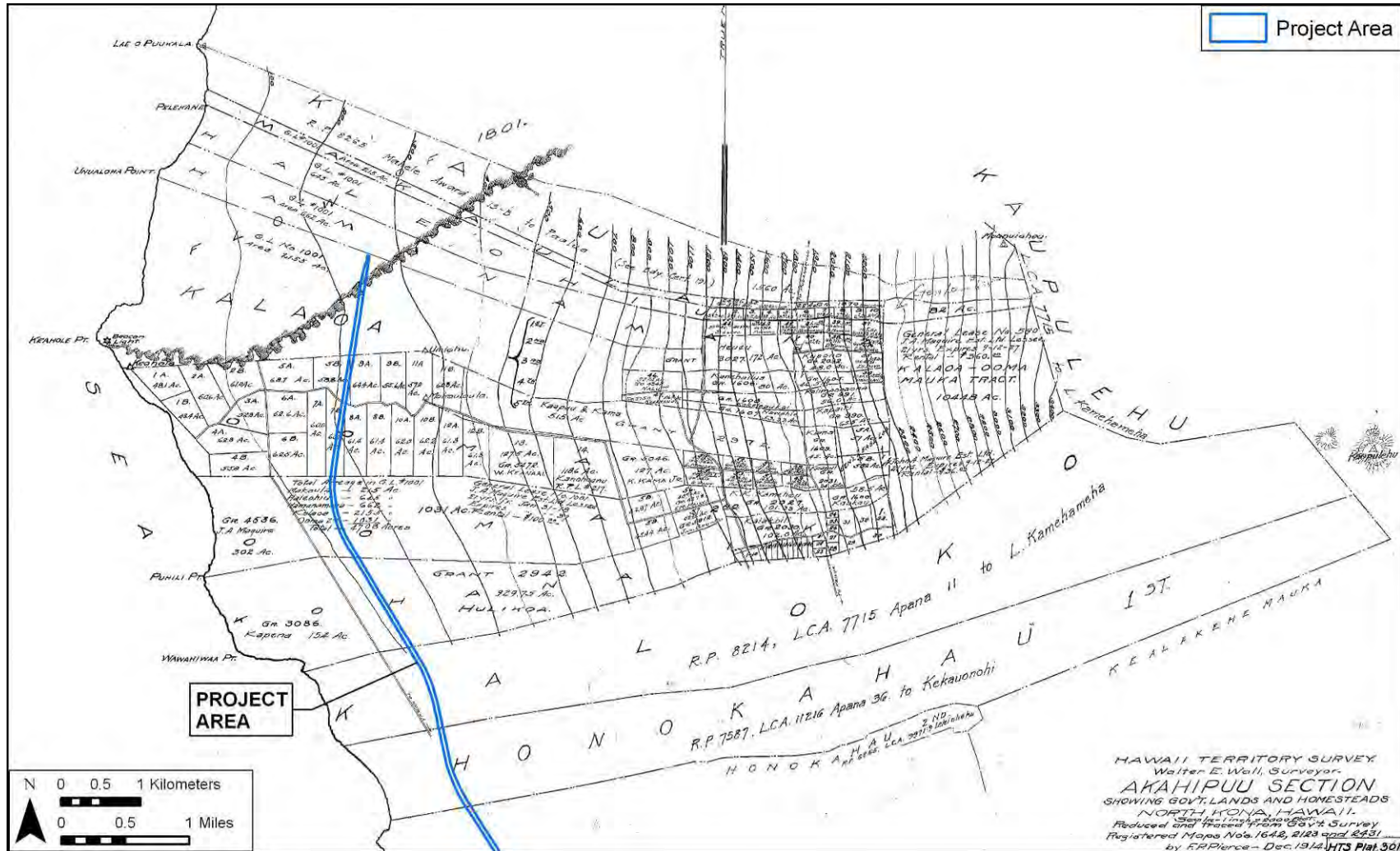


Figure 9. 1914 map of Akahipuu Section of Kailua, Kona, depicting the numerous Government lands and land grants in ‘O‘oma and Kalaoa (Hawai‘i Land Survey Division, Hawai‘i Territorial Survey Plat Map. No 301)

Abbreviations used in the Soehren database are presented in Table 2.

Table 2. Abbreviations for location sources in Tables 3-10

BC	Boundary Certificate No.
BCT	Boundary Commission Testimony
FB	Field Book Reg.
FR	Land Commission, Foreign Register
FT	Land Commission, Foreign Testimony
NR	Land Commission, Native Register
NT	Land Commission, Native Testimony
RM	Registered Map
RPG	Royal Patent Grant
TM	Tax Map
U.S.G.S.	U.S. Geological Survey

### 3.1.1 Kealakehe Place Names

Kealakehe was assigned as Government Land during the Māhele, but there were 23 Land Commission claims with information on *'ili* names. Although there is no specific Boundary Commission survey for Kealakehe, Keahuolū, the *ahupua'a* to the south was surveyed, with the result that the boundary points (abbreviated as bdry pts in tables) along the southern boundary of Kealakehe are in the Boundary Commission testimony. The exact locations of most of the places are not known, but the general order of the names, from the *makai* boundary point at the coast, to the *mauka* point of the *ahupua'a* can be determined. In Table 3, these boundary points are numbered from 1 to 12, from the shore to the *mauka* point. In the Boundary Commission, several different witnesses recorded their memory of the boundary points, which resulted in different sequences, as some place names appeared in only one of the testimonies. For instance, one sequence listed:

Pu'u Nāhāhā, Pu'u Hulihuli, and Ka'e'ku

Another sequence lists:

Pu'u Nāhāhā, Ka'ena'ena, and Ka'e'ku

Thus, it is not possible to determine which middle name, Pu'u Huliuli and Ka'ena'ena, is *mauka* of the other, or even if they are variant names for the same place. In this case, the names are listed with a sub-number (e.g. bdry pt 5a and 5b).

The boundary points between Kealakehe and Honokōhau are presented in the following section on Honokōhau Place Names.

Table 3. Kealakehe Place Names (compiled by Lloyd Soehren, with additions)

Place Name	Type	Comments	Name Meaning
Kealakehe	<i>ahupua'a</i>	Māhele Book	the bend of a road (Thrum 1922)
Haleoloni	<i>'ili 'āina</i>	LCA 8608 testimony	house of Lono (Pukui et al. 1974)
'Ililoa	<i>'ili 'āina</i>	LCA 8608 testimony	long <i>'ili</i> (land division) Pukui & Elbert 1986
Ka'ōhia	<i>'ili 'āina</i>	LCA 7483, 8608, 10950 testimony	the <i>'ōhi'a</i> tree
Kalihi	<i>'ili 'āina</i>	LCA 8608 testimony	the edge (Pukui et al. 1974)
Kani'ohale	<i>'ili 'āina</i>	LCA 9252, 10070, 10306, 10671 testimony	the house doorway (Pukui & Elbert 1986)
Kukui'ōmino	<i>'ili 'āina</i>	LCA 8608, 7897, 10597, & 10671 testimony	stunted <i>kukui</i> tree (Pukui & Elbert 1986)
Makakiloi'a	<i>'ili 'āina</i>	LAC 8608 testimony	fish-observing point (Pukui et al. 1974)
Pū'ohe	<i>'ili 'āina</i>	LCA 8608 testimony	
Hale o Mono (or Mano)	<i>heiau</i>	1982 U.S. Geological Survey	
Haleokane	<i>heiau</i>	Site 33: Reinecke called this simple platform heiau "Hale o Lono". It was called "Hale of Kane" by surveyors in 1883 (Reinecke ms (1) 9: FB 294:135; FB 493:94)	
Haleoloni	<i>heiau</i>	U.S. Geological Survey 1959	should be Makaopio Heiau
Kalualapauila	<i>heiau</i>	The Kealakehe/ Keahuolū boundary passes "a few fathoms on the north side of a heiau called Kalualapauila (BCT 1:355); also called Luapauwila; see BC 45 (3:44); FB 294:610-62.	
Luapauwila (Kalualapauila)	<i>heiau</i>	Said to be a walled structure on the 'Emakule homestead, RPG 3765, 3.5 miles from sea. Stokes 1991:40	
Maka'ōpio	<i>heiau</i>	Called "Hale o Lono Heiau" on U.S. Geological Survey 1959, a generic name for temples dedicated to Lono. Reinecke had no name for his Site 35. Emory and Soehren recorded "Makaopio" for their Site D11-7. Emory & Soehren 1971:9; Reinecke ms (1):10	a variety of taro (Pukui & Elbert 1986)
'Ālula	canoe landing	Site 34 (Reinecke ms (1):10. A small sandy cove south of Honokōhau small boat harbor. Here Punia tricked the shark king, Kaialeale, into coming ashore where he was killed.	possibly named for the endemic lobelia, <i>'alula</i> (Pukui & Elbert 1986)

Place Name	Type	Comments	Name Meaning
Ka'omalō	canoe landing	Canoe landing near or the same as Alula (FB 243:191)	perhaps, dry desert (Pukui & Elbert 1986)
Makauhele-hele	canoe landing	(FB 306:136)	
Kalokoloa	inlet	A narrow inlet at the shore, probably a collapsed <i>pāhoehoe</i> lava tube, between Kaluakauaka and Noio Point (FB 306:135)	the long pond (Pukui & Elbert 1986)
Kaluakauaka	inlet	between Kaiwi Point and Kalokoloa (FB 243:191-192)	the pit [where] lightning flashes
Noio	coastal point	(U.S. Geological Survey 1982)	tern (Pukui & Elbert 1986)
Ōpilopilo	stream	"turn north to kahawai Opilopilo, the <i>mauka</i> corner of Kealakehe."	
Keomano	<i>pōhaku</i>	A rock outside Alula, below Hale on Kane Heiau (FB 294:135-136; FB 493:94)	
Kaiwi Point	bdry pt 1 (at coast)	Kealakehe/Keahuolū boundary at shore (U.S. Geological Survey 1998)	the bone (Pukui et al. 1974)
Pu'u o Kāloa	bdry pt 2	Kealakehe/Keahuolū boundary. Kamakau: "The spot where [Kealii-o-kaloa] was killed was called Puu-o-Kaloa, situated between Kailua and Honokōhau." It places it along the trail from Kamakahonu to Kiholo. An <i>oioina</i> (resting place), on Kealakehe/Keahuolū boundary. (BCT). 1:355; Kamakau 1961:35; Ii 1959:120	hill of Kāloa (Pukui & Elbert 1986)
Pu'u 'Ula'ula	bdry pt. 3	Kealakehe/Keahuolū boundary; "hill between Puu o Kaloa & Puu Nahaha." (BCT 1:356)	red hill (Pukui & Elbert 1986)
Pu'u Nāhāhā	bdry pt.4	Kealakehe/Keahuolū boundary "...a hill of aa called Puu Nahaha..." between Puu Ulaula & Puu o Hulihuli. Elev. 150 ft. (BCT 1:355, 356)	shattered hill (Pukui et al. 1974)
Pu'u Hulihuli (Puohuliuliu)	bdry pt. 5a	Kealakehe/Keahuolū boundary between Puu Nahaha & Kalualapauwila, about 220 ft. elev. BC 45 (3:44); BCT 1:356; FB 294:61-62; U.S. Geological Survey 1924.	hill of Hulihuli (Pukui & Elbert 1986)
Ka'ena'ena	bdry pt. 5b	Kealakehe/Keahuolū boundary - hill between Pu'u Nahaha & Kae'eku (BCT 1:356, 358)	

Place Name	Type	Comments	Name Meaning
Ka'e'ku	bdry pt. 6	Kealakehe/Keahuolū boundary - hill between Kaenaena & Kalualapauila (BCT 1:356, 358)	
Kaluapau-wila	bdry pt 7	Kealakehe/Keahuolū boundary passes "a few fathoms on the north side of a heiau called Kalualapauila." (BCT 1:355)	
Lae Niau (Kalaeniau)	bdry pt 8	Kealakehe/Keahuolū boundary...an ahu pohaku at the Government road (1:355); "...a puu makai of said road" [Old Upper Govt. road on TM] (1:356). Between Kalualapauila & Keahupuaa (BCT 1:355, 1:366, 358)	
Keahupua'a	bdry pt 9	Kealakehe/Keahuolū boundary "... and ahua pohaku at the mauka [Old Upper] Government road..." ; between lae Niau and Kahihi'ie (BCT 1:357)	the pig altar (Pukui & Elbert 1986)
Kahuua-ka'ūlei	bdry pt 10	Kealakehe/Keahuolū boundary between Keahuuaa and Ohiawela (BCT 1:358)	the fruit of the 'lei shrub (Pukui & Elbert 1986)
'Ōhi'awela	bdry pt 11	Kealakehe/Keahuolū boundary. "I have not been there, but have heard that there is a spring there." Between Kahuaakaulei and Kahihiia BCT a:358	
Kahihi'ie	bdry pt 12a (mauka)	Kealakehe/Keahuolū boundary at the corner of the lands of Kealakehe, Keahuolū & Lanihauiki (BC 45 (3:44); BCT:1:358, 364, 365)	
Kaohiamoeakanaka (Ohiakaukanaka)	bdy pt 12b (mauka)	Kealakehe/Keahuolū boundary. "The mauka corner of Keahuolū is an Ahua called Kaohiamoeakanaka, thence makai along Kealakehe" (BCT 1:356)	

### 3.1.2 Honokōhau Place Names

Honokōhau was awarded to two *high ali'i* in the Māhele, and 32 commoner Land Commission Awards were claimed. The survey of the lands (Honokōhau 1 and Honokōhau 2) were surveyed and the testimony for the boundary points is recorded in the Boundary Commission Books. This resulted in a great deal of information on place names for Honokōhau. Table 4 lists all of the place names, with their place name meaning. Table 5 presents additional information on boundary points (including their numbered order) for the Honokōhau Ahupua'a /

Kealakehe Boundary, and Table 6 presents the boundary points for the border between Honokōhau 1 and Honokōhau 2.

Few of the boundary points between the *ahupua'a* of Honokōhau and Kealakehe Ahupua'a or the boundary between Honokōhau 1 and Honokōhau 2 are known exactly. The tables present the general location information from the Boundary Commission Testimonies in order of occurrence as one would walk from the shore to the *mauka* point of the *ahupua'a*. Estimates of the elevation along this boundary line are from U.S. Geological Survey maps, Hawai'i Survey Registered Maps (RM) and from estimates by Lloyd Soehren (2010). For points along the Honokōhau / Kaloko Ahupua'a boundary, see the next section in this report.

Table 4. Honokōhau Place Names (compiled by Lloyd Soehren 2010, with additions)

Place Name	Location	Type	Source	Meaning
'Ai'ōpio	Honokōhau 2	fishpond		youth eating (Pukui et al. 1974)
'Aimakapā	Honokōhau	fishpond		
Ahupua'a	Honokōhau 2	<i>pu'u</i> , bdry point		pig altar
'Elepaio	Honokōhau 2	'ili kū	LCA 10319 testimony b	Pukui et al. 1974 - flycatcher (a Hawaiian bird, <i>Chasiempis sandwichensis</i> ). Pukui & Elbert 1986: a variety of taro.
Hale o Mano (sometimes written as Mono)	Honokōhau	<i>heiau</i>		
Haleamahuka	Honokōhau 1	'ili 'āina	LCA 10521 testimony	fugitive house (Pukui & Elbert 1986).
Halekū'ō	Honokōhau 1	<i>heiau</i>		
Haleolono	Honokōhau	'ili 'āina	LCA 10319 testimony	house of Lono (Pukui et al. 1974)
Hanapouli	Honokōhau	'ili 'āina	LCA 7890, LCA 10319, & 10949 testimony	
Honokōhau	Honokōhau 1,2	<i>ahupua'a</i>	U.S. Geological Survey 1982.	bay drawing dew (Pukui et al. 1974)
Honokōhau	Honokōhau 1,2	village		bay drawing dew (Pukui et al. 1974)



Place Name	Location	Type	Source	Meaning
Honokōhau	Honokōhau	bay		bay drawing dew (Pukui et al. 1974)
Hulipia	Honokōhau 2	<i>‘ili ‘āina</i>	LCA 9231 testimony	
Hulipia	Honokōhau 2	bdry point		
Iakahale	Honokōhau 3	bdry point		
Ikuana	Honokōhau 1	residence		
Iliala	Honokōhau 2	bdry point		
Kaaiakuli	Honokōhau 2	bdry point		
Kaeo	Honokōhau 1	<i>‘ili ‘āina</i>	LCA 9236 testimony	winner (Thrum 1922)
Kahawaiaina	Honokōhau 2	bdry point		
Kāne‘ōpua	Honokōhau 2	bdry point		
Kapiopio	Honokōhau 1	bdry point		
Kauakahihale	Honokōhau 1	<i>‘ili ‘āina</i>	LCA 9114 testimony	
Keanakāhuapua‘a	Honokōhau 1	bdry point		the cave [for] baking pig (Pukui & Elbert 1986)
Kuakahela	Honokōhau 1	bdry point		
Kuanawai	Honokōhau 1	coastal point		
Kūkāno‘ono‘o	Honokōhau 2	residence		
Kukuioahulani	Honokōhau 2	bdry point		
Kukuipulua	Honokōhau 2	bdry point		
Kumumāmaki	Honokōhau 1	bdry point		trunk of <i>māmaki</i> tree (Pukui & Elbert 1986)
Mākūiki	Honokōhau 1	<i>‘ili ‘āina</i>	LCA 10699 testimony	small hibiscus (Pukui & Elbert 1986)
Malai‘ula	Honokōhau 1	bdry point		variant of <i>palai‘ula</i> , a fern (Pukui & Elbert 1986)
Maliu	Honokōhau 2	coastal point		look upon (Pukui et al. 1974)
Maluhia	Honokōhau 3	bdry point		peace, quiet, security (Pukui & Elbert 1986)
Mī‘ala	Honokōhau 2	bdry point		same as <i>miki‘aala</i> : alert, prompt (Pukui & Elbert 1986)
Mumuku	Honokōhau 1	bdry point		

Place Name	Location	Type	Source	Meaning
Nāunu	Honokōhau 1	bdry point		
Nu'uhiwa	Honokōhau 2	<i>'ili 'āina</i>	LCA 10559 testimony	a variety of banana (Pukui & Elbert 1986)
‘Ōhi‘akaumai‘a	Honokōhau 1	bdry point		
‘Ōhi‘awela	Honokōhau 1	bdry point		
‘Ōnea	Honokōhau 1	<i>'ili 'āina</i>	LCA 7490 & LCA 9158 testimony	desolate (Pukui & Elbert 1986)
Paehala	Honokōhau	<i>'ili 'āina</i>	LCA 9158 testimony	cluster of pandanus trees (Pukui & Elbert 1986)
Pāhoehoea	Honokōhau 2	bdry point		
Papa‘akoko	Honokōhau 2	<i>'ili kū</i>	RPG 3456 testimony	secured blood (Pukui et al. 1974)
Pōhakuha‘ikū	Honokōhau 1	bdry point		
Pu‘u Kou	Honokōhau	<i>'ili 'āina</i>	LCA 7396 testimony	
Pu‘u Mau	Honokōhau 1	bdry point		
Pu‘u Noho	Honokōhau 2	bdry point		
Pu‘u Oina	Honokōhau 2	heiau		
Pukaalani	Honokōhau 2	bdry point		
Pūnāwai	Honokōhau 1	bdry point		water spring (Pukui & Elbert 1986)
‘Ulukūkahi	Honokōhau 1	bdry point		breadfruit tree standing alone. (Pukui & Elbert 1986)
Waihā	Honokōhau 2	<i>'ili 'āina</i>	LCA 9161 testimony	trough water (Pukui & Elbert 1986)
Waihā	Honokōhau 2	bdry point		trough water (Pukui & Elbert 1986)
Waiopapa	Honokōhau 2	bdry point		
Waipi‘o	Honokōhau 2	<i>'ili 'āina</i>	LCA 7870 testimony	curved water (Pukui et al. 1974)

Table 5. Honokōhau / Kealakehe Ahupua'a Boundary Points (in order from the coast to the *mauka* point) (compiled by Lloyd Soehren 2010, with additions)

Boundary Point	Order	Elev. (ft)	Description
Maliu	Point 1 (at coast)	0	Variously described as a <i>lae</i> (point), a <i>pōhaku</i> (stone), a point of rocks (U.S. Geological Survey 1982; BCT 1:364,365; BC 27; BCT 1:366).
Halekū'ō	Point 2		"...a heiau named Halekuo..." is above Maliu Point, but the same witness earlier placed Halekuo, "...a wall above the School house (BCT 1:365)
Malihia	Point 3		"...a kula mahiai, ahua, and iwi aina...[dryland field, mound, wall]" between Maliu and Kahawaiaina (BCT 1:365).
Pāhoehoea	Point 4		On <i>pāhoehoe</i> near shore, between Maliu Point and Puu Noho (BCT 1:364)
Pu'u Noho	Point 5		"...on the pāhoehoe, said place is an Ahua..." Between Pāhoehoea and (BCT 1:364)
Kahawaiaina	Point 6		"...a mahina ai [cultivated patch] in aa..." (p.364); "...an ahua pohaku... [stone mound]" (p.365). Between Puu Noho and Kukuipulua (BCT 1:364, 365)
Kukuioahulani	Point 7a	200	"...at a place called Kukuioahulani..." between Maliu Point and Iliala (BC 27, 1:366).
Iliala	Point 7b	430	"...to Iliala a point 23 ft. southwest of a tree..." between Kukuioahulani & Hulipia (BC 27; 1:366).
Hulipia	Point 7c	660	"...a place called Hulipia..." about 690 ft. elev., between Iliala & Kukuipulua at lower end of Papaakoko (BC 27 (1:367); NT 4:542)
Keanalehu	Point 8	720	RM 1280 - shown as the <i>makai</i> corner of the 'ili of Papa'akoko near a marked cave
Kukuipulua	Point 9	790	"...an ahua pohaku (resting place)... in the kula mahiai and goat ground." (p.364). "...an old resting place, under a kukui tree..." (p.365). between Hulipia & Kukanooonoo ;at the north end of Kealakaa Street. BC 27 (1:367); BCT 1:364,365.
Pu'u Kou	Point 10	1040	RM 1280 shown as peak just below the lower government road
Kūkāno'ono'o	Point 11		"...an old kulana kauhale...[house complex]" Between Kukuipulua and Kaneopua

Boundary Point	Order	Elev. (ft)	Description
Kāne'ōpua	Point 12		"...an oioina [resting place] on the boundary, below the Government road..." Between Kukanooonoo and Waiopapa (BCT 1:364)
Papa'akoko	Point 13	1400	Above the upper govt. road (RM 1280)
Waiopapa	Point 14	1760	"...a punawai [spring] and Ahua above the Government road, where you can look out to sea..." between Ahupuaa and Waiha.BCT 1:364.
Waihā	Point 15	2000	"...along Kealakehe to Waiha a punawai at the old kulana kauhale, below the woods..." (p.364) Between Waiopapa and Malaiula .BCT 1:364,365; NT 8:652.
Miala	Point 16		Between Kukanooonoo and Ahupuaa (BCT 1:365)
Ahupua'a	Point 17		"...a place called Ahupuaa a puu pohaku at the Government road at the makai corner of my land [LCAw.7870]..." Probably a Makahiki altar at the land boundary. (Malo 1951:146) (BCT 1:354)
Kaaiakuli	Point 18		"...passing to the south side of Kaaiakuli and the mauka corner of my land [LCA 7870]." Between Waiha and Malaiula (BCT 1:365)
Malai'ula	Point 19	2130	" ...a banana grove, in the edge of the ohia woods where Honokōhau Nui & Kealakehe unite, thereby cutting Honokōhau Iki off." BCT 1:364,365; BC 27 (1:367).
Nāunu	Point 20	2200	"The lands of Kealakehe & Honokōhaunui meet at a place called Naunu, an ahu makai of the koa." This point at end of Honokōhauiki is called Kumumamaki elsewhere. BCT 1:369,372.
Ōhi'awela	Point 21	5800	"a pali [cliff] on Honokōhaunui where olona grows" (p.369); "Honokōhaunui ends at Ohiawela, a pali" (p.371); "on the road through the woods...above Honokōhaunui" (p.371) BCT 1:369,371.

Table 6. Honokōhau 1 / Honokōhau 2 Boundary Points (in order from the coast to the *mauka* point) (compiled by Lloyd Soehren 2010, with additions)

Boundary Point	Order	Elev. (ft)	Description
Kuanawai [Punawai]	Point 1	0	"...a place called Kuanawai, said place is in the water..." (1:363) "...a lae pohaku named Kuanawai, on the North side of the point..." (1:365) "ledge of rocks at shore...called Punawai or Kuanawai..." (BCT 1:368). BCT 1:363,365; BC 27 (1:368).
Pōhaku ha'ikū	Point 2	20	...up the sand beach to a place called Pohakuhaiku a heiau on the pāhoehoe [Bishop Museum site HA-D12-14?]" (1:363, Hoohia testifying) Between Kuanawai & Puu Mau. BCT 1:363,365.
Pu'u Mau	Point 3		"...an oioina or Ahua, an old resting place, where a koa tree used to stand..." (1:363) "...a puu pohaku above the makai government road..." (1:365) Between Pohakuhaiku & Keanakaluapuaa BCT 1:363,365.
Keanakāluapua'a	Point 4		"...a cave" between Puu Mau & Ulukukahi (BCT 1:363,365)
'Ulukūkahi	Point 5	620	"...a breadfruit tree..." (1:363) "...a lae kukui " (1:365) Between Keanakaluapuaa & Pukaalani
Puka'alani	Point 6	800	grove of <i>puhala</i> [pandanus] tree (BCT 1:365)
'Ōhi'akaumai'a	Point 7		"...ohia fruit trees ['ōhi'a ai, mountain apple]..." (1:365) Between Ulukukahi & Kuakahela. BCT 1:363,365.
Kuakahela	Point 8	1100	"...a lae ohia fruit trees ['ōhi'a ai, mountain apple]..." (1:364) "...a place called Kuakahela..." Between Pukaalani & Mumuku (BCT 1:364,365; BC 27, 1:367).
Mumuku	Point 9	1260	...to a Bread fruit tree...at place called Mumuku... (BCT 1:367); between Palani Rd & Māmalahoa Hwy; between Kuakahela & Iakahale. BCT 1:364,365; BC 27 (1:367).
Ikuana	Point 10	1400	between Mumuku & Kapiopio, above Māmalahoa Hwy. (BCT 1:364, 365)
Iakahale	Point 11	1610	"...to Iakahale kihapai [cultivated patch], the boundary passing on the North side and crossing the road..." Between Mumuku & Ikuana, near Māmalahoa Hwy. (BCT 1:365)

Boundary Point	Order	Elev. (ft)	Description
Kapiopio	Point 12	2060	"...a punawai [spring or well] in the fern [ <i>ama'u</i> ]..." between Ikuana & Kumumamaki (BCT 1:364,365; BC 27, 1:367).
Kumumāmaki	Point 13	2160	"...a water hole and bathing place..." (p.364) "...on the edge of the woods. The water hole is above here..." (p.365) BCT 1:364,365; BC 27 (1:367). Honokōhauiki [Honokōhau 2] is cut off at Kumumamaki by Honokohanui [Honokōhau 1] and Kealakehe" (BCT 1:365)

### 3.1.3 Kaloko Place Names

Table 7. Kaloko Place Names (compiled by Lloyd Soehren, with additions)

Place Name	Type	Comments (Source)	Place Name Meaning
Kaloko	<i>ahupua'a</i>	MB 13; IN 64; BCT 1:371; U.S. Geological Survey 1982.	the pond (Pukui et al. 1974)
Hale'ape	<i>'ili 'āina</i>	LCA 10327 testimony	house of <i>'ape</i> [a taro like plant].
Haleolono	<i>'ili 'āina</i>	LCA 9243 testimony	house of Lono (Pukui et al. 1974)
Kanaio	<i>'ili 'āina</i>	LCA 9160 testimony	Pukui et al. 1974: the false sandalwood tree.
Kealaehu	<i>'ili 'āina</i>	LCA10951, 10346, 10693, & 9243 testimony	the dusty road (Pukui & Elbert 1986)
Ki'iki'i	<i>'ili 'āina</i>	LCA7797, 10951, 10346, & 9242 testimony	
Kikahala	<i>'ili 'āina</i>	LCA 10694 testimony	
Kukuiha'a	<i>'ili 'āina</i>	LCA9238: & 9241 testimony	low candlenut tree (Pukui & Elbert 1986)
Luahine'eku	<i>'ili 'āina</i>	LCA 9241 & 9243 testimony	
Makaawe	<i>'ili 'āina</i>	LCA 7909 testimony	
Oloupe	<i>'ili 'āina</i>	LCA 9237 testimony	
Pāpua'a	<i>'ili 'āina</i>	LCA 9238 testimony	pig fence or enclosure (Pukui & Elbert 1986)
Ulawini	<i>'ili 'āina</i>	LCA 7797 testimony	
Ulukukahi	<i>'ili 'āina</i>	LCA 9060 testimony	
Waimea	<i>'ili 'āina</i>	LCA 10693 testimony	reddish water (Pukui et al. 1974)

Place Name	Type	Comments (Source)	Place Name Meaning
Kaloko	coastal point	U.S. Geological Survey 1982	the pond (Pukui et al. 1974)
Pu'u Iki	<i>pu'u</i>	Kaloko/Honokōhau boundary Course 1, 6864 ft. from shore a. Elev. about 260 ft. (BC 138, 3:348)	small hill (Pukui et al. 1974)
Kaloko	fishpond	U.S. Geological Survey 1983	
Kaukahokū	survey station	A survey station located near the Kohanaiki/Kaloko boundary, TMK 7324:16. Elev. about 1900 ft. (RM 2035)	the star appears (Pukui et al. 1974)
Pālahalaha	water hole	Near the Kaupulehū boundary, about 4200 ft. elev. (BC 160 4:55)	Pukui & Elbert 1986: broad, spread out, flattened.
Okuhi	bdry point (1) (at shore)	Kaloko/Honokōhau boundary at shore "...an awaawa [gulch, ravine] in the sea with a point on each side of it." (BCT 1:371)	Probably ' <i>okuhe</i> , a variety of ' <i>ō'opu</i> fish (Pukui & Elbert 1986).
Kaewewai	bdry point (2)	Kaloko/Honokōhau boundary near shore road "...an awaawa with water"..." Between Okuhi & Kaohe (BCT 1:371)	
Kaohe	bdry point (3)	"...a grove of trees..." above the aa. Between Kaewewai & Kiikii [Kīkī] (BCT 1:371)	
Ki'iki'i	bdry point (4)	Kaloko/Honokōhau boundary, Between Kaohe & Kapokalani (BCT 1:371).	possibly to fetch, summon, procure Pukui & Elbert 1986:
Kapokalani	bdry point (5) (SE corner)	Kaloko-Honokōhau boundary - SE corner; "...along an iwi aina [field wall] to Kapokalani at the Govt. road [Old Upper Road on TM 7301]..." (BCT 1:371)	

### 3.1.4 Kohanaiki Place Names

The entire *ahupua'a* of Kohanaiki was classified as Government Lands (Board of Commissioners 1929) in the Māhele. Only two LCA claims were made, but neither was awarded so there are few sources for *'ili* names. The boundary of the *ahupua'a* was not surveyed, so there are no Boundary Commission sources for place names. Some land was later sold by the government as land grants and place names are occasionally mentioned in these documents. J. S. Emerson mapped a portion of Kohanaiki on his Kona Coast Registered Map (RM 2035), and listed the names of several triangulation stations, which he named himself. Thus, we have little information on traditional place names in Kohanaiki, except for that presented in Table 8.

Table 8. Kohanaiki Place Names (compiled by Lloyd Soehren, with additions)

Place Name	Type	Location (Source)	Name Meaning
Hālau	triangulation station	SW corner of RPG 3086, on Kohanaiki/Kaloko boundary about 250 ft from shore. Elev. <20 ft. (RM 2035)	canoe shed; meeting house (Pukui & Elbert 1986)
Haleolono	<i>'ili 'āina</i>	LCA 7987 testimony	house of Lono (Pukui et al. 1974)
Ho'okēkē	place	"Area in upper Kohanaiki, Kona, Hawai'i. See Mai'a-loa."	crowded (Pukui et al. 1974 51)
Kananaka	triangulation station	SE corner of RPG 3086 on Kohanaiki/Kaloko boundary at the Lower Gov. road. Elev. about 40 ft. Named by surveyor (RM 2035)	
Kānoa	place, boundary point	"...in scrub trees above the woods where Kaloko is cut off by Kaupulehu. It is on the <i>makai</i> side of an ahua called Kapulehu [Pulehu on TM 7301]" (BCT 1:370)	bowl (Pukui et al. 1974)
Kapa	triangulation station	SE corner of RPG 2942, on the Kohanaiki/Kaloko boundary between Nawahiahu and the upper Gov. road. Named by surveyor (RM 2035)	
Kohanaiki	<i>ahupua'a</i>		small barrenness (Pukui et al. 1974)
Kumu'ohe	triangulation station	Located on RPG 2942, on the Kohanaiki/Kaloko boundary between Kananaka and Nawahiahu. Elev. about 320 ft. Named by surveyor (RM 2035)	trunk of 'ohe tree [ <i>Reynoldsia sandwicensis</i> ].
Kumua	<i>pu'u</i> , triangulation station	Located on RPG 4787, about 200 ft <i>mauka</i> of the upper Gov. road. Elev. about 1750 ft.	first Kū, or to stand forward
Mai'aloa	pit	"Pit at Ho'o-kēkē in upper Kohanaiki, Kona, Hawai'i." Fictitious place in tale of Kamiki, "the sacred plantation of the chief Pohakuokane [in which] was grown the 'awa of Pohakuokane...in a small crater or hollow-like area..."	Pukui et al. 1974 138: long banana.
Nalowale	<i>heiau</i>	A <i>heiau</i> whose name is lost ( <i>nalowale</i> ) U.S. Geological Survey 1959	lost, forgotten (Pukui & Elbert 1986)



Place Name	Type	Location (Source)	Name Meaning
Nāwahiahu	triangulation station	RPG 2942, TMK 7309:17, on Kohanaiki/Kaloko boundary between Kumuohe and Kapa. Elev. about 500 ft. Named by surveyor. (RM 2035)	
Wāwahiwa'a	coastal point	U.S. Geological Survey 1982	wreck canoe (Pukui & Elbert 1986).

### 3.1.5 'O'oma Place Names

Similar to Kohanaiki, 'O'oma became government land, thus there is no Boundary Commission testimony. Only three Land Commission Awards were granted, all in the same 'ili. J. S. Emerson included 'O'oma in his Kona Coast map (RM 2035), and recorded several triangulation stations, which he named himself. Table 9 presents the scant information on place names in the *ahupua'a* of 'O'oma.

Table 9. 'O'oma Place Names (compiled by Lloyd Soehren 2010, with additions)

Place name	Type	Location (Source)	Name Meaning
'O'oma 1, 2	<i>ahupua'a</i>		concave (Pukui et al. 1974)
Puhili	coastal point	'O'oma 2. The boundary between 'O'oma and Kohanaiki at the shore is at Puhili point. "Said to be named for a priest of the same name..." (Pukui et al. 1974; TM 7300; RM 2035)	to thwart (Pukui et al. 1974)
Anakauao-kahokukahi	cave	'O'oma 1. "...the vertical entrance of a famous 'ana kaua' [cave] which extends for a long distance to the east and to the west" is located about 500 ft. north of Kahokukahi trig. station. A refuge cave during time of war. Elev. about 400 ft. (RM 2035; FB 291:197)	war cave of Kahokukahi (Pukui & Elbert 1986)
Hālawa	triangulation station	Located between Kekee and Kalamanamana on 'O'oma 2/Kohanaiki boundary, at NW corner of RPG 2030, TMK 7307:36. Elev. about 1100 ft. Named by surveyor. (RM 2035)	curve (Pukui et al. 1974)
Kahōkūkahi	triangulation station	Located on the 'O'oma 1/'O'oma 2 boundary at the NE corner of Lot 29C, SW corner of TMK 7310:4x. Elev. about 360 ft. Named by surveyor. (RM 2035)	the first star (Pukui & Elbert 1986)

Place name	Type	Location (Source)	Name Meaning
Kalamanamana	triangulation station	Located at NE corner of RPG 2030, TMK 7307:50, on 'O'oma 2/Kohanaiki boundary. Elev. about 1740 ft. Named by surveyor. (RM 2035)	
Kaualoku	triangulation station	'O'oma 2. Located on <i>mauka</i> boundary of RPG 2027 at Gov. road, TMK 7336:10. Elev. about 1720 ft. Named by surveyor. (RM 2035)	the pouring rain (Pukui & Elbert 1986)
Keke'e	triangulation station	Located between Puhili trig. station and Halawa on 'O'oma 2/Kohanaiki boundary at Lower Gov. road, the NE corner of RPG 3086, TMK 7309:3. Elev. about 70 ft. Also written "Keekee" on TM 7309. Named by surveyor. (RM 2035)	crooked, twisted. Same as <i>ke'eke'e</i> . (Pukui & Elbert 1986)
Kekuaio	triangulation station	'O'oma 1. Located on Lot 29B, TMK 7310:6x. Elev. about 280 ft. Coordinates estimated. Named by surveyor. (RM 2035)	the border or bank between cultivated fields. (Pukui & Elbert 1986)
Kuhiaka	triangulation station	Located at the NE corner of RPG 1600 on the 'O'oma 1/'O'oma 2 boundary, TMK 7306:22. Elev. about 2100 ft. Named by surveyor. (RM 2035)	
Pihapono	triangulation station	'O'oma 2. Located near center of RPG 1600, TMK 7306:20. Elev. about 1860 ft. Named by surveyor. (RM 2035)	completely full (Pukui et al. 1974)
Pu'u Kou	triangulation station	'O'oma 2. Located on the <i>makai</i> side of RPG 2027, TMK 7397:37. Elev. about 1125 ft. Named by surveyor. (RM 2035)	

### 3.1.6 Kalaoa Place Names

Kalaoa was designated as Government Land in the Māhele, and only two Land Commission Awards were claimed. Thus, there were few early surveys of the land, and many of the traditional place names were lost. J. S. Emerson's made a survey of Kailua government lands,

where he made new names for many triangulation station and boundary points at the corners of land grants, but only a few traditional boundary point names are known. These are listed in Table 10.

Table 10. Kalaoa Place Names (compiled by Lloyd Soehren, with additions)

Place Name	Type	Location (Source)	Name Meaning
Kalaoa	<i>ahupua'a</i>	Māhele Book	the eel gorge, choker (Pukui et al. 1974)
Kahuku	<i>'ili 'āina</i>	LCA 7937 testimony	the projection (Pukui & Elbert 1986)
Kaweo	<i>'ili 'āina</i>	LCA 7899 testimony	
Ahupua'a	<i>ahu</i> (mound)	At the Government road on the Hamanamana/Kalaoa boundary. Probably a Makahiki altar at the land boundary. (Malo 1951:146; BCT 2:265; Malo 1951:146)	pig altar (Pukui & Elbert 1986)
Kanakamake	place	Between Ahupuaa and Kipuka on the Hamanamana/Kalaoa boundary. "There used to be an old trail from [Kapulehu] along this boundary to a place called Kanakamake" (BCT 2:263)	dead man (Pukui & Elbert 1986)
Unualoha [Unuhoaloha]	bdry point 1a (at coast)	Kalaoa/Hamananmana coastal boundary point U.S. Geological Survey 1982; RM 2035	
Kahua	bdry point 1b (at coast)	Kalaoa/Hamananmana coastal boundary point "...a lae at the shore..." (BCT 2:263,264; RM 2035; U.S. Geological Survey 1924)	
Kelehua	bdry point 2	Kalaoa/Hamanamana "...an ahua and kipuka the boundary running through the kipuka" (BCT 2:264). "...ohia trees growing on the aa..." (BCT 2:265). Between Kahua and Laekailio (BCT 2:264, 265.)	
Laeaka'ilio [Kalaeka'ilio]	bdry point 3	Kalaoa/Hamananmana boundary "...on the Kona side of the aa" at 395 ft. elev. below Gr. 3027. "Laekailio" (RM 2035, U.S. Geological Survey). Between Kelehua and Kaiwiholehole (BCT 2:264, 265; RM 2035; U.S. Geological Survey 1924)	point of the dog (Pukui & Elbert 1986)

Place Name	Type	Location (Source)	Name Meaning
Kaiwiholehole	bdry point 4	Kalaoa/Hamananmana boundary". "...a lauhala grove..." between Government road and Kalaeakailio (BCT). Claim no. 10523 by Nawahie is for "kekahi pauku o keia ili o Kaiwiholehole, o Kaloaloa ka inoa o ka pauku...". (BCT 2:264; NR 8:597; RM 2035; U.S. Geological Survey 1924)	
Ho'ona	coastal bay	A place on shore and a small bay north of Keāhole Point	to relieve pain, soothe, comfort; to end, as a taboo; settle a claim (Pukui & Elbert 1986)
Makako	coastal bay	U.S. Geological Survey 1982	
Kalihi	coastal point	U.S. Geological Survey 1982	the edge (Pukui et al. 1974)
Keāhole	coastal point	U.S. Geological Survey 1959; Kamakau 1961:185,193; Reinecke ms (1):17.	the āhole fish.
Kapeke	traingulation station	Located at SE corner of RPG 3750, TMK 7310:29, on Kalaoa 4/Kalaoa 5 boundary above Kahouhale. Elev. about 1040 ft. Named by surveyor. RM 2035	the dwarf (Pukui & Elbert 1986)
Pāhinahina	trig.st.	Located at SE corner of Lot 16, TMK 7310:32(dropped), on Kalaoa 1/Kalaoa 2 boundary (Kona Highlands subdivision). Elev. about 1160 ft. Named by surveyor. RM 2035	
Kuanalua	trig.st.	"This station was named after Kuanalua, a warrior chieftain of Kamehameha I, whose house once stood among the trees back of the station." Located on <i>mauka</i> side of Gov. road in Kalaoa 1, TMK 7302:12. Elev. about 1780 ft. RM 2035; FB 291:49	
Ipuu	trig.st.	Kalaoa 4. Located at south side center of RPG 990, TMK 7304:14, almost on Kalaoa 4/Kalaoa 5 boundary. Elev. about 200 ft. Named by surveyor. RM 2035	
Kaaipuaa	trig.st.	Kalaoa 3. Located near SW corner of RPG 3764, TMK 7302:25. Elev. about 2100 ft. Named by surveyor. RM 2035	

Place Name	Type	Location (Source)	Name Meaning
Kaeu	trig.st.	Kalaoa 2. Boundary point located "...in the iwi aina north side of the 'kihapai koele' Kaeu, formerly cultivated with taro." TMK 7302:10. Elev. about 1880 ft. RM 2035; FB 291:53	
Kahouhale	trig.st.	Kalaoa 2. Boundary point located "...in the iwi aina north side of the 'kihapai koele' Kaeu, formerly cultivated with taro." TMK 7302:10. Elev. about 1880 ft. ; RM 2035; FB 291:53	
Kalaehumuhumu	trig.st.	Located at NW corner of RPG 1606, at SE corner of TMK 7301:31, on Kalaoa 2/Kalaoa 3 boundary. Elev. about 1020 ft. Named by surveyor. RM 2035	the <i>humuhumu</i> [fish] point (Pukui & Elbert 1986)
Keanalele	trig.st.	Kalaoa 2. Located near NE corner of RPG 2032 [erroneously printed 3032 on RM 2035], TMK 7302:9. Elev. about 2060 ft. Named by surveyor. Coordinates estimated. Cf. Analele 394.21.001. RM 2035	the flying cave (Pukui & Elbert 1986)
Kumumamane	trig.st.	Located at SW corner of RPG 3027, TMK 7310:31, on Kalaoa 2/Kalaoa 3 boundary. Elev. about 850 ft. Named by surveyor. RM 2035	<i>māmane</i> tree [ <i>Sophora chrysophylla</i> ] trunk (Pukui & Elbert 1986)
Makaulaula	trig.st.	Kalaoa 5. Located near SW corner of RPG 2972, TMK 7310:25x in Kalaoa 5. Named by surveyor. Elev. about 280 ft. Coordinates estimated. RM 2035	pinkeye; inflamed or bloodshot eye (Pukui & Elbert 1986)
Pu'u Oina [Puoina]	trig.st.	Kalaoa 3. Located "on hill over cave, in woods" N side center of RPG 3764, TMK 7302:25. Elev. about 2160 ft. Named by surveyor, perhaps after the heiau at the shore. Coordinates estimated. Cf Puu Oina, the preferred spelling. RM 2035; FB 291:55	
'Umiahu	trig.st.	Located on Kalaoa 2/Kalaoa 5 boundary, at NW corner of RPG 2972, TMK 7310:33. Named by surveyor. Elev. about 280 ft. RM 2035	cairn of 'Umi (Pukui & Elbert 1986)

### 3.2 ‘Ōlelo (Poetical Sayings) and Mo‘olelo (Stories)

The project area is located within the Kekaha region of North Kona District. Based on a recent translation of the "Legend of Ka-Miki" by Kepa Maly (cited in Henry et al. 1993) the region or ‘okana of Kekaha extends from Keahuolū northward to the Kona/Kohala boundary. The Kekaha region is also called *Kekaha wai‘ole*, or “waterless place,” a name which reflects its dry and barren appearance. Despite its desolate appearance, legends and other traditional accounts indicate that Kekaha was once a populous and productive region.

The character of Kekaha - as it had been established in the Hawaiian consciousness - is represented in a traditional saying recorded by Mary Kawena Pukui and in a brief description by John Papa ‘Ī‘Ī. The saying, “*Kekaha wai ‘ole na Kona*”, translates to “waterless Kekaha of the Kona district.” Pukui states that “Kekaha in Kona, Hawai‘i, is known for its scarcity of water but is dearly loved by its inhabitants” (Pukui 1983:184). However, water could come in the form of early morning mists and rains, as shown in this account of a hill, located in either Kealakehe, or the adjacent Keahuolū, as recounted in the Legend of Kamiki.

Ka-noenoe (The mist, fogginess) The mound-hill called Pu‘u-o-Kaloa sits upon the plain of Kanoenoe which is associated with both Keahuolu and Kealakehe. The settling of mists upon Pu‘u-o-Kaloa was a sign of pending rains; thus the traditional farmers of this area would prepare their fields. This plain was referenced by Pili when he described to Ka-Miki the extent of the lands which Ka-Miki would over see upon marrying the scared chiefess Paehala of Honokōhau. The inheritance lands included everything from the uplands of Hikuhia above Nāpu‘u and the lands of the waterless Kekaha, which spanned from the rocky plain of Kanikū (Keahualono) to the plain of Kanoenoe at Pu‘ukaloa (*Ka Hoku o Hawai‘i* 10/25/1917, as translated by Maly 1994:A-4).

Another legendary account discusses the hill called Pu‘u-o-kaloa:

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

*Ua ka ua i Pu‘ukaloa, ihea ‘oe?*

When rains fell at Pu‘ukaloa, where were you? (If the answer was...)

*I Kona nei no!*

In Kona (there would be no sweet potatoes for this person)

But if the answer was:

*I Kohala nei no!*

In Kohala! (The person would be given food to eat for they had been away, thus unable to accomplish the planting.) (*Ka Hōkū o Hawai'i* 3/19/1914, as translated by Maly 1994:A-5)

These legendary accounts emphasize the importance of rainfall in this relatively dry region for farmers, who were cultivating sweet potatoes and other crops on the plains of Kekaha.

Samuel Kamakau, the native historian, relates that in the 15<sup>th</sup> century, High Chief 'Umi-a-Liloa fished for *aku* along the Kekaha coast, and around 1810, Kamehameha I also fished the shores of Kekaha (Kamakau 1961:20, 203).

'Ī'Ī describes the winds of Kekaha:

...a cold wind from Kekaha, the Hoolua. Because of the calm of that land, people often slept outside of [sic] the tapa drying sites at night. It is said to be a land that grows cold with a dew-laden breeze, but perhaps not so cold as in Hilo when the Alahonua blows. ('Ī'Ī 1959:122)

These passages suggest that Kekaha was firmly identified with its austere physical environment. A legend told in Maguire (1966:28-32) reveals the importance of water resources in this general area (see also Wolforth 2005:8-9). The story takes place at the Cave of Mākālei, which is located outside of the current project area near 'Akahipu'u (a nearby mountain). The story focuses on a man named Ko'amokumokuohe'eia, who moved to this area and was told by the current residents that water was very scarce. Water, he was told, could be obtained in "celebrated" caves, but these caves were *kapu* (forbidden), and if caught, trespassers would be killed by the owner of the cave. However, Ko'amokumokuohe'eia discovered a very small cave entrance that no else knew about. The cave had water dripping from its roof (Maguire 1966:30). Ko'amokumokuohe'eia and his father used carved 'ōhi'a and wiliwili trees to capture the dripping water, and his family was thus able to survive during dry spells. This legend clearly demonstrates the importance of water as a resource that is difficult to procure, and it highlights the importance of water collection caves.

John Ka'elemakule Sr., a Kekaha native, wrote newspaper articles between 1928 and 1930 that provide details about life and customs in the last half of the nineteenth century. Kepā Maly (Maly and Maly 2003) translated these serial accounts that appeared in *Ka Hoku o Hawai'i*. The two following excerpts provide additional details related to water collection.

...There were not many water holes, and the water that accumulated from rain dried up quickly. Also there would be weeks in which no rain fell... The water which the people who lived in the uplands of Kekaha drank, was found in caves. There are many caves from which the people of the uplands got water... [September 17, 1929:3] (Maly and Maly 2003:42)

...The *kūpuna* had very strict *kapu* (restrictions) on these water caves. A woman who had her menstrual cycle could not enter the caves. The ancient people kept this as a sacred *kapu* from past generations. If a woman did not know that her time was coming and she entered the water cave, the water would die, that is, it

would dry up. The water would stop dripping. This was a sign that the *kapu* of Kāne-of-the-water-of-life (Kaneikawaiola) had been desecrated. Through this, we learn that the ancient people of Kekaha believed that Kāne was the one who made the water drip from within the earth, even the water that entered the sea from the caves. This is what the ancient people of Kekaha wai 'ole believed, and there were people who were *kia'i* (guardians) who watched over and cleaned the caves, the house of Kāne... (September 24, 1929:3] (Maly and Maly 2003:42)

Pukui (1983:271) also relates the importance of fishing in the following:

*Ola aku la ka aina kaha, ua pua ka lehua i kai.*

Life has come to the *kaha* lands for the *lehua* blooms are seen at sea.

Pukui (1983:271) further explains this saying: "Kaha lands refers to Kekaha. When the season for deep-sea fishing arrived, expert fishermen and their canoes headed for the ocean."

Kekaha was, however, "valued by ruling chiefs, inhabited by attendant chiefs, and upon occasion abused by warring chiefs" (Kamakau 1979:31). Kamakau (1961) reports that during the war between Alapa'inui of Hawai'i and Kekaulike of Maui, Kekaulike "abused the country people of Kekaha" by destroying all the coconut groves and slaughtering "the country people." The destruction of these valuable trees was devastating.

Describing the apportioning of land by the *ali'i* (royalty) before the ascendancy of Kamehameha, Kamakau records this information about the lands of Kekaha:

Waimea [he is referring in this case to Waimea, O'ahu] was given to the Pa'ao kahuna class in perpetuity and was held by them up to the time of Kamehameha III when titles had to be obtained. But there was one land title held by the kahuna class for many years and that was Puuepa in Kohala. In the same way the land of Kekaha was held by the kahuna [priests] class of Ka-uahi and Nahulu. (Kamakau 1961:231)

Kamakau further records that during the 1770s, "Kekaha and the lands of that section" were held by descendants of the Nahulu line, the Ka-me'e-ia-moku and Ka-manawa, the twin half brothers of Ke'e-au-moku, the Hawai'i island chief (Kamakau 1961:310). The Great Seal of the State of Hawai'i depicts Kame'eiamoku and Kamanawa (Springer 1989:23).

A great deal of primary research on legendary references and place names of Kekaha has been undertaken by Kepa Maly and Lehua Kalima. The results of some of this research can be found in "The Historical Documentary Research by Kepa Maly and Lehua Kalima" presented in PHRI report 1275-071493: Archaeological Assessment Study, Kailua to Keahole Region State Lands LUC Project (Henry et al. 1993).

### 3.2.1 The Story of Ka-Miki

Kepa Maly (1993) translated the "Kaa Hooniua Puuwai no Ka-Miki" (The Heart stirring Story of Ka-Miki) that appeared in the newspaper *Ka Hoku o Hawai'i* between 1914 and 1917. The legend provides details about life and the environment of Kekaha as well as for the entire island of Hawai'i. Ka-Miki, the quick or adept one, and his brother Maka'iole ("rat or squinting



eyes”), traveled around the island to participate in competitions circa the thirteenth century when Pili-a-Ka‘aiea was the chief of Kona. The boy’s parents were Pōhaku-o-Kāne (male) and Kapa‘ihilani (female), the *ali‘i* of Kaloko and Kohanaiki. The legend relates that the supernatural brothers “were empowered by their ancestress Ka-uluhe-nui-hihi-kolo-i-uka (the great entangled growth of *uluhe* fern which spreads across the uplands), a reincarnate form of the earth-mother goddess, creative force of nature Haumea (also called Papa) who dwelt at Kalama‘ula on Hualālai, in the uplands of Kohana-iki, Kona” (Maly 1993:21-22). The twins were raised by Ka-uluhe, who taught them how to use their supernatural powers.

Portions of the legend that are relevant to the current study follow. The following excerpt discusses the division of property within Ka-loko (the pond).

The wood carved for the makaha (fish pond gates) came from ‘Iwa‘awa‘a (near a halau ali‘i [royal compound] and kahua [contest arena] of the chief Pohaku-o-Kane, on the plains of Kohana-iki next to Kaloko [1/15/1914]). The lands of Kaloko and Kohana-iki were jointly governed by Pohaku-o-Kane, though the ponds were under guardianship of other god-chiefs and chiefesses (5/21/1914).

Several of the stories identify *heiau* of Kaloko and Kohanaiki. The first appeared between April 16 and 30, 1914.

The ocean at ‘Ohiki was named Kauahia or Kai o Kauahia. After an ‘awa ceremony with Ka-uluhe ma, Ka-Miki went to the shore of ‘Ohiki to fish, in the pond waters of the chief Ahauhale. ‘Ohiki was the name given for several places, including: a heiau; a cove; and an ‘ili of Kaloko. The ‘ili land parcel came to be known as Ki‘ikahala after the punishment of the dual formed priest-shark Kalua‘olapauila.

On the night of Kāne the priests, chiefs, and people were observing the kapu of silence and all was being made ready to dedicate the royal compound of Ka‘aipu‘a at Kohanaiki. Ka-Miki and Maka‘iole descended to the coastal region of Kaloko and Kohanaiki from Kalama‘ula and beat the drums in the heiau of Pohakea, ‘Ohiki, Kaukeano, ‘O‘unui, Honu‘iwa, Pu‘uho‘olelelupe, Kauki‘eki‘e, and Hale-o-Lono. The sound of the pahu heiau (temple drums) greatly startled the people, and caused the priests and chiefs of Kaloko to grumble amongst themselves. The sequence of events which followed, led to the naming of Hi‘iakanoholae.

A spring in the land parcel was also named ‘Ohiki. The ocean of this area was named Kauahia before ‘Ohiki came about, and following the death of the shark-priest Kalua‘olapauila, the land section and temple of ‘Ohiki came to be called Ki‘ikahala.

The following appeared between January 8 and 15, 1914 and describes Hale-o-Lono, or house of Lono, a *heiau* in Kohanaiki where prayers for rain and abundant growth were offered.

Hale-o-Lono was the husband of Pipipi‘apo‘o, a daughter of the deified beings Kumua and Ka-uluhe. Hale-o-Lono excelled at farming, and had the plain of

Nanawale, Kohaha-iki well cultivated. His plantation was marked by Nahiahu, also called Nawahiahu (the alignment of cairns) on the makai side of this feature.

Additional information about Na'wahi'ahu was published between January 8 and 29, 1914:

Na-wahi-ahu (the place [of] cairns) [or] Mahiahu is identified as a line of cairns which marked the agricultural fields of Hale-o-Lono, and the sacred plantation of Ka'aipu'a at Kohana-iki. Before Hale-o-Lono established his fields in this area this portion of Kohanaiki was called Nanawale (to look about – because of the extensive fields).

Details about why this area of Kohanaiki became important appeared between January 8 and May 28, 1914 and December 6, 1917.

Ka-uluhe-nui-hihi-kolo-i-uka a reincarnate form of Haumea (also called Papa) lived at Kalama'ula in the uplands of Kohana-iki, below Hainoa. Ka-uluhe was the wife of Kumua, and the hill site at which Kumua dwelt is also called Kumua; it is below Kalama'ula, a little above the hidden spring of Kapa'ihiki. The reason that Kumua lived at this hill was because it allowed him clear view of the coastal lands of Kohana-iki, which is where his children and grand children lived. One of the children of Kumua ma was Pipipi'apo'o and she was married to Hale-o-Lono (an agriculturalist and temple type, coastal Kohana-iki) who was an exceptional farmer. Hale-o-Lono excelled in his trade, and the place upon which he farmed was called Nanawale, and because he marked the area with many cairns, it came to be called Nahiahu, also called Nawaiahu, the place of cairns.

Nawahi ahu appears on Emerson's RM 1449 and RM 1512, dating to 1888 and 1889 respectively.

A more recent translation of the legend of Ka-Miki by Maly and Maly (2003:15) includes the following additional information about Nāwahiahu.

Pipipi'apo'o was another daughter of Kūmua and Ka-uluhe-nui-hihi-kolo-i-uka. She married Haleolono, one who cultivated sweet potatoes upon the *'ilima* covered flat lands of Nānāwale, also called Nāhiahu (Nāwahiahu), as it has been called from before and up to the present time. Cultivating the land was the skill of this youth Haleolono, and because he was so good at it, he was able to marry the beauty, Pipipi'apo'o. Pipipi'apo'o skill was that of weaving pandanus mats, and there grow there many pandanus trees to this day. The grove of pandanus trees and a nearby cave, is called Pipipi'apo'o...

Maly (1993:28) notes that Hale-o-Lono, Ki'ikahala, and 'Ohiki are associated with sites and/or place names that are shared by Kaloko and Kohanaiki.

In 'O'oma and Kalaoa, the priests of the different *ahupua'a* are named:

'Elepaio was the high priest of Honokōhau. The place where he dwelt bears the name 'Elepaio [an *'ili* in Honokōhau]. It is in the great grove of *'ulu* (*kaulu' ulu*)

on the boundary between Honokōhau-nui and Honokōhau-iki [Honokōhau I and II] . . . (April 23, 1914)

Puhili was the high priest of 'O'oma and Kohanaiki, the place where he lived is on the plain of Kohanaiki, at the shore, and bears his name to this day. It is on the boundary between Kohanaiki and 'O'oma.

Kalua'ōlapa was the high priest of Hale'ōhi'u and Kamāhoe, that is the waterless land of Kalaoa (*Kalaoa wai 'ole*). The place where he lived was in the uplands of Maulukua on the plain covered with 'ilima growth. This place bears his name to this day.

Kalua-ōlapa-uwila was the high priest of Kealakehe and Ke'ohu'olu (Keahuolu), and it was he who built the *heiau* named Kalua'ōlapa-uwila, which is there along the shore of Kealakehe, next to the road that goes to Kailua. The nature of this priest was that of a shark and a man. The shark form was named Kaiwi, and there is a stone form of the shark that can be seen near the *heiau* to this day. (April 30, 1914).

Ka-Miki completed his journey around the Big Island and,

...became the foremost champion of Pili (7/26/1917). It was at this time that Ka-Miki learned about the sacred palama chiefess Paehala of Honokōhau; lands also called Na-Hono-i-na-Hau-'Elua (the bays of the two dewes). Pili gave Ka-Miki permission to wed Paehala if she and her family agreed, and Paehala was the foremost beauty of Kona.

When the chiefess agreed to marry Ka-Miki, Pili told Ka-Miki, that he would also, "oversee the chiefs' sacred fishponds [at Kaloko and Pa'aiea]; the schools of kala, uhu, and palani; and all the lands of Kekaha from Hikuhia which is above Napu'u u (also called Napu'upo'alu); and lands between Keahualono at Kaniku to the plain of Kanoenoe, marked by the hill of Pu'uokaloa at Keahuolu" (10/18/1917). (Maly 1993:22)

The following passage is from Kihe and appeared in *Ka Hoku o Hawai'i* between January 31 and April 10, 1928. It relates the variety of agricultural crops that grew in Kohanaiki and Kaloko:

Departing from O'ahu, Makalie and his family landed at Hale 'uki, Ka'upulehu and were greeted by Ke'awalena a chief and overseer of the Kekaha region. Ka'upulehu and all Kekaha were extensively cultivated at this time. Dependent on seasons, the uplands were used for residences and farming, and the coastal lands for residence and fishing. Pao wai (dug out water catchments) on the pāhoehoe and in upland fields were a means of water catchment. Crops grown here included: taro, sweet potatoes, sugar canes, bananas, and 'awa...(Maly 1993:25)

Maly (1993:29) explains that traditional accounts of Kaloko and Kohanaiki describe a lush environment that differs from its current state due to several factors. The Hualālai lava flow in

1801 covered the former agricultural and forested lands, residential areas, and fishponds. The loss of forests began the decrease in rainfall that was exacerbated by the introduction of livestock and ranching. Goats and cattle stripped the vegetation from the lands causing water resources to dry up. Thus, over the last 150 years, the environment has been significantly altered.

### 3.2.2 Other Legends

#### 3.2.2.1 Honokōhau and the Spy

The nineteenth-century Hawaiian historian Samuel M. Kamakau mentions Honokōhau in an account of an extraordinary day's reconnaissance of the west coast of Hawai'i island by the spy Ka-uhi-o-ka-lani, sent to the island by Kama-lala-walu, chief of Maui. Having reached Kawaihae by canoe at night, Ka-uhi-o-ka-lani "ran about that same evening [reaching as far south as Ka'awaloa] and returned before the canoes were dismantled..." Ka-uhi-o-ka-lani, recounting his journey and the landmarks he had observed, mentions: "I went on to the long stretch of sand, to the small bay with a point on that side and one on this side. There are large inland ponds." He is told that the "sandy stretch is 'Ohiki, and the walled-in ponds are Kaloko and Honokōhau." (Kamakau 1961: 56).

Kamakau also includes Honokōhau in a litany of lands inquired about following the division of Hawai'i island *ahupua'a* among the *ali'i* after the death of Kalaniopu'u in 1782. Keoua Kuahu-ūla asks Kiwala'o:

"Are Ola'a and Kea'au ours?" The chief answered, "They have been given away; they are not ours." "How about Waiakea and Ponahawai?" They have been given away; they are not ours." . . . "The two Napu'u and the two Honokahau are ours?" "They have been given away; they are not ours." (Kamakau 1961:120)

#### 3.2.2.2 Kaloko Fishpond

There are numerous versions of *mo'olelo* about the famous fishpond along the seashore at Kaloko Ahupua'a, including some suggesting the remains of Kamehameha I may have been buried there. In his chapter recounting the death of Hawai'i's greatest leader, Kamakau (1961:215) states:

After the kahuna had performed his office [ritual duties], Ulu-maheihē prepared to carry out the command of Kamehameha given before his death...to secret his bones in a place where they could not be found...to put them in a place which could never be pointed out to anyone. At midnight, therefore, when black darkness had fallen and no one was likely to be on the road and the rough lava plains of Pu'uokaloa lay hushed, Hoa-pili sent his man, Ho'olulu, to bring the container of wicker work in which the bones of Kamehameha were kept to Kaloko in Kekaha [the coast of North Kona]...The next morning Hoa-pili and Keopu-o-lani took care to Kaloko where Hoa-pili met the man who had charge of the secret cave and together they placed the bones there. "The morning star alone knows where Kamehameha's bones are guarded."

### 3.2.2.3 *Kahinihini'ula*

Kahinihini'ula is the name of a bathing pool along the boundary between Kaloko Ahupua'a and Honokōhau I Ahupua'a, west and *makai* of the subject project area.

According to the Maly's work (Maly 2000; Maly and Maly 2002) extensive research translating Hawaiian language documents and interviewing *kūpuna* (elders), this bathing pool is associated with *mo'o* (supernatural water spirits) who ensured the water stayed clean and free from pollutants. Kama'āina Kihe, born in the area in the middle 19<sup>th</sup> century, had this to say about Kahinihini'ula:

This is a bathing pool of the chiefs of days gone by. It is a beautiful pond, with cool water that causes the skin of the sweetheart that bathes there to tingle. The pool is on the shore in the middle of a lava flow, entirely surround by stone. It is there on the boundary of the ahupua'a of Kaloko and Honokōhau-Nui. It is there that one will find this famous swimming pond of the chiefs of days gone by. Here is the tradition of this pond —

In ancient times, the chiefs would regularly live along the shore, that is, the chiefs of Kaloko and Honokōhau. At the place called Ahauhale, is where the chiefs of Kaloko lived. The place called Waihalulu, is where the chiefs of Honokōhau lived.

In the times when all was still and the sun glistened above the aa and the sands, that is when they would go swim in this cool pond (kiowai), Kahinihiniula, which caused the skin to tingle. When they were finished bathing, they would go to the enclosure (pa) that was near the pond. Then the one who had been bathing would say, "What is it about the pond of Kahinihiniula? It is cold and pinches the skin, like a sweetheart one holds close to the breast."

The pond is still there to this day, at the place of the chiefs of past time. They have returned to the earth, but the pond is still there today. This pond is an unforgettable monument for those ancient people who have gone. Those works of old and the pond may be seen by travelers of this generation. (J.W.H.I. Kihe in "Na Hoonanea o ka Manawa." *Ka Hoku o Hawai'i*, September 13, 1923; translated by Maly 2000)

### 3.2.2.4 *Ōhiki and Kaiwi*

Pukui et al.'s (1974:70) entry for Kaiwi, a coastal point in Kealakehe, described it as "[l]and points near Kai-lua, Kona, Hawai'i, and farther north in the same district," summarizes *mo'olelo* originally documented by Fornander about the sandy beach area between Kaloko and Honokōhau known as Ōhiki:

At one of the points [along this coast] is a rock believed to be a petrified shark, the shark form of a priest (Ka-lua-lapa-uila). When the priest was about to be burned at Ōhiki, a legendary hero, Ka-miki, prayed to Pele and a terrible storm arose. The priest's shark-form was turned to stone as it tried to enter the *heiau* to

save the human form of the priest. One of Pele's sisters, Hi'iaka-noho-lae (Hi'iaka living [at the] point), came to live here, making the place sacred and forbidden to Pele.

### 3.2.2.5 *Punia*

Pukui et al. (1974:70) also note that Kaiwi Point in Kealakehe is related to the shark Punia.

In the story of Punia, the shark Kai'ale'ale, who had swallowed Punia, came here and was cut open by the people; Punia came out alive but was bald.

This refers to a story about a shark named Punia who was born in Kohala (Fornander 1959:9-17). He wished to trap lobsters for his mother, but the cave pool with the lobsters was guarded by a school of sharks led by the shark Kai'ale'ale. Punia killed all of the other sharks, and tricked Kai'ale'ale into swallowing him whole.

Once inside Kai'ale'ale, Punia rubbed two sticks together to make a fire to cook the sweet potatoes he had brought with him. He also scraped the insides of Kai'ale'ale, causing great pain to the shark. In his weakened state, Kai'ale'ale swam along the coast of Kekaha, and finally beached himself at Alula, near the point of Maliu in the land of Kealakehe. The people of Alula, cut open the shark and Punia was released (Fornander 1959:10).

All of the Hawaiians along the Kekaha coast lived at Alula at this time, since the rest of the area was inhabited by ghosts. Punia again used his skill of trickery to convince the ghosts to follow him into the ocean. When they dove below the surface, he caught them in his nets and killed them until only one was left. "The ghost fled and Kekaha became safe for human habitation" (Fornander 1959:17).

### 3.2.2.6 *Kona Legends Concerning 'O'oma*

There are only a few listings for the *ahupua'a* of Kealakehe, Honokōhau, Kaloko, Kohanaiki, 'O'oma, and Kalaoa in the definitive bibliographic source on Hawaiian *mo'olelo*, the *Hawaiian Legends Index* (Gotanda 1989). However, several of the stories written about the story of Kamiki in Hawaiian language newspapers were used as the basis for Eliza Maguire's Kona Legends.

One of these concerns the Pond of Wawālohi on the 'O'oma shore.

This little pool of water is situated near the seashore between 'O'oma and Kaloko. The story of this pool has been handed down from generations past to the present day, and is related thus:

Wāwālohi was the name of a certain *loli* (a sea slug). He was a *kupua* (wizard). He had two bodies, a limpsy fish body and the body of a man.

There lived in the uplands covered with *'ilima*, a man by the name of Kalua'ōpala and his wife, and their beautiful and charming daughter, Malumaluiki. (Maguire 1966:21)

Malumaluiki traveled to the shore to collect *limu* (seaweed) and *'opihi* (sea snails). When she bent down to get a drink from the pool, a handsome man arose. He was the charmer Wāwālohi, and the girl fell in love with him. Each day she returned to the pool, crying out a chant, and her lover would join her. The girl could not eat or sleep, however, and one day her father followed her. Seeing the form of her lover, he vowed to trap him. He memorized the chant, and disguised his voice to make the loli appear and then caught him in a net. He gave the captured loli to a priest, Pāpa'apa'o, he baked the *loli* in an *imu* (underground oven), and saved the life of Malumaluiki (Maguire 1966:21-32).

Wawālohi is also mentioned in the legend of the fishpond of Pā'aiea, which was destroyed by the Hualālai lava flow of 1801.

This was a very large fishpond extending from *Ka'elehuluhulu* [in Kaulana Ahupua'a], adjoining the little fishing hamlet of *Mahai'ūla* [Mahai'ula Ahupua'a] and as far as *Wawālohi* on the boundary of *'O'oma* [Kalaoa/'O'oma boundary]. This pond was not far from *Ka-Lae-O-Keāhole*, (Fisherman's Point) which is the extreme western point, or cape on the island of *Hawai'i*, and on which there is a lighthouse. . . .

The Fish-Pond of *Pā'aiea* was three miles long, and a mile and a half wide. The fishermen going to *Kailua* and further south, often took a short cut by taking their canoes into the pond and going across, thus saving time and the hard labor of paddling against the *'eka* [strong southern breeze] and also against the strong current from *Keāhole*. (Maguire 1966:13)

Pele came to visit the pond in her guise as an old woman and asked the *konohiki* (overseer) of the pond for some fish or shrimp. The *konohiki* refused, and that night the lava flowed down to the shore, completely destroying and filling the fishpond in revenge for the stinginess of the fishpond manager (Maguire 1966:13-17).

### 3.3 Early Historic References

#### 3.3.1 Explorers and Visitors

Archibald Menzies, the first foreigner to record his visit to Kekaha, accompanied Captain Vancouver in 1792. He described the land as "barren and rugged with volcanic dregs and fragments of black lava...in consequence of which the inhabitants were obliged to have recourse to fishing for their sustenance" (Menzies 1920:99).

On January 17, 1792, Menzies hiked to the top of Hualālai, and observed the following:

We commenced our march with a slow pace, exposed to the scorching heat of the meridian sun, over a dreary barren track of a gradual ascent, consisting of little else than rugged porous lava and volcanic dregs, for about three miles, when we entered the bread fruit plantations whose spreading trees with beautiful foliage were scattered about that distance from the shore along the side of the mountain as far as we could see on both sides. Here the country began to assume a pleasant and fertile appearance through which we continued our ascent for about two miles



further, surrounded by plantations of the esculent roots and vegetables of the country, industriously cultivated...From this place we had a delightful view of the scattered villages and shore underneath us, and of the luxuriant plantations around us...

January 18<sup>th</sup>....We observed here and there on the path little maraes [shrines] pointed out by taboo sticks in the ground round a bush or under a tree. In passing these places the natives always muttered a prayer or hymn, and made some offering as they said, to their akua, by leaving them a little piece of fruit, vegetable or something or other at these consecrated spots. Even in this distant solitary hut, we found a corner of it consecrated by one of these taboo sticks which the natives earnestly requested us not to remove when we took possession of it, and we very strictly obeyed their injunction, conceiving that religious forms whatever they are, ought to be equally inviolable everywhere. (Menzies 1920:151-160)

Vancouver, referring to the North Kona coast in 1794 stated: the adjacent shores ... chiefly composed of volcanic matter, and producing only a few detached groves of cocoa nut trees, with the appearance of little cultivation, and very few inhabitants ... (Vancouver 1798, III:62 quoted in Cordy 1985:34)

In 1823, William Ellis referred to the 1801 Huehue lava flow from Hualālai, which covered parts of Kekaha just to the north of the present project area, as having "inundated several villages, destroyed a number of plantations and extensive fish ponds, filled up a deep bay twenty miles in length and formed the present coast ... stone walls, trees and houses all gave way before it" (Ellis 1963:30-31).

In 1840, the explorer C. Wilkes observed "a considerable trade is kept up between the north and south end of this district. The inhabitants of the barren portion of the latter are principally occupied in fishing and the manufacture of salt, which articles are bartered with those who live in the more fertile regions of the south, for food and clothes." (Wilkes 1845:91)

### 3.3.2 Cultivation

The project area is in the central area of the North Kona District at the boundary of two distinct ecological zones. Lands to the south of Lanihau, known as *Kona kai 'opua* (Kona of the distant horizon clouds above the ocean), between Kailua Bay and Keauhou Bay, are generally recognized as the fertile agricultural district and population center of North Kona (Kirch 1985:166, Kelly 1983). The relatively dry *Kekaha-wai-'ole* (the waterless place) area of North Kona to the northwest, which includes the six *ahupua'a* of the current project area, is characterized by coastal fishponds and relatively barren lava inlands.

Despite descriptions of the lava covered terrain, various crops were traditionally cultivated within Kekaha, and sweet potato is likely to have been the most abundantly grown crop because of its adaptability to stony, dry environments. It was commonly planted in mounds and in *pāhoehoe* excavations.

Henry J. Lyman, son of missionaries that first arrived in Hilo in 1831, describes features in Puna similar to *pāhoehoe* clearings in the project that were cultivated with sweet potatoes:

Wherever the lava could be pounded into scoria, a plantation of sweet potatoes was laboriously formed by digging among the stones and filling in the holes with dried grass brought from the mountainside. Placed in the nest, the tuberous buds were covered with gravel, and there grew with astonishing luxuriance, yielding the largest and finest potatoes on the island (in Frierson 1991:167).

During the mid 1800s, Captain Charles Wilkes of the American Exploring Team comments on the agricultural use of *pāhoehoe* excavations (similar to the modification of *pāhoehoe* outcrop in the project) that he observed specifically in the Kona region:

Cultivation is carried on in many places where it would be deemed almost impracticable in any other country. The natives, during the rainy season, also plant, in excavations among the lava rocks, sweet potatoes, melons, and pine-apples, all of which produce a crop. (Wilkes 1845:91)

Sweet potatoes were also cultivated within walled fields or depressions in the walls themselves. E.S. Craighill Handy and Elizabeth Green Handy discuss this method from an account that appeared in the Hawaiian newspaper *Ka Nupepa Ku'oko'a* (March 24, 1922):

Rocky lands in the olden days were walled up all around with the big and small stones of the patch until there was a wall (*kuaiwi*) about 2 feet high and in the enclosure were put weeds of every kind, 'ama'u tree ferns and so on, and then topped well with soil taken from the patch itself, to enrich it, or in other words to rot the rubbish and weeds to make soil.

After several months, the rotted weeds were converted into soil of the best grade. The farmer waited for the time when he knew that the rains would fall, then he made the patch ready for planting. If for sweet potatoes, he made mounds for them and for taro too, on some places on Hawai'i. (Handy and Handy 1972:131)

### 3.3.3 Population in Kekaha

Early missionary residents made the first estimates of the population of the North Kona District. Asa Thurston estimated a population of not less than 20,000 people along a 30-mile stretch of the Kona coast. These residents were clustered on the coast, but some families also lived in a habitation belt about 2 miles inland (Kelly 1983:14). A formal census was conducted in 1832, and 12,432 people were recorded for the district of Kona. By 1835, this number had declined to 5,957. By 1853, the number had dropped to 2,210 (Schmitt 1973:21, 29, 31). The missionary, William Ellis (1976:32), visited the Kona area in 1822 and noted deserted villages and abandoned fields "everywhere to be met with."

Missionary censuses of the 1830s also chart the diminishing population of Kekaha. In 1834, the total population of Kekaha is recorded as 1,244, comprising 21% of the total North Kona population of 5,957 (Schmitt 1973:31). The North Kona figure represents a population loss of 692 since the previous census of 1831 (during which no figure specific to Kekaha was noted),

which recorded 6,649 persons in the district (Schmitt 1973:9). One factor - inter-island migration - inducing the diminishing population of Kona was specifically noted by missionaries in 1832:

We have been sensible for some time that the number of inhabitants in this island is on the decrease. There is an almost constant moving of the people to the leeward islands, especially since the removal of the governor (Kuakini) to Oahu. Some leave by order of the chiefs, and others go on their own responsibility.” (cited in Schmitt 1973:16)

The movement of people from Hawai'i Island to O'ahu and Kaua'i, in particular, was also related to economic opportunities to own land or work for money in the so-called “leeward islands.”

William Ellis also described Kailua Bay, the coastal area to the south of the current project area as follows:

The houses which are neat, are generally erected on the sea-shore, shaded with cocoa-nut and kou trees, which greatly enliven the scene. The environs were cultivated to a considerable extent: small gardens were seen among the barren rocks on which the houses were built, wherever soil could be found sufficient to nourish the sweet potato, the watermelon, or even a few plants of tobacco, and in many places they seemed to be growing literally in the fragments of lava, collected in small heaps around their roots (Ellis 1976:31).

The middle 19th century brought great changes to North Kona, including private and public land ownership laws known as the Māhele (literally, ‘to divide’ or ‘to section’) and commercial ranching. Ranching, in particular, established the region as a source of market resources (e.g., beef and dairy products) for Honolulu and beyond.

Coulter's (1931) population density estimates for 1853 (Figure 10) show that a few hundred people lived in the vicinity of the present project area during the mid 1800's. However, many sources of information—including archaeological survey data, historical documentation, and oral-historical information—suggest the main areas of settlement were likely along the coast and upcountry above the present project area. It is likely that the present project area was never a location of dense permanent settlement.

As Cordy et al. (1991) note about Kaloko: “The historical documents suggest that by the 1840s-1850s, the Coastal Zone had been abandoned as a residential area, except probably for a house used by the fishpond's caretaker. This pattern would have been a stunning change from prehistoric and early historic times, when many coastal residences were present” (Cordy et al. 1991:288). This pattern likely also held for other ahupua'a in the Kekaha area.

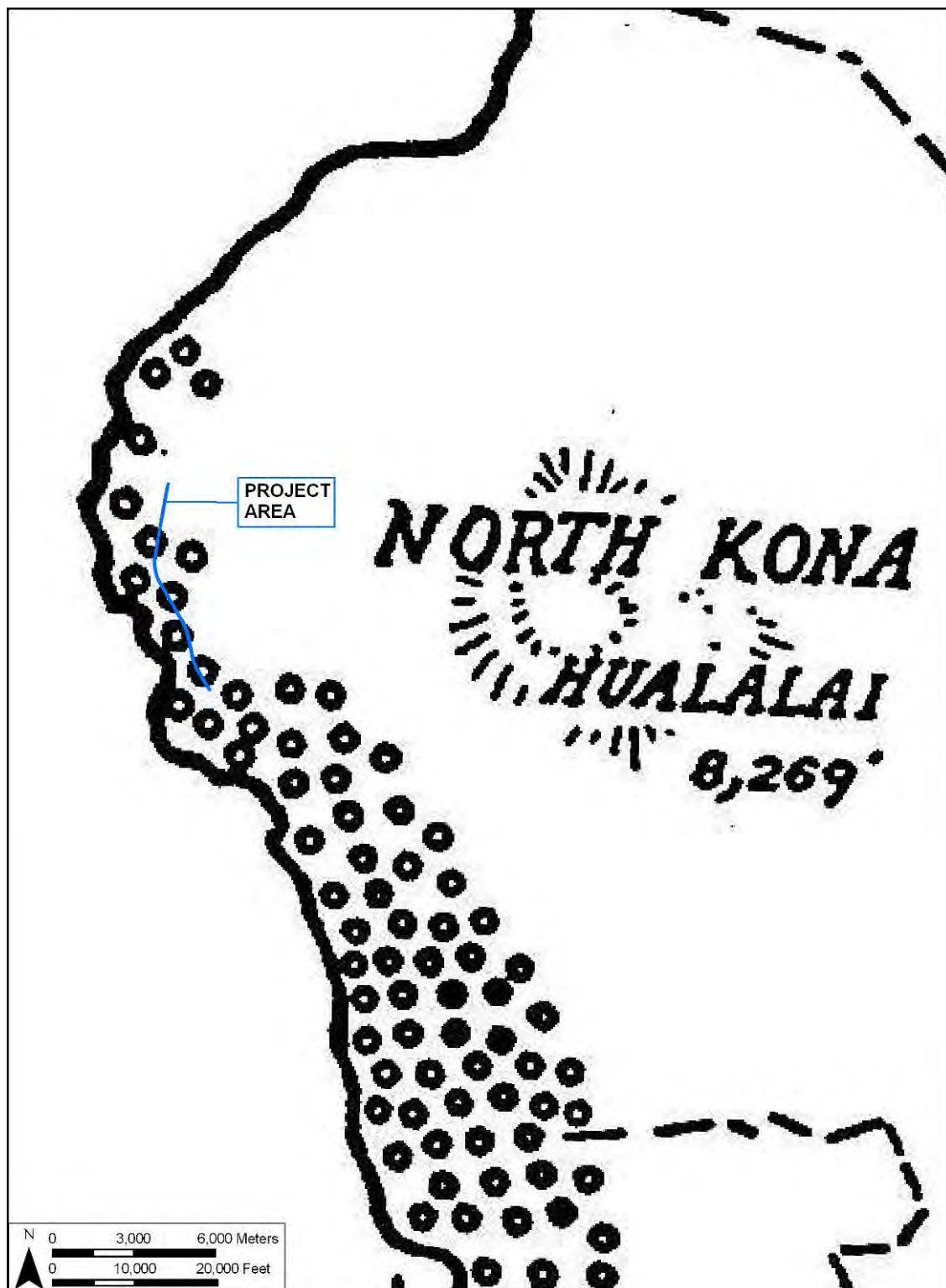


Figure 10. Coulter's (1931) population estimates for 1853 in and around the project area (each symbol represents 50 people)

### 3.4 1848-1852 Māhele Data

In the middle 19<sup>th</sup> century, during the time of Kamehameha III, a series of legal and legislative changes were brought about in the name of 'land reform' (see the works of Jon Chinen 1958, 1971 for a thorough and well-written explanation). Previous to the Māhele, all land belonged to the *akua* (gods), held in trust for them by the paramount chief, and managed by subordinate chiefs.

Following the enactment of a series of new laws from the middle 1840s to middle 1850s, Kamehameha III divided the land into four categories: certain lands to be reserved for himself and the royal house were known as Crown Lands; lands for the government were known as Government Lands; lands claimed by *ali'i* and their *konohiki* (supervisors) were called Konohiki Lands; and, small plots claimed by the *maka'āinana* were called *kuleana* (Chinen 1958:8-15). These claims are described in Land Commission Award (LCA) testimony from the claimant and witnesses. A Royal Patent (R.P.), which quitclaimed the government's interest in the land, was issued on most Land Commission Awards (Chinen 1958:14). In some cases, more than one R.P. number was issued for a LCA, especially in cases where there were several widely separated 'āpana (lots), such as an award with agricultural land in one *ahupua'a* and a house lot in Kailua town.

The chiefs and *konohiki* were required to pay a commutation fee for their lands, usually about one-third of the value any unimproved lands. To pay the fee, the awardees usually "returned" a portion of the lands awarded to pay the commutation fee for the lands they decided to "retain." The returned lands usually became government lands (Chinen 1958:13).

In 1848, four resolutions were passed to protect the rights of the *kama'āina*, the native tenants. The resolutions authorized the Land Commission to award fee simple title to native tenants for habitation and agricultural lands that were part of Crown Lands, Government Lands, or Konohiki Lands. The lands for the common people became known as *kuleana* (tenant) awards (Chinen 1958, 1961). The Kuleana Act of 1850 allowed *maka'āinana*, in principle, to own land parcels at which they were currently and actively cultivating and/or residing. In theory, this 'set aside' of hundreds of thousands of acres as potential *kuleana* parcels ultimately led to about 10,000 claimants obtaining approximately 30,000 acres, while 252 chiefs, for example, divided up about a million acres. Many or most Hawaiians were simply disenfranchised by these acts.

In Kekaha, land claim testimonies indicate that there were relatively few native tenants that made land claims and the majority of lands became the property of the government. Of the few land claims made, however, it appears that the cultivation of traditional crops within the upper elevations (the Upland Zone), including taro and sweet potatoes, was the predominant land use activity. Only one claimant indicated the cultivation of a commercial crop (coffee). Besides a claim made for "salt lands" at Keahuolū, and several other claims made for rights to fish pond resources, there is very little indication of land use throughout the intermediate and lower elevations, including an absence of claims made for house lots on the coast.

The Māhele data from each of the subject *ahupua'a* supports what Cordy found in his study of land claims made at Kaloko, namely, that by the time of the Māhele, "the coast was virtually abandoned [and the economic focus in this area had shifted to the uplands, which may have been a non-traditional pattern in this area]" (Cordy et al. 1991:421). The following are excerpts from

previous studies which provide brief summaries of the Māhele data for each of the subject *ahupua'a*. The excerpts are direct quotes compiled from the referenced reports.

### 3.4.1 Kealakehe – Government Land

Kealakehe was awarded to Kekuapanio, a *hulumanu*, one of a group of young nobles that were the favorites of Kauikeaouli, Kamehameha II. He returned the land to the government. Twenty-three *kuleana* claims were made for Kealakehe and 11 were awarded. Table 11 gives the LCA (Land Commission Award) number, awardees, the name of the *'ili* (small land division within an *ahupua'a*) in which the award was located (if known), the Royal Patent number, and the acreage. Six *'ili* are mentioned in Māhele testimony, for which all had claims awarded.

From the eleven testimonies it was determined that claimants listed numerous cultivated parcels (*kīhāpai*) planted in taro and sweet potatoes. At least ten houses and a fair sized banana patch was situated in the uplands (Donham 1990b:B-4).

Table 11. Land Commission Award in Kealakehe

LCA	Awardee	'Ili	R.P.	Acreage
7483	Kulua	Ka'ōhia, Makakiloī'a	4040	2.6
7897	Kahuenui 2	Kukui'ōmino	4002	4.9
8608	Kaahui	Ka'ōhia, Kalihi, Pū'ohe, Kukui'ōmino, 'Ililoa	5228	3.9
9252	Kauhai	Pū'ohe, Ka'ōhia, Kani'ohale	4005	5.78
10070	Mioi	'Ililoa, Kani'ohale, Kukui'ōmino	4003	4.4
10306	Nuole	Kani'ohale	4006	5.25
10322	Nuhi	Makakiloī'a	8054	4.75
10597	Puou	Kukui'ōmino-nui, Kukui'ōmino-iki	6235	4.12
10671	Pepe	'Ililoa, Haleolono, Kukui'ōmino, Kani'ohale	4007	4.96
10692	Paai	Pū'ohu, 'Ililoa, Ka'ōhia	4004	2.8
10950	Waiwairole	Ka'ōhia, Pū'ohe	5123	2.0

### 3.4.2 Honokōhau 1-2 – Konohiki Land

Honokōhau 1, comprised of 2653 acres, was awarded to Miriam Kekau'ōnohi (LCA 11216). Honokōhau 2, comprised of 480 acres, was awarded to William Pitt Leleiōhoku (LCA 9971). Both of these awards were kept by the claimants. The *'ili* of Papa'akoko and Elepai were also awarded as a *konohiki* award to William Charles Lunailo (LCA 8559-B), who later became the sixth Hawaiian monarch, but ruled for only a year, until his death in 1874. He returned the land to the government in lieu of commutation.

In addition to the two *konohiki* awards, Hawaiian commoners made an additional 32 claims on Honokōhau lands; 12 were awarded (Table 12). Lands were claimed in 16 *'ili*, but awarded in only nine. These awards - ranging in size from 0.97 to 6.75 acres ... are located between 800 and

1680 feet [elevation]. Only two of the testimonies recorded for these awards mentioned specific crops grown upon the awarded parcels, which include taro and potato *kīhāpai*. A house lot was claimed by only one individual (Robins et al. 1995:25).

Table 12. Land Commission Awards for Honokōhau 1-2

LCA	Awardee	Ahupua'a	'Ili	R.P.	Acreage
6026	Lanai, Ikaaka	Honokōhau 2	Hanapouli	6787	1.0
7396	Kekipi	Honokōhau 2	Pu'u Kou	5231	3.9
7490	Polapola, Solomonā	Honokōhau 1, Honokōhau 2	'Onea, Waipi'o, Pukalani	5247	2.0
7870, 7867	Kamohai	Honokōhau 2	Waipi'o	--	1.0
7890	Kukona	Honokōhau 2	Hanapouli	7766	2.3
8218	Ikiiki	Honokōhau 2	Waipi'o	--	2.3
9061	Kanae	Honokōhau 2	Pukalani	5049	4.8
9236	Kahaulewahine	Honokōhau 1	Kaeo	--	3.2
10319	Nahina	Honokōhau 2	Haleolono	4896	3.5
10521-B	Puhiale	Honokōhau 1	Haleamāhuka	7785	6.8
10762	Ahu	Honokōhau 2	Nu'uhiwa	3743	2.2
11064	Apuni	Honokōhau 1		5326	2.5
11216:36	Kekauonohi, Mikahela	Honokōhau 1	Ahupua'a Award	7587	26.5
9971	Leleiohoku, William P.	Honokōhau 2	Ahupua'a Award	6855	480.0

### 3.4.3 Kaloko – Konohiki Land

Kaloko was awarded and kept by Lot Kamehameha (LCA 7715), who later ruled Hawai'i as Kamehameha V. A total of 21 additional claims of land were made in Kaloko, and 12 were awarded (Table 13). Fifteen 'ili names are mentioned in Māhele testimony, but lands were awarded in only twelve.

Kelly (1971) noted that all 12 commoner or *kuleana* awards were located within the Upland Zone, between 1200-1700 feet elevation. Actual crops grown in the claims fields are mentioned in only six claims. Taro predominated, although two sweet potato plots were claimed and eight mixed taro, and sweet potato plots. House lots were claimed in only two of the eighteen cases, which is extremely unusual. In sum, housing data are extremely poor for this period (Cordy et al. 1991:411, 415).



Table 13. Land Commission Awards in Kaloko

LCA	Awardee	‘Ili	R.P.	Acreage
7797	Kamohoalii	Kikahala, Ulaiui	3972	5.3
7909	Kamaole	Makaawe, Hale‘ape	5377	7.0
9060	Kioku	Ulukukahi	4012	4.0
9160	Kanu	Kanaio	6938	2.5
9237	Kahiona	Oloupe	--	2.8
9238	Kahooohanohano	Pāpua‘a	3316	1.8
9241	Kaiama	Kealaehu, Luahine‘eku, Haleolono	3772	4.3
9242	Keaweahokina	Kikahala, Kealaehu	3744	2.8
9243	Kaleiko	Kealaehu, Luahine‘eku, Haleolono	3786	1.8
10327	Nahuina	Hale‘ape	3891	3.5
10694	Puhi	Kiki	3763	3.5
10951	Wahahee	Kealaehu, Kikahala	5095	2.0
<b>7715</b>	<b>Kapuaiwa, Lota</b>	<b>Ahupua‘a Award</b>	<b>8214</b>	<b>4320.0</b>

### 3.4.4 Kohanaiki – Government Land

Kohanaiki was awarded to Asa Ka‘eo, the uncle of Kekau‘ōnohi, a granddaughter of Kamehameha I and one of the wives of Kamehameha II. He returned the land to the government. Commoners claimed two LCA parcels in Kohanaiki, but neither was awarded.

The entire *ahupua‘a* of Kohanaiki was classified as Government Lands (Board of Commissioners 1929). Because of this, no testimony can be found on this land by any of the natives wishing to testify for *kuleana* lands. Instead, parcels of the land were later sold by the government to raise money (Lehua Kalima, in O'Hare and Goodfellow 1992:A-12).

### 3.4.5 ‘O‘oma 1-2 – Government Land

Kauikeaouli, the future King Kamehameha II, was born and lived in his early childhood at ‘O‘oma. He originally claimed the land of ‘O‘oma as his own land, but returned it to the government for further claims. Kamakau (1961:264) notes:

Ka-iki-o-‘ewa became the boy’s guardian and took him to rear in an out-of-the-way place at ‘O‘oma, Kekaha. . . .Here at ‘O‘oma he was brought up until his fifth year, chiefly occupied with his toy boats rigged like warships and with little brass cannon loaded with real powder mounted on [their] decks.

In the Māhele, ‘O‘oma 1 was awarded as a *konohiki* award to Moses Kekūāiwa, while ‘O‘oma 2 was awarded to an *ali‘i* named Kekaha. Moses Kekūāiwa was the brother of the future

Kamehameha IV and Kamehameha V; he died of the measles at the age of 19. Both Kekūāiwa and Kekaha returned these awards to the government to pay the commutation fee for lands they decided to keep. Commoners claimed five *kuleana* awards in 'O'oma, but only three were granted (Table 14).

Table 14. Land Commission Awards in 'O'oma

LCA	Awardee	'Ili	R.P.	Acreage
8245-B	Kiekie	'O'omakaa	--	3.2
8059	Naiwi	'O'omakaa	3950	4.4
11004	Waa	'O'omakaa	5433	4.8

### 3.4.6 Kalaoa 1-5 – Government Land

Kalaoa was divided into five sections: Kalaoa 1 was awarded to Emilia Keaweamahi, Kalaoa 2 was awarded to Kinimaka, Kalaoa 3 was awarded to Hapakuka Hewahewa, Kalaoa 4 was awarded to William Pitt Leleiōhoku, and Kalaoa 5 was designated government land. The awardees of Kalaoa 1 to 4 all returned their lands to the government as commutation fees. Emily Keaweamahi was the wife of Kaikio'ewa, an early supporter of Kamehameha I. He became governor of Kaua'i in 1825, and was succeeded at that post by his wife after his death in 1839. Kinimaka was a high *ali'i* who became the *makua hānai* (adopted father) of the future King Kalākaua (Barrère 1994:367). Hewahewa was the last high priest of the Hawaiian *kapu* [tabu] system and had been the *kahuna* of Kamehameha I and Ka'ahumanu, before he became an early Christian convert. Leleiōhoku was the brother of two Hawaiian monarchs, King Kalākaua and Queen Lili'uokalani.

Twelve Hawaiians claimed *kuleana* lots in Kalaoa, but only two were awarded (Table 15), both in Kalaoa 5. A series of Grants were issued in the *ahupua'a* from 1852-1864 -- evidently commoners acquiring lands. All these awards were in the upland forest zone from the 800 to 2200 foot elevations ... they would seem to be agricultural parcels (Cordy 1985:35).

Table 15. Land Commission Awards for Kalaoa

LCA	Awardee	'Ili	R.P.	Acreage
7899	Kiekie	Kalaoa 5	--	4.9
7937	Kupuo	Kalaoa 5	--	5.8

### 3.5 Late Nineteenth and Early Twentieth Centuries

Following are selections from previous studies that summarize the historical developments that occurred within Kekaha and selected portions of the Kekaha region:

#### 3.5.1 Early Historic Period

By the first decades of the 19th century, the inhabitants of Kekaha would have long experienced the social pressures and consequences of western contact. “As early as 1788, Hawaiians began enlisting as seamen on the foreign ships that stopped at Island ports, and their number increased rapidly with the growth of whaling in the Pacific” (Schmitt 1973:16). As harbor facilities were developed at Kailua and Kealahou during the early 1800s, these burgeoning ports became centers of a population drawn from increasingly isolated (economically and socially) areas like Kekaha. Newly-introduced diseases decimated the population.

Missionary censuses of the 1830s chart the diminishing population of Kekaha and North Kona. In 1834, the total population of Kekaha is recorded as 1,244, comprising 21% of the total North Kona population of 5,957 (Schmitt 1973:31). The North Kona figure represents a population loss of 692 since the previous census of 1831 (during which no figure specific to Kekaha was noted), which recorded 6,649 persons in the district (Schmitt 1973:9). One factor - inter-island migration - inducing the diminishing population of Kona was specifically noted by missionaries in 1832: “We have been sensible for some time that the number of inhabitants in this island is on the decrease. There is an almost constant moving of the people to the leeward islands, especially since the removal of the governor (Kuakini) to Oahu. Some leave by order of the chiefs, and others go on their own responsibility” (cited in Schmitt 1973:16).

By the end of the 1800s, land use in North Kona had undergone significant alterations from the dryland cultivation and fishing practiced during prehistoric (pre-Contact) and proto-historic times. Maly (1994) summarizes the gradual replacement of Hawaiian lifestyle in this area as the result of two major factors: the 1801 eruption of Hualālai, and changing land use patterns over the last 150 years. The lava flows from Hualālai reclaimed much of the land used for settlement, agriculture and fishponds; reducing the land to a shadow of its former condition. Introduction of foreign plants and animals brought about additional changes, as once barren lava fields became overgrown with *kiawe* and other weedy shrubs, and goat and cattle raising became a mainstay of local industry. The 1850s saw the development of large-scale commercial ranching and agriculture as a result of the shift to private land ownership brought about by the Māhele and an 1850 law permitting foreigners to own land. Coffee, grazing land, tobacco and sugar cane gradually replaced traditional crops such as taro and ‘*uala*; stripped the land of forests, and caused disruption of the water catchment systems ...

Today, the upland and intermediate zones are covered with coffee plantations, housing developments, and light industry. On the coast are the Keāhole Airport and the Natural Energy Laboratory. The coast has not been utilized for permanent human habitation since the 1801 lava flow (Henry et al. 1993:50).

### 3.5.2 Mid- to late-1800s

The middle nineteenth century brought great changes to North Kona, including private and public land ownership laws known as the *Māhele* (literally, 'to divide' or 'to section') and commercial ranching. Ranching, in particular, established the region as a source of market resources (e.g., beef and dairy products) for Honolulu and beyond.

Coulter's (1931) population density estimates for 1853 (see Figure 10) show that a few hundred people lived in the area during the mid 1800's. However, many sources of information—including archaeological survey data, historical documentation, and oral-historical information—suggest the main areas of settlement were likely along the coast and upcountry above the present project area. It is likely that the present project area was never a location of dense permanent settlement.

Oral history interviews (Maly and Maly 2002) relate that in the mid 1800s only a few residences were on the coastal lands, in the uplands above 900 ft. elevation, and in the vicinity of Māmalahoa Highway (east of the project area). The land between 900 ft. and the coast was cattle, donkey, and goat pasturage. *Mauka/makai* trails through Kohanaiki, Kaloko, Kalaoa, and Honokōhau were utilized by upland families to access the coast to fish, and gather water during upland droughts.

Despite these major changes, there were apparently still many people living in the area in the later 19<sup>th</sup> century, as indicated by the following extended testimony of J.W.H.I. Kihe, who was born at Honokōhau in 1854. Kihe talked about the area in 1870:

Now [1924] the majority of those people are all dead. Of those things remembered and thought of by the people who yet remain from that time in 1870; those who are here 53 years later, we cannot forget the many families who lived in the various ('āpana) land sections of Kekaha. From the lands of Honokōhau, Kaloko, Kohanaiki, the lands of 'O'oma, Kalaoa, Haleohiu, Makaula, Kau, Puukala-Ohiki, Awalua, the lands of Kaulana, Mahaiula, Makalawena, Awakee, the lands of Kukio, Kaupulehu, Kiholo, Keawaiki, Kapalaoa, Puuanahulu, and Puuwaawaa. These many lands were filled with people in those days.

There were men, women, and children, the houses were filled with large families. Truly there were many people [in Kekaha]. I would travel around with the young men and women in those days, and we would stay together, travel together, eat together, and spend the nights in homes filled with aloha. The lands of Honokōhau were filled with people in those days, there were many women and children with whom I traveled with joy in the days of my youth. Those families are all gone, and the land is quiet. There are no people, only the rocks remain, and a few scattered trees growing, and only occasionally does one meet with a man today (1924). One man and his children are all that remain.

Kaloko was the same in those days, but now, it is a land without people. The men, the women, and the children are all gone, they have passed away. Only one man, J.W. Haau, remains. He is the only native child (*keiki kupa*) besides this author, who remains. Now the land is desolate, there are no people, the houses are quiet.

Only the houses remain standing, places simply to be counted. (Maly and Maly 2002:341-342)

Another native familiar with the area, J.P. Pu'uokupa, wrote a letter to the Hawaiian language newspaper *Ku Okoa* in 1875, reacting to (and disagreeing with) an earlier letter describing supposed famine-like conditions in the area:

...The people who live in the area around Kailua are not bothered by the famine. They all have food. There are sweet potatoes and taro. These are the foods of these lands. There are at this time, breadfruit bearing fruit at Honokōhau on the side of Kailua, and at Kaloko, Kohanaiki, 'O'oma and the Kalaoas where lives J.P. [the author]. All of these lands are cultivated. There is land on which coffee is cultivated, where taro and sweet potatoes are cultivated, and land livestock is raised. All of us living from Kailua to Kalaoa are not in a famine, there is nothing we lack for the well being of our bodies.

Mokuola (a poetic reference to a place of life and well-being) is seen clearly upon the ocean, like the featherless back of the ukeke (shore bird). So it is in the uplands where one may wander gathering what is needed, as far as Kiholo which opens like the mouth of a long house into the wind. It is there that the bow of the boats may safely land upon the shore. The livelihood of the people there is fishing and the raising of livestock. The people in the uplands of Napuu are farmers, and as is the custom of those people of the backlands, they all eat in the morning and then go to work. So it is with all of the native people of these lands, they are a people that are well off...

...As was said earlier, coffee is the plant of value on this land, and so, is the raising of livestock. From the payments for those products, the people are well off and they have built wooden houses. If you come here you shall see that it is true. Fish are also something which benefits the people. The people who make the pai ai on Maui bring it to Kona and trade it. Some people also trade their poi for the coffee of the natives here... (J.P. Puuokupa, in *Ku Okoa* November 27, 1875; translated by Maly, in Maly and Maly 2002:339)

### 3.5.3 Kealakehe

As government lands, portions of Kealakehe Ahupua'a were subdivided as the Kealakehe Homesteads for purchase by homesteaders for residential development. Following the passage of the Hawaiian Homes Commission Act in 1921, portions of Kealakehe were designated Hawaiian Homelands, "...for the benefit and use of native Hawaiians, upon which they may live, farm, ranch, and otherwise engage in commercial or industrial or any other activities."

### 3.5.4 Honokōhau

Clues to the life of the two Honokōhau Ahupua'a come to light in records of the 1873 Commission of Boundaries (Boundary Commission) proceedings concerning the *ahupua'a*.

J.O. Dominis, agent for Ruth Ke'elikōlani (widow of William Pitt Leleiōhoku), had petitioned a hearing by the commission "for the settlement of the boundaries of the land of Honokōhauike

[i.e., Honokōhau II] situated in North Kona Island of Hawaii." Three witnesses, all native Hawaiians familiar with the *ahupua'a*, gave their testimonies on August 12, 1873. The testimonies contain many place names no longer indicated on modern maps. These place names are associated with land features and constructions which hint at the once thriving traditional Hawaiian life once occurring within the *ahupua'a*. The testimony of Hoochia suggests how intricately and usefully known the land was by its inhabitants:

Commencing at the sea shore the boundary between Honokohaunui and Honokōhauike is at a place called Kuanawai said place is in the water, thence up the sand beach to a place called Pohakuhaiku a heiau on the pāhoehoe, from thence the boundary runs to Puumau an ai aina or ahua, an old resting place where a koa tree used to stand at a crook on the road thence up the iwi aina to Keauakaluapuaa a cave, thence to Ulukukahi a breadfruit tree thence to an ohia tree called Ohia kaumaia thence up the iwi aina to Kuakahela a lae ohia fruit trees, thence to Mumuku a breadfruit tree on the North Side. From Kuakahela the trail runs mauka along the boundary from Mumuku through Ikuana, an old kulana kauhale, and along the road, mauka to Kapiopio punawai, thence the boundary runs up mauka along the iwi to Kumumanaike a water hole and bathing place. (The Government road is mauka of Mumuku.) From Kumumanaike the boundary runs to ma Laiula, a banana grove in the edge of the ohia woods; where Honokōhauunui and Kealakehe unite thereby cutting Honokōhauike off. There turn makai along Kealakehe to Waiha a punawai at the old kulana kauhale below the woods, thence makai along the iwi aina to Waiopapa, a punawai and ahua above the Government road, where you can look out to sea. Thence makai to Kaneopua an ai aina on the boundary, below the Govt. road, at the junction of ...[?] boundary of Kealakehe and Honokōhauike. Thence makai to Kukanoonoo, an old kulana kauhale...thence makai to Kukuipualoa an ahua pohaku (resting place) coming to the aa. Thence to Kahawai aina, a mahina ai in aa, thence makai to Puunoho on the pāhoehoe, said place is an ahua thence to Pāhoehoea, still on pāhoehoe, thence makai to Maliu a lae. the sea bounds the land makai; and there is a very small fishing right cut off by the sea of Kealakehe and Honokōhauunui.

Noteworthy in these boundary commission testimony are the references to the two old *kūlana kauhale*" (literally, a plurality of houses; hamlet, village, or residential cluster; See Pukui & Elbert 1984), named Ikuana and Kukanoonoo, the three *pūnāwai* (water spring), and the "water hole and bathing place" Kumumanaike, all features of the *ahupua'a's mauka* portion. Also, in the *makai* portion of the *ahupua'a*, the *heiau* identified as Pohakuhaiku may correspond to the unnamed heiau recorded approximately 500 feet inland from the coast and in the vicinity of the *ahupua'a* boundary during an archaeological survey (Emory and Soehren 1971) of the coastal region. Also mentioned is a *heiau* named Halekuo between the Government Road and the sea which informant Kamohai described as the wall above the school house and a few sentences later as a heiau..

Early twentieth century maps and photographs show a village along the coast of Honokōhau comprising frame houses, a chapel and schoolhouse. No records were uncovered documenting dates of construction for these structures. Apparently, by the 1920s the village had been

abandoned. Most Hawaiians moved to the uplands, where another schoolhouse had been established by at least 1888, as it papers on the 1888 Emerson map (see Figure 6).

In summary following the Māhele (ca. 1850s), the Intermediate and Upland Zones of the Honokōhau area were ultimately abandoned, as suggested by Boundary Commission and Land Court Award records. As a result, the vacant lands were subsequently acquired for cattle ranching and portions leased for commercial cultivation of coffee and fruit by Japanese immigrants. By the 1920s to 1930s the Coastal Zone of Honokōhau I and II was virtually vacant, with settlement associated with ranching and coffee farming centered primarily along the mauka roads, as it is today. (Robins et al. 1995:149)

### 3.5.5 Kaloko

The historical documents suggest that by the 1840s to 1850s, the Coastal Zone had been abandoned as a residential area, except probably for a house used by the fishpond's caretaker. This pattern would have been a stunning change from prehistoric (pre-Contact) and early historic times, when many coastal residences were present (Cordy et al. 1991:288).

By the 1870s and 1880s, housing does seem to have become focused in the Upland Zone at the Kohanaiki Homesteads and with some scattered houses across Kaloko along the Road to Kailua and the upper Government Road. A Catholic Church is shown on the Emerson map of 1888 (see Figure 8), which would have drawn families to settle nearby. Cultivation may have been shifting to cash crops (coffee), and ... small-scale livestock raising may have been taking place.

During the 20th century, major developments focused on Kaloko Ahupua'a (just north of Honokōhau), with continuing commercial use of the fishpond and increasing animal husbandry. Ranching steadily increased with the development of the *ahupua'a* uplands into the Hu'ehu'e Ranch. Maly and Maly (2003:78) discuss the acquisition of these lands and the types of ranching that were common:

In 1899, John A. Maguire, founder of Huehue Ranch applied for a Patent Grant on... lots in 'O'oma 2nd, but he only secured Grant No. 4536.... Maguire's Huehue Ranch did secure General Lease No.'s 1001 and 590 for grazing purposes on the remaining government lands in the Kohanaiki and 'O'oma vicinity. Thus, by the turn of the century, Huehue Ranch, utilized both the upper forest lands and lower kula lands to the shore for ranching purposes. Oral history interviews with elder former ranch hands record that this use extended across the Kapena and Huliko'a grant lands of Kohanaiki, from the fee and leasehold lands of Kaloko and 'O'oma. Nineteenth century goat drives, gave way to formalized cattle drives and round ups on these lands.

Until the construction of the Queen Ka'ahumanu Highway in the 1970s, access to the "kula kai (shoreward plains)" was limited to local residents (Maly and Maly 2003:101). The 1924 U.S. Geological Survey map shows "the road to the sea" connecting the Kohanaiki Homesteads with the Kaloko fishpond. In the first half of the 20th century, the primary method of travel was "by foot or on horse or donkey, and those who traveled the land, were almost always native residents



of Kalaoa, 'O'oma, Kohanaiki, Kaloko and Honokōhau" (Maly and Maly 2003:99). Hu'ehu'e Ranch bulldozed a jeep road to the shore around 1955 during the construction of the Kailua pier, and this was used primarily by the ranch employees for duties or for going fishing along the coast.

The Kaloko fishpond - leased from the Hu'ehu'e ranch - continued as a commercial fishing operation until the 1950s. During the 1970s, the pond was incorporated into the newly-established Kaloko-Honokōhau National Historical Park.

### 3.5.6 Kohanaiki, 'O'oma, and Kalaoa

Kohanaiki, 'O'oma, and Kalaoa were all designated government lands during the Māhele. The government began to sell this land to native tenants as early as 1852. The 1888 map of the Kona Coast by J. S. Emerson (see Figure 8) shows the dense concentration of land grants purchased near the upper Belt Road (Māmalahoa Highway) in the Kona region. One of these clusters was in Kohanaiki, where a small settlement grew up around a Protestant church built in the 1870s (Kelly 1971:14). The land could also be leased, such as the lower *kula* (pasture, drylands) lands (including the present project area), which were used as grazing lands for goats and cattle. To encourage more native tenants to buy or lease lands, the Hawaiian Kingdom established the Homestead Act in 1884. Government lands from Kohanaiki north to Kūki'o were set aside for these homesteads, and 20-acre lots were leased, mainly adjacent to Māmalahoa Highway in the uplands. King Kalākaua gave up his lands in Kekaha in 1889 to increase the amount of land available for homesteads. Besides the smaller lots, large tracts were also leased for cattle ranches, such as the Huehue Ranch in Kealakehe. Ranching

Ranching has its roots in this early historic period with the introduction of goats, cattle, and horses by sea captains who sought to develop these resources to replenish their ship holds during long journeys. Captain George Vancouver gave Ke'eumoku, an *ali'i*, a pair of goats in 1792, and the following year, he brought Ke'eumoku four sheep. Vancouver also brought the first cattle, California longhorns, to Kamehameha I in 1793. Kamehameha issued a *kapu* (in this case, a prohibition) that carried the death penalty to anyone harming cows or cattle thus ensuring that the first herds would proliferate. The *kapu* was enforced for 10 years. Due to the *kapu*, families constructed walls to protect their sweet potato and taro lands from the cattle. Kamehameha ordered the construction of a wall, *mauka* of the project area, that ran from north to south Kona, to prevent cattle from destroying populated areas (Bergin 2004:22-23). Historical research suggests that both goat and cattle grazing took place within the project area.

In 1803, horses were introduced, and they also ran free although no *kapu* protected them. Horses had difficulties acclimating to local grasses, and herds of feral horses were rare until the 1830s. At that time, Kamehameha III had California *vaqueros*, cowboys of Native Californian, Spanish, and Mexican descent, brought to Hawai'i to herd the cattle and teach Hawaiians to ride horses and tend the cattle. The *paniolo*, as they were called, were expert horsemen and able to chase down the wild cattle on horseback and capture them with a lasso. The hide and tallow trade proved to be successful and cattle were shipped from Kailua Bay to slaughterhouses on O'ahu. In 1851, it was estimated that Hawai'i Island had 8,000 head of tame cattle and 12,000 head of wild cattle (Kelly 1983:79; Bergin 2004:23, 97).

Historic documents related to the Government Homestead Program of the late 1880s indicate officials determined that goats were the only animals that were adept at grazing within arid, rocky Kaloko and Kohanaiki (Maly and Maly 2003:76, 79). Goats were present in the area prior to the late 1880s and may have been present within the project area. Limited cattle ranching was practiced at the same time, although by 1900, cattle ranching had for the most part replaced the goats (Maly and Maly 2003:75).

Cattle were first introduced to the island of Hawai'i by George Vancouver in 1793. Kamehameha I, to give the cattle a change to reproduce and increase, put a 10-year protective taboo (kapu) on cattle and they flourished with no natural enemies. But by 1803, roaming wild cattle began to destroy homes, gardens, and orchards. To respond to this destruction, Kamehameha I hired bullock hunters to kill cattle. For a while cattle hides and fat or tallow were a new island industry. The residents in areas where cattle roamed freely, responded by either abandoning land or building stone walls to keep cattle out of the cultivated areas and away from their houses and sheds. These new walls were built higher than had previously been customary, in order to keep the cattle from eating the thatched roofs (Lynn J. Martin, editor 1987) and *Aloha Cowboy* (Cowan-Smith, Virginia and Bonnie Domrose Stone (1998)

In 1803, because of the increased value of cattle and the need to control them, Kamehameha III brought in vaqueros (cowhands or cow handlers of Mexican, Indian and Spanish descent) to train Hawaiians in the handling of horses and cattle. Horses first arrived in Hawai'i in 1803, brought by Richard Cleveland. The Hawaiians and others who learned from these vaqueros became cowboys well before many in the Western United States (Martin 1987:20). Actual early cattle ranching began about 1820 but took a long time to develop.

The development of cattle ranching, as with sugarcane plantations, was most changed during the Māhele (1848) laws which for the first time in Hawai'i, allowed for the ownership of land, and for the foreign-born settlers to own land. Fences and corrals were built in the vast tracts of formerly open land to contain the captured cattle, and then foreign stock was brought in for breeding. Once the fences and corrals were built, they needed to be maintained, and this was one of the many regular tasks of the Hawaiian paniolo in addition to the more occasional cattle round-ups and shipping to slaughter houses (Strazar in *Ranching in Hawai'i* 1987: xiv-xv).

In the northern section of the project area, in 'O'oma, Kohanaiki, and Kaloko, upland areas were developed into cattle ranches by the turn of the century. Maly and Maly (2003:78) discuss the acquisition of these lands and the types of ranching that were common:

In 1899, John A. Maguire, founder of Huehue Ranch applied for a Patent Grant on... lots in 'O'oma 2nd, but he only secured Grant No. 4536.... Maguire's Huehue Ranch did secure General Lease No.'s 1001 and 590 for grazing purposes on the remaining government lands in the Kohanaiki and 'O'oma vicinity. Thus, by the turn of the century, Huehue Ranch, utilized both the upper forest lands and lower kula lands to the shore for ranching purposes. Oral history interviews with elder former ranch hands record that this use extended across the Kapena and Huliko'a grant lands of Kohanaiki, from the fee and leasehold lands of Kaloko and 'O'oma. Nineteenth century goat drives, gave way to formalized cattle drives and round ups on these lands.

In the southern section of the project area, the *mauka* portions of Honokōhau I and II during the last quarter of the nineteenth century and throughout the twentieth century focus on the activities of the Greenwell family. Henry Nicholas Greenwell, an Englishman, had arrived on Hawai'i island during the 1850s and soon began purchasing and leasing land. After starting out growing oranges, Greenwell would expand his commercial interests to coffee and sheep and cattle raising. The lands of Honokōhau apparently became a part of Greenwell's holdings sometime between the 1870s and his death in 1891. During the twentieth century, the Greenwell Ranch lands of Kona were divided into three units with the Honokōhau holdings becoming the Frank Greenwell Ranch, named for a son of Henry N. Greenwell who had managed that section. A 1929 publication described the Frank Greenwell Ranch:

This...is also known as Honokōhau Ranch and Hualalai Ranch. The total area is about 20,000 acres, one-half of which is suitable for grazing; it stretches from the sea to an elevation of 5400 feet. Four thousand acres of this area are fee simple, the remainder is leased land.

The herd on this ranch is approximately 1500 head. Between 300-350 cattle averaging three to four years of age with an average weight of 525 pounds are marketed annually in Honolulu. In addition ninety head are annually slaughtered locally. The cattle for Honolulu are loaded at Napoopoo. The ranch is well fenced into fifteen paddocks by 20 miles of stone wall and 12 miles of wire fencing.

The ranch now carries 9 Hereford and 3 Shorthorn bulls. Cattle are bred from June to February. From November to April only about one-half of the paddocks are used, the others being too dry over these months. September is perhaps the wettest month in Kona. Only enough horses for use on the ranch are raised. (Henke 1929: 26-27)

The Frank Greenwell Ranch subsequently became the Palani Ranch Company. According to information provided by the company, Palani Ranch in modern times has carried over 3000 head of Angus and Hereford cattle per year.

James M. Greenwell, grandson of H.N. Greenwell and son of Frank Greenwell, provided details of his family's life in Kona and, more specifically, at Honokōhau [personal communication 9/14/92]. Mr. Greenwell recalled that dairy cattle ranching on Henry N. Greenwell's Kona lands began in the 1870s at the time when the first Portuguese immigrants arrived in Hawai'i. Henry N. Greenwell formed partnerships with Portuguese families in which the families would live on Greenwell's land and turn out dairy products.

Mr. Greenwell remembered that his father Frank planted mango and other introduced trees on portions of the Honokōhau ranch property. Some of these trees were protected by individual surrounding walls.

Mr. Greenwell noted that, sometime early in this century, a paddock of the ranch below Palani Road within the northeast portion of the present project area was leased to the Kuni and Isomoto families for growing coffee. (During the present interview, Mr. Greenwell pointed out the house sites of these two families and referred to the area as "Kuni paddock".) After the collapse of the

coffee market, the families grew avocado and citrus fruit trees. Mr. Greenwell recalled that the families would build protective walls around these trees to protect them from animals.

### 3.5.7 Coffee

Mr. Greenwell's reference to coffee growing by Japanese families brings to light another commercial activity within Kekaha paralleling the development of ranching. Thomas Thrum, writing in the 1870s on the history of coffee in the Hawaiian Islands, records that coffee was first introduced "on Hawai'i, in . . . Kona, about...1828 or 9, Rev. Mr. Ruggles planting the first slips in Naole, Kona, - the property now occupied by H.N. Greenwell, Esq." (Thrum 1876: 46-47). Thrum notes that the coffee industry in Kona - the "center of [coffee] cultivation [on Hawai'i Island which] . . . both from soil and climate produces the choicest article" - subsequently expanded despite a scarcity of labor, fluctuating prices, occasional drought and blight.

Thrum mentions H.N. Greenwell again when he brings his account up to the 1870s and suggests that the burgeoning coffee industry in Kona was not based upon large plantation-type operations:

Mr. H.N. Greenwell of Kona, trader, takes great pains in his selections for the market, and any bearing his mark is a sufficient guarantee in Honolulu market of fully ripe, well dried and clean aromatic coffee. There is an idea prevalent that Mr. G. is a grower of this article [i.e. coffee], but that is erroneous. The coffee is almost wholly in the hands of the natives with little patches here and there throughout the district, who gather it in its season and dispose of the same to the stores located near them. (Thrum 1876:51)

With the influx of Japanese immigrants to the Hawaiian Islands during the second half of the nineteenth century, the cultivation of coffee at Kona would no longer be "almost wholly in the hands of the natives" though planting likely continued to be concentrated upon "little patches here and there throughout the district":

Most Japanese immigrants in Kona came from three prefectures of Japan: Kumamoto-ken, Hiroshima-ken, and Yamaguchi-ken. They were mostly sugarcane laborers and coffee farmers, and lived in Kailua, Holualoa, Kainaliu, Kealahuekua, Hōnaunau, Captain Cook, and Napoopoo. The majority of these immigrants came directly from Japan during periods of government contract or liberal immigration from 1885 to 1923. (Nakano 1990: 45)

Noboru Yamamoto, a *kama'āina* coffee grower of Kona, provided details of life in Kona during the earlier decades of this century when Japanese immigrant families were the mainstays of the coffee farming industry [personal communication 2/21/93]. Mr. Yamamoto remembers that most of the coffee farms were on leased land and ranged in size from five to seven acres. The trees were not distributed in any special order but had been planted wherever they would grow. It was only in the later 1930s, Mr. Yamamoto thinks, that he began to see farms with trees planted in straight rows. Mr. Yamamoto also noted that, after the coffee beans had been picked in the field, the beans were dried on wooden frames near the house. No drying operation took place in the field.

Mr. Yamamoto remembers both the Kuni and Isomoto families of Honokōhau. He believes that all members of the Kuni family who had operated the Honokōhau farm are presently deceased. He believes that one member of the Isomoto family survives today.

During the second half of the present century, developments beyond ranching and coffee have occurred within Honokōhau. These include the establishment of the Kaloko-Honokohau National Park at the coast, of an industrial park *mauka* of Queen Ka'ahumanu Highway, and of residential subdivisions off Māmalahoa Highway and Palani Road. The present project area, however, has continued as ranch lands and only since modern times, the *makai* portion is used as a quarry.

### 3.5.8 Trails

Based on consultation with the NPS for the current project, all the *mauka-makai* trails identified in the project area extend *makai* beyond project area limits, and most can also be traced *mauka* outside of the project area. Physical survey of the full extent of these trails outside the project area boundary (i.e., the State ROW) was beyond the scope of work for the current investigation. However, in response to NPS concerns and review comments, CSH recommends a more comprehensive treatment of trail sites—including analysis of all relevant historic Registered Map references and other documents—that can be used as a baseline for a systematic archival analysis that will place the project-area trail segments in a wider context in order to more accurately reflect their cultural and historical significance (see Section 7.2.2 Data Recovery).

CSH also includes in the subject report (see Section 5.2 Results – Site Descriptions) more detailed contextual information about the trails identified during the current archaeological survey.

The first improved cross-*ahupua'a* trails through Kekaha (inland of the coastal trail) were the *alaloa* and the *alalele*. The *alaloa* was modified in the 1840s and called the *Alanui Aupuni* (Government Road), the King's Highway, or the Māmalahoa Trail. Cordy et al. (1991:403) believes that the curb-lined Māmalahoa Trail was built between 1836 and 1855. Portions of this trail are aligned with the current Queen Ka'ahumanu Highway. The *alalele*, or Kealaehe ("path of Ehu"), extended from Kailua to the uplands of Kekaha; the current Belt Highway, or Māmalahoa Highway, is aligned with portions of this old trail. Each *ahupua'a* also had a *mauka-makai* trail, that led from the coast to the uplands. Sometimes these were mere footpaths, marked by cairns across the bare *pāhoehoe* or 'a'ā lava (Clark and Rechtman 2006a:61).

Many of these trails were improved in the mid-nineteenth century for horse or carriage traffic. The government paid for the work or used prisoners working off penalties to construct the roads, which became straighter, back from the coast, and sometimes paved and lined with stones. As the population shifted to the agricultural zone along the inland trail, the Māmalahoa trail on the lower barren shore was abandoned. By the time of J. S. Emerson's survey of homestead lands in Kekaha in 1888, the trail was noted as "Lower Govt. Road – little used" (Cordy et al. 1991:405).

The main means of transport before 1947 were by foot, and on horses and donkeys. Jeeps became available for purchase after the end of World War II, and many old *mauka-makai* trails were improved. Not all trails shown on post 1950s maps are old; for instance, the Huehue Ranch in Kealakehe blazed a new jeep trail to the Kaloko shore sometime between 1924 and the 1950s.

In 1973, the Queen Ka'ahumanu Highway opened, allowing vehicles to cross the Kekaha *ahupua'a* at the lower elevations once again (Clark and Rechtman 2006a:66).

The Hawai'i Territorial Survey and U.S. Geological Survey maps depict early trails along the Kekaha Coast. On an 1881 map (see Figure 6) of Hawai'i, only the inland cross-*ahupua'a* Belt Road (now the Māmalahoa Highway), that extends from Kailua to Waimea in Kohala, is depicted. J.S. Emerson depicts a coastal trail on an 1881 map (see Figure 7), immediately adjacent to the beach, and a *mauka-makai* trail from Kaloko fishpond to the early upper settlements at Kohanaiki near the Belt Road. This same map also depicts two other *mauka-makai* trails; one within the project area, in Honokōhau (SIHP # 18099) and another originating in Honokōhau on the south side of 'Aimakapā Fishpond and connecting with the Māmalahoa Trail in Kealakehe. This latter trail has been designated SIHP # 21588.

On a 1924 U.S. Geological Survey map (Figure 11), the only cross-*ahupua'a* trail shown is the Māmalahoa Trail (Site 50-10-27-00002). In the project area, this trail is *mauka* of, and adjacent to, the present Queen Ka'ahumanu Highway alignment in Kealakehe and in the southern third of Honokōhau, at which point it crosses the highway alignment in Honokōhau and continues on the *makai* side of the highway and the current project area. The Māmalahoa Trail extends approximately 500 meters *makai* and parallel to the alignment in Kaloko, Kohanaiki and Kalaoa, then is greater than 1000 meters inland of the highway as Queen Ka'ahumanu diverges to the northeast. The relationship of these two alignments is also shown on a 1928 Hawai'i Territorial Survey map (Figure 12).

On the 1959 U.S. Geological Survey map (Figure 13), portions of four *mauka-makai* trails that cross the Queen Ka'ahumanu Highway alignment are shown: a "Pack Trail" that extends from Honokōhau Bay southeast to join with the Māmalahoa Trail towards Kailua, a trail from 'Aimakapā Fishpond in Honokōhau that extends inland to the Māmalahoa Trail, a "jeep trail" that extends from the Kaloko Fishpond to the upper settlements at Kohanaiki near the Belt Road, and a "jeep trail" that extends from Wawālohi Beach east to the Kalaoa-'O'oma Homesteads in the uplands near the Belt Road. The "jeep trail" in Kaloko refers to a *makai* portion of the current access road to Kaloko Fishpond, a bulldozed connection to Māmalahoa Trail and Huehue Ranch Road found within Kaloko-Honokōhau NHP, and Huehue Ranch Road extending further *mauka*. The "pack trail" refers to SIHP # 21588.

The *mauka-makai* trail, generally following the border of Kohanaiki and Kaloko, was noted during J. S. Emerson's survey in 1888 (see Figure 7). Cordy et al. (1991:404) note:

Emerson's next inland station was called "Kumuohe", at 325 elevation (Emerson 1888a:75-78; 1888b). This station was a cairn (*ahu*) on an 'a'a flow. A mark (+) and cairn were placed here by Emerson (Emerson 1881:75-78). Additionally, a trail, "road", was located just south of this station within Kaloko (Emerson 1888b). "This irregular path is a continuation of the road, located from Na wahi ahu [the next inland station]" (Emerson 1888a:76-78). Emerson's map of the entire Kaloko-Kohanaiki area shows this road leading from the Kohanaiki Homestead, inland at 1,1000-1,200 feet and within Kohanaiki *ahupua'a*, down to Na Wahi Ahu (Nawahiahu), and then into Kaloko by the Kumuohe station and down to Kealiihelepo's house at Kaloko Fishpond in the d13-12 area (Emerson 1888b). (Cordy et al. 1991:404)

In Emerson's field notebooks, written in 1882, several sketches show some of these trails, the coastal foot trail, the cross-*ahupua'a* Māmalahoa Trail, the Upper Government Road (now Māmalahoa Highway), and three *mauka-makai* trails. The *mauka-makai* trails extend from the coast to the Upper Government Road from the Kealakehe shore, 'Aimakapa Fishpond at Honokōhau, and Kaloko Fishpond in Kaloko. These sketches are reproduced in Appendix A.

The trail from 'Aimakapā Fishpond at Honokōhau 1 (SIHP # 18099) is a paved curbed-lined trail that begins at the south side of 'Aimakapā Fishpond, intersects the Māmalahoa Trail, and then runs parallel to a trodden 'a'ā trail (Robins et al. 2000:23). It extends inland of the Māmalahoa Trail for approximately 10,120 feet (nearly 2 miles) reaching an elevation of 810 feet AMSL.

The Road to the Sea Trail, originating in the vicinity of Kohanaiki Village, and also known by other names such as "Trail to Sea Coast" and "Kohanaiki Road," has been documented *mauka* of the current project area by Wolforth et al. (2005) and more recently by CSH (Bell et al. 2009). The NPS has pointed out to CSH that this trail system crosses the current project area; this trail system is represented by at least three trail segments identified by CSH during the current investigation, located immediately north of Hina Lani Street. This extensive trail system has been designated SIHP # 10714 (see Section 5.2 Site Descriptions for additional details). In Figure 11 (below), it is important to note that a portion of the trail system that is not shown on the map is actually present and recognizable on the ground within the project area. CSH has designated this portion Feature A of SIHP # 10714 for the purposes of the current project.

In Kalaoa, the *mauka-makai* trail was the Alanui Kauhini, or *ka'uhini* (meaning "grasshopper"), which predated the division of the Kalaoa lands into Government Grants in 1852 (Walker and Rosendahl 1990:A-2). After World War II, a jeep road was bulldozed from Māmalahoa Highway to Keāhole Point along the alignment of the Alanui Kauhini. This jeep road was abandoned when access to the coastal lands became easier with the construction of Queen Ka'ahumanu Highway in 1937 (Walker and Rosendahl 1990:A-3).

Faint traces of these trails can be seen as thin white lines on a 1978 aerial photograph (Figure 14) of the Kona Coast. This photo also shows the limited development of the project area, with the improvements to the Honokōhau Small Boat Harbor in Honokōhau, the construction of an industrial complex on the *mauka* side of the road in Honokōhau, and the development of the new Keāhole Airport in Kalaoa.



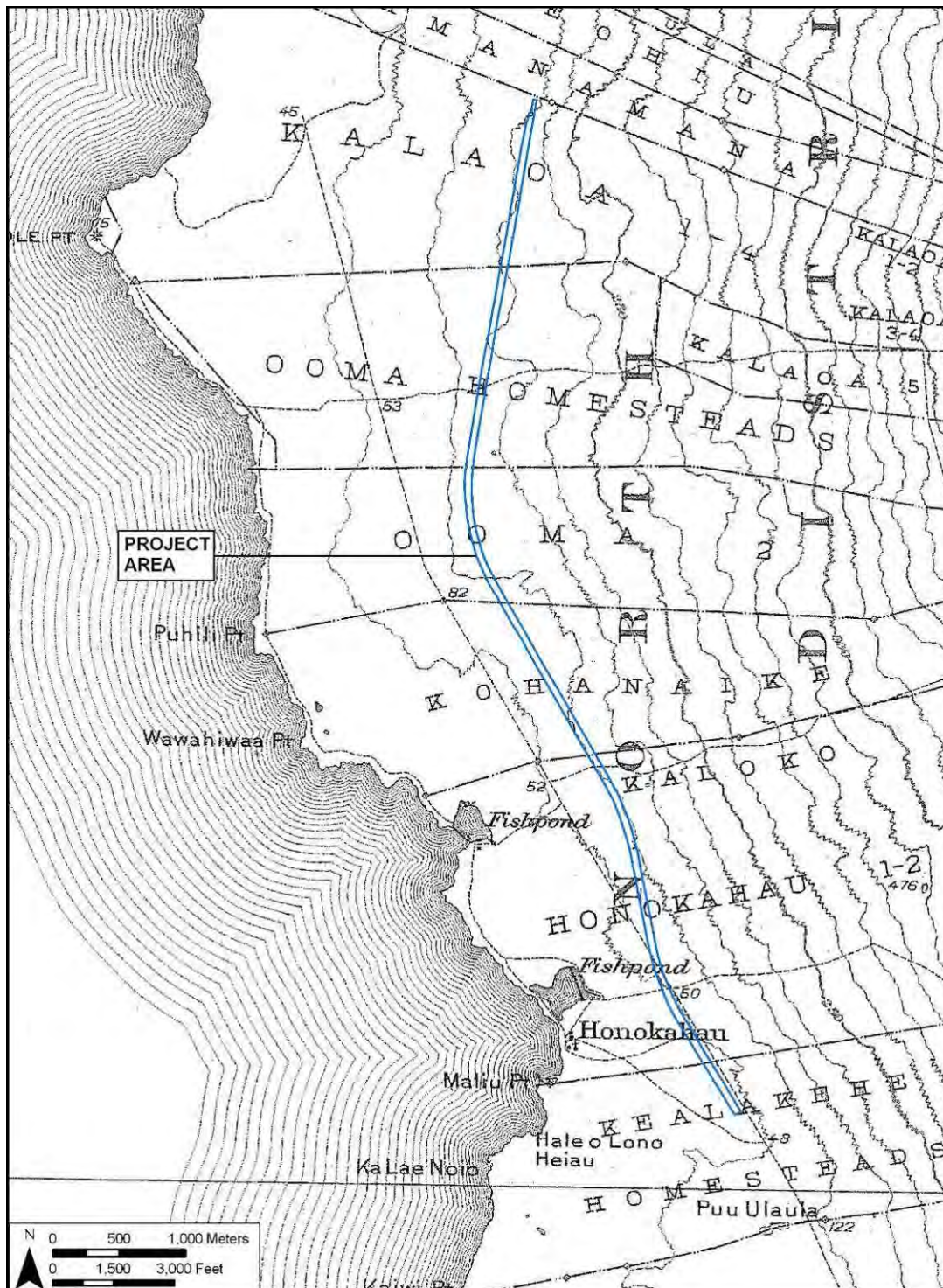


Figure 11. 1924 U.S. Geological Survey map, Keāhole Quadrangle, depicting project area; note dotted line Māmalahoa Trail crossing project area in Honokōhau; and, *mauka-makai* section of the Road to the Sea Trail connecting Māmalahoa Trail with Kaloko Fishpond (see text above for notes on the depiction of the Road to the Sea Trail)



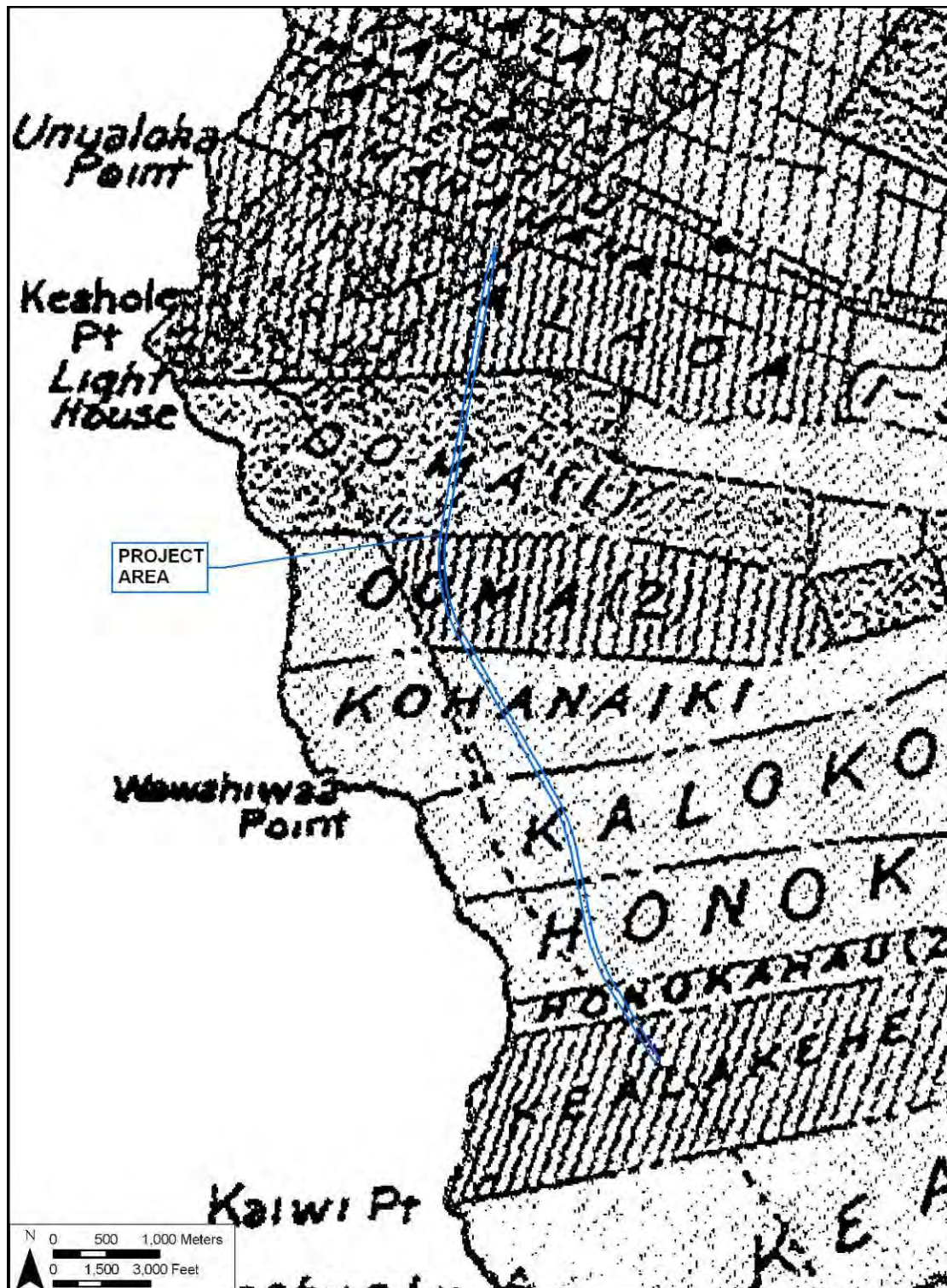


Figure 12. 1928 Hawai'i Territorial Survey map of Hawai'i (W. E. Wall, surveyor), depicting the approximate boundaries of the project area; noted dotted Māmalahoa Trail adjacent to, and *makai* of, the highway



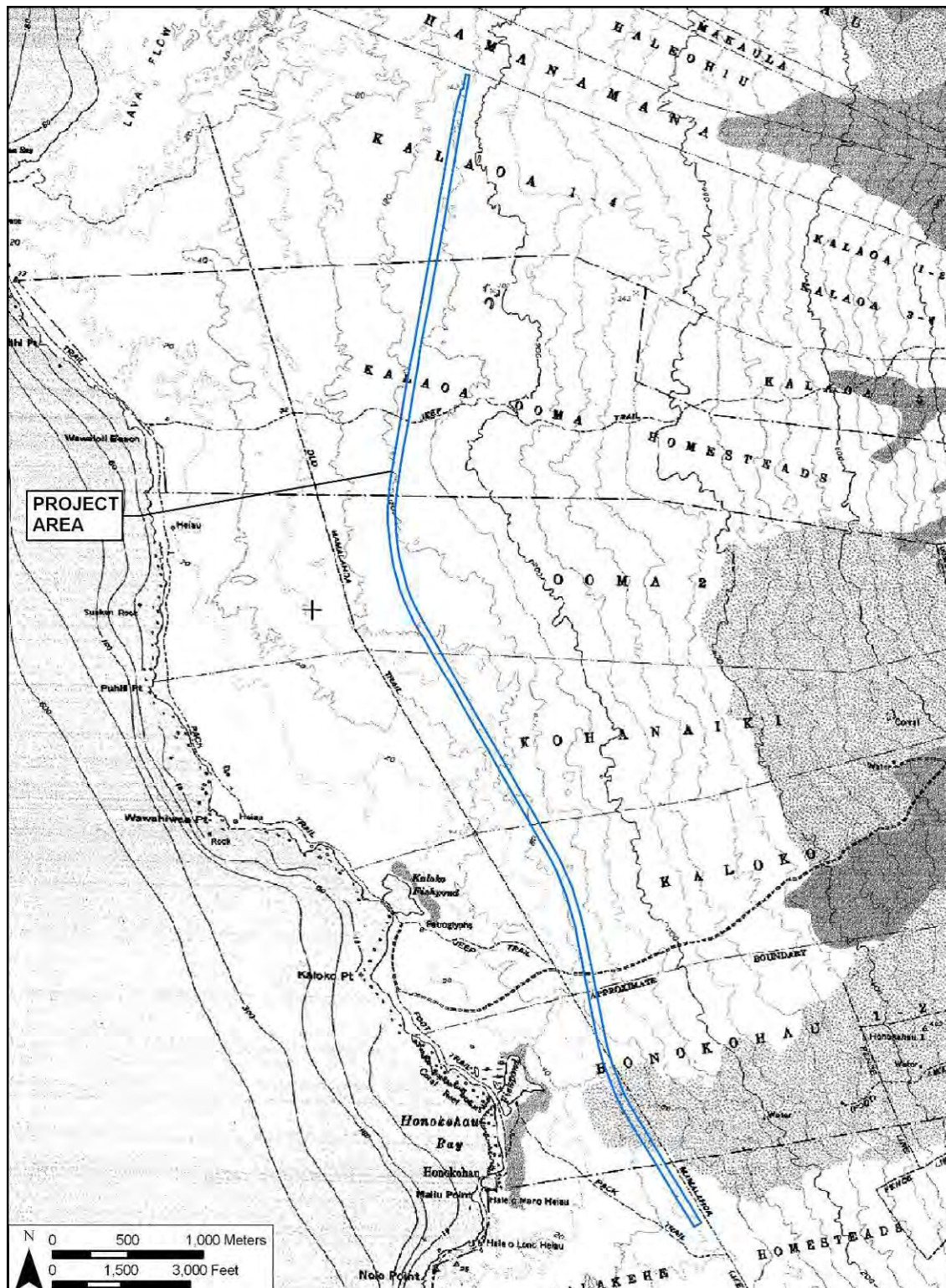


Figure 13. 1959 U.S. Geological Survey map, Keāhole Quadrangle, depicting the approximate boundaries of the project area



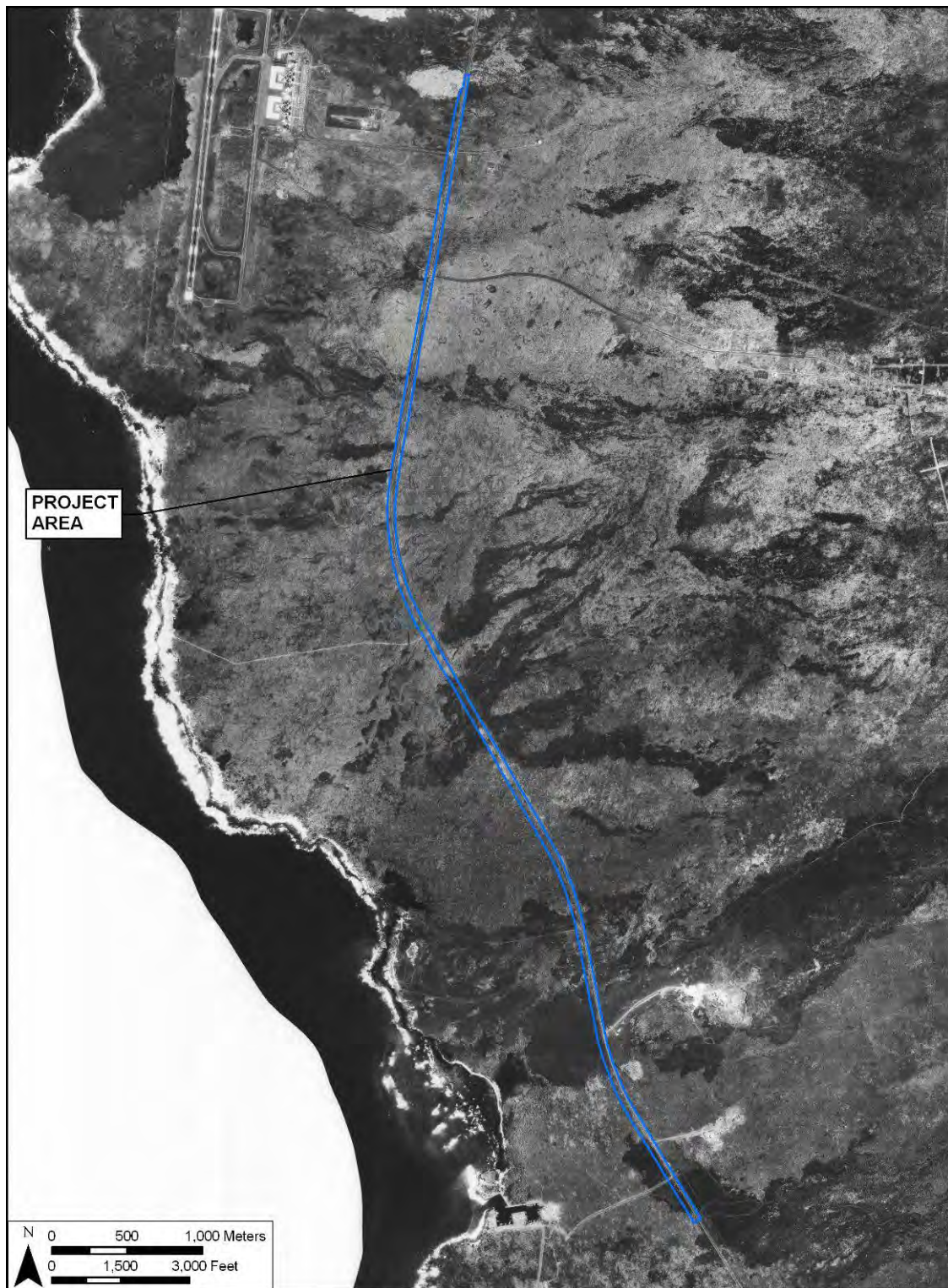


Figure 14. 1977-78 Aerial photograph of the Keāhole Point Area (U.S. Geological Survey Orthophoto), depicting the approximate boundaries of the project area

## Section 4 Previous Archaeological Studies

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The following is an annotated list of previous archaeological studies conducted within or adjacent to the present project area (Figure 15). They are presented by *ahupua'a* from Kealakehe northward to Kalaoa 1-4. Project areas shown on Figure 15 are for large survey or data recovery areas, and small projects within these large areas or follow-up studies are not labeled on this figure. The background research focused on identifying all archaeological sites previously identified within approximately 300 feet (91 meters) of both sides of the present highway (Figure 16). This information provides a context for understanding the findings of the current archaeological inventory survey. The information on sites in this study can be found in Walsh and Hammatt (1995), the original archaeological inventory survey for the Queen Ka'ahumanu Widening Project. This entire report is attached to this report as Appendix B.

### 4.1 Kealakehe

Summaries of projects adjacent to the Queen Ka'ahumanu Highway are discussed below. Table 16 presents a representative sample of previous archaeological projects conducted in Kealakehe.

#### 4.1.1 Reinecke 1930

In 1930, John Reinecke conducted a survey of Hawaiian sites along the Kona coast. Reinecke noted the presence of numerous habitation platforms and petroglyphs (Reinecke 1930). Emory (1970:37) indicated Reinecke's sites 25 to 31 are located in Kealakehe, including the Kealakehe settlement ruins, consisting of "13 house platforms, 11 burials, two corrals, one pen, and two *heiau*, Heiau-o-Kāne and Heiau Maka'opio."

#### 4.1.2 Sinoto 1977

This reconnaissance survey was conducted on the eastern, or *mauka*, side of the highway. Four sites were identified, only one of which (5011) was within 300 feet of Queen Kaahumanu Highway. The site, 5011, refers to the *mauka-makai* oriented Kealakehe/Keauhuolū boundary wall, south of the current project area.

#### 4.1.3 Sinoto 1983

This reconnaissance survey of roughly 7.0 acres is also on the eastern side of the highway. No sites were found. The project areas of the two Sinoto reports (1977 and 1983) were subsequently subjected to inventory level survey (Donham 1990b, see below for details).

#### 4.1.4 Bonk 1987

The report concerns a walk-through survey over the width of the *ahupua'a* between the coast and roughly 640 feet AMSL. One site, the Māmalahoa Trail, was identified in close proximity to the highway, and another site, a stepping stone trail previously identified by Soehren (Soehren 1975, see Honokōhau Section below), was mentioned as being just *mauka* of the highway near the northern boundary of the *ahupua'a*.



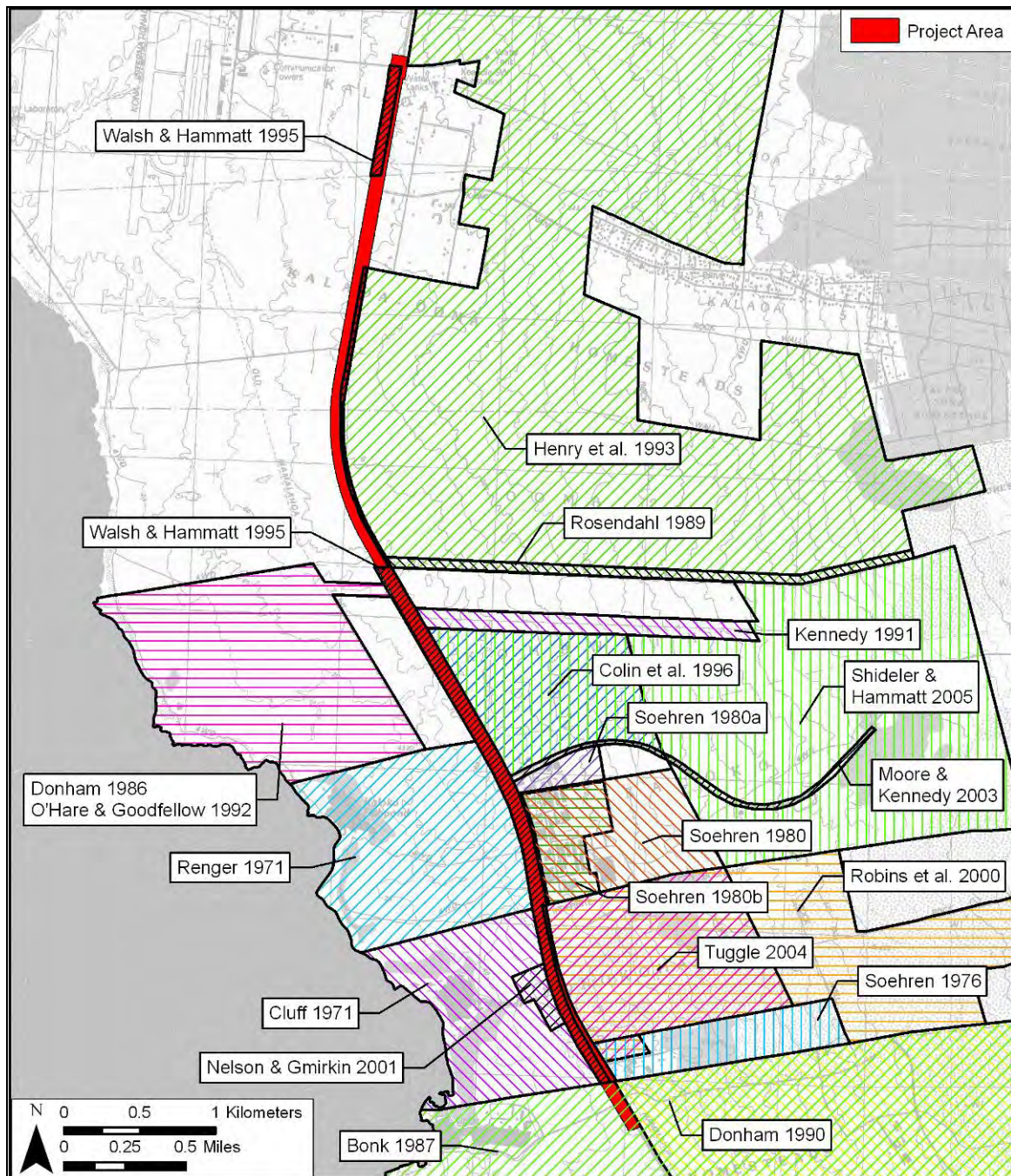


Figure 15. Previous archaeological studies in and immediately adjacent to the project area (base map: U.S. Geological Survey 1996, Keāhole Point and Kailua Quadrangles)

Table 16. Previous Archaeological Studies in Kealakehe Ahupua'a

Reference	Project Location	Report Type	Findings
Stokes & Dye 1991	Island of Hawai'i	Survey	Identified two <i>heiau</i> , Kawaluna Heiau and Palihiolo Heiau, and two <i>ko'a</i> (fishing shrines), Halepa'u Ko'a and Maka'eo Ko'a
Reinecke 1930	West Hawai'i	Survey	Identified 7 sites: Sites 24 through 35, including house platforms, small complexes encompassing enclosures and platforms, petroglyphs, and a possible fishing <i>heiau</i>
Sekido 1968	A Shelter Cave Kealakehe D11-1a	Archaeological Excavation Report (Anthropology 371 UH Hilo paper).	Description of shelter cave
Emory & Soehren 1971	Ka'ū, Kona Districts and 'Anaeho'omalu	Inventory of Sites	Relocated many of Reinecke's sites, found 27 sites in Kealakehe, 4 sites in the current project area, two <i>heiau</i> , one <i>ko'a</i> and a cluster of petroglyphs
Sinoto 1975a	A proposed access road corridor at Keahuolū	Archaeological Reconnaissance Survey	Identified 7 sites (walls and enclosures)
Sinoto 1975b	Honokōhau Small- Boat Harbor, Kealakehe	Archaeological Reconnaissance Survey	Documented no new sites but discussed 3 previously identified sites
Sinoto 1977	Mauka of highway	Archaeological Reconnaissance Survey	One site within project area
Soehren 1980a	Kealakehe Wastewater Site Kealakehe, <i>makai</i> of Queen Ka'ahumanu Hwy, TMK: 3-7-4- 008:003	Archaeological Reconnaissance Survey	Documented trail 50-10-27- 7704, which connected Ainapapa Pond on Honokōhau with a settlement at Pawai Bay in Keahuolū
Soehren 1981	Kealakehe, TMK: 3- 7	Archaeological Reconnaissance Survey	Three previously recorded sites (1888-1890) were relocated
Sinoto 1983	Kona Public Safety Bldg	Field Inspection	No sites recorded

Reference	Project Location	Report Type	Findings
Hammatt 1984	Kealakehe Houselots, TMK: 3-7-4-008:017	Archaeological Reconnaissance Survey	No sites recorded
Schilt 1984	Kuakini Highway Realignment Project - 26 <i>ahupua'a</i> in Kona	Archaeological Study	134 sites were found in the road corridor; two sites, a cairn and a modified outcrop, were recorded in Keahuolū.
Bonk 1987	Lower Kealakehe	Archaeological Walk-Through Survey	Noted sites in a 1,000-ft wide coastal strip and between 620 ft. and 730 ft. elevation.
Hammatt 1987	15-Acre Parcel Kealakehe, (TMK 7-4-17:30) at 700 ft. elevation	Archaeological Reconnaissance Survey	Described 18 sites including mounds, terraces, overhang shelters, agricultural complexes and cattle walls.
Hammatt et al. 1987	15-Acre Parcel Kealakehe, (TMK 7-4-17:30) at 700 ft. elevation	Inventory Survey & Data Recovery	Excavations at 17 of the sites previously identified by Hammatt 1987
Walker & Haun 1987a	Kealakehe Reservoir, TMK: 3-7-4-009 :072	Archaeological Reconnaissance Survey	Recorded one agricultural/habitation complex at an elevation of 900 ft.
Donham 1990a, b	Kealakehe Planned Community, TMK: 3-7-4-008:012, 017	Archaeological Inventory Survey	82 sites recorded, mainly agricultural and temporary habitation, but also burial features and ranching features
Burgett & Rosendahl 1991	Kealakehe Planned Community, TMK: 3-7-4-008:012, 017, <i>mauka</i> of Queen Ka'ahumanu Hwy.	Archaeological Inventory Survey	44 new sites with 225 features identified in Donham area (1990 a, b). 103 new features at previously identified sites. The most common features were modified outcrops, rock mounds, terraces, and 'a'ā excavations.
Borthwick & Hammatt 1992a	Kealakehe Sewer Force, TMK 7-5-04:67, 7-5-05:07, 7-4-08:02	Archaeological Assessment	Discussed 10 previously identified sites and 4 new sites, all in Keahuolū.
Borthwick & Hammatt 1992b	Proposed Kealakehe Golf Center, Kealakehe, TMK 7-1-8: por. 17	Archaeological Field Inspection and Interim Preservation Plan	Identified 2 additional sites (15,537, a cave, and 15,538, a terrace).

Reference	Project Location	Report Type	Findings
O'Hare & Goodfellow 1994	Kealakehe Planned Community, TMK: 3-7-4-008:012, 017	Data Recovery	Data recovery at selected sites previously identified by Donham 1990a, b and Burgett & Rosendahl 1991
Thompson & Rosendahl 1992a, b	Keāhole Transmission Lines, TMK: 3-6-; 3-7-; 3-8-	Archaeological Assessment	Relocated previously identified sites
Barr et al. 1994	Kealakehe Parkway Extension, TMK: 3-7-4-008:003, 005, 017, 034	Archaeological Inventory Survey	83 sites were identified, 50 were previously recorded; site types included pre-Contact Hawaiian and habitation, and post-contact ranching and Japanese homesteading
Borthwick et al. 1994	Kealakehe Parkway Extension, TMK: 3-7-4-008:005	Archaeological Inventory Survey	Additional information for Barr et al. 1994
Walsh & Hammatt 1995	New Queen Ka'ahumanu Right-of-Way	Archaeological Inventory Survey	Seventeen cultural resources were located, with one, the Māmalahoa Trail (Site 00002), recorded in Keahuolū Ahupua'a.
Wolforth 1999	Māmalahoa Trail, TMK: 3-7-3-009; -019; -049; -051; 3-7-4-008	Archaeological Monitoring Report	Monitoring to prevent site destruction
Haun & Henry 2001	Kealakehe DHHL, TMK: 3-7-4-008:003, 200 ac.	Archaeological Inventory Survey	123 features at 56 sites recorded, including two trails, site 13194 and one recorded by Borthwick et al. (1994)
Rechtman et al. 2001	TMK 3-7-4-003:007 Kealakehe (21.81 acres)	Archaeological Inventory Survey	Recorded six sites, four historic walls and two pre-Contact agricultural complexes Site 50-10-28-22429 Site 50-10-28-22430 Site 50-10-28-22431 Site 50-10-28-22432 Site 50-10-28-22433 Site 50-10-28-22434



Reference	Project Location	Report Type	Findings
Rechtman & Dougherty 2002	TMK 3-7-4-03:005 Kealakehe (16 acres)	Archaeological Reconnaissance Survey	One site with 79 features identified – historic residence complex - Site 50-10-28-23274
Rechtman & Escott 2002	Kealakehe Water Treatment, TMK: 3-7-4-008:003	Archaeological Inventory Survey	Makai edge of Queen Kaahumanu Hwy – recorded five features, including 3 trail segments

#### 4.1.5 Donham 1990a, 1990b

In 1990, PHRI completed an archaeological inventory survey for the Kealakehe Planned Community in Kealakehe (Donham 1990b). The approximately 950-acre study area consisted of lands *mauka* of the Queen Ka'ahumanu Highway, including the Kealakehe portion of the current survey area. A total of 82 cultural resources, including 840 features, were located within the study area. The most common feature types consisted of rock mounds and *pāhoehoe* excavation features. Other common features included modified outcrops, terraces, enclosures, and low mounded walls. The author noted the predominance of such features indicates “relatively intensive use of the area for agricultural purposes” (Donham 1990b:ii).

#### 4.1.6 Burgett and Rosendahl 1991

This addendum report (for Donham 1990a and 1990b) documents the inventory survey of an approximately 950-acre project area situated on the east side of the highway. Four sites were identified within roughly 300 feet (91 m) of the highway including, the Māmalahoa Trail (Site 00002), a stepping stone trail (Site 13194), a site consisting of several *ahu* (Site 13195), and the *ahupua'a* boundary wall (Site 5011).

The stepping stone trail identified by Soehren (1975) and mentioned again by Bonk (1987) is identified in this survey (Site 13253) as being located roughly 400 feet (122 m) from the highway (and is thus considered to be outside the present project area).

#### 4.1.7 O'Hare and Goodfellow 1994

This report is on the data recovery work undertaken within the Kealakehe Planned Community Project Area. This report should include any final data collection on sites 00002 and 13194.

#### 4.1.8 Borthwick and Hammatt 1992b

This project area lies within the Kealakehe Planned Community Project area previously surveyed, in an area planned for a golf course. No newly identified sites were located within 300 feet (91 m) of the highway. Recommended treatment for the three previously identified sites (00002, 13194 and 13195) was the same as that cited above.

#### 4.1.9 Barr et al. 1994

A reconnaissance and inventory level survey of two parcels, one of which is an interchange area of the highway that includes 150 feet (46 m) on either side of an approximately 2500 foot (762 m) section of the highway. This project area adjoins and partially overlaps with the Kealakehe Planned Community project area previously surveyed. The three sites identified in prior surveys (Sites 00002, 13194 and 13195) were re-identified in this survey, but no additional sites were found within 300 feet (91 m) of the highway including virtually the entire length of the highway through Kealakehe except for a roughly 700 foot section on the *makai* side of Queen Ka'ahumanu Highway at the southern end of the *ahupua'a*.

#### 4.1.10 Kealakehe Summary

The highway extends approximately 4900 feet (1494 m) through Kealakehe. The entire *mauka* side of the highway has been subjected to inventory survey and/or data recovery work. Four sites have been identified within 300 feet (91 m) of the present highway at Kealakehe. Two sites, Site 13195, an *ahu*, and Site 5011, a wall, have been subjected to data recovery and/or inventory level work, and no further work was recommended (Donham 1990b); two have been included in preservation plans approved by DLNR-SHPD; Site 00002, the Māmalahoa Trail, and Site 13194, a stepping stone trail.

### 4.2 Honokōhau

Summaries of projects adjacent to the Queen Ka'ahumanu Highway are discussed below. Table 17 presents a representative sample of previous archaeological projects conducted in Honokōhau.

#### 4.2.1 Cluff 1971

Cluff (1971) conducted a surface survey of the *ahupua'a* west of the highway to the coast. No sites were identified within 300 feet (91 m) of the highway.

#### 4.2.2 Soehren 1975, 1976

These reports describe two reconnaissance surveys conducted on adjoining parcels situated within TMK: 7-4-08:26 (por.) on the east side of the highway along the southern end of the *ahupua'a*. Two sites were identified within roughly 300 feet (91 m) of the highway, the Māmalahoa Trail and a stepping stone trail (also mentioned by Bonk in his walk-through survey of Kealakehe, as this trail extends into that *ahupua'a*). The northernmost of these two parcels was subsequently included in the inventory survey by Robins et al. (2000).

#### 4.2.3 Cordy et al. 1991

As the historic properties addressed in this data recovery plan are immediately south of the Kaloko-Honokōhau *ahupua'a* border, it was deemed appropriate to include a summary of Cordy et al.'s (1991) study of Kaloko, which constructs a generalized model for social structure and environmental adaptation for pre-Contact Kaloko (A.D. 1000-1800).

In 1971, Cordy et al. (1991) attempted to construct a “model of how Hawaiians in the Kaloko area were organized socially before contact (A.D. 1778) and how this social organization reflected adaptations to the natural and social environments, and to internal pressures.” A combination of pedestrian surveys and subsurface testing was undertaken throughout the Kaloko area in order to collect data for analysis. Due to a general lack of chronological data, Cordy et al. (1991) were “unable to build a picture of local social organization and its adaptation to the environmental field at any one time period, nor can we make any major statements on change in organization and adaptation.” As a result Cordy et al. attempted to present a generalized model for social structure and environmental adaptation for the entire pre-Contact period of Kaloko (A.D. 1000-1800).

Cordy et al. speculated that Kaloko was initially settled between A.D. 1000 and 1500, and that it may have been an outlier of another community (Cordy et al. 1991). By historic times, the Kaloko community consisted of four residential groups totaling 60 to 100 individuals. Political power and religious authority were focused with a chief, who apparently before and after A.D. 1490 to A.D. 1610 did not reside at Kaloko (Cordy et al. 1991).

According to Cordy et al., adaptation to the natural environment consisted of agriculture, water usage, the collection of raw materials for tool manufacture and dwelling construction, marine resource procurement, and the raising of livestock. Agriculture was determined to be focused within the “upland zone” (300 to 490 m elevation) and the “lower upland-forest zone” (490 to 550 m elevation). Agricultural structures utilized in this agricultural zone consisted of terraces and low walls for water and soil control, as well as stone piles resulting from the clearing of soil areas for planting. Also noted were enclosures of varying shape, utilized as temporary habitations.

As water was scarce in Kaloko, potable water was thought to have been predominantly acquired at brackish pools present near the “coastal-middle zone” interface. Cultural modification observed at these pools consisted of small cleared areas around them or large lava slabs tilted over them for shade (Cordy et al. 1991). Several short trails leading to the pools were also noted.

The “middle” and “upland-forest” zones were believed to have been the primary areas for the collection of raw materials such as thatching, wood, and vines for the manufacture of dwellings, weapons, agricultural tools (e.g., digging sticks), fishing gear (e.g., nets and lines), and canoes (Cordy et al. 1991).

Further data and analysis was determined necessary in order to determine if distinct coastal areas were utilized and partitioned per each residential group or if Kaloko Fishpond was always reserved for chiefly use. Additionally, further data were necessary to shed light on the extent and nature of animal husbandry in pre-Contact Kaloko.

Table 17. Previous Archaeological Studies in Honokōhau Ahupua'a

Reference	Project Location	Report Type	Findings
Stokes & Dye 1991	Island of Hawai'i	Survey	Identified two <i>heiau</i> , Kawaluna Heiau and Palihilo Heiau, and two <i>ko'a</i> , Halepa'u Ko'a and Maka'eo Ko'a.
Reinecke 1930	West Hawaii	Survey	Sites 38-42 are within Honokōhau I and II, including Pu'uoina Heiau, Makaopi'o Heiau, and a <i>hōlua</i> (slide)
Ching & Rosendahl 1968	Kailua-Kawaihae Rd (Honokōhau -Keāhole Point) & Keāhole Airport	Archaeological Surface Survey	Two sites recorded in the Honokōhau portion, a terrace, and a platform and trail
Ladd 1968	Lanikai Corporation Lands, TMK: 3-7-4-008:010	Data Recovery	Excavation at sites identified by Emory & Soehren 1971
Cluff 1971	Seaward Portion of Honokōhau 1 and 2, TMK: 3-7-4-008:010, 025	Archaeological Reconnaissance Survey	61 sites recorded, many clustered around 'Aimakapā Fishpond
Emory & Soehren 1971	Honokōhau Area, TMK: 3-7-3; 3-7-4	Archaeological Reconnaissance Survey	27 sites recorded, including traditional Hawaiian habitation complexes, especially around 'Aimakapā Fishpond at the coast
Sinoto 1975c	Honokōhau 2 Quarry, TMK: 3-7-4-005	Archaeological Reconnaissance Survey	19 sites identified, including portions of a foot trail, the Māmalahoa Trail, and several platforms thought to be burials
Soehren 1976	Honokōhau 2, TMK: 3-7-4-008:026	Archaeological Reconnaissance Survey	Three sites recorded, the Māmalahoa trail, a mound, and a stone wall
Rosendahl 1987a	Honokōhau Industrial Park, TMK: 3-7-4-008:033	Archaeological Reconnaissance Survey	Two sites recorded, a terrace complex (10642) and a single terrace (10643)
Donham 1990c	Honokōhau Industrial Park, TMK: 3-7-4-008:026, 049	Archaeological Inventory Survey	Mauka of the Queen Ka'ahumanu Highway; six sites identified, mainly agricultural and temporary habitation
Johnson & Somers 1991	Kaloko-Honokōhau Park, TMK: 3-7-3; 3-7-4	Data Recovery	Pu'uoina Heiau Stabilization

Reference	Project Location	Report Type	Findings
Rosendahl & Walker 1991	Honokōhau Industrial Park, TMK: 3-7-4-008:026, 049	Archaeological Inventory Survey	Identified a trail with two cairns
Fager & Rosendahl 1992	Honokōhau Industrial Park, TMK: 3-7-3-051:001	Data Recovery	Data recovery work for Rosendahl & Walker 1991
Thompson & Rosendahl 1992a, b	Keāhole Transmission Lines, TMK: 3-6; 3-7; 3-8-	Archaeological Assessment	Relocated previously identified sites
Jensen & Goodfellow 1993	Honokōhau Industrial Park, TMK: 3-7-4-008:026, 049	Data Recovery	Excavations carried out at 36 sites previously identified during Donham 1990c project
Robins et al 1993	Honokōhau 2 - 82 ac., TMK: 3-7-4-008:034	Archaeological Inventory Survey	39 sites identified, mainly dryland agricultural features, temporary habitations, and ranching features
Barr et al. 1994	Kealakehe Parkway, Honokōhau 1- 2, TMK: 3-7-4-008:003, 005, 017, 034	Archaeological Inventory Survey	83 sites were identified, 50 were previously recorded; site types included pre-Contact Hawaiian and habitation, and post-contact ranching and Japanese homesteading
Borthwick et al. 1994	Kealakehe Parkway Extension Honokōhau 1, (TMK 7-4-08:por. 5)	Addendum Report Archaeological Inventory Survey	Additional work for Barr et al. 1994
Walsh & Hammatt 1995	Queen Ka'ahumanu Highway	Archaeological Inventory Survey	17 cultural resources were located
Robins et al. 2000	Honokōhau 1, 2 - 803-ac., TMK: 3-7-4-008:005, 013, 030, 036	Archaeological Inventory Survey	284 sites identified, mainly features for dryland agriculture and temporary habitation; a refuge cave and a <i>heiau</i> were also recorded
Wolforth 1999	Māmalahoa Trail, TMK: 3-7-3-009;; -019;; -049;; -051;; 3-7-4-008:	Archaeological Monitoring Report	Monitoring of Māmalahoa Trail
Hammatt et al. 1999	Honokōhau, 13 ac. Parcel, 800 elevation area, TMK: 3-7-3; 3-7-4	Data Recovery	Historic materials, including a Spanish and a Russian coin were recovered from one rock shelter (site 18343) and indigenous artifacts, including a poi pounder were found at a second rock shelter (site 18345)

Reference	Project Location	Report Type	Findings
Hammatt et al. 2001	Honokōhau 2 - 9.9 ac parcel, TMK: 3-7-4-008:034	Data Recovery	Data recovery at sites identified in Robins et al. 1993
Rechtman 2000	Honokōhau 2, Sites 18326 & 18327, TMK: 3-7-4-008:064	Data Recovery	Data recovery at a permanent habitations site (18326) and a habitation platform (18327) first identified during the Robins et al. 1993 study
Nelson & Gmirkin 2001	Area fronting ( <i>mauka</i> side) the National Park	Archaeological Inventory Survey	In current project area: SIHP #s 21245, 22417, 22418, 18099 and 22507
Gmirkin & Bond 2002	Area fronting ( <i>mauka</i> side) the National Park	Addendum to Archaeological Inventory Survey	In current project area: SIHP #s 21245, 22417, 22418, 18099 and 22507
Tuggle 2004	337 ac. Parcel, extending inland from Queen Ka'ahumanu Hwy, TMK 7-4-009:103, 030	Archaeological Data Recovery	Data Recovery at sites first recorded by Robins et al. 2000
Haun & Henry 2005	277 ac. Parcel, Honokōhau 1, TMK: 3-7-4-008:47	Inventory Survey	167 sites identified with 7,894 component features; 31 of the sites had been previously identified by Barr et al. (1994), mainly agricultural and temporary habitation

#### 4.2.4 Jensen and Goodfellow 1993

In 1993, PHRI completed data recovery for the Honokōhau Industrial Park. Research objectives consisted of the following (Jensen and Goodfellow 1993:9-10):

1. Further evaluating the age, duration, and intensity of occupation at individual sites and features;
2. Further evaluating and characterizing individual sites and features for portable artifact content and assemblages;
3. Further evaluating and characterizing individual sites and features for ecofactual content;
4. Refining existing assessments, thus far based on inventory-level survey data, of the variety of cultural activities conducted at various sites at different prehistoric (pre-Contact) time periods;
5. Further evaluating existing interpretations of specific architectural features and presumed associated activities.

Jensen and Goodfellow's (1993) investigations confirmed that the study area "represented a pattern of recurrent/temporary use of small subsurface and surface habitation features, with subsistence focused on the exploitation of locally available marine resources and limited agriculture" (Jensen and Goodfellow 1993: 40). Radiocarbon analysis indicated that the area was occupied from as early as A.D. 980 and continued uninterrupted into the early 20<sup>th</sup> century. Artifacts observed during excavations consisted of bone fishhooks and awls, lithic debitage, and coral and basalt abraders. The artifact assemblage indicated that a broad range of pre-Contact activities were conducted within the study areas, including: fishing gear manufacture, stone tool manufacture, food processing, and domestic activity. Ecofactual analysis of midden indicated that the primary source of resources was the ocean.

#### **4.2.5 Robins et al. 2000**

This project area is situated on the east side of the highway between the two parcels surveyed by Soehren (above) and the northern *ahupua'a* boundary. Eight sites were identified within roughly 300 feet of the highway. From south to north these include 18085, 18086, 18091, 18084, 18186, 18083, 18081, and 00002. Recommended treatment includes preservation of 00002 (Māmalahoa Trail) and 18081 (petroglyphs), data recovery for 18083, 18084 and 18085, and no further research of 18086, 18186 and 18091.

#### **4.2.6 National Park Service 1975**

This document is a report on the cultural and historical resources within the park. One site is indicated as being within 300 feet (91 m) of the highway, Site 00002, the Māmalahoa Trail. The present highway crosses the Māmalahoa Trail in Honokōhau, and therefore the trail is present on both sides of the highway.

Information on additional archaeological sites located within 300 feet (91 m) of the highway was provided by National Park Service archaeologist, Laura Schuster. In addition to the Māmalahoa Trail, recent archaeological surveys conducted by National Park archaeologists have identified two *mauka-makai* trails near the highway. It was also brought to our attention that within the park (but not necessarily within the present project area), human burials had been found beneath accretion boulders within the 'a'ā lava flows. The accretion boulders are formed "when a fragment of solidified lava . . . is rolled along and wrapped up in the viscous liquid and range in size up to 10 feet" (MacDonald and Abbott 1970:25-26). These burials had no associated archaeological surface features.

#### **4.2.7 Johnson and Somers 1991**

This project included maintenance work at two sites within the park and at the Māmalahoa Trail (which is referred to by its name and not its state site number in this report) at the Kaloko-Honokōhau National Historical Park. A portion of the trail was cleared and restored, but this portion does not lie within 300 feet (91 m) of the highway.

#### **4.2.8 Hammatt et al. 1999**

In 1999, CSH completed data recovery for portions of the Māmalahoa Trail and SIHP # 50-10-27-19953 (an unnamed *mauka/makai* trail) located in the *ahupua'a* of Honokōhau II. The

goal of the data recovery was to gather information from the portions of the two trails that would be destroyed by highway widening. The research focused on recording more information on the two trails, including archival quality photographs and test excavations to expose trail cross-sections to document trail construction techniques.

Trail construction at the Māmalahoa Trail involved either the filling or removal of 'a'ā pebbles and cobbles relative to surface topography; low areas were filled and high areas involved removal. Trail construction at SIHP -19953 involved placing 'a'ā slab boulders atop clinker 'a'ā with 'a'ā cobbles filling gaps, thus creating a stepping stone trail across an otherwise difficult terrain.

#### 4.2.9 Rechtman 2000

In 2000, PHRI completed data recovery at two permanent habitation sites (SIHP -18326, platforms and terrace, and SIHP -18327, a platform) in the *ahupua'a* of Honokōhau II. Six radiocarbon dates were obtained from charcoal samples collected during excavation, three samples from each site. Samples from both sites indicated they were occupied by the mid-1400s. Due to similar construction styles and the relative distance between individual features, it was suggested that SIHP -18326 and -18327 composed a single permanent habitation complex (Rechtman 2000: 23). Additionally, the limited midden diversity and lack of a developed cultural deposit indicated the sites were occupied for a relatively short duration, likely for a single generation (Rechtman 2000: 22).

#### 4.2.10 Hammatt et al. 2001

In 1999, CSH completed data recovery for an approximately 13-acre parcel located in the *ahupua'a* of Honokōhau II. Data recovery was conducted at two permanent habitation sites (SIHP -18340, an enclosure and terrace, and SIHP -18349, an enclosure). Research objectives consisted of the following (Hammatt et al. 1999: 6):

1. To confirm or disprove the existence of specific activity areas within selected permanent habitation sites;
2. To obtain chronological data (e.g. radiocarbon dates, temporally distinct artifacts) to build a chronology of occupation of permanent habitation sites.

Excavations at SIHP -18340 yielded both pre- and post-contact artifacts. Pre-Contact artifacts included abraders, volcanic glass flakes, a hammerstone, a grindstone fragment, and a basalt adze. Post-contact artifacts included a 1782 Spanish reale, an 1858 Russian kopek, buttons, beads, and equestrian related materials. Distribution maps, utilizing point plotting of artifact proveniences, were created in order to identify specific activity areas within the excavated feature. Identified pre-Contact activity areas consisted of a refuse area, a storage area, and a tool manufacture area. A post-contact writing area was also identified, based on a concentration of slate pencils.

Charcoal samples collected from SIHP -18340 yielded a radiocarbon date range of A.D. 1635 to 1950, reflecting the pre- to post-contact utilization of this site as indicated by the artifact assemblage collected during excavation.



Excavations at SIHP -18349 yielded pre-Contact artifacts including a broken *poi* pounder, a hammerstone, and volcanic glass flakes. Due to previous bulldozer disturbance at this site distribution maps were not generated as the original positions of many of the documented artifacts were likely disturbed.

Charcoal samples collected from SIHP -18349 yielded a radiocarbon date ranges of A.D. 1305 to 1645 and A.D. 1405 to 1650, reflecting the pre-Contact indigenous Hawaiian utilization of this site as indicated by the artifacts.

#### **4.2.11 Nelson and Gmirkin 2001 and Gmirkin and Bond 2002**

These two studies reported on an archaeological inventory survey of two parcels totaling approximately 17.9 acres along the *mauka* boundary of the Kaloko-Honokōhau National Historical Park (see Figure 15 for location). Several sites in the current project are—including SIHP #s 21245, 22417, 22418, 18099 and 22507—were identified, and are described in detail in this report (see Section 5.2 Site Descriptions).

#### **4.2.12 Honokōhau Summary**

The highway extends approximately 4200 feet (1280 m) through Honokōhau Ahupua'a. On the *mauka* side of the road, approximately 3800 feet (1158 m) has been subjected to inventory level archaeological survey and the remaining 400 feet (122 m) has undergone reconnaissance level survey only. The *makai* side of the road has been subjected to reconnaissance level survey only, including that portion of the project area that lies within the Kaloko-Honokōhau National Park.

Eight sites have been identified within 300 feet (91 m) of the highway (including two sections of the Māmalahoa Trail that are situated on both sides of the highway in Honokōhau). The recommended treatment for these sites includes preservation for two sites, data recovery for three, and no further work for three.

Two additional sites, *mauka-makai* oriented trails, have also been noted as nearby the highway, although these sites had yet to be fully documented (L. Schuster, National Park Service, personal communication).

### **4.3 Kaloko and Kohanaiki**

Projects adjacent or pertinent to the current project area are summarized below. A list of all projects conducted in Kaloko and Kohanaiki is presented in Table 18.

#### **4.3.1 Early Archaeological Surveys**

During the mapping of the North Kona area in 1888, Emerson noted two sites in Kohanaiki, the cross-*ahupua'a* Māmalahoa Trail, probably built between A.D. 1836-1855, and a *mauka-makai* trail that extended from the Kohana-iki Homesteads near Māmalahoa Highway towards the coast at Kaloko (Reinecke 1888:76-78; Cordy et al. 1991:404).

During the 1930s, John Reinecke surveyed the coastal areas of North and South Kona for the Bishop Museum. He recorded eight sites (later merged into three sites) in Kohanaiki, which were recorded as Sites 50-10-27-1902, 1905, and 1909 during a Statewide Inventory of Historic Places

study in 1971 and 1972. Sites 1902 and 1905 were residential features and Site 1909 was a possible fishing shrine at Wawahiwaa Point (Reinecke n.d.)

#### 4.3.2 Cordy et al. 1991

Cordy et al. (1991) conducted a study of all previous work in the Kaloko-Honokōhau National Park.

#### 4.3.3 Haun et al. 2003a

In 2003, Haun & Associates completed data recovery for eight sites located in the *ahupua'a* of Kaloko. All eight sites consisted of temporary habitations in the form of caves and surface midden scatters. Research objectives consisted of the following (Haun et al. 2003a:i):

1. To establish the age of the site/feature
2. To determine the type and variety of activities conducted at each site/feature

Charcoal samples from five of the eight sites were submitted for radiocarbon analysis (with the remaining three already dated during the inventory survey phase). Three of the sites (SIHP – 21999, -22016, -22018) were potentially utilized by the mid-1400s. SIHP -22023 was determined to have multiple occupations spanning between A.D. 1500 and A.D. 1700. SIHP -22014 and -22017 were occupied during the late pre-Contact period into the early post-contact period.

Observed artifact and midden assemblages as well as structural modifications indicated a variety of activities conducted at the temporary habitation features. Activities determined to have been practiced at the data recovery sites included animal husbandry, water collection, fire construction, food preparation and consumption, and stone and bone tool manufacture.

As the historic properties addressed in this data recovery plan are immediately south of the Kaloko-Honokōhau *ahupua'a* border, it was deemed appropriate to include a summary of Cordy et al.'s (1991) study of Kaloko, which constructs a generalized model for social structure and environmental adaptation for pre-Contact Kaloko (A.D. 1000-1800).

Table 18. Previous Archaeological Studies in Kaloko and Kohanaiki Ahupua'a

Reference	Project Location	Report Type	Findings
Reinecke 1930	Kona Coastal Survey	Cursory survey	Briefly notes numerous sites
Emory & Soehren 1971	Kona Coastal Survey	Cursory survey	Briefly notes numerous sites
Kelly 1971	Kaloko and Kuki'o <i>ahupua'a</i>	Historical survey and background	Background study
Renger 1971	Kaloko, Coastal, TMK 7-3-004:005; 009:002	"Field Notes" of "Mauka excavations"	"Field Notes" describe several sites

Reference	Project Location	Report Type	Findings
Hammatt (ARCH) 1980	Kaloko YO 410 acre Project Area; TMK 3-7-3-009:019	Archaeological Reconnaissance	Identified 2 sites
Soehren 1979	Kaloko Access Road Corridor (Hina Lani Street) TMK 3-7-3-009:001;	Letter Report Reconnaissance Survey	No finds
Soehren 1980b	Kaloko lowlands	Letter Report Reconnaissance Survey	No finds
Soehren 1980c	Kaloko Access Road Corridor	Letter Report Reconnaissance Survey	Discusses 3 stepping stone trails, 2 cairn & a lava tube complex
Barrera 1983	Kaloko, TMK 7-3-9:019	Archaeological Reconnaissance	No finds
Kennedy 1983	Kaloko Golf Course, TMK: 7-3-009: 001	Archaeological Reconnaissance	Identifies 39 sites
Kennedy 1984	Kaloko Golf Course, TMK: 7-3-009: 001	Intensive Archaeological Survey	Results of investigations of 39 sites
Barrera 1985a	YO 409 acre Project Area; TMK 3-7-3-009:019	Archaeological Survey	58 sites identified
Donham 1986	Kohanaiki Development Project, TMK: 3-7-3-009:003, 014	Archaeological Reconnaissance Survey	105 sites identified
Rosendahl, M., & Haun 1987	Kaloko & Kohanaiki 3 1-acre parcels for potential water tank sites; TMK 3-7-3-009:001, 017	Archaeological Reconnaissance Survey	1 site

Reference	Project Location	Report Type	Findings
Rosendahl 1987b	Kohanaiki Māmalahoa Trail, TMK: 3-7-3-009:003, 016	Field Inspection	Inspection of Māmalahoa Trail in Kohanaiki
Barrera 1988	Kaloko & Kohanaiki, YO 409 acre Project Area; TMK 3-7-3-009:019	Archaeological Excavations	60 sites identified
Rosendahl 1989a	Kaloko Mauka Parcel 1, TMK: 3-7-3-024:007	Field Inspection	4 sites identified
Rosendahl 1989b	Kaloko Mauka Parcel 2, TMK: 3-7-3-024:008	Field Inspection	No sites
Rosendahl 1990	Kohanaiki Resort, TMK: 3-7-3-009:003	Archaeological Inventory Survey	Testing of Burial Features
Rosendahl & Walker 1990	Kaloko Water Tank, TMK: 3-7-3-010:017	Archaeological Inventory Survey	1 site identified
Barrera 1991	Kaloko & Kohanaiki, YO 409 acre Project Area; TMK 3-7-3-009:019	Archaeological Inventory Survey & Data Recovery Report	Recorded 140 sites, mainly in the Kohanaiki Homestead section; the Kaloko area had been bulldozed
Cordy et al 1991	Kaloko-Honokōhau National Park	An Ahupua'a Study: The 1971 Archaeological Work at Kaloko	94 sites identified
Johnson & Somers 1991	Kaloko-Honokōhau Park, TMK: 3-7-3; 3-7-4	Data Recovery	Pu'uoina Heiau Stabilization
Kennedy 1991	Kohanaiki Industrial Development, TMK: 3-7-3-009:015	Surface Reconnaissance	No significant finds

Reference	Project Location	Report Type	Findings
Rosendahl & Walker 1991	Industrial crusher site, 2 adjacent 10 acre parcels within present project area	Archaeological Field Inspection	Identified a trail with two cairns
O'Hare & Goodfellow 1992	Kohanaiki Resort, TMK: 3-7-3-009:003	Data Recovery	Data Recovery at Sites Identified during Donham (1986)
Barrera 1993a	5.7 acres; 1450 to 1630' elevation	Archaeological Inventory Survey	Identified 40 features of Kona Field System
Fager & Graves 1993	Kaloko Industrial Park parcel	Archaeological Inventory Survey	Identified 17 sites with 60 component features
Henry et al. 1993	Transmission line project <i>Mauka</i> side of Queen K Hwy.	Archaeological Inventory Survey	Identified 42 sites in the entire project area, 4 sites in present project area
Rosendahl 1993	Kaloko Mauka, TMK: 3-7-3-024:005	Field Inspection	4 sites discussed
Nees & Williams 1995	Kaloko Mauka Subdivision, TMK: 3-7-3-024:010; - 025:016, 110 acres, 2100 to 2900' elevation	Archaeological Investigations	Identified enclosure, lava tube, terrace, wall, mounds
R. M. Towill	Kaloko-Kohanaiki Trail, TMK:	Site Description	Brief historical references to trails
Walsh & Hammatt 1995	Queen K Hwy Right-of-Way	Archaeological Inventory Survey	Identified 9 sites adjacent to <i>makai</i> side of Hwy in Kohanaiki & Kaloko
Colin et al. 1996	Kaloko, Kohana-iki - 2243 ac., TMK: 3-7-3-009:002, 017	Inventory Survey & Data Recovery	Identified 55 sites

Reference	Project Location	Report Type	Findings
Rechtman 1998	Kaloko parcel 22-ac., TMK: 3-7-3-025:015, 2400-2500' elevation	Archaeological Field Inspection	No finds
Rechtman & Henry 1999	Kaloko, Morrisson Property, TMK: 3-7-3-008:017, 1450-1620' elevation	Archaeological Inventory Survey	Identified 15 sites
Wolforth 1999	HELCO Keāhole-Kailua Transmission line corridor	Monitoring Report	Describes 1 site 21258
Haun & Henry 2000a	Kaloko Industrial Park TMK: 7-3-51:60; 102-acre parcel	Archaeological Inventory Survey	Identified 45 sites with 81 features
Rosendahl & Gothar 2000	Kaloko Mauka, TMK: 3-7-3-025:013, 2435-2730' elevation	Archaeological Assessment	No finds
Clark & Rechtman 2002	Kohanaiki, 52 acres, TMK: 3-7-3-007:027, 1200' to 1600' elevation	Archaeological Inventory Survey	Identified 5 sites in area that had been cleared for coffee cultivation
Rechtman & Rivera 2002	Kaloko Mauka, TMK: 3-7-3-026:004, 3-7-3-26:4; 3,100'	Archaeological Assessment	No finds
Cobb, Elmore, and Kennedy 2003	TMK: 7-3-09:25, 26 & 28 at Kaloko and Kohanaiki (400 acres)	Archaeological Assessment	Briefly identifies 154 features
Haun & Henry 2003a	400-Acre Portion of TMK 7-3-09:28 Kaloko	Archaeological Assessment	Identifies only 8 sites (63 features) all in 'a'ā

Reference	Project Location	Report Type	Findings
Haun et al. 2003a	Kaloko Industrial Park TMK: 7-3-51:60; 102-acre	Data Recovery Report	Data Recovery Report addresses 8 specific sites
Moore & Kennedy 2003	Roadway Corridor	Archaeological Inventory Survey	Identified 1 site (23973) 2 mounds
Puette & Dye 2003	22 acres 2100 to 2400' elevation	Archaeological Inventory Survey	No finds
Rechtman 2003	Kaloko Mauka, TMK: 3-7-3-026:005, 3100' elevation	Archaeological Assessment	No finds
Shideler & Hammatt 2005	1,200+ Acres in Kaloko and Kohanaiki	Archaeological Field Inspection and Literature Review	Numerous pre-Contact sites including: habitations, agricultural features, petroglyphs, boundary walls, and burials observed
Wolforth et al. 2005	TMK: [3] 7-3-09: 032	Archaeological Inventory Survey	A total of 89 sites were identified, consisting of burials, permanent habitations, temporary habitations, religious sites, trails, boundary walls, and agricultural sites
Nelson et al. 2006	TMK:3-7-3-009:007	Archaeological Inventory Survey	Re-recorded site 16103, which extends into project area

#### 4.3.4 Cordy et al. 1991

In 1971, Cordy et al. (1991) attempted to construct a “model of how Hawaiians in the Kaloko area were organized socially before contact (A.D. 1778) and how this social organization reflected adaptations to the natural and social environments, and to internal pressures.” A combination of pedestrian surveys and subsurface testing was undertaken throughout the Kaloko area in order to collect data for analysis. Due to a general lack of chronological data, Cordy et al. were “unable to build a picture of local social organization and its adaptation to the environmental field at any one time period, nor can we make any major statements on change in organization and adaptation.” As a result Cordy et al. attempted to present a generalized model for social structure and environmental adaptation for the entire pre-Contact period of Kaloko (A.D. 1000-1800).

Cordy et al. speculated that Kaloko was initially settled between A.D. 1000 and A.D. 1500, and that it may have been an outlier of another community (Cordy et al. 1991). By contact the Kaloko community consisted of 4 residential groups totaling 60 to 100 individuals. Political

power and religious authority were focused with a chief, who apparently before and after A.D. 1490-1610 did not reside at Kaloko (Cordy et al. 1991).

According to Cordy et al., adaptation to the natural environment consisted of agriculture, water usage, the collection of raw materials for tool manufacture and dwelling construction, marine resource procurement, and the raising of livestock. Agriculture was determined to be focused within the “upland zone” (300-490 m elevation) and the “lower upland-forest zone” (490-550 m elevation). Agricultural structures utilized in this agricultural zone consisted of terraces and low walls for water and soil control, as well as stone piles resulting from the clearing of soil areas for planting. Also noted were enclosures of varying shape, utilized as temporary habitations.

Because water was scarce in Kaloko, potable water was thought to have been predominantly acquired at brackish pools present near the “coastal-middle zone” interface. Cultural modification observed at these pools consisted of small cleared areas around them or large lava slabs tilted over them for shade (Cordy et al. 1991). Several short trails leading to the pools were also noted.

The “middle” and “upland-forest” zones were believed to have been the primary areas for the collection of raw materials such as thatching, wood, and vines for the manufacture of dwellings, weapons, agricultural tools (e.g., digging sticks), fishing gear (e.g., nets and lines), and canoes (Cordy et al. 1991).

Further data and analysis were necessary to determine if distinct coastal areas were utilized and partitioned per each residential group or if Kaloko Fishpond was always reserved for chiefly use. Additionally, further data were necessary to shed light on the extent and nature of animal husbandry in pre-Contact Kaloko.

This report documents the archaeological survey and testing work undertaken in the *makai* portion of Kaloko (i.e. *makai* of the highway) in 1971. Based on the map of the seaward portion of Kaloko included in this study, five sites are located within 300 feet (91 m) of the highway, from south to north these include: Site 2199 (BPM 46), a *mauka-makai* trail; Site BPM 90 (no state site number assigned), a *mauka-makai* trail; Site 2238 (BPM 86), a wall with midden; Site 2233 (BPM 81), a *mauka-makai* trail; and Site 2240 (BPM 89A-B), a *mauka-makai* trail. Survey work was also done on the eastern side of the highway, but the information on the locations and descriptions of specific sites is missing (see p. 339), so it is unknown if any sites were identified within 300 feet (91 m) of the highway.

These two reports are also included in this section because the national park includes a portion of Kaloko within 300 feet (91 m) of the highway as well. No additional archaeological sites were identified within 300 feet of the highway.

#### **4.3.5 Kaloko Summary**

The highway extends for approximately 3800 feet (1158 m) through Kaloko. Both sides of the highway have been subjected to some degree of archaeological study, but it is likely that the archaeological work undertaken within these areas would not be considered adequate as an inventory level survey.



Five sites were identified within 300 feet (91 m) of the highway, four *mauka-makai* trails (Sites BPM 90, 2199, 2233 and 2240) and, one site described as a wall with midden (Site 2238). The survey in which these sites were identified was conducted in 1971, and the survey data was made available in 1991. The survey report does not include significance assessments or recommendations for future treatment.

#### 4.3.1 Late Twentieth Century Surveys

Hammatt (1980) conducted a reconnaissance survey of a 410 acre parcel in upland Kohanaiki and Kaloko, recording two sites: a walled complex and a habitation cave. In 1985, a full reconnaissance survey was conducted on a portion of the project area (the Y-O project); in this survey (Barrera 1985a) 55 sites were recorded within Kohanaiki. Data recovery, consisting of limited excavation, took place in the Barrera project area in 1987 (Barrera 1988). Barrera (1991) led a crew for an inventory survey, with limited testing, of the project area in 1991. Most of the features were found in the Kohanaiki section, as the Kaloko area had been extensively bulldozed. A total of 89 of features were identified as agricultural features associated with the Kona Field System. Sixty-one features were associated with the Kohanaiki Homesteads, a late 1800s historic settlement adjacent to Māmalahoa Highway. In 2005, the project now called Kaloko Heights, was surveyed again by Scientific Consultant Services (Wolforth et al. 2005). Eighty-nine sites were identified; the most common sites were cave shelters (37 sites).

Ross Cordy (1985) surveyed a portion of the Kohanaiki coast inland from 0.25 to 0.5 miles inland in 1975. He recorded 12 sites and conducted limited excavations at 11 sites.

Joseph Kennedy (1991) conducted a reconnaissance survey of a 500 foot (152 m) wide strip extending east (*mauka*) from the Queen Ka'ahumanu Highway for 7260 feet (2213 m). No sites or features were observed; seven caves "were examined to term and were determined to be devoid of cultural materials" (Kennedy 1991:C-1).

A Phase I reconnaissance survey was carried out for the proposed Kohanaiki Development Project Area in 1986 (Donham 1986). The project area covers the coastal area from 'O'oma Ahupua'a on the north to Kaloko Ahupua'a on the south, and extends inland approximately 0.5 miles to the Māmalahoa Trail. A total of 105 sites were recorded, consisting of habitations sites (more than 50%), roads, trails, boundary markers, animal pens, petroglyphs, shrines, and brackish water wells/pools. Three additional sites were found in 1987, and in 1990, features identified as possible burials were tested. Only one burial was found (Rosendahl 1990).

Based on the recommendations in the Donham report, data recovery was conducted at 31 of the previously recorded sites, consisting of relocation, vegetation, and additional recording (O'Hare and Goodfellow 1992). In addition, 15 newly identified sites were recorded during the project. A total of 109 test units were excavated at 21 of the 46 total sites for the data recovery project. Most of the project area is 1500 feet (457 m) west of Queen Ka'ahumanu Highway, but there is an access road that extends to the highway. No archaeological sites were identified within 300 feet (91 m) of the highway or within the access road portion of the project area.

In 1995, CSH conducted an archaeological inventory survey in portions of the current project area (Walsh and Hammatt 1995). Three sites were identified in Kohanaiki: two trails and a set of three cairns. The two trails, which converge into one trail inland of the highway, had been previously identified as Site 50-10-27-15324.

In 1996, a 224-acre parcel in Kohanaiki and Kaloko, adjacent to the *mauka* side of Queen Ka'ahumanu Highway, was surveyed by CSH (Colin et al. 1996). Fifty-five sites were recorded during the project; thirteen were within Kohanaiki or on the Kaloko - Kohanaiki boundary. These consisted of one cairn, on C-shape, one enclosure, one terrace, two modified excavations, two lava tubes, and portions of five trails.

#### **4.3.2 Kohanaiki Summary**

The highway extends approximately 4300 feet (1311 m.) through Kohanaiki Ahupua'a. One 500 foot (152 m) wide section on the *mauka* side of the highway has been subjected to inventory level archaeological survey, and one approximately 200 foot (61 m) wide section on the *makai* side of the highway has been included in both an inventory level survey and data recovery phase archaeological study. No sites were identified in either of these two portions of the present project area within Kohanaiki.

### **4.4 'O'oma 2**

Previous archaeological projects conducted in 'O'oma are listed in Table 19. Studies pertinent to the current project area are summarized below.

#### **4.4.1 Rosendahl, M. 1989**

PHRI, Inc. conducted an inventory survey of a 200 foot (61 m) wide corridor situated on the 'O'oma-Kohanaiki border extending east from the highway. No sites were identified within 300 feet (91 m) of the highway.

Table 19. Previous Archaeological Studies in 'O'oma Ahupua'a

Reference	Project Location	Report Type	Findings
Reinecke 1930	Cursory survey	Coastal Survey	Briefly notes numerous sites, Sites 66-78 are within 'O'oma, mainly habitation sites
Ching et al. 1968-69	Kailua-Kawaihae Road corridor extension and parcel near Keāhole Airport	Reconnaissance Survey and Excavations	A total of 343 sites were recorded, 216 features in the coastal portion, and 117 in the inland portion from 800 ft to 3 miles from the coast
Ching & Rosendahl 1968	Kailua-Kawaihae Road corridor, South Kohala to North Kona	Reconnaissance Survey	665 archaeological features identified, including three trails (Sites 500, 603, and 630)
Davis 1977	Keāhole Ag. Park, Kalaoa 1-5& 'O'oma 1; from Queen Ka'ahumanu Hwy to the 400 ft elevation	Reconnaissance Survey	22 agricultural and habitation sites recorded; minimal recording
Rogers-Jourdane 1978	Keāhole Point, NELH, 22.5 ac parcel	Reconnaissance Survey	Eleven sites recorded
Hammatt & Folk 1980	Keāhole Ag. Park & 370 acre parcel north of the park	Subsurface Excavations, Reconnaissance Survey	Twelve site complexes first identified by Davis (1977) were tested; eighteen new sites recorded in the 370 ac. parcel
Rosendahl 1980	NELH, Keāhole Point, TMK: 3-7-3-010:036	Inventory Survey & Data Recovery	Follow-up on work of Rogers & Jourdan 1978
Soehren 1980d	'O'oma 1, TMK: 3-7-3-007:040, 041	Archaeological Reconnaissance Survey	Four-page report; no site map
Barrera 1985b	'O'oma II Resort, 314 ac. Coastal parcel, TMK 3-7-3-009:004	Archaeological Reconnaissance Survey	40 sites identified
Barrera 1989	NELH & Host Park, TMK: 3-7-3-043:003, 042	Data Recovery	Excavation of sites identified by Barrera 1985b
Cordy 1985	'O'oma, Kalaoa, TMK: 3-7-3	Site Inventory	Inventory of Previous Identified Sites

Reference	Project Location	Report Type	Findings
Cordy 1986a	‘O‘oma 2 Resort, TMK: 3-7-3-009:004	Field Inspection	Re-evaluation of Barrera's survey (Barrera 1985b)
Donham 1987	‘O‘oma 2 Resort, TMK: 3-7-3-009:004	Data Recovery	27 new sites with 130 features were recorded and 54 features were recorded at previously identified sites
Rosendahl, M. 1989	Kohana-iki Resort Water Development Project Area, Land of ‘O‘oma 2, (TMK:3-7-3-09:5)	Archaeological Inventory Survey	Four sites identified along the corridor; features included a wall, terraces, a cave, and a <i>papamū</i> (playing) board
Walker & Rosendahl 1990	‘O‘oma 2 Water System Dev. Project	Reconnaissance Survey	Thirteen sites with 27 features were recorded. The majority of features were agricultural mounds
Dowden & Graves 1992	HELCO Keahole Parcel, Kalaoa 1-4, 15-acre parcel	Inventory Survey	Four sites with <i>pāhoehoe</i> excavations were recorded
Drolet & Schilz 1991	‘O‘oma 2, TMK: 3-7-3-007:038; 3-7-3-009:005, 008	Archaeological Inventory Survey	29 with 41 features identified; the majority were agricultural mounds
Yent 1991	Upland ‘O‘oma at an elevations of 2600 to 3200 ft	Reconnaissance Survey	10 sites found at the 2280 ft elevation, walls and mounds of agricultural fields, probably for sweet potato cultivation
Barrera 1992	‘O‘oma, TMK: 3-7-3	Data Recovery	Excavations at three sites
Thompson & Rosendahl 1992a, b	Keahole Transmission Lines, TMK: 3-6-; 3-7-; 3-8-	Archaeological Assessment	Relocated previously identified sites
Henry et al. 1993	Makaula to Kalaoa to ‘O‘oma Ahupua‘a	Archaeological Assessment	Assessment of a 1260 acre parcel
Walsh & Hammatt 1995	Queen Ka‘ahumanu Highway, TMK: 3-7, 3-4	Archaeological Inventory Survey	Seventeen cultural resources were located
Corbin 2000	NELH, ‘O‘oma II, TMK: 3-7-3-009:004	Data Recovery	Sites 1916 and 18028

Reference	Project Location	Report Type	Findings
Haun & Henry 2000b	‘O‘oma 1 <sup>st</sup> , 50-acre parcel, TMK 3-7-3-10:03	Archaeological Inventory Survey	186 features at 17 sites recorded, including a habitation cave and a basalt rock quarry
Haun & Henry 2002	‘O‘oma, Sites 22740, 22741 & 22749, TMK: 3-7-3-005:004	Data Recovery	Data Excavation at three caves, sites 22740, 22741 & 22749
Haun & Henry 2003b	‘O‘oma, 41 acre parcel, TMK: 3-7-3-007:040	Archaeological Inventory Survey	21 sites with 2,046 features recorded, including six habitation caves
Clark & Rechtman 2005	‘O‘oma 1 <sup>st</sup> and 2 <sup>nd</sup> parcel, TMK:3-7-3-007:039 and 3-7-3-046:105	Archaeological Inventory Survey	3 sites previously identified (Drolet & Schilz 1991) & 12 new sites identified, including habitation occupied as late as 1939
Clark & Rechtman 2006a	Holoholo Street Extension, TMK: 373-009:008	Archaeological Inventory Survey	Four sites recorded, two walls, an agricultural complex, and a pre-Contact habitation site
Clark & Rechtman 2006b	‘O‘oma 2 <sup>nd</sup> parcel, TMK:3-7-3-007:038	Archaeological Inventory Survey	18 sites recorded, mainly historic walls
Haun et al. 2006	TMK 3-7-3-007:040, 041	Archaeological Data Recovery	Sites 23825, 23831, 23832, 23835, 23836, and 23839; 18 features tested
Nelson et al. 2006	‘O‘oma 2 <sup>nd</sup> 45-acre parcel, TMK 3-7-3-009:007	Archaeological Inventory Survey	11 sites recorded, mainly historic homestead features

#### 4.4.2 Henry et al. 1993

Assessment of a 1260 acre parcel situated on the west side of the highway in the *ahupua‘a* listed above. Within ‘O‘oma 2, no sites were identified within 300 feet (91 m) of the highway.

#### 4.4.3 Barrera 1985b

Reconnaissance survey of a 450 acre project area situated on the west side of the highway in ‘O‘oma 2 and Kalaoa-‘O‘oma (referred to as ‘O‘oma 1). One site (10154, a “habitation structure”) was identified within 300 feet (91 m) of the highway.

#### 4.4.4 Barrera 1989

Varying levels of data recovery work conducted on sites identified within a 450 acre project area situated on the western side of the highway within ‘O‘oma 2 and Kalaoa-‘O‘oma (called ‘O‘oma 1 in this report). Site 10154 is identified as having been one of the sites that "required additional recording only." This site is located on the project area map and briefly described. It is described as a well constructed shelter plus an adjacent short wall section - age and function unknown.

#### 4.4.5 'O'oma 2 Summary

The highway extends through 'O'oma 2 for approximately 3800 feet (1158 m). The *mauka* side of the highway has been subjected to reconnaissance level study, and the *makai* side of the road has apparently been adequately surveyed and data recovery work was carried out on selected sites.

One site has been identified within 300 feet of the highway in 'O'oma 2, site 10154. This site was included in the data recovery project, and is presumed to have been adequately recorded.

### 4.5 Kalaoa

Previous archaeological projects conducted in 'O'oma are listed in Table 20. Studies pertinent to the current project area are summarized below.

#### 4.5.1 Barrera 1985c, 1989

Reconnaissance and subsequent data recovery work (see above), no sites were identified within 300 feet of the highway at Kalaoa-'O'oma.

#### 4.5.2 Henry et al. 1993

This project area included the western side of the highway at 'O'oma 2 (see above). One site was identified as being within approximately 300 feet (91 m) of the highway - Site 18524, identified as "pāhoehoe excavation." Recommended treatment was "further data collection." This project continues through Kalaoa 1-4, but no sites were identified within 300 feet of the highway in Kalaoa 1-4.

#### 4.5.3 Davis 1977; Hammatt & Folk 1980

These two reports record the survey and salvage excavations within the proposed Keāhole Agricultural Park on the eastern side of the highway. One site was identified within 300 feet of the highway, Site 06432, the boundary wall. This is described as a historic-era wall that forms the boundary between Kalaoa-'O'oma and 'O'oma 2. Survey and salvage excavations within the proposed Keahole Ag Park also extends into Kalaoa 1-4. No sites were identified within 300 feet of the highway at Kalaoa 1-4.

#### 4.5.4 Barrera 1987a, b, 1990

Survey and data recovery work at five areas within Kalaoa 1-4 in the vicinity of the Keāhole airport (it appears that this project area did not include the area within 300 feet of the highway). No sites were identified within 300 feet of the highway.

#### 4.5.5 Kalaoa-'O'oma Summary

The highway extends approximately 5200 feet (1585 m) through Kalaoa-'O'oma. The *mauka* side of the road through the length of the ahupua'a has been subjected to varying degrees of archaeological survey including salvage excavations in some areas. The length of the *ahupua'a* along the *makai* side of the road was included in the reconnaissance and data recovery work

Table 20. Previous Archaeological Studies in Kalaoa Ahupua'a

Reference	Project Location	Report Type	Findings
Stokes & Dye 1991	Island of Hawai'i	Survey	Identified two <i>heiau</i> , Kawaluna Heiau and Paliholo Heiau, and two <i>ko'a</i> , Halepa'u Ko'a and Maka'eo Ko'a.
Rosendahl & Kirch 1975	NELH, Keahole Point	Reconnaissance Survey	Fourteen sites recorded, all previously identified
Davis, 1977	Keahole Agricultural Park, TMK: 3-7-3-010:033	Archaeological Reconnaissance Survey	22 site complexes identified in a narrow corridor study
Barrera 1979	Keahole Airport Emergency Service Roads TMK 3-7-3-043:003	Archaeological Reconnaissance Survey	Two walled shelters, 50-10-27-06961 50-10-27-06962
Bonk 1979	Keahole Airport TMK 3-7-3-010	Addendum: An Archaeological Survey	Borrow pits area, 50-10-27-500
Barrera 1980	Keahole Airport, TMK 3-7-3-043:0-03 Kalaoa	Archaeological Reconnaissance Survey	50-10-27-06987; dismantled two C-shaped structure
Hammatt, and Folk 1980	Keahole Agricultural Park, TMK: 3-7-3-010:033	Archaeological Excavations	Data recovery at 12 sites, and identification of 18 sites in larger parcel north of the park
Rosendahl 1980	NELH, Keahole Point, TMK: 3-7-3-010:036	Inventory Survey & Data Recovery	No findings.
Soehren 1982	TMK 3-7-3-005:013, Kalaoa 4	Archaeological Reconnaissance Survey	Recorded a house platform and a square enclosure, sites 50-10-27-10214 50-10-27-07266
Clark 1984	Natural Energy Laboratory Hawai'i (NELH) Property, Keahole Point, TMK 3-7-3-010:036	An Archaeological Reconnaissance	50-10-27-00185 50-10-27-00246 50-10-27-01920 50-10-27-05601 50-10-27-10191 50-10-27-10192 50-10-27-10194 to 50-10-27-10201
Barrera 1985c	Keahole Point, 450 ac. Parcel, TMK: 3-7-3	Archaeological Reconnaissance Survey	42 sites identified

Reference	Project Location	Report Type	Findings
Soehren 1985	Alanui Kauhini, TMK 3-7-3-010:033 (Kalaoa 4)	Archaeological Survey	Coastal foot trail 50-10-27-21186
Cordy 1985	Kalaoa, 'O'oma	Archaeological Reconnaissance Survey	Settlement Pattern Study
Cordy 1986b	NELH Property: Kalaoa 5 Ahupua'a, Keahole Point TMK 3-7-3-010	Field Check	50-10-27-01920 50-10-27-10205 to 50-10-27-10214
Barrera 1987a	Five Areas Proposed for Airport Expansion Ke--āhole Airport,	Archaeological Survey	Six sites recorded
Barrera 1987b	Keāhole Airport, of South Ramp and Ground Transportation Expansion, Kalaoa, TMK 3-7-3-043:043	Archaeological Survey	50-10-27-00002 50-10-27-10306
Cordy 1987	Kalaoa 3 Uplands, TMK: 3-7-3-028:005	Field Inspection	Recorded one platform/terrace
Telea & Rosendahl 1987	Kona Palisades Subdivision Parcel, TMK 3-7-3-005:086 (6.6 acres) Kalaoa 4th	Archaeological Reconnaissance Survey:	14 features at six sites identified
Walker and Haun 1988	Kona Palisades Subdivision Parcel, TMK 3-7-3-005:087 (5.6 acres) Kalaoa 4th	Limited Archaeological Data Recovery	Identified 17 features, including two agricultural complexes that are part of the Kona Field System
Barrera 1989	NELH & Host Park, TMK: 3-7-3-043:003, 042	Data Recovery	Excavations of Site identified by Barrera 1985c
Walker and Rosendahl 1989	Pu'uhonua Subdivision TMK 3-7-3-010:027 Kalaoa 5th	Archaeological Inventory Survey,	34 sites with 84 features recorded, comprised of sites 50-10-27-05745 to 50-10-27-05778
Barrera 1990	Keāhole Airport Expansion	Archaeological Data Recovery	Excavations at two caves
Walker & Rosendahl 1990a	Kona Palisades, TMK: 3-7-3-005:012	Archaeological Inventory Survey	12 sites identified, including a refuge cave
Walker & Rosendahl 1990b	Kona Palisades, TMK: 3-7-3-005:086	Archaeological Inventory Survey	18 additional features recorded, in addition to the 14 features found during



Reference	Project Location	Report Type	Findings
			the reconnaissance survey (Telea & Rosendahl 1987)
Dowden and Graves 1992	HELCO Keahole Parcel Project Area, Lands of Kalaoa 1-4 TMK 3-7-3-049:036	Archaeological Inventory Survey,	Four quarry sites identified; 50-10-27-18076 to 50-10-27-18079
Thompson, L. & Goodfellow 1992	Kona Palisades Development Parcel, TMK 3-7-3-005:086 Land of Kaloa 4th	Interim Report: Background, Summary of Findings, and Recommendations; Archaeological Data Recovery - Phase II, Archaeological Mitigation Program,	Additional recording at four sites; 50-10-28-14135 50-10-28-14136 50-10-28-14137 50-10-28-14565  24 test units excavated
Barrera 1993b	Kalaoa, at TMK: 7-3-05:88 (5.0 acres)	Archaeological Data Recovery, Māmalahoa Trail	Further recording of the Māmalahoa Trail
Henry, et al. 1993	LUC Project, TMK: 3-7-3-009:001;010:001	Archaeological Assessment Study	25 sites recorded
Barrera 1995	Kalaoa Mauka, TMK: 7-3-05:98	Archaeological Inventory Survey	50-10-28-19823 to 50-10-28-19831
Masterson & Hammatt 1997	Kalaoa Reservoir, TMK: 3-7-3-010:033	Archaeological Reconnaissance Survey	Upland sites
Bonk 1998	TMK 3-7-3-005:112 (5.9 acres) Kalaoa	Archaeological Survey Papers in Ethnic and Cultural Studies-98-1	Cultural Study
Cleghorn 1998	for the Proposed University Center at West Hawai'i TMK 3-7-3-010:033	Archaeological Investigations	50-10-28-06418 50-10-28-15263 to 50-10-28-15265 50-10-28-15268 50-10-28-15281 to 50-10-28-15288 50-10-28-15300 50-10-28-21361
Wolforth 1999	HELCO Keahole-Kailua 69kV Transmission Line: Lands of Kalaoa 1-4,	Monitoring Report with A Detailed Description of Māmalahoa Trail (50-10-27-2)	Monitoring of Māmalahoa Trail
McGerty, and Spear 2000	Kalaoa Mauka, TMK: 7-3-05:98 (5.9 acres)	Final Addendum to: Archaeological Inventory Survey	50-10-28-19823 to 50-10-28-19832, 50-10-28-19839 & 50-10-28-21812

Reference	Project Location	Report Type	Findings
Roberts & Roberts 2001	Natural Energy Laboratory of Hawaii Authority TMK 3-7-3-043:003 Kalaoa 5	Archaeological Data Recovery	Sites: 50-10-27-10211, 50-10-27-10212, 50-10-27-10213
Haun and Henry 2003c	TMK: 3-7-3-10:29, Land of Kalaoa 4th	Archaeological Inventory Survey	50-10-28-11271 50-10-28-21886 50-10-28-23640 to 50-10-28-23643
Haun and Henry 2003d	TMK: 3-7-3-23:88, Land of Kalaoa 3rd	Archaeological Inventory Survey	50-10-28-23789
Rosendahl 2004	HELCO Station, Kalaoa 1-4, TMK: 3-7-3-49:36, 37	Archaeological Assessment	Four sites recorded, all <i>pāhoehoe</i> excavations
Haun, Henry and Berrigan 2003b	Pu'uhonua Subdivision Parcel, Land of Kalaoa 5, TMK 3-7-3-010:027	Archaeological Data Recovery	Sites 5748, 5749, 5750, 5753, 5755, 5756, 5761, 5762, 5764, 5771, 5773, and 5774; excavations at four sites; charred sweet potato found in one feature

conducted by Barrera. Two sites have been identified within 300 feet of the highway, Site 18524 Pāhoehoe excavation, and Site 06432 Boundary wall.

#### 4.5.6 Kalaoa 1-4 Summary

The portion of the highway within the present project area extends 2400 feet (732 m) into Kalaoa 1-4, between the southern boundary of the *ahupua'a* and the Keāhole Airport entrance road. Along the *mauka* side of this section of the highway, the area has been subjected to both an archaeological survey and salvage excavations. On the *makai* side of the road, survey and data recovery work has been undertaken in the vicinity of the airport, but apparently not within 300 feet of the highway.

### 4.6 Other Relevant Archaeological Studies

#### 4.6.1 Ching, Cluff, and Riley 1968-69

This report is incomplete and is missing a section called "Kailua-Kawaihae Road Section II Survey and Salvage" pp.38-89. The report contains a map of the Keahole region with site locations (site numbers 118 to 355) but no site descriptions of any specific sites.

#### 4.6.2 Ching and Rosendahl 1968

Surface survey of Section II of the highway (likely the same report that was to have been included in the report cited above). The map accompanying this report identifies a small number of sites within roughly 300 feet of the (proposed) highway: two sites in Honokōhau (T2 and T3), one site in 'O'oma 2 (T1), one in Kalaoa-'O'oma (T1), and one in Kalaoa 1-4 (T1). Minimal

descriptions of these sites are provided, but the use of this data is highly problematic, see explanation by Cordy (1985:11-12).

#### **4.6.3 Thompson and Rosendahl 1992a, b**

A study in which the locations of selected existing sites along two proposed transmission line routes were identified. The sites marked on the map were limited to "sites or features considered to be culturally significant or possibly significant" (Thompson 1992a:4). One of these routes is essentially the same project area as the present highway widening.

#### **4.6.4 Helber, Hastert & Kimura, Planners 1987**

A study related to the request for an easement across a portion of the Māmalahoa Trail. Although this report documents the Māmalahoa Trail, it is not considered an acceptable archaeological data recovery report.

#### **4.6.5 Barrera 1993b**

This report is an archaeological documentation of a portion of the Māmalahoa Trail in Kalaoa 1-4.

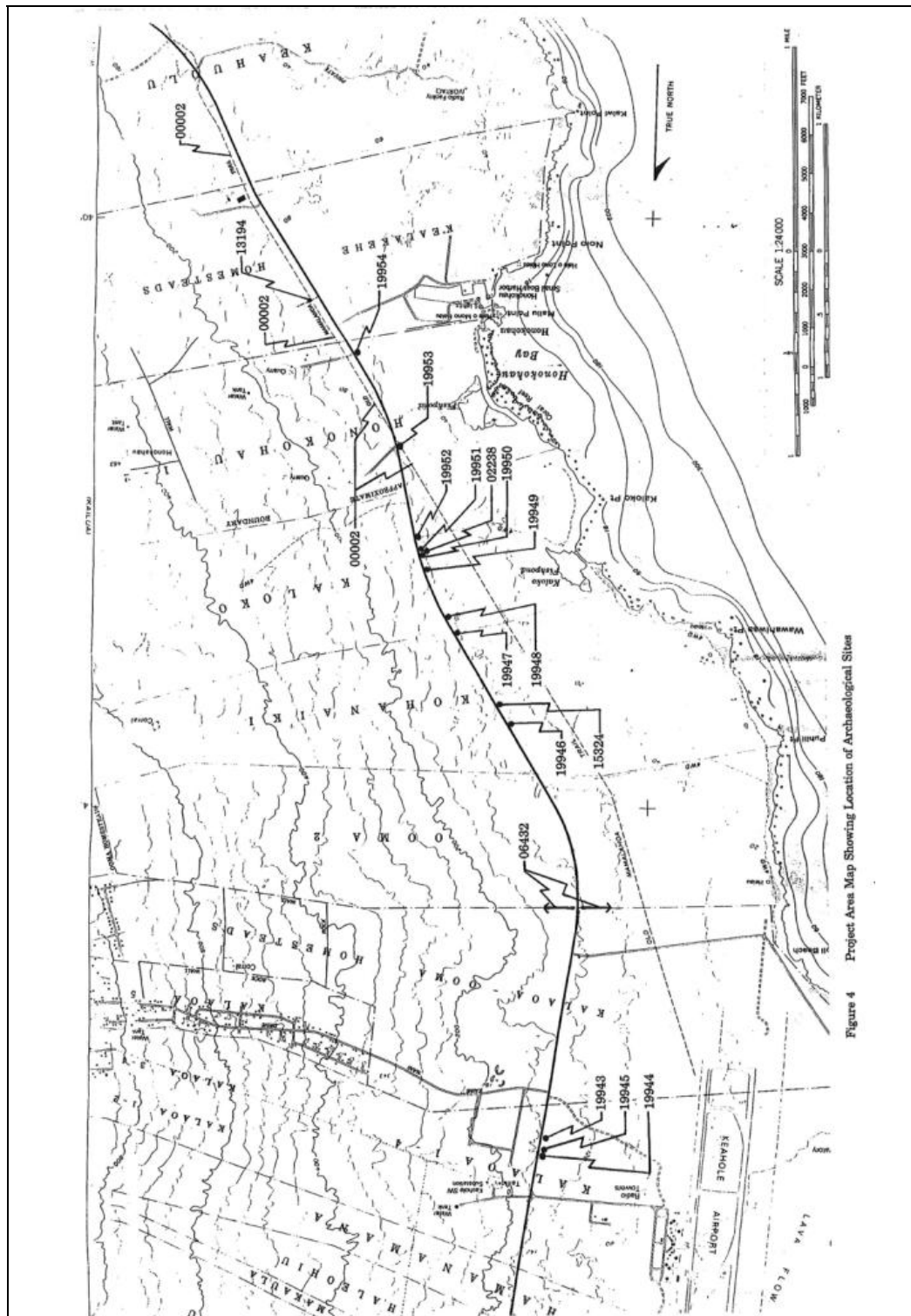


Figure 16. Identified archaeological sites from Keahuolu to Kalaoa within 300 feet of the Queen Ka'ahumanu Highway Right-of-Way (figure from Walsh and Hammatt 1995)

Table 21. Previously Identified Sites within 300 feet of Queen Ka'ahumanu Highway (Listed by *ahupua'a* from South to North)

Site #	Site Type	<i>Ahupua'a</i>	Level	References	Recommendation	Status
5011	Boundary Wall	Kealakehe/ Keahuolu	AIS	Sinoto 1977; Donham 1990b	NFW	M
18513	Complex			O'Hare & Goodfello w 1994, Jensen 1992+	FDC	M
18514	Wall				NFW	M
18515	Complex				FDC	M
18516	Complex				NFW	M
18517	Filled Depression				NFW	M
18518	Complex				FDC	M
00002	Māmalahoa Trail				FDC, PID	M
13194	Trail	Kealakehe	AIS, DR	Donham 1990b+ Jensen 1992	P, I	P
13195	<i>Ahu(s)</i>				NFW	M
00002*	Māmalahoa Trail				P, I	P
18081	Petroglyphs	Honokōhau	AIS	Robins et al. 2000	P	K
18083	Modified Outcrop				DR	K
18084	Rockshelter				DR	K
18085	Lava Tube				DR	K
18086	Pāhoehoe Basin				NFR	K
18091	Petroglyph				NFR	K
18186	Wall Segment				NFR	K
00002*	Māmalahoa Trail				P	K
02199	Trail	Kaloko	S	Cordy et al. 1991	None	K
BPM90	Trail				None	K

Site #	Site Type	Ahupua'a	Level	References	Recommendation	Status
02238	Wall w/ midden				None	K
02233	Trail				None	K
02240	Trail				None	K
10154	Habitation Structure	'O'oma 2	R, DR	Barrera 1985b, 1989	Add. Recording only	M
06432*	Boundary Wall	Kalaoa - 'O'oma	S	Davis 1977	None	K
18524	Pāhoehoe Excavation		R	Henry et al. 1993	FDC	K

**KEY**

+	Indicates there are associated addendum reports or revision letters
AIS	Archaeological Inventory Survey
DR	Data Recovery
S	Survey (conducted prior to establishment of current AIS standards)
NFW	No Further Work
NFR	No Further Research
FDC	Further Data Collection
PID	Preservation with Interpretive Development
P,I	Preservation with Interpretation
P	Preserved - Included in a preservation plan
M	Mitigated - Site adequately recorded
K	Known - Site has been identified but findings and recommended treatment have not been made and/or have not yet approved by DLNR-SHPD
*	Site included in present Inventory Survey

Table 22. Summary of Zone Model Characteristics

Zone	Elevation	Topography	Climate	Present Vegetation	Occupation Activities (Traditional and Historic)	Site/Feature Types	Site Density/Distribution
Coastal	Coastline to 300 m inland; 0 to 9 m contour (0 to 30 feet)	Relatively flat to gradual slope (5-10%), rocky, little or no soils; includes isolated bays, inland ponds	Central Kona patterns; Avg. Temp. range 67-83 F; Rainfall 10 inches/yr	Strand, pond & <i>kiawe</i> thicket communities	Primary traditional use: permanent and temporary occupance & marine resource exploitation. Other uses: limited agriculture, quarrying, transportation, burials art/ communication	caves, cairns, enclosures, trails, midden scatters, modified outcrops, overhangs, <i>pāhoehoe</i> excavations, petroglyphs, platforms, sinkholes, terraces, lava tubes, pavements	Moderate, concentrated along the shoreline and around inland ponds
Intermediate (Barren of middle)	300 – 600 m inland; 9- 12 m contour (30-39 ft.) to 130 m contour (425 ft.)	Gradual slope undissected lavas, little or no soils	Central Kona patterns; Rainfall 10- 30+ in/yr	Grasses dominate, some shrubs	Primary traditional use: temporary or transitory occupance Other uses: habitation (mostly temporary or recurrent), transportation, quarrying, limited agriculture, burials, art/communication, ranching	trails, <i>pāhoehoe</i> excavations, cairns, midden scatters, platforms, terraces, enclosures, caves, mounds, walls	Very low and scattered, some concentrations along <i>mauka/makai</i> trails
Upland	Extends up to 6 km inland from shore; 130 m contour (425 ft) to 1030 m contour (3379 ft.)	Gradual slope, minimal soils below 800 ft.. moderate to strong soil development above	Central Kona patterns; Rainfall 40- 50+ in/yr	Non-native secondary forest dominates	Primary traditional use: permanent and temporary occupance & intensive dryland agriculture. Other uses: forest resource exploitation, ranching, commercial agriculture	upland agricultural features, platforms, mounds, walls, enclosures, cairns, terraces, trails, lava tubes, <i>pāhoehoe</i> excavations	Medium to high, very high around 2000 ft elevation and 25 in/yr rainfall area

## Section 5 Results of Fieldwork

This section includes two main subsections: (1) an overview of the results of identification efforts, and (2) site descriptions with documentation and interpretations of age and function.

### 5.1 Overview of Historic Properties Identified

The project area is approximately 5.2 miles long and 300 ft. wide, or approximately 190 acres. Of this area, approximately 50 percent consists of the existing highway and previously-disturbed land along both the *mauka* and *makai* highway shoulders. Therefore, the total area of undisturbed land that was surveyed is approximately half, or 95 acres, of the ROW. The entire undisturbed portion of the project area was surveyed for historic properties. In addition, the entire previously disturbed area on the *mauka* side of the highway was also surveyed as a check and assurance that no historic properties were present (none were identified in the *mauka* portion). On the *makai* side, as reported in the 2011 AIS (Monahan et al. 2011), survey transects (oriented north-to-south) were conducted so that all previously disturbed areas extending upslope to the existing highway were visually confirmed to be disturbed. Later, during supplemental survey efforts conducted with the consulting parties (Monahan and Wilkinson 2012; Monahan and Yucha 2012), identification and inspection efforts were not conducted by systematic transects but, rather, on a more selective basis focused on areas of interest to the consulting parties.

Seventy-four (74) historic properties were identified within the project area. Most of these (n=54) have not been formally described in prior reports, and are reported here for the first time. The remaining 20 historic properties have been described in prior reports, as indicated in the individual site descriptions below, although some of these are trails whose previously-described portions are not located in the current project area.

Of the 54 newly-identified historic properties, 35 were first described in the May 2011 AIS by Monahan et al. (2011). Nineteen (19) were identified during supplemental survey efforts working with the consulting parties (cf. Monahan and Wilkinson 2012; Monahan and Yucha 2012).

Table 23 summarizes all historic properties in the project area including their temporary number(s), primary source(s) if previously identified, site type, number of features, age and functional interpretation.

Figure 17 to Figure 27 depict the location of all historic properties in the project area. These maps depict three important project area boundaries: the ROW (red line), “construction limits” (black dashed line), which is a buffer zone needed to conduct construction activities, and “grading limits” (yellow shading), which is the physical area of landscape modification (grading and filling) that will result in site destruction.

Regarding formal site types, the most common are trails (n=15), which include the *ala loa*-type Māmalahoa Trail (SIHP # 00002), and excavated pits in *pāhoehoe* and *‘a‘ā* (n=15). Another common site type includes a variety of stacked-rock mounds and *ahu* (n=10). Four (4) wall sites were identified, including the extensive *ahupua‘a*-boundary (SIHP # 06432) between Ka-laoa-O‘oma and Ka-laoa; four (4) modified outcrops consisting of cleared rocks piled or stacked on bedrock exposures were identified. Other site types include: one (1) burial platform (SIHP # 22415); two (2) petroglyph sites (SIHP #s 28792 and 19945)—the former is directly associated



with a *mauka-makai* trail (SIHP # 28791), the latter is associated with areas of bashed/pecked *pāhoehoe*; two (2) rounded boulders, interpreted as *pāhoehoe* bashers, associated with excavated pits (SIHP #s 29348 and 29349); three (3) lava tubes including one (SIHP # 19943) probable temporary habitation; three (3) enclosures including one (SIHP # 10154) of relatively formal design interpreted as a possible historic-era habitation; five (5) site complexes containing a variety of features; three (3) leveled areas including one (SIHP # 29272) associated with a *mauka/makai* trail discovered by Isaac Harp; three (3) rock-filled crevices; two (2) coral-filled crevices; and three (3) modified depression / blisters.

Numerous sites for which a functional interpretation can be made appear to be related to agriculture / cultivation / planting of dryland food plants, including a variety of mounds, enclosure, modified outcrops, depressions and pits. Many *mauka/makai* trails cross the project area, which is consistent with its physiographic location between the abundant marine resources of the coast and the productive uplands of the Kona Field System—both of which were major permanent settlement areas. There are also several sites that appear to be primarily related to quarrying of rocks. A few temporary habitations were also identified. The burial and petroglyph sites are noteworthy indicators that the project area contains some unique and special resources.

Twenty-nine (31) sites are interpreted as prehistoric / pre-Contact in age mostly because they exhibit traditional Hawaiian construction styles; only four (4) appear to date exclusively and conclusively to the historic era (these are the Māmalahoa Trail, the walled enclosure SIHP # 10154, the ranching / boundary wall SIHP # 19951 and the *ahupua'a* boundary wall SIHP # 06432). The majority of the remaining sites are indeterminate.

CSH's 1995 report (Walsh and Hammatt 1995), in which many of the sites described below were first documented, is reproduced in its entirety as Appendix B.

SIHP # 19946 (a *mauka-makai* trail), identified during Walsh and Hammatt's (1995) survey and included as an "interim preservation" site in the Final Archaeological Treatment Plan (1999), could not be re-located during the current investigation despite several attempts to find it.

Based on consultation with the NPS, all *mauka-makai* trails identified in the project area extend *makai* beyond project area limits, and most can also be traced *mauka* outside of the project area. Physical survey of the full extent of these trails outside the project area boundary was beyond the scope of work for the current investigation. However, in response to NPS concerns, CSH recommends a comprehensive treatment of trail sites—including analysis of historic maps and documents—that can be used as a baseline for a systematic archival analysis that will place the project-area trail segments in a wider context in order to more accurately reflect their cultural and historical significance. This trail study will be conducted during the Data Recovery phase.

In response to review comments from the Office of Hawaiian Affairs (OHA) of a previous version of this archaeological inventory survey report, it is important to state that two sites originally included in the Walsh and Hammatt (1995) survey (SIHP #s 02238 and 19944) are not located within the current project area. SIHP # 02238 is located within the national park, not the project area, and SIHP # 19944 is located *makai* of the project area at the northern end of the project area.

Table 23. Historic Properties in the Project Area (arranged from South to North)

SIHP # <sup>1</sup>	Temp. # (s) <sup>2</sup>	Primary Source(s)	Site Type	Feat.	Age	Function
19954	15 (Walsh and Hammatt 1995)	Walsh and Hammatt (1995)	Trail ( <i>mauka-makai</i> )	1	Indeterminate	Transportation
29332	NPS 1 (Current Report)	Current report	Mound/Paved Area within Naturally-formed <i>Pāhoehoe</i> Depression	2	Indeterminate	Indeterminate
29334	Depression 0 (Monahan and Yucha 2012)	Current report; Monahan and Yucha (2012)	Rock Mound within a Naturally-formed <i>Pāhoehoe</i> Depression	1	Indeterminate	Indeterminate
28774	Trail 1 (Monahan et al. 2011)	Monahan et al. (2011)	Trail ( <i>mauka-makai</i> )	1	Indeterminate	Transportation
22507	Trail 2 (Monahan et al. 2011) 157-16 (Nelson and Gmirkin (2001)	Nelson and Gmirkin (2001); Monahan et al. (2011)	Trail ( <i>mauka-makai</i> )	1	Indeterminate	Transportation
29335	Wall 0 (Monahan and Yucha 2012)	Current report; Monahan and Yucha (2012)	Rock Wall Segment	1	Indeterminate	Indeterminate
18099	Trail 4 (Monahan et al. 2011) 157-6 (Nelson and Gmirkin (2001)	In project area, Nelson and Gmirkin (2001); Monahan et al. (2011); outside the project area, Robins et al. (2000); Yucha and McDermott (2008)	Trail ( <i>mauka-makai</i> )	1	Indeterminate-Possibly Historic	Transportation
22418	Trail 3 (Monahan et al. 2011) 157-6A (Nelson and Gmirkin (2001)	Nelson and Gmirkin (2001); Monahan et al. (2011)	Trail ( <i>mauka-makai</i> )	1	Indeterminate	Transportation
22417	Tube 1 (Monahan et al. 2011) 157-5 (Nelson and Gmirkin (2001)	Nelson and Gmirkin (2001); Monahan et al. (2011)	Modified Lava Blister	1	Prehistoric (Pre-Contact)	Agriculture / Planting Pit
28778	T-080510-2 (Monahan et al. 2011)	Monahan et al. (2011)	<i>Pāhoehoe</i> Excavation	1	Prehistoric (Pre-Contact)	Agriculture / Planting Pit
22415	T-080510-3 (Monahan et al. 2011) 157-3 (Nelson and Gmirkin (2001)	Nelson and Gmirkin (2001); Monahan et al. (2011)	Platform	1	Prehistoric (Pre-Contact)	Burial
29336	Terrace 0 (Monahan and Yucha 2012)	Current report; Monahan and Yucha (2012)	Rock Terrace	1	Indeterminate	Indeterminate
29337	Depression 1 (Monahan and Yucha 2012)	Current report; Monahan and Yucha (2012)	Excavated Pit	1	Indeterminate	Indeterminate-Possible Quarry or Sweet Potato Planter
29339	Wall 1 (Monahan and Yucha 2012)	Current report; Monahan and Yucha (2012)	Rock Wall Segment	1	Indeterminate	Indeterminate
29338	Depression 2 (Monahan and Yucha 2012)	Current report; Monahan and Yucha (2012)	Excavated Pit	1	Indeterminate	Indeterminate-Possible Quarry or Sweet Potato Planter
29340	Mound 0 (Monahan and Yucha 2012)	Current report; Monahan and Yucha (2012)	Rock Mound	1	Indeterminate	Indeterminate
29341	Depression 3 (Monahan and Yucha 2012)	Current report; Monahan and Yucha (2012)	Excavated Pits	2	Indeterminate	Indeterminate-Possible Quarry or Sweet Potato Planter
29342	Depression 4 (Monahan and Yucha 2012)	Current report; Monahan and Yucha (2012)	Excavated Pit	1	Indeterminate	Indeterminate-Possible Quarry for Cinder Rock to Repair Nearby Māmalahoa Trail
00002	n.a.	Numerous (e.g., Cordy et al. 1991)	Māmalahoa Trail (cross slope, <i>ala loa</i> type)	1	Historic	Transportation
19953	14 (Walsh and Hammatt 1995)	Walsh and Hammatt (1995)	Trail ( <i>mauka-makai</i> )	1	Indeterminate	Transportation
29343	Depression 5 (Monahan and Yucha 2012)	Current report; Monahan and Yucha (2012)	Excavated Pit	1	Indeterminate	Indeterminate-Possible Quarry or Sweet Potato Planter
28780	T-080510-7 (Monahan et al. 2011)	Monahan et al. (2011)	‘A ‘ā Excavation	1	Indeterminate	Indeterminate
28781	T-080510-8 (Monahan et al. 2011)	Monahan et al. (2011)	Paved / Leveled Area	1	Indeterminate	Indeterminate-Possible Agricultural Clearing

SIHP # <sup>1</sup>	Temp. # (s) <sup>2</sup>	Primary Source(s)	Site Type	Feat.	Age	Function
28782	Trail 6 (Monahan et al. 2011)	Monahan et al. (2011)	Trail ( <i>mauka-makai</i> )	1	Indeterminate	Transportation
28783	T-080510-10-14a (Monahan et al. 2011)	Monahan et al. (2011)	Complex	6	Prehistoric (Pre-Contact)	Agriculture
28784	Trail 7 (Monahan et al. 2011)	Monahan et al. (2011)	Trail ( <i>mauka-makai</i> )	1	Indeterminate	Transportation
28785	T-091010-1 (Monahan et al. 2011)	Monahan et al. (2011)	Enclosure	1	Prehistoric (Pre-Contact)	Agriculture
29333	NPS 3 (Current Report)	Current report	Rock Stacking (Possible <i>Ahu</i> )	1	Indeterminate	Indeterminate
28786	T-080510-15 (Monahan et al. 2011)	Monahan et al. (2011)	Modified Depression	1	Prehistoric (Pre-Contact)	Agriculture
28787	Trail 8 (Monahan et al. 2011)	Monahan et al. (2011)	Trail ( <i>mauka-makai</i> )	1	Indeterminate	Transportation
19952	13 (Walsh and Hammatt 1995)	Walsh and Hammatt (1995)	Trail ( <i>mauka-makai</i> )	1	Indeterminate	Transportation
28788	T-080510-16/17 (Monahan et al. 2011)	Monahan et al. (2011)	Modified Outcrop Complex	2	Prehistoric (Pre-Contact)	Agriculture
19951	12 (Walsh and Hammatt 1995)	Walsh and Hammatt (1995)	Wall	1	Historic	Ranching / Boundary
28789	T-080510-18/19/20 (Monahan et al. 2011)	Monahan et al. (2011)	Complex	6	Prehistoric (Pre-Contact)	Agriculture
19950	10 (Walsh and Hammatt 1995)	Walsh and Hammatt (1995); Current report	Modified Outcrop Complex	5	Prehistoric (Pre-Contact)	Agriculture
28790	Tube 2 (Monahan et al. 2011)	Monahan et al. (2011)	<i>Pāhoehoe</i> Excavation	1	Prehistoric (Pre-Contact)	Quarrying
19949	9 (Walsh and Hammatt 1995)	Walsh and Hammatt (1995)	Enclosure	1	Indeterminate (Historic or Possibly Modern)	Indeterminate-Possible Windbreak / Temporary Shelter
28791	Trail 11 (Monahan et al. 2011)	Monahan et al. (2011)	Trail ( <i>mauka-makai</i> )	1	Indeterminate	Transportation
28792	Petroglyph 1 (Monahan et al. 2011)	Monahan et al. (2011)	Petroglyph	1	Prehistoric (Pre-Contact)	Symbolic Expression
29344	Excavation 0 (Monahan and Yucha 2012)	Current report; Monahan and Yucha (2012)	Excavated Pit	1	Indeterminate- Probably Prehistoric (Pre-Contact)	Indeterminate-Possible Quarry or Sweet Potato Planter or Bird Pit
10714	T-091010-4 (Feature A) T-091010-5 (Feature B) T-091010-9 (Feature C) (All, Monahan et al. 2011)	Current report (in project area); elsewhere Wolforth et al. (2005); Bell et al. (2009)	Trail System ( <i>mauka-makai</i> ), interpreted as part of the “Road to the Sea Trail”	3	Prehistoric (Pre-Contact) (used in Historic times as well)	Transportation
28794	T-091010-7 (Monahan et al. 2011)	Monahan et al. (2011)	Filled Crevice	1	Indeterminate	Indeterminate-Possible Agricultural Clearing Feature
28796	T-091010-6 (Monahan et al. 2011)	Monahan et al. (2011)	Stacked Boulders	1	Indeterminate	Marker
28797	T-091010-8 (Monahan et al. 2011)	Monahan et al. (2011)	Mound Complex	2	Prehistoric (Pre-Contact)	Agriculture
19948	T-091010-11 (Monahan et al. 2011)	Portion of site originally identified in project area by Walsh and Hammatt (1995). Additional features identified and reported in Monahan et al. (2011).	Complex	8	Prehistoric (Pre-Contact)	Agriculture and Quarrying
28799	T-091010-12 (Monahan et al. 2011)	Monahan et al. (2011)	Excavated Pit Complex	3	Prehistoric (Pre-Contact)	Agriculture

SIHP # <sup>1</sup>	Temp. # (s) <sup>2</sup>	Primary Source(s)	Site Type	Feat.	Age	Function
28800	T-091010-13 (Monahan et al. 2011)	Monahan et al. (2011)	<i>Pāhoehoe</i> Excavation	1	Prehistoric (Pre-Contact)	Quarrying
28801	T-091710-3/4 (Monahan et al. 2011)	Monahan et al. (2011)	Modified Outcrop Complex	2	Prehistoric (Pre-Contact)	Agriculture
19947	7 (Walsh and Hammatt 1995)	Walsh and Hammatt (1995)	Stacked Rocks	3	Prehistoric (Pre-Contact)	Ahupua‘a Boundary Markers
28802	T-091710-7/8 (Monahan et al. 2011)	Monahan et al. (2011)	Complex	3	Prehistoric (Pre-Contact)	Temporary Habitation
28803	T-091710-9 (Monahan et al. 2011)	Monahan et al. (2011)	Complex	2	Indeterminate	Indeterminate-Possible Agricultural Clearing Feature
28804	T-091710-11 (Monahan et al. 2011)	Monahan et al. (2011)	Filled Crevice	1	Indeterminate	Indeterminate-Possible Agricultural Clearing Feature
28805	T-091710-14 (Monahan et al. 2011)	Monahan et al. (2011)	Modified Outcrop	1	Prehistoric (Pre-Contact)	Agriculture/Clearing
15324	6 (Walsh and Hammatt 1995)	Walsh and Hammatt (1995)	Trail ( <i>mauka-makai</i> )	2	Indeterminate	Transportation
19946	5 (Walsh and Hammatt 1995)	(Walsh and Hammatt 1995)	Trail ( <i>mauka-makai</i> )	1	Indeterminate	Transportation
28806	T-092110-1 (Monahan et al. 2011)	Monahan et al. (2011)	Mound	1	Indeterminate	Possible Marker
28807	T-092110-2 (Monahan et al. 2011)	Monahan et al. (2011)	Filled Crevice	1	Indeterminate	Indeterminate
29345	Coral Crevice (Harp 2011)	Current report; Harp (2011); Monahan and Wilkinson (2012)	Coral-filled <i>Pāhoehoe</i> Crevice	3	Indeterminate	Indeterminate
28808	T-092110-7 (Monahan et al. 2011)	Monahan et al. (2011); additional features added (Monahan and Wilkinson 2012; Current report)	Mound Complex	5	Indeterminate	Markers
28809	T-092310-1 (Monahan et al. 2011)	Monahan et al. (2011)	<i>Pāhoehoe</i> Excavation	1	Prehistoric (Pre-Contact)	Quarrying
28810	T-092110-8 (Monahan et al. 2011)	Monahan et al. (2011)	Lava Tube	1	Prehistoric (Pre-Contact)	Indeterminate / Possible Water Catchment
29346	Mound (Harp 2011)	Current report; Harp (2011); Monahan and Wilkinson (2012)	Rock Mound	1	Indeterminate	Indeterminate – Possible Marker or Quarrying
10154	T-4 (Barrera 1985)	Barrera (1985, 1989)	Walled Enclosure	1	Historic	Indeterminate-Possible Habitation
06432	n.a.	Davis (1977)	Core-Filled Stone Wall	1	Historic	<i>Ahupua‘a</i> Boundary
29347	Mound 1 (Harp 2011)	Current report; Harp (2011); Monahan and Wilkinson (2012)	Rock Mound	1	Indeterminate	Possible Marker or Quarrying
29272	Coral Frags (Harp 2011)	Current report; Harp (2011); Monahan and Wilkinson (2012)	Level Area in ‘A ‘ <i>ā</i> with Trail ( <i>mauka/makai</i> )	2	Indeterminate	Possible Temporary Resting Spot / Work Area and Transportation
28811	T-092110-10 (Monahan et al. 2011)	Monahan et al. (2011)	<i>Pāhoehoe</i> Excavation	1	Prehistoric (Pre-Contact)	Quarrying
28812	T-092410-1 (Monahan et al. 2011)	Monahan et al. (2011)	Possible Filled Crevice	1	Indeterminate	Indeterminate
28813	T-092110-11 (Monahan et al. 2011)	Monahan et al. (2011); additional features added (Monahan and Wilkinson 2012; Current report)	Modified Lava Blisters	5	Prehistoric (Pre-Contact)	Agriculture
28814	T-092210-1 (Monahan et al. 2011)	Monahan et al. (2011)	Lava Tube	1	Prehistoric (Pre-Contact)	Indeterminate / Possible Water Catchment
28815	T-092210-2 (Monahan et al. 2011)	Monahan et al. (2011)	<i>Pāhoehoe</i> Excavation	1	Prehistoric (Pre-Contact)	Quarrying
19943	1 (Walsh and Hammatt 1995)	Walsh and Hammatt (1995)	Lava Tube	4	Prehistoric (Pre-Contact)	Temporary Habitation

SIHP # <sup>1</sup>	Temp. # (s) <sup>2</sup>	Primary Source(s)	Site Type	Feat.	Age	Function
19945	4 (Walsh and Hammatt 1995)	Walsh and Hammatt (1995); additional features added (Monahan and Wilkinson 2012; Current report)	Petroglyphs (n=2) and Bashed/Pecked <i>Pāhoehoe</i> (n=7)	9	Prehistoric (Pre-Contact)	Symbolic Expression and Prospecting for Voids in Lava Flows
29348	Rock 1 (Monahan and Wilkinson 2012)	Current report; Monahan and Wilkinson (2012)	Boulder ( <i>Pāhoehoe</i> Basher) in Excavated Pit	1	Prehistoric (Pre-Contact)	Prospecting for Voids in Lava Flow
29349	River Rock (Harp 2011)	Current report; Harp (2011); Monahan and Wilkinson (2012)	Boulder ( <i>Pāhoehoe</i> Basher) and Associated Excavated Pit	2	Prehistoric (Pre-Contact)	Prospecting for Voids in Lava Flow

<sup>1</sup> These State Inventory of Historic Property (SIHP) numbers begin with “50-10-27.”

<sup>2</sup> Original references are provided for sources of temporary site numbers

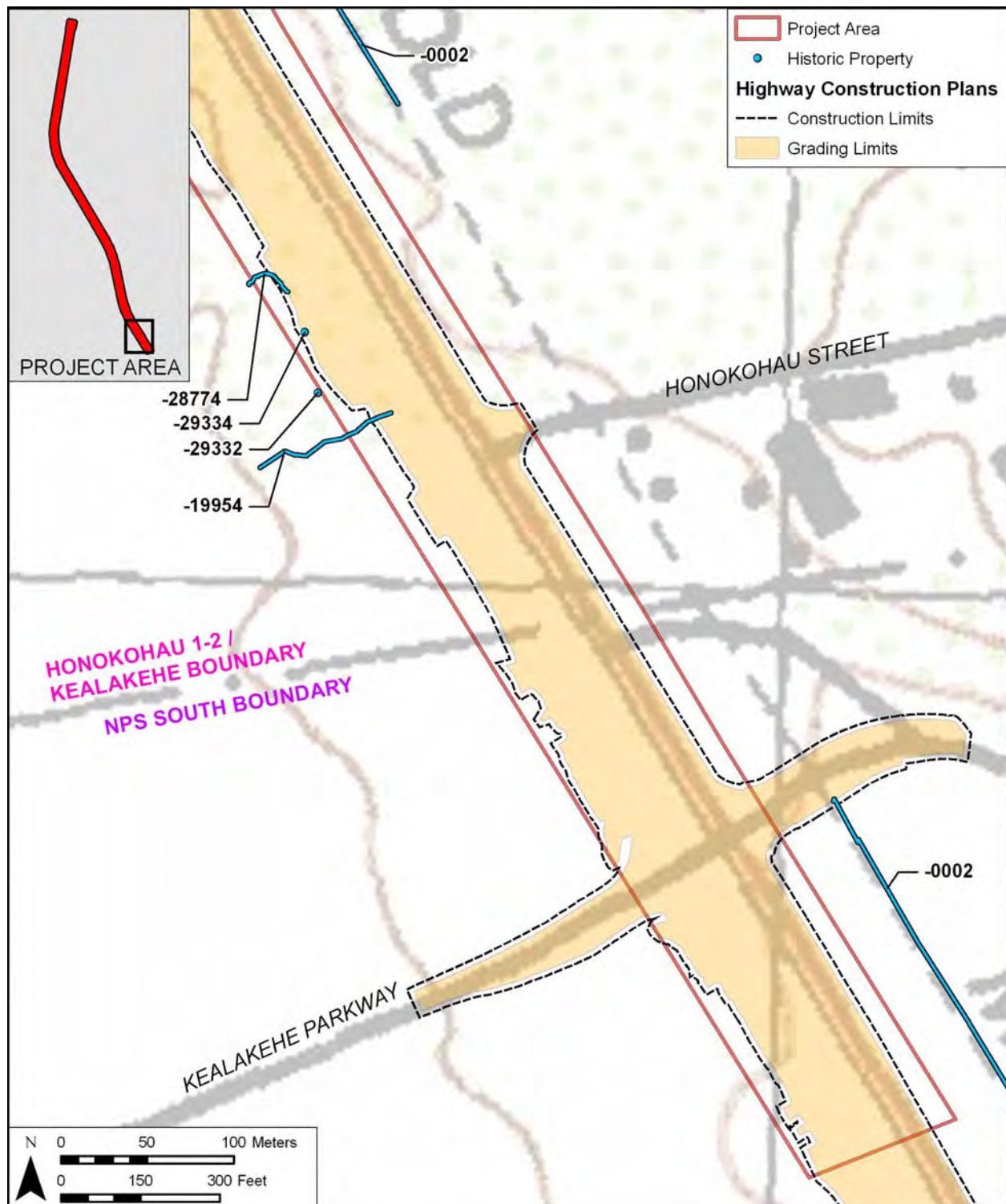


Figure 17. Portion of the 1996 U.S. Geological Survey 7.5 minute topographic map (Keāhole Point Quadrangle) showing Section 1 of the project area



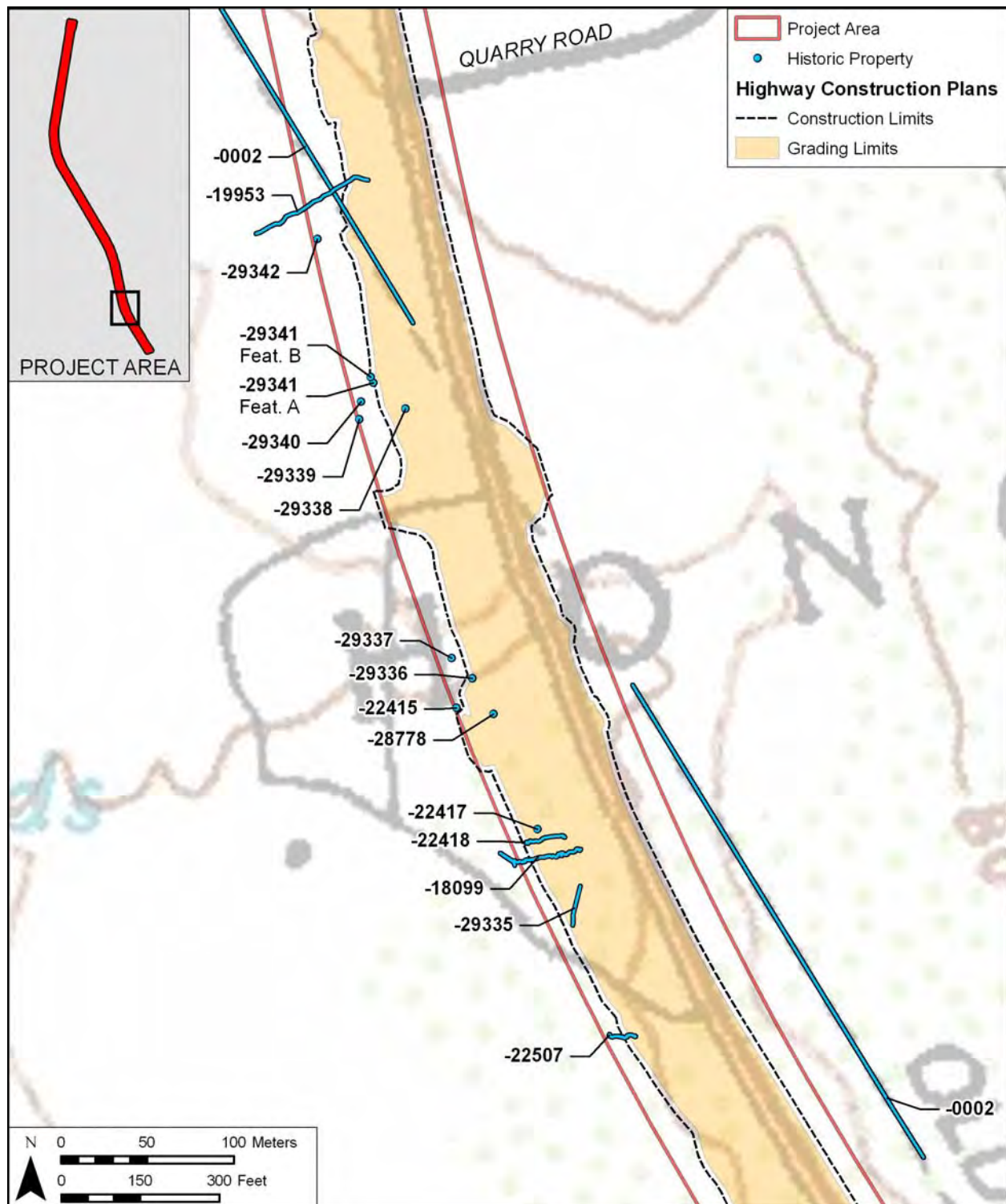


Figure 18. Portion of the 1996 U.S. Geological Survey 7.5 minute topographic map (Keāhole Point Quadrangle) showing Section 2 of the project area

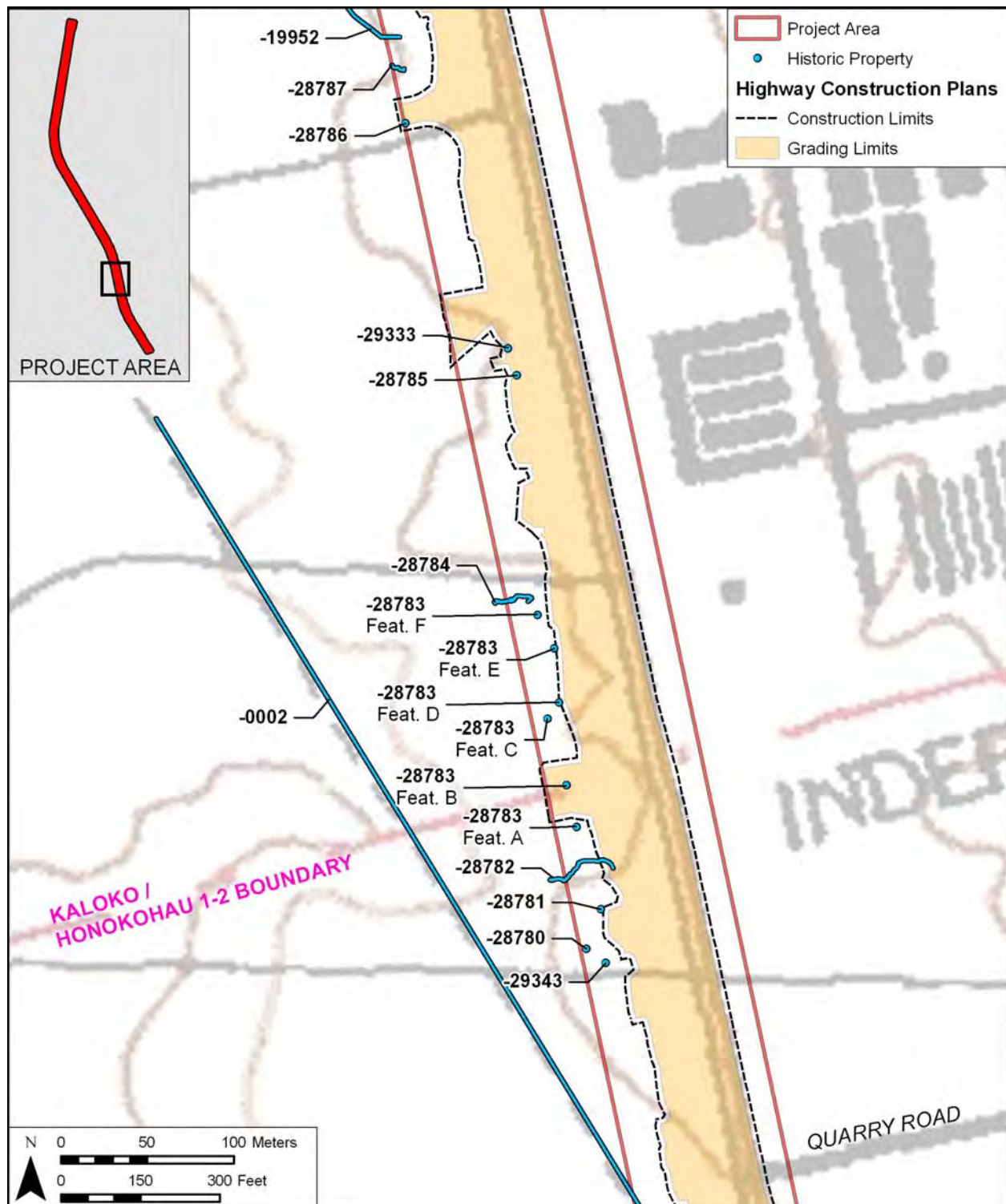


Figure 19. Portion of 1996 U.S. Geological Survey 7.5 minute topographic map (Keāhole Point Quadrangle) showing Section 3 of the project area



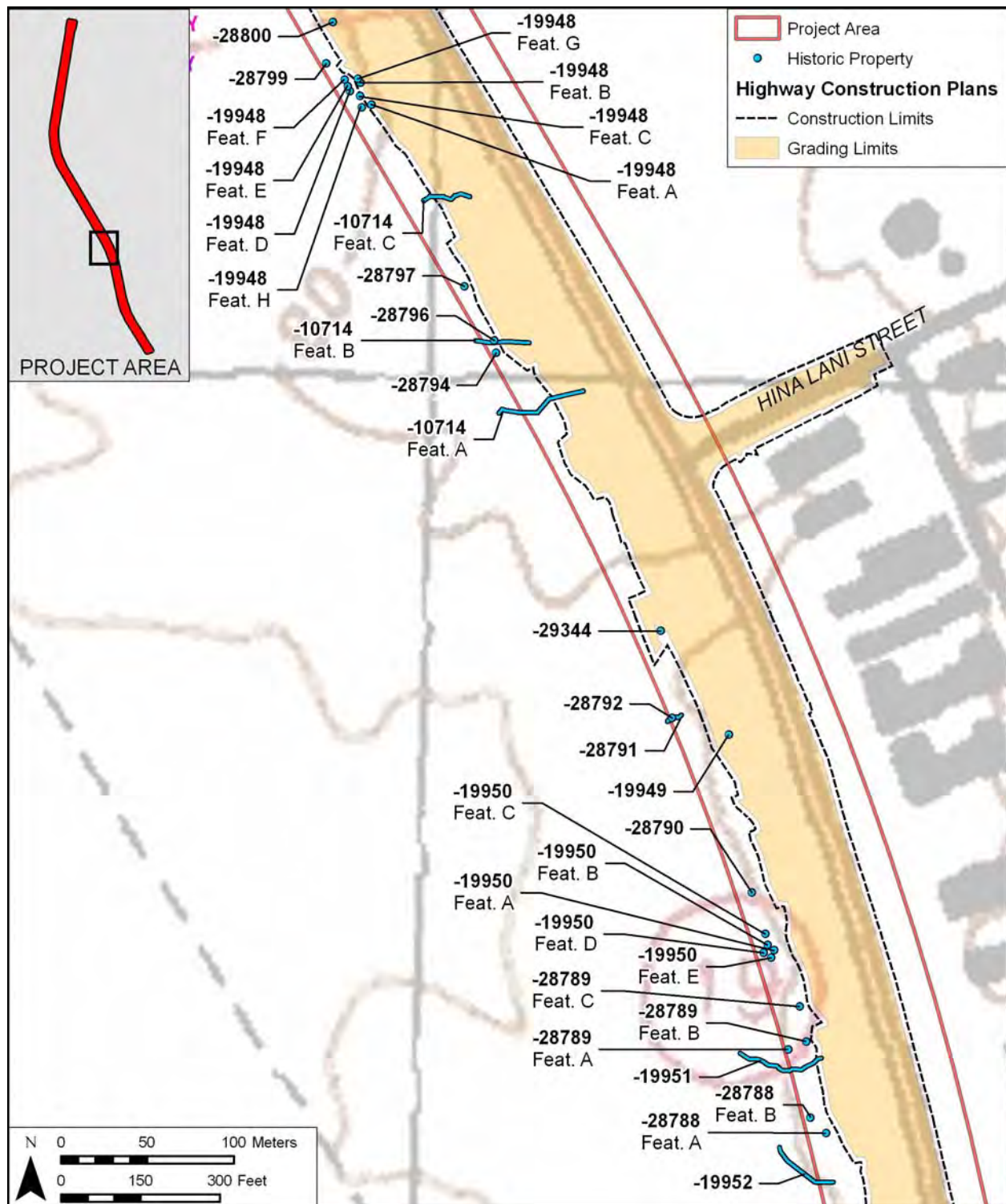


Figure 20. Portion of 1996 U.S. Geological Survey 7.5 minute topographic map (Keāhole Point Quadrangle) showing Section 4 of the project area

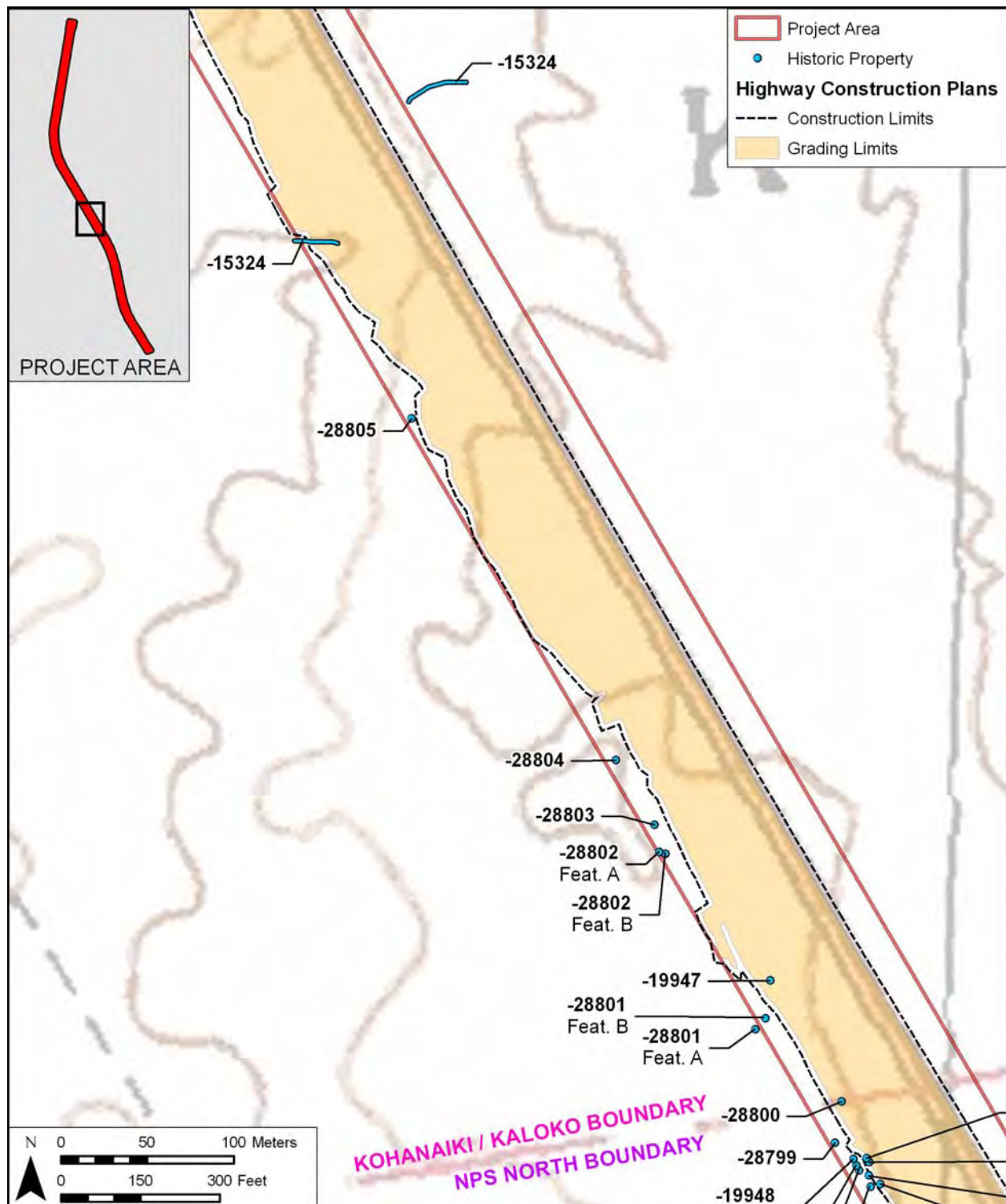


Figure 21. Portion of 1996 U.S. Geological Survey 7.5 minute topographic map (Keāhole Point Quadrangle) showing Section 5 of the project area

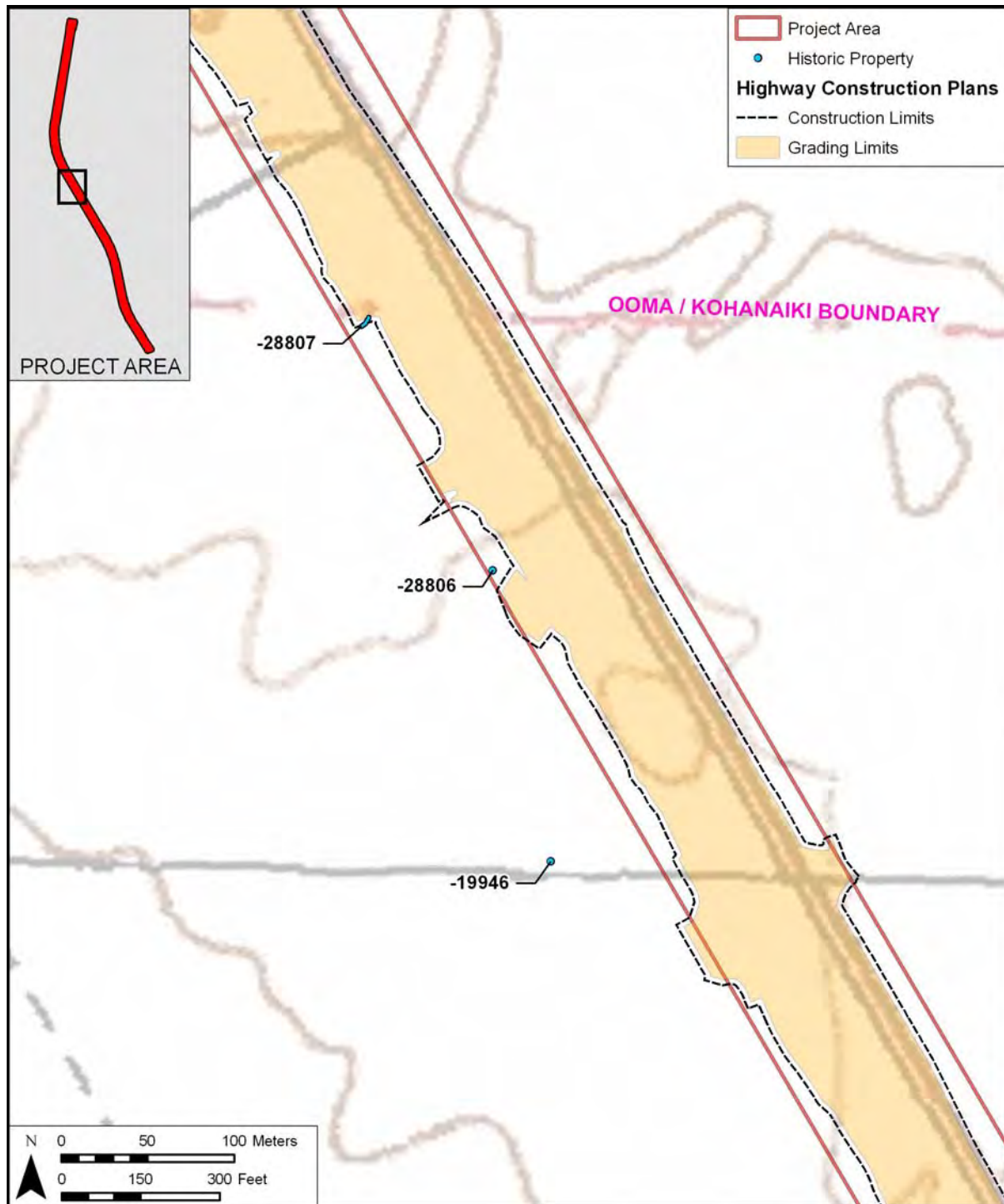


Figure 22. Portion of the 1996 U.S. Geological Survey 7.5 minute topographic map (Keāhole Point Quadrangle) showing Section 6 of the project area [Note: The location of SIHP # -19946 is here shown outside the project area due to a lack of precise coordinates for the portions of SIHP # -19946 within the project area; however, the trail runs *mauka-makai* and extends into the project area 18-20 m.]



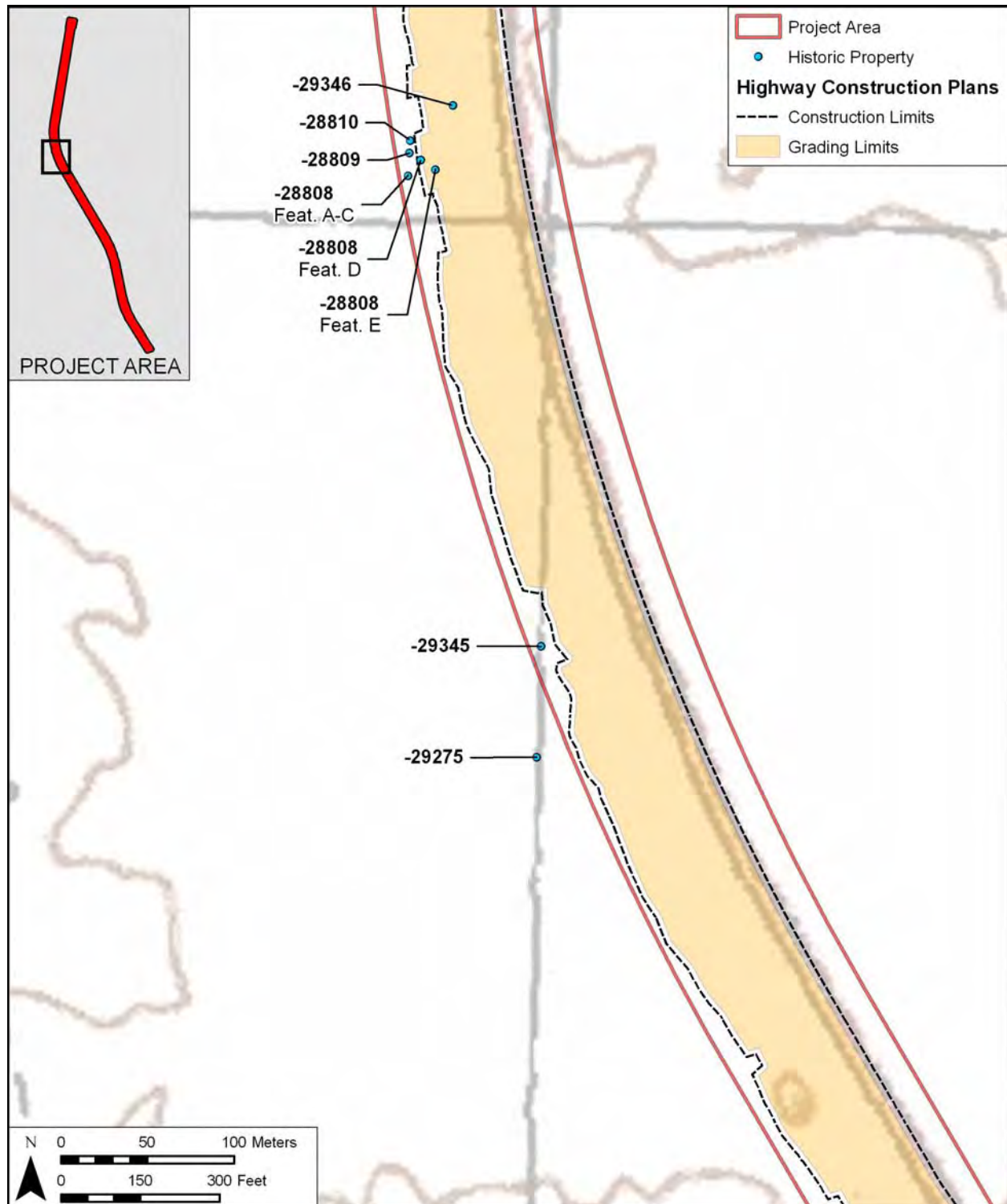


Figure 23. Portion of the 1996 U.S. Geological Survey 7.5 minute topographic map (Keāhole Point Quadrangle) showing Section 7 of the project area

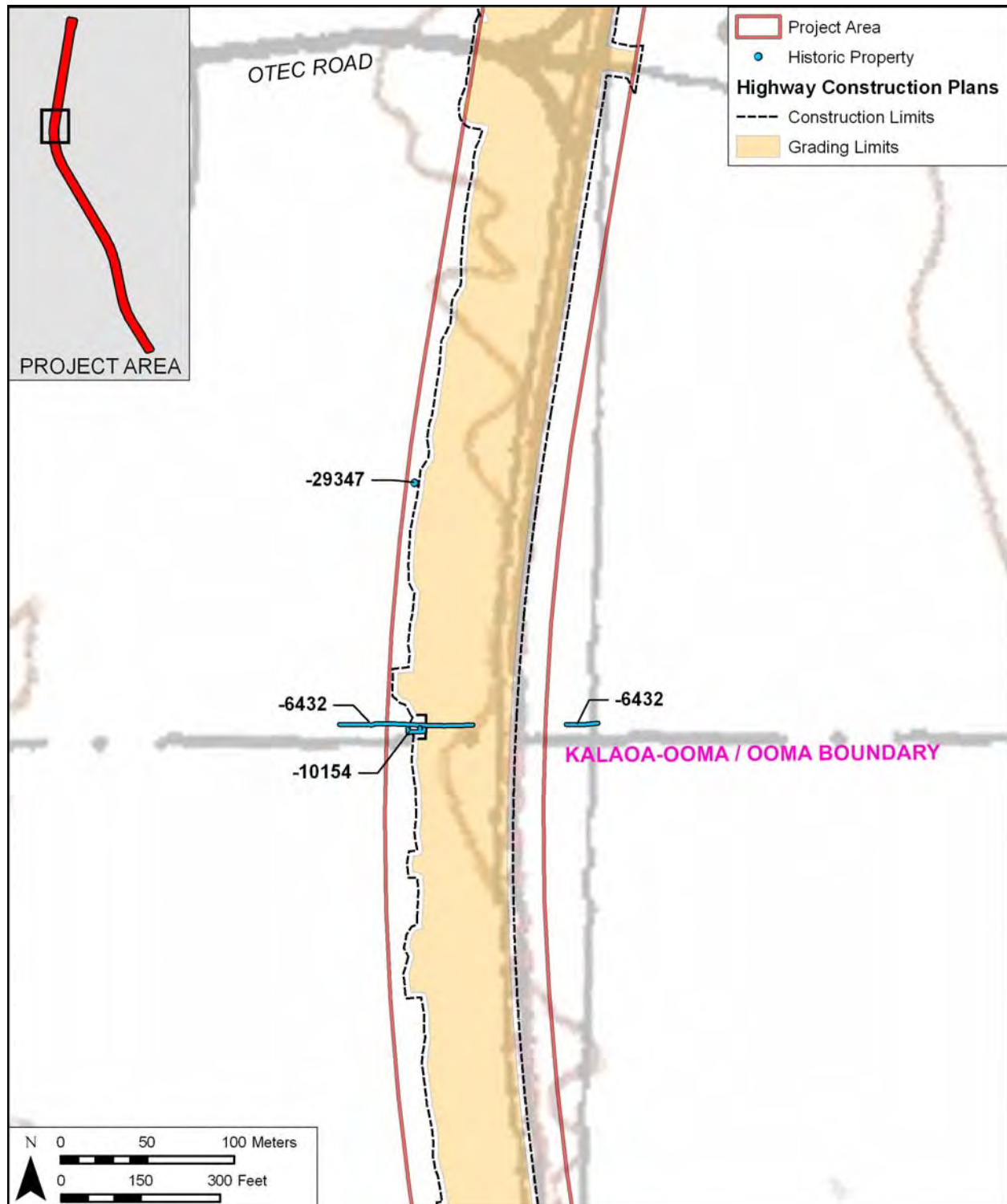


Figure 24. Portion of the 1996 U.S. Geological Survey 7.5 minute topographic map (Keāhole Point Quadrangle) showing Section 8 of the project area

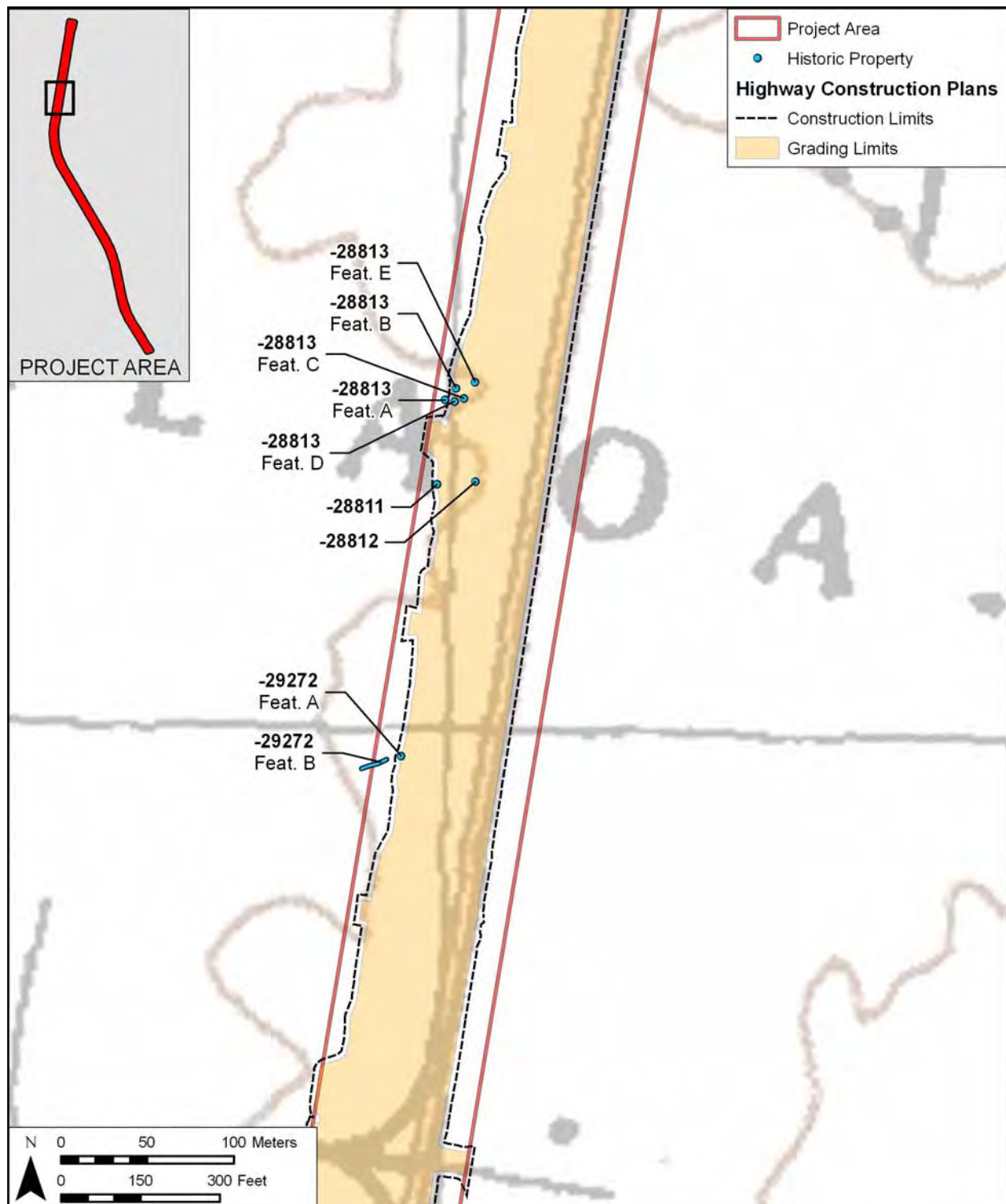


Figure 25. Portion of the 1996 U.S. Geological Survey 7.5 minute topographic map (Keāhole Point Quadrangle) showing Section 9 of the project area

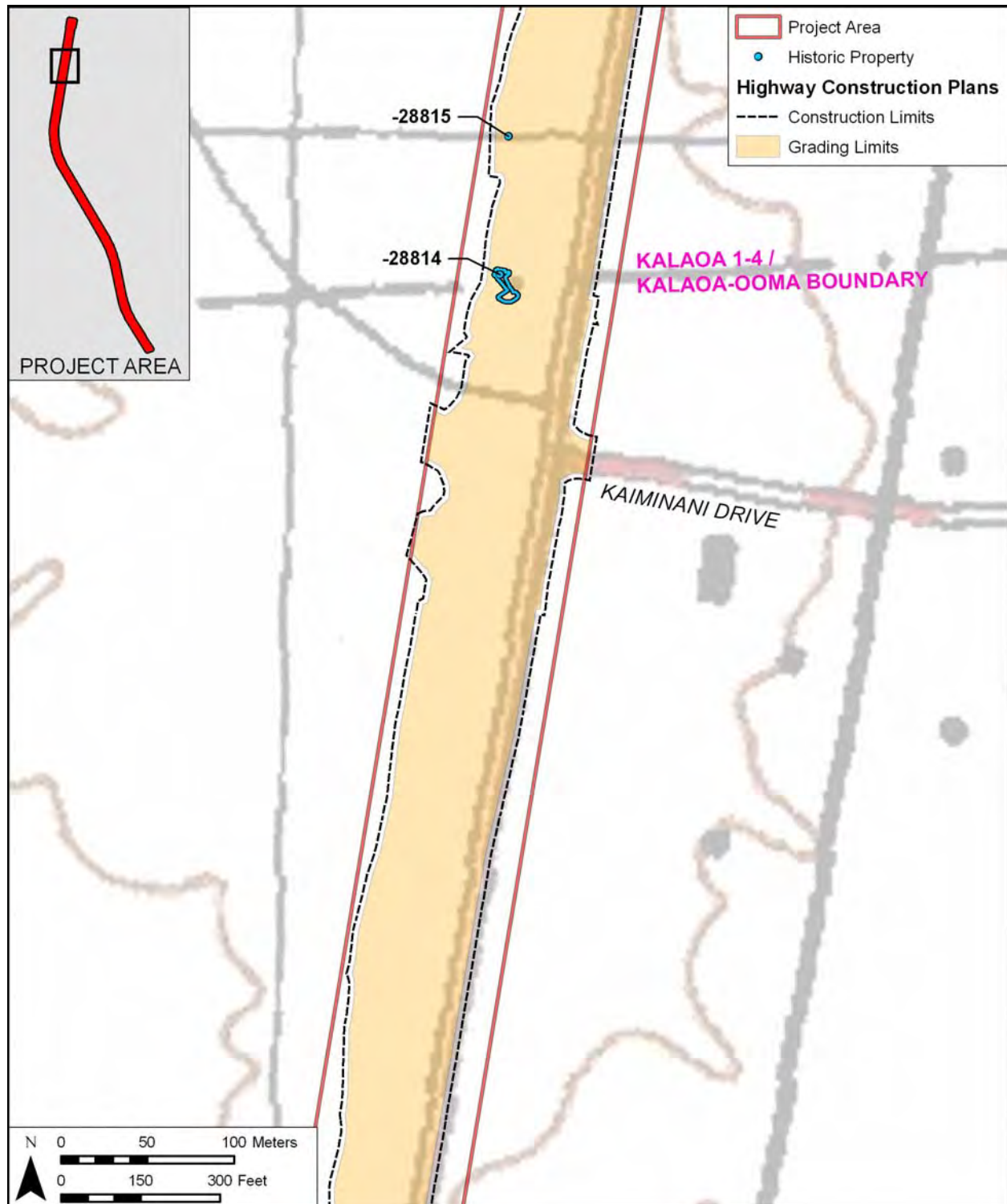


Figure 26. Portion of the 1996 U.S. Geological Survey 7.5 minute topographic map (Keāhole Point Quadrangle) showing Section 10 of the project area



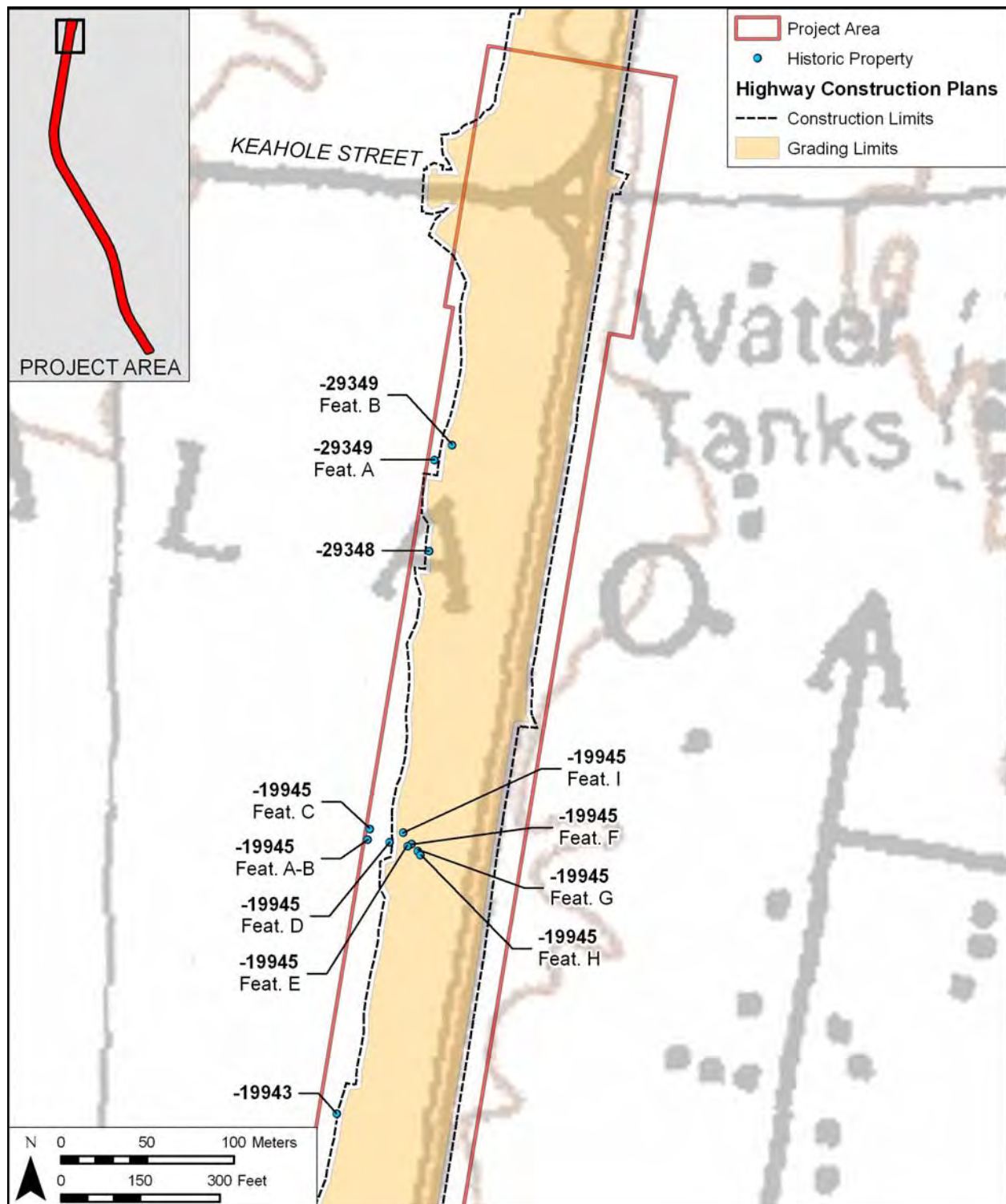


Figure 27. Portion of the 1996 U.S. Geological Survey 7.5 minute topographic map (Keāhole Point Quadrangle) showing Section 11 of the project area



## 5.2 Site Descriptions

### 5.2.1 SIHP # 50-10-27-19954

**Temp. Site No.:** 15 (Walsh and Hammatt 1995)

**Site Type:** Trail

**No. of Features:** 1

**Functional Interpretation:** Transportation

**Probable Age:** Indeterminate

**Overall Dimensions:** Approximately 30.5 m (100 ft) long (in the ROW)

**Topography:** Trail meanders through 'a'a along the edge of a *pāhoehoe* flow

**Elevation:** 42 ft (13 m) AMSL

**Description:**

**SIHP # 50-10-27-19954** was first formally described by CSH in 1995 (Walsh and Hammatt 1995) (see Figure 17). The site was revisited during the current archaeological inventory survey and found to be in the same physical condition (Figure 28 to Figure 30). The overall length of the trail, and its *mauka* terminus (i.e., starting approximately 28 m from the existing highway pavement edge), has not changed since 1995. The trail was described by Walsh and Hammatt (1995:54) as follows:

Site 19954 consists of a *mauka-makai* oriented trail . . . The trail begins 93 feet (28m.) from the present highway pavement edge (extent of bulldozed portion of old right-of-way) and meanders through the A'a along the edge of a *pahoehoe* outcrop, then up and over an outcrop and continues *makai* beyond the project area boundary into the National Park. Some portions of the trail contain *pahoehoe* slabs placed as stepping stones, and it appears that the slabs were taken from the adjacent *pahoehoe* outcrop. The trail measures 0.4 to 0.5 m. wide. The trail is in fair to good condition and has previously been identified and flagged, probably by National Park archaeologists who, we have been informed, have done some surveying in the area and have identified several inland-heading trails. The site has not been previously recorded however, and a state site number had not been previously assigned (personal communication with National Park archaeologist Catherine Glidden 6/27/95).

Walsh and Hammatt (1995) recommended SIHP # -19954 eligible for the National and State Registers of Historic Places under criterion D for its information relevant to prehistory and history. The site was recommended for data recovery by Walsh and Hammatt (1995); however, the Final Archaeological Treatment Plan (1999) called for "interim protection" only with no data recovery.



Figure 28. Photograph of SIHP # -19954, showing pahoehoe stepping stones, view to northeast (scale is 2 m long)





Figure 29. Detail (section) of SIHP # -19954 showing stepping stones, view to southwest

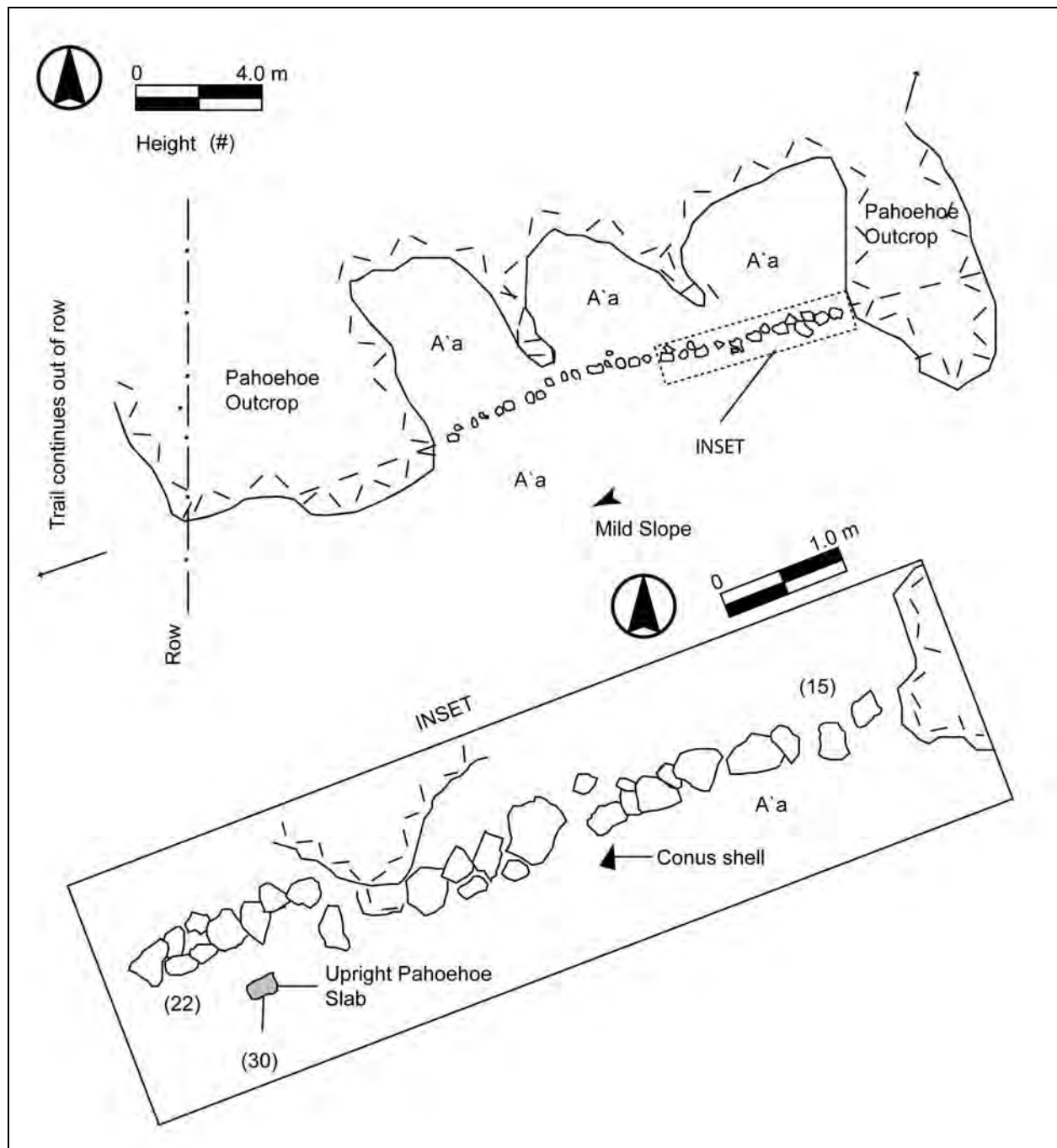


Figure 30. Plan view map SIHP # -19954, showing trail segment within project area and close-up inset of stepping stones

**5.2.2 SIHP # 50-10-27-29332****Temp. Site No.:** NPS 1 (Current Report)**Site Type:** Mound/Paved Area within Naturally-formed *Pāhoehoe* Depression**No. of Features:** 2**Functional Interpretation:** Indeterminate, possible burial**Probable Age:** Indeterminate**Overall Dimensions:** Approximately 7.0 m E/W by 2.5 m N/S**Topography:** Undulating *pāhoehoe* flow sloping gently *makai***Elevation:** 39 ft (12 m) AMSL**Description:**

**SIHP # 50-10-27-29332** is a mound/paved area within a naturally-formed *pāhoehoe* depression approximately 15 m east of the national park service road. The site location is shown in Figure 17. The site straddles the ROW, with a portion in the national park and a portion in the ROW. Vegetation surrounding the *pāhoehoe* depression includes fountain grass, *haole koa* and the native *maiapilo* (Figure 31, Figure 32). Lichen growth is present on some of the stones and bedrock exposures within the depression. This site was pointed out to CSH by NPS archaeologist Tyler Paikuli-Campbell on May 1, 2012.

The depression measures approximately 7.0 m long E/W by 2.5 m wide N/S (Figure 32). It reaches a maximum depth of 1.4 m along its southwest side, while the northern side of the depression is only 20 to 30 cm deep. A consolidated bedrock exposure runs across the central portion of the depression. The modifications consist of two filled areas, one on either end of the depression. The filled area at the eastern end of the depression (designated Feature A) is roughly 1.75 m long by 1.5 m wide, while the western-most filled area (Feature B) is approximately 1.0 m square. These features are low areas filled with medium- to large-sized *pāhoehoe* cobbles and small boulders. Some large *pāhoehoe* slabs are present within the depression but appear to represent natural breakage of the surrounding bedrock. Scattered cobbles in the center of the depression may or may not represent further modification. The feature is in generally good condition and no obvious disturbance was noted. No midden or artifacts are present.

The site appears to be older than 50 years of age, but it is difficult to more precisely date it or interpret its function. In a letter dated April 25, 2012, in reference to the recent supplemental archaeological survey work in the south segment of the current project area (cf. Monahan and Yucha 2012), NPS archaeologists requested this site be inspected and evaluated as a possible burial. During the current project, CSH tested five features and found only one of them, a formally-constructed boulder platform (SIHP # -22415), to contain human skeletal remains. The remaining four are informally-constructed features (SIHP #s -28781, -28794, -28803 and -28804) that did not contain human skeletal remains. Therefore, CSH believes it is unlikely that this site represents a burial. Consultation with Mike Vitousek of the SHPD and NPS archaeologist Tyler Paikuli-Campbell has led to a revised description of this site as a possible burial. CSH's fieldwork efforts to date have not included excavation or dismantling of this site. This site is *not* located within the project grading limits or construction limits, and it will not be physically impacted by the project. In consultation with the SHPD this site is now slated for excavation through a program of data recovery (see Table 27 and Table 28).





Figure 31. Photograph of SIHP # -29332, view to east

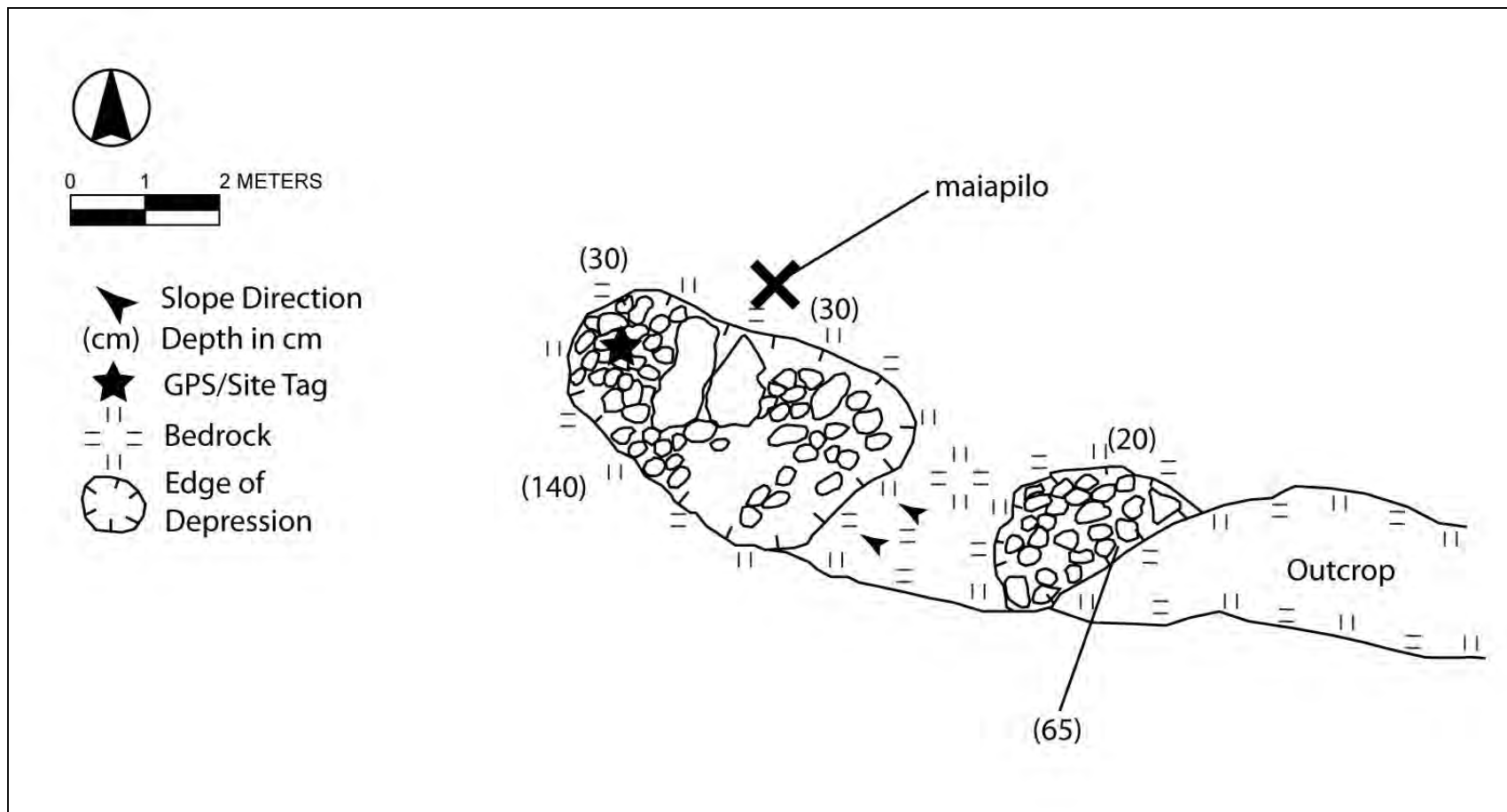


Figure 32. Plan view map of SIHP # -29332



### 5.2.3 SIHP # 50-10-27-29334

**Temp. Site Designation:** Depression 0 (Monahan and Yucha 2012)

**Site Type:** Rock Mound within a Naturally-formed *Pāhoehoe* Depression

**No. of Features:** 1

**Functional Interpretation:** Indeterminate, possible burial

**Probable Age:** Indeterminate

**Overall Dimensions:** 12.0 m E/W by 8.0 m N/S

**Topography:** Undulating terrain of *pāhoehoe* adjacent to 'a'ā

**Elevation:** 43 ft (13 m) AMSL

**Description:**

**SIHP # 50-10-27-29334** is a loosely-piled mound of *pāhoehoe* cobble- and boulder-sized clasts within a naturally-formed depression of *pāhoehoe*. This site was pointed out to CSH by NPS archaeologists in the supplemental survey of the south segment (Monahan and Yucha 2012). Vegetation in the immediate area consists of introduced grasses and *haole koa* (*Leucaena glauca*). The site location is depicted in Figure 17. Many of the piled rocks have a distinctive reddish color.

The naturally-formed *pāhoehoe* depression measures approximately 12.0 m long by 8.0 m wide by 1.2 m maximum depth (Figure 33 to Figure 35). The mound of reddish *pāhoehoe* rocks measures approximately 2.0 m long E/W by 0.60 m wide N/S by 0.15-0.35 m high. The mound has a roughly-linear shape oriented east-to-west.

There is very little soil-sedimentary deposition at or adjacent to the mound. No portable cultural materials, other than the piled rocks, were observed by CSH archaeologists.

The site appears to be older than 50 years of age, but it is difficult to more precisely date it or interpret its function. In a letter dated April 25, 2012, in reference to the recent supplemental archaeological survey work in the south segment of the current project area (cf. Monahan and Yucha 2012), NPS archaeologists hypothesized that this site may represent a burial. During the current project, CSH tested five features and found only one of them, a formally-constructed boulder platform (SIHP # -22415), to contain human skeletal remains. The remaining four are informally-constructed features (SIHP #s -28781, -28794, -28803 and -28804) that did not contain human skeletal remains. Therefore, CSH believes it is unlikely that this site represents a burial. However, in consultation with the SHPD and NPS this site is now regarded as a possible burial site. Based on the NPS review letter dated April 25, 2012, CSH conducted additional fieldwork on May 1, 2012, to further document this site (Figure 35). The latest fieldwork, however, did not include excavation or dismantling of the site. This site is located within the project grading limits and likely will be destroyed. CSH has recommended data recovery including excavation for this site (see Table 27 and Table 28).





Figure 33. Overview of SIHP # -29334, loosely-piled rock mound on a naturally-formed *pāhoehoe* depression, view to south



Figure 34. Photograph of SIHP # -29334, mound of loosely-piled reddish *pāhoehoe* rocks, view to south



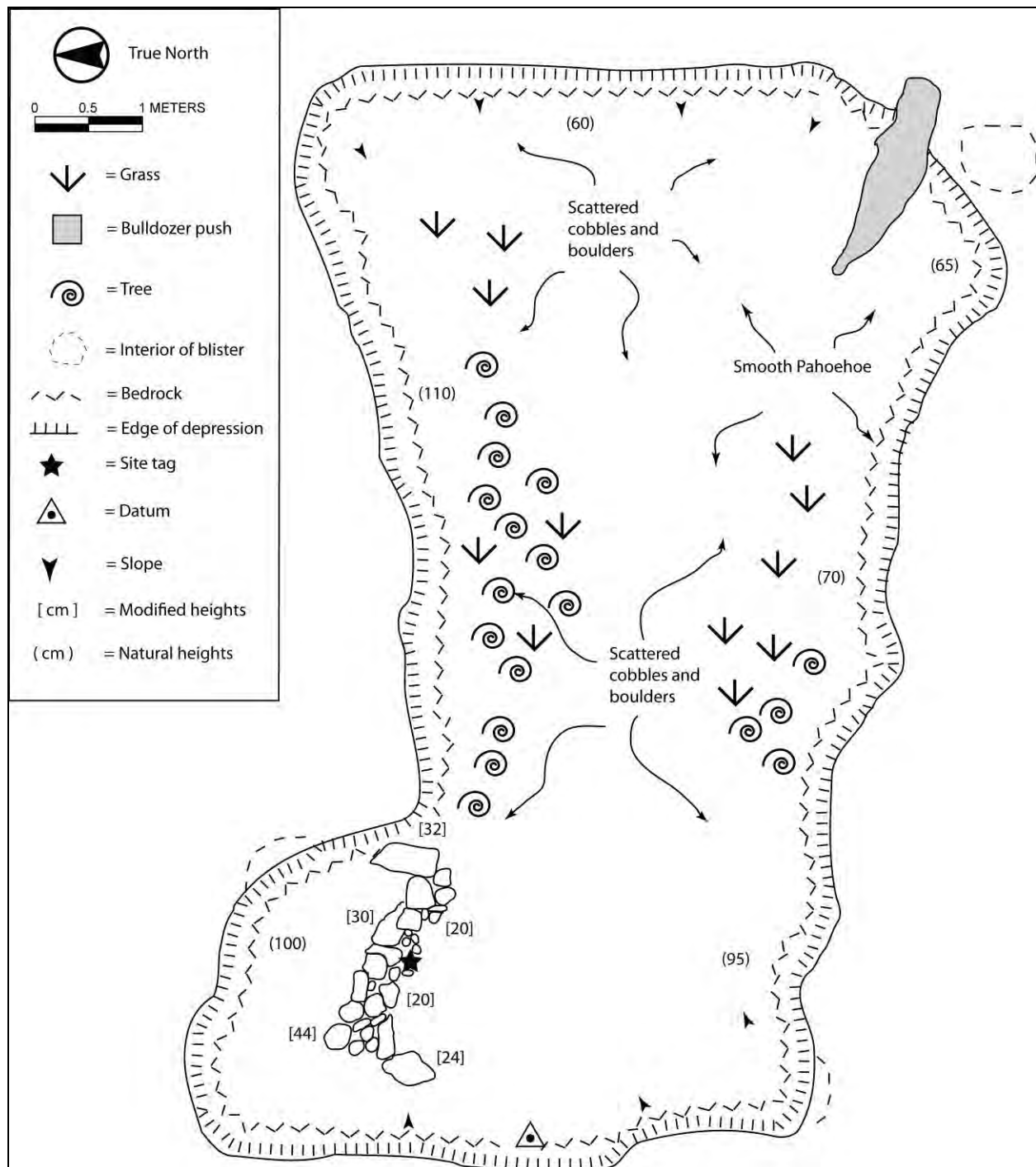


Figure 35. Plan view map of SIHP # -29334

**5.2.4 SIHP # 50-10-27-28774****Temp. Site No.:** Trail 1 (Monahan et al. 2011)**Site Type:** Trail**No. of Features:** 1**Functional Interpretation:** Transportation**Probable Age:** Indeterminate**Overall Dimensions:** Approximately 40.9 m long (in the ROW)**Topography:** Undulating *pāhoehoe* flow, level to moderately sloping**Elevation:** 45 ft (14 m) AMSL**Description:**

**SIHP # 50-10-27-28774** is a trail located approximately 515 m southeast of the Kaloko-Honokōhau National Historical Park visitor center entrance within the portion of the project area that is adjacent to the Kaloko-Honokōhau National Historical Park (see Figure 17). The trail extends along the northeastern edge of an area of modern disturbance. The trail measures 40.9 m long in the ROW. This trail is one of several that were pointed out to CSH by NPS staff. The trail can be recognized within the project area by observing subtle wear-pattern / color variation on the lava flow (Figure 36, Figure 37). NPS staff has pointed out that trails such as this one, even though lacking formal attributes within the subject project area, may exhibit formal features elsewhere (i.e., outside of the project area).

In a letter dated April 25, 2012, in reference to the recent supplemental archaeological survey work in the south segment of the current project area (cf. Monahan and Yucha 2012), NPS archaeologists stated that another undocumented *mauka/makai* trail was located in this general area. On May 1, 2012, CSH archaeologist Oli Bautista and NPS archaeologist Tyler Paikuli-Campbell traced this trail out, starting from within the national park to the west (*makai*) of the ROW; the trail was recorded using a survey-grade GPS device. In the field, moving in an easterly (*mauka*) direction, the trail was found to terminate in a disturbed area before reaching the ROW boundary. Therefore, according to the survey-grade GPS, the trail segment was not located in the current project area. When the data was processed in the laboratory the following day, it became clear that the newly-traced trail segment is very close to the previously-identified SIHP # -28774. It is possible that the trail segment mapped on May 1, 2012, and found to be outside of the current project area, represents another portion of this same trail.

In follow-up field work on July 9 2012 the trail area was relocated but, as was the case for the NPS, the trail could not be followed with certainty in the project area. Discolored *pāhoehoe* was found in several directions. It may be the trail was always quite braided and ill-defined in this area. Thus no plan view was generated (the SHPD review of July 9 2012 specifies “a plan view map is not necessary”) as we could not follow this trail with any certainty.



Figure 36. Photograph of SIHP # -28774, showing trail traversing pahoehoe outcrop, visible as subtle wear-pattern and color variation, view to east



Figure 37. Close-up of SIHP # -28774, showing subtle wear-pattern and color variation, view to east



**5.2.5 SIHP # 50-10-27-22507****Temp. Site No.:** Trail 2 (Monahan et al. 2011), 157-16 (Nelson and Gmirkin 2001)**Site Type:** Trail**No. of Features:** 1**Functional Interpretation:** Transportation**Probable Age:** Indeterminate**Overall Dimensions:** Approximately 16.1 m long (in the ROW)**Topography:** Undulating *pāhoehoe* flow, level to moderately sloping**Elevation:** 36 ft (11 m) AMSL**Description:**

**SIHP # 50-10-27-22507** is a trail located approximately 325 m southeast of the Kaloko-Honokōhau National Historical Park visitor center entrance within the portion of the project area that is adjacent to the Kaloko-Honokōhau National Historical Park (see Figure 18). The trail is roughly oriented E/W and measures 16.1 m long (Figure 39). The trail terminates to the west along the edge of a modern gravel road. The trail can be recognized within the project area by observing subtle wear-pattern / color variation on the lava flow (Figure 38). NPS staff has pointed out that trails such as this one, even though lacking formal attributes within the subject project area, may exhibit formal features elsewhere (i.e., outside of the project area).



Figure 38. Photograph of SIPH # -22507, showing trail traversing pahoehoe outcrop, visible as subtle wear-pattern and color variation, view to west



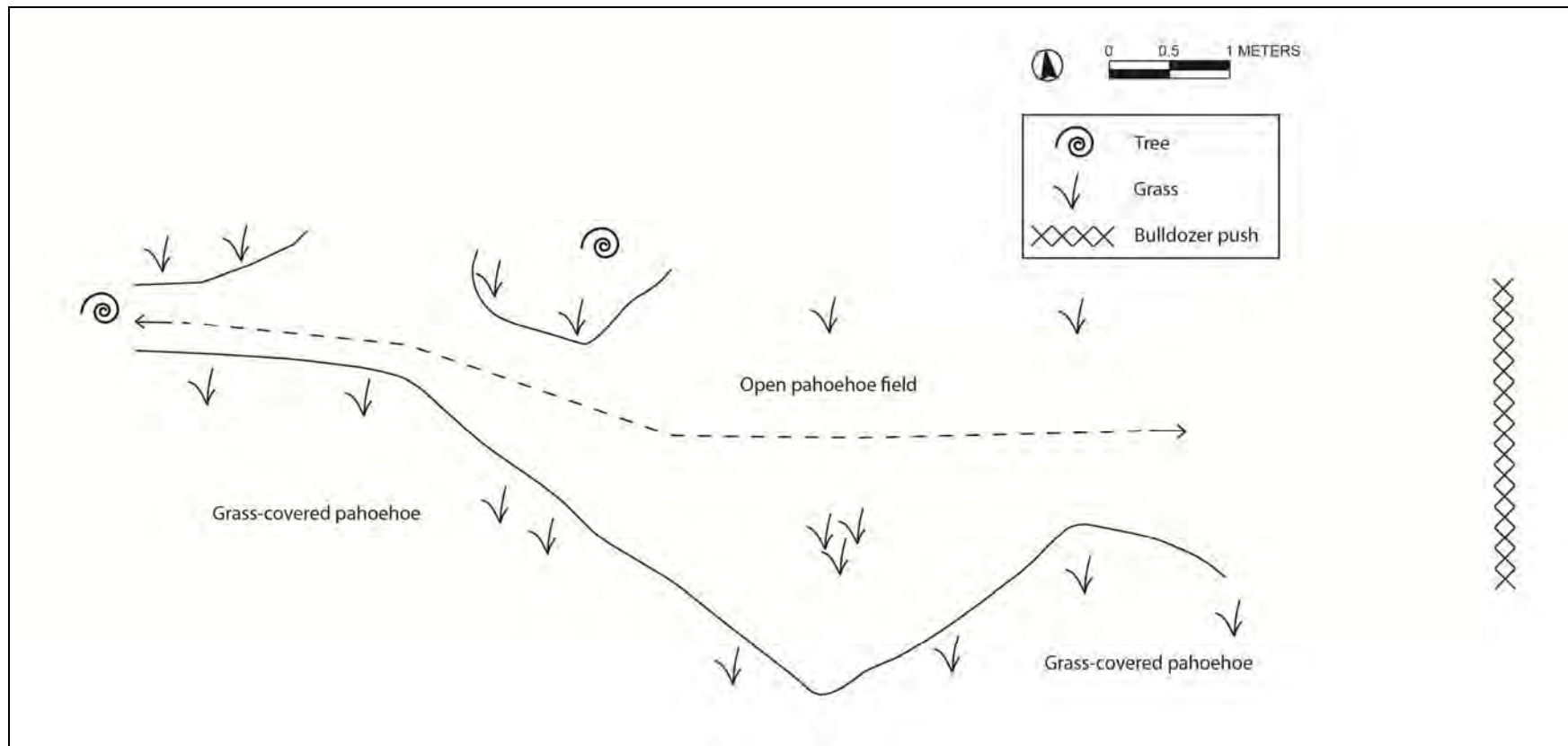


Figure 39. Plan view map of SIHP # -22507

**5.2.6 SIHP # 50-10-27-29335****Temp. Site Designation:** Wall 0 (Monahan and Yucha 2012)**Site Type:** Rock Wall Segment**No. of Features:** 1**Functional Interpretation:** Indeterminate, possibly agricultural**Probable Age:** Indeterminate**Overall Dimensions:** 30.0 m long N/S by 0.30-0.60 m wide by 0.10-0.70 m high**Topography:** *Pāhoehoe* outcrop**Elevation:** 26 ft (8 m) AMSL**Description:**

**SIHP # 50-10-27-29335** is a segment of dry-stacked rock wall on a *pāhoehoe* bedrock outcrop. This site was pointed out to CSH by NPS archaeologists in the supplemental survey of the south segment (Monahan and Yucha 2012). The wall is oriented in a roughly north-to-south direction along the bedrock outcrop very close to an area of heavy disturbance associated with the construction of the existing highway to the east. The site location is depicted in see Figure 18. Vegetation in the area consists of introduced grasses.

The wall is constructed of *pāhoehoe* slabs, most of which are small boulder-sized, stacked up to three courses high (Figure 40 to Figure 43). The wall measures approximately 30 m long N/S by 0.30-0.60 m wide by 0.10-0.70 m high. Modern rubbish including plastic grow bags and wetsuit material (neoprene) were observed at the south end of the wall.

There is a shallow soil-sedimentary deposition at and adjacent to the rock wall. No portable cultural materials, other than the stacked rocks and modern rubbish, were observed by CSH archaeologists.

Other than the fact that it appears to be older than 50 years of age, the function and age of this site is indeterminate. In consultation with the SHPD it was agreed that this site could possibly have had an agricultural function (it appears to have been used in cannabis cultivation in modern times). It is not clear what a single section of low wall at this location may be marking. In consultation with SHPD this site is recommended for Data Recovery.





Figure 40. Photograph of SIHP # -29335, rock wall segment, view to south



Figure 41. Close-up of SIHP # -29335, showing section of faced wall, view to west

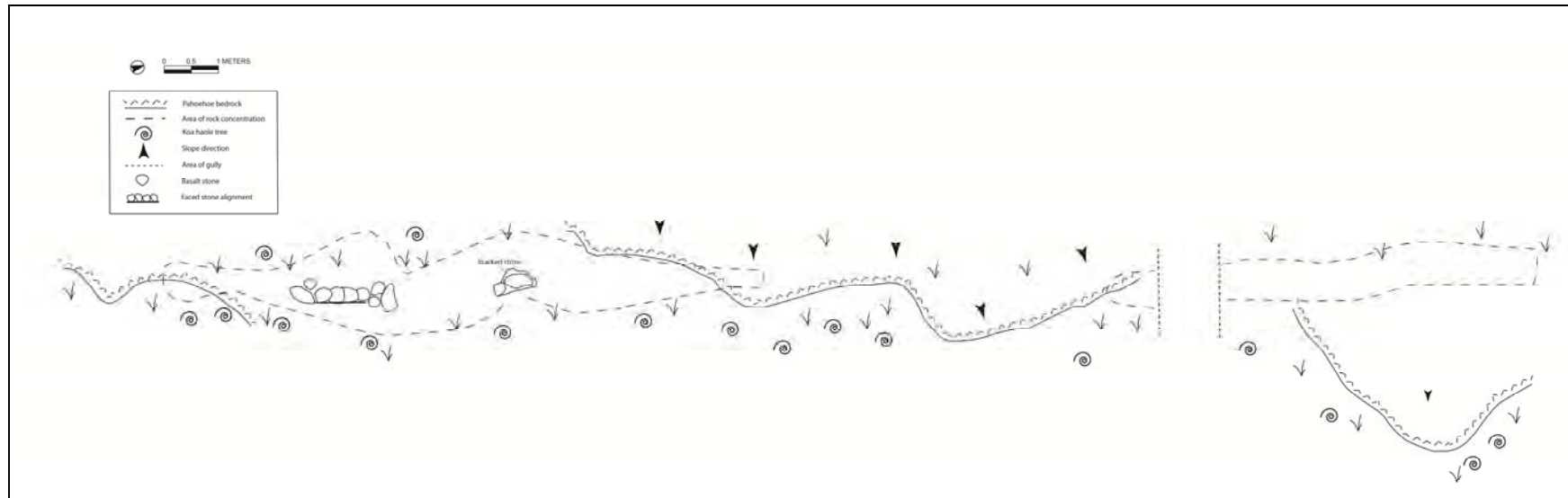


Figure 42. Plan view map of SIHP # -29335



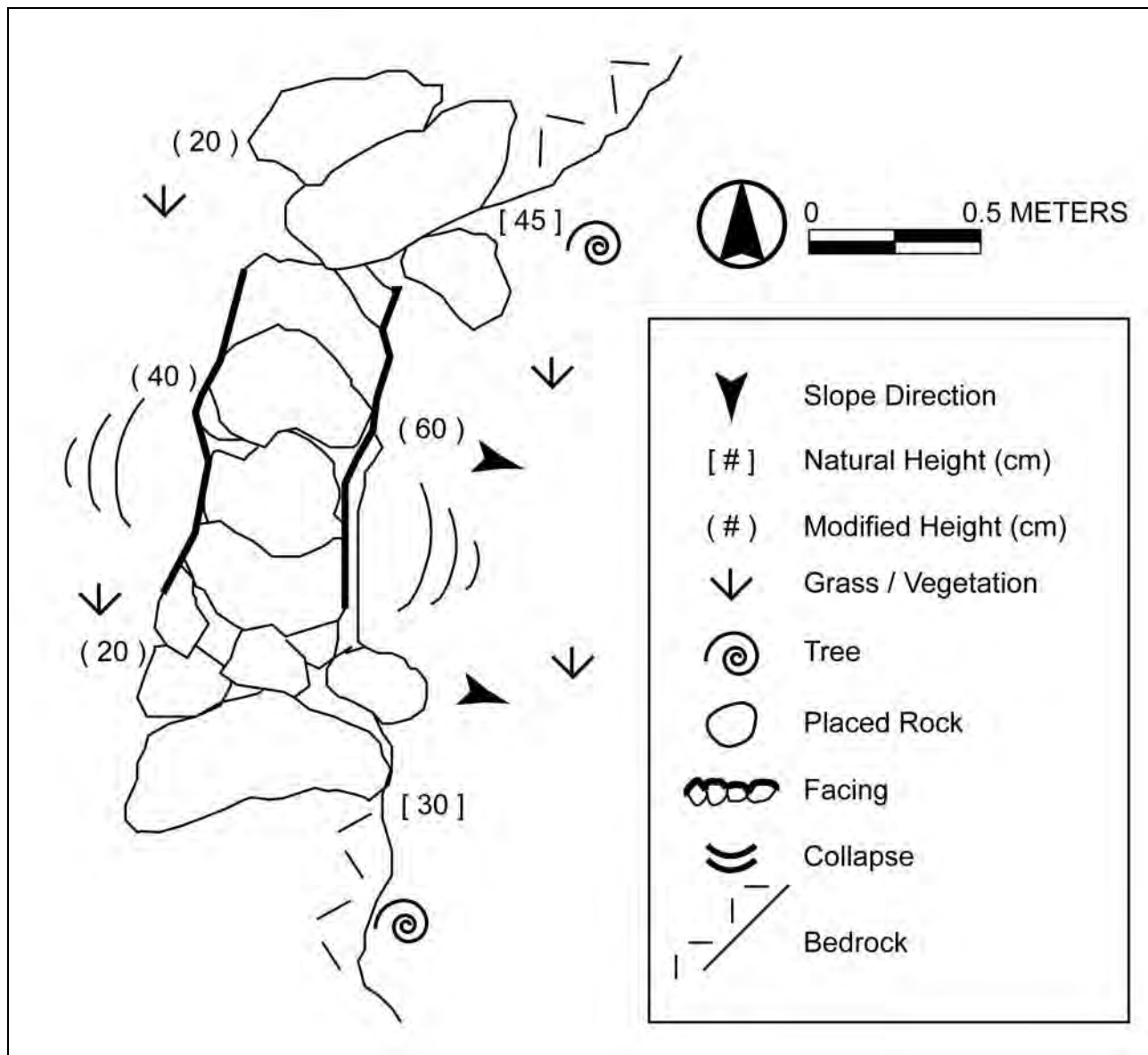


Figure 43. Plan view map of SIHP # -29335 rock wall segment

**5.2.7 SIHP # 50-10-27-18099 (Trail to Honokōhau)****Temp. Site No.:** Trail 4 (Monahan et al. 2011), 157-6 (Nelson and Gmirkin 2001)**Site Type:** Trail (Curbstone)**No. of Features:** 1**Functional Interpretation:** Transportation**Probable Age:** Indeterminate-Possibly Historic**Overall Dimensions:** Minimally 3,066 m (10,120 ft) long (1.7 m N/S by 37.6 m E/W within the current project area)**Topography:** Undulating *pāhoehoe* flow, level to moderately sloping**Elevation:** 45 to 810 ft (14 to 247 m) AMSL (refers to entire trail including *mauka* portion)**Description:**

**SIHP # 50-10-27-18099**, also known as the Trail to Honokōhau, is a trail that extends roughly E/W through the project area approximately 200 m south of the Kaloko-Honokōhau National Historical Park visitor center entrance (see Figure 18) within the portion of the project area that is adjacent to the Kaloko-Honokōhau National Historical Park (Figure 44 to Figure 48). The trail has been previously identified within Honokōhau Ahupua'a on the *mauka* side of the existing highway during an archaeological inventory survey conducted by CSH in 1993 (Robins et al. 1993). Robins et al. (1993:23) describe SIHP # 18099 as follows:

In accordance to Russell A. Apple's classifications of Hawaiian land routes (Apple 1973), this type of curbstone trail is of the "AB" trail type. "AB" trails are generally defined as historic trails constructed for mule or horse travel over an existing prehistoric land route.

Where the trail crosses *pāhoehoe* outcrop it is usually characterized by a pebble pavement bound by parallel cobble and boulder alignments. The trail has an average width of 3.3 m and, when traversing prominent depressions, is constructed to a maximum height of 1.0 m. Along 'a'ā outcrop, the trail is distinguished by a trodden surface presently obscured by a dense grass growth and inset boulder curbing.

As was identified during the survey and on aerial photos, the trail begins at the south side of Aimakapa Pond (fishpond) along the coast of Honokōhau I Ahupua'a and extends *mauka* across the *ahupua'a*, intersecting the Māmalahoa Trail (SIHP # 50-10-27-2), and running parallel to a trodden 'a'ā trail (SIHP # 50-10-27-18122). The most *mauka* portion of the trail, beginning at approximately 690 ft. a.m.s.l., has evolved during the historic era into a road likely associated with ranching or historic agriculture activities in this region.

Midden was observed over portions of the trail.

The portion of SIHP # -18099 that extends through the present project area consists of intermittent portions of curbstone alignments over solid *pāhoehoe* bedrock. Bulldozer track marks were observed in the vicinity of the trail. No artifacts or midden were observed in the area.

In the *ahupua'a* of Honokōhau I, SIHP # -18099 is being preserved on the *mauka* side of the existing highway by West Hawaii Business Park, LLC. This trail is subject to protection and preservation under the Highways Act of 1892 (HRS Chapter 264-1(b)) (Na Ala Hele 2008).

SIHP # -18099 has previously been recommended eligible for nomination to the State Register of Historic Places under Criteria A, C and D by CSH in two previous projects in Honokōhau I and II (Robins et al. 2000; Yucha and McDermott 2008).



Figure 44. SIHP # -18099 (within the project area) Section 1, view to east

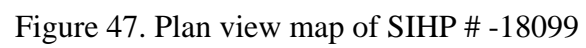




Figure 45. SIHP # -18099 (within the project area) Section 2, view to east



Figure 46. SIHP # -18099 (within the project area) Section 3, view to east



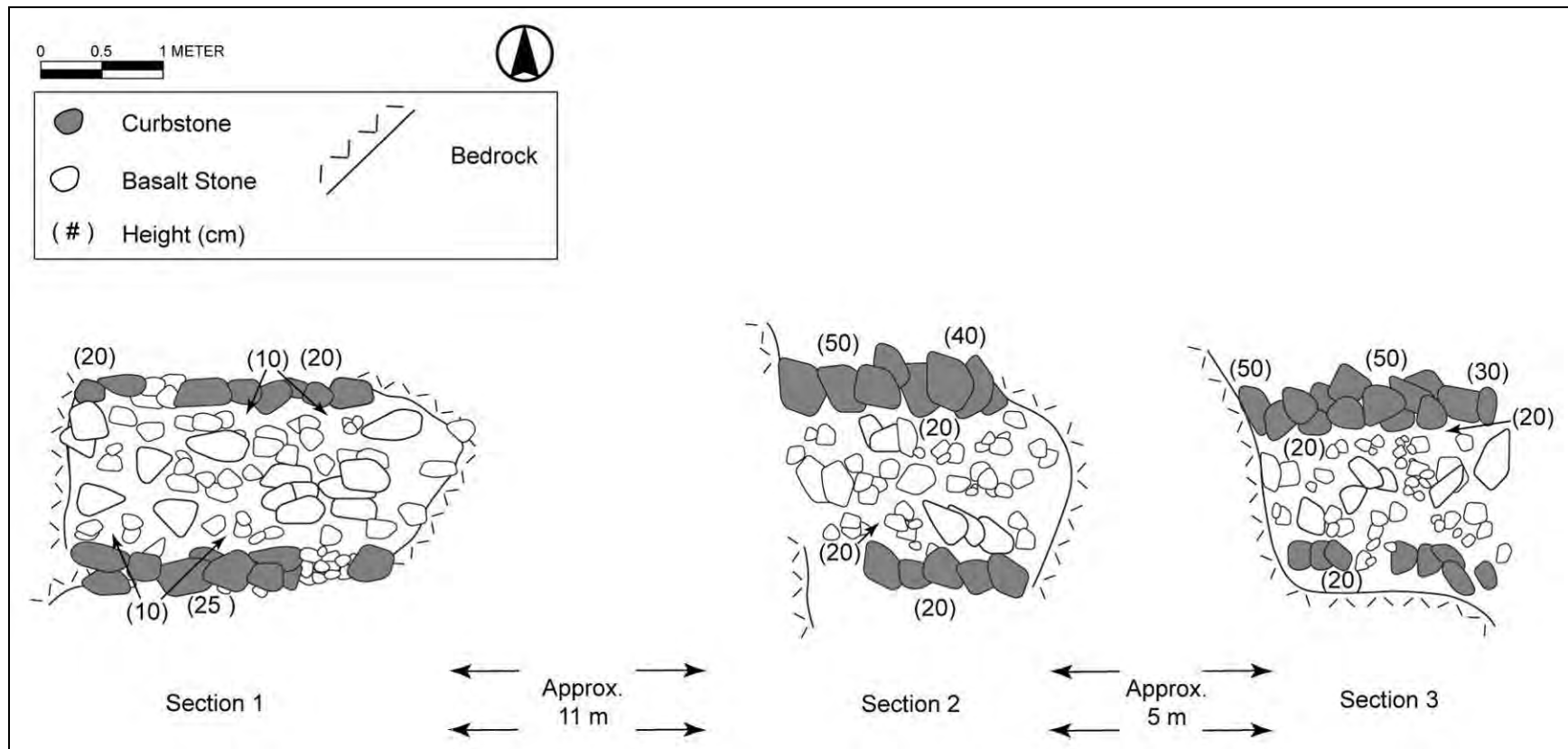


Figure 48. Plan view map of three sections of the portion of SIHP # -18099 located within the current project area



**5.2.8 SIHP # 50-10-27-22418**

**Temp. Site No.:** Trail 3 (Monahan et al. 2011), 157-6A (Nelson and Gmirkin 2001)

**Site Type:** Trail

**No. of Features:** 1

**Functional Interpretation:** Transportation

**Probable Age:** Indeterminate

**Overall Dimensions:** Approximately 22.6 m long (in the ROW)

**Topography:** Undulating *pāhoehoe* flow, level to moderately sloping

**Elevation:** 36 ft (11 m) AMSL

**Description:**

**SIHP # 50-10-27-22418** is a trail located approximately 200 m southeast of the Kaloko-Honokōhau National Historical Park visitor center entrance within the portion of the project area that is adjacent to the Kaloko-Honokōhau National Historical Park (see Figure 18). The trail is roughly oriented E/W and measures 22.6 m long within the project area (Figure 49 and Figure 50). Within the project area, the trail lacks any formal construction features such as stepping stones or curbing. The trail can be recognized within the project area by observing subtle wear-pattern / color variation on the lava flow. NPS staff has pointed out that trails such as this one, even though lacking formal attributes within the subject project area, may exhibit formal features elsewhere (i.e., outside of the project area).

Nelson and Gmirkin (2001:21) previously identified this trail, designated it SIHP # -22418, and pointed out that it parallels and crosses/merges with SIHP # -18099 outside of the current project area, in keeping with other historic trails in the region.



Figure 49. Photograph of SIHP # -22418, showing trail traversing *pāhoehoe* outcrop, visible as subtle wear-pattern and color variation, view to east

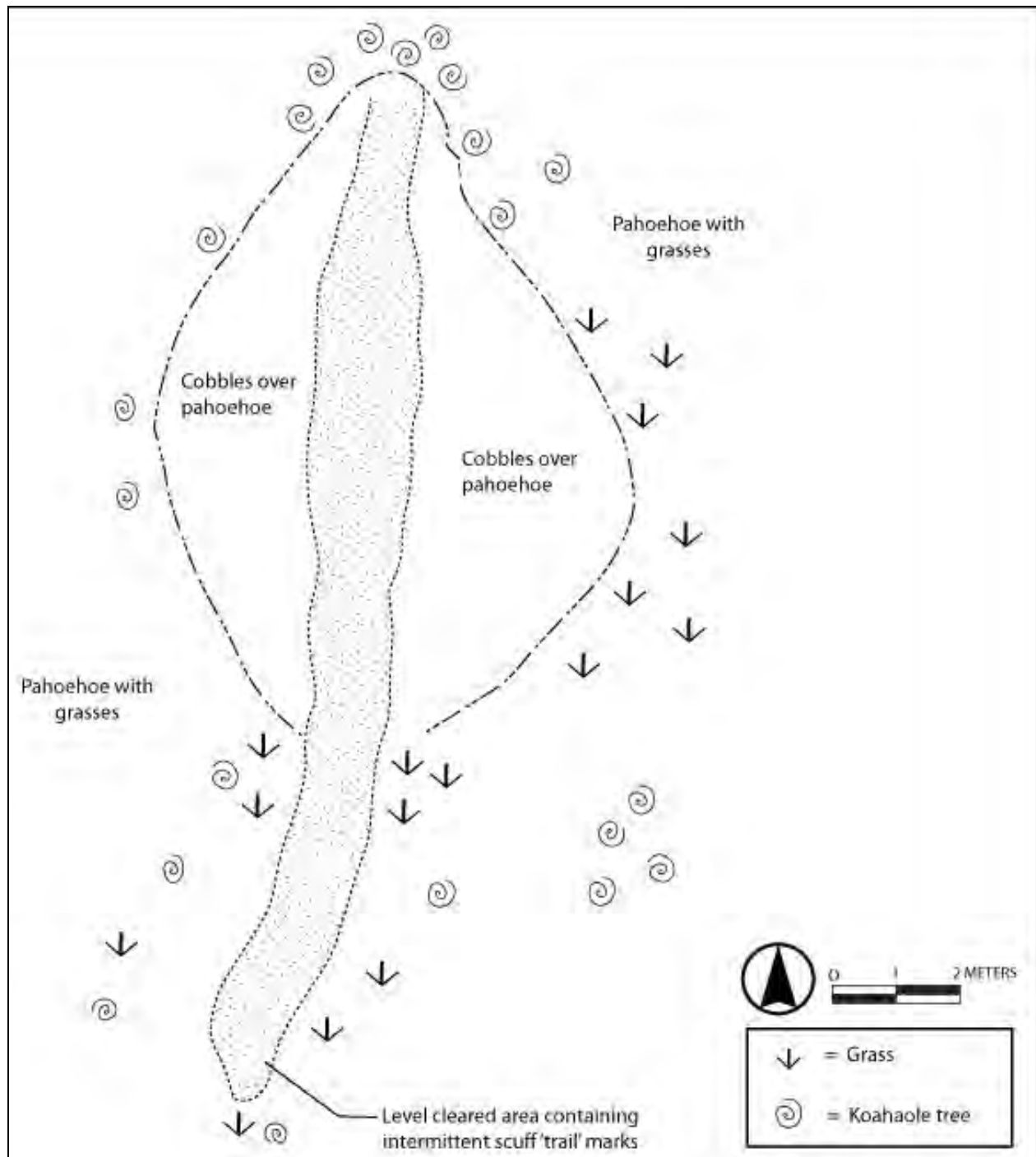


Figure 50. Plan view map of SIHP # -22418

**5.2.9 SIHP # 50-10-27-22417****Temp. Site No.:** Tube 1 (Monahan et al. 2011), 157-5 (Nelson and Gmirkin 2001)**Site Type:** Modified Lava Blister**No. of Features:** 1**Functional Interpretation:** Agriculture / Planting Pit**Probable Age:** Prehistoric (Pre-Contact)**Overall Dimensions:** 2.8 m N/S by 3.2 m E/W**Topography:** Level *pāhoehoe* flow**Elevation:** 30 ft (9 m) AMSL**Description:**

**SIHP # 50-10-27-22417** is a modified lava blister located approximately 200 m south of the Kaloko-Honokōhau National Historical Park visitor center entrance (see Figure 18) within the portion of the project area that is adjacent to the Kaloko-Honokōhau National Historical Park (Figure 52 and Figure 52). The lava blister has formed beneath a relatively thin, level *pāhoehoe* surface and consists of a central, vertical opening that has been deliberately expanded through the excavation of cobble-sized portions of *pāhoehoe* bedrock. The edges of the lava blister opening are scalloped. The opening of the lava blister measures 1.0 m N/S by 1.6 m E/W. The excavated material from the edges of the blister opening has been removed and displaced. The interior of the lava blister has been cleared of all cobble- and boulder-sized debris and consists of a layer of sediment interspersed with pebbles and organic debris that supports the growth of several *koa haole* saplings. The interior of the lava blister measures 2.8 m N/S by 3.2 m E/W and is located 1.2 m below the overlying ground surface. No artifacts or midden were observed in the area.

SIHP # -22417 is interpreted as a planting pit feature likely dating from prehistoric (pre-Contact) times. The sediment layer within the lava blister could have supported various dryland cultivars. The opening of the lava blister was likely expanded in order to increase the light zone and usable planting surface on the floor of the blister.





Figure 51. Photograph of SIHP # -22417, view to south

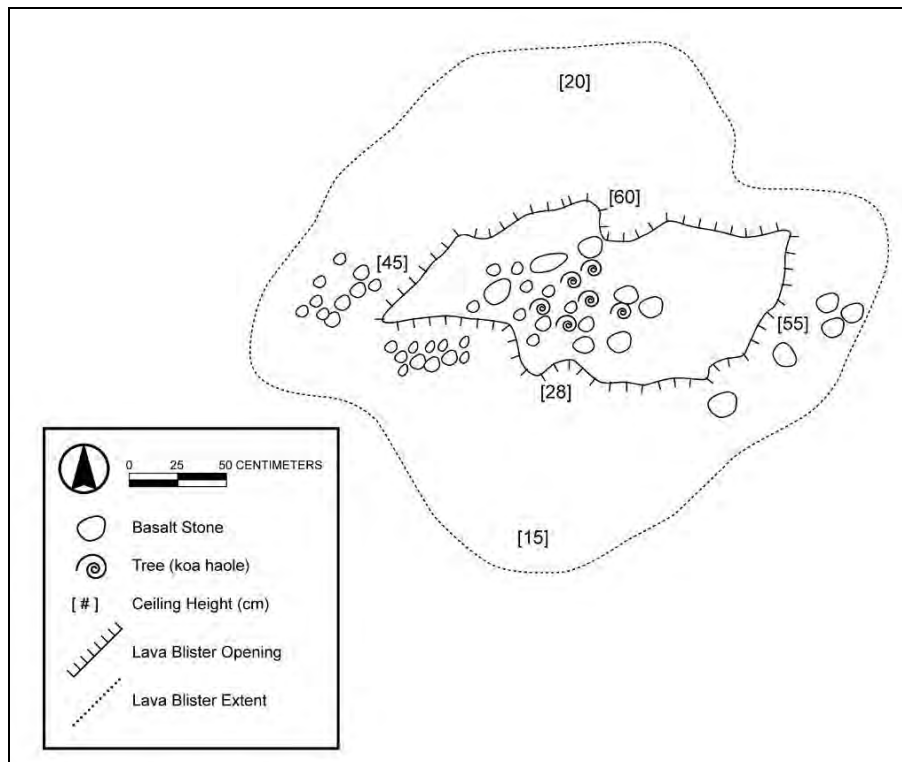


Figure 52. Plan view map of SIHP # -22417

**5.2.10 SIHP # 50-10-27-28778****Temp. Site No.:** T-080510-2 (Monahan et al. 2011)**Site Type:** *Pāhoehoe* Excavation**No. of Features:** 1**Functional Interpretation:** Agriculture / Planting Pit**Probable Age:** Prehistoric (Pre-Contact)**Overall Dimensions:** 3.0 m N/S by 2.0 m E/W**Topography:** Level *pāhoehoe* flow**Elevation:** 30 ft (9 m) AMSL**Description:**

**SIHP # 50-10-27-28778** is a *pāhoehoe* excavation located approximately 120 m south of the Kaloko-Honokōhau National Historical Park visitor center entrance (see Figure 18) within the portion of the project area that is adjacent to the Kaloko-Honokōhau National Historical Park (Figure 54 and Figure 54). The *pāhoehoe* excavation consists of a concentration of angular *pāhoehoe* cobbles and small boulders that have been excavated from an adjacent layer of *pāhoehoe* bedrock resulting in an excavated area surrounded by small piles of excavated material. The excavated area is irregular-shaped, has scalloped edges, and measures 3.0 m N/S by 2.0 m E/W. The excavated material has been redeposited within portions of the excavated area and on top of the surrounding bedrock surface. The *pāhoehoe* excavation has exposed a small void between two layers of *pāhoehoe* with a maximum ceiling height of 0.3 m. The base of the excavated area consists of a thin layer of sediment and organic debris that supports the growth of *koa haole* and exotic grasses. No artifacts or midden were observed in the area.

SIHP # -28778 is interpreted as a planting pit feature likely dating from prehistoric (pre-Contact) times. The thin sediment layer within the excavated area and excavated material piles could have supported various dryland cultivars.



Figure 53. SIHP # -28778, view to south

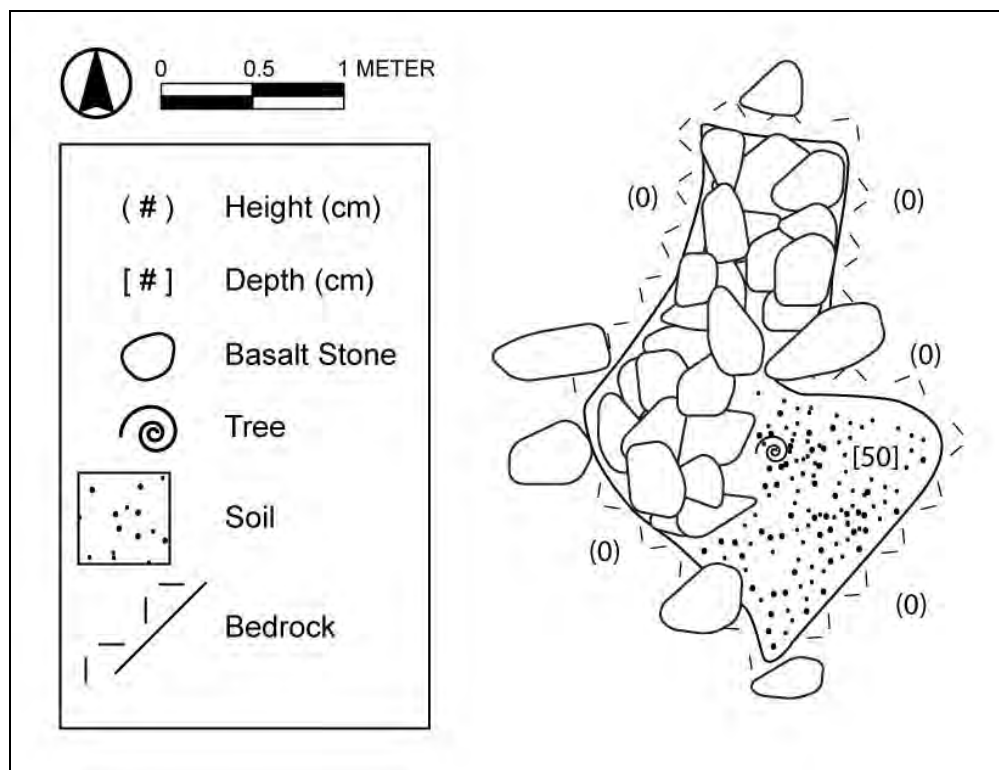


Figure 54. Plan view map of SIHP # -28778



**5.2.11 SIHP # 50-10-27-22415****Temp. Site No.:** T-080510-3 (Monahan et al. 2011), 157-3 (Nelson and Gmirkin 2001)**Site Type:** Platform**No. of Features:** 1**Functional Interpretation:** Burial**Probable Age:** Prehistoric (Pre-Contact)**Overall Dimensions:** 2.2 m N/S by 4.3 m E/W**Topography:** Level *Pāhoehoe* flow**Elevation:** 27 ft (8 m) AMSL**Description:**

**SIHP # 50-10-27-22415** is a platform located approximately 120 m south of the Kaloko-Honokōhau National Historical Park visitor's center entrance within the portion of the project area that is adjacent to the Kaloko-Honokōhau National Historical Park (see Figure 18, and Figure 55 to Figure 62). Based on CSH's sub-meter accurate GPS data and the State's depiction of the boundary between the State ROW and the national historical park, the burial site designated SIHP # -22415 is located within *both* the State ROW (approximately 85% of the burial site) *and* the federal lands of the national historical park (approximately 15% of the burial site).

The platform measures 2.2 m N/S by 4.3 m E/W with a maximum height of 0.8 m above the adjacent ground surface. The platform is roughly rectangular and is comprised of three to six courses of dry-stacked and piled *pāhoehoe* cobbles to medium boulders. The interior of the platform is roughly paved with cobbles and small boulders. One upright *pāhoehoe* boulder was observed along the southern edge of the platform. No artifacts or midden were observed in the area.

This site was previously identified and interpreted as a burial platform by Nelson and Gmirkin (2001), who designated it SIHP # -22415. Nelson and Gmirkin did not test (excavate) the platform because they were confident, based on its morphological similarity to other known burials in the national park and consultation with descendant families, that it was indeed a burial. Given the legal requirements under Hawai'i historic-preservation law and rules, however, CSH was obligated to determine whether human skeletal remains were present within the feature.

On October, 6, 2010, CSH (Monahan) led a field inspection with the SHPD of this site. Present from SHPD at the field inspection were Theresa Donham (archaeologist) and Analu Josephides (cultural specialist). Also present at the request of CSH was Cynthia Nazara (cultural monitor), who is familiar with the descendant families from the project area. The primary objective of the field inspection was to obtain guidance from the SHPD regarding testing of this site, which may represent a traditional Native Hawaiian burial.

During the site visit with the SHPD, the following information was obtained. First, Theresa Donham opined that there is approximately a 50% probability that the feature represents a burial, and that it may also be some type of habitation structure. Second, Theresa Donham noticed possible evidence of a previously-excavated archaeological trench through the western end of the platform. It is possible that a previous archaeological excavation was conducted at this feature—perhaps to test the burial-site interpretation; however, CSH has not been able to confirm this by

inspecting previous archaeological reports. Third, Analu Josephides stated that the SHPD would assist CSH in contacting descendant families for their input as to how to proceed with evaluating this feature. Subsequent to the site visit, Cynthia Nazara reported to CSH (Monahan) that she had consulted with descendant families from the area, and that they favored archaeological testing of this feature to determine if it contained human skeletal remains. CSH obtained concurrence from the SHPD before testing this site.

#### *5.2.11.1 Test Excavation Findings*

On November 8, 2010, CSH tested this site and confirmed the presence of human skeletal remains within the platform (Figure 57 to Figure 62). Human remains were encountered during the excavation of a 1.0 by 1.0 m test unit within the center of SIHP # -22415. The posterior portion of an intact human cranium was exposed within the northwest corner of the test unit while sweeping sediment into a dustpan to be screened. Upon identification, all test excavation procedures were halted, the exposed portion of cranium was immediately covered with a thick layer of nearby sediment (Stratum III), and SHPD/DLNR was promptly notified. The northwest corner of the test unit was carefully filled during the reconstruction effort. No additional human remains were identified during sediment screening, which occurred prior to the identification of the *in situ* cranium. Screening of sediment prior to the discovery of human remains encountered two crab claws, one small fish bone, one rodent mandible, and numerous small terrestrial snail shells. No photographs of the human remains were taken.

SIHP # -22415 is interpreted as a burial site dating from prehistoric (pre-Contact) times.



Figure 55. SIHP # -22415, view to west



Figure 56. SIHP # -22415, view to northeast



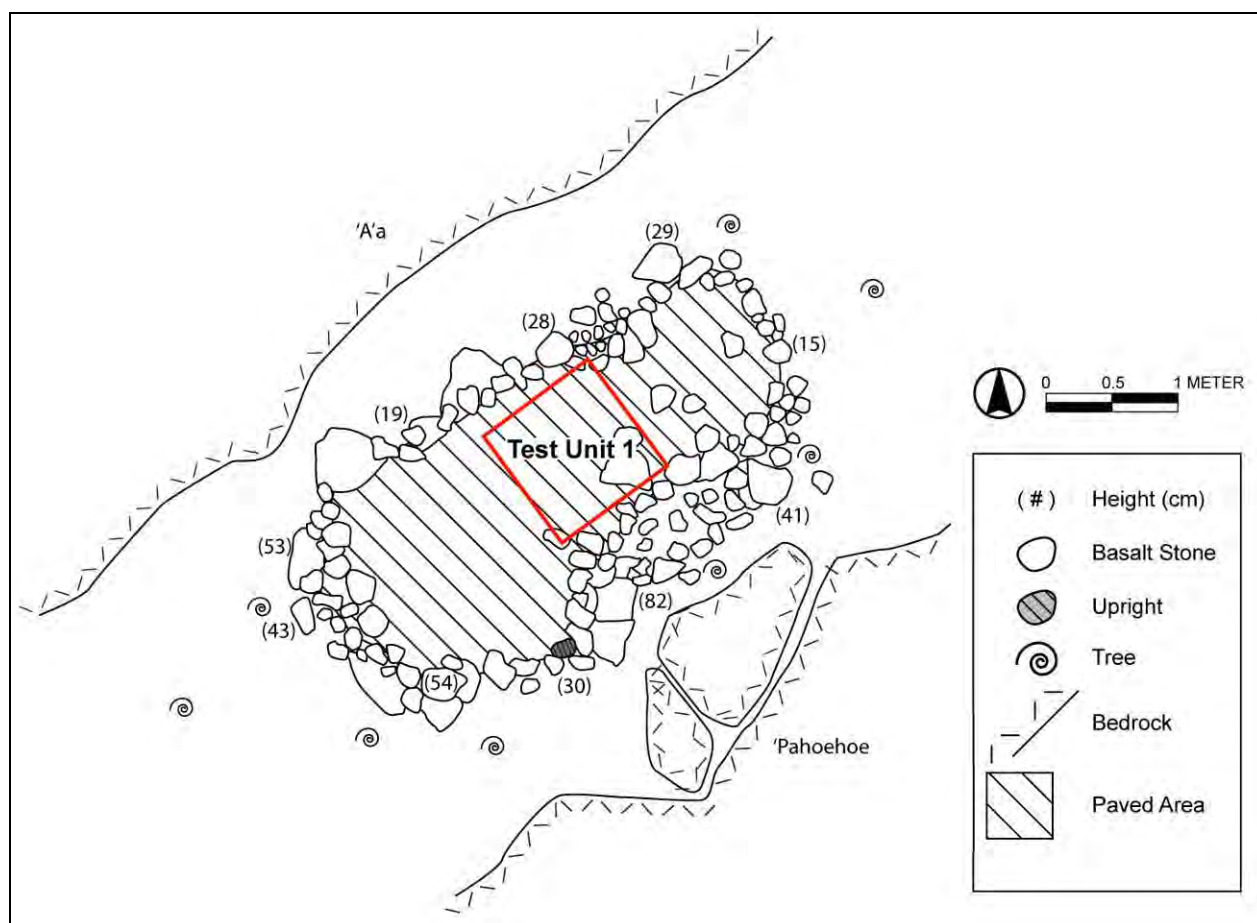


Figure 57. Plan view map of SIHP # -22415 showing location of Test Unit 1



Figure 58. SIHP # -22415 pre-excavation of Test Unit 1, view to northwest



Figure 59. SIHP # -22415 post-reconstruction of Test Unit 1, view to northwest

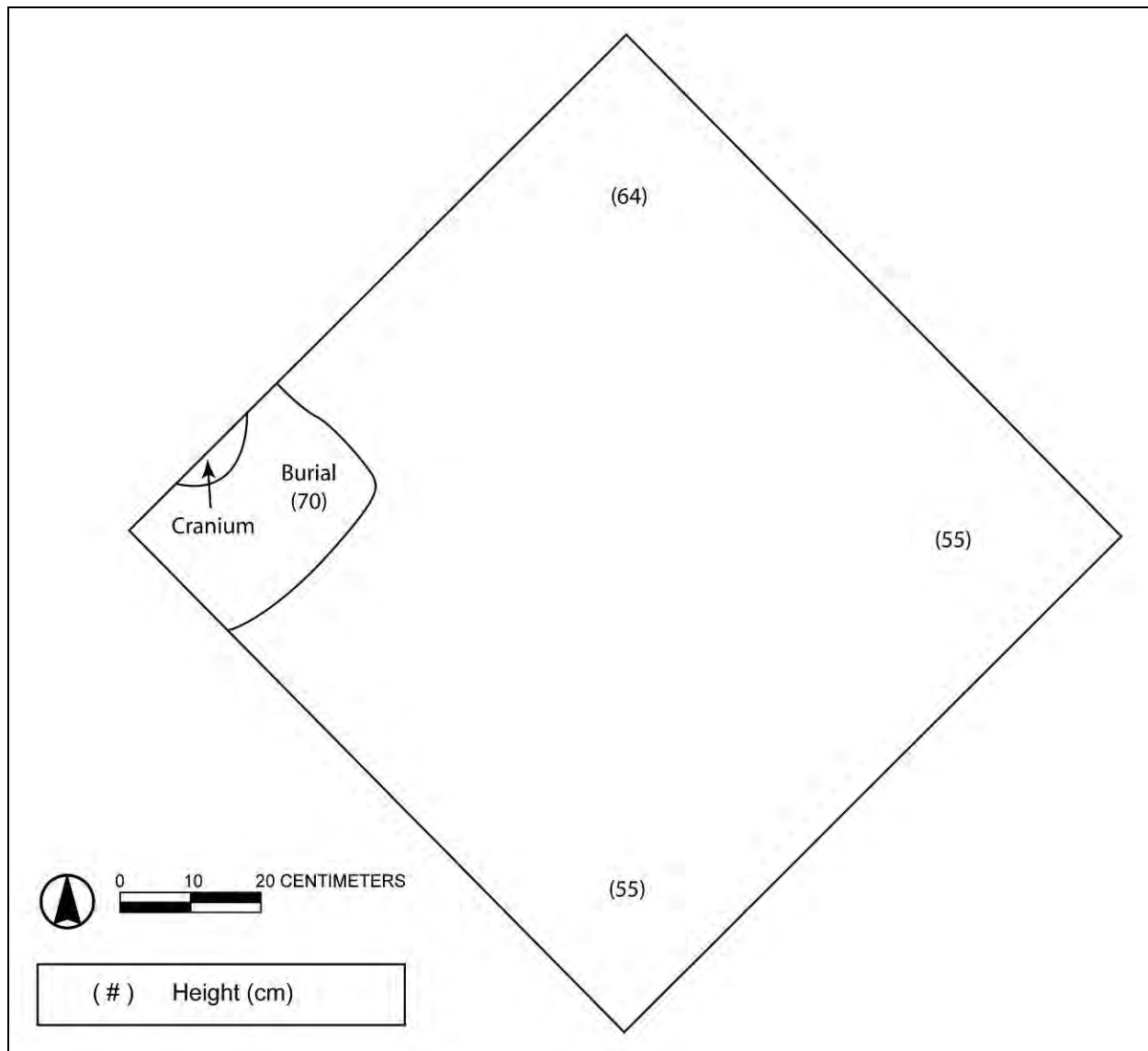


Figure 60. Plan view map of Test Unit 1 showing posterior portion of cranium (human skeletal remains), SIHP # -22415





Figure 61. Profile south wall of SIHP # -22415, Test Unit 1, view to south

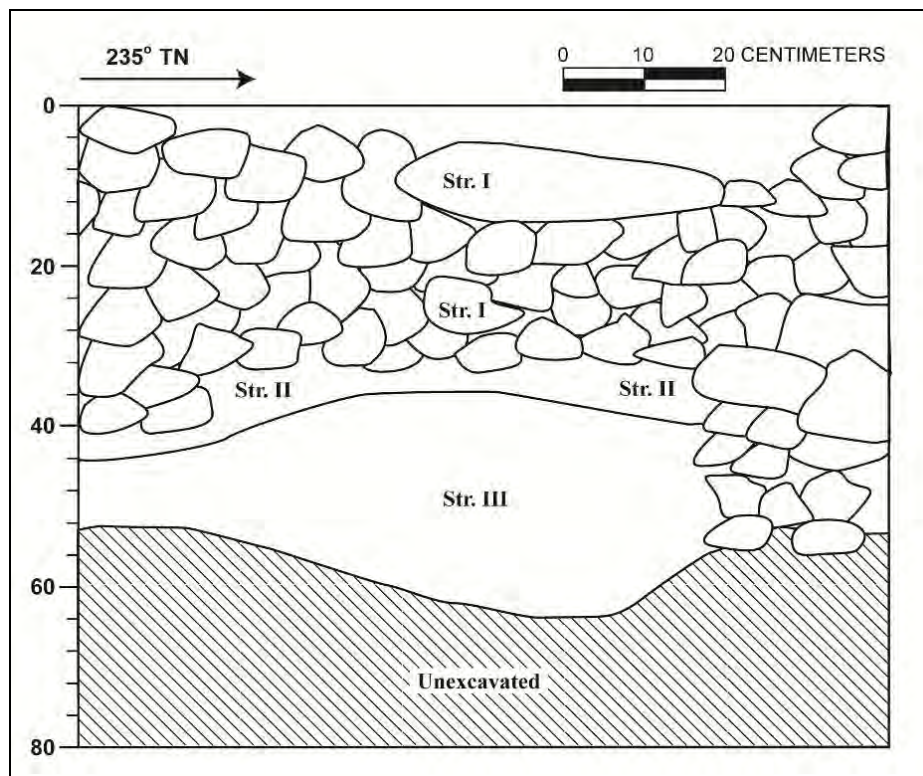


Figure 62. Stratigraphic profile of the south wall of SIHP # -22415, Test Unit 1

**5.2.12 SIHP # 50-10-27-29336****Temp. Site No.:** Terrace 0 (Monahan and Yucha 2012)**Site Type:** Rock Terrace**No. of Features:** 1**Functional Interpretation:** Indeterminate, possible burial**Probable Age:** Indeterminate**Overall Dimensions:** 2.0 m long E/W by 1.0 m wide N/S**Topography:** Southern slope of an 'a'ā ridge**Elevation:** 41 ft (12 m) AMSL**Description:**

**SIHP # 50-10-27-29336** is located approximately 15 m northeast of the burial site designated SIHP 50-10-27-22415, south of the entrance to the visitor center at the national historical park. The site location is depicted in Figure 18. It is on the southern face of an 'a'ā ridge sloping up to the north. The 'a'ā hill slope is mostly devoid of vegetation, and is completely bare at the location of this site. This site was pointed out to CSH by NPS archaeologists in the supplemental survey of the south segment (Monahan and Yucha 2012).

The terrace is constructed of dry-stacked 'a'ā boulders and cobbles two courses high forming low retaining features on the south and west sides (Figure 63 to Figure 65). These two cobble and boulder stackings create a small, nearly level area on the upslope (north) side that has been filled in with pebble- and cobbled-sized 'a'ā clasts. The surface of the nearly level area slopes slightly down to the south. The site measures approximately 2.0 m long E/W by 1.0 m wide N/S by 0.40 m high (i.e., maximum height of the stacked cobbles and boulders).

There is no soil-sedimentary deposition at or adjacent to the rock terrace. No portable cultural materials, other than the stacked and filled-in rocks, were observed by CSH archaeologists.

Other than the fact that it appears to be older than 50 years of age, the function and age of this site was regarded by CSH as indeterminate. However, in consultation with the NPS and the SHPD it is agreed that the site may be a possible burial site. CSH has recommended data recovery including excavation for this site (see Table 27 and Table 28).





Figure 63. Photograph showing the location of SIHP # -29336; filled, view to east



Figure 64. Detail of SIHP # -29336, showing formal western side of stacked-rock facing under the tape measure and filled, nearly level area behind it; view east



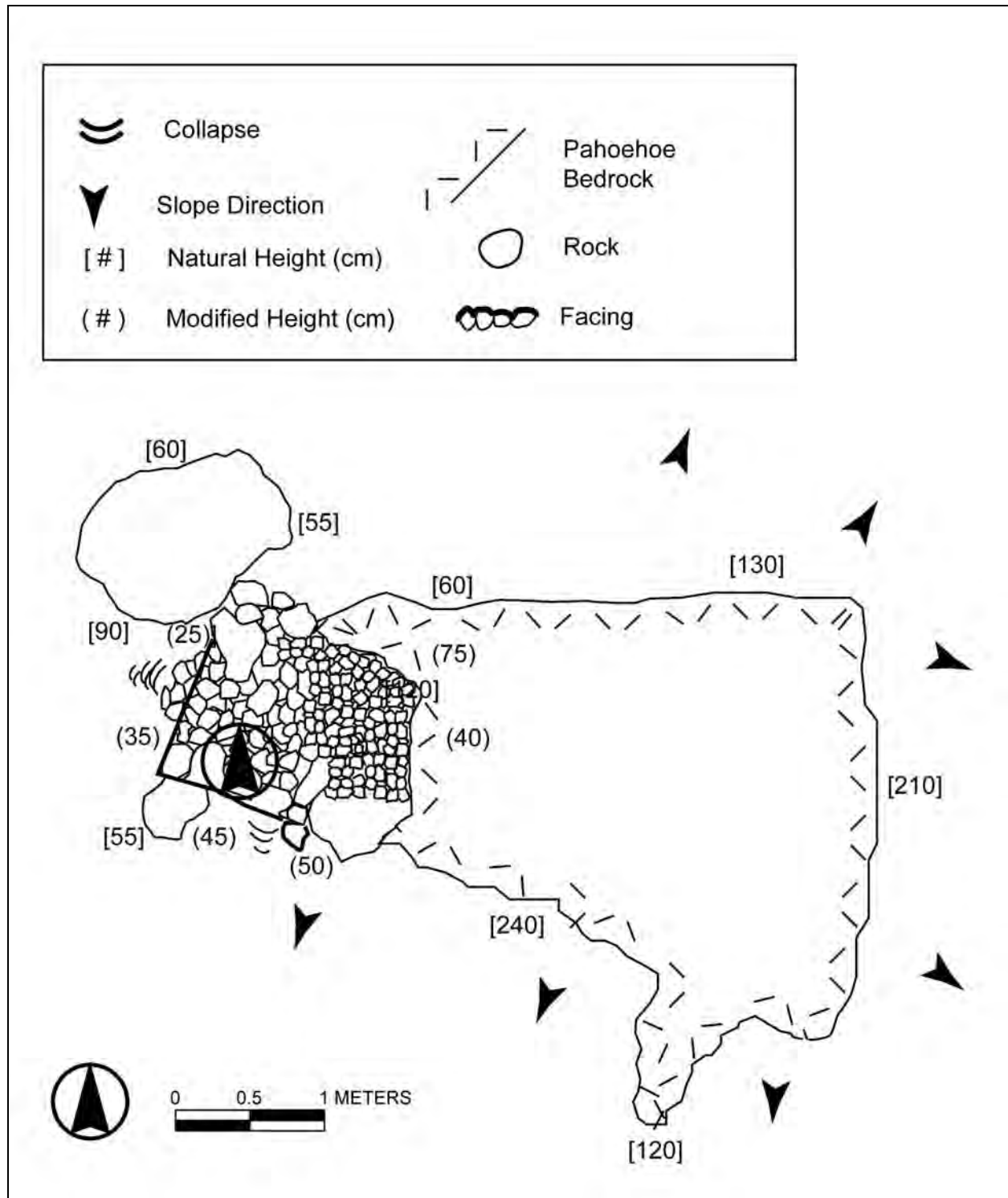


Figure 65. Plan view map of SIHP # -29336

**5.2.13 SIHP # 50-10-27-29337****Temp. Site No.:** Depression 1 (Monahan and Yucha 2012)**Site Type:** Excavated Pit**No. of Features:** 1**Functional Interpretation:** Indeterminate-Possible Quarry or Sweet Potato Planter**Probable Age:** Indeterminate**Overall Dimensions:** 1.0 m N/S by 1.0 m E/W**Topography:** 'A 'ā flow**Elevation:** 41 ft (12 m) AMSL**Description:**

**SIHP # 50-10-27-29337** is located approximately 30 m north of the burial site designated SIHP 50-10-27-22415, south of the entrance to the visitor center at the national historical park. The site location is depicted in Figure 18. The site is located on the eastern side of a very large boulder in an 'a 'ā flow (Figure 67 and Figure 67). The human modification consists of the removal of 'a 'ā rocks from up against the side of a very large 'a 'ā boulder; this removal has resulted in an excavated pit in the 'a 'ā. This site was pointed out to CSH by NPS archaeologists in the supplemental survey of the south segment (Monahan and Yucha 2012).

The excavated pit measures approximately 1.0 m by 1.0 m by 0.90 m deep. There is no vegetation or soil-sedimentary matrix in or immediately adjacent to the pit. No portable cultural materials, other than the removed rocks, were observed by CSH archaeologists.

Other than the fact that it appears to be older than 50 years of age, the function and age of this site is indeterminate. A wide variety of excavated pits in 'a 'ā have been documented in similar physiographic settings in the Kona region. This pit may have functioned as a quarry (e.g., a source of rock material) or as a sweet potato planter. It is unlikely that further work at the site could contribute any additional information to further clarify its age or function.

An SHPD review letter (dated July 9, Log No. 2012.1442, Log No 1206MV26) of an earlier draft of this archaeological inventory survey study raises the question "What is the justification that Site 29337 is a sweet potato planter? There does not appear to be any soil in the photo of the site." Very similar questions are raised regarding three quite similar designated sites (See discussions of sites -29938, -29341 and -29343). These (and several other sites) were identified in the company of NPS personnel in a field inspection of April 12 2012. CSH field records relate the opinion of the CSH field archaeologist that these are "natural features of the 'a 'ā flow." We appreciate that in such 'a 'ā flows many archaeological properties can be exceedingly subtle and we are deferring to the greater experience and wishes of the NPS in declaring these to be sites at all and to a conceivable function as "Sweet Potato Planters."

We are quick to agree with the SHPD that there "does not appear to be any soil." We note in passing that these sites all appear to be immediately adjacent to large accretion balls in the 'a 'ā flows. It may be the case that these small depressions are geological phenomenon related to the final movement, rotation and settling of these massive accretion balls causing very small collapses in the immediately adjacent unconsolidated 'a 'ā. We certainly cannot rule out that these features on the landscape had cultural uses. We do not believe this can be proven or disproven at these examples by further archaeological study.



Figure 66. Photograph of SIHP # -29337, view west

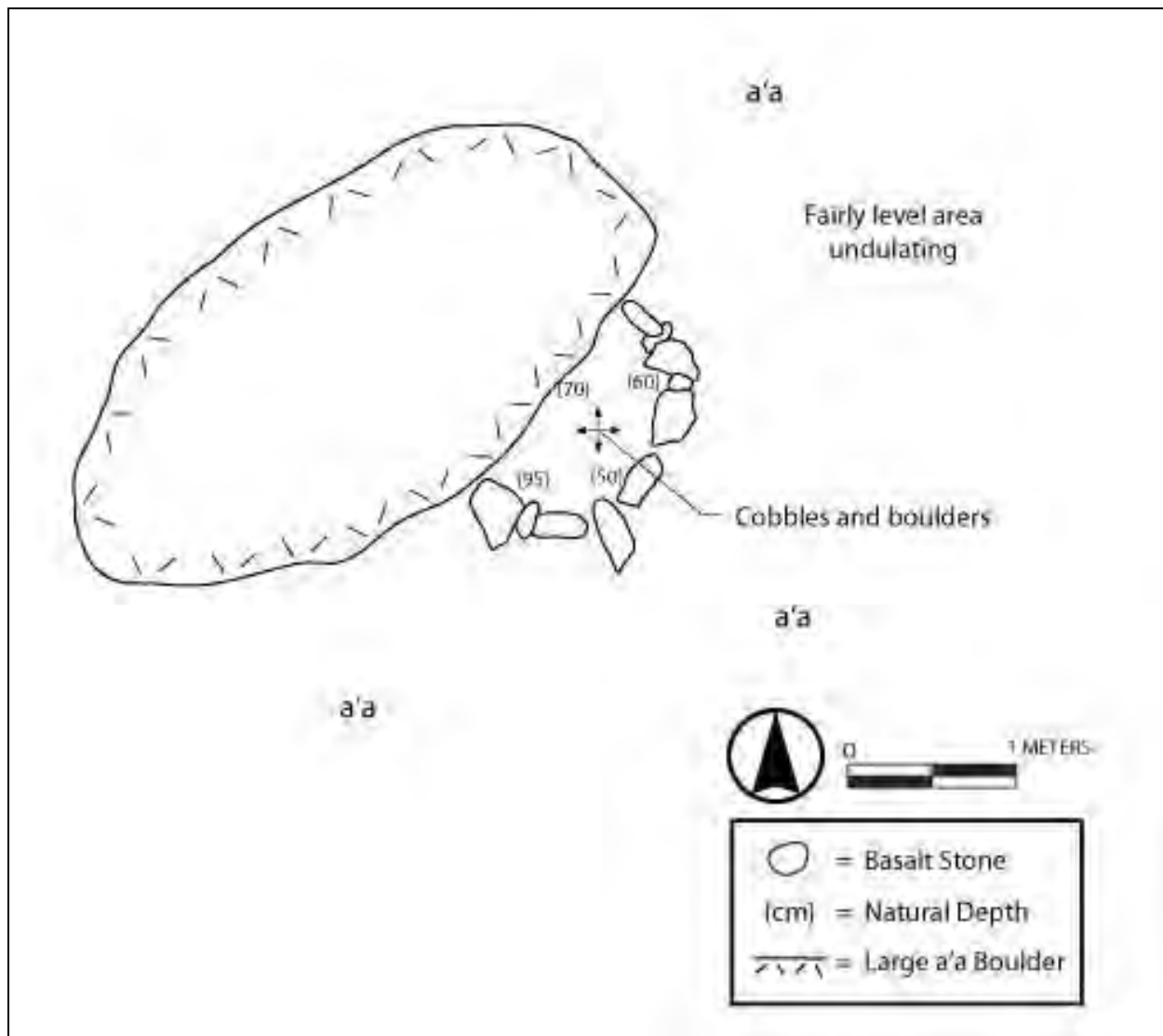


Figure 67. Plan view map of SIHP # -29337

**5.2.14 SIHP # 50-10-27-29339****Temp. Site Designation:** Wall 1 (Monahan and Yucha 2012)**Site Type:** Rock Wall Segment**No. of Features:** 1**Functional Interpretation:** Indeterminate**Probable Age:** Indeterminate**Overall Dimensions:** 1.10 m long (NE/SW) by 0.45 m wide**Topography:** 'A 'ā flow**Elevation:** 53 ft (17 m) AMSL**Description:**

**SIHP # 50-10-27-29339** is a very short segment of dry-stacked rock wall on an 'a 'ā flow. The wall is oriented in a roughly northeast-to-southwest direction up against a very large 'a 'ā boulder. The site location is depicted in Figure 18. This is part of a cluster of sites pointed out to CSH by NPS archaeologists in the supplemental survey of the south segment (Monahan and Yucha 2012), along with SIHP #s -29338, -29340 and -29341 (see Figure 18).

There is no vegetation or soil-sedimentary matrix in or immediately adjacent to the wall segment. No portable cultural materials, other than the placed rocks, were observed by CSH archaeologists.

The very short wall segment is constructed of loosely-piled 'a 'ā cobbles and small boulders stacked up to two courses high. The wall measures approximately 1.10 m long (NE/SW) by 0.45 m wide by 0.65 m high (maximum) (Figure 68 to Figure 70).

Consultation with the SHPD lead to reconsideration of possible form and function in the field in July 2012. But we see no C-shape. We see no paving.

Other than the fact that it appears to be older than 50 years of age, the function and age of this site is indeterminate. It is not clear what such a short section of low wall at this location may be marking. In consultation with the SHPD this site is recommended for Data Recovery.





Figure 68. Photograph of SIHP # -29339, very short segment of 'a'ā wall, view south



Figure 69. SIHP # -29339, very short segment of 'a'ā wall; view south



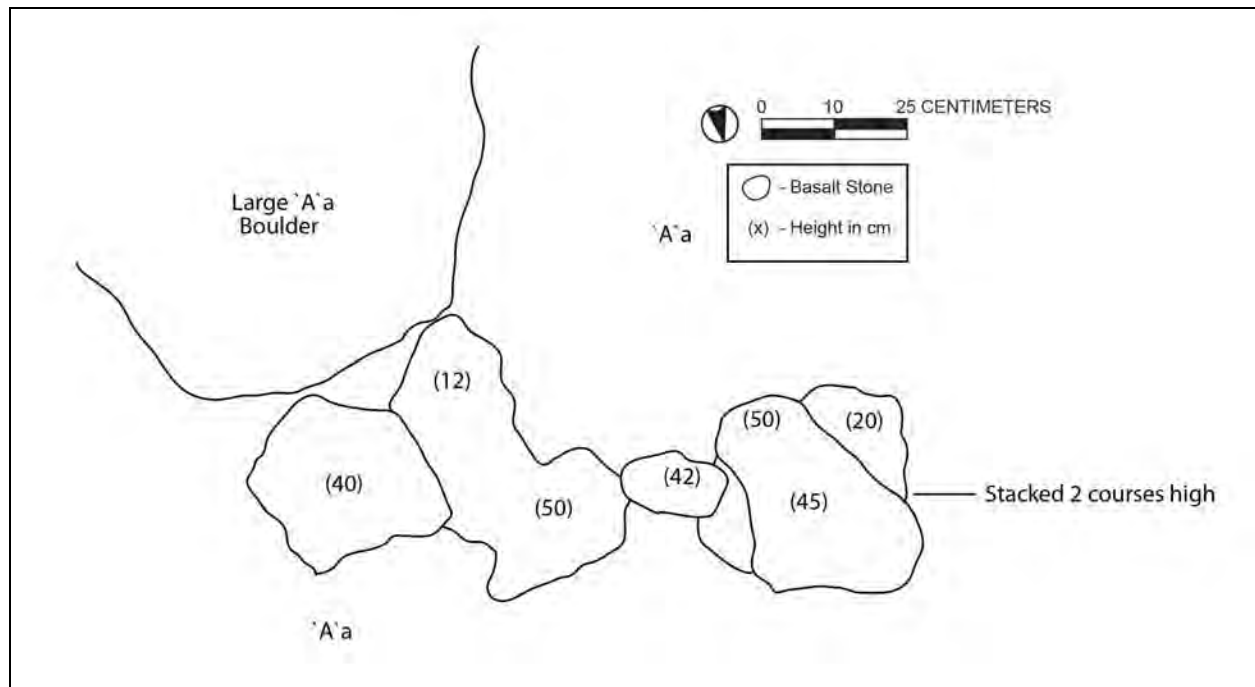


Figure 70. Plan view map of SIHP # -29339

**5.2.15 SIHP # 50-10-27-29338****Temp. Site No.:** Depression 2 (Monahan and Yucha 2012)**Site Type:** Excavated Pit**No. of Features:** 1**Functional Interpretation:** Indeterminate-Possible Quarry or Sweet Potato Planter**Probable Age:** Indeterminate**Overall Dimensions:** 1 m N/S by 1.0 m E/W**Topography:** 'A 'ā flow**Elevation:** 53 ft (17 m) AMSL**Description:**

**SIHP # 50-10-27-29338** is located north of the entrance to the visitor center at the national historical park. The site location is depicted in Figure 18. This is part of a cluster of sites pointed out to CSH by NPS archaeologists in the supplemental survey of the south segment (Monahan and Yucha 2012), along with SIHP #s -29339, -29340 and -29341 (see Figure 18). The human modification consists of the removal of 'a 'ā rocks forming a pit in the 'a 'ā with some of the removed rocks stacked along the pit's east side (Figure 72 and Figure 72).

The excavated pit measures approximately 1.0 m by 1.0 m by 1.0 m deep. There is no vegetation or soil-sedimentary matrix in or immediately adjacent to the pit. No portable cultural materials, other than the removed rocks, were observed by CSH archaeologists. Some of the rock on the eastern edge of the pit appears to be loosely-stacked two to three courses to a maximum height of approximately 0.60 m.

Other than the fact that it appears to be older than 50 years of age, the function and age of this site is indeterminate. A wide variety of excavated pits in 'a 'ā have been documented in similar physiographic settings in the Kona region. This pit may have functioned as a quarry (e.g., a source of rock material) or as a sweet potato planter. It is unlikely that further work at the site could contribute any additional information to further clarify its age or function.

An SHPD review letter (dated July 9, Log No. 2012.1442, Log No 1206MV26) of an earlier draft of this archaeological inventory survey study raises the question "What is the justification that Site 29338 is a sweet potato planter? There does not appear to be any soil in the photo of the site." Very similar questions are raised regarding three quite similar designated sites (See discussions of sites -29937, -29341 and -29343). These (and several other sites) were identified in the company of NPS personnel in a field inspection of April 12 2012. CSH field records relate the opinion of the CSH field archaeologist that these are "natural features of the 'a 'ā flow." We appreciate that in such 'a 'ā flows many archaeological properties can be exceedingly subtle and we are deferring to the greater experience and wishes of the NPS in declaring these to be sites at all and to a conceivable function as "Sweet Potato Planters."

We are quick to agree with the SHPD that there "does not appear to be any soil." We note in passing that these sites all appear to be immediately adjacent to large accretion balls in the 'a 'ā flows. It may be the case that these small depressions are geological phenomenon related to the final movement, rotation and settling of these massive accretion balls causing very small collapses in the immediately adjacent unconsolidated 'a 'ā. We certainly cannot rule out that these features on the landscape had cultural uses. We do not believe this can be proven or disproven at these examples by further archaeological study.



Figure 71. Photograph of SIHP # -29338, view east

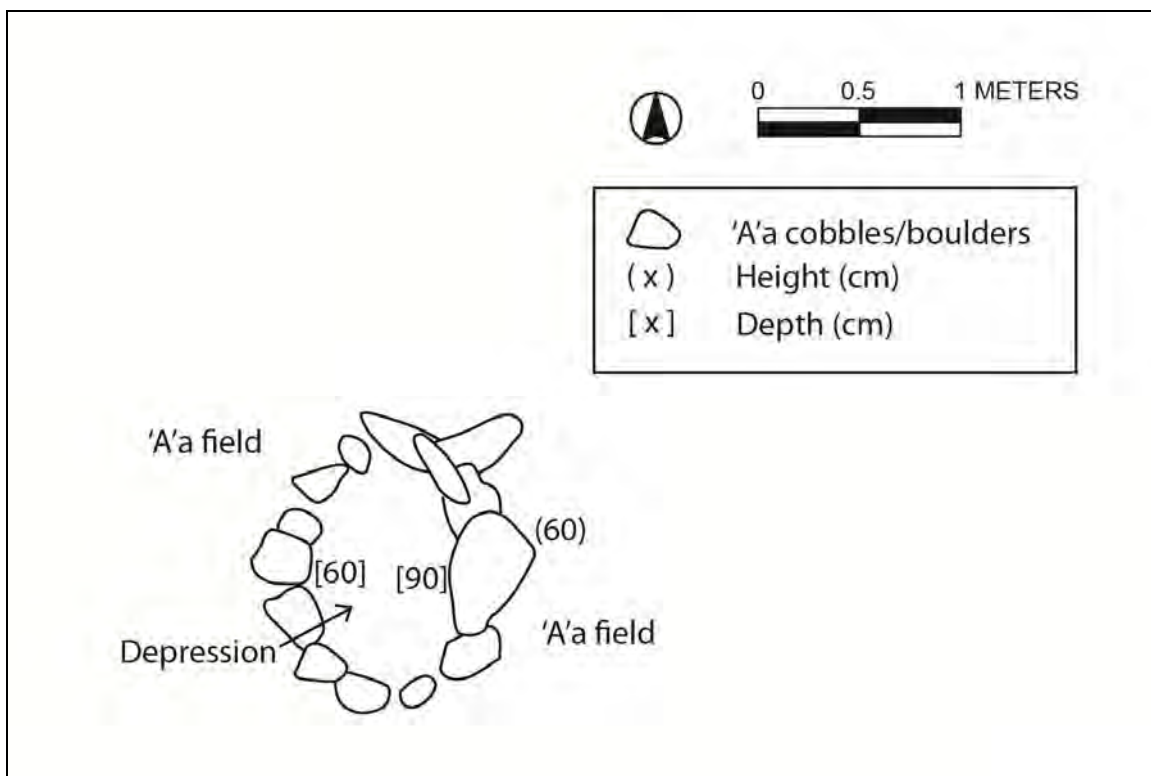


Figure 72. Plan view map of SIHP # -29338

**5.2.16 SIHP # 50-10-27-29340****Temp. Site Designation:** Mound 0 (Monahan and Yucha 2012)**Site Type:** Rock Mound**No. of Features:** 1**Functional Interpretation:** Indeterminate, possible burial**Probable Age:** Indeterminate**Overall Dimensions:** 3.0 m by 3.0 m**Topography:** 'A 'ā flow**Elevation:** 53 ft (16 m) AMSL**Description:**

**SIHP # 50-10-27-29340** is located north of the entrance to the visitor center at the national historical park. The site location is depicted in Figure 18. This is part of a cluster of sites pointed out to CSH by NPS archaeologists in the supplemental survey of the south segment (Monahan and Yucha 2012), along with SIHP #s -29338, -29339 and -29341 (see Figure 18).

The site is a loosely-piled mound of 'a'ā cobbles on 'a'ā bedrock. The mound measures approximately 3.0 m long by 3.0 m wide by 1.1 m high. It has a roughly circular shape (Figure 73 to Figure 75).

There is no vegetation or soil-sedimentary matrix in or immediately adjacent to these pits. No portable cultural materials, other than the removed rocks, were observed by CSH archaeologists.

The site appears to be older than 50 years of age, but it is difficult to more precisely date it or interpret its function. In a letter dated April 25, 2012, in reference to the recent supplemental archaeological survey work in the south segment of the current project area (cf. Monahan and Yucha 2012), During the current project, CSH tested five features and found only one of them, a formally-constructed boulder platform (SIHP # -22415), to contain human skeletal remains. The remaining four are informally-constructed features (SIHP #s -28781, -28794, -28803 and -28804) that did not contain human skeletal remains. Therefore, CSH believes it is unlikely that this site represents a burial. Based on the NPS review letter dated April 25, 2012, CSH conducted additional fieldwork on May 1, 2012, to further document this site (Figure 75). The latest fieldwork, however, did not include excavation or dismantling of the site. Consultation with Mike Vitousek of the SHPD and NPS archaeologist Tyler Paikuli-Campbell has led to a revised description of this site as a possible burial. This site is *not* located within the project grading limits or construction limits, and it will not be physically impacted by the project. In consultation with the SHPD this site is now slated for excavation through a program of data recovery (see Table 27 and Table 28).





Figure 73. Photograph of SIHP # -29340, view to southeast





Figure 74. SIHP # -29340, view southeast



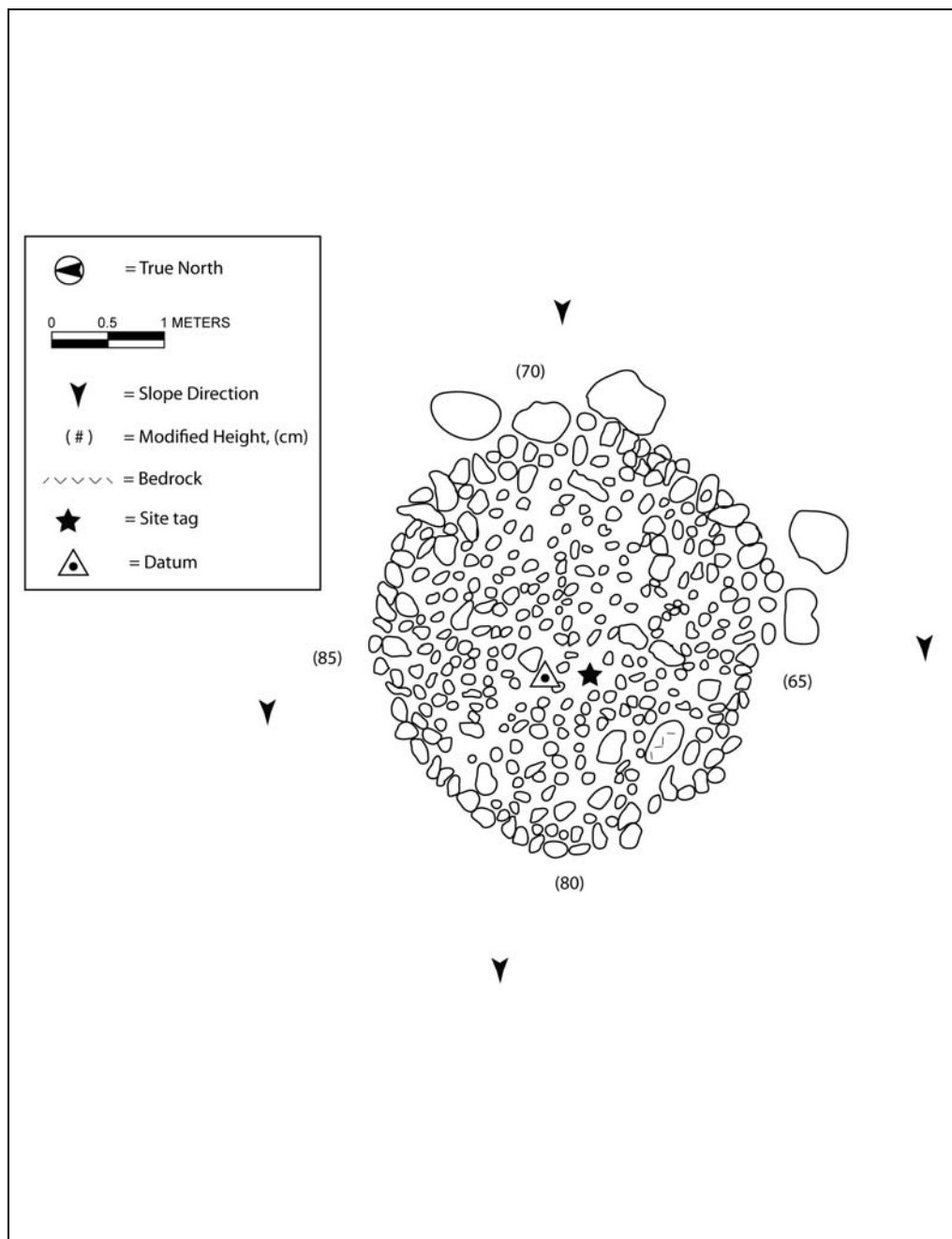


Figure 75. Plan view map of SIHP # -29340

**5.2.17 SIHP # 50-10-27-29341****Temp. Site No.:** Depression 3 (Monahan and Yucha 2012)**Site Type:** Excavated Pits**No. of Features:** 2**Functional Interpretation:** Indeterminate-Possible Quarry or Sweet Potato Planter**Probable Age:** Indeterminate**Overall Dimensions:** 4.0 m N/S by 1.0 m E/W**Topography:** 'A 'ā flow**Elevation:** 52-53 ft (16 m) AMSL**Description:**

**SIHP # 50-10-27-29341** is located north of the entrance to the visitor center at the national historical park. The site location is depicted in Figure 18. This is part of a cluster of sites pointed out to CSH by NPS archaeologists in the supplemental survey of the south segment (Monahan and Yucha 2012), along with SIHP #s -29338, -29339 and -29340 (see Figure 18). This site consists of two features, designated Feature A (Figure 76 and Figure 78) and Feature B (Figure 77 and Figure 78), each a partially-excavated pit in the 'a 'ā.

Feature A measures approximately 0.70 m long N/S by 0.60 m wide E/W by 1.2 m deep; this excavated pit is located on the western edge of a very large boulder in the 'a 'ā flow. Feature B measures approximately 0.45 m long N/S by 0.30 m wide E/W by 0.40 m deep; this excavated pit is located on the western edge of a very large boulder. The two pits are approximately 4.0 m apart from each other. The entire site (consisting of the two pits) measures approximately 4.0 m N/S by 1.0 m E/W.

There is no vegetation or soil-sedimentary matrix in or immediately adjacent to these pits. No portable cultural materials, other than the removed rocks, were observed by CSH archaeologists.

Other than the fact that it appears to be older than 50 years of age, the function and age of this site is indeterminate. A wide variety of excavated pits in 'a 'ā have been documented in similar physiographic settings in the Kona region. These two pits may have functioned as a quarry (e.g., a source of rock material) or as a sweet potato planter. It is unlikely that further work at the site could contribute any additional information to further clarify its age or function.

An SHPD review letter (dated July 9, Log No. 2012.1442, Log No 1206MV26) of an earlier draft of this archaeological inventory survey study raises the question "What is the justification that Site 29341 is a sweet potato planter? There does not appear to be any soil in the photo of the site." Very similar questions are raised regarding three quite similar designated sites (See discussions of sites -29937, -29938 and -29343). These (and several other sites) were identified in the company of NPS personnel in a field inspection of April 12 2012. CSH field records relate the opinion of the CSH field archaeologist that these are "natural features of the 'a 'ā flow." We appreciate that in such 'a 'ā flows many archaeological properties can be exceedingly subtle and we are deferring to the greater experience and wishes of the NPS in declaring these to be sites at all and to a conceivable function as "Sweet Potato Planters."

We are quick to agree with the SHPD that there "does not appear to be any soil." We note in passing that these sites all appear to be immediately adjacent to large accretion balls in the

‘a‘ā flows. It may be the case that these small depressions are geological phenomenon related to the final movement, rotation and settling of these massive accretion balls causing very small collapses in the immediately adjacent unconsolidated ‘a‘ā. We certainly cannot rule out that these features on the landscape had cultural uses. We do not believe this can be proven or disproven at these examples by further archaeological study.



Figure 76. Photograph of SIHP # -29341, Feature A, view east



Figure 77. Photograph of SIHP # -29341, Feature B, view east

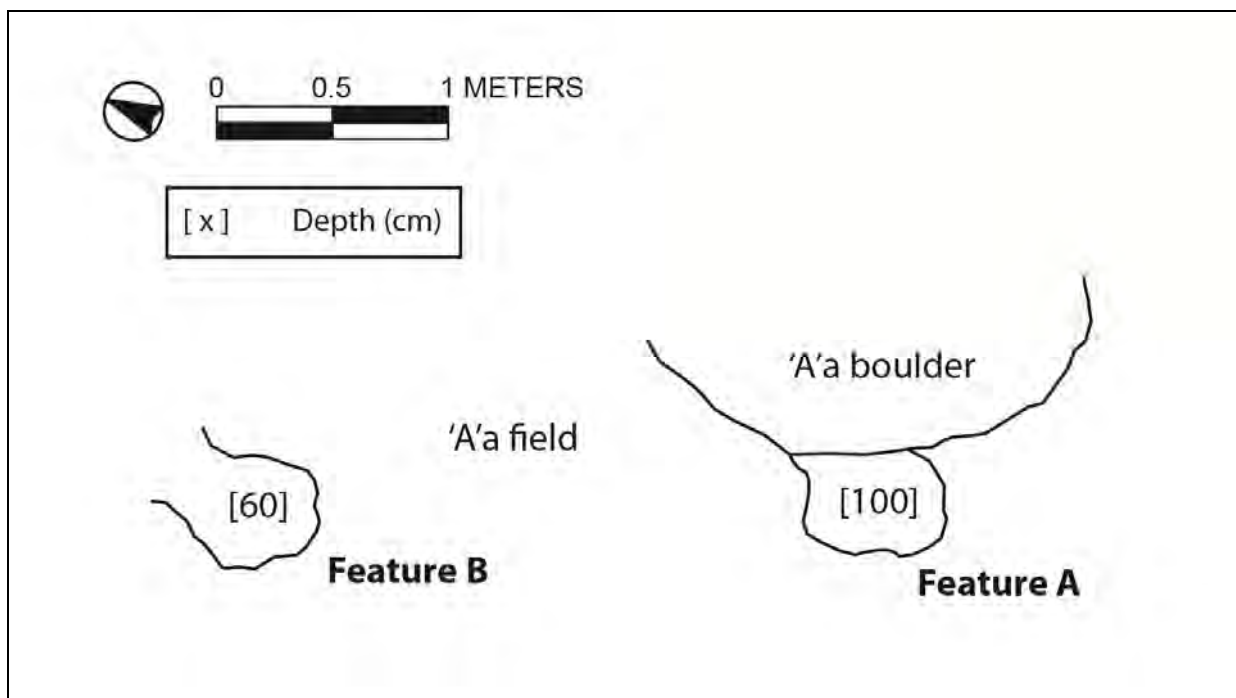


Figure 78. Plan view map of SIHP # -29341, Feature A and Feature B

**5.2.18 SIHP # 50-10-27-29342****Temp. Site No.:** Depression 4 (Monahan and Yucha 2012)**Site Type:** Excavated Pit**No. of Features:** 1**Functional Interpretation:** Indet.-Possible Quarry for Rock to Repair Māmalahoa Trail**Probable Age:** Indeterminate**Overall Dimensions:** 2.5 m N/S by 1.25 m E/W**Topography:** 'A 'ā flow**Elevation:** 59 ft (18 m) AMSL**Description:**

**SIHP # 50-10-27-29342** is an excavated pit in an 'a 'ā flow. The site location is depicted in Figure 18. The pit is approximately 30 m west of the Māmalahoa Trail. The human modification consists of the removal of 'a 'ā pebble- and cobble-sized rocks resulting in an excavated pit in the 'a 'ā (Figure 79, Figure 80). This site was pointed out to CSH by NPS archaeologists during the supplemental survey of the south segment (Monahan and Yucha 2012).

The excavated pit measures approximately 2.5 m N/S by 1.25 m E/W by 1.0 m deep. There is no vegetation or soil-sedimentary matrix in or immediately adjacent to the pit. No portable cultural materials, other than the removed rocks, were observed by CSH archaeologists.

Other than the fact that it appears to be older than 50 years of age, the function and age of this site is indeterminate. A wide variety of excavated pits in 'a 'ā have been documented in similar physiographic settings in the Kona region. This pit may have functioned as a quarry (e.g., a source of rock material). During fieldwork with CSH on March 29, 2012, NPS archaeologists hypothesized that the pit may have been a source of quarried cinder used to repair and maintain the nearby Māmalahoa Trail. It is unlikely that further work at the site could contribute any additional information to further clarify its age or function.





Figure 79. Photograph of SIHP # -29342, view east

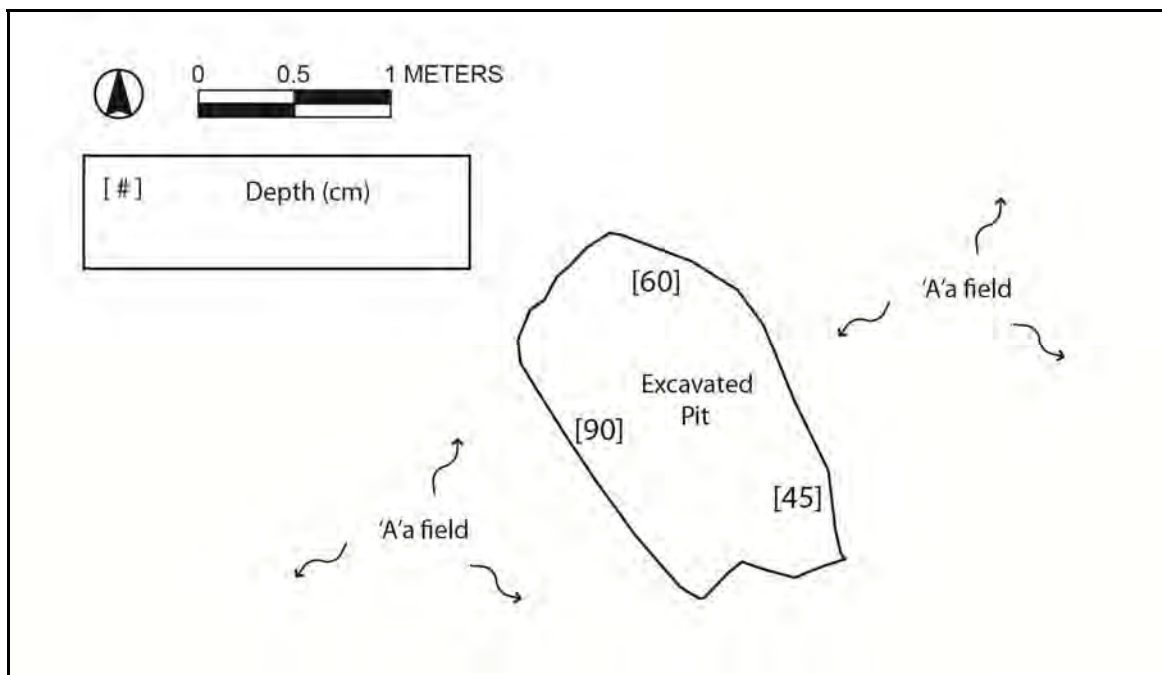


Figure 80. Plan view map of SIHP # -29342

**5.2.19 SIHP # 50-10-27-00002****Temp. Site No.:** n.a.**Site Type:** Māmalahoa Trail (Road)**No. of Features:** 1**Functional Interpretation:** Transportation**Probable Age:** Historic (constructed 1836-1855)**Overall Dimensions:** Approximately 490 ft (149 m) (in ROW); entire site is miles long**Topography:** Gently undulating 'a'ā terrain (in the project area)**Elevation:** 57-60 ft (17-18 m) AMSL (in the project area)**Description:**

**SIHP # 50-10-27-00002**, the well-known Māmalahoa Trail or Road, extends for miles outside of, and north and south of, the project area (see Figure 18). In its 1995 report, CSH (Walsh and Hammatt 1995) describe this site in general and project-specific terms:

Site 00002 is an historic cross-*ahupua'a* road commonly referred to as the Mamalahoa Trail. The construction of the road is dated to 1836-1855. It is considered to have been the major seaward road through the region between its construction and 1888, when use of the road became infrequent (Cordy 1991:403, 406). The road, in general, is described as a remarkably straight curb-lined path – typically 2.0 to 3.0 m. wide. In some areas the road surface is raised, with low points in the terrain filled in and leveled with stone.

The trail has been used sporadically in late historic and modern times and some parts of the road show evidence of vehicular use. The road has been breached in numerous places between Kailua-Kona and the Keahole Airport in modern times. As a result, the trail exists as a series of discontinuous segments in varying conditions. (Walsh and Hammatt 1995:30)

The portion currently located within the project area was described by CSH in 1995 as follows:

At Honokohau, Queen Kaahumanu Highway breaches the Mamalahoa Trail and two sections lie within the present project area. On the eastern side of the highway, one 30-40 foot (10 m.) section remains within the project area. It consists of a short ramp section below the present power line. The area surrounding this section has been cleared, presumably during the construction of the present highway. On the western side of the highway, an approximately 490 foot (149 m.) sections lies within the project area . . . This section begins 30 feet (9 m.) west of the present highway pavement edge and extends through the project area at 147 degrees T.N. [true north]. The road continues at the angle beyond the project area boundary and into the Kaloko-Honokohau National Park. This section does not appear to have been previously recorded. (Walsh and Hammatt 1995:32)

The site was revisited during the current archaeological inventory survey and found to be in the same general physical condition (Figure 81 to Figure 85); however, in its current

configuration, the Māmalahoa Trail is no longer within the project area on the east, or *mauka*, side.

This trail is subject to protection and preservation under the Highways Act of 1892 (HRS Chapter 264-1(b)) (Na Ala Hele 2008).

In recognition of its significance to Hawaiian history, Walsh and Hammatt (1995) recommended SIHP # -00002 eligible for the National and State Registers of Historic Places under criterion A (“reflects major trends or events in the history of the state or nation”), C (“excellent example of a site type/work of a master”), D (“information content”) and (Hawai'i only) E (“has traditional cultural significance to an ethnic group”). The Māmalahoa Trail (SIHP - 00002) should also be considered eligible under criterion B, which recognizes the historic property's association with the lives of persons significant in our past, in this case, Kuakini (Governor of Hawai'i from 1819-1844), who undertook a program of road building using prison labor (Kirch 1996).

The site was recommended for a combination of preservation and data recovery (for portions that could not be saved) by Walsh and Hammatt (1995). The Final Archaeological Treatment Plan (1999) called for “interim protection” and data recovery. Data recovery work at this site was conducted by CSH in 1999 (Hammatt et al. 1999).

That Hammatt et al. 1999 data recovery study presents many detailed cross, sections, and archival photographs of representative and distinctive portions of the Māmalahoa Trail and the reader is referred to that study. Distinctive curb sections of the Māmalahoa Trail present elsewhere are not present in the project area.





Figure 81. Photograph of SIHP # -00002, showing southeastern portion of the trail within the project area, view to northwest



Figure 82. Photograph of SIHP # -00002, showing central portion of the trail within the project area, view to northwest





Figure 83. Photograph of SIHP # -00002, showing northwestern portion of the trail within the project area, view to northwest. Service road is visible on the left, intersecting with SIHP # -00002



Figure 84. Photograph of SIHP # -00002, showing curbed portion of the trail beginning just outside of the project area, view to northwest



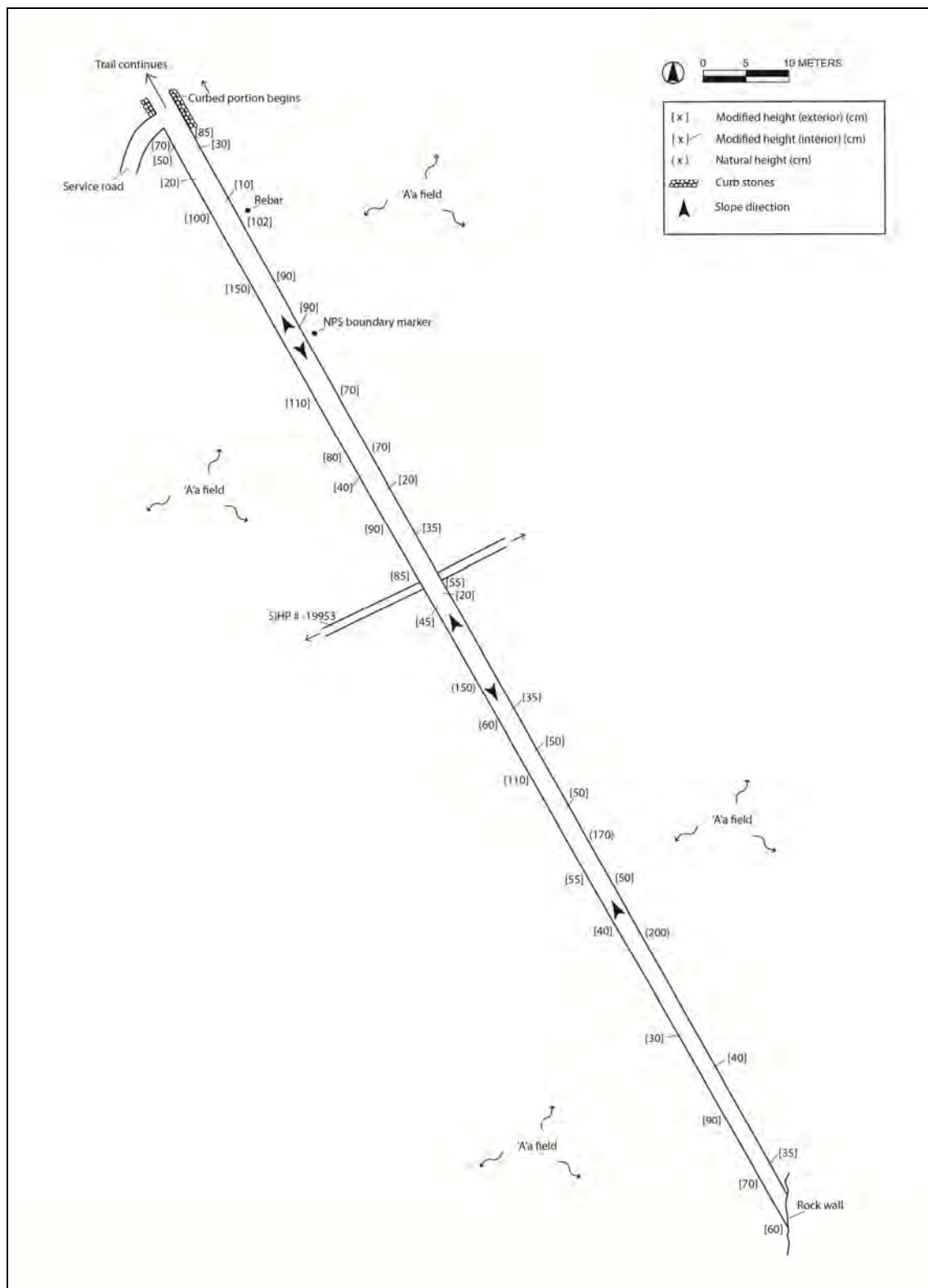


Figure 85. Plan view map of SIHP # -00002 [Note: Area of curbing on northwest portion of trail is just outside of the project area]

**5.2.20 SIHP # 50-10-27-19953****Temp. Site No.:** 14 (Walsh and Hammatt 1995)**Site Type:** Trail**No. of Features:** 1**Functional Interpretation:** Transportation**Probable Age:** Pre-Contact or early historic**Overall Dimensions:** Approximately 30.5 m (150 ft) long (in the ROW)**Topography:** Gently sloping 'a'ā terrain**Elevation:** 57-60 ft (17-18 m) AMSL**Description:**

**SIHP # 50-10-27-19953** was first formally described by CSH in 1995 (Walsh and Hammatt 1995) (see Figure 18). The site was revisited during the current archaeological inventory survey and found to be in the same physical condition (Figure 86 to Figure 90). A water-worn cobble and surveyor's pin described in CSH's 1995 report were observed during the current study. The overall length of the trail, and its *mauka* terminus (i.e., starting approximately 16 m from the existing highway pavement edge), has not changed since 1995. The trail was described by Walsh and Hammatt (1995:54) as follows:

Site 19953 consists of a slightly meandering, but generally *mauka-makai* oriented trail . . . The trail consists of a partially cleared and trodden surface over A'a lava terrain. The trail measures 0.5 to 0.6 m. wide. It begins 53 feet (16 m.) from the highway pavement edge and continues *makai* for at least 200 feet (61 m.) beyond the project area boundary. A roughly 20 foot (6 m.) section of the trail has been destroyed where it intersects with the Mamalahoa Trail at approximately 150 feet (46 m.) from the highway pavement edge.

The trail is in fair to good condition and has previously been identified and flagged, probably by National Park archaeologists who, we have been informed, have done some surveying in the area and have identified several inland-heading trails. The site has not been previously recorded however, and a state site number had not been previously assigned (personal communication with National Park archaeologist Catherine Glidden 6/27/95).

The SHPD has pointed out (letter of July 9, 2012) that "this trail predates the Māmalahoa Trail. Therefore it is likely that this trail is pre-contact/early historic age.

Walsh and Hammatt (1995) recommended SIHP # -19953 eligible for the National and State Registers of Historic Places under criterion D for its information relevant to prehistory and history. The site was recommended for data recovery by Walsh and Hammatt (1995); however, the Final Archaeological Treatment Plan (1999) called for data recovery of the portion of the trail that could not be saved (due to project-related construction) *and* "interim protection" of the remainder of the non-data recovery portion of the trail in the ROW. In 1999, CSH (Hammatt et al. 1999) conducted data recovery of a portion of SIHP # 50-10-27-19953.



Figure 86. Photograph of the eastern portion of SIHP # -19953 at the intersection with the Māmalahoa Trail (SIHP # -00002), view to east





Figure 87. Photograph showing the eastern terminus of SIHP # -19953, view to east



Figure 88. Photograph of western portion of SIHP # - 19953, showing the upright water-worn cobble located just outside (*makai*) of the project area (in lower right corner), view to east





Figure 89. Photograph of western portion of SIHP # -19953 within the project area, view to west



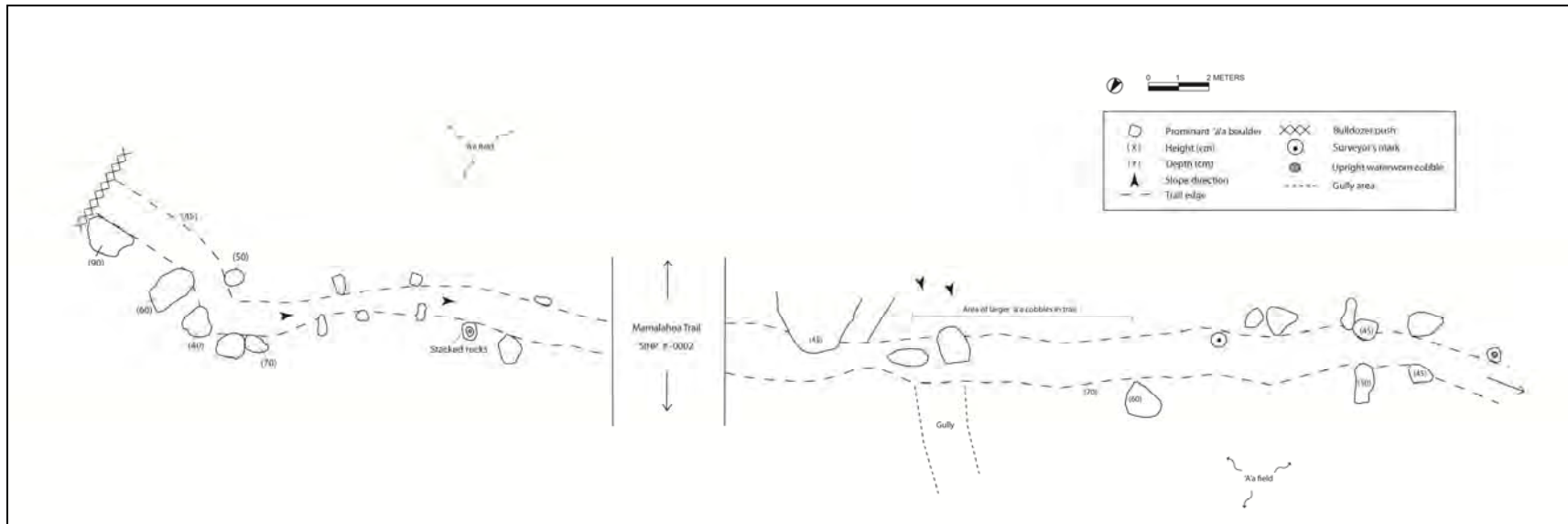


Figure 90. Plan view map of SIHP # -19953

**5.2.21 SIHP # 50-10-27-29343****Temp. Site No.:** Depression 5 (Monahan and Yucha 2012)**Site Type:** Excavated Pit**No. of Features:** 1**Functional Interpretation:** Indeterminate-Possible Quarry or Sweet Potato Planter**Probable Age:** Indeterminate**Overall Dimensions:** 1.75 m N/S by 0.70 m E/W**Topography:** 'A 'ā flow**Elevation:** 69 ft (21 m) AMSL**Description:**

**SIHP # 50-10-27-29343** is an excavated pit in an 'a'ā flow. The site location is depicted in Figure 19. The site is located on the western edge of a very large boulder in an 'a'ā flow (Figure 91, Figure 92). The human modification consists of the removal of 'a'ā rocks from up against the boulder; this removal has resulted in an excavated pit in the 'a'ā. This site was pointed out to CSH by NPS archaeologists during the supplemental survey of the south segment (Monahan and Yucha 2012).

The excavated pit measures approximately 1.75 m N/S by 0.70 m E/W by 0.50 m deep. There is no vegetation or soil-sedimentary matrix in or immediately adjacent to the pit. No portable cultural materials, other than the removed rocks, were observed by CSH archaeologists.

Other than the fact that it appears to be older than 50 years of age, the function and age of this site is indeterminate. A wide variety of excavated pits in 'a'ā have been documented in similar physiographic settings in the Kona region. This pit may have functioned as a quarry (e.g., a source of rock material) or as a sweet potato planter. It is unlikely that further work at the site could contribute any additional information to further clarify its age or function.

An SHPD review letter (dated July 9, Log No. 2012.1442, Log No 1206MV26) of an earlier draft of this archaeological inventory survey study raises the question "What is the justification that Site 29341 [sic.; in context, site 29343 is the subject of comment # 25] is a sweet potato planter? There does not appear to be any soil in the photo of the site." Very similar questions are raised regarding three quite similar designated sites (See discussions of sites - 29937, -29938 and -29341). These (and several other sites) were identified in the company of NPS personnel in a field inspection of April 12 2012. CSH field records relate the opinion of the CSH field archaeologist that these are "natural features of the 'a'ā flow." We appreciate that in such 'a'ā flows many archaeological properties can be exceedingly subtle and we are deferring to the greater experience and wishes of the NPS in declaring these to be sites at all and to a conceivable function as "Sweet Potato Planters."

We are quick to agree with the SHPD that there "does not appear to be any soil." We note in passing that these sites all appear to be immediately adjacent to large accretion balls in the 'a'ā flows. It may be the case that these small depressions are geological phenomenon related to the final movement, rotation and settling of these massive accretion balls causing very small collapses in the immediately adjacent unconsolidated 'a'ā. We certainly cannot rule out that these features on the landscape had cultural uses. We do not believe this can be proven or disproven at these examples by further archaeological study.



Figure 91. Photograph of SIHP # -29343, view to east

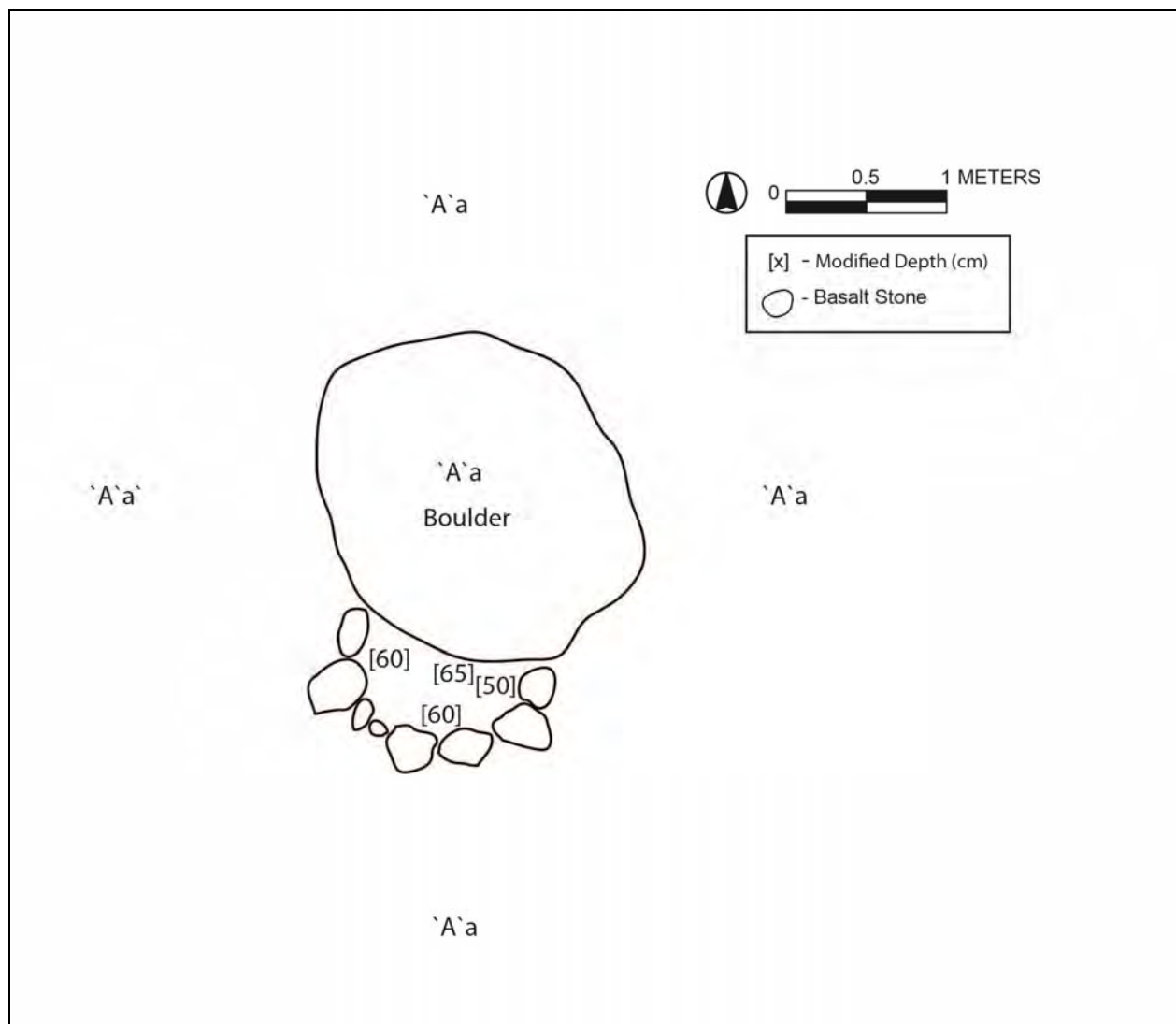


Figure 92. Plan view map of SIHP # -29343

**5.2.22 SIHP # 50-10-27-28780****Temp. Site No.:** T-080510-7 (Monahan et al. 2011)**Site Type:** 'A 'ā Excavation**No. of Features:** 1**Functional Interpretation:** Indeterminate**Probable Age:** Indeterminate, possible burial**Overall Dimensions:** 2.6 m N/S by 3.2 m E/W**Topography:** 'A 'ā tumulus, level to moderately-sloping**Elevation:** 71 ft (22 m) AMSL**Description:**

**SIHP # 50-10-27-28780** is an 'a'ā excavation located approximately 380 m north of the Kaloko-Honokōhau National Historical Park visitor center entrance (see Figure 19) within the portion of the project area that is adjacent to the Kaloko-Honokōhau National Historical Park (Figure 93, Figure 94). The 'a'ā excavation consists of a roughly circular depression on an 'a'ā tumulus that appears to have been excavated or modified. The excavated area or depression is comprised of small 'a'ā cobbles and pebbles, which is surrounded by an unmodified surface of 'a'ā boulders. The 'a'ā excavation measures 2.6 m N/S by 3.2 m E/W with a depth of approximately 0.9 m below the unmodified 'a'ā surface. The area is devoid of vegetation. No artifacts or midden were observed in the area.

From an archaeological perspective, this feature retains no evidence of formal construction, and, therefore, both its age and function are indeterminate. However, on the initial field inspection with the NPS on August 5, 2010, NPS staff reported the information that local community members have expressed the belief that this feature represents a place where descendant families removed human skeletal remains from the 'a'ā in advance of the construction of the current highway. Archaeologically, there is no specific way to evaluate this possibility; however, it might be possible to obtain independent confirmation of this possible interpretation of the site by speaking with community members. On the October 6, 2010, site visit with the SHPD, Analu Josephides indicated there was, indeed, oral-historical information in the community that human skeletal remains had been removed from certain features by descendant families in advance of the current highway construction.

SIHP # 50-10-27-28780 was regarded by CSH as indeterminate in terms of both age and function. In consultation with the SHPD (letter of July 9 2012) it was agreed that this site is a possible burial. Because this site is to be preserved, in consultation with the SHPD it was agreed that additional subsurface testing is not necessary.





Figure 93. Photograph of SIHP # -28780, view to northeast

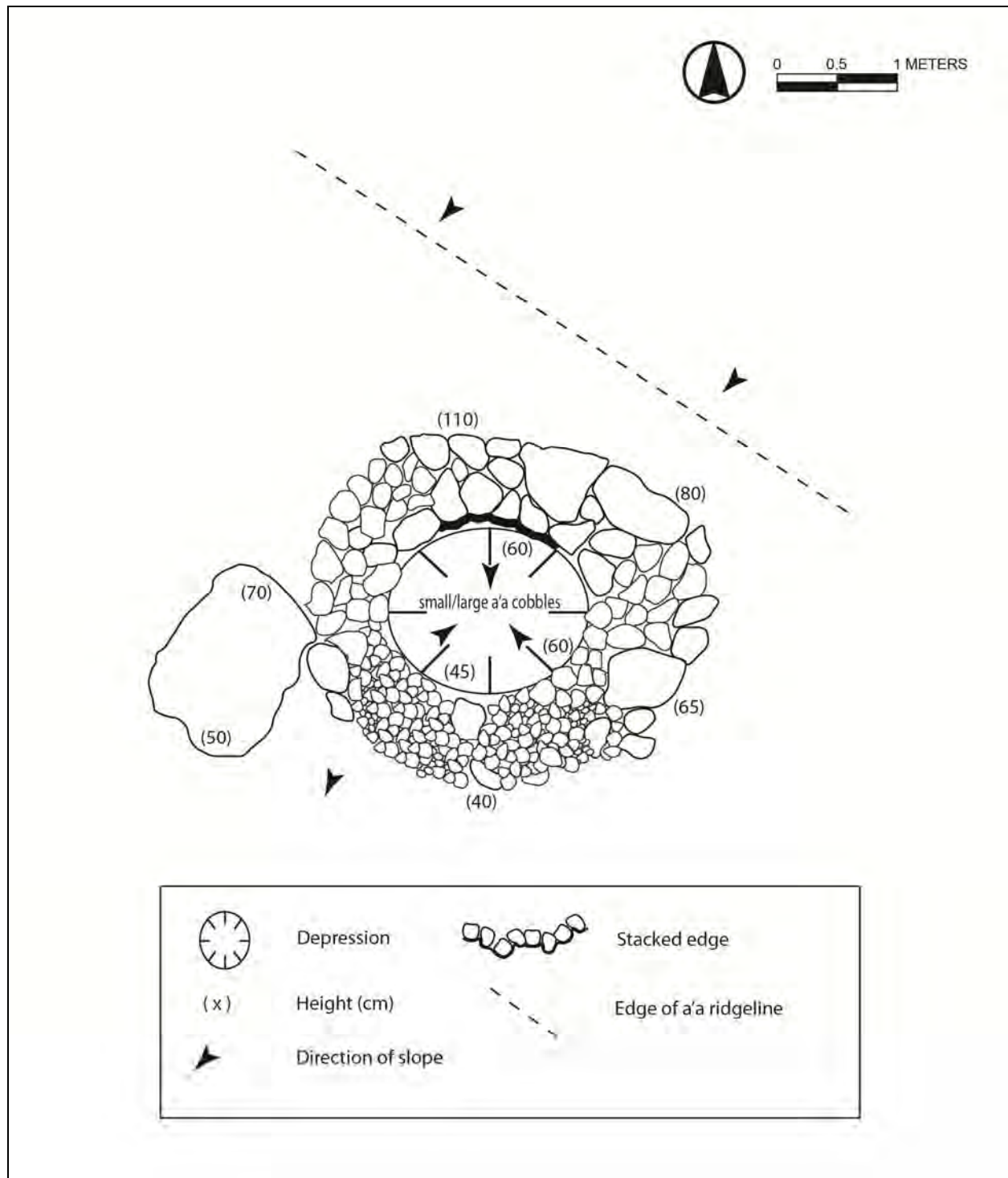


Figure 94. Plan view map of SIHP # -28780

**5.2.23 SIHP # 50-10-27-28781****Temp. Site No.:** T-080510-8 (Monahan et al. 2011)**Site Type:** Paved / Leveled Area**No. of Features:** 1**Functional Interpretation:** Indeterminate-Possible Agricultural Clearing**Probable Age:** Indeterminate**Overall Dimensions:** 6.0 m N/S by 4.0 m E/W**Topography:** 'A 'ā tumulus, level to moderately-sloping**Elevation:** 79 ft (24 m) AMSL**Description:**

**SIHP # 50-10-27-28781** is a paved / leveled area located approximately 400 m north of the Kaloko-Honokōhau National Historical Park visitor center entrance (see Figure 19) within the portion of the project area that is adjacent to the Kaloko-Honokōhau National Historical Park (Figure 95 to Figure 100). The paved / leveled area is irregular-shaped and is comprised of 'a'ā pebbles with scattered water-rounded coral pebbles and cobbles. The paved / leveled area measures approximately 2.7 m N/S by 1.5 m E/W. No internal structure or alignments were observed within the paved / leveled area. The coral scatter extends beyond the edges of the paved / leveled area to within the surrounding unmodified 'a'ā surface. The site area, including the paved / leveled area and coral scatter, measures approximately 6.0 m N/S by 4.0 m E/W. The coral was observed to be extensively weathered with no apparent placement pattern. The area is devoid of vegetation. No artifacts or midden were observed in the area.

On October, 6, 2010, CSH (Monahan) led a field inspection with the SHPD of this site. Present from SHPD at the field inspection were Theresa Donham (archaeologist) and Analu Josephides (cultural specialist). Also present at the request of CSH was Cynthia Nazara (cultural monitor), who is familiar with the descendant families from the project area. The primary objective of the field inspection was to obtain guidance from the SHPD regarding testing of this site, which was thought to possibly represent a traditional Native Hawaiian burial.

During the site visit with the SHPD, Analu Josephides stated that the SHPD would assist CSH in contacting descendant families for their input as to how to proceed with evaluating this feature. One option is to conduct testing (subsurface excavation) of this feature to determine if human skeletal remains are present. CSH obtained concurrence from the SHPD before testing this site.

**5.2.23.1 Test Excavation Findings**

Test excavations (1.0 by 1.0 m unit) conducted at SIHP # -28781 yielded no cultural material. Excavation was halted at approximately 65 cm below surface due to increased and significant collapse of the test unit sidewalls, which compromised the site's overall integrity. The substrate that was observed within SIHP # 28781 was interpreted as natural, unmodified 'a'ā clinker (Figure 96 to Figure 100). No human skeletal remains were observed.

SIHP # -28781 contains no evidence of being a burial site; its functional interpretation and age are indeterminate.





Figure 95. Photograph of SIHP # -28781, view to north

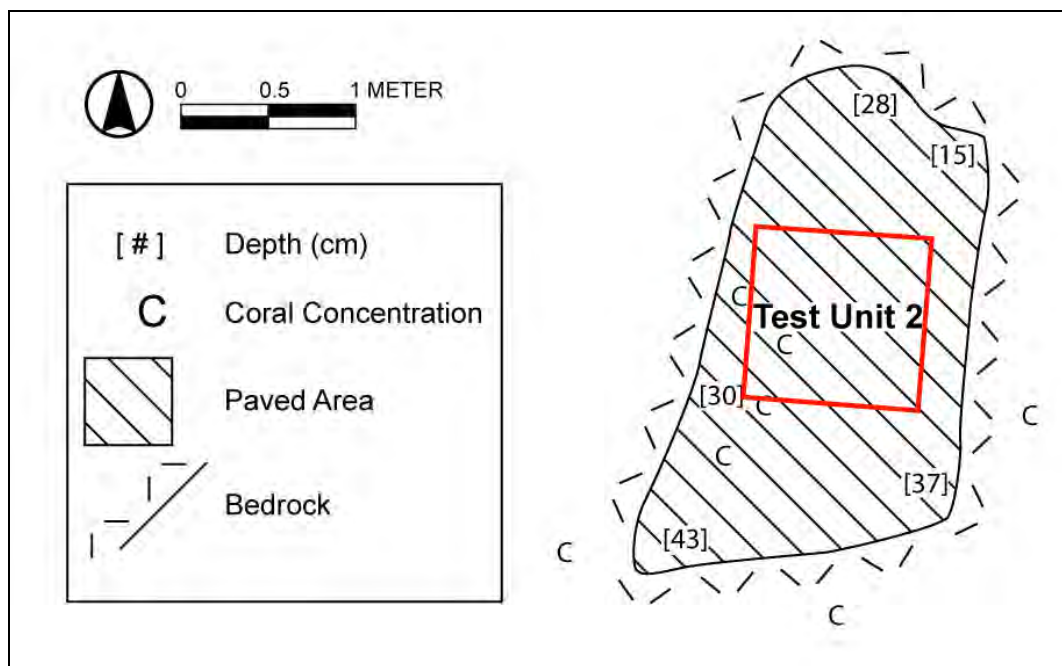


Figure 96. Plan view map of SIHP # -28781



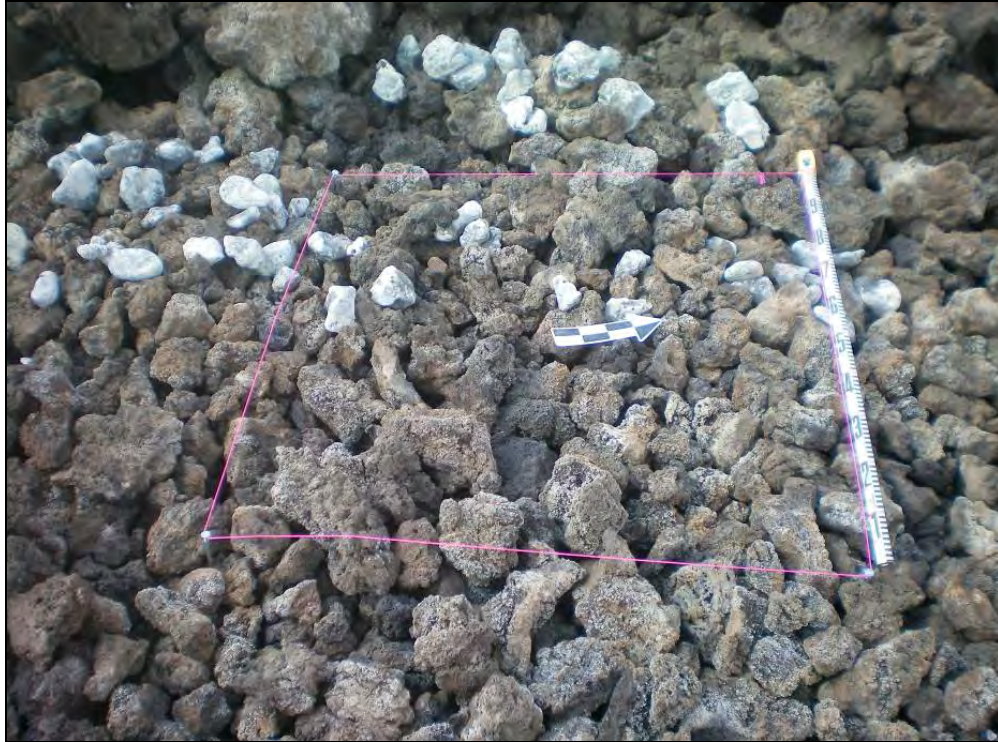


Figure 97. SIHP # -28781 pre-excavation of Test Unit 2, view to west



Figure 98. Profile view of the west wall of SIHP # -28781, Test Unit 2, view to west



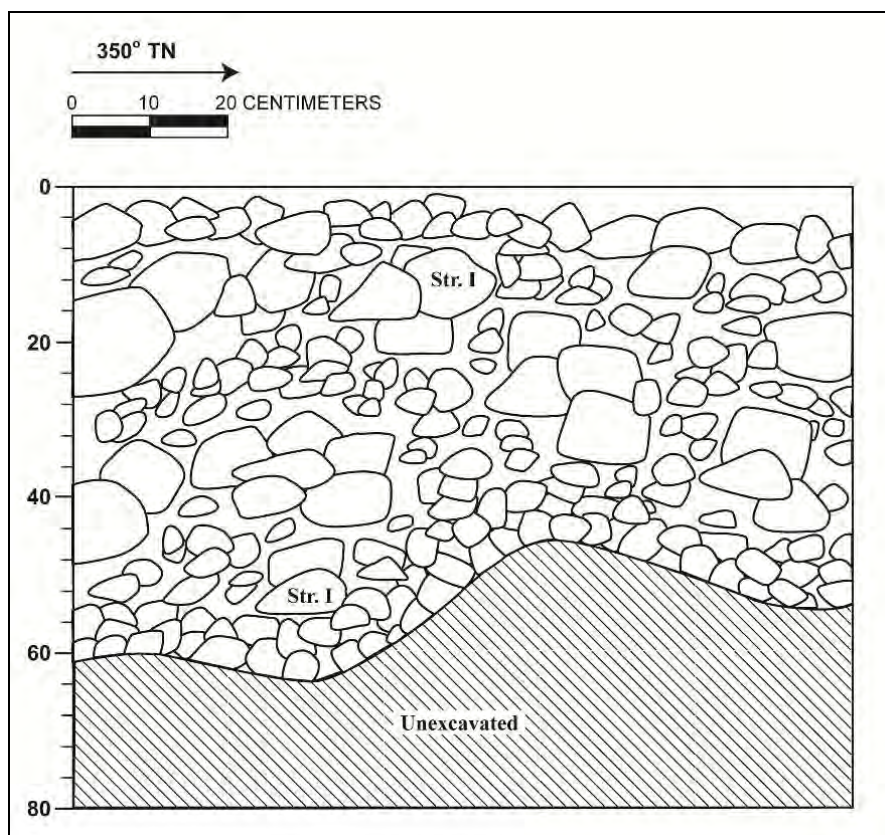


Figure 99. Stratigraphic profile of the west wall of SIHP # -28781, Test Unit 2



Figure 100. SIHP # -28781 post-reconstruction of Test Unit 2, view to west

**5.2.24 SIHP # 50-10-27-28782****Temp. Site No.:** Trail 6 (Monahan et al. 2011)**Site Type:** Trail**No. of Features:** 1**Functional Interpretation:** Transportation**Probable Age:** Indeterminate**Overall Dimensions:** 42.4 m long E/W by 0.5 to 0.75 m wide N/S within the ROW**Topography:** 'A'ā flow and adjacent 'a'ā tumulus, level to moderately-sloping**Elevation:** 79 ft (24 m) AMSL**Description:**

**SIHP # 50-10-27-28782** is a trail which extends roughly E/W through the project area approximately 424 m north of the Kaloko-Honokōhau National Historical Park visitor center entrance (see Figure 19) within the portion of the project area that is adjacent to the Kaloko-Honokōhau National Historical Park (Figure 101 to Figure 104). The trail consists of a partially cleared, well-trodden 'a'ā pebble and cobble surface located along the north side of the base of an 'a'ā tumulus. A concentration of weathered coral pebbles and cobbles was observed along the edge of the trail beneath several large 'a'ā boulders. The coral concentration may have served as a trail marker. No artifacts or midden were observed in the area. Unlike most other trails in the project area, this one is clearly observable and relatively well-defined.





Figure 101. Photograph of central portion of SIHP # -28782, showing 'a'ā ridge on right, view to east



Figure 102. Detail of concentration of coral observed along the edge of SIHP # -28782, view to southeast

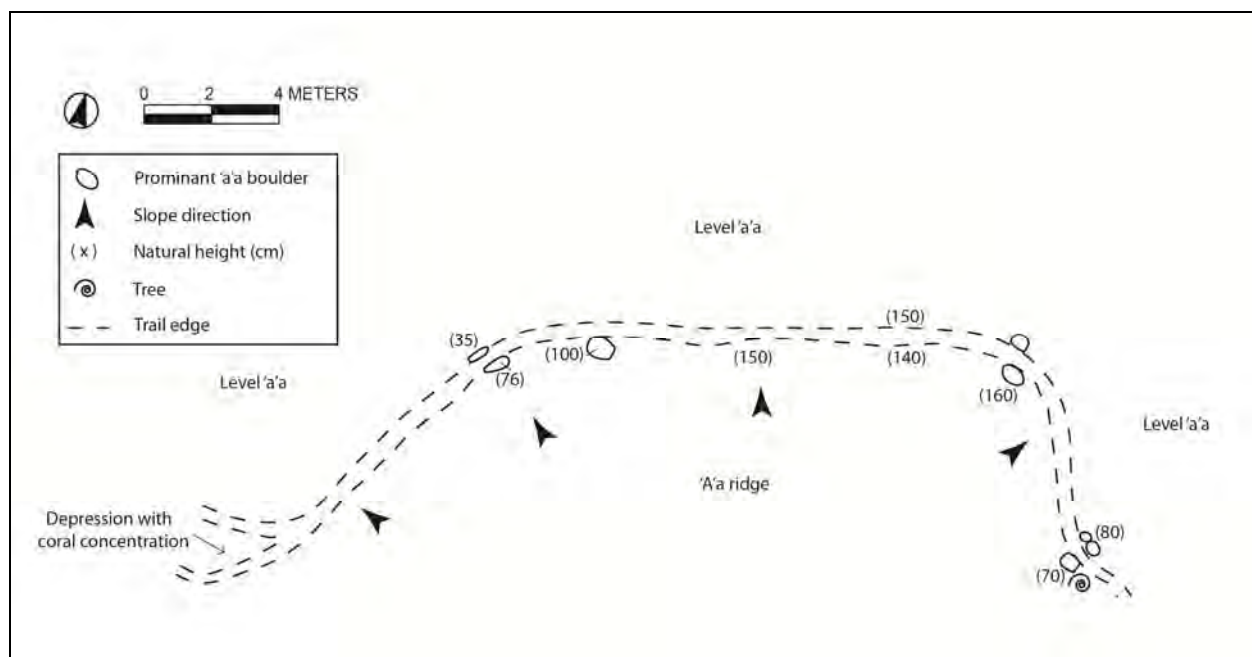


Figure 103. Plan view map of SIHP # -28782

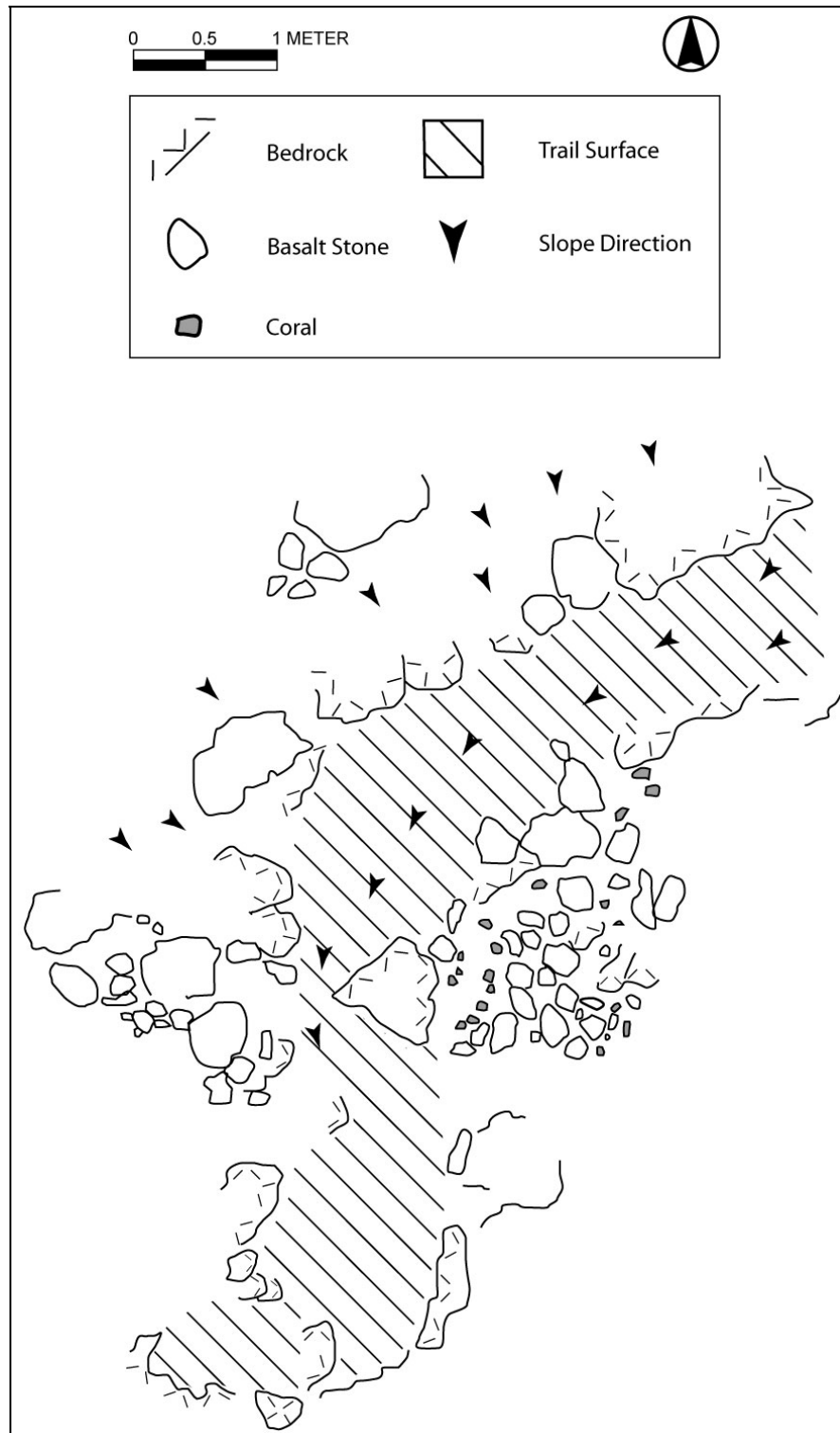


Figure 104. Plan view map of a portion of SIHP # -28782, showing the coral concentration observed along the edge of the trail



**5.2.25 SIHP # 50-10-27-28783****Temp. Site No.:** T-080510-10 to -14a (Monahan et al. 2011)**Site Type:** Excavated 'A'ā Complex**No. of Features:** 6**Functional Interpretation:** Agriculture**Probable Age:** Prehistoric (Pre-Contact)**Overall Dimensions:** 132.0 m N/S by 40.0 m E/W**Topography:** Undulating 'a'ā flow, level to slightly-sloping**Elevation:** 61-76 ft (19-23 m) AMSL**Description:**

**SIHP # 50-10-27-28783** is a complex consisting of six features (Feature A to Feature F) located south of Huehue Road within a portion of the project area adjacent to the Kaloko-Honokōhau National Historical Park (see Figure 19). SIHP # -28783 consists of six 'a'ā excavations within a low area of undulating 'a'ā. In general, the interior of each excavation consists of relatively thick layers of sediment and organic debris that presently support the growth of large Christmasberry trees. Detailed documentation of Feature A and Feature B is provided below and is representative of the remainder of the features of SIHP # 28783.

**Feature A** (Figure 105 to Figure 106) is an 'a'ā excavation comprises a low, natural depression within the 'a'ā flow that has been cleared to a level bedrock surface, which supports a thick deposit of sediment and organic debris. The excavation is oval-shaped and measures 3.2 m N/S by 5.0 m E/W with a maximum depth of 0.7 m beneath the surrounding 'a'ā flow. Stacking was observed along the north and northwestern sides of the excavation, which consisted of two to three courses of small- to medium-sized 'a'ā boulders. The south and southwestern sides of the excavation consist of natural eroding bedrock. The eastern side of the excavation has been covered, and potentially impacted, by massive basalt "blue-rock" boulders that were likely pushed into the site during the initial construction of the Queen Ka'ahumanu Highway. A large Christmasberry tree grows from the southwestern edge of the sediment surface within the 'a'ā excavation. No artifacts or midden were observed in the area.

**Feature B** is an 'a'ā excavation comprised of several adjacent and partially interconnected areas that have been cleared to a level bedrock surface (Figure 107 to Figure 110). The cleared areas consist of a layer of sediment and organic debris of varying thickness that presently supports the growth of Christmasberry trees and grasses. The cleared areas are irregular-shaped and enclosed by a combination of unmodified 'a'ā flow and roughly stacked 'a'ā cobbles and small boulders. Modern garbage, including aluminum cans, bottles, mattresses, and food containers, is scattered throughout Feature B. The eastern side of the excavation has been covered, and potentially impacted, by massive basalt "blue-rock" boulders that were likely pushed into the site during the initial construction of the Queen Ka'ahumanu Highway. No artifacts or midden were observed in the area.

SIHP # -28783 is interpreted as an agricultural complex likely dating from prehistoric (pre-Contact) times. The sediment surfaces within each 'a'ā excavation could have supported various dryland cultivars.



Figure 105. Photograph of SIHP # -28783 Feature A, view to south

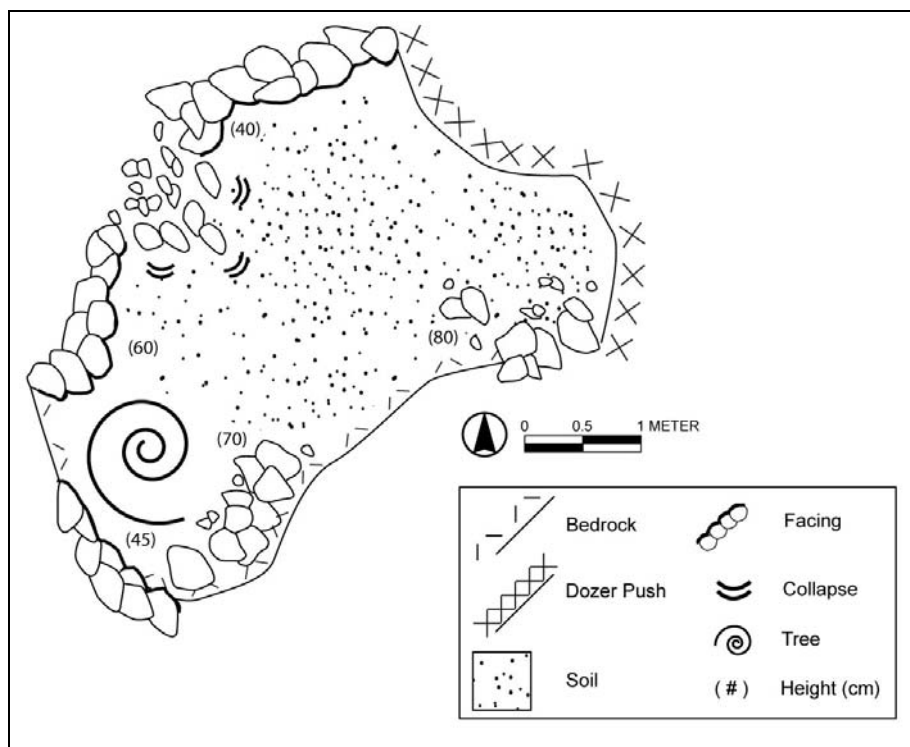


Figure 106. Plan view map of SIHP # -28783 Feature A



Figure 107. Panoramic photograph of SIHP # -28783 Feature B, view to south





Figure 108. Western portion of SIHP # -28783 Feature B, view to south



Figure 109. Eastern portion of SIHP # -28783 Feature B, view to south

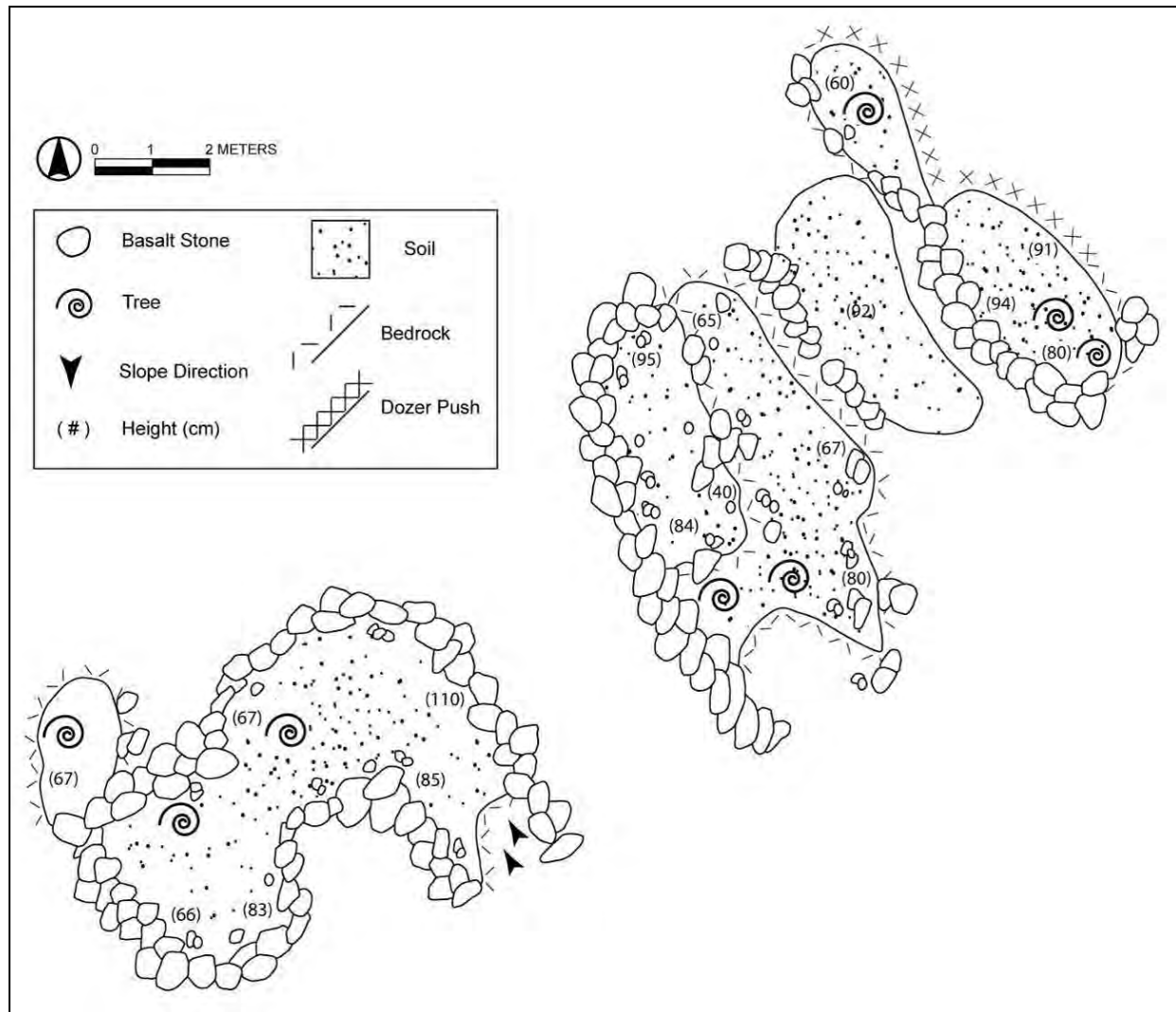


Figure 110. Plan view map of SIHP # -28783 Feature B



**5.2.26 SIHP # 50-10-27-28784****Temp. Site No.:** Trail 7 (Monahan et al. 2011)**Site Type:** Trail**No. of Features:** 1**Functional Interpretation:** Transportation**Probable Age:** Indeterminate**Overall Dimensions:** Approximately 25.2 m long**Topography:** Undulating 'a'ā flow, level to slightly-sloping**Elevation:** 75 ft (23 m) AMSL**Description:**

**SIHP # 50-10-27-28784** is a trail located approximately 280 m south of Kaloko Road within the portion of the project area that is adjacent to the Kaloko-Honokōhau National Historical Park (see Figure 19). The trail is oriented E/W and measures 25.2 m long. A faint vehicular road within the 'a'ā mostly obscures the trail within the project area, however, just at the boundary of the right-of-way of the project area and extending *makai* the trail is quite visible and consists of subtle wear-pattern / color variation on the 'a'ā lava flow and interspersed with small flat pahoehoe cobbles (Figure 111 to Figure 113).



Figure 111. Photograph of SIHP # -28784, showing trail just outside the boundary of the project area, with pahoehoe slabs, view to west



Figure 112. Photograph of vehicular road at the eastern terminus of SIHP # -28784, view to east

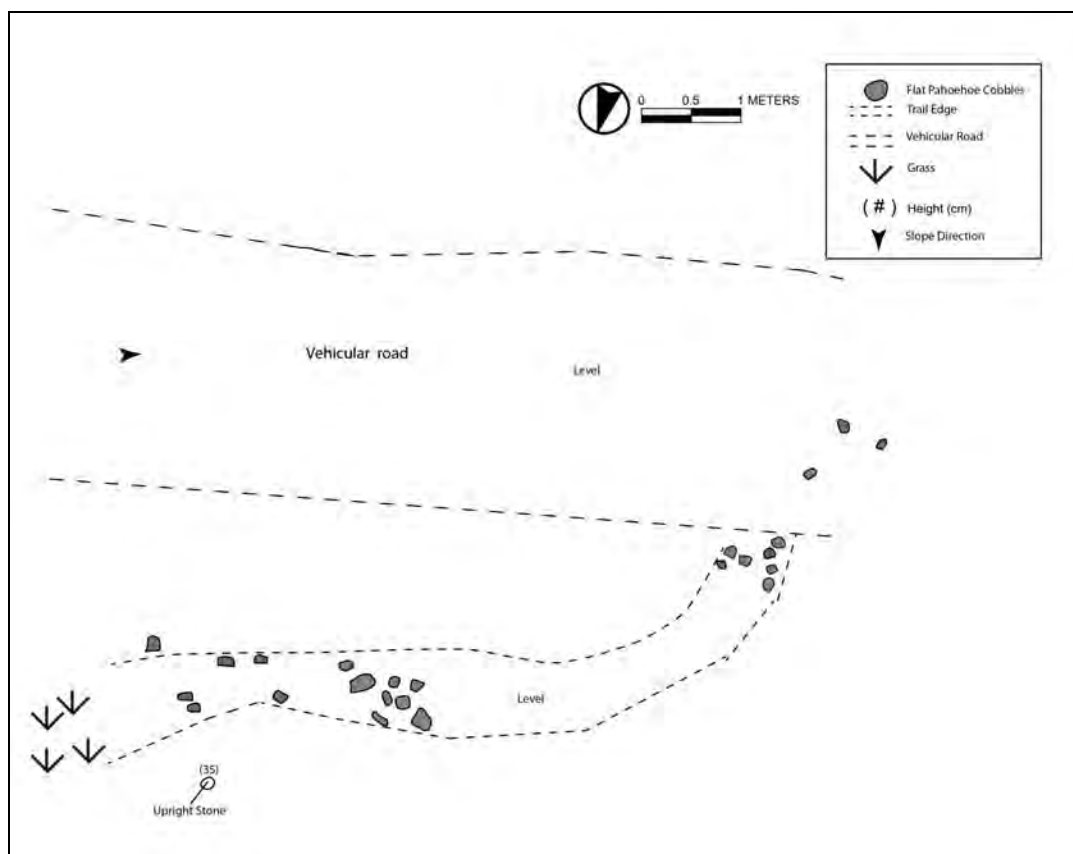


Figure 113. Plan view map of SIHP # -28784

**5.2.27 SIHP # 50-10-27-28785****Temp. Site No.:** T-091010-1 (Monahan et al. 2011)**Site Type:** Enclosure**No. of Features:** 1**Functional Interpretation:** Agriculture**Probable Age:** Prehistoric (Pre-Contact)**Overall Dimensions:** 3.5 m N/S by 7.5 m E/W**Topography:** *Pāhoehoe* tumulus and undulating *pāhoehoe* flow, level to slightly sloping**Elevation:** 84 ft (26 m) AMSL**Description:**

**SIHP # 50-10-27-28785** is an enclosure located 635 m south of the intersection of Hina Lani Street and the Queen Ka'ahumanu Highway (see Figure 19) within the portion of the project area that is adjacent to the Kaloko-Honokōhau National Historical Park (Figure 114, Figure 115). The enclosure is oval-shaped and is comprised of a C-shaped wall to the south abutting the edge of a *pāhoehoe* tumulus to the north. The enclosure measures 3.5 m N/S by 7.5 m E/W. The C-shaped wall is constructed of three to six courses of stacked medium 'a'ā and *pāhoehoe* boulders along the edge of a natural depression or collapsed lava blister. Facing was observed along portions of the interior side of the wall. The C-shaped wall ranged in height from 0.9 to 1.1 m. Several boulders from the wall have collapsed into the interior of the enclosure. The interior of the enclosure is relatively level and consists of a thick layer of sediment and organic debris that supports the growth of grasses. No artifacts or midden were observed in the area.

SIHP # -28785 is interpreted as an agricultural enclosure likely dating from prehistoric (pre-Contact) times. The thick layer of sediment within the enclosure could have supported various dryland cultivars.





Figure 114. Photograph of SIHP # -28785, view to east



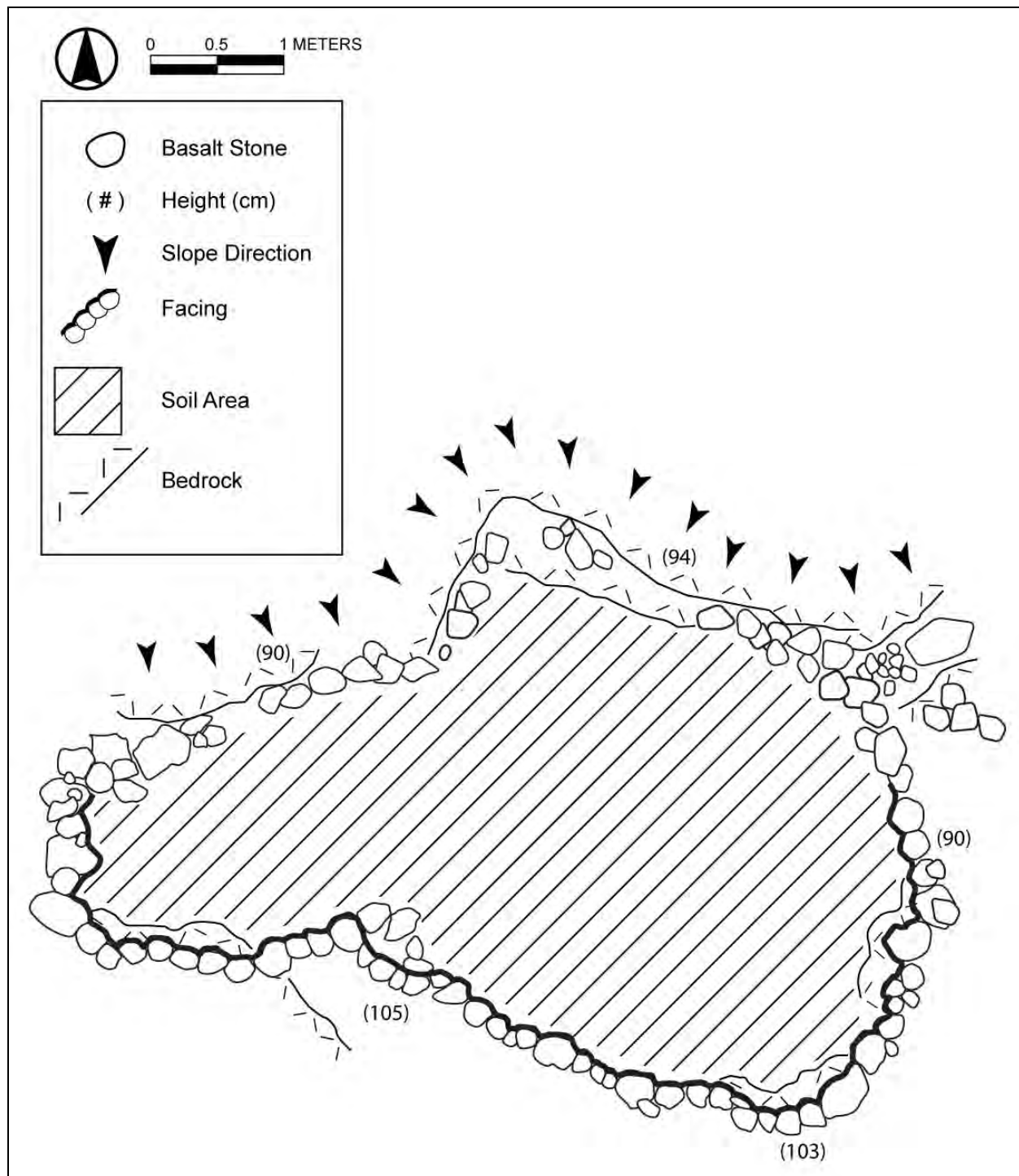


Figure 115. Plan view map of SIHP # -28785

**5.2.28 SIHP # 50-10-27-29333****Temp. Site No.:** NPS 3 (Current Report)**Site Type:** Rock Stacking (Possible *Ahu*)**No. of Features:** 1**Functional Interpretation:** Indeterminate**Probable Age:** Indeterminate**Overall Dimensions:** Approximately 1.35 m E/W by 1.2 m N/S**Topography:** Mix of *pāhoehoe* and 'a'ā flow**Elevation:** 84 ft (26 m) AMSL**Description:**

**SIHP # 50-10-27-29333** is a very small pile of loosely-stacked *pāhoehoe* slabs on a large 'a'ā boulder (Figure 116). The site is within a slight depression on a *pāhoehoe* and 'a'ā outcrop near the existing highway; the site location is depicted in Figure 19. This site was pointed out to CSH by NPS archaeologist Tyler Paikuli-Campbell on May 1, 2012.

A small, culturally-sterile blister is approximately 1.0 m northwest of this possible *ahu*. The blister is within a moderately-sized *pāhoehoe* outcrop (Figure 116 to Figure 117). The area surrounding the site is completely devoid of vegetation. The stacked-rock feature measures 1.35 m long E/W by 1.2 m wide N/S with a maximum height on its west side of 70 cm above ground surface. The stacked *pāhoehoe* slabs constitute the upper 25 to 30 cm of the feature's total height. No artifacts or cultural materials, other than the stacked rocks, were observed at the site. The site is in excellent physical condition.

The age of this site is difficult to interpret; the constituent material shows no signs of bulldozer scarring or damage. It is possible that this site dates to prehistoric (pre-Contact) times, but, again, it is difficult to make this interpretation given the available evidence. It seems reasonable that the function of this site is a marker of some type, but it is difficult to conclusively make this interpretation.



Figure 116. Photograph of SIHP # -29333, view to east

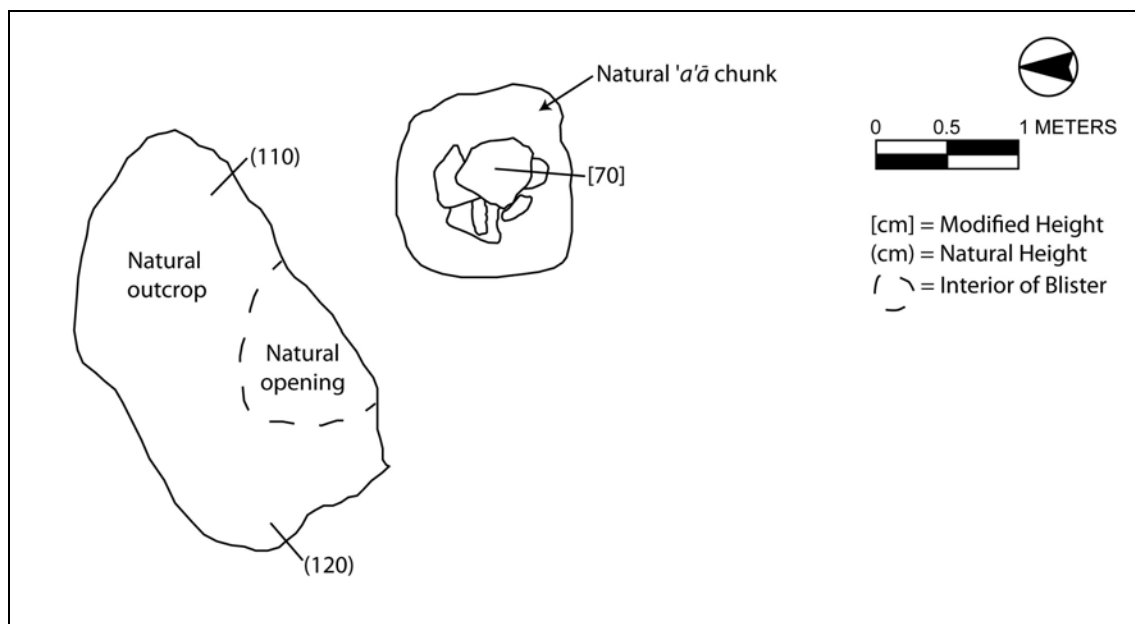


Figure 117. Plan view map of SIHP # -29333

**5.2.29 SIHP # 50-10-27-28786****Temp. Site No.:** T-080510-15 (Monahan et al. 2011)**Site Type:** Modified Depression**No. of Features:** 1**Functional Interpretation:** Agriculture**Probable Age:** Prehistoric (Pre-Contact)**Overall Dimensions:** 3.2 m NE/SW by 2.7 m NW/SE**Topography:** Undulating 'a'ā flow, level to slightly-sloping**Elevation:** 85 ft (26 m) AMSL**Description:**

**SIHP # 50-10-27-28786** is a modified depression located along the northern edge of Kaloko Road within the portion of the project area that is adjacent to the Kaloko-Honokōhau National Historical Park (Figure 118 to Figure 120, and see Figure 19). The modified depression measures 3.2 m NE/SW by 2.7 m NW/SE. Modifications to the depression consist of informal stacking (three to four courses) of 'a'ā cobbles and small boulders around the south, east, and northeast edges. The interior of the depression consists of a thin layer of sediment and organic debris that supports the growth of a Christmasberry tree. Modern garbage and recently discarded coconut husks were also present within the interior of the depression. No artifacts or midden were observed in the area.

The NPS has pointed out the fact that SIHP # -28786 is consistent with, and likely associated with, an agricultural complex of enclosures extending more than 600 meters into the national historical park. Therefore, SIHP # -28786 should be considered part of the larger cultural landscape of the park.

SIHP # -28786 is interpreted as an agricultural locality likely dating from prehistoric (pre-Contact) times. The thin sediment surface within the modified depression could have supported various dryland cultivars.





Figure 118. Photograph of SIHP # -28786, view to south



Figure 119. SIHP # -28786, view to southeast



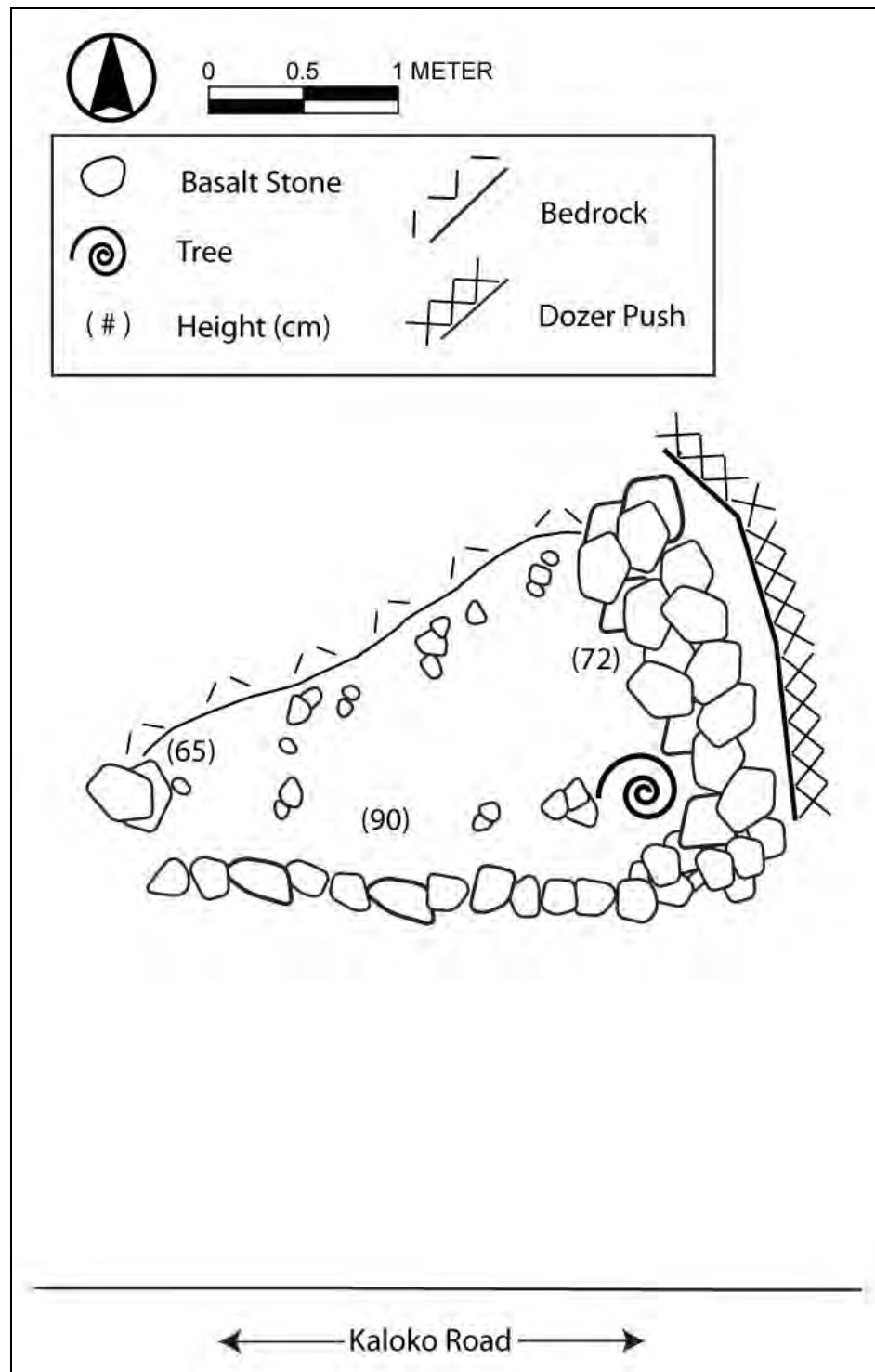


Figure 120. Plan view map of SIHP # -28786

**5.2.30 SIHP # 50-10-27-28787****Temp. Site No.:** Trail 8 (Monahan et al. 2011)**Site Type:** Trail**No. of Features:** 1**Functional Interpretation:** Transportation**Probable Age:** Indeterminate**Overall Dimensions:** Approximately 8.0 m long (in the ROW)**Topography:** Undulating 'a'ā flow**Elevation:** 75 ft (23 m) AMSL**Description:**

**SIHP # 50-10-27-28787** is a trail that is located approximately 40 m south of Kaloko Road within the portion of the project area that is adjacent to the Kaloko-Honokōhau National Historical Park (see Figure 19). The trail is roughly oriented NW/SE and measures 8.0 m long (Figure 121 to Figure 122). The trail can be recognized within the project area by observing subtle wear-pattern / color variation on the lava flow. NPS staff has pointed out that trails such as this one, even though lacking formal attributes within the subject project area, may exhibit formal features elsewhere (i.e., outside of the project area).



Figure 121. Photograph of SIHP # -28787, view to northwest

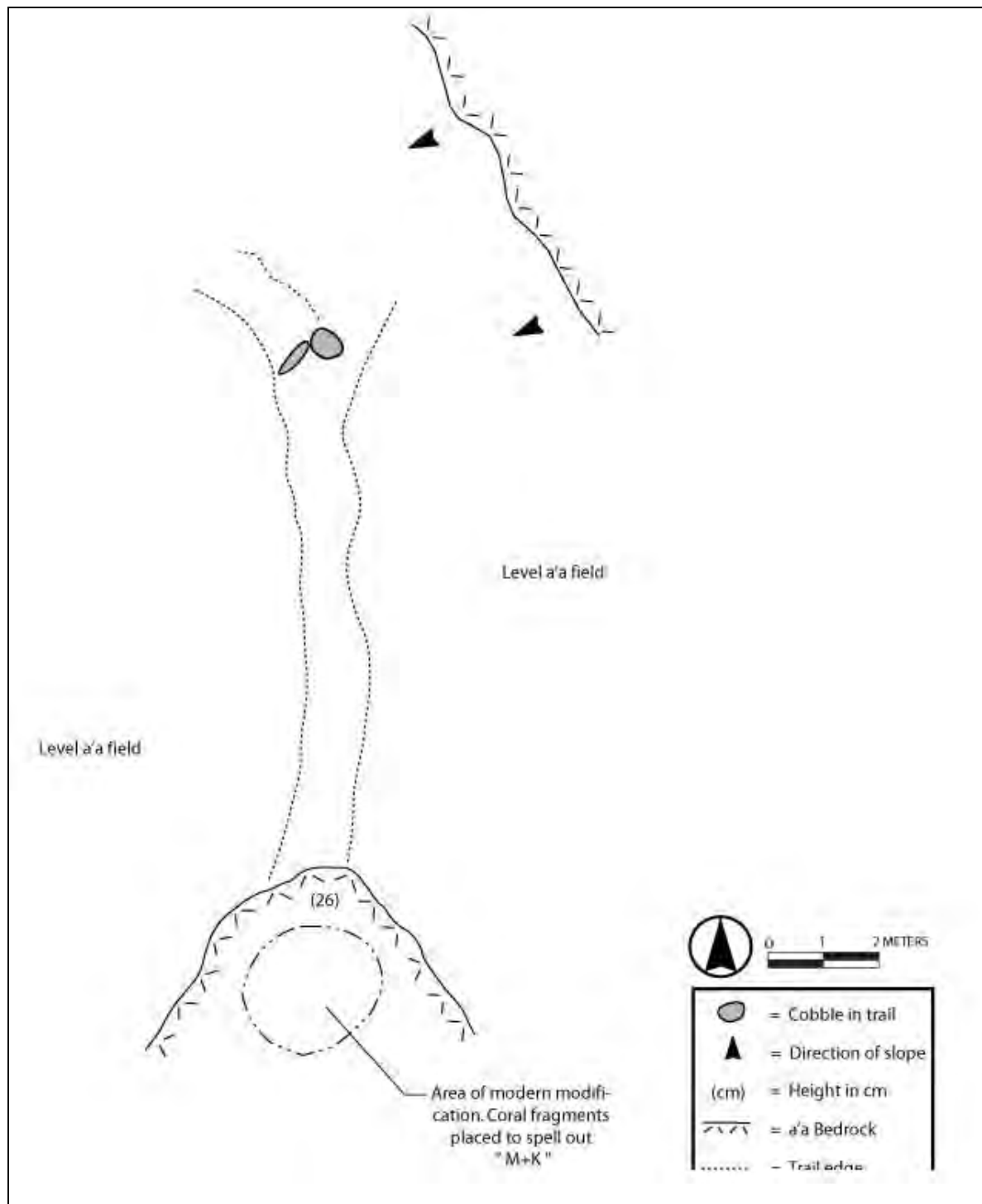


Figure 122. Plan view map of SIHP # -28787

**5.2.31 SIHP # 50-10-27-19952****Temp. Site No.:** 13 (Walsh and Hammatt 1995)**Site Type:** Trail**No. of Features:** 1**Functional Interpretation:** Transportation**Probable Age:** Indeterminate**Overall Dimensions:** Approximately 70 ft long (in the ROW)**Topography:** 'A 'ā finger transitioning into *pāhoehoe* flow**Elevation:** 75 ft (23 m) AMSL**Description:**

**SIHP # 50-10-27-19952** was first formally described by CSH in 1995 (Walsh and Hammatt 1995) (see Figure 20). The site was revisited during the current archaeological inventory survey and found to be in the same physical condition (Figure 123 to Figure 124). The intact *mauka* end of the trail (before it is truncated by previous ground disturbance associated with the previous highway construction) is located approximately 38 m from the edge of the existing highway. The trail was described by Walsh and Hammatt (1995:51, 54) as follows:

Site 19952 consists of a *mauka-makai* oriented trail segment . . . The trail is discernible as a trodden surface roughly 1.0 m. wide extending over the finger of an a'a flow. The trail becomes increasingly faint as it continues *makai* over *pahoehoe* lava terrain. Some remnant curbstones were observed along the trail where it crosses the a'a.

The trail begins approximately 125 feet (38 m.) *makai* of the highway pavement edge (the extent of bulldozing for the construction of the present highway), and can be followed *makai* for roughly 200 feet (61 m.), beyond which becomes increasingly difficult to discern. The condition of the trail is poor and it appears to have been at least partially disturbed by modern construction activities.

Walsh and Hammatt (1995) recommended SIHP # -19952 eligible for the National and State Registers of Historic Places under criterion D for its information relevant to prehistory and history. The site was recommended for data recovery by Walsh and Hammatt (1995); however, the Final Archaeological Treatment Plan (1999) called for "interim protection" only with no data recovery.





Figure 123. Photograph of SIHP # -19952, view to west

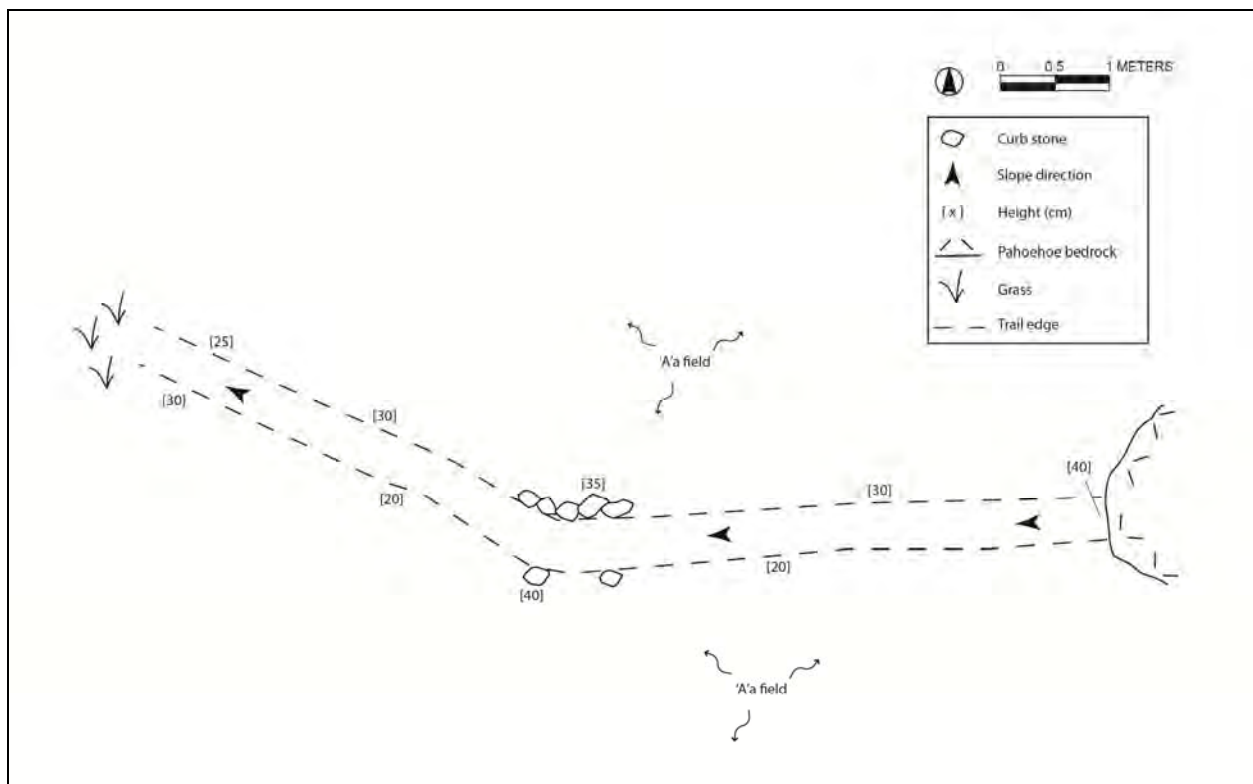


Figure 124. Plan view map of SIHP # -19952

**5.2.32 SIHP # 50-10-27-28788****Temp. Site No.:** T-080510-16/17 (Monahan et al. 2011)**Site Type:** Modified Outcrop Complex**No. of Features:** 2**Functional Interpretation:** Agriculture**Probable Age:** Prehistoric (Pre-Contact)**Overall Dimensions:** 4.5 m N/S by 8.1 m E/W**Topography:** *Pāhoehoe* tumulus and adjacent 'a'ā flow, level to moderately-sloping**Elevation:** 85-88 ft (26-27 m) AMSL**Description:**

**SIHP # 50-10-27-28788** is a complex consisting of two features (Feature A and Feature B) located approximately 90 m north of Kaloko Road (see Figure 20) within the portion of the project area that is adjacent to the Kaloko-Honokōhau National Historical Park (Figure 125 to Figure 127).

**Feature A** is a modified outcrop enclosure measuring 1.5 m N/S by 2.5 m E/W that is constructed on the edge of a *pāhoehoe* tumulus surrounded by a more recent 'a'ā flow (Figure 125). The modified outcrop enclosure consists of one to four courses of stacked *pāhoehoe* cobbles and small boulders constructed on the *pāhoehoe* outcrop surface around the edge of a small collapsed lava blister. The base of the collapsed blister consists of a relatively thick layer of sediment and organic debris that currently supports the growth of several *koa haole* saplings and grasses. No artifacts or midden were observed in the area.

**Feature B** is a modified outcrop enclosure measuring 2.6 m N/S by 2.9 m E/W that is constructed within an 'a'ā flow adjacent to Feature A (Figure 127). The modified outcrop enclosure consists of one to three courses of stacked 'a'ā cobbles and small boulders constructed along the edge and on top of the unmodified 'a'ā flow surface. The interior of the enclosure has been cleared and consists of a thin layer of sediment and organic debris that currently supports the growth of several *koa haole* sapling and grasses. No artifacts or midden were observed in the area.

SIHP # -28788 is interpreted as an agricultural complex likely dating from prehistoric (pre-Contact) times. The sediment surfaces within the Feature A and Feature B could have supported various dryland cultivars.





Figure 125. Photograph of SIHP # -28788 Feature A, view to west



Figure 126. Photograph of SIHP # -28788 Feature B, view to east

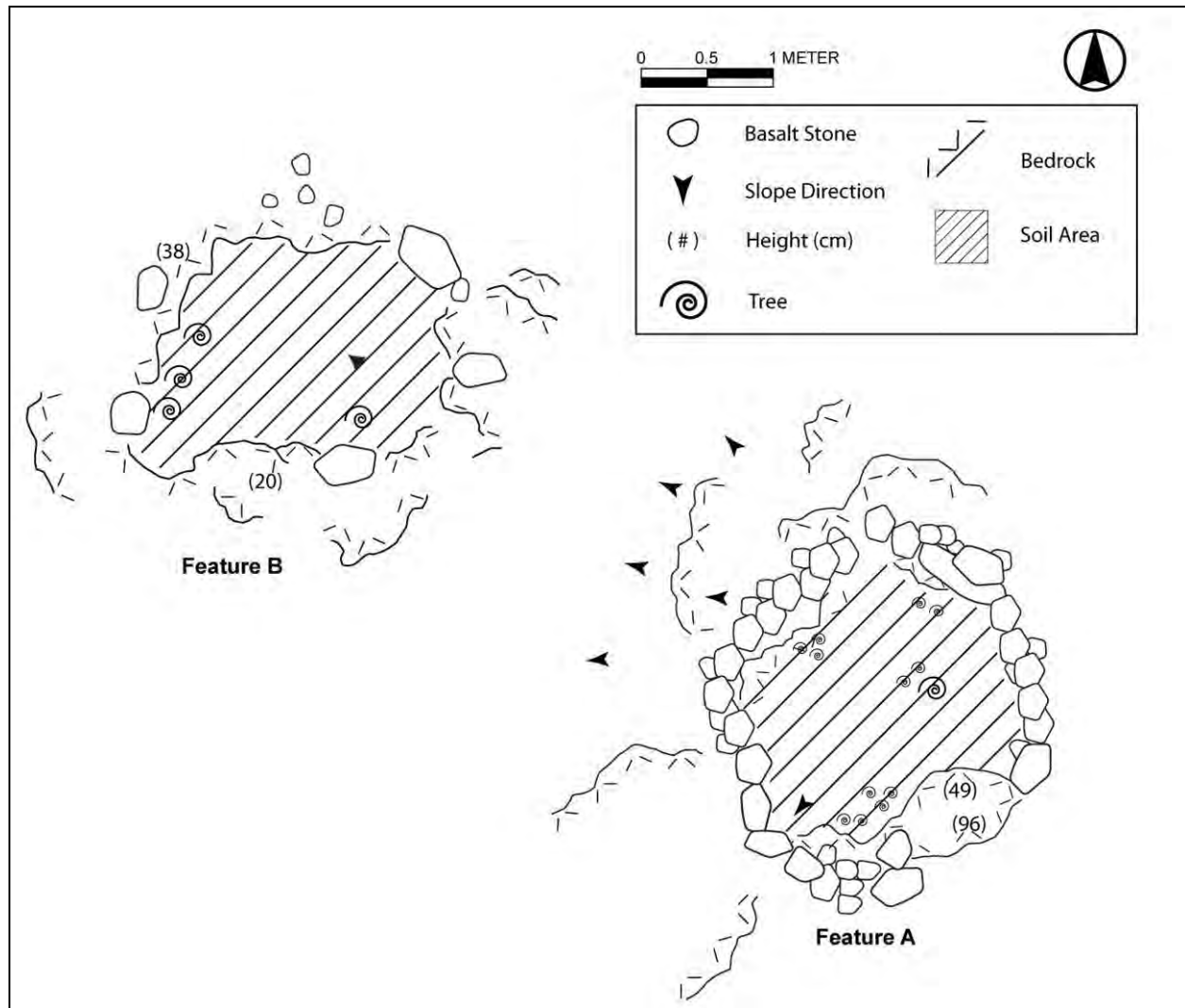


Figure 127. Plan view map of SIHP # -28788

**5.2.33 SIHP # 50-10-27-19951****Temp. Site No.:** 12 (Walsh and Hammatt 1995)**Site Type:** Wall**No. of Features:** 1**Functional Interpretation:** Ranching / Boundary**Probable Age:** Historic**Overall Dimensions:**  $\geq 200$  ft (including overall length extending *mauka* of ROW)**Topography:** Wall runs along edge of a *pāhoehoe* flow**Elevation:** 80-60 ft (24-18 m) AMSL**Description:**

**SIHP # 50-80-27-19951** was first formally described by CSH in 1995 (Walsh and Hammatt 1995) (see Figure 20). The site was revisited during the current archaeological inventory survey and found to be in the same physical condition (Figure 128 to Figure 130). The trail was described by Walsh and Hammatt (1995:51) as follows:

Site 19951 consists of a serpentine wall that extends in a general *mauka-makai* direction . . . The wall consists of free-standing sections which adjoin natural and modified outcrops. The free-standing sections are constructed of small and medium boulders, faced on both sides and “core-filled” with cobbles and pebbles. The free-standing sections average 1.0 m high and 0.8 m. wide. Those sections of the wall formed by natural and modified outcrops reach a maximum height of 1.3 m.

The wall begins 100 feet (30 m.) *makai* of the highway pavement edge (the extent of bulldozing for the construction of the present highway) and continues *makai* at least 200 feet (61 m.) beyond the project area boundary. The wall is not present on the *mauka* side of the highway, as that area has been landscaped and developed as the Kaloko Industrial Park. The wall is in good condition.

Walsh and Hammatt (1995) recommended SIHP # 19951 eligible for the National and State Registers of Historic Places under criterion D for its information relevant to prehistory and history. The site was recommended for “no further work” by Walsh and Hammatt (1995). The Final Archaeological Treatment Plan (1999) did not include this site, and, thus, concurred with CSH’s 1995 recommendation.





Figure 128. Photograph of SIHP # -19951, view to east



Figure 129. Detail of wall within eastern portion of SIHP # -19951, view to north

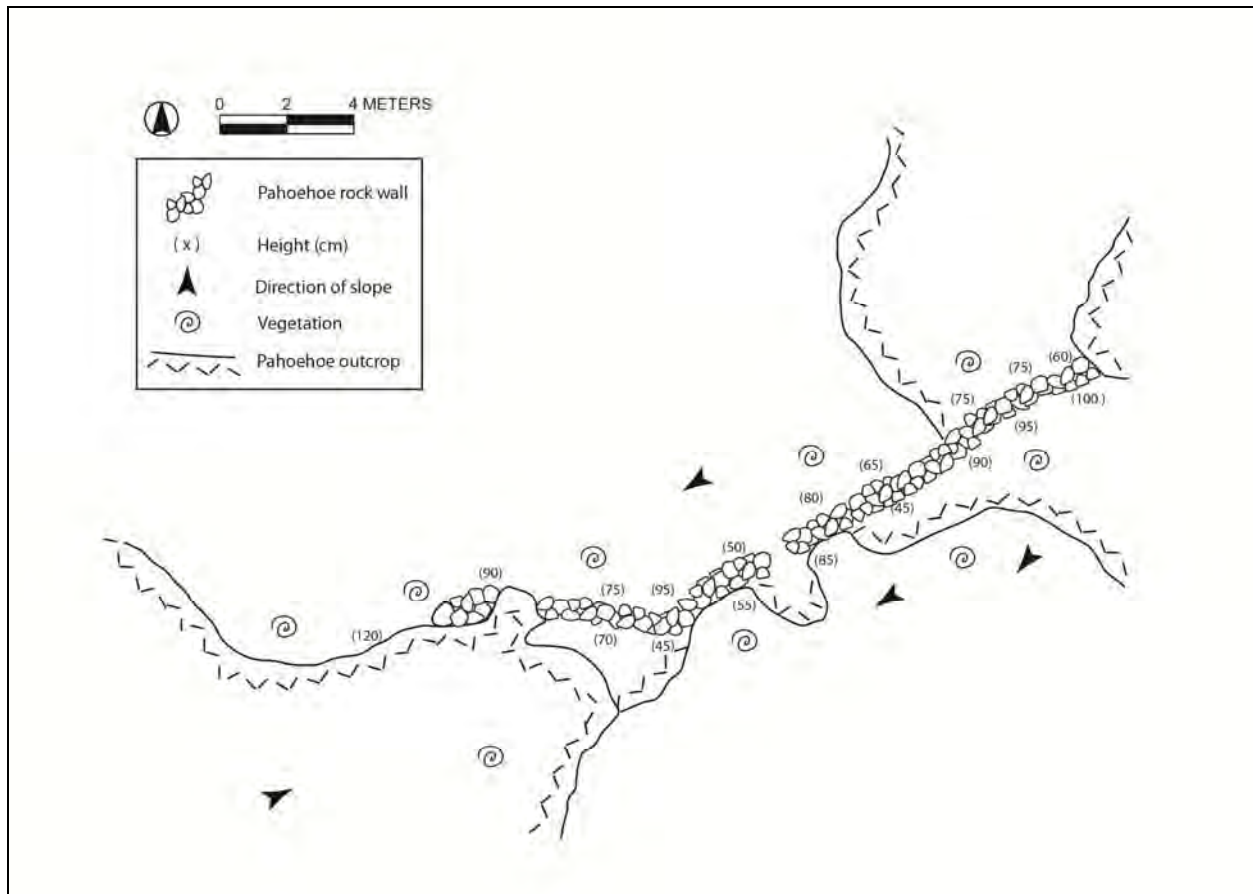


Figure 130. Plan view map of SIHP # -19951

**5.2.34 SIHP # 50-10-27-28789****Temp. Site No.:** T-080510-18/19/20 (Monahan et al. 2011)**Site Type:** Complex**No. of Features:** 6**Functional Interpretation:** Agriculture**Probable Age:** Prehistoric (Pre-Contact)**Overall Dimensions:** 3.35 m long 351-171 degrees by 0.85 m wide 75-255 degrees**Topography:** *Pāhoehoe* tumuli and undulating *pāhoehoe* flow, level to moderately sloping**Elevation:** 83-86 ft (25-26 m) AMSL**Description:**

**SIHP # 50-80-27-28789** is a complex of six features (Feature A to Feature F) approximately 340 m south of Hina Lani Street (see Figure 20) adjacent to the Kaloko-Honokōhau National Historical Park (Figure 131). No artifacts or midden were observed at the site. **Feature A** is a filled crevice at the edge of a *pāhoehoe* tumulus in the southwestern portion of the site (Figure 132). Feature A measures 3.4 m N/S by 0.9 m E/W, and consists of small *pāhoehoe* cobbles and small boulder-sized *pāhoehoe* slabs placed within a natural *pāhoehoe* crevice. The fill extends approximately 0.3 m above the adjacent ground surface.

**Feature B** is a mound along the edge of a *pāhoehoe* tumulus within the southeastern portion of the site (Figure 133). Feature B measures 0.8 m N/S by 0.6 m E/W with a maximum height of 0.2 m above ground surface. Feature B is constructed of a loose, informal pile of *pāhoehoe* cobbles and small boulders.

**Feature C** is a modified outcrop on top of a south-sloping exposure of undulating *pāhoehoe* in the northern portion of the site (Figure 134). Feature C measures 1.4 m N/S by 0.7 m E/W with a maximum height of 0.6 m above the adjacent ground surface. Feature C is composed of one to two courses of small *pāhoehoe* boulders piled on top of *pāhoehoe* bedrock and behind a natural, uplifted *pāhoehoe* slab.

**Feature D** is a mound within a natural depression between two *pāhoehoe* tumuli in the central portion of the site (Figure 135). Feature D measures 1.8 m N/S by 0.7 m E/W with a maximum height of 0.7 m above the adjacent ground surface, and is composed of three courses of stacked *pāhoehoe* cobbles to medium boulders adjacent to the edge of a *pāhoehoe* outcrop.

**Feature E** is a mound within a natural depression between two *pāhoehoe* tumuli in the central portion of the site (Figure 136). Feature E measures 1.0 m N/S by 0.9 m E/W with a maximum height of 0.3 m above the adjacent ground surface. Feature E is composed of two courses of piled *pāhoehoe* cobbles to medium boulders on top of *pāhoehoe* bedrock.

**Feature F** is a mound within a natural depression between two *pāhoehoe* tumuli in the central portion of the site (Figure 137). Feature F measures 1.1 m N/S by 1.0 m E/W with a maximum height of 0.2 m above the adjacent ground surface. Feature F is composed of two courses of piled *pāhoehoe* cobbles on top of *pāhoehoe* bedrock.

SIHP # -28789 is interpreted as an agricultural complex likely dating from prehistoric (pre-Contact) times. The features may be related to clearing of adjacent soil areas for planting and/or may have supported various dryland cultivars

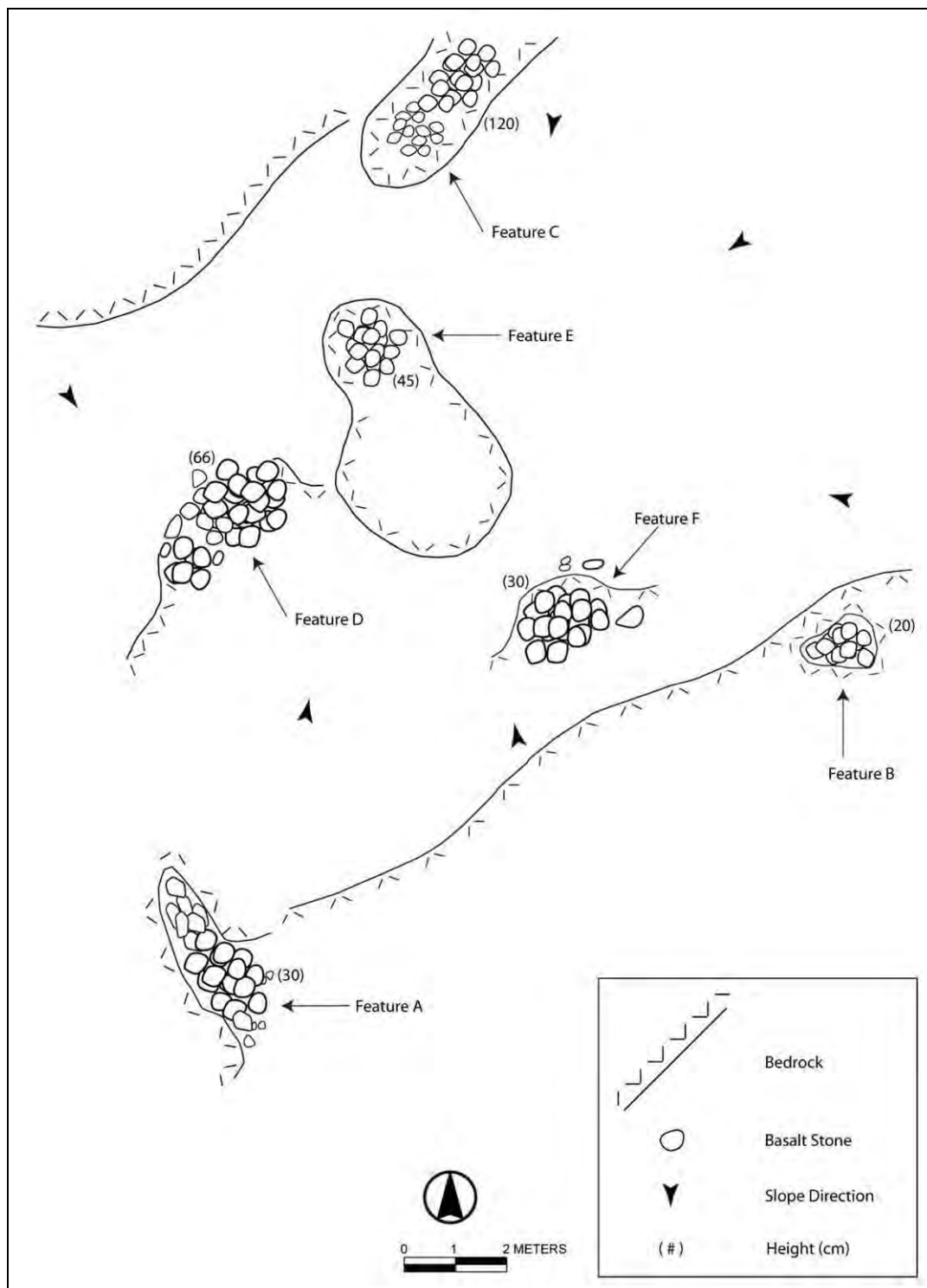


Figure 131. Plan view map of SIHP # -28789





Figure 132. Photograph of SIHP # -28789 Feature A, view to south



Figure 133. Photograph of SIHP # -28789 Feature B, view to northeast





Figure 134. Photograph of SIHP # -28789 Feature C, view to north



Figure 135. Photograph of SIHP # -28789 Feature D, view to east





Figure 136. Photograph of SIHP # -28789 Feature E, view to northeast



Figure 137. Photograph of SIHP # -28789 Feature F, view to south

**5.2.35 SIHP # 50-10-27-19950****Temp. Site No.:** 10 (Walsh and Hammatt 1995)**Site Type:** Modified Outcrop Complex**No. of Features:** 5**Functional Interpretation:** Agriculture**Probable Age:** Prehistoric (Pre-Contact)**Overall Dimensions:** 18.0 m N/S by 15.0 m E/W**Topography:** Undulating *pāhoehoe* flow, level to slightly-sloping**Elevation:** 74-75 ft (23 m) AMSL**Description:**

**SIHP # 50-10-27-19950** was first formally described by CSH in 1995 (Walsh and Hammatt 1995) (see Figure 20) as consisting of four features. The site was revisited during the archaeological inventory survey reported in Monahan et al. (2011), and found to be in the same physical condition (Figure 138, Figure 138). The site was originally described by Walsh and Hammatt (1995:51) as follows:

Site 19950 is a complex consisting of four modified outcrops designated Features A-D . . . The modifications consist of piled or mounded small boulders and cobbles along the edges of slightly raised pahoehoe outcrop.

This site is interpreted as an agricultural site and the individual features, the modified outcrops, appear to be piled or mounded rocks cleared from the adjacent small soil areas. The presence of two pieces of coral and one cowry shell reflect probable traditional use of the site. It is likely that this site is associated with the habitation site (Site 02238) [which is located outside, and *makai*, of the current project area] located approximately 40 feet (12 m.) to the south.

See Appendix B for Walsh and Hammatt's original descriptions and dimensions of individual features at SIHP # 19950.

More recently, in a letter dated April 25, 2012, in reference to the supplemental archaeological survey work in the south segment of the current project area (cf. Monahan and Yucha 2012), NPS archaeologists requested that CSH revisit this site to ensure that all features have been identified. On May 1, 2012, CSH archaeologist Oliver Bautista, under the direct supervision of Chris Monahan, returned to SIHP # -19950 and inspected the area. This resulted in the discovery of one additional piled-rock feature (designated Feature E). All five features were also recorded with survey grade GPS, and an updated plan view map was produced (Figure 139).

The site is interpreted as an agricultural complex likely dating to prehistoric (pre-Contact) times.

Walsh and Hammatt (1995) recommended SIHP # -19950 eligible for the National and State Registers of Historic Places under criterion D for its information relevant to prehistory and history. The site was recommended for data recovery by Walsh and Hammatt (1995); however, the Final Archaeological Treatment Plan (1999) called for "interim protection" only with no data recovery.





Figure 138. Representative rock-stacking feature at SIHP # -19950, facing north (scale measures approximately 40 cm in length)

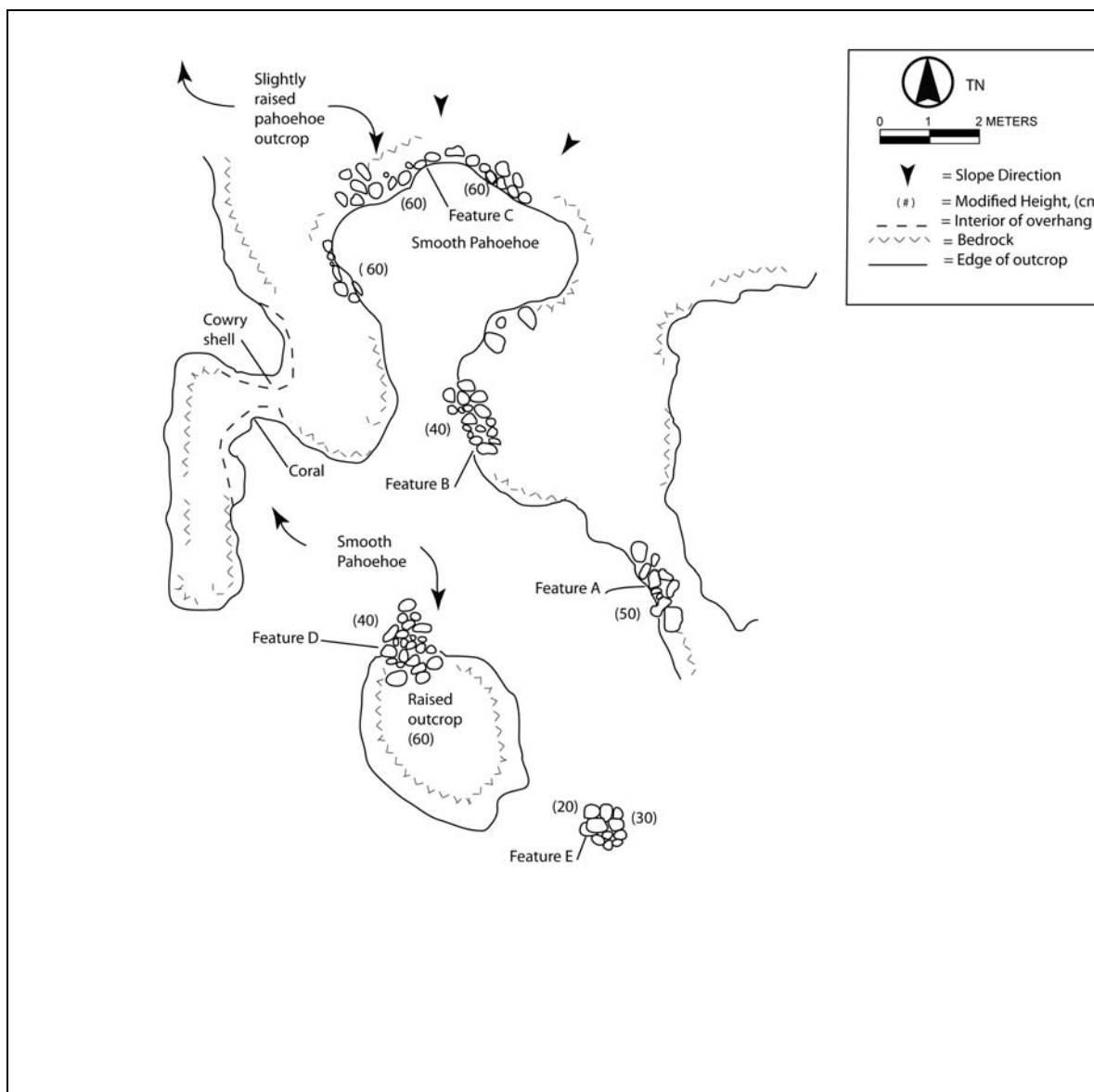


Figure 139. Plan view map of SIHP # -19950 including newly-identified Feature E



**5.2.36 SIHP # 50-10-27-28790****Temp. Site No.:** Tube 2 (Monahan et al. 2011)**Site Type:** *Pāhoehoe* Excavation**No. of Features:** 1**Functional Interpretation:** Quarrying**Probable Age:** Prehistoric (Pre-Contact)**Overall Dimensions:** 5.0 m N/S by 7.0 m E/W**Topography:** Undulating *pāhoehoe* flow, level to slightly-sloping**Elevation:** 80 ft (24 m) AMSL**Description:**

**SIHP # 50-10-27-28790** is a *pāhoehoe* excavation located approximately 250 m south of the intersection of Hina Lani Street and the Queen Ka'ahumanu Highway (see Figure 20) within the portion of the project area that is adjacent to the Kaloko-Honokōhau National Historical Park (Figure 140 to Figure 141). The *pāhoehoe* excavation consists of large boulder-sized slabs of *pāhoehoe* that have been excavated and displaced from the surrounding bedrock surface. The edges of the *pāhoehoe* excavation and resulting *pāhoehoe* slabs are scalloped. Several of the *pāhoehoe* slabs have been overturned. The excavated area measures 5.0 m N/S by 7.0 m E/W. The *pāhoehoe* excavation has exposed an opening to a small lava blister with an interior dimension of approximately 1.2 m N/S by 1.5 m E/W and a maximum ceiling height of 0.6 m (Figure 142). A thin layer of sediment and accumulated organic debris was observed on the floor of the blister beneath the opening. No artifacts or midden were observed in the area.

SIHP # -28790 is interpreted as a possible raw material quarrying locality likely dating from prehistoric (pre-Contact) times. The *pāhoehoe* excavation lacks sediment accumulation that would indicate potential agricultural use.



Figure 140. Photograph of SIHP # -28790, view to west



Figure 141. Detail of small lava blister at SIHP # -28790, view to south

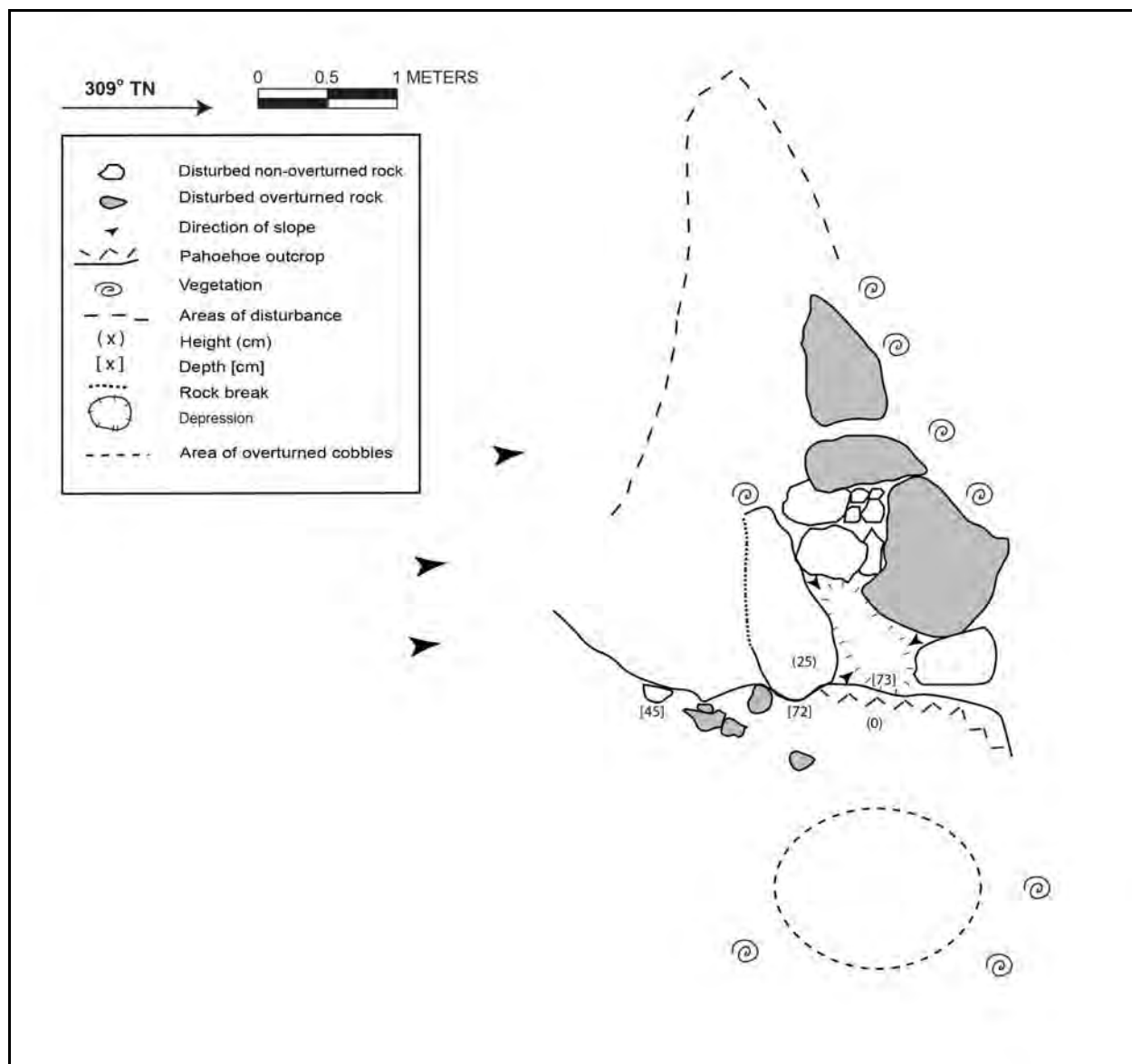


Figure 142. Plan view of SIHP # -28790

**5.2.37 SIHP # 50-10-27-19949****Temp. Site No.:** 9 (Walsh and Hammatt 1995)**Site Type:** Enclosure**No. of Features:** 1**Functional Interpretation:** Indeterminate-Possible Windbreak/Temporary Shelter**Probable Age:** Indeterminate (Historic or Possibly Modern)**Overall Dimensions:** 2.0 m by 2.0 m**Topography:** Smooth, level *pāhoehoe***Elevation:** 84 ft (26 m) AMSL**Description:**

**SIHP # 50-10-27-19949** was first formally described by CSH in 1995 (Walsh and Hammatt 1995) (see Figure 20). The site was revisited during the current archaeological inventory survey and found to be in the same physical condition (Figure 143, Figure 143). The site was described by Walsh and Hammatt (1995:49) as follows:

Site 19949 is a small circular enclosure situated on top of smooth pahoehoe terrain . . . The enclosure is constructed of minimally stacked or aligned small pahoehoe slabs and small a'a boulders and cobbles. The interior of the enclosure measures 2.0 m. and the enclosure walls measure between 0.5 and 0.6 m. high.

The enclosure appears to have been hastily constructed and the walls are loosely stacked and fragile. It may have functioned as an historic or modern hunting blind.

Observations made during the current investigation and site visit are consistent with the earlier interpretations regarding the function and age of this site. Given the character of the rock stacking, this site is clearly not a traditional Hawaiian construction. In general, it is poorly-built and does not exhibit the structural quality typically associated with prehistoric (pre-Contact) rock stacking. It is not possible, however, to definitively determine whether this site is historic in age (i.e., greater than 50 years) or modern. There is no soil-sedimentary deposition to test. There are no surface cultural materials. Therefore, the age of this site is interpreted as indeterminate, and most likely historic or modern in age. The function, as well, is indeterminate given all available evidence, but it seems likely to represent a temporary shelter / windbreak of some sort.

Walsh and Hammatt (1995) recommended SIHP # -19949 eligible for the National and State Registers of Historic Places under criterion D for its information relevant to prehistory and history. The site was recommended for "no further work" by Walsh and Hammatt (1995). The Final Archaeological Treatment Plan (1999) did not include this site, and, thus, concurred with CSH's 1995 recommendation. In consultation with the SHPD this site is now recommended for Data Recovery.





Figure 143. Photograph of SIHP # -19949, view to southwest (scale measures approximately 50 cm)



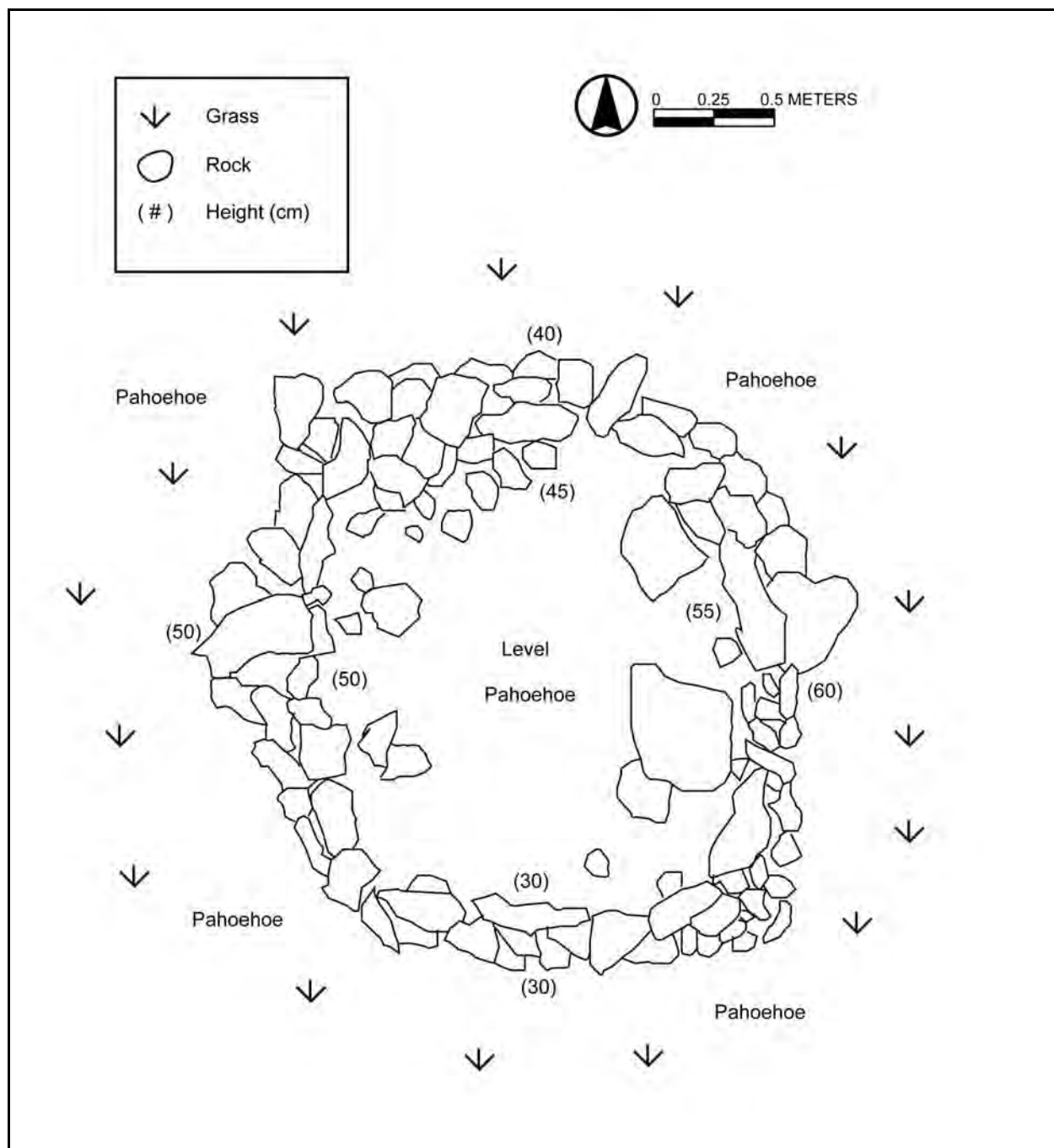


Figure 144. Plan view map of SIHP # -19949

**5.2.38 SIHP # 50-10-27-28791****Temp. Site No.:** Trail 11 (Monahan et al. 2011)**Site Type:** Trail**No. of Features:** 1**Functional Interpretation:** Transportation**Probable Age:** Indeterminate**Overall Dimensions:** Approximately 9.2 m long**Topography:** Undulating *pāhoehoe* flow, level to slightly-sloping**Elevation:** 75 ft (23 m) AMSL**Description:**

**SIHP # 50-10-27-28791** is a trail located approximately 150 m southwest of the intersection of Hina Lani Street and the Queen Ka'ahumanu Highway within the portion of the project area that is adjacent to the Kaloko-Honokōhau National Historical Park (see Figure 20). The trail is roughly-oriented NE/SW and measures 9.2 m long. The trail can be recognized within the project area by observing subtle wear-pattern / color variation on the lava flow (Figure 145, Figure 145). NPS staff has pointed out that trails such as this one, even though lacking formal attributes within the subject project area, may exhibit formal features elsewhere (i.e., outside of the project area).

The trail designated SIHP # -28791 is directly associated with a petroglyph designated SIHP # -28792 (see Figure 20).



Figure 145. Photograph of SIHP # -28791

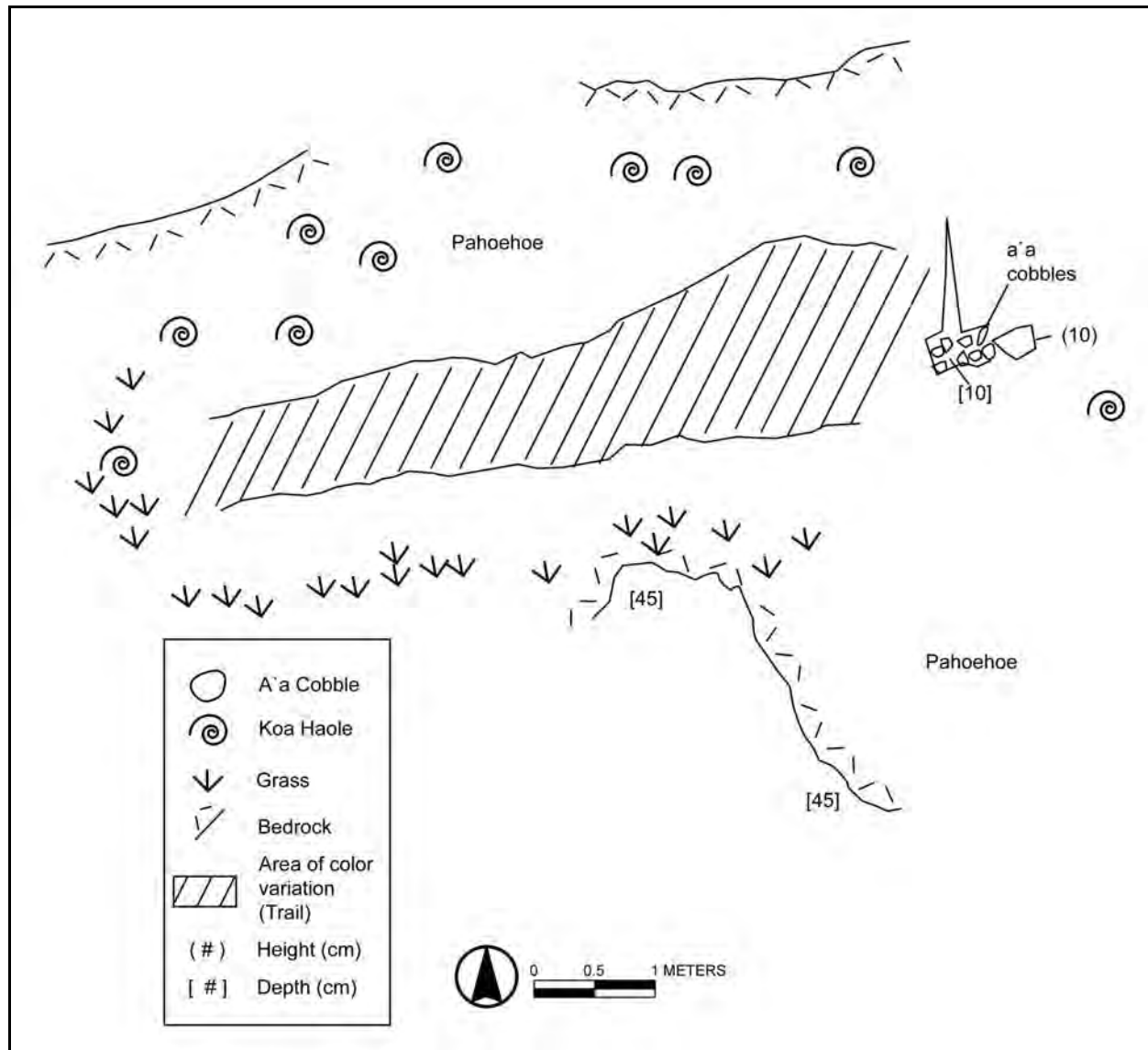


Figure 146. Plan view map of SIHP # -28791

**5.2.39 SIHP # 50-10-27-28792****Temp. Site No.:** Petroglyph 1 (Monahan et al. 2011)**Site Type:** Petroglyph**No. of Features:** 1**Functional Interpretation:** Symbolic Expression**Probable Age:** Prehistoric (Pre-Contact)**Overall Dimensions:** 0.2 m N/S by 0.3 m E/W**Topography:** Level *pāhoehoe* flow**Elevation:** 79 ft (24 m) AMSL**Description:**

**SIHP # 50-10-27-28792** is a petroglyph located approximately 145 m south of the intersection of Hina Lani Street and the Queen Ka'ahumanu Highway within the portion of the project area that is adjacent to the Kaloko-Honokōhau National Historical Park (Figure 147, Figure 147, and see Figure 20). This petroglyph was discovered by NPS archaeologist Tyler Paikuli-Campbell while surveying with CSH archaeologists. The petroglyph has been engraved onto a smooth, level *pāhoehoe* surface and measures approximately 0.2 m N/S by 0.3 m E/W. The *pāhoehoe* flow surface is very weathered and the petroglyph is extremely faint. The petroglyph appears to consist of a hollow circle with a central dot adjacent to an L-shaped line and a small, linear pecked depression. It is unclear as to whether the petroglyph represents three individual symbols or the, now weathered, depiction of an anthropomorphic figure.

The petroglyph designated SIHP # -28792 is directly associated with, and located along, a trail designated SIHP # -28791 (see Figure 20).

SIHP # -28792 is interpreted as an example of traditional symbolic expression dating from prehistoric (pre-Contact) times. No artifacts or midden were observed in the area.





Figure 147. SIHP # -28792, view to west

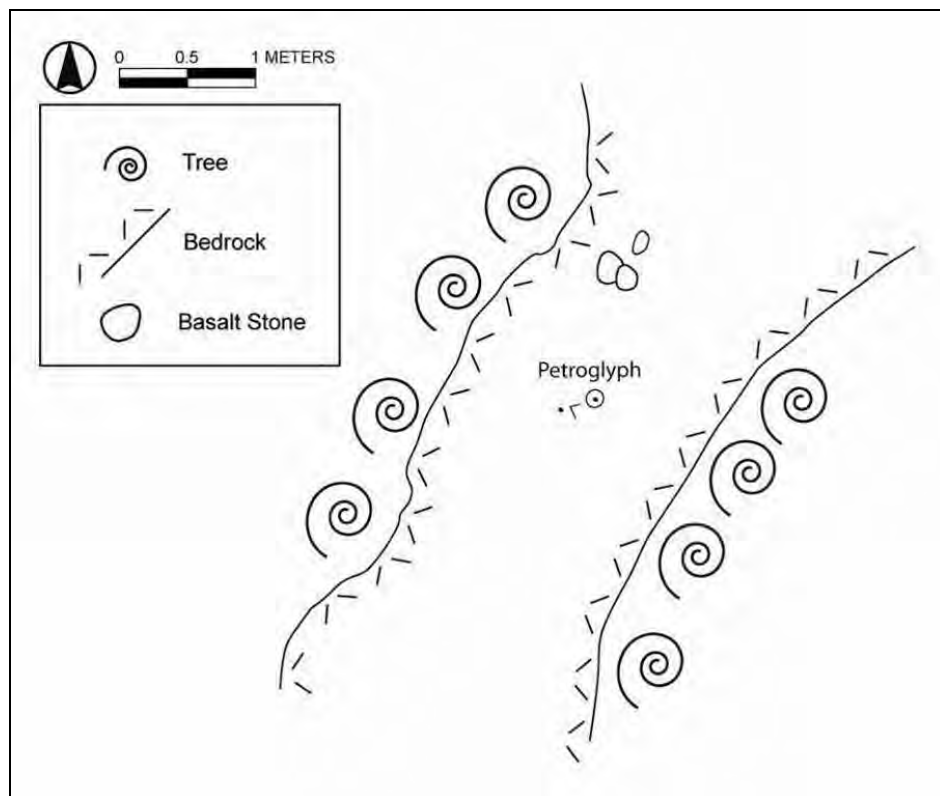


Figure 148. Plan view map of SIHP # -28792

**5.2.40 SIHP # 50-10-27-29344****Temp. Site No.:** Excavation 0 (Monahan and Yucha 2012)**Site Type:** Excavated Pit**No. of Features:** 1**Functional Interpretation:** Indet.-Possible Quarry or Sweet Potato Planter or Bird Pit**Probable Age:** Indeterminate-Probably Prehistoric (Pre-Contact)**Overall Dimensions:** 1.0 m N/S by 1.0 m E/W**Topography:** 'A 'ā flow**Elevation:** 75 ft (23 m) AMSL**Description:**

**SIHP # 50-10-27-29344** is an excavated pit in a *pāhoehoe* lava blister. The site location is depicted in Figure 20. The excavated pit was created by bashing and removal of sections of *pāhoehoe* creating an opening in the flow (Figure 149, Figure 150). Two small boulder-sized *pāhoehoe* blocks have been left in the pit floor. Larger sections of fractured *pāhoehoe* are located along the east side of the pit. Low overhangs are present along the west side of the pit. This site was pointed out to CSH by NPS archaeologists during the supplemental survey of the south segment (Monahan and Yucha 2012).

The excavated pit measures approximately 1.0 m N/S by 1.0 m E/W by 0.30 m deep. There is relatively little vegetation or soil-sedimentary matrix in or immediately adjacent to the pit. No portable cultural materials, other than the removed rocks, were observed by CSH archaeologists.

It is difficult to unequivocally date this site, although it seems likely to be of prehistoric (pre-Contact) age. Its function is currently indeterminate. A wide variety of excavated pits in *pāhoehoe* have been documented in similar physiographic settings in the Kona region. The pit may have functioned as a quarry (e.g., a source of rock material) or as a sweet potato planter or as a bird pit. It is possible that further work (excavation) at the site may contribute additional information to further clarify its age or function.



Figure 149. SIHP # -29344, view northwest

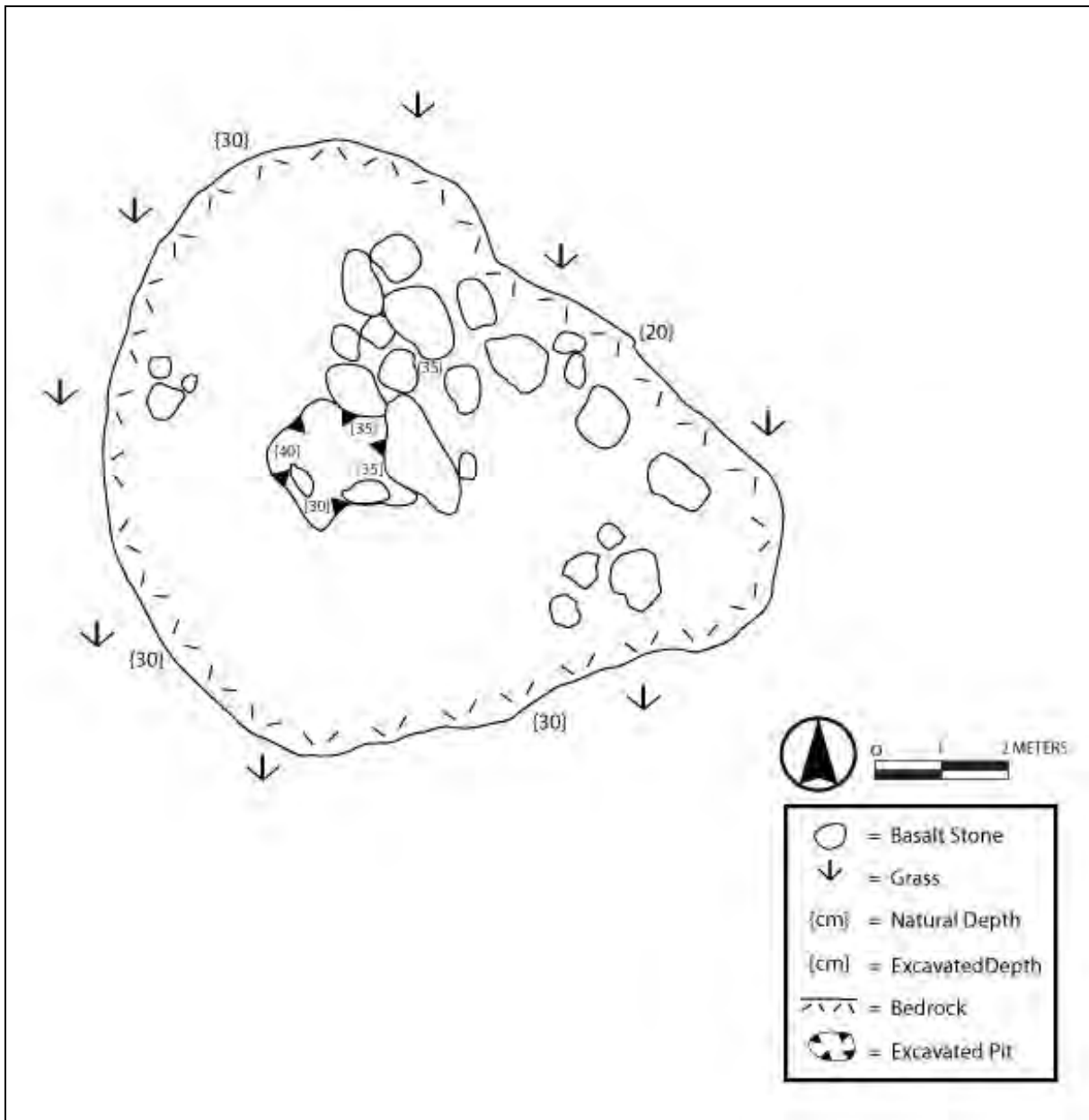


Figure 150. Plan view map of SIHP # -29344



**5.2.41 SIHP # 50-10-27-10714 (Feature A)**

**Temp. Site No.:** T-091010-4 (Monahan et al. 2011)

**Site Type:** Trail—Part of the Trail System “Road to the Sea”

**No. of Features:** 1

**Functional Interpretation:** Transportation

**Probable Age:** Pre-Contact with continued use in Historic Era

**Overall Dimensions:** Approximately 56.6 m long in the project area

**Topography:** Undulating *pāhoehoe* flow, level to slightly-sloping

**Elevation:** 75 ft (23 m) AMSL (in the project area)

**Description:**

**SIHP # 50-10-27-10714 (Feature A)** is a trail located approximately 88 m northwest of the intersection of Hina Lani Street and the Queen Ka‘ahumanu Highway within the portion of the project area that is adjacent to the Kaloko-Honokōhau National Historical Park (see Figure 20). The trail is roughly oriented E/W and measures 56.6 m long within the project area. Within the project area, the trail lacks any formal construction features such as stepping stones or curbing. The trail can be recognized within the project area by observing subtle wear-pattern / color variation on the lava flow (Figure 151 to Figure 153).

Other previous archaeological studies such as Renger (1970), Cordy et al. (1991), Wolforth et al. (2005) and Bell et al. (2009), as well as consultation with trails specialists with the NPS, suggest this trail portion is part of a more extensive trail complex known as the “Road to the Sea,” which generally follows the Kaloko/Kohanaiki *ahupua‘a* boundary and extends from the Kohanaiki Homesteads (*mauka*) to Kaloko Fishpond (at the coast). *Mauka* of the project area, this trail has been designated SIHP # -10714 (by Wolforth et al. 2005), and the portion within the current project area is herein designated Feature A (specific to the current project).

This trail also connects within the national park with other trails segments designated SIHP # -2233 (D13-81) and SIHP # -2183.

It is important to note that CSH has identified three portions of this “Road to the Sea Trail” within the project area. NPS trail specialists have suggested these three portions should all be considered part of SIHP # -10714, and CSH concurs with this recommendation. In the current report, these three trail portions are treated separately (although they are all given the same site number, with different feature numbers) in keeping with the south-to-north presentation and description of cultural resources.

This trail is subject to protection and preservation under the Highways Act of 1892 (HRS Chapter 264-1(b)) (Na Ala Hele 2008).

Previous significance evaluations for SIHP # -10714 by Wolforth et al. (2005) and Bell et al. (2009) have recommended this resource eligible for the Hawai‘i Register of Historic Places under Criteria D and E.





Figure 151. Photograph of SIHP # 10714 Feature A, view to southwest



Figure 152. Close-up of color variation and wear pattern on *pāhoehoe* surface of SIHP # -10741 Feature A

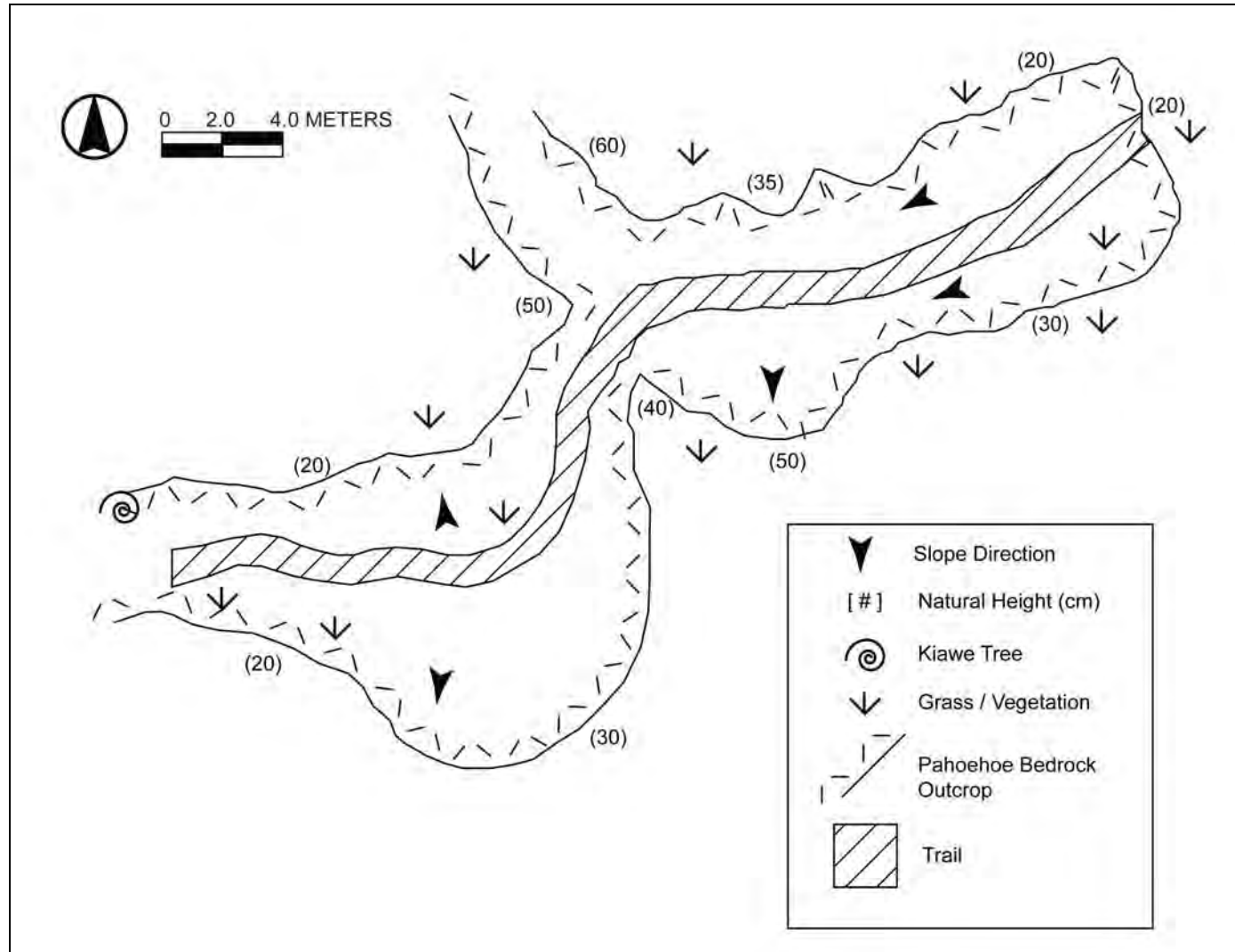


Figure 153. Plan view map of SIHP # -10714 Feature A

**5.2.42 SIHP # 50-10-27-28794****Temp. Site No.:** T-091010-7 (Monahan et al. 2011)**Site Type:** Filled Crevice**No. of Features:** 1**Functional Interpretation:** Indeterminate-Possible Agricultural Clearing Feature**Probable Age:** Indeterminate**Overall Dimensions:** 0.9 m N/S by 3.8 m E/W**Topography:** Level *pāhoehoe* flow**Elevation:** 94 ft (29 m) AMSL**Description:**

**SIHP # 50-10-27-28794** is a filled crevice (see Figure 20) adjacent to the Kaloko-Honokōhau National Historical Park (Figure 154). SIHP # 28794 consists of several *pāhoehoe* cobbles and small boulders that have been placed within a natural crevice in the *pāhoehoe* surface. The filled crevice measures 0.9 m N/S by 3.8 m E/W. No artifacts or midden were observed in the area.

From an archaeological perspective, this feature retains little evidence of formal construction, and, therefore, both its age and function are indeterminate. Based on oral-historical information cited by NPS staff, and confirmed as accurate by Analu Josephides of the SHPD, in the context of discussing other features in the project area, it was believed to be possible that this site represented a burial. Subsurface testing of this feature was conducted to determine if human skeletal remains were present. CSH obtained concurrence from the SHPD before testing this site.

**5.2.42.1 Test Excavation Findings**

Excavation of SIHP # -28794 was halted at the exposure of solid bedrock, which was encountered between 70 and 90 cmbs. A small, unmodified coral cobble, a portion of a *kukui* nut shell, and sparse amounts of charcoal were identified during the excavation of SIHP # -28794 at 70 to 75 cmbs (Figure 155 to Figure 161, and Table 24).

SIHP # -28794 may represent an agricultural clearing feature. Subsurface testing did not reveal any human skeletal remains. The age of this feature is indeterminate.





Figure 154. SIHP # -28794, view to east



Figure 155. SIHP # -28794, pre-excavation, view to west

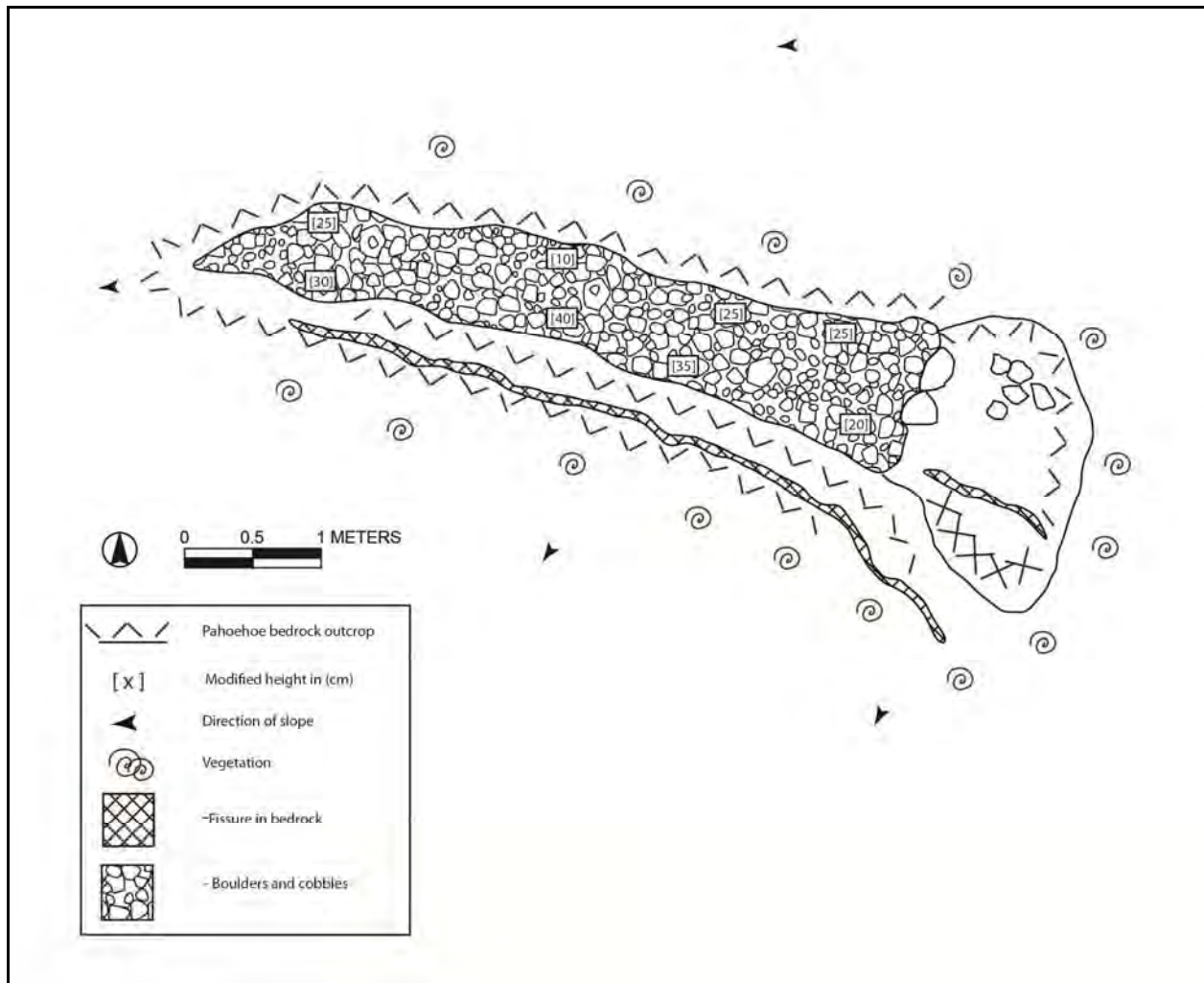


Figure 156. Plan view map of SIHP # -28794





Figure 157. SIHP # -28794, post-reconstruction, view to west

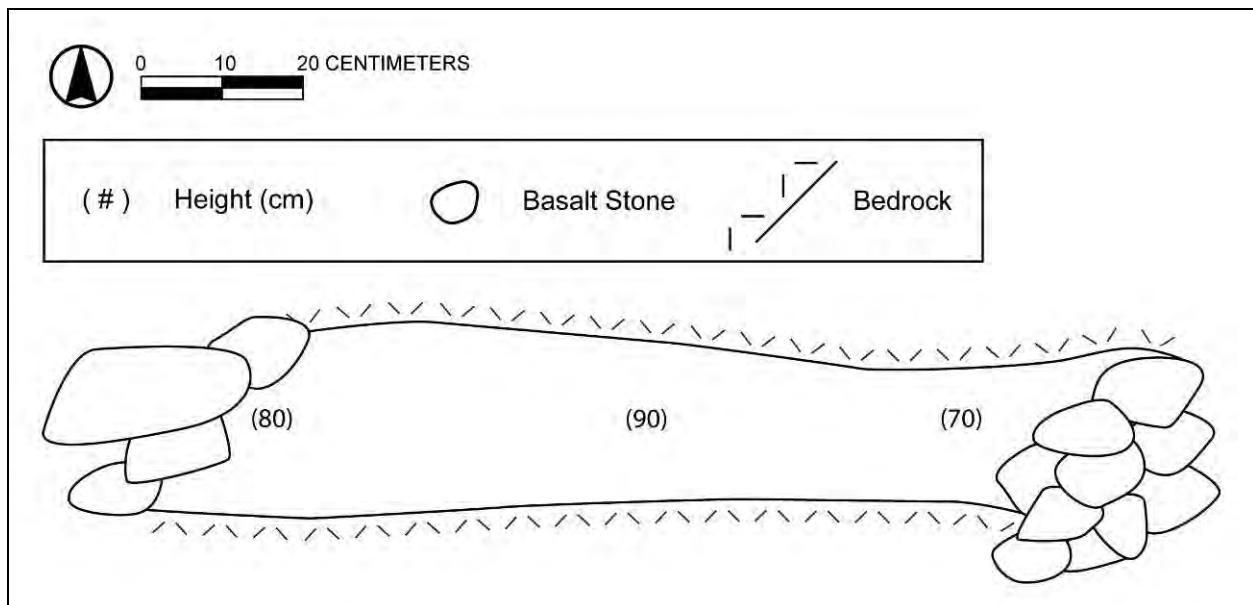


Figure 158. Plan view map of SIHP # -28794, post-excavation



Figure 159. General view of SIHP # -28794, post-excavation, view to north



Figure 160. Profile of east wall of SIHP # -28794, post-excavation, view to east



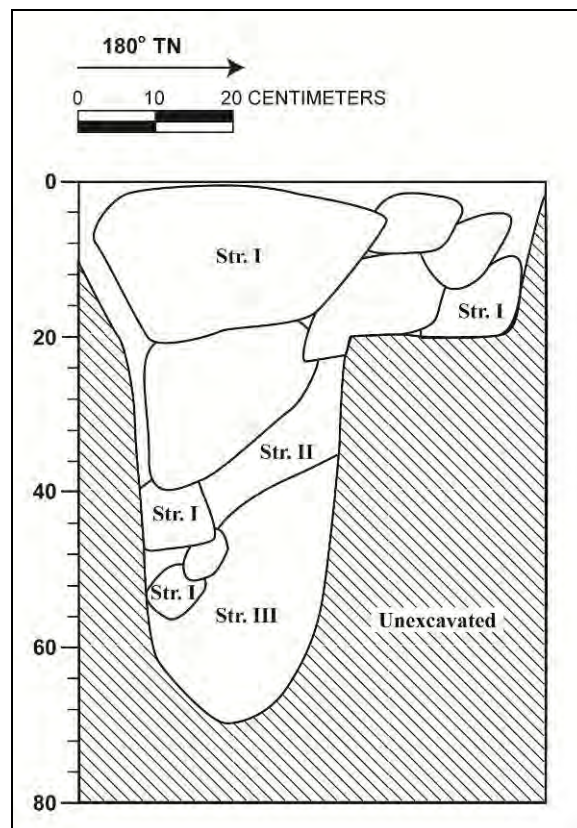


Figure 161. Stratigraphic profile of the east wall of SIHP # -28794, post-excavation

Table 24. Strata observed within SIHP # -28794

Stratum	Depth (cmbs)	Description of Sediment
I	0-56	<i>Pāhoehoe</i> cobble and small boulders fill
II	22-46	O Horizon; organic leaf litter/detritus
III	35-69 (BOE)	5 YR 2.5/2, Dark Reddish Brown; silt; structureless; dry, loose consistency; non-plastic; terrigenous origin; few, very fine roots.

**5.2.43 SIHP # 50-10-27-10714 (Feature B)****Temp. Site No.:** T-091010-5 (Monahan et al. 2011)**Site Type:** Trail—Part of the Trail System “Road to the Sea”**No. of Features:** 1**Functional Interpretation:** Transportation**Probable Age:** Pre-Contact with continued use in Historic Era**Overall Dimensions:** Approximately 35.6 m long in the project area**Topography:** Undulating *pāhoehoe* flow, level to slightly-sloping**Elevation:** 75 ft (23 m) AMSL (in the project area)**Description:**

**SIHP # 50-10-27-10714 (Feature B)** is a trail located approximately 130 m northwest of the intersection of Hina Lani Street and the Queen Ka‘ahumanu Highway within the portion of the project area that is adjacent to the Kaloko-Honokōhau National Historical Park (see Figure 20). The trail is roughly oriented E/W and measures 35.6 m long within the project area. Within the project area, the trail lacks any formal construction features such as stepping stones or curbing. The trail can be recognized within the project area by observing subtle wear-pattern / color variation on the lava flow (Figure 162, Figure 163). Two stacked boulders located alongside (just north of) SIHP # -10714 Feature B may have served as a trail marker (Figure 163 to Figure 165). The two stacked *pāhoehoe* boulders are situated on top of a smooth, level *pāhoehoe* flow next to the trail and measure 0.4 m N/S by 0.3 m E/W with a maximum height of 0.5 m above the adjacent ground surface. A third boulder, located in the immediate vicinity, may have been displaced from the top of the mound.

Other previous archaeological studies such as Renger (1970), Cordy et al. (1991), Wolforth et al. (2005) and Bell et al. (2009), as well as consultation with trails specialists with the NPS, suggest this trail portion is part of a more extensive trail complex known as the “Road to the Sea,” which generally follows the Kaloko/Kohanaiki *ahupua‘a* boundary and extends from the Kohanaiki Homesteads (*mauka*) to Kaloko Fishpond (at the coast). *Mauka* of the project area, this trail has been designated SIHP # 10714 (by Wolforth et al. 2005), and the portion within the current project area is herein designated Feature B (specific to the current project).

This trail also connects within the national park with another trail segment designated SIHP # 2240 (D13-89).

It is important to note that CSH has identified three portions of this “Road to the Sea Trail” within the project area. NPS trail specialists have suggested these three portions should all be considered part of SIHP # 10714, and CSH concurs with this recommendation. In the current report, these three trail portions are treated separately (although they are all given the same site number, with different feature numbers) in keeping with the south-to-north presentation and description of cultural resources.

This trail is subject to protection and preservation under the Highways Act of 1892 (HRS Chapter 264-1(b)) (Na Ala Hele 2008).

Previous significance evaluations for SIHP # -10714 by Woforth et al. (2005) and Bell et al. (2009) have recommended this resource eligible for the Hawai'i Register of Historic Places under Criteria D and E.





Figure 162. Photograph of SIHP # -10741 Feature B, view to east

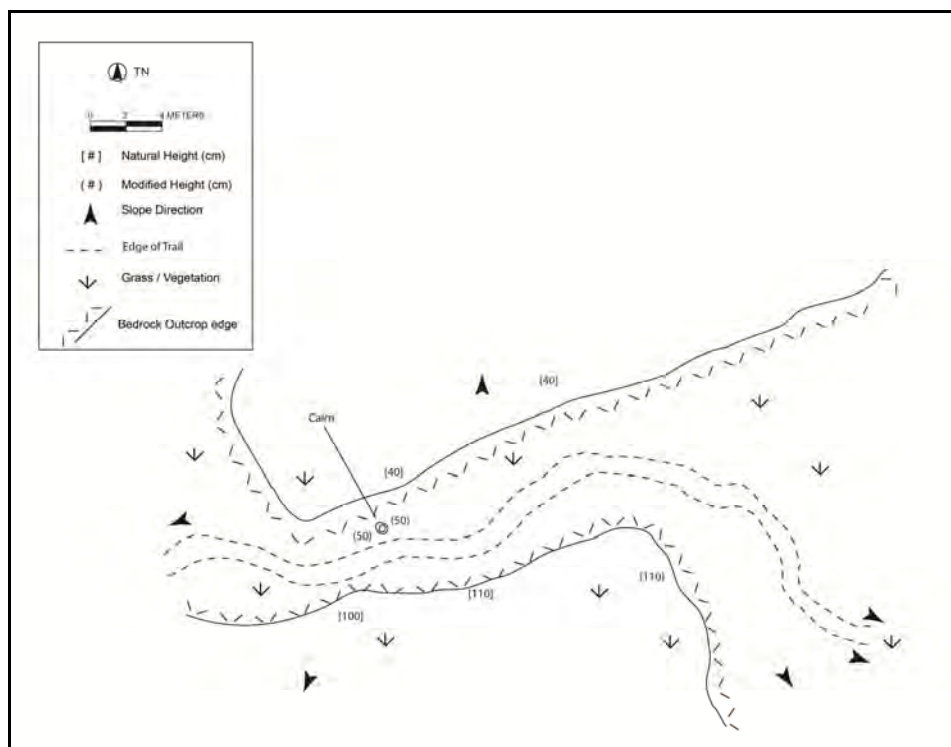


Figure 163. Plan view map of SIHP # -10714 Feature B



Figure 164. Stacked boulders alongside SIHP # -10714 Feature B, view to north

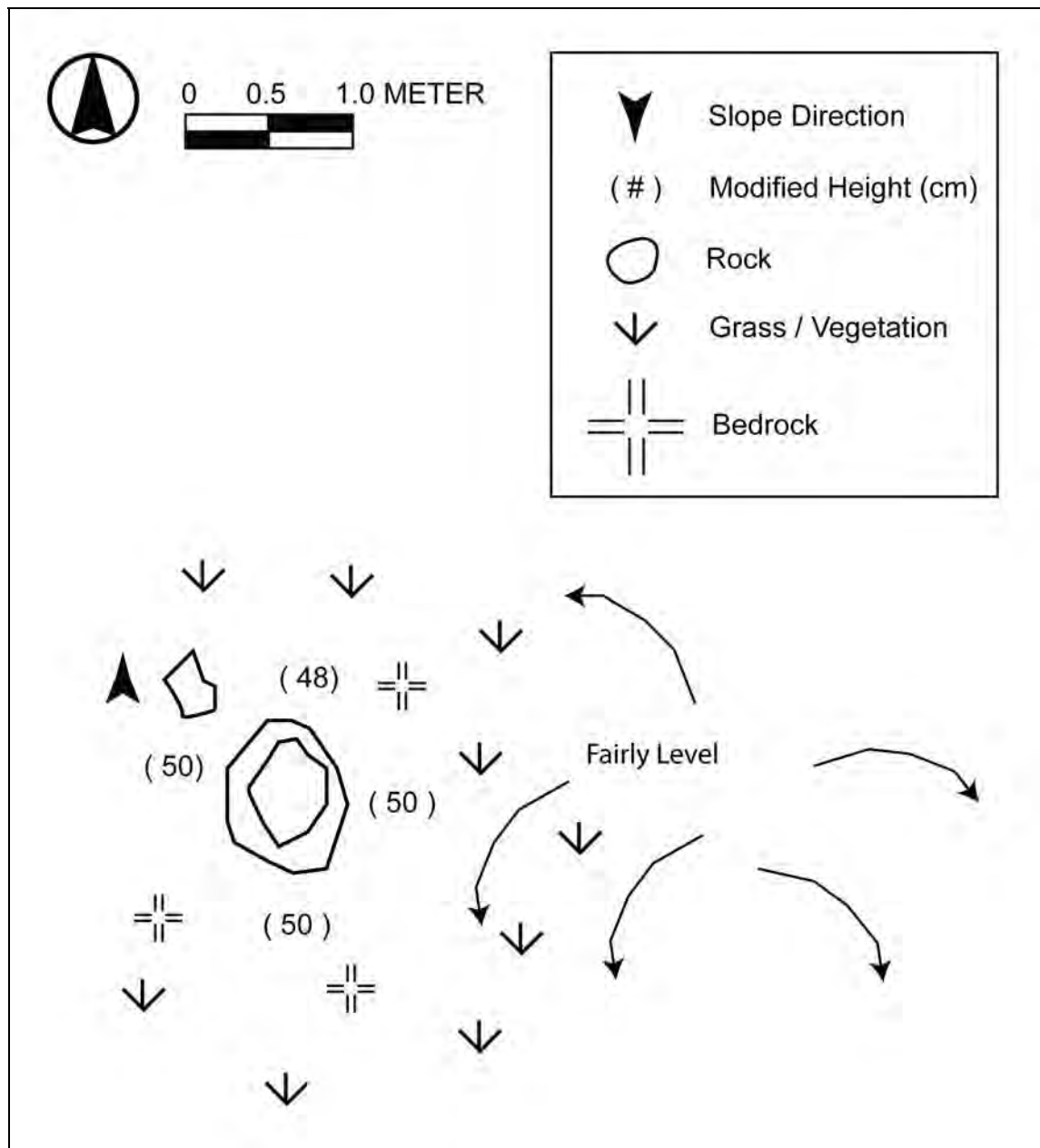


Figure 165. Plan view of two stacked boulders along SIHP # -10714 Feature B

**5.2.44 SIHP # 50-10-27-28797****Temp. Site No.:** T-091010-8 (Monahan et al. 2011)**Site Type:** Mound Complex**No. of Features:** 2**Functional Interpretation:** Agriculture**Probable Age:** Prehistoric (Pre-Contact)**Overall Dimensions:** 4.8 m N/S by 1.4 m E/W**Topography:** Level *pāhoehoe* flow**Elevation:** 93 ft (28 m) AMSL**Description:**

**SIHP # 50-10-27-28797** is a mound complex consisting of two features (Features A and Feature B) located approximately 147 m northwest of the intersection of Hina Lani Street and the Queen Ka'ahumanu Highway within the portion of the project area that is adjacent to the Kaloko-Honokōhau National Historical Park (Figure 168, and see Figure 20).

**Feature A** is a mound constructed of one to two courses of *pāhoehoe* cobbles along the edge of a *pāhoehoe* bedrock shelf (Figure 166). The mound measures 1.1 m N/S by 1.1 m E/W with a maximum height of 0.5 m above the adjacent ground surface. No artifacts or midden were observed in the area.

**Feature B** is a mound constructed of one to three courses of *pāhoehoe* cobbles and small boulders along the edge of a *pāhoehoe* bedrock shelf (Figure 167). The mound includes several upright small boulder-sized slabs of *pāhoehoe*. The mound measures 1.0 m N/S by 2.3 m E/W with a maximum height of 0.5 m above the adjacent ground surface. No artifacts or midden were observed in the area.

SIHP # -28797 is interpreted as an agricultural complex likely dating from prehistoric (pre-Contact) times. The features may be related to clearing of adjacent soil areas for planting and/or may have supported various dryland cultivars.





Figure 166. SIHP # -28797 Feature A, view to southeast



Figure 167. SIHP # -28797 Feature B, view to south

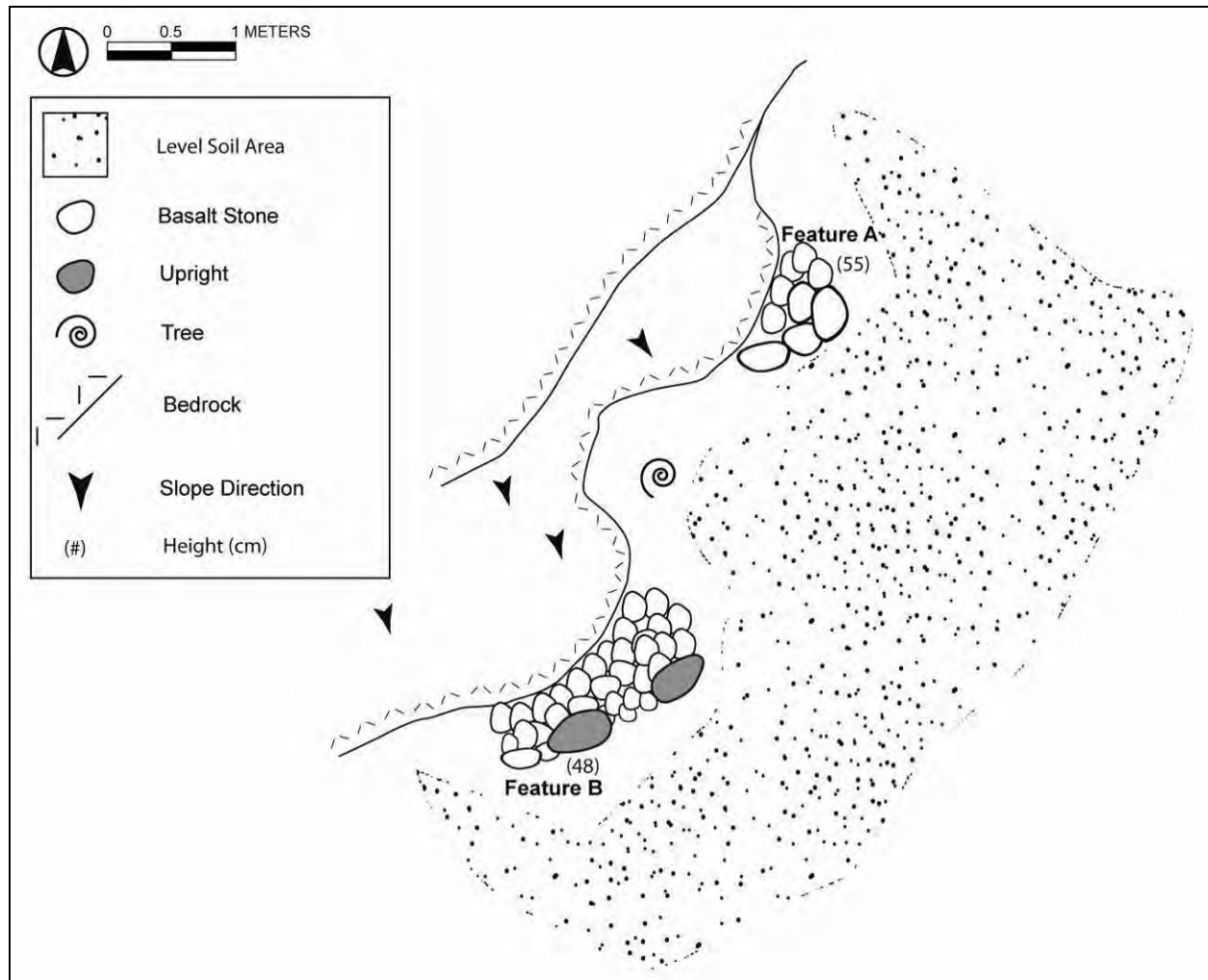


Figure 168. Plan view map of SIHP # -28797

**5.2.45 SIHP # 50-10-27-10714 (Feature C)****Temp. Site No.:** T-091010-9 (Monahan et al. 2011)**Site Type:** Trail—Part of the Trail System “Road to the Sea”**No. of Features:** 1**Functional Interpretation:** Transportation**Probable Age:** Pre-Contact with continued use in Historic Era**Overall Dimensions:** Approximately 30.4 m long in the project area**Topography:** Undulating *pāhoehoe* flow, level to slightly-sloping**Elevation:** 89 ft (27 m) AMSL (in the project area)**Description:**

**SIHP # 50-10-27-10714 (Feature C)** is a trail located approximately 200 m northwest of the intersection of Hina Lani Street and the Queen Ka‘ahumanu Highway within the portion of the project area that is adjacent to the Kaloko-Honokōhau National Historical Park (see Figure 20). The trail is roughly oriented E/W and measures 30.4 m long within the project area. Within the project area, the trail lacks any formal construction features such as stepping stones or curbing. The trail can be recognized within the project area by observing subtle wear-pattern / color variation on the lava flow (Figure 169, Figure 170).

Other previous archaeological studies such as Renger (1970), Cordy et al. (1991), Wolforth et al. (2005) and Bell et al. (2009), as well as consultation with trails specialists with the NPS, suggest this trail portion is part of a more extensive trail complex known as the “Road to the Sea,” which generally follows the Kaloko/Kohanaiki Ahupua‘a boundary and extends from the Kohanaiki Homesteads (*mauka*) to Kaloko Fishpond (at the coast). *Mauka* of the project area, this trail has been designated SIHP # 10714 (by Wolforth et al. 2005), and the portion within the current project area is herein designated Feature C (specific to the current project).

It is important to note that CSH has identified three portions of this “Road to the Sea Trail” within the project area. NPS trail specialists have suggested these three portions should all be considered part of SIHP # 10714, and CSH concurs with this recommendation. In the current report, these three trail portions are treated separately (although they are all given the same site number, with different feature numbers) in keeping with the south-to-north presentation and description of cultural resources.

This trail is subject to protection and preservation under the Highways Act of 1892 (HRS Chapter 264-1(b)) (Na Ala Hele 2008).

Previous significance evaluations for SIHP # 10714 by Wolforth et al. (2005) and Bell et al. (2009) have recommended this resource eligible for the Hawai‘i Register of Historic Places under Criteria D and E.





Figure 169. Photograph of SIHP # -10741 Feature C, view to southwest



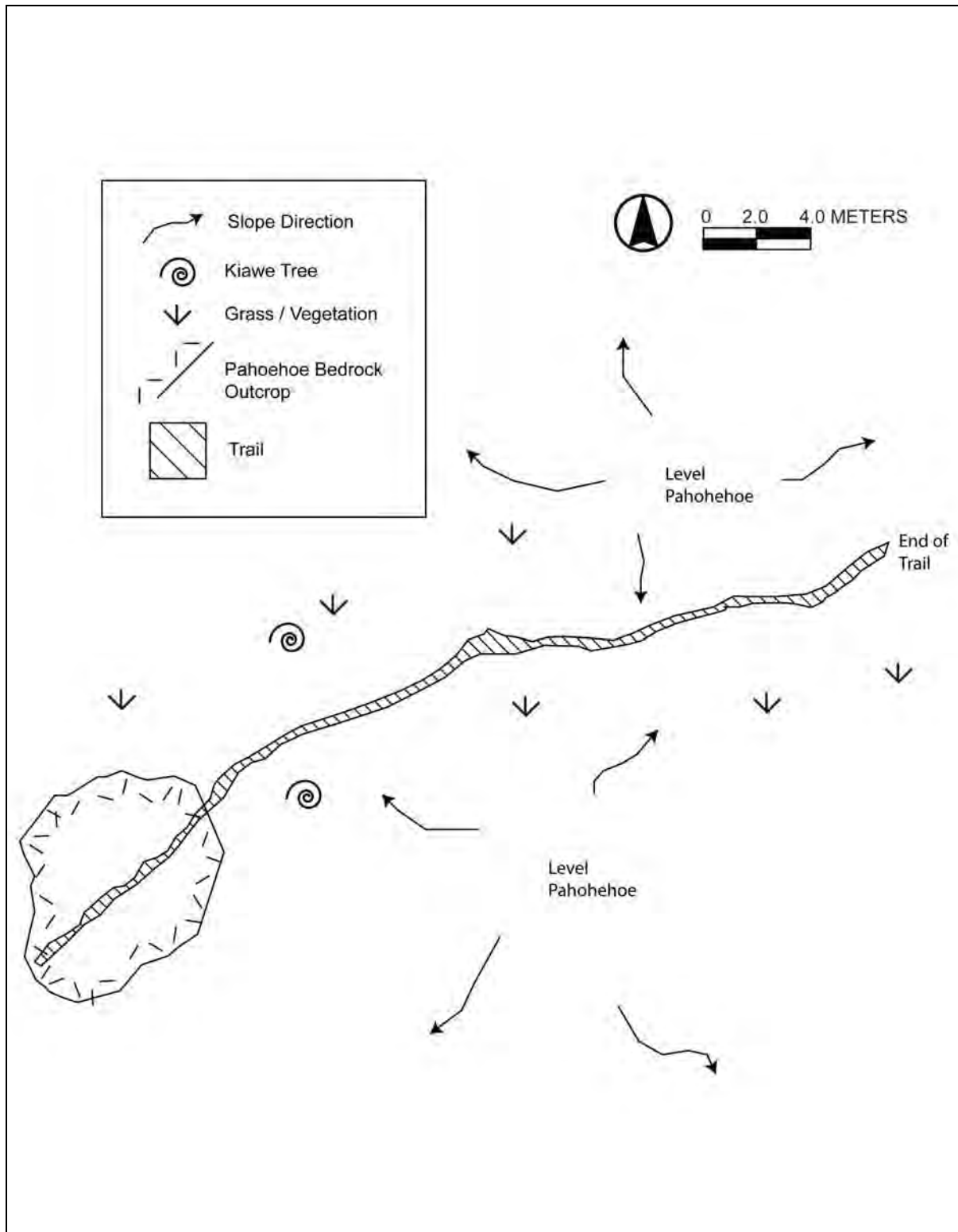


Figure 170. Plan view map of SIHP # -10741 Feature C

**5.2.46 SIHP # 50-10-27-19948****Temp. Site No.:** T-091010-11 (Monahan et al. 2011); 8 (Walsh and Hammatt 1995)**Site Type:** Complex**No. of Features:** 8**Functional Interpretation:** Agriculture and Quarrying**Probable Age:** Prehistoric (Pre-Contact)**Overall Dimensions:** 22.8 m N/S by 17.2 m E/W**Topography:** Level *pāhoehoe* flow**Elevation:** 79-80 ft (24 m) AMSL**Description:**

**SIHP # 50-10-27-19948** is a site complex consisting of eight features (Feature A to Feature H) located approximately 270 m northwest of the intersection of Hina Lani Street and the Queen Ka'ahumanu Highway (see Figure 20) within the portion of the project area that is adjacent to the Kaloko-Honokōhau National Historical Park (Figure 171). Feature types identified at SIHP # -19948 complex include one modified lava blister (Feature A), six *pāhoehoe* excavations (Feature B to Feature G), and one filled crevice (Feature H).

A portion of the site was first identified by Walsh and Hammatt (1995), who only documented part of what is now designated Feature B. Recent field inspection by CSH demonstrates this feature is part of a larger site complex, as described below.

**Feature A** is a lava blister that has been partially cleared of collapse (*pāhoehoe* cobbles and boulders) with an opening that has been expanded and modified as evidenced by scalloping and quarry marks (Figure 172). A thin sediment layer with organic debris has accumulated at the base of the blister, which presently supports the growth of grasses. No artifacts or midden were observed in the area.

**Feature B to Feature G** are *pāhoehoe* excavations that consists of areas where an overlying, uplifted sheet of *pāhoehoe* has been quarried and removed to expose a lower *pāhoehoe* surface (Figure 173 to Figure 178). Quarry marks and scalloping were observed along the edges of each excavation. The excavated material (*pāhoehoe* slabs, cobbles, and boulders) is scattered throughout the SIHP # 19948 site area, and in some cases has been redeposited within the excavated areas. The interior of the excavated areas consist of a relatively thin accumulation of sediment and organic debris that presently support the growth of *koa haole* and grasses. No artifacts or midden were observed in the area.

**Feature H** is a filled crevice that consists of *pāhoehoe* cobbles and pebbles that have been placed within a natural crevice in the *pāhoehoe* surface (Figure 179). The *pāhoehoe* cobble and pebble fill extends approximately 0.2 m above the adjacent ground surface. No artifacts or midden were observed in the area.

SIHP # -19948 is interpreted as an agricultural and quarrying complex likely dating from prehistoric (pre-Contact) times.

Table 25. Metric Data for SIHP # -19948, Feature A to Feature H

<b>Feature</b>	<b>Length (N/S)</b>	<b>Width (E/W)</b>	<b>Max Depth</b>
A	1.6 m	2.2 m	0.8 m
B	8.6 m	4.9 m	0.4 m
C	2.5 m	1.8 m	0.6 m
D	1.9 m	1.9 m	0.4 m
E	0.7 m	0.5 m	0.5 m
F	1.0 m	0.6 m	0.5 m
G	0.9 m	0.4 m	0.6 m
H	2.4 m	1.2 m	-

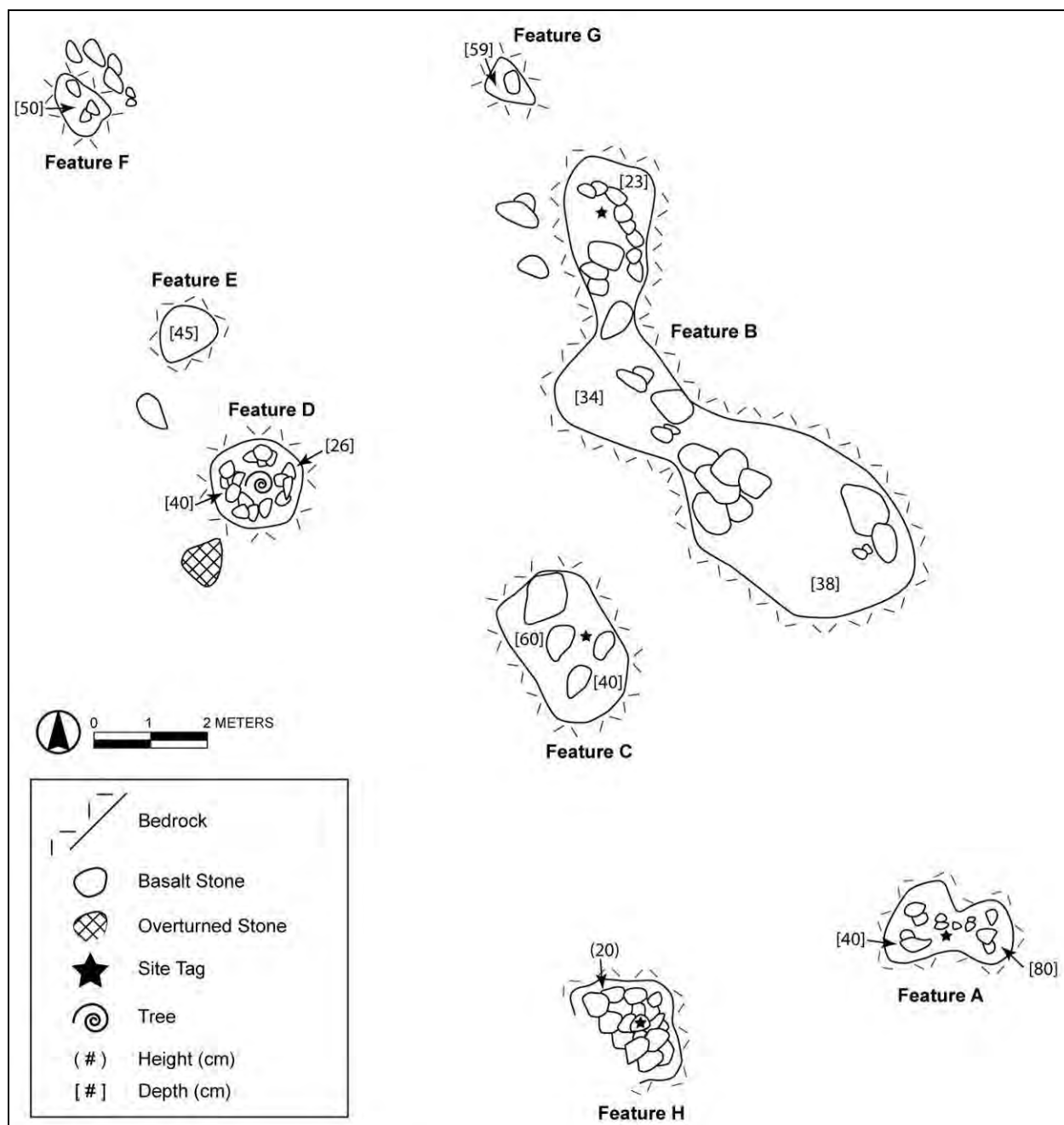


Figure 171. Plan view map of SIHP # -19948





Figure 172. Photograph of SIHP # -19948 Feature A, view to east



Figure 173. Photograph of SIHP # -19948 Feature B, view to east





Figure 174. Photograph of SIHP # -19948 Feature C, view to east



Figure 175. Photograph of SIHP # -19948 Feature D, view to east





Figure 176. Photograph of SIHP # -19948 Feature E, view to east



Figure 177. Photograph of SIHP # -19948 Feature F, view to east





Figure 178. Photograph of SIHP # -19948 Feature G, view to east



Figure 179. Photograph of SIHP # -19948 Feature H, view to east

**5.2.47 SIHP # 50-10-27-28799****Temp. Site No.:** T-091010-12 (Monahan et al. 2011)**Site Type:** Excavated Pit Complex**No. of Features:** 3**Functional Interpretation:** Agriculture**Probable Age:** Prehistoric (Pre-Contact)**Overall Dimensions:** 4.9 m N/S by 5.8 m E/W (includes the adjacent soil area)**Topography:** Level *pāhoehoe* flow**Elevation:** 84 ft (26 m) AMSL**Description:**

**SIHP # 50-10-27-28799** is a complex consisting of three features (Features A to Feature C) located approximately 300 m northwest of the intersection of Hina Lani Street and the Queen Ka'ahumanu Highway (see Figure 20) within the portion of the project area that is adjacent to the Kaloko-Honokōhau National Historical Park (Figure 180). The complex is comprised of three adjacent *pāhoehoe* excavations similar to those observed at SIHP # -28799. The *pāhoehoe* excavations are located along the west side of a soil area that has formed within a natural depression or undulation in the *pāhoehoe* surface.

**Feature A to Feature C** are *pāhoehoe* excavations that consist of areas where an overlying, uplifted sheet of *pāhoehoe* has been quarried and removed to expose a lower *pāhoehoe* surface (Figure 181 to Figure 184). Quarry marks and scalloping were observed along the edges of each excavation. The excavated material (*pāhoehoe* slabs, cobbles, and boulders) from Feature A has been placed along the edge of the excavation near the adjacent soil area. The interior of Feature A consists of a relatively thin accumulation of sediment and organic debris. The excavated material from Feature B and Feature C has been redeposited within each excavation as loosely piled *pāhoehoe* cobble and small boulder fill. Feature A measures 0.9 m N/S by 0.8 m E/W. Feature B measures 1.1 m N/S by 1.3 m E/W. Feature C measures 0.7 m N/S by 0.6 m E/W. No artifacts or midden were observed in the area.

SIHP # 50-10-27-28799 is interpreted as an agricultural complex likely dating from prehistoric (pre-Contact) times. The three *pāhoehoe* excavations and/or the adjacent soil area may have supported various dryland cultivars.



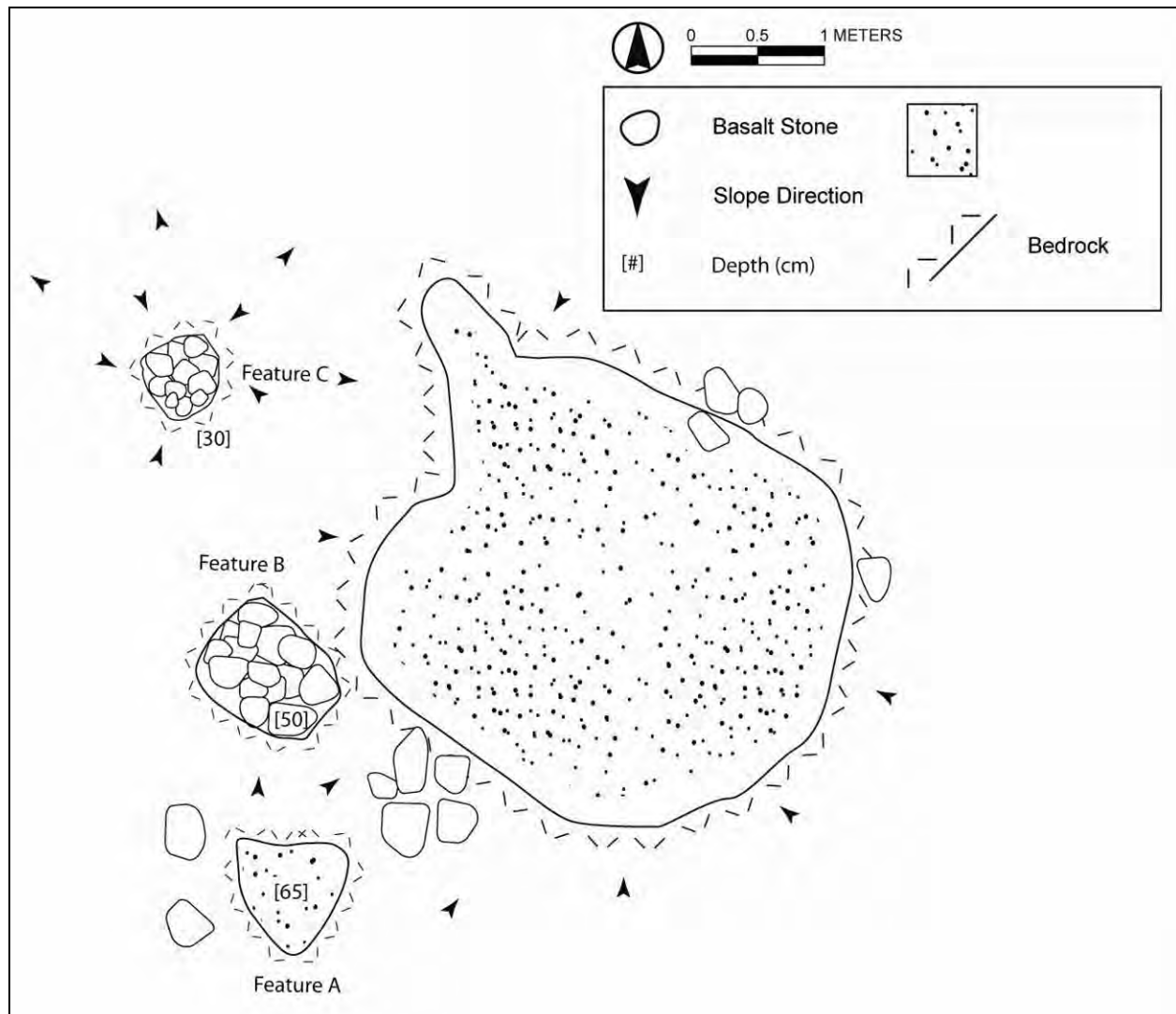


Figure 180. Plan view map of SIHP # -28799



Figure 181. Photograph of SIHP # -28799, Feature A to Feature C, view to northwest



Figure 182. Detail of SIHP # -28799 Feature A, view to northwest





Figure 183. Photograph of SIHP # -28799 Feature B, view to northwest



Figure 184. Photograph of SIHP # -28799 Feature C, view to northwest

**5.2.48 SIHP # 50-10-27-28800****Temp. Site No.:** T-091010-13 (Monahan et al. 2011)**Site Type:** *Pāhoehoe* Excavation**No. of Features:** 1**Functional Interpretation:** Quarrying**Probable Age:** Prehistoric (Pre-Contact)**Overall Dimensions:** 0.6 m N/S by 0.8 m E/W**Topography:** Level *pāhoehoe* flow**Elevation:** 84 ft (26 m) AMSL**Description:**

**SIHP # 50-10-27-28800** is a *pāhoehoe* excavation located approximately 314 m northwest of the intersection of Hina Lani Street and the Queen Ka'ahumanu Highway (see Figure 20) within the portion of the project area that is adjacent to the Kaloko-Honokōhau National Historical Park (Figure 185, Figure 186). The *pāhoehoe* excavation consists of an area where an overlying, uplifted sheet of *pāhoehoe* has been quarried and removed exposing a lower *pāhoehoe* surface. Quarry marks and scalloping were observed along the edges of the excavation. The interior surface of the *pāhoehoe* excavation consists of bare *pāhoehoe* bedrock with no sediment accumulation. The material (*pāhoehoe* cobbles and small boulders) that was removed from the *pāhoehoe* excavation scatters the surface near the excavation opening. The *pāhoehoe* excavation measures 0.6 m N/S by 0.8 m E/W. No artifacts or midden were observed in the area.

SIHP # 50-10-27-28800 is interpreted as a possible raw material quarrying locality likely dating from prehistoric (pre-Contact) times. The *pāhoehoe* excavation lacks sediment accumulation that would indicate potential agricultural use.





Figure 185. Photograph of SIHP # -28800, view to north

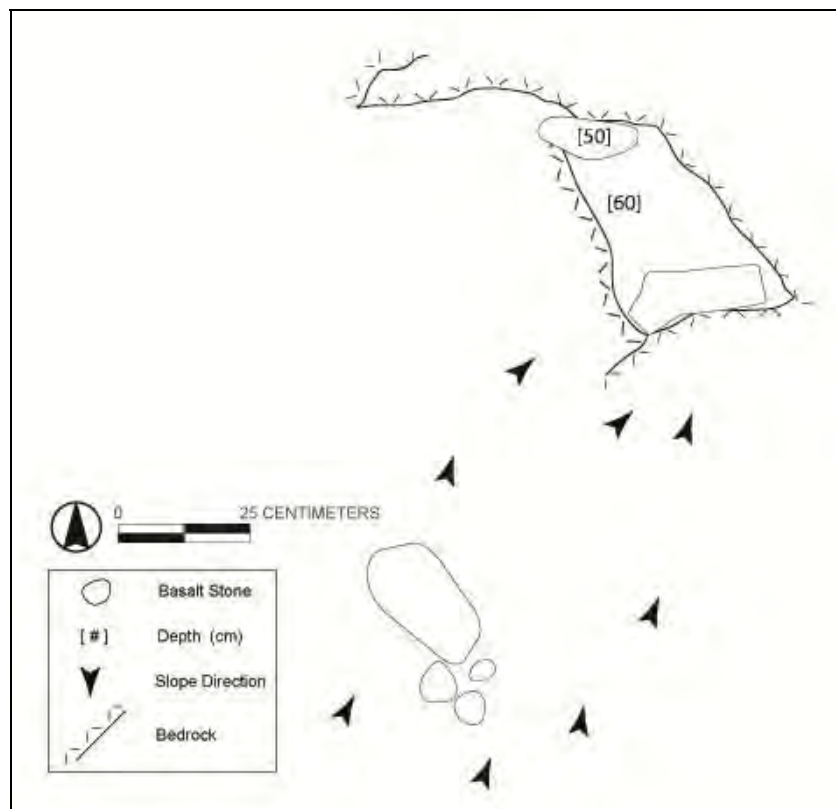


Figure 186. Plan view map of SIHP # -28800

**5.2.49 SIHP # 50-10-27-28801****Temp. Site No.:** T-091710-3/4 (Monahan et al. 2011)**Site Type:** Modified Outcrop Complex**No. of Features:** 2**Functional Interpretation:** Agriculture**Probable Age:** Prehistoric (Pre-Contact)**Overall Dimensions:** 7.8 m N/S by 10.5 m E/W**Topography:** Undulating *pāhoehoe* flow, level to slightly sloping**Elevation:** 79-82 ft (24-25 m) AMSL**Description:**

**SIHP # 50-10-27-28801** is a complex consisting of two features (Feature A and Feature B) located approximately 375 m northwest of the intersection of Hina Lani Street and the Queen Ka'ahumanu Highway (Figure 187 to Figure 190, and see Figure 21).

**Feature A** and **Feature B** are modified outcrops that consist of adjacent areas of loosely-piled *pāhoehoe* cobbles and small boulders located on top of undulating *pāhoehoe* bedrock. Multiple, small soil pockets are present within the immediate area that support the dense growth of *koa haole*, *kiawe* and grasses. Feature A measures 2.8 m N/S by 1.7 m E/W with a maximum height of 0.5 m above the adjacent ground surface. Feature B measures 3.2 m N/S by 1.5 m E/W with a maximum height of 0.9 m above the adjacent ground surface. No artifacts or midden were observed in the area.

SIHP # -28801 is interpreted as an agricultural complex likely dating from prehistoric (pre-Contact) times. The two modified outcrops, consisting of loosely piled material, appear to have been constructed during the clearing of adjacent soil areas to support various dryland cultivars.





Figure 187. Photograph of SIHP # -28801 Feature A, view to southwest



Figure 188. Photograph of SIHP # -28801 Feature B, view to east

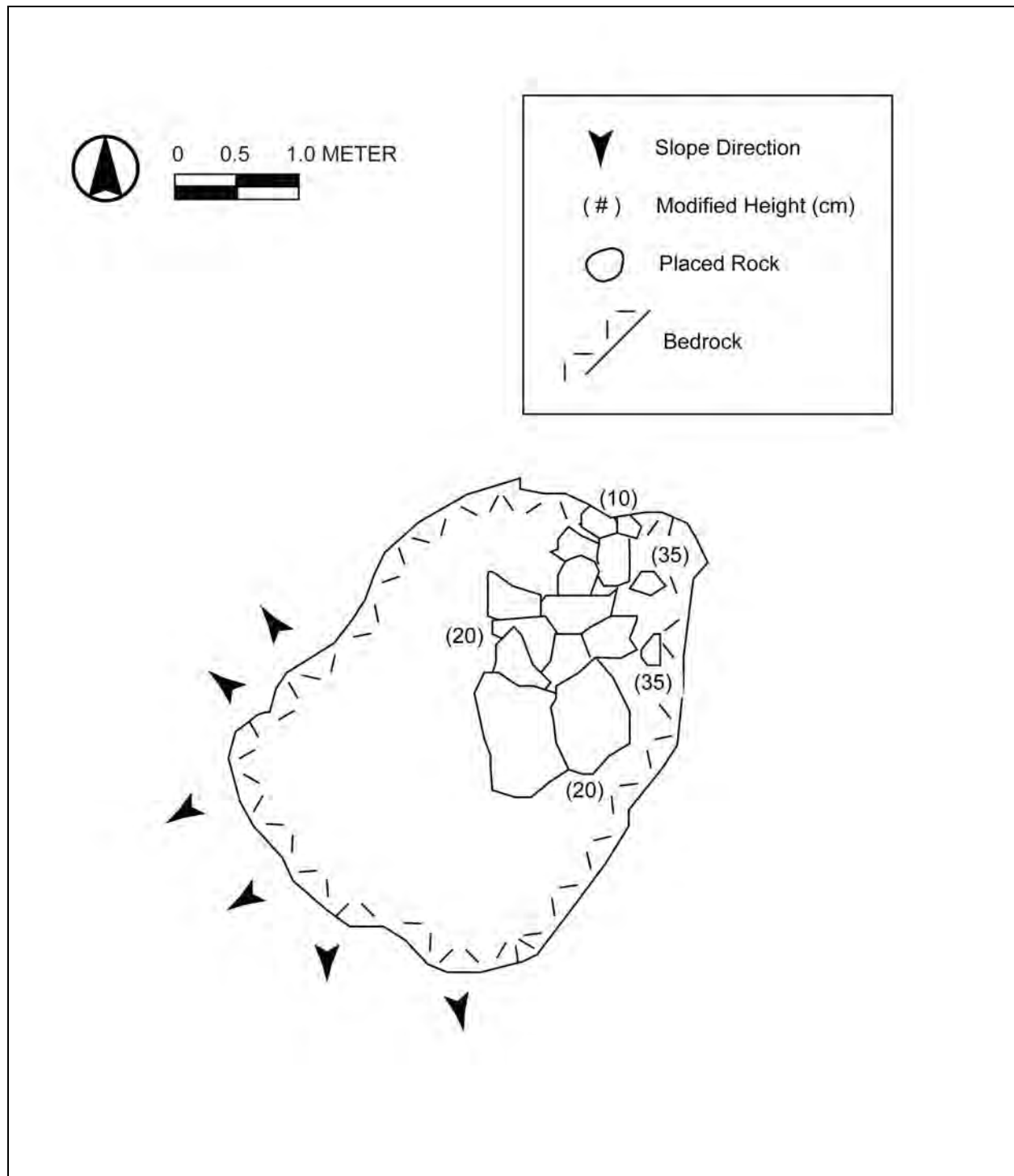


Figure 189. Plan view map of SIHP # -28801 Feature A



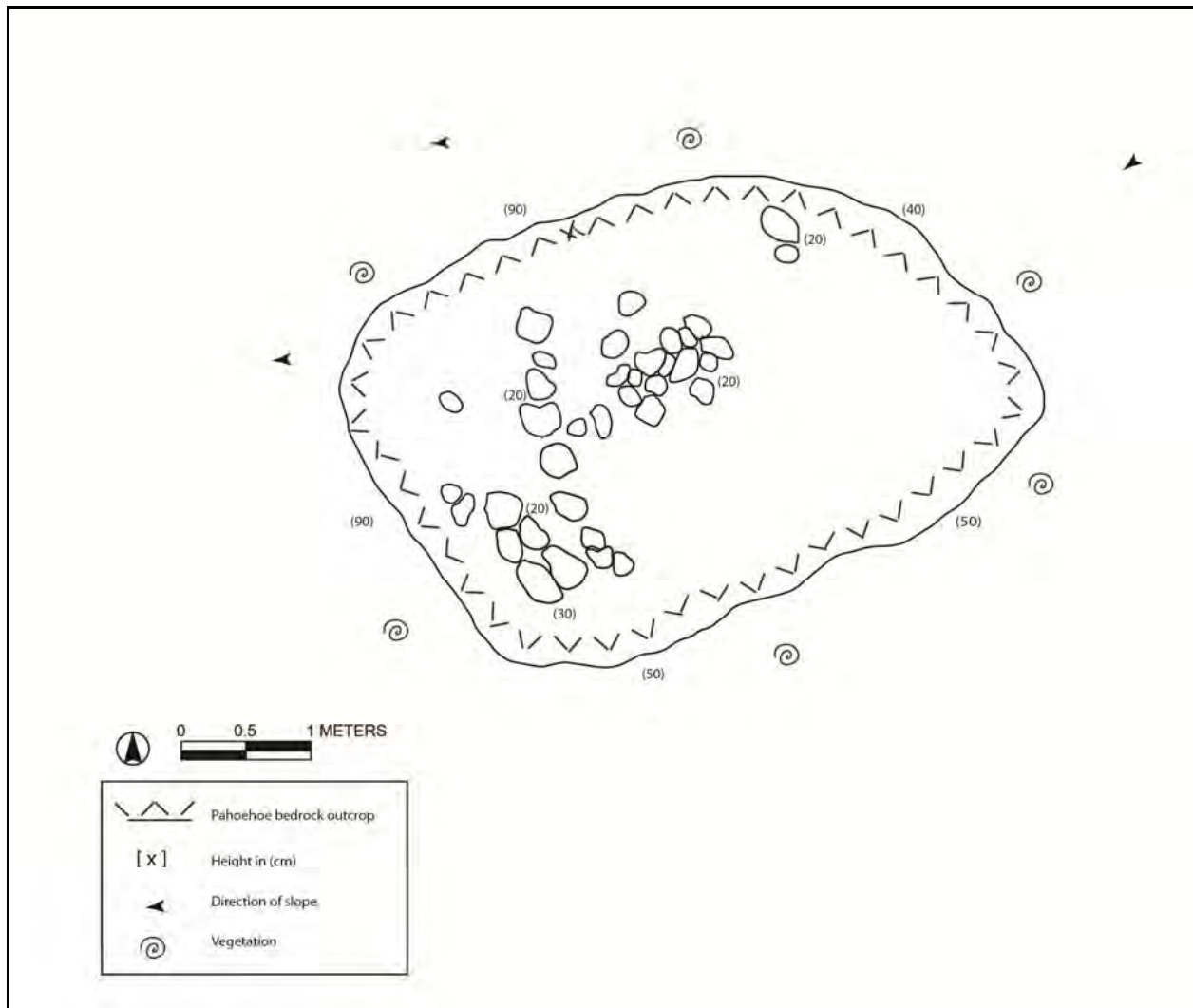


Figure 190. Plan view map of SIHP # -28801 Feature B

**5.2.50 SIHP # 50-10-27-19947****Temp. Site No.:** 7 (Walsh and Hammatt 1995)**Site Type:** Stacked Rocks**No. of Features:** 3**Functional Interpretation:** Ahupua'a Boundary Marker (Kohanaiki and Kaloko)**Probable Age:** Prehistoric (Pre-Contact)**Overall Dimensions:** 5.0 m N/S by 5.0 m E/W**Topography:** Site located in a low spot on gently undulating *pāhoehoe* terrain**Elevation:** 83 ft (26 m) AMSL**Description:**

**SIHP # 50-10-27-19947** was first formally described by CSH in 1995 (Walsh and Hammatt 1995) (see Figure 21). The site was revisited during the archaeological inventory survey by Monahan et al. (2011) and found to be in the same physical condition (Figure 191, Figure 192). The site was originally described by Walsh and Hammatt (1995:49) as follows:

Site 19947 consists of three small cairns, designated Features A-C. The cairns are located within a low point of gently undulating pahoehoe terrain. They are constructed of loosely stacked pahoehoe cobbles and small boulders on top of slightly raised pahoehoe outcrops. Two of the cairns are aligned in a roughly north-south axis and the third is to the west of these, forming a triangle.

The cairns are located at the approximate *ahupua'a* boundary between Kohanaiki and Kaloko, and are considered to be *ahupua'a* boundary markers. All three are in fair to good condition.

See Appendix B for descriptions and dimensions of individual features at SIHP # -19947.

During the consultation process, an NHO representative, Ruby McDonald, requested that photographs of all three features from this site be included in the documentation for this project (instead of the single, representative photograph currently included in this report). All three features will be photographed during Data Recovery work; the three features are recommended for relocation out of the construction zone into a safe place within the ROW.

Walsh and Hammatt (1995) recommended SIHP # -19947 eligible for the National and State Registers of Historic Places under criterion D for its information relevant to prehistory and history. The site was recommended for "no further work" by Walsh and Hammatt (1995). The Final Archaeological Treatment Plan (1999) did not include this site, and, thus, concurred with CSH's 1995 recommendation.



Figure 191. Representative stacked rock feature at SIHP -19947, view to west

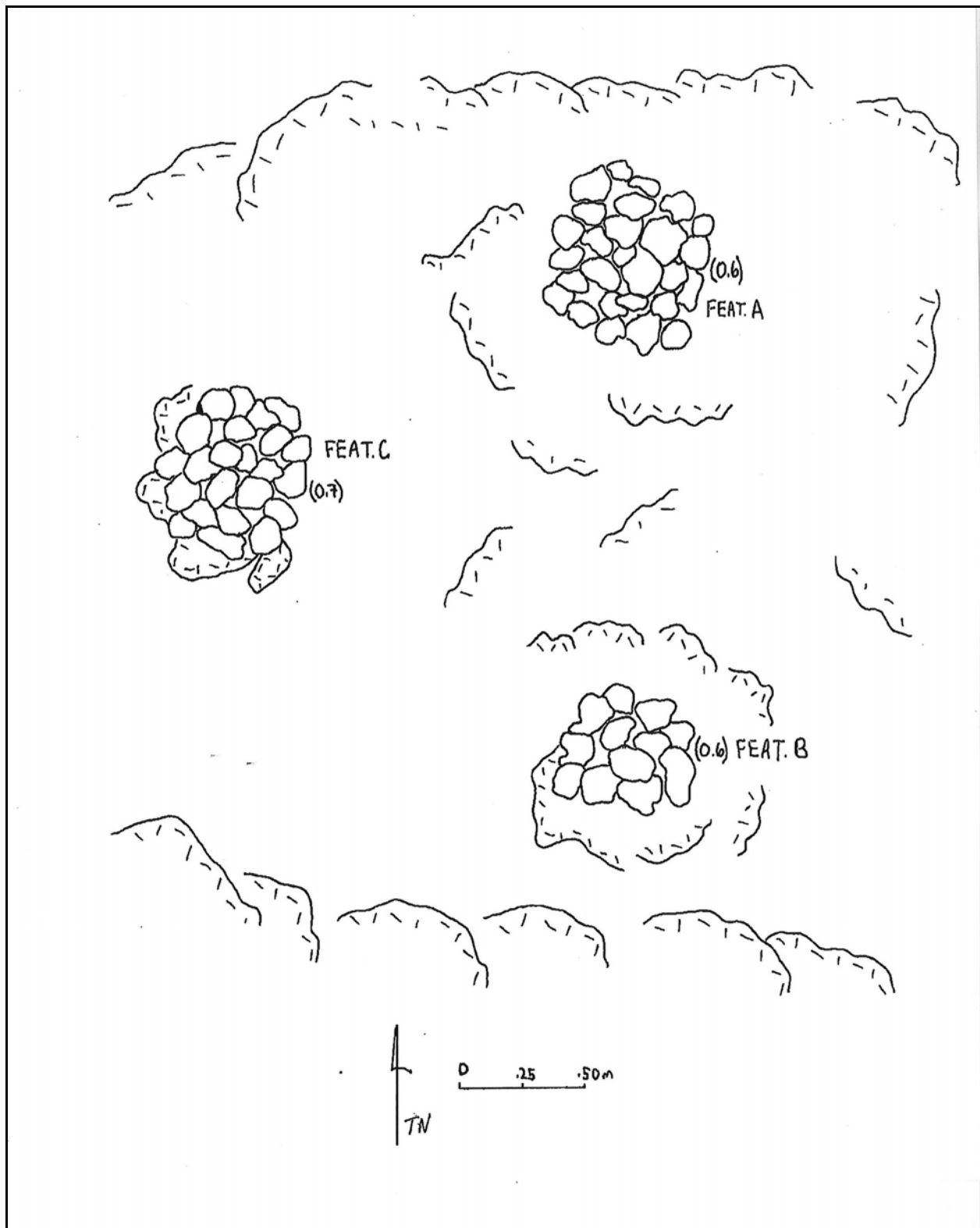


Figure 192. Plan view map of SIHP # - 19947 (taken from Walsh and Hammatt 1995)



**5.2.51 SIHP # 50-10-27-28802****Temp. Site No.:** T-091710-7/8 (Monahan et al. 2011)**Site Type:** Complex**No. of Features:** 3**Functional Interpretation:** Temporary Habitation**Probable Age:** Prehistoric (Pre-Contact)**Overall Dimensions:** 9.2 m N/S by 8.9 m E/W**Topography:** *Pāhoehoe* tumulus, level to moderately sloping**Elevation:** 82-86 ft (25-26 m) AMSL**Description:**

**SIHP # 50-10-27-28802** is a complex consisting of three features (Feature A to Feature C) located approximately 500 m northwest of the intersection of Hina Lani Street and the Queen Ka'ahumanu Highway (Figure 193, and see Figure 21).

**Feature A** is an overhang shelter created by the collapse of a large lava blister located along the southeastern edge of a *pāhoehoe* tumulus (Figure 194, Figure 195). Feature A measures 5.5 m N/S by 3.4 m E/W with a maximum interior ceiling height of 1.3 m. A wall segment composed of stacked *pāhoehoe* cobbles and small boulders is constructed in front of the southern half of the overhang shelter entrance in line to the overhang drip line. The wall segment measures 3.1 m N/S by 1.2 m E/W with a maximum height of 0.4 m. A significant amount of collapse is present on the eastern side of the wall suggesting the wall may have originally extended upward to the drip line. The interior of the overhang shelter consists of areas that have been cleared and filled to create a level surface. The cleared areas consist of relatively smooth *pāhoehoe* bedrock. The filled areas, located along the western and northern edges of the overhang shelter interior, are composed of *pāhoehoe* pebbles, cobbles and small boulders. The western filled area consists of loosely-packed *pāhoehoe* pebbles and small cobbles. Several shell fragments and fish bones were observed within the fill. The northern filled area is composed of a stacked and faced *pāhoehoe* boulder wall that separates Feature A and Feature B, which is overlain with loosely-packed *pāhoehoe* cobbles and pebbles. A portion of unmodified coconut shell was observed within a gap in the northern filled area. A small, impassable lava tube with a maximum ceiling height of 0.3 m extends from the southern end of the overhang shelter. No artifacts were observed within Feature A.

**Feature B** is a modified lava blister located immediately adjacent to Feature A along the southeastern edge of a *pāhoehoe* tumulus (Figure 196). Feature B measures 2.8 m N/S by 2.1 m E/W with a maximum interior ceiling height of 1.2 m. The stacked and faced wall that separates Feature A and Feature B, described above, forms the western edge and extent of the lava blister interior. The lava blister continues to the east, tapering to a ceiling height of less than 0.3 m. The interior surface of the blister is composed of loose *pāhoehoe* cobbles and small boulders. The opening of the lava blister has been partially blocked by a medium boulder-sized slab of *pāhoehoe* to the west. Another *pāhoehoe* slab upright as well as several small boulders, located in front of the lava blister opening, may have previously covered the entire entrance to the lava blister. No artifacts or midden were observed within Feature B.

**Feature C** is a mound located 4.5 m southeast of Feature B on top of the sloping *pāhoehoe* flow surface that extends from the edge of the tumulus (Figure 197). Feature C measures 1.2 m N/S by 0.7 m E/W with a maximum height of 0.4 m. The mound is constructed of loosely-piled *pāhoehoe* cobbles.

SIHP # -28802 is interpreted as a probable temporary habitation or refuge area. The presence of small amounts of shell midden, fish bone, and a coconut shell fragment as well as clearing and level of the interior surface of Feature A provide evidence of temporary use and habitation. The wall constructed along the south end of Feature A and the *pāhoehoe* slabs and boulders located at the opening to Feature B suggest the entrances may have been partially concealed and the features could have functioned as a refuge area. The mound (Feature C) has been included as a feature of SIHP # -28802 due to its proximity, but the specific function of the mound is indeterminate. The site likely dates from prehistoric (pre-Contact) times.

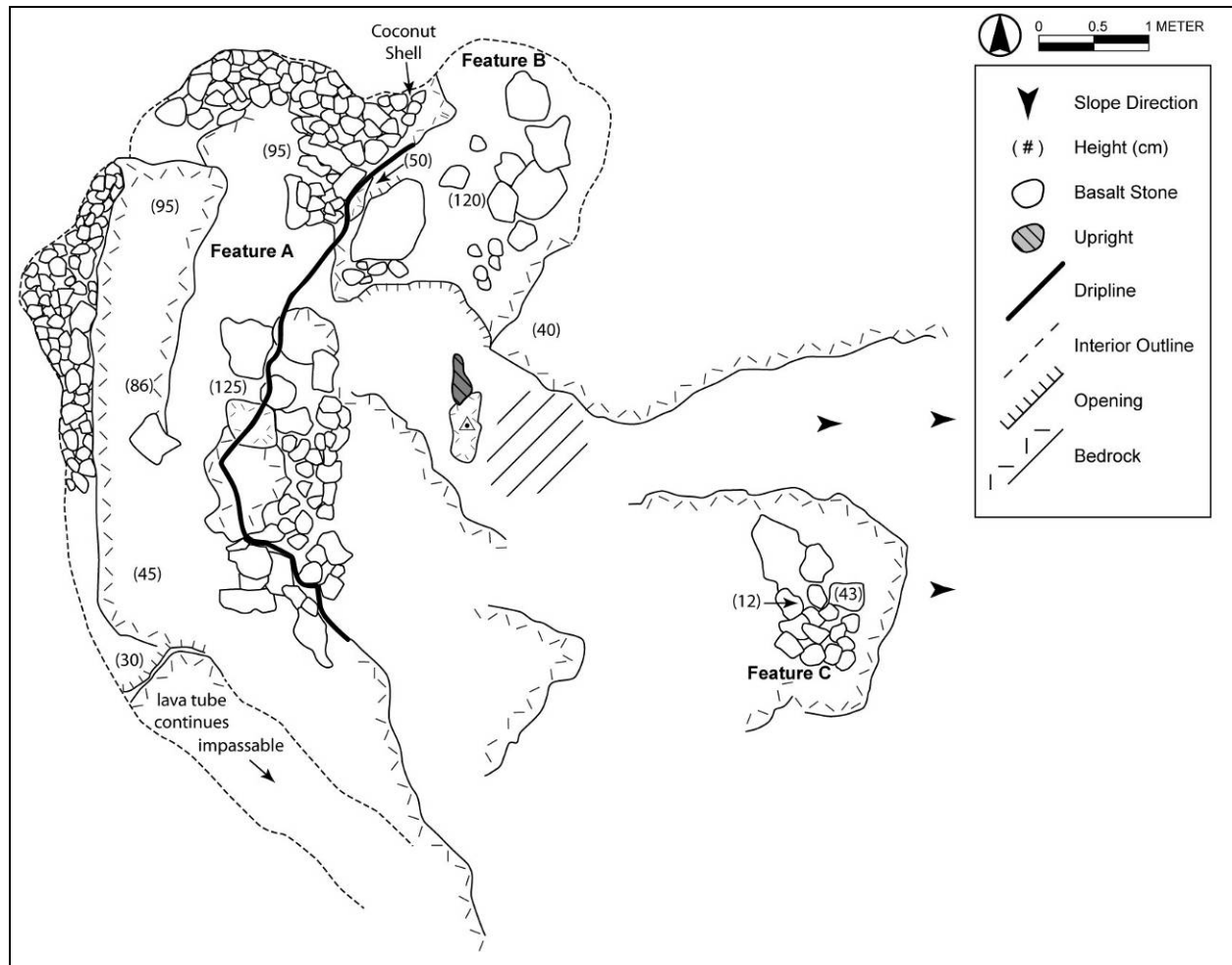


Figure 193. Plan view map of SIHP # -28802



Figure 194. Photograph of SIHP # -28802 showing Feature A (overhang shelter, center of image) and Feature B (modified lava blister, opening in lower right corner), view to west



Figure 195. Detail of Feature A, SIHP # -28802, view to northwest





Figure 196. Photograph of SIHP # -28802 Feature B, view to northwest



Figure 197. Photograph of SIHP # -28802 Feature C, view to southwest

**5.2.52 SIHP # 50-10-27-28803****Temp. Site No.:** T-091710-9 (Monahan et al. 2011)**Site Type:** Complex**No. of Features:** 2**Functional Interpretation:** Indeterminate-Possible Agricultural Clearing Features**Probable Age:** Indeterminate**Overall Dimensions:** 4.0 m N/S by 6.0 m E/W**Topography:** *Pāhoehoe* tumulus, level to moderately sloping**Elevation:** 87 ft (27 m) AMSL**Description:**

**SIHP # 50-10-27-28803** is a complex consisting of two features (Feature A and Feature B) located approximately 505 m northwest of the intersection of Hina Lani Street and the Queen Ka'ahumanu Highway (Figure 198 to Figure 200, and see Figure 21).

**Feature A** is a mound that is constructed on top of a relatively flat section of exposed *pāhoehoe* bedrock located adjacent to a deep crevice (Feature B) that extends along the northeastern side of a *pāhoehoe* tumulus. Feature A measure 1.8 m N/S by 2.5 m E/W with a maximum height of 0.5 m. The mound is comprised of unevenly weathered *pāhoehoe* cobbles and small boulders. It seems likely that the unevenly weathered material may have been removed from the adjacent crevice to the south (Feature B) or pushed by a bulldozer from the north, where bulldozer disturbance was noted. No artifacts or midden were observed in the area.

**Feature B** is a partially filled crevice located along the base of a *pāhoehoe* tumulus adjacent to Feature A. Feature B measures 1.6 m N/S by 5.7 m E/W. The western portion of Feature B is open and appears to be unmodified. As stated above, the unevenly weathered material that composes Feature A (mound) may have been removed from the western half of Feature B. The western portion is steep-sided with a maximum depth of 1.2 m below the adjacent ground surface. The eastern portion of Feature B has been filled with *pāhoehoe* boulders and cobbles to be level with the adjacent ground surface. A Christmasberry tree is growing from the center of the crevice. No artifacts or midden were observed in the area.

From an archaeological perspective, this feature (B) retains little evidence of formal construction, and, therefore, both its age and function are indeterminate. Based on oral-historical information cited by NPS staff, and confirmed as accurate by Analu Josephides of the SHPD, in the context of discussing other features in the project area, it was considered possible that this site represented a burial. Subsurface testing of Feature B was conducted to determine if human skeletal remains were present. CSH obtained concurrence from the SHPD before testing this site.

**5.2.52.1 Test Excavation Findings**

Excavation of SIHP # -28803 Feature B was halted at the exposure of solid bedrock, which was encountered between 70 and 75 cmbs. No cultural material observed or recovered. No human skeletal remains were observed (Figure 201 to Figure 204).

SIHP # 50-10-27-28803 may represent an agricultural clearing feature. Subsurface testing did not reveal any human skeletal remains. The age of this feature is indeterminate.

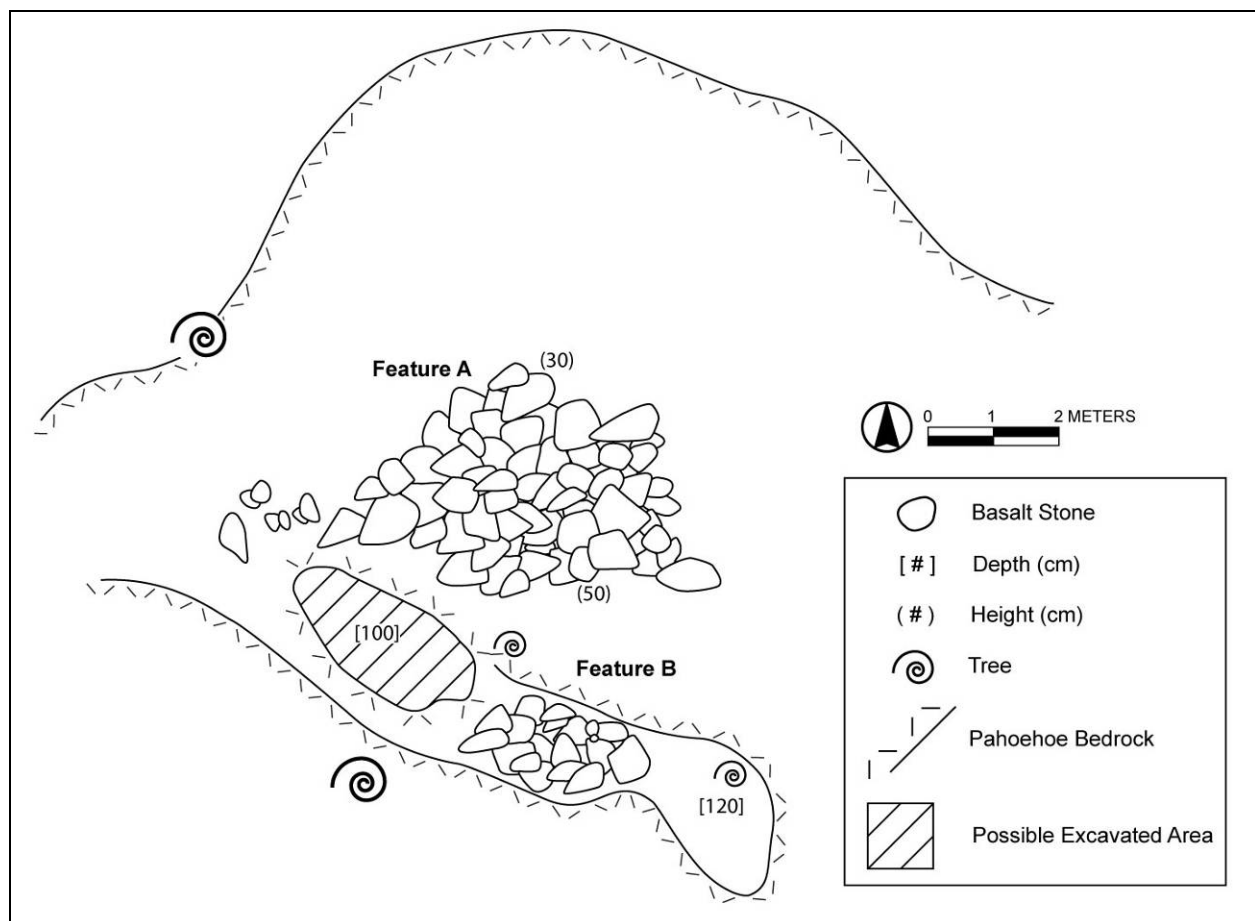


Figure 198. Plan view map of SIHP # -28803





Figure 199. Photograph of SIHP # -28803 Feature A (mound, left) and Feature B (partially filled crevice, right), view to southeast



Figure 200. Photograph of SIHP # -28803, view to east





Figure 201. Photograph of SIHP # -28803, pre-excitation, view to west



Figure 202. Photograph of SIHP # -28803, post-reconstruction, view to west





Figure 203. Profile view of the west wall of SIHP # -28803, post-excavation, view to west

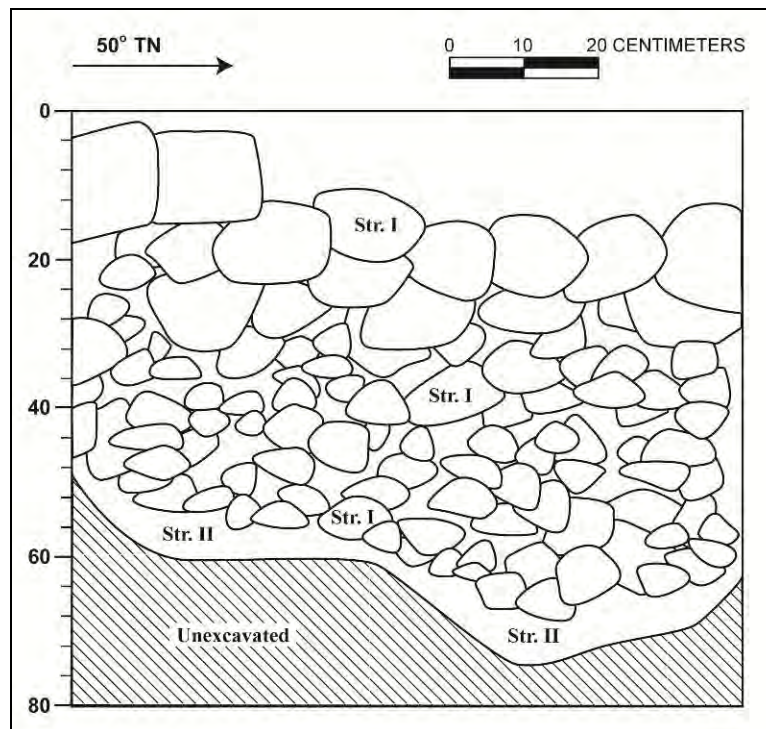


Figure 204. Stratigraphic profile of the west wall of SIHP # -28803, post-excavation

**5.2.53 SIHP # 50-10-27-28804****Temp. Site No.:** T-091710-11 (Monahan et al. 2011)**Site Type:** Filled Crevice**No. of Features:** 1**Functional Interpretation:** Indeterminate-Possible Agricultural Clearing Feature**Probable Age:** Indeterminate**Overall Dimensions:** 3.0 m N/S by 1.5 m E/W**Topography:** *Pāhoehoe* tumulus, moderately sloping**Elevation:** 86 ft (26 m) AMSL**Description:**

**SIHP # 50-10-27-28804** is a filled crevice located approximately 550 m northwest of the intersection of Hina Lani Street and the Queen Ka'ahumanu Highway (Figure 205, Figure 206, and see Figure 21). The filled crevice measures 3.0 m N/S by 1.5 m E/W and consists of *pāhoehoe* cobbles and boulders that have been placed within a natural crevice between the vertical face of a *pāhoehoe* tumulus to the south and natural, uplifted slabs of *pāhoehoe* bedrock to the north. A possible small lava blister opening was observed beneath the crevice fill beneath the vertical face of the tumulus (Figure 207). No artifacts or midden were observed in the area.

From an archaeological perspective, this feature retains little evidence of formal construction, and, therefore, both its age and function are indeterminate. Based on oral-historical information cited by NPS staff, and confirmed as accurate by Analu Josephides of the SHPD, in the context of discussing other features in the project area, it is possible that this site represents a burial. Testing (excavation or partial dismantling) of this feature would help determine if human skeletal remains are present. Prior to such testing, however, CSH recommends seeking SHPD's concurrence, in consultation with descendant families and with federally-recognized Native Hawaiian organizations.

**5.2.53.1 Test Excavation Findings**

Excavation of SIHP # -28804 was halted at the exposure of solid bedrock, which was encountered between 70 and 125 cmbs. No cultural material observed or recovered. No human skeletal remains were observed (Figure 208 to Figure 212).

SIHP # 50-10-27-28804 may represent an agricultural clearing feature. Subsurface testing did not reveal any human skeletal remains. The age of this feature is indeterminate.

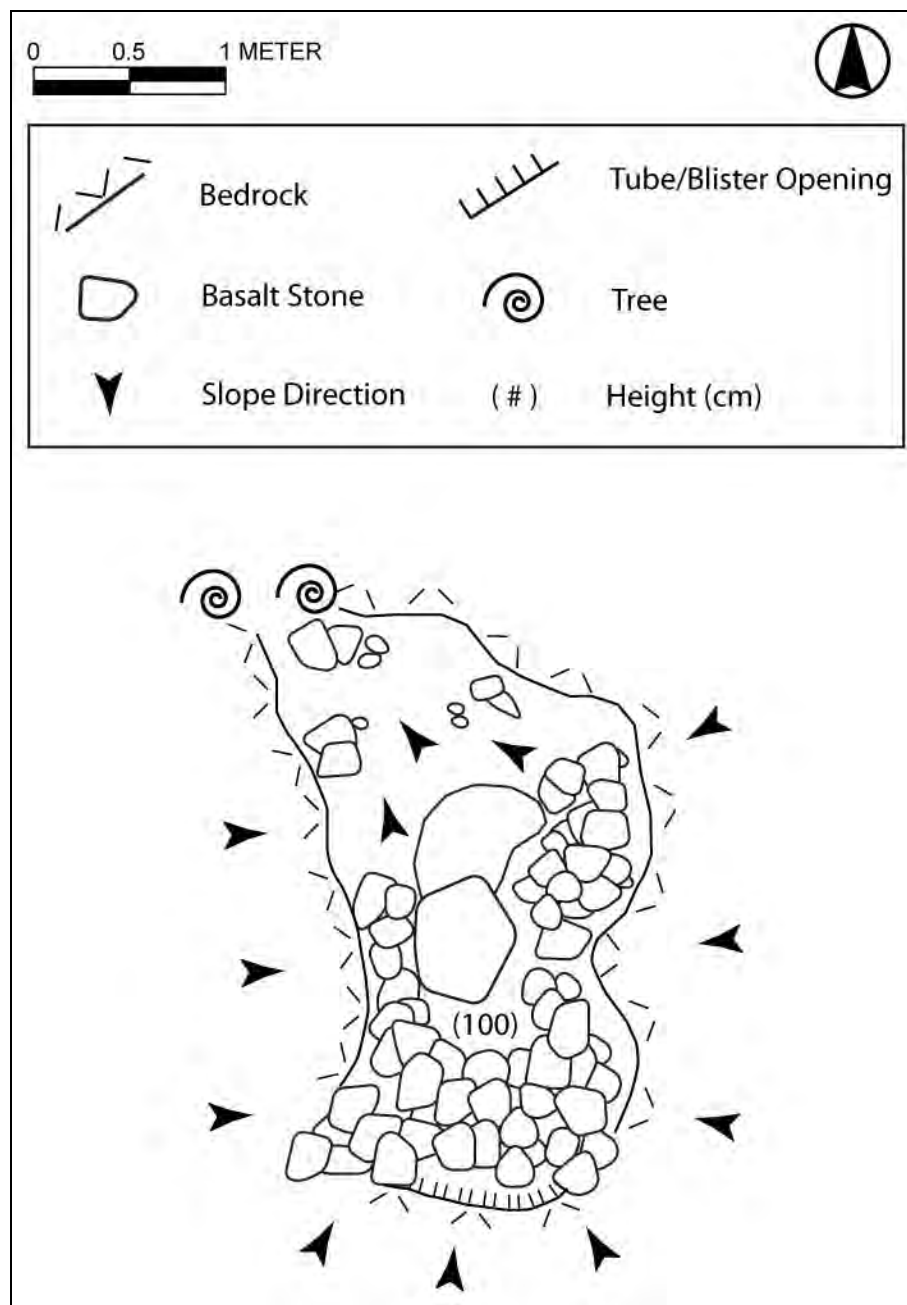


Figure 205. Plan view map of SIHP # -28804





Figure 206. Photograph of SIHP # -28804, view to southwest



Figure 207. Possible small lava blister opening within SIHP # -28804, view to south





Figure 208. SIHP # -28804, pre-excavation, view to south



Figure 209. SIHP # -28804, post-reconstruction, view to south

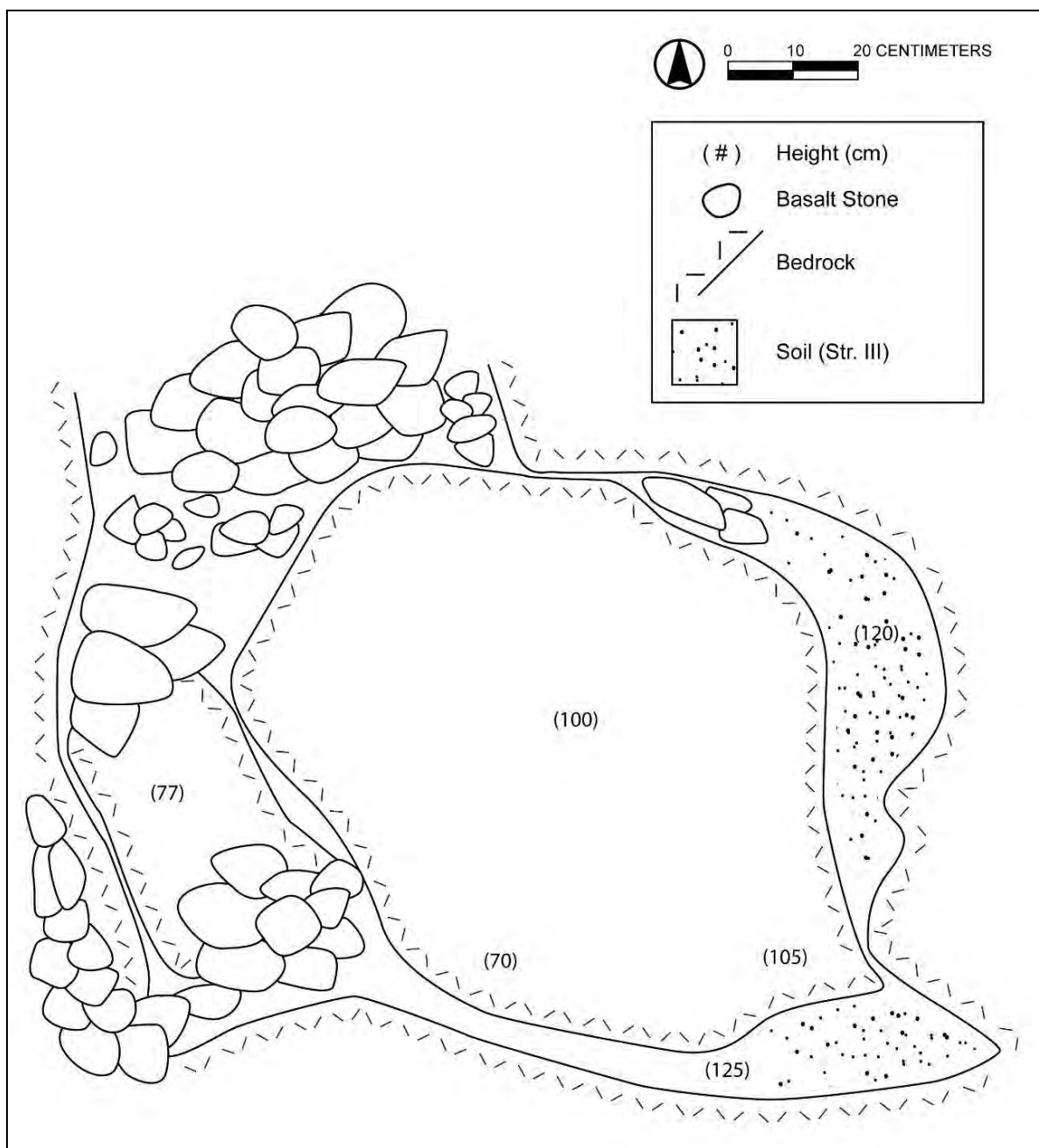


Figure 210. Plan view map of SIHP # -28804, post-excavation, showing sediment accumulation areas (Stratum III)





Figure 211. General view of SIHP # -28804, post-excavation, view to south



Figure 212. General view of SIHP # -28804, post-excavation, showing sediment accumulation areas, view to south



**5.2.54 SIHP # 50-10-27-28805****Temp. Site No.:** T-091710-14 (Monahan et al. 2011)**Site Type:** Modified Outcrop**No. of Features:** 1**Functional Interpretation:** Agriculture/Clearing**Probable Age:** Prehistoric (Pre-Contact)**Overall Dimensions:** 4.0 m N/S by 3.5 m E/W**Topography:** *Pāhoehoe* tumulus, level to moderately sloping**Elevation:** 86 ft (26 m) AMSL**Description:**

**SIHP # 50-10-27-28805** is a modified outcrop approximately 438 m southeast of the intersection of Hulikoa Drive and the Queen Ka'ahumanu Highway (Figure 213, Figure 214, and see Figure 21). The modified outcrop consists of several *pāhoehoe* cobbles and small boulders piled on top of a small *pāhoehoe* tumulus behind a natural ledge of *pāhoehoe*. The modified outcrop measures 4.0 m N/S by 3.5 m E/W with a maximum height of 0.2 m. Multiple, small soil pockets are present within the immediate area that support the dense growth of *koa haole*, *kiawe* and grasses. No artifacts or midden were observed in the area.

SIHP # -28805 is interpreted as an agricultural feature likely dating from prehistoric (pre-Contact) times. The modified outcrop may have been constructed during the clearing of adjacent soil areas and may have supported various dryland cultivars.



Figure 213. Photograph of SIHP # -28805, view to south

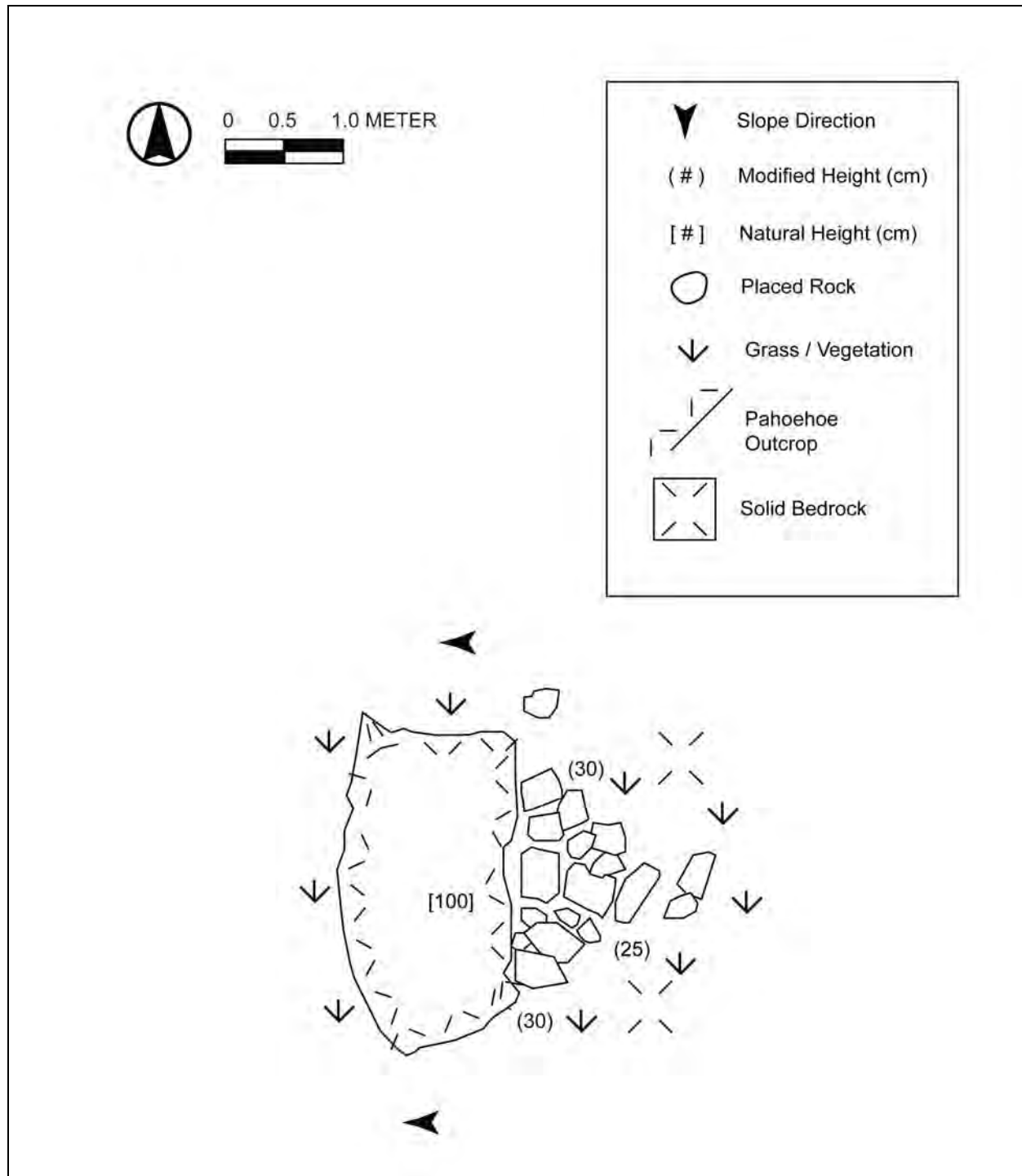


Figure 214. Plan view map of SIHP # -28805

**5.2.55 SIHP # 50-10-27-15324****Temp. Site No.:** 6 (Walsh and Hammatt 1995); 92-1118-12 (PHRI)**Site Type:** Trail (*mauka-makai*)**No. of Features:** 2**Functional Interpretation:** Transportation**Probable Age:** Indeterminate**Overall Dimensions:** See description below**Topography:** Both *a'a* and *pāhoehoe* sections**Elevation:** 60-65 ft (18-20 m) AMSL (in the ROW)**Description:**

**SIHP # 50-10-27-15324** was first formally described by PHRI, Inc. (see Figure 21). In 1995, CSH (Walsh and Hammatt 1995) described the site and noted the presence of PHRI's site tag. The site was revisited during the current archaeological inventory survey and found to be in the same physical condition (Figure 215, Figure 216). The trail was described by Walsh and Hammatt (1995:39) as follows:

Site 15324 consists of two converging trail segments designated Features A and B . . . Both trail segments extend in a roughly *mauka-makai* direction, but angle toward each other and converge into one trail that continues inland. The point where the two trails meet is located at the edge of the bulldozed portion of the present highway right of way, 164 feet (50 m.) from the *makai* edge of the highway pavement. Both trail segments were observed to continue over 300 feet (91 m.) *makai*. On the *mauka* side of the highway, the trail was observed at the edge of the bulldozed portion of the powerline (the new right-of-way boundary) and continuing inland at 65 degrees T.N. [true north] for at least another 100 feet (30 m.).

Both trail segments (Features A and B) average 0.6 wide and consist of a trodden surface that meanders over *pahoehoe* and *a'a* lava surfaces. A few isolated stepping stones consisting of *pahoehoe* slabs were observed along Feature B. Both trail segments are well worn and clearly visible, especially on the *a'a* lava surfaces. The portion of Feature A within the new right-of-way is approximately 40 feet (12 m.) long, and the portion of Feature B within the new right-of-way is 50 feet (15 m.) long.

Walsh and Hammatt (1995) recommended SIHP # -15324 eligible for the National and State Registers of Historic Places under criterion D for its information relevant to prehistory and history. The site was recommended for preservation "to the extent possible within the proposed highway widening plans" and "those portions of [the site] that cannot be avoided [should] be included in a program of data recovery" (Walsh and Hammatt 1995:57). The Final Archaeological Treatment Plan (1999), however, called for "interim protection" only for SIHP # -15324.





Figure 215. Detail of a portion of SIHP # -15324, view to east (note stepping stone under the north arrow)

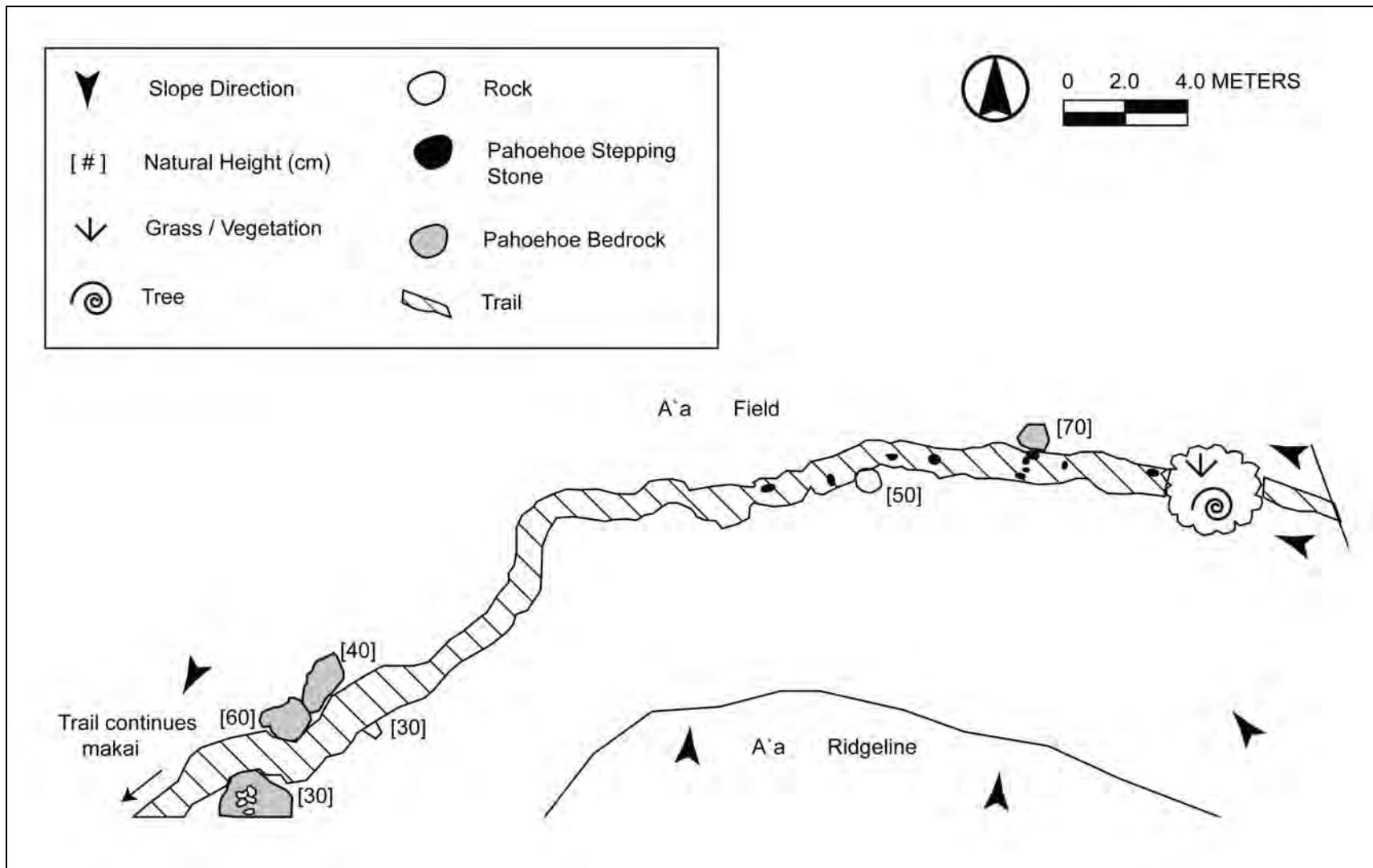


Figure 216. Plan view map of SIHP # -15324

**5.2.56 SIHP # 50-10-27-19946****Temp. Site No.:** N/A**Site Type:** Trail (*mauka-makai*)**No. of Features:** 1**Functional Interpretation:** Transportation**Probable Age:** Post-Contact**Overall Dimensions:** See description below**Topography:** 'a'ā**Elevation:** 60-65 ft (18-20 m) AMSL (in the ROW)**Description:**

**State Site # 19946** is a trail (Figure 217 to Figure 221, and see Figure 21). The trail is located approximately 44 meters west of Queen Ka'ahumanu Hwy. at the edge of the bulldozer push. Matsuyama Market and the Pine Trees Café complex are across the Highway; to the south east. The trail trends *mauka/makai* over a rough 'a'ā flow and terminated at the edge of a *pāhoehoe* flow (next to a cairn) at its westernmost point; which is well outside the ROW. The trail terminates at its *mauka* end at a small pile of rubble at the edge of bulldozer push that was a result of the initial construction of Queen Ka'ahumanu Highway. As a result of heavy use the trail has settled below the surrounding 'a'ā flow, approx. 10-50 cm. The surface of the trail is fairly level and is comprised of small cobbles of *pāhoehoe* and 'a'ā. The portion within the ROW measures approx. 13.10 m long *mauka/makai* and is approximately 1.25-1.50 m wide. The trail is well defined and in good condition. No cultural material was observed within the ROW, however out of the ROW to the west on a rise in the trail there are the remains of a donkey on the trail; the bones are very weathered and sun-bleached. The trail appears to be a historic horse/donkey trail due to its width and the lack of stepping stones (not to mention the donkey bones in the trail). However, it could have evolved from a traditional period foot trail.





Figure 217. Photograph of SIHP # -19946, view to west



Figure 218. Photograph of SIHP # -19446, view to east



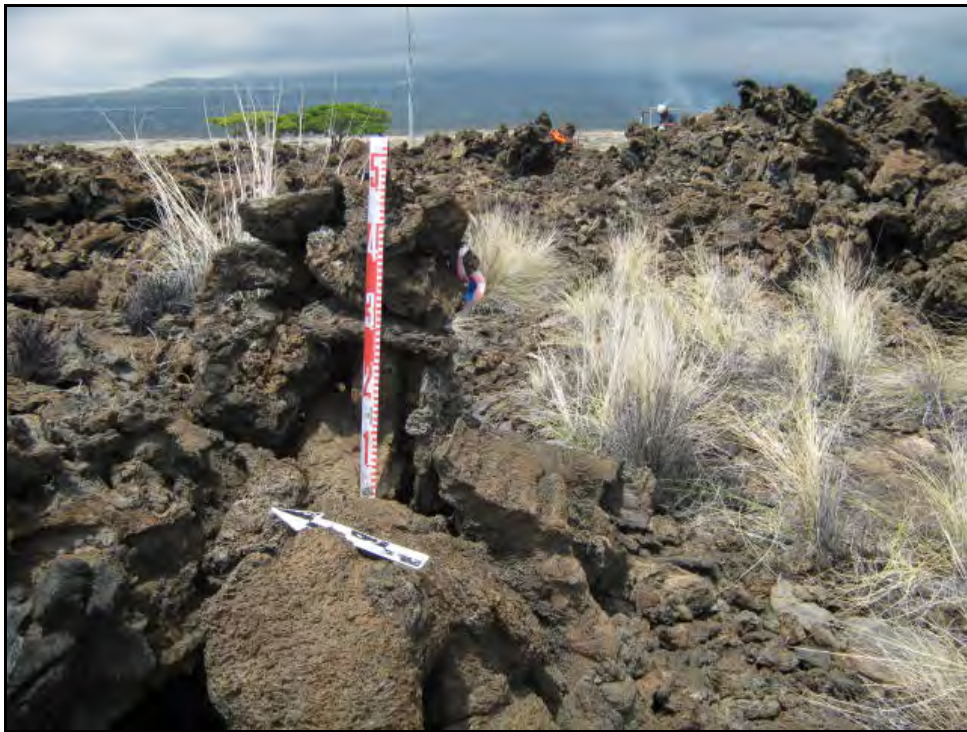


Figure 219. Photograph of cairn at the makai portion of SIHP # -19446

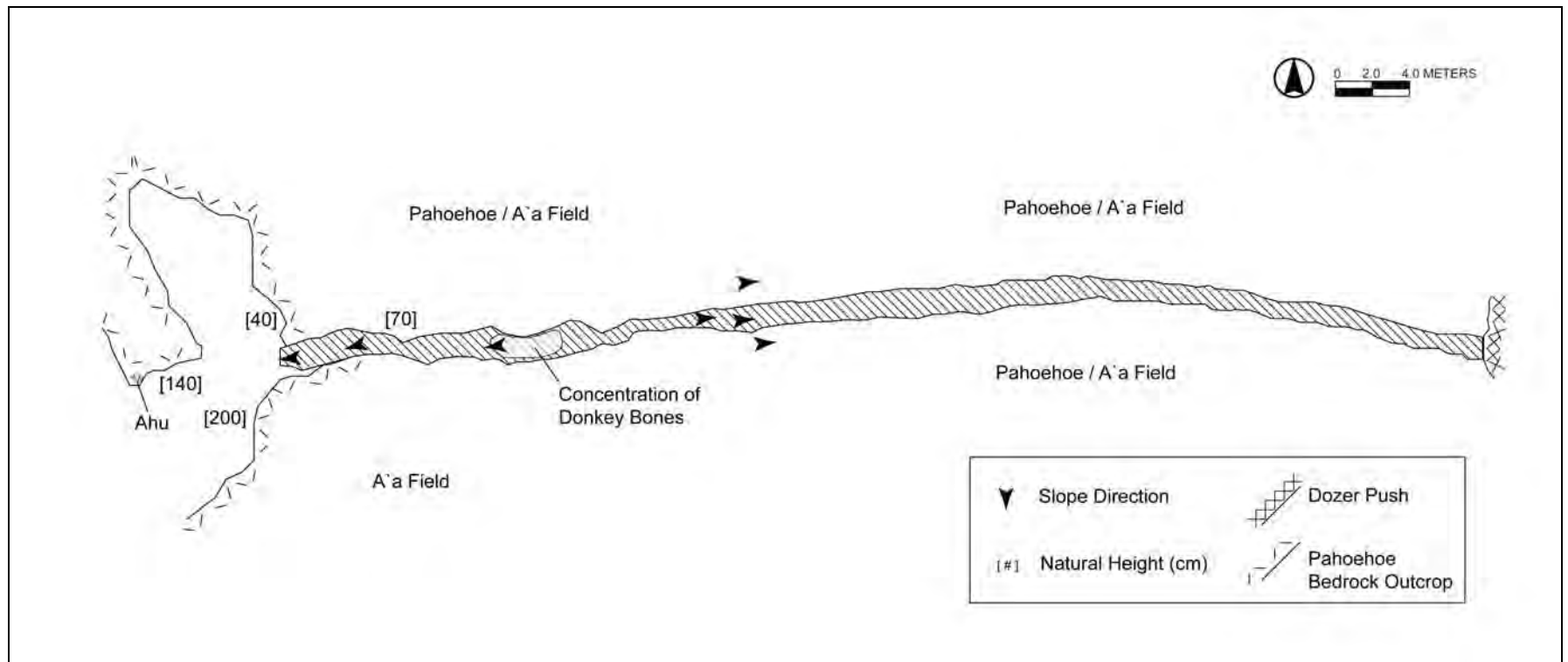


Figure 220. Plan view map of SIHP # -19446

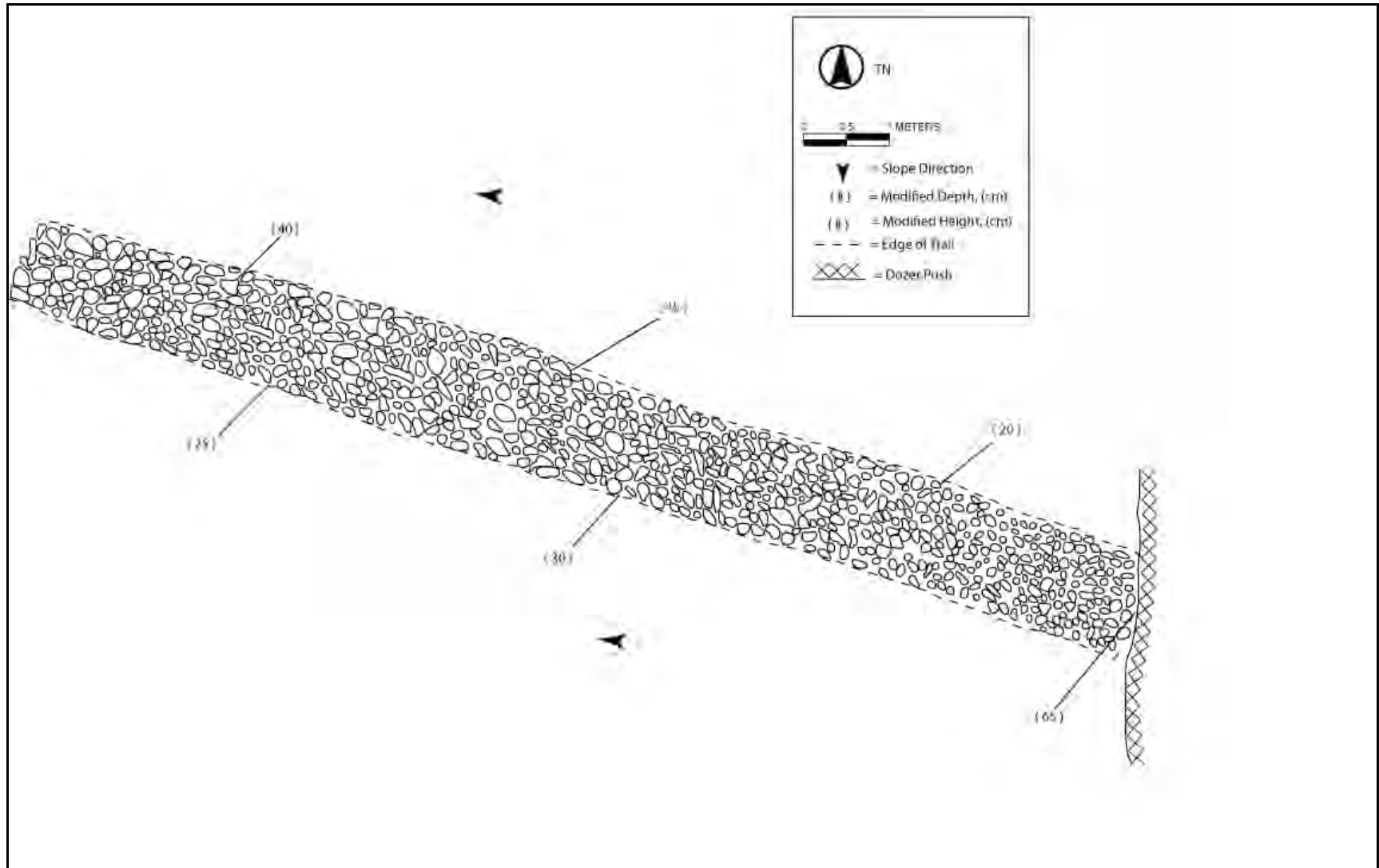


Figure 221. Close-up plan view map of eastern portion of SIHP # -19446

**5.2.57 SIHP # 50-10-27-28806****Temp. Site No.:** T-092110-1 (Monahan et al. 2011)**Site Type:** Mound**No. of Features:** 1**Functional Interpretation:** Possible Marker**Probable Age:** Indeterminate**Overall Dimensions:** 0.7 m N/S by 0.6 m E/W**Topography:** Undulating *pāhoehoe* flow, level to slightly sloping**Elevation:** 69 ft (21 m) AMSL**Description:**

**SIHP # 50-10-27-28806** is a mound located approximately 260 m northwest of the intersection of Hulikoa Drive and the Queen Ka'ahumanu Highway (Figure 222, Figure 223, and see Figure 22). The mound consists of one to three courses of loosely-piled *pāhoehoe* cobbles and small boulders on top of a relatively level surface of exposed *pāhoehoe* bedrock. The mound measures 0.7 m N/S by 0.6 m E/W with a maximum height of 0.5 m above the adjacent ground surface. One small boulder-sized *pāhoehoe* slab is positioned upright within the northern portion of the mound. No artifacts or midden were observed in the area.

SIHP # -28806 is interpreted as a possible marker that may be related to a trail or footpath. The proximity of the mound to the edge of Queen Ka'ahumanu Highway suggests that it may be a modern construction. Given all available evidence, it is not possible to unequivocally assign a date of construction to this site; therefore, CSH interprets its age as indeterminate.



Figure 222. SIHP # -28806, view to southeast



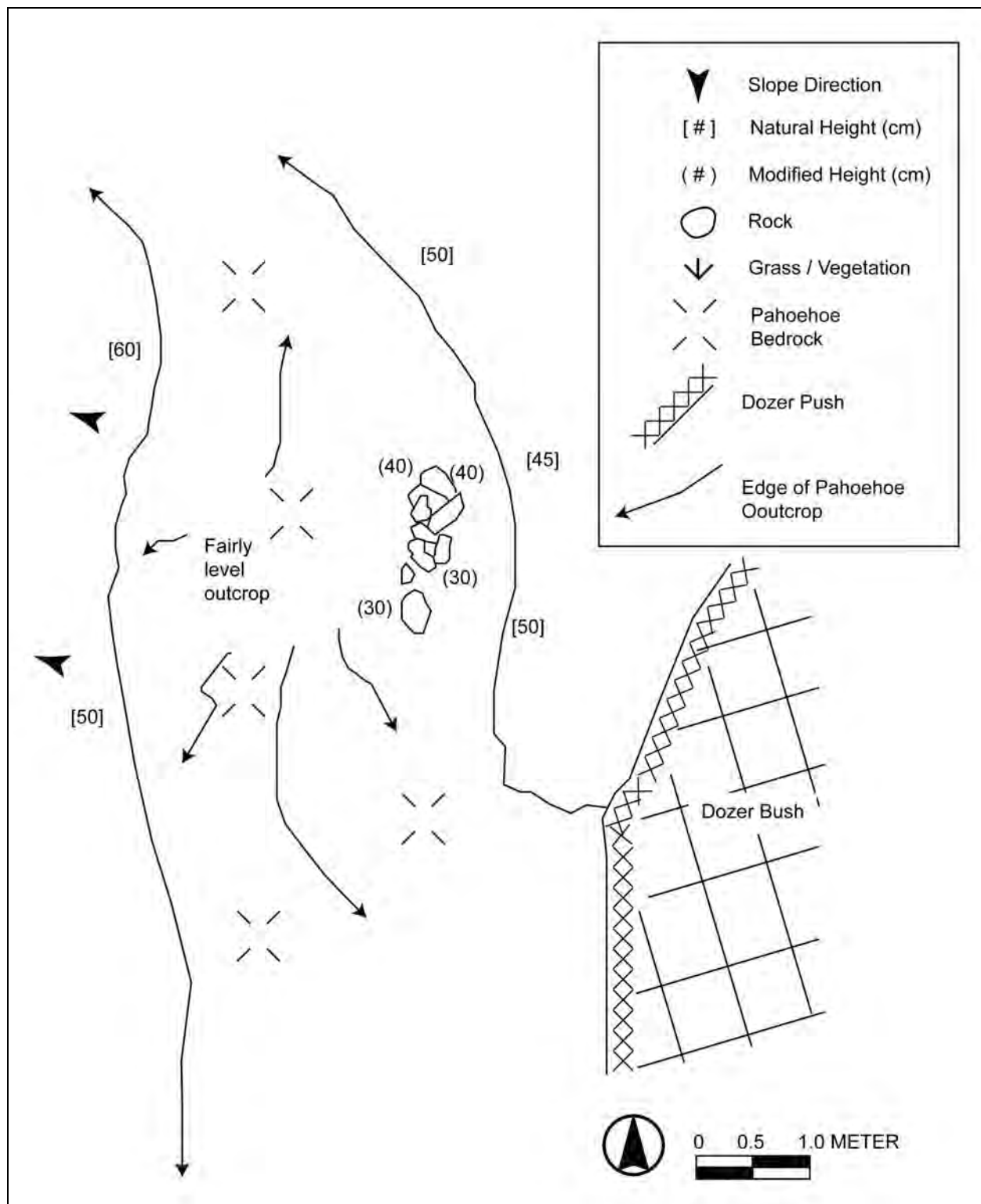


Figure 223. Plan view of SIHP # -28806

**5.2.58 SIHP # 50-10-27-28807****Temp. Site No.:** T-092110-2 (Monahan et al. 2011)**Site Type:** Filled Crevice**No. of Features:** 1**Functional Interpretation:** Indeterminate**Probable Age:** Indeterminate**Overall Dimensions:** 7.4 m N/S by 0.8 m E/W**Topography:** *Pāhoehoe* tumulus, level to moderately sloping**Elevation:** 72 ft (22 m) AMSL**Description:**

**SIHP # 50-10-27-28807** is a filled crevice approximately 420 m northwest of the intersection of Hulikoa Drive and Queen Ka'ahumanu Highway (Figure 224, Figure 225, and see Figure 22). It consists of a concentration of large, water-rounded and weathered coral cobbles and several small boulder-sized *pāhoehoe* slabs placed in a natural crevice on top of a *pāhoehoe* tumulus. The coral concentration, located near the center of the crevice, consists of one to three courses of loosely-piled cobbles. Individual coral cobbles are also scattered along the extent of the crevice to the northeast and southwest of the central coral cobble concentration. The filled crevice measures 7.4 m N/S by 0.8 m E/W. A wooden stake with deteriorated orange flagging tape tied to one end was observed *beneath* the central coral concentration (Figure 226).

The function of SIHP # -28807 is indeterminate. The presence of a modern wooden stake beneath the coral fill of the crevice suggests the site may be a modern construction or a previously disturbed historic or prehistoric (pre-Contact) construction.



Figure 224. Photograph of SIHP # -28807, view to west



Figure 225. Photograph of SIHP # -28807 showing the wooden stake with orange flagging tape beneath coral cobbles (at left), view to north

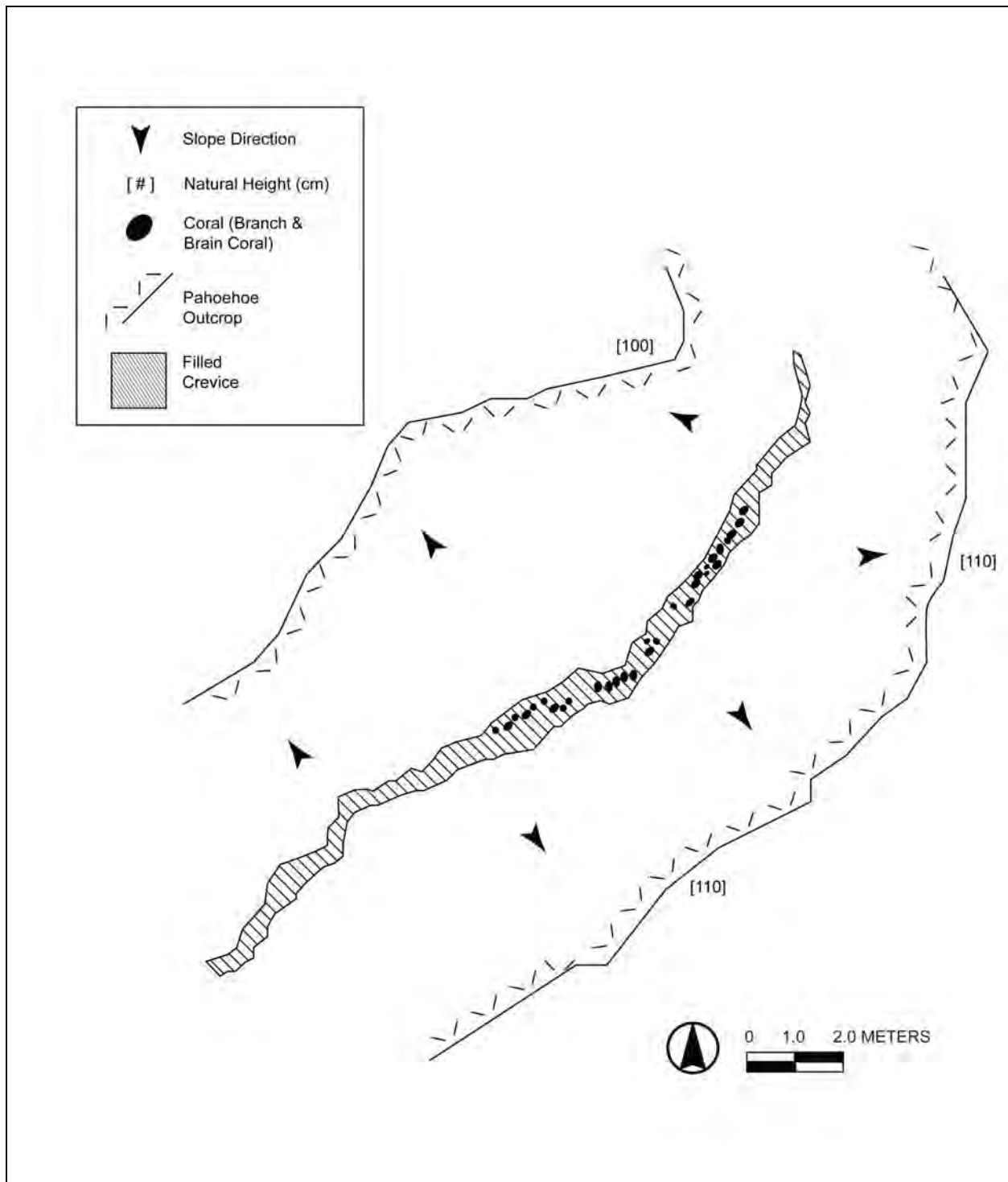


Figure 226. Plan view map of SIHP # -28807



**5.2.59 SIHP # 50-10-27-29345****Temp. Site Designation:** Coral Crevice (Harp 2011)**Site Type:** Coral-filled *Pāhoehoe* Crevice**No. of Features:** 3**Functional Interpretation:** Indeterminate**Probable Age:** Indeterminate**Overall Dimensions:** 4.0 m N/S by 4.0 m E/W**Topography:** Undulating and cracked *pāhoehoe* flow**Elevation:** 101 ft (31 m) AMSL**Description:**

**SIHP # 50-10-27-29345** consists of three discrete concentrations of coral fill inside of natural crevices / fissures along a large, uplifted section of *pāhoehoe*. The uplifted section of lava reaches a height of over 2.0 m above the surrounding ground surface. The crevices containing coral run along the long axis of the flow in an essentially north-to-south direction. The site location is depicted in Figure 23. This site was pointed out to CSH by Isaac Harp, and was inspected and assessed as part of the supplemental survey of the north segment of the current project area (Monahan and Wilkinson 2012).

The somewhat rounded pieces of coral are typically small to medium cobble-sized, ranging from white to gray in color. The majority of corals are located in the westernmost, or upper, crevice. Some corals were also observed scattered here and there (one or two pieces) in other cracks and at the base of the uplifted section of lava (Figure 227 to Figure 229).

An attempt was made to determine whether the corals are covering or marking something within the fissures. The corals appear to lie directly on the bottom, or “floors,” of the fissures, varying in depth from 80-135 cm below the top surface of the flows. Isaac Harp assisted in extracting several pieces of coral from the main, upper concentration. No cultural materials were observed beneath, or in association with, the removed corals.

In the professional opinion of the CSH archaeologists, the age and function of this site is indeterminate. It is possible that these features represent a modern placement of corals, perhaps a disturbance of the commonly-observed “Kona graffiti.” Other possible interpretations exist. Given the available evidence, it is unlikely that this site can be unequivocally dated.



Figure 227. Photograph of SIHP # -29345 showing a sample of coral removed by Isaac Harp to investigate what, if any, materials were located underneath, view to south



Figure 228. Detail of SIHP # -29345, view to north

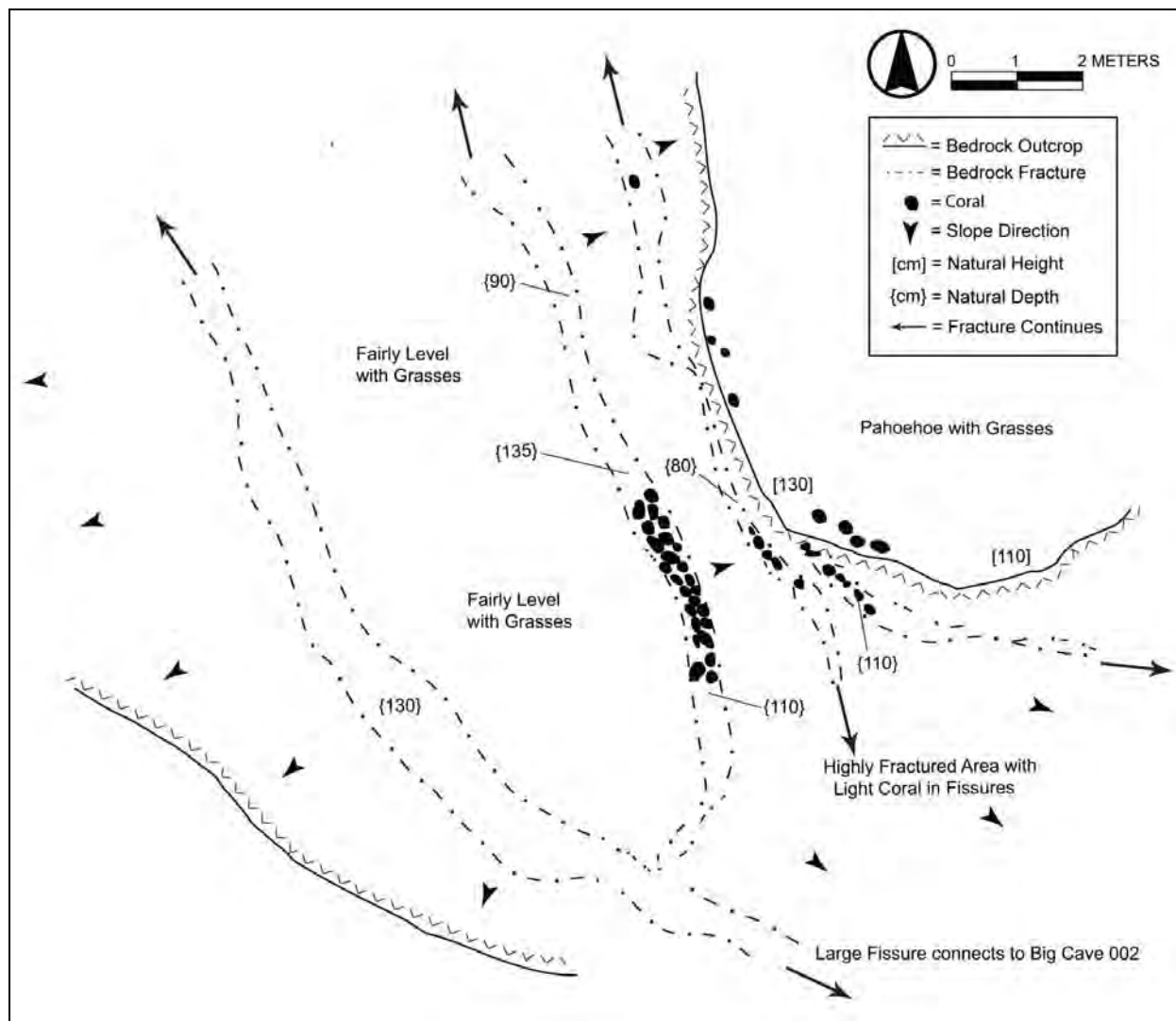


Figure 229. Plan view sketch map of SIHP # -29345

**5.2.60 SIHP # 50-10-27-28808****Temp. Site No.:** T-092110-7 (Monahan et al. 2011)**Site Type:** Mound Complex**No. of Features:** 5**Functional Interpretation:** Markers**Probable Age:** Indeterminate**Overall Dimensions:** 15.0 m N/S by 10.0 m E/W**Topography:** Level *pāhoehoe* flow**Elevation:** 111-114 ft (34-35 m) AMSL**Description:**

As originally documented by Monahan et al. (2011), **SIHP # 50-10-27-28808** was described as a mound complex consisting of three features (Feature A, Feature B and Feature C) located approximately 735 m south of the intersection of OTEC Road and the Queen Ka'ahumanu Highway. The site location is depicted in Figure 23. During supplemental survey work with the NHOs (Monahan and Wilkinson 2012), two additional (previously-undocumented) mounds were identified and added to this site complex, bringing the total number of mounds to five (Figure 230).

**Feature A** to **Feature C** are mounds composed of upright, small boulder-sized slabs of *pāhoehoe* on top of a relatively level surface of exposed *pāhoehoe* bedrock (Figure 231 to Figure 233). No soil formation has occurred within or beneath the mounds. Feature A, the southernmost feature, measures 0.8 m N/S by 0.9 m E/W with a maximum height of 0.4 m above the adjacent ground surface. Feature B, the easternmost feature, measures 1.4 m N/S by 0.8 m E/W with a maximum height of 0.4 m above the adjacent ground surface. Feature C, the westernmost feature, measures 1.0 m N/S by 0.9 m E/W with a maximum height of 0.3 m above the adjacent ground surface. The slabs that comprise each feature were likely quarried or collected from the immediate area. No artifacts or midden were observed in the area.

**Feature D** is constructed of approximately 10 small, loosely-piled slabs (Figure 234, Figure 235). Grasses are growing around the mound, which is situated on a broken-up section of *pāhoehoe* flow. This feature measures approximately 0.7 m long E/W by 0.6 m wide N/S by 0.5 m high.

**Feature E** is located just *mauka* of Feature D. This mound is constructed of 9-10 small, loosely-piled slabs (Figure 236, Figure 237). It measures approximately 0.5 m long E/W by 0.5 m wide N/S by 0.4 m high.

SIHP # -28808 is interpreted as a complex of markers. The proximity of the complex to the edge of Queen Ka'ahumanu Highway and the lack of sedimentation within and beneath the features suggests that the complex may be a modern construction or may be not much older than 50 years. Given all available evidence, however, it is not possible to unequivocally assign a date of construction to this site; therefore, CSH interprets its age as indeterminate.



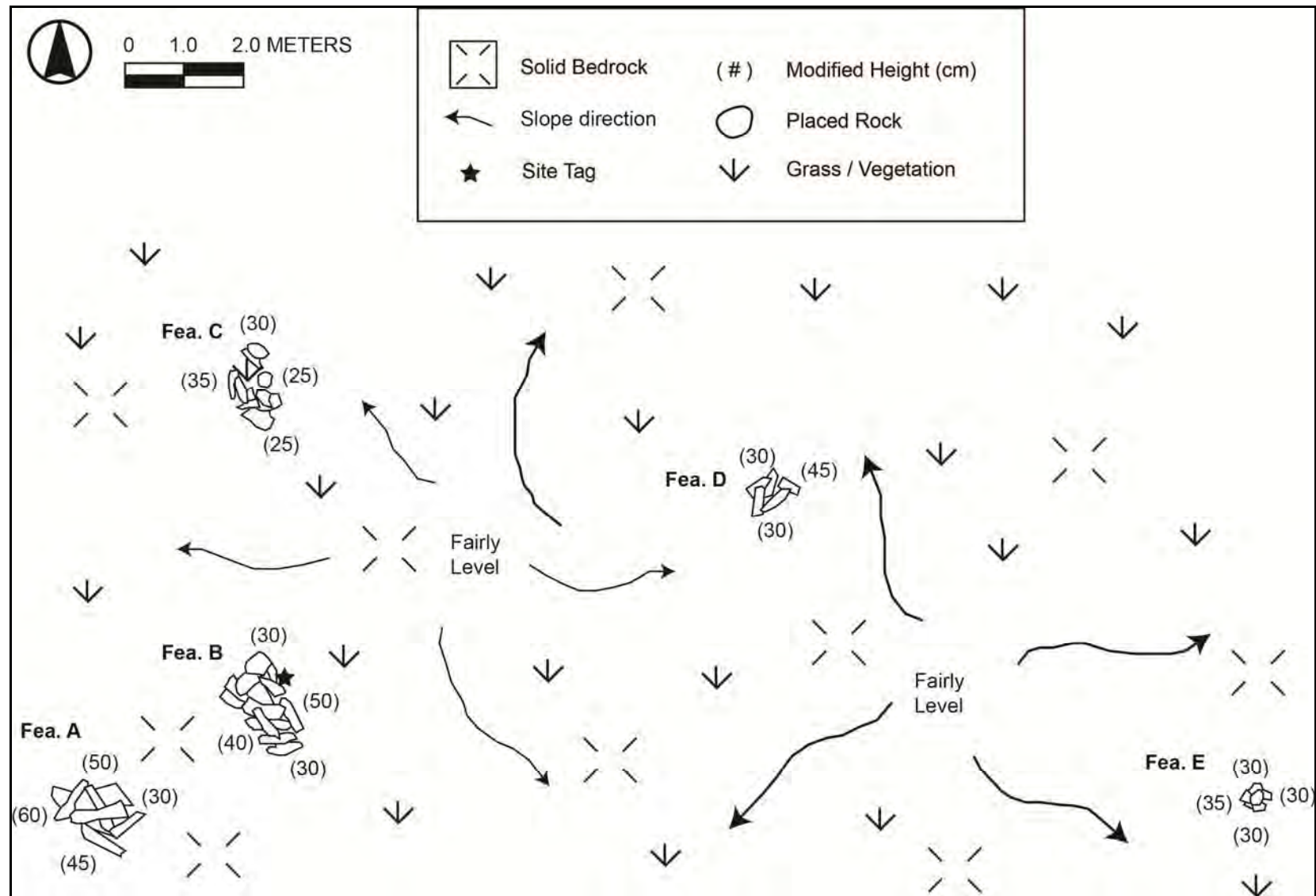


Figure 230. Plan view of SIHP # -28808 Features A through E



Figure 231. Photograph of SIHP # -28808 Feature A, view to southwest



Figure 232. Photograph of SIHP # -28808 Feature B, view to south





Figure 233. Photograph of SIHP # -28808 Feature C, view to south



Figure 234. Photograph of SIHP # -28808 Feature D, view to west

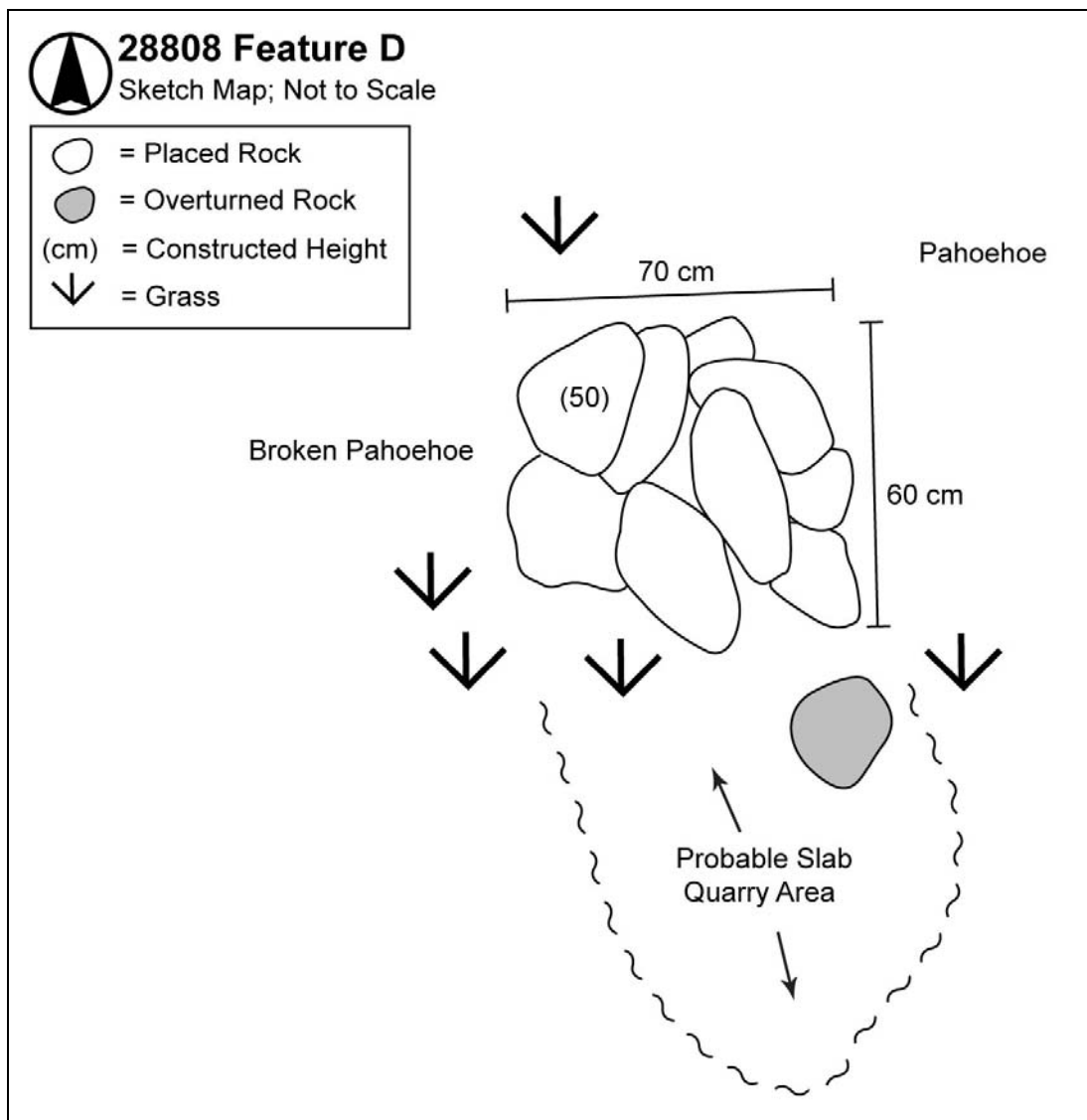


Figure 235. Plan view sketch map of Feature D at SIHP # -28808





Figure 236. Photograph of SIHP # -28808 Feature E, view to east

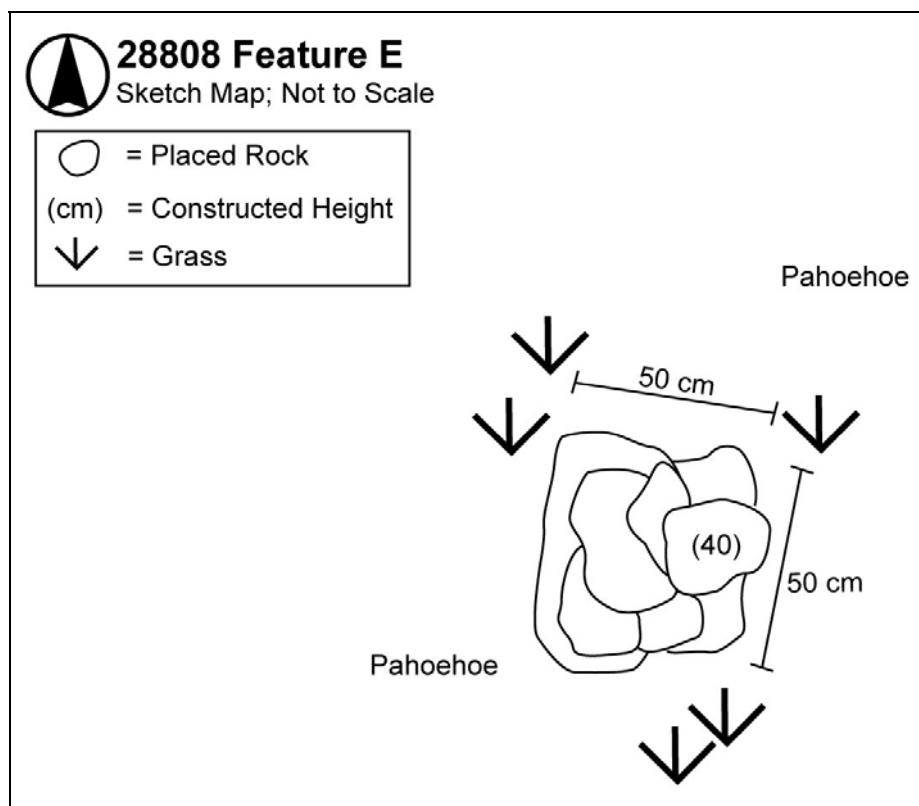


Figure 237. Plan view sketch map of Feature E at SIHP # -28808

**5.2.61 SIHP # 50-10-27-28809****Temp. Site No.:** T-092310-1 (Monahan et al. 2011)**Site Type:** *Pāhoehoe* Excavation**No. of Features:** 1**Functional Interpretation:** Quarrying**Probable Age:** Prehistoric (Pre-Contact)**Overall Dimensions:** 0.9 m N/S by 1.4 m E/W**Topography:** Level *pāhoehoe* flow**Elevation:** 112 ft (34 m) AMSL**Description:**

**SIHP # 50-10-27-28809** is a *pāhoehoe* excavation approximately 700 m south of the intersection of OTEC Road and the Queen Ka'ahumanu Highway (Figure 238, Figure 239, and see Figure 23). It consists of an area where an overlying, uplifted sheet of *pāhoehoe* has been quarried and removed, exposing a lower *pāhoehoe* surface. Quarry marks and scalloping were observed along the edges of the excavation. Most of the excavated material (large boulder-sized *pāhoehoe* slabs) has been placed along the southwestern side of the excavation. The interior surface of the excavation consists of scattered *pāhoehoe* pebbles on solid *pāhoehoe* bedrock. The excavated area lacks soil deposition. The *pāhoehoe* excavation measures 0.9 m N/S by 1.4 m E/W with a maximum depth of 0.4 m below the adjacent ground surface. No artifacts or midden were observed in the area.

SIHP # -28809 is interpreted as a possible raw material quarrying locality likely dating to prehistoric (pre-Contact) times. The *pāhoehoe* excavation lacks sediment accumulation that would indicate potential agricultural use.



Figure 238. Overview of SIHP # -28809, view to west

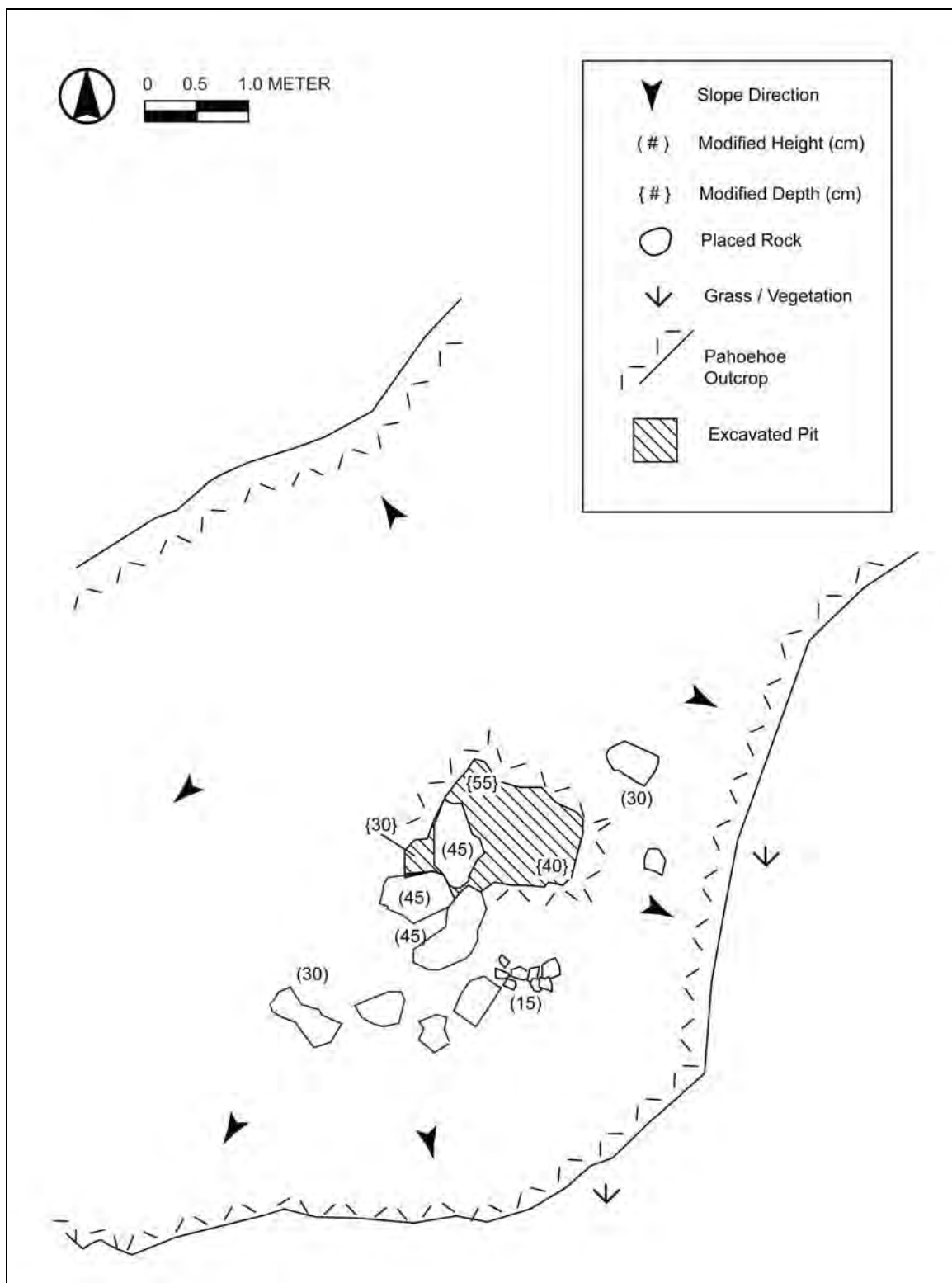


Figure 239. Plan view map of SIHP # -28809



**5.2.62 SIHP # 50-10-27-28810****Temp. Site No.:** T-092110-8 (Monahan et al. 2011)**Site Type:** Lava Tube**No. of Features:** 1**Functional Interpretation:** Indeterminate / Possible Water Catchment**Probable Age:** Prehistoric (Pre-Contact)**Overall Dimensions:** 6.2 m N/S by 4.5 m E/W**Topography:** Undulating *pāhoehoe*, level to slightly sloping**Elevation:** 112 ft (34 m) AMSL**Description:**

**SIHP # 50-10-27-28810** is a lava tube located approximately 710 m south of the intersection of OTEC Road and the Queen Ka'ahumanu Highway (Figure 240, Figure 241, and see Figure 23). The lava tube has formed beneath a partially uplifted area of exposed *pāhoehoe* flow. The lava tube measures 6.2 m N/S by 4.5 m E/W. The opening of the lava tube, located at the northern extent, measures 2.2 m wide with a ceiling height of 0.6 m. The lava tube consists of a single chamber, the majority of which is illuminated from the lava tube opening and several natural fissures in the overlying bedrock. Modifications to the lava tube consist of one placed *pāhoehoe* boulder and an adjacent paved area located just inside the drip line. The placed boulder appears to have been detached, either naturally or manually, from the outer edge of the adjacent drip line and positioned just inside the lava tube. The paved area is comprised of loosely-packed *pāhoehoe* cobbles and pebbles, portions of which may be natural fall from the ceiling of the lava tube. The cleared area measures 1.9 m N/S by 2.3 m E/W. The interior of the lava tube, including the paved area, lacks soil deposition. No artifacts or midden were observed in the area.

The function of SIHP # -28810 is indeterminate. The lava tube consists of a single, small chamber with minimal modifications, no soil deposition, and no artifacts or midden. Habitation within SIHP # -28810 is unlikely. The presence of natural fissures within the lava tube ceiling and a placed stone near the drip line may suggest evidence of water catchment activity. It seems likely use of the site dates to prehistoric (pre-Contact) times.

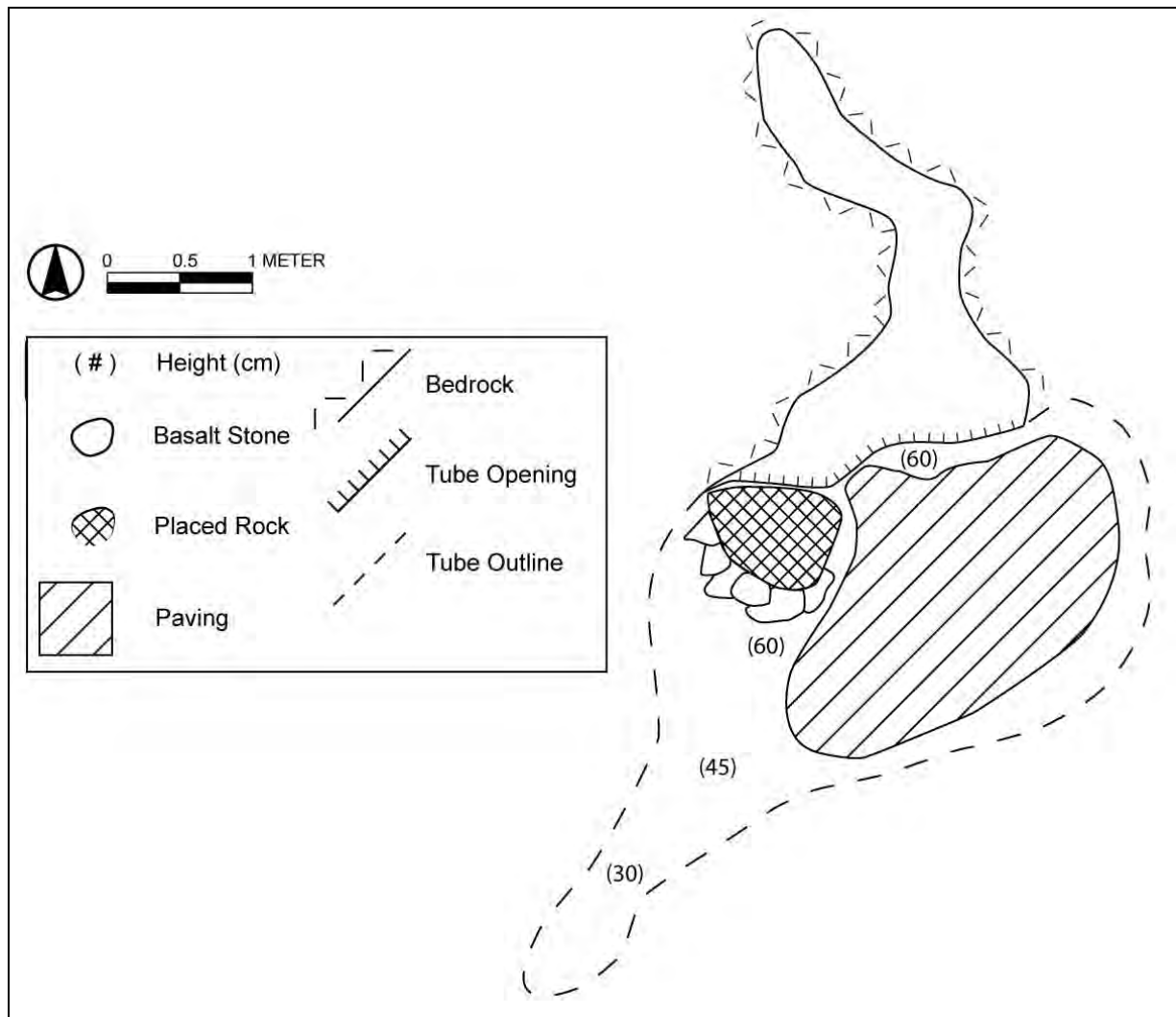


Figure 240. Plan view map of SIHP # -28810



Figure 241. Photograph of SIHP # -28810 showing the placed boulder and a portion of the paved area within the lava tube, view to south

**5.2.63 SIHP # 50-10-27-29346****Temp. Site Designation:** Mound (Harp 2011)**Site Type:** Mound**No. of Features:** 1**Functional Interpretation:** Indet.-Possible Marker or Quarrying**Probable Age:** Indeterminate**Overall Dimensions:** Less than 1.0 m square (see description below)**Topography:** Level *pāhoehoe* flow**Elevation:** 115 ft (35 m) AMSL**Description:**

**SIHP # 50-10-27-29346** is a small rock mound on *pāhoehoe*. Vegetation includes introduced grasses. The site location is depicted in Figure 23. This site was pointed out to CSH by Isaac Harp, and was inspected and assessed as part of the supplemental survey of the north segment of the current project area (Monahan and Wilkinson 2012).

The mound measures approximately 50 cm N/S by 40 cm E/W and is up to 35 cm high (Figure 242, Figure 243). The mound consists of 13-15 small *pāhoehoe* slab pieces informally piled on bare *pāhoehoe*. In many places, there is substantial space in between the piled rocks. The constituent slabs appear to be fairly old/weathered, similar to the surrounding flow. A few of the slabs have substantial chemical weathering (white appearance) on their bottom sides—one of these constituent white slabs was overturned. Some grasses surround the mound. There is no soil-sedimentary deposit at this site.

Because of uncertainties about the age of this mound, based on NHO concerns, and in cooperation with Isaac Harp, this mound was dismantled to check for evidence of recent/modern scarring of the underlying rock. None was found, and the mound was rebuilt according to its original structure. There are some bulldozer scars fairly close by (a few meters away), but none right at or under this mound.

This site was interpreted by CSH archaeologists as either “likely modern,” given its extremely informal construction style, and possibly functioning as a quarrying feature; or, alternatively, as indeterminate in age, possibly at least 50 years old or greater, and perhaps representing a marker of some kind. It is unlikely, however, that any additional investigation of this site could resolve this uncertainty.





Figure 242. Photograph of SIHP # -29346, view to southwest

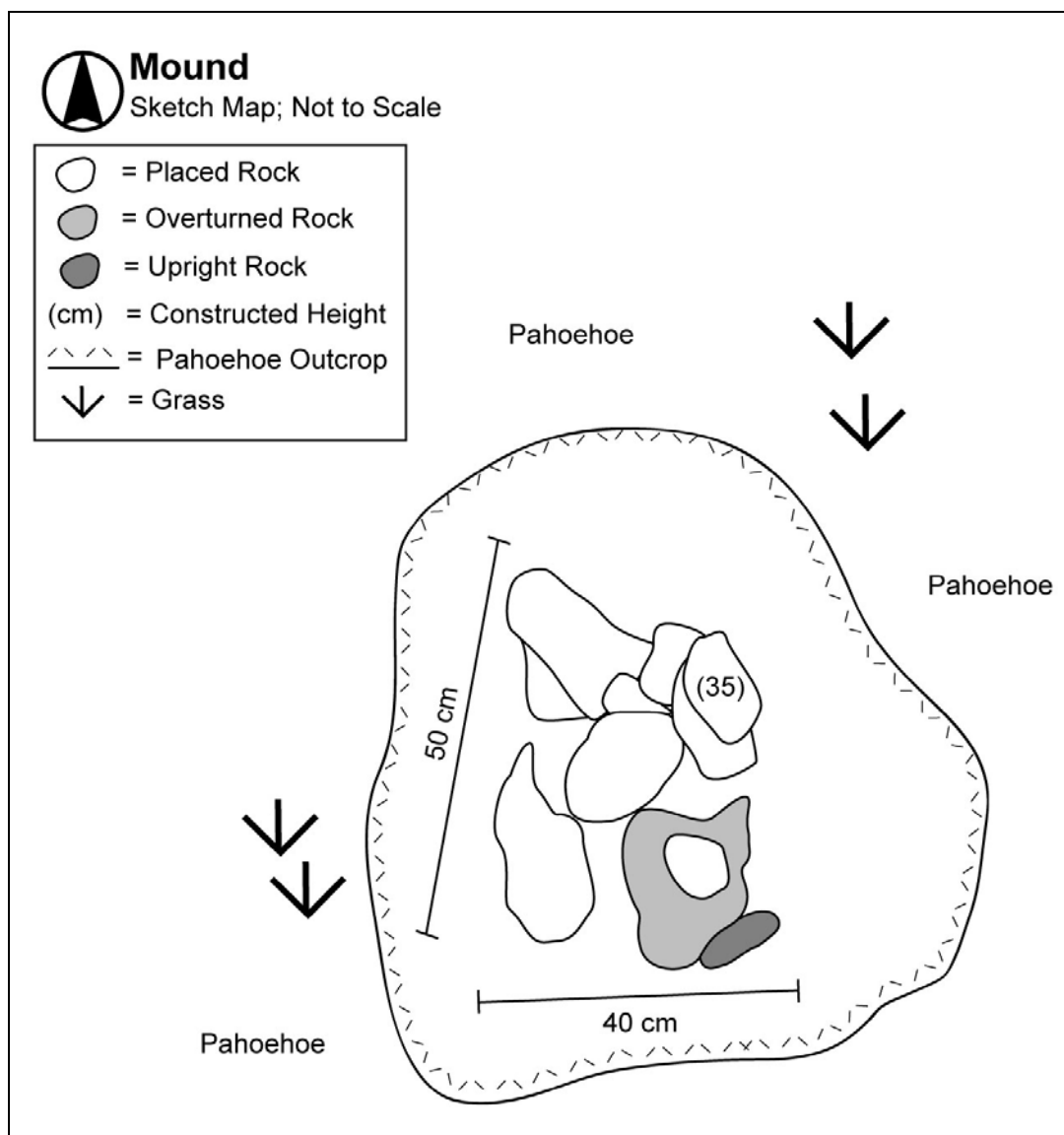


Figure 243. Plan view sketch map of SIHP # -29346

**5.2.64 SIHP # 50-10-27-10154****Temp. Site No.:** T-4 (Barrera 1985)**Site Type:** Walled Enclosure**No. of Features:** 1**Functional Interpretation:** Indeterminate-Possible Habitation**Probable Age:** Historic**Overall Dimensions:** 3.0 m N/S by 10.3 m E/W**Topography:** Level *pāhoehoe* flow**Elevation:** 105 ft (32 m) AMSL**Description:**

**SIHP # 50-10-27-10154** was first formally described by Barrera (1985) (see Figure 24). For unknown reasons, Walsh and Hammatt (1995) do not mention or include SIHP # 10154 in their study, although it was clearly within the limits of their project area. The site was revisited during the current archaeological inventory survey and found to be in the same physical condition as described by Barrera (Figure 244 to Figure 246). The site was described by Barrera (1985:11) as follows:

This is a habitation structure measuring approximately 13 meters in length and 3 meters in width, and standing to a height of about 1 meter.

Barrera (1989) provided additional detail in a data recovery effort that included SIHP # 10154:

This is a well-constructed shelter built against a bedrock ledge plus an adjacent short wall section, covering an area of 3 by 10.3 meters. The shelter measures 7.8 meters in length and 3 meters in width, and stands to a height of 1.2 meters. Its wall, which measures between 0.65 and 0.95 meters in width, encloses an area of 14.4 square meters and cover an area of 8 square meters. The short wall section measures 0.8 by 1.7 meters and stands to a height of one meter. Although no midden or artifacts were found at the site, its proximity and similarity in construction to the adjacent historic period boundary [SIHP # 06432] wall suggests that it is of the same age, but its function remains unknown.

Barrera's (1989) study was based on a data recovery plan developed by the Historic Sites Section of the Hawai'i Department of Land and Natural Resources (precursor to the SHPD). Based on the completion of the data recovery work, historic preservation work at SIHP # -10154 was considered complete at the time of Barrera's (1989) report. SIHP # 10154 was not included in the Final Archaeological Treatment Plan (1999), indicating concurrence with the treatment ("no further work") for this site.

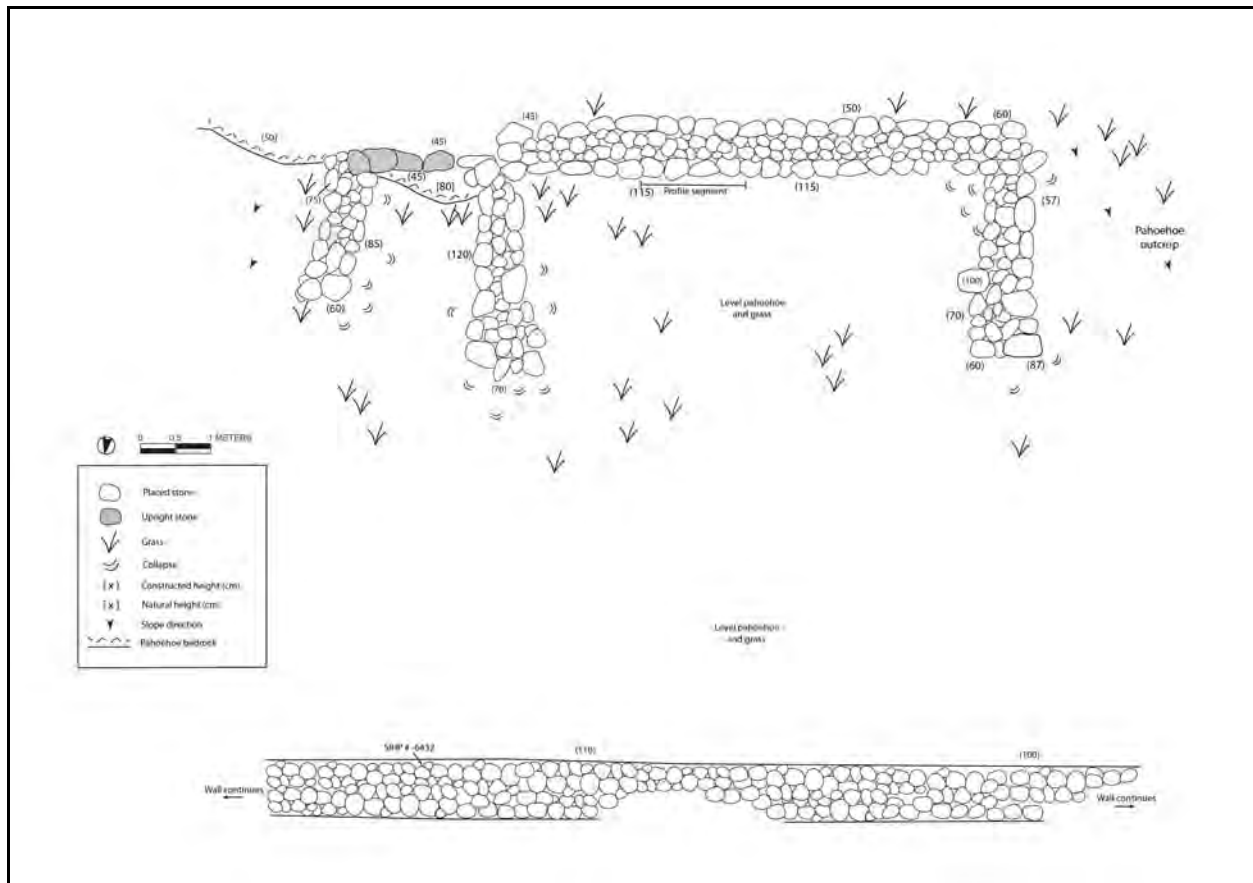


Figure 244. Plan view map of SIHP # -10154





Figure 245. Photograph of SIHP # -10154 overall, view to southwest

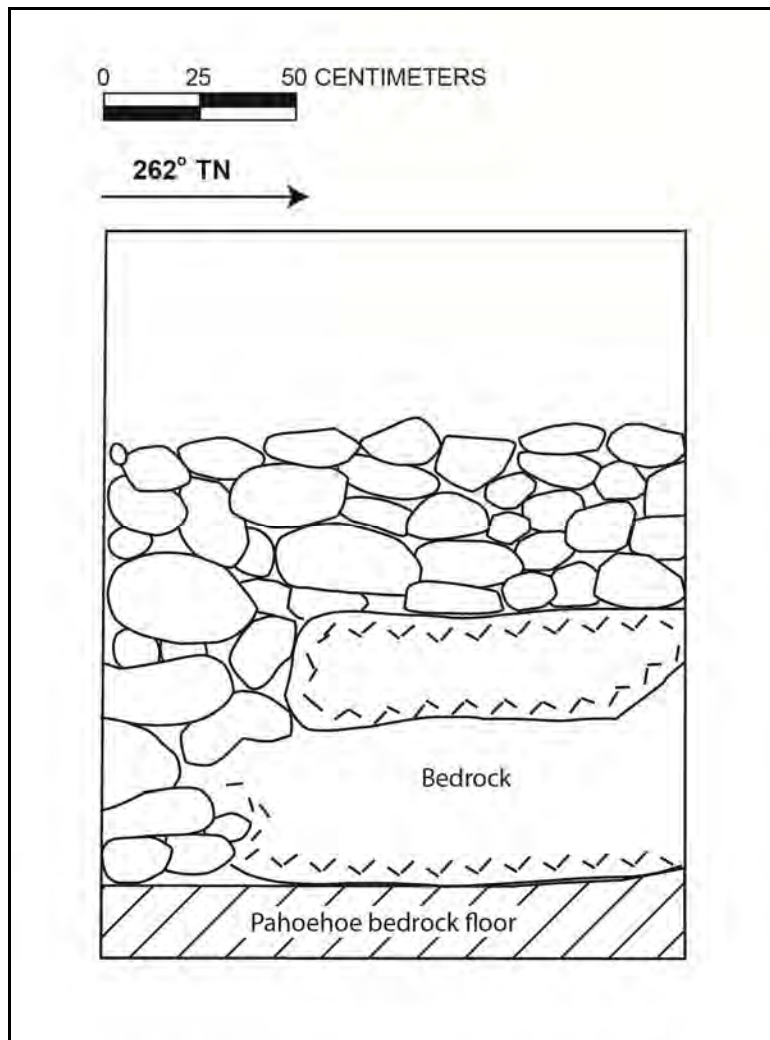


Figure 246. Profile view of SIHP # -10154 (refer to plan view map for location)

**5.2.65 SIHP # 50-10-27-06432****Temp. Site No.:** n.a. (Davis 1977)**Site Type:** Core-filled Stone Wall**No. of Features:** 1**Functional Interpretation:** *Ahupua'a* Boundary**Probable Age:** Historic**Overall Dimensions:** See Description Below**Topography:** Wall Crosses Varied Terrain**Elevation:** 50-420 ft (15-128 m) AMSL**Description:**

**SIHP # 50-10-27-06432** was first formally described by Davis (1977) (see Figure 24). The site was revisited during the current archaeological inventory survey and found to be in the same physical condition as described by Davis (Figure 247, Figure 248). The site was described by Davis (1977) as follows:

Site 6432 . . . Is the stone boundary wall between Ka-laoa-O'oma and Ka-laoa *ahupua'a*. Given the fact that this wall is nearly transit-like straight and is constructed of core-filled masonry, it is likely a historic feature. No further work is recommended.

Davis (1977) also provides quantitative data on the dimensions of SIHP # 06432: 1,920.24 m in overall length, 1.52-1.83 m (width range) and 1.00-1.20 m (height range), and describes it further as,

Very large and very straight wall of core-filled construction indicating it is most probably a historic wall; location on boundary of Kalaoa-O'oma and O'oma 2 *ahupua'a* suggests boundary wall built since the *Māhele* of 1848.

Walsh and Hammatt (1995:37) described the site as follows:

Site 6432 is a free-standing stone wall that forms the boundary between Kalaoa-O'oma and O'oma 2 . . . The wall has been breached in the construction of the present highway, but continues both *mauka* and *makai* for more than several hundred feet . . .

Walsh and Hammatt (1995) recommended SIHP # -06432 eligible for the National and State Registers of Historic Places under criterion D for its information relevant to prehistory and history. The site was recommended for "no further work" by Walsh and Hammatt (1995). The Final Archaeological Treatment Plan (1999) did not include this site, and, thus, concurred with CSH's 1995 recommendation.



Figure 247. Photograph of SIHP # -06432, view to west



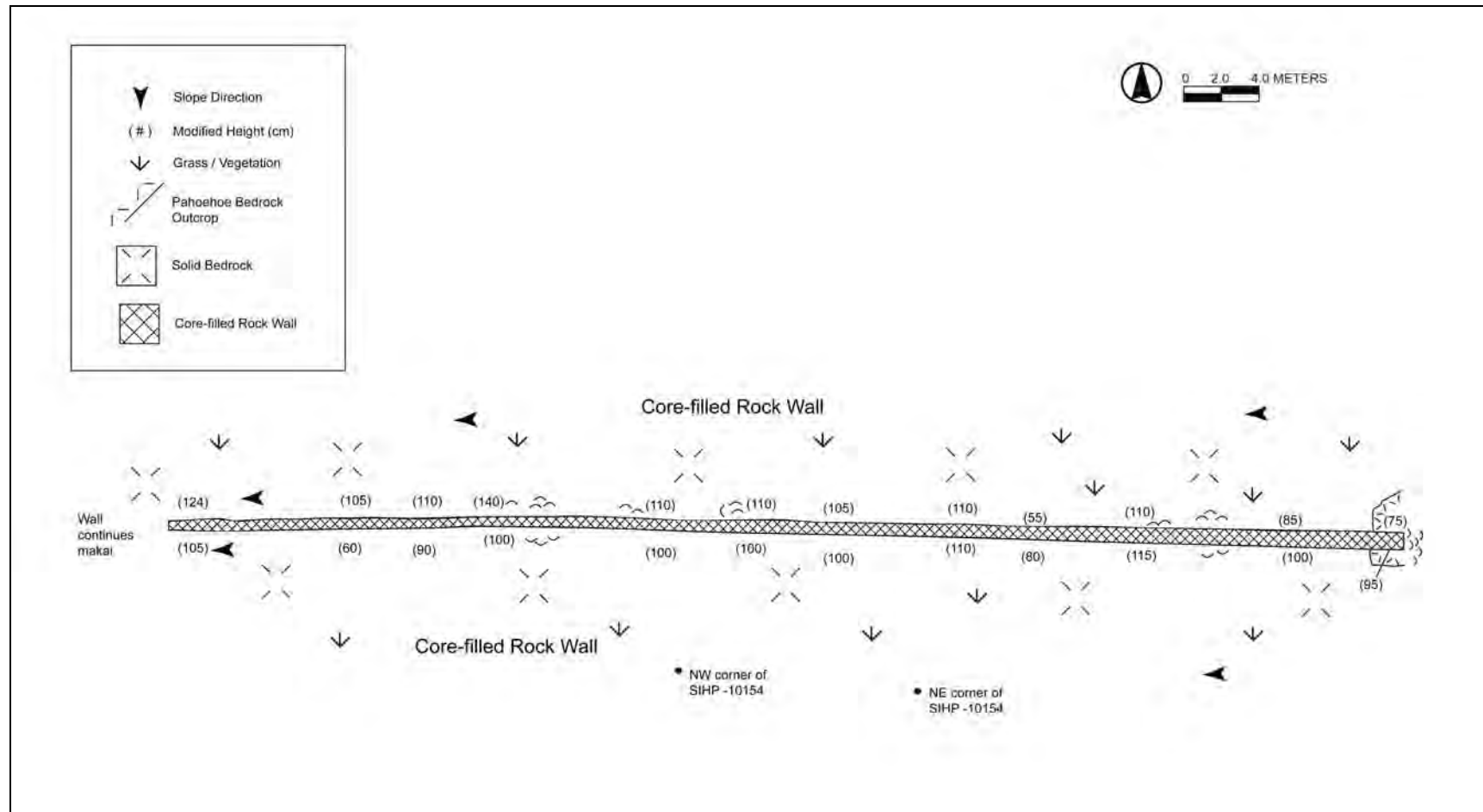


Figure 248. Plan view map of SIHP # -06432

**5.2.66 SIHP # 50-10-27-29347****Temp. Site Designation:** Mound 1 (Harp 2011)**Site Type:** Mound**No. of Features:** 1**Functional Interpretation:** Possible Marker or Quarrying**Probable Age:** Indeterminate**Overall Dimensions:** Less than 1.0 m square (see description below)**Topography:** Gently sloping *pāhoehoe* flow**Elevation:** 109 ft (33 m) AMSL**Description:**

**SIHP # 50-10-27-29347** is a small rock mound on *pāhoehoe*, bordered by 'a'ā to the south. Vegetation includes fountain grass and *maiapilo* (*C. sandwichiana*). The site location is depicted in Figure 24. This site was pointed out to CSH by Isaac Harp, and was inspected and assessed as part of the supplemental survey of the north segment of the current project area (Monahan and Wilkinson 2012).

The mound measures approximately 50 cm N/S by 40 cm E/W and 25 cm high (Figure 249, Figure 250). The constituent rocks, which include a small boulder and cobbles, are loosely piled. A natural depression / sink containing nothing is just to the south. The immediate surrounding area lacks signs of impact or disturbance. There is no soil-sedimentary deposit at this site.

This site was interpreted by CSH archaeologists as either “likely modern,” given its extremely informal construction style, and possibly functioning as a quarrying feature; or, alternatively, as indeterminate in age, possibly at least 50 years old or greater, and perhaps representing a marker of some kind. It is unlikely, however, that any additional investigation of this site could resolve this uncertainty.



Figure 249. Photograph of SIHP # -29347, view to west

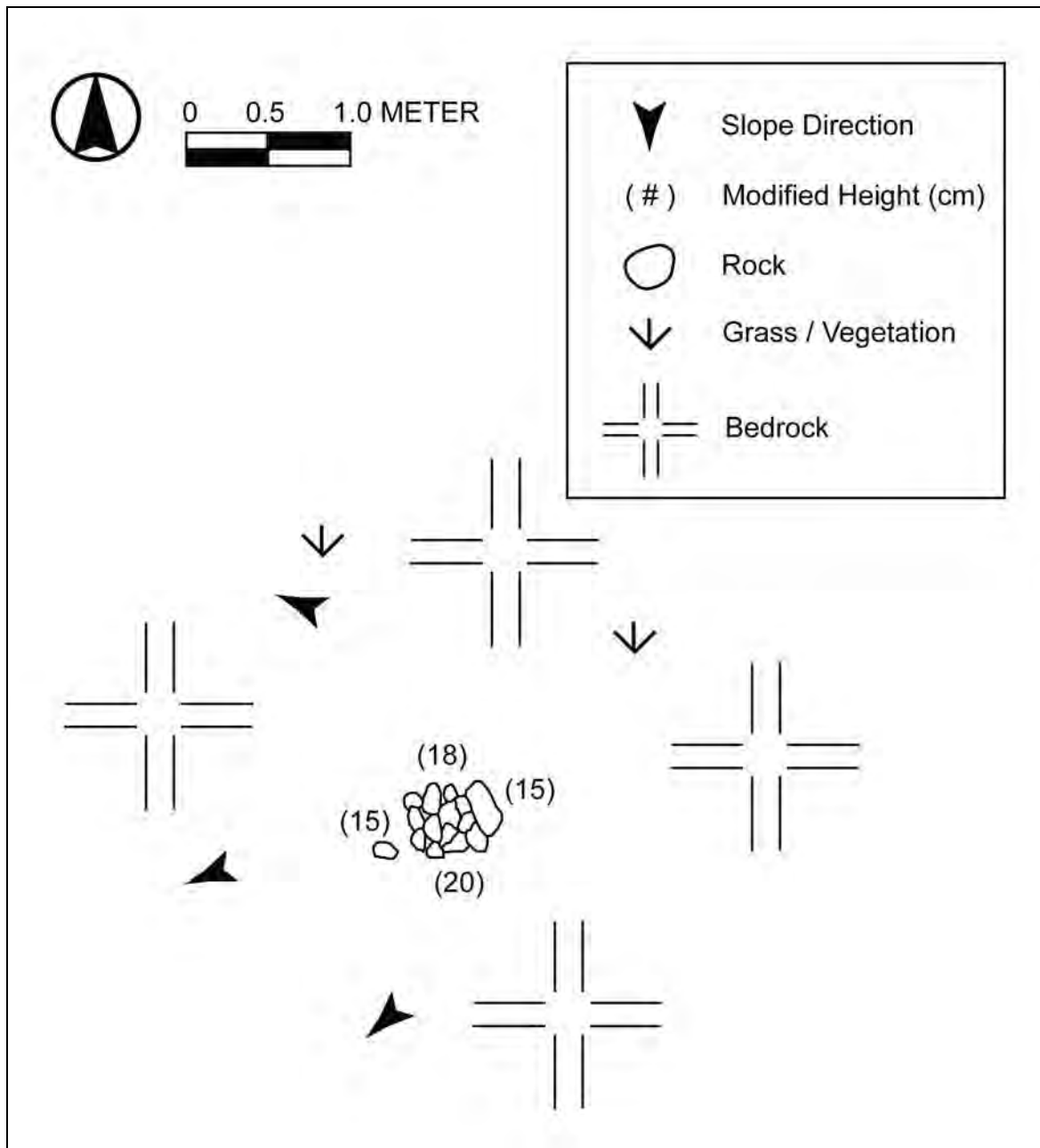


Figure 250. Plan view of SIHP # -29347



**5.2.67 SIHP # 50-10-27-29272****Temp. Site Designation:** Coral Frags (Harp 2011)**Site Type:** Level Area (Feature A) with *Mauka/Makai* Trail (Feature B)**No. of Features:** 2**Functional Interpretation:** Possible Resting Place (Fea. A) / Transportation (Fea. B)**Probable Age:** Indeterminate**Overall Dimensions:** 6.5 m E/W by 5.5 m N/S (level area)**Topography:** Undulating *pāhoehoe* terrain sloping gently *makai***Elevation:** 114 ft (36 m) AMSL**Description:**

**SIHP # 50-10-27-29272** consists of a level area (Feature A) of somewhat rounded but “fresh” looking basalt cobbles and small boulders with some rounded coral pieces (mostly less than 5 cm in size) in a low area at the edge of a *pāhoehoe* outcrop (Figure 251, Figure 252). Pieces of shell (cowrie and ‘*opihi*’) are also present on the surface of the level area. Some 1970s-era bottles and beverage cans and other trash are scattered around the site area, as well as a single, rusted horseshoe. The western side of the feature has a clear but informal edge about 30 cm high. Grasses surround the site. The site location is depicted in Figure 25. This site was pointed out to CSH by Isaac Harp, and was inspected and assessed as part of the supplemental survey of the north segment of the current project area (Monahan and Wilkinson 2012).

While working with CSH archaeologists, Isaac Harp identified a relatively faint trail oriented *mauka* to *makai* leading into the site area from the west (Figure 253). CSH archaeologists were skeptical about this trail, which they considered to be relatively difficult to observe in the field; nonetheless, GPS coordinates for the trail were obtained in order to map its location (see Figure 25). It is important to note that, subsequent to CSH’s fieldwork with Isaac Harp, the SHPD informed CSH that a more formal section of this trail had been identified by another firm (Dr. Robert Rechtman) in an adjacent project area to the west. The site number obtained by Rechtman for this trail has been used for the current project area, but the report is still in draft form and is not available for citation at this time.

In order to explore the possible function and age of the site more fully, two test units were excavated within the main level area (Feature A). Test unit 1 (TU-1) was relatively shallow and was sterile (Figure 254). Test unit 2 (TU-2) contained a small amount of midden (Figure 255, Figure 256). A third excavation, test unit 3 (TU-3), was placed in a nearby area of the site thought to be possibly a “filled in” area by Isaac Harp (Figure 257). This test unit was sterile.

This site appears to be a constructed ramp to allow for travel across uneven terrain with a primary function of transportation. It may also have been used as a small resting place (the level area designated Feature A) associated with a *mauka/makai* trail (Feature B). The age of the site is currently indeterminate.

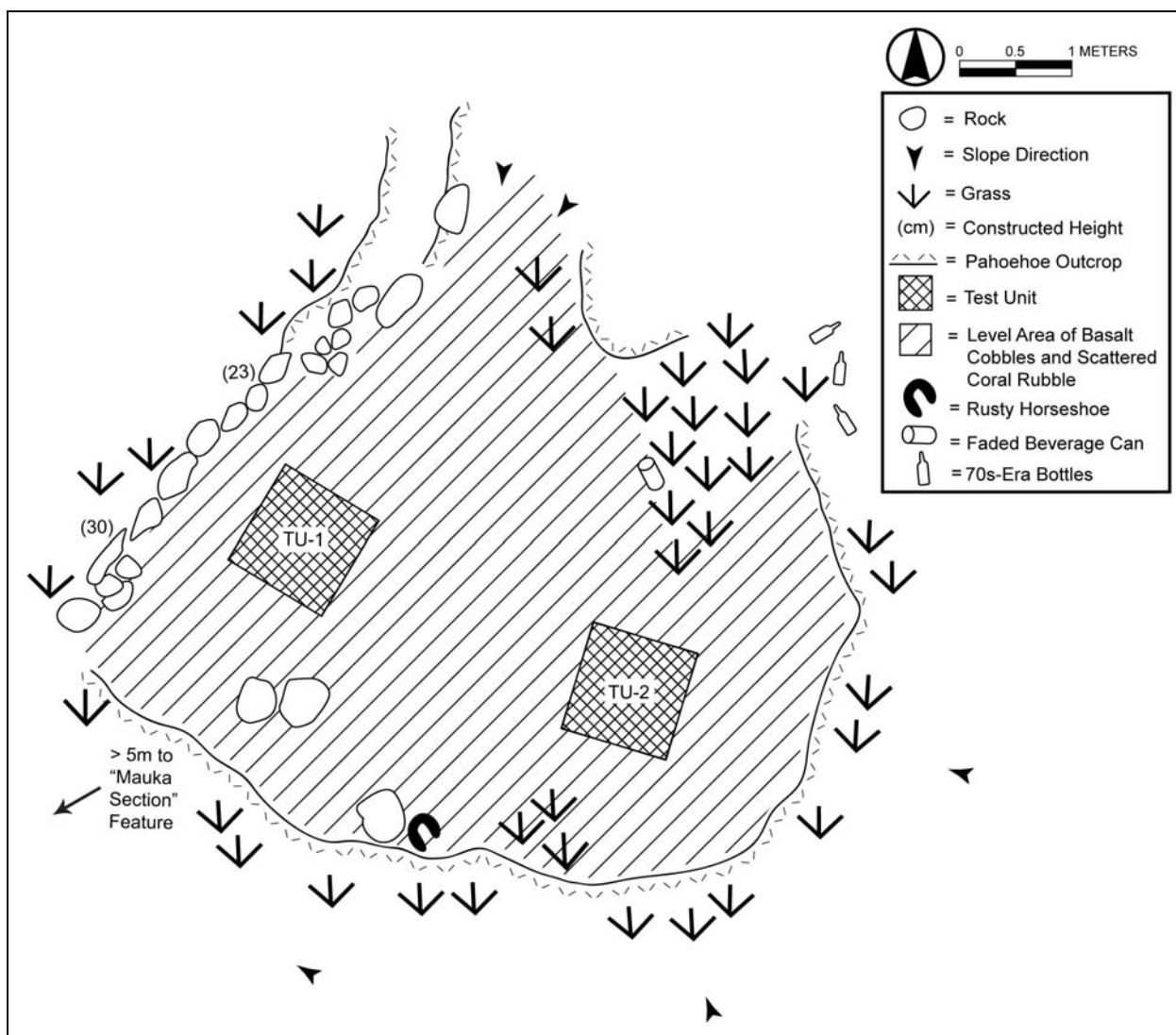


Figure 251. Plan view sketch map of SIHP # -29272 Feature A



Figure 252. Level area of cobbles with coral (SIHP # - 29272 Feature A);-, view to northwest



Figure 253. Section of trail (SIHP # -29272 Feature B) identified by Isaac Harp leading to Feature A, view to west





Figure 254. Post-excavation of TU-1 at SIHP # -29272 Feature A, view to east



Figure 255. Post-excavation of TU-2 at SIHP # -29272 Feature A, view to southeast



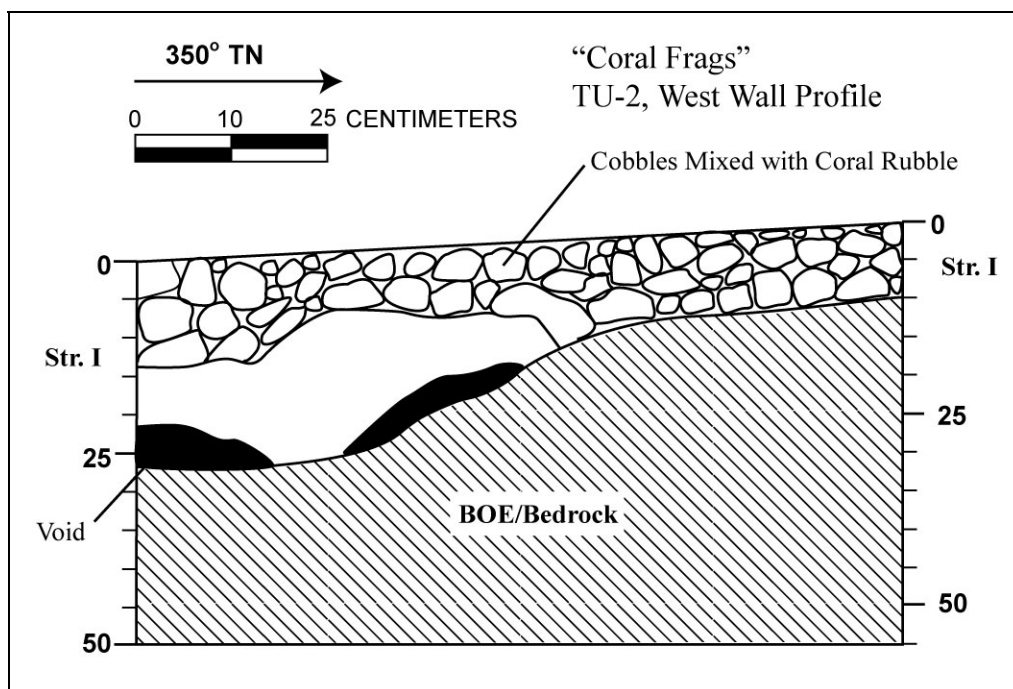


Figure 256. Stratigraphic profile of TU-2 (SIHP # -29272 Feature A)



Figure 257. Post-excavation of TU-3, view to east

**5.2.68 SIHP # 50-10-27-28811****Temp. Site No.:** T-092110-10 (Monahan et al. 2011)**Site Type:** *Pāhoehoe* Excavation**No. of Features:** 1**Functional Interpretation:** Quarrying**Probable Age:** Prehistoric (Pre-Contact)**Overall Dimensions:** 3.0 m N/S by 4.2 m E/W**Topography:** Level *pāhoehoe* flow**Elevation:** 114 ft (35 m) AMSL**Description:**

**SIHP # 50-10-27-28811** is a *pāhoehoe* excavation approximately 715 m south of the intersection of OTEC Road and the Queen Ka'ahumanu Highway (Figure 258, Figure 259, and see Figure 25). It consists of an area where an overlying, uplifted sheet of *pāhoehoe* has been quarried and removed, exposing a lower *pāhoehoe* surface. Quarry marks and scalloping were observed along the edges of the excavation. Most of the excavated material (medium boulder-sized *pāhoehoe* slabs) has been overturned and placed along the northern side of the excavation. The interior surface of the excavation consists of scattered *pāhoehoe* pebbles on solid *pāhoehoe* bedrock. The excavated area lacks soil deposition. The *pāhoehoe* excavation measures 3.0 m N/S by 4.0 m E/W with a maximum depth of 0.6 m below the adjacent ground surface. No artifacts or midden were observed in the area.

SIHP # -28811 is interpreted as a possible raw material quarrying locality likely dating from prehistoric (pre-Contact) times. The *pāhoehoe* excavation lacks sediment accumulation that would indicate potential agricultural use.



Figure 258. Photograph of SIHP # -28811, view to west

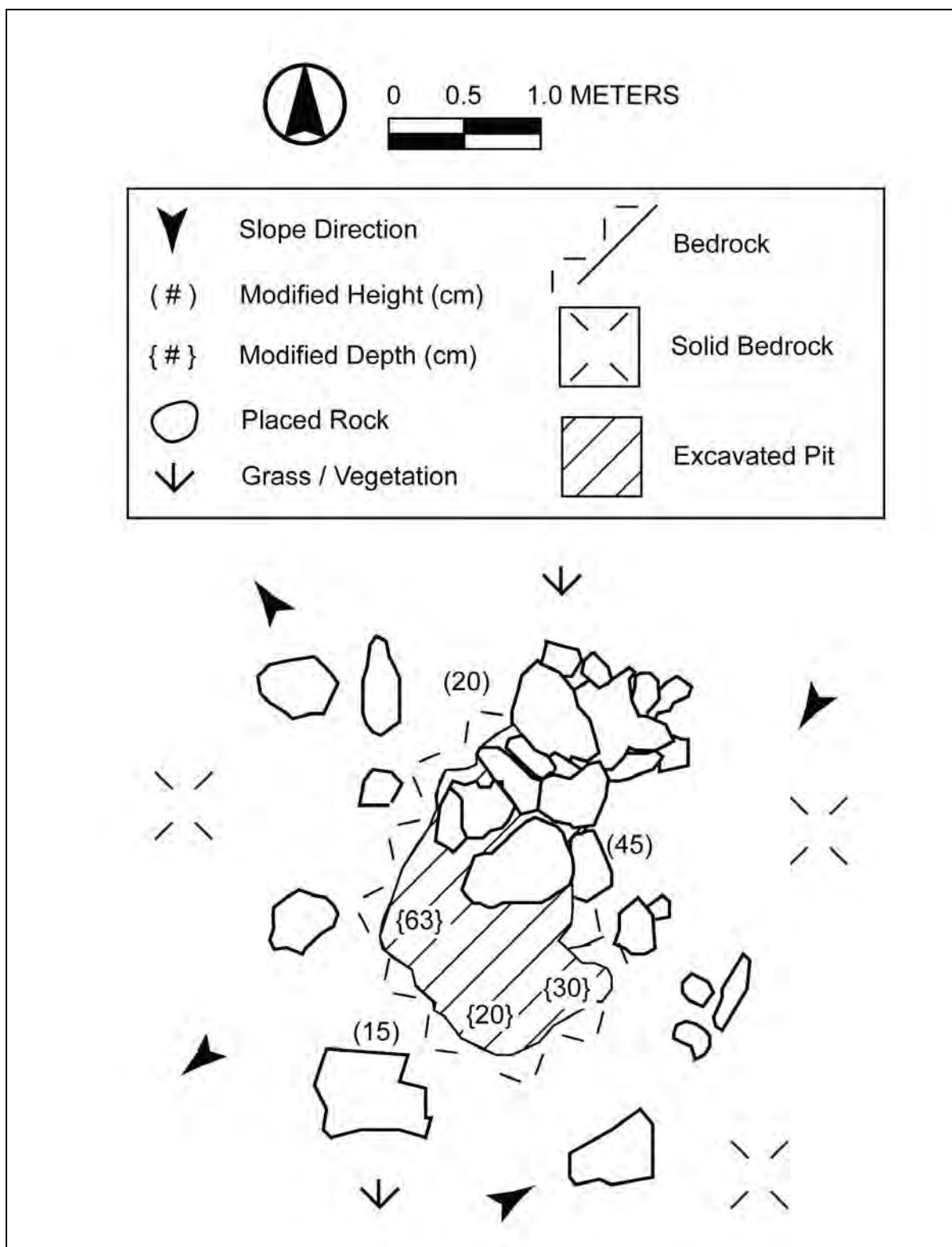


Figure 259. Plan view of SIHP # -28811

**5.2.69 SIHP # 50-10-27-28812****Temp. Site No.:** T-092410-1 (Monahan et al. 2011)**Site Type:** Possible Filled Crevice**No. of Features:** 1**Functional Interpretation:** Indeterminate**Probable Age:** Indeterminate**Overall Dimensions:** 1.0 m N/S by 1.5 m E/W**Topography:** *Pāhoehoe* tumulus, level to moderately sloping**Elevation:** 124 ft (38 m) AMSL**Description:**

**SIHP # 50-10-27-28812** is a possible filled crevice located approximately 390 m north of the intersection of OTEC Road and the Queen Ka'ahumanu Highway (Figure 260, Figure 261, and see Figure 25). SIHP # -28812 consists of an area within a natural *pāhoehoe* crevice that appears to be filled with loosely-piled *pāhoehoe* boulders. The possible filled crevice is located near the center of a *pāhoehoe* tumulus and measures 1.0 m N/S by 1.5 m E/W. The possible filled crevice is identified by the presence of a small stand of *ti* plants located immediately north of and adjacent to the site. In general, the fill material within the crevice appears to be unmodified rubble or collapse, however, the presence of manually-introduced *ti* plants suggest that the area has been visited and possibly modified. No artifacts or midden were observed in the area.

The function of SIHP # 50-10-27-28812 is indeterminate. In general, the fill material within the crevice appears to be unmodified rubble or collapse; however, the presence of manually-introduced *ti* plants suggests the area has been visited and possibly modified.





Figure 260. Photograph of SIHP # -28812, view to west

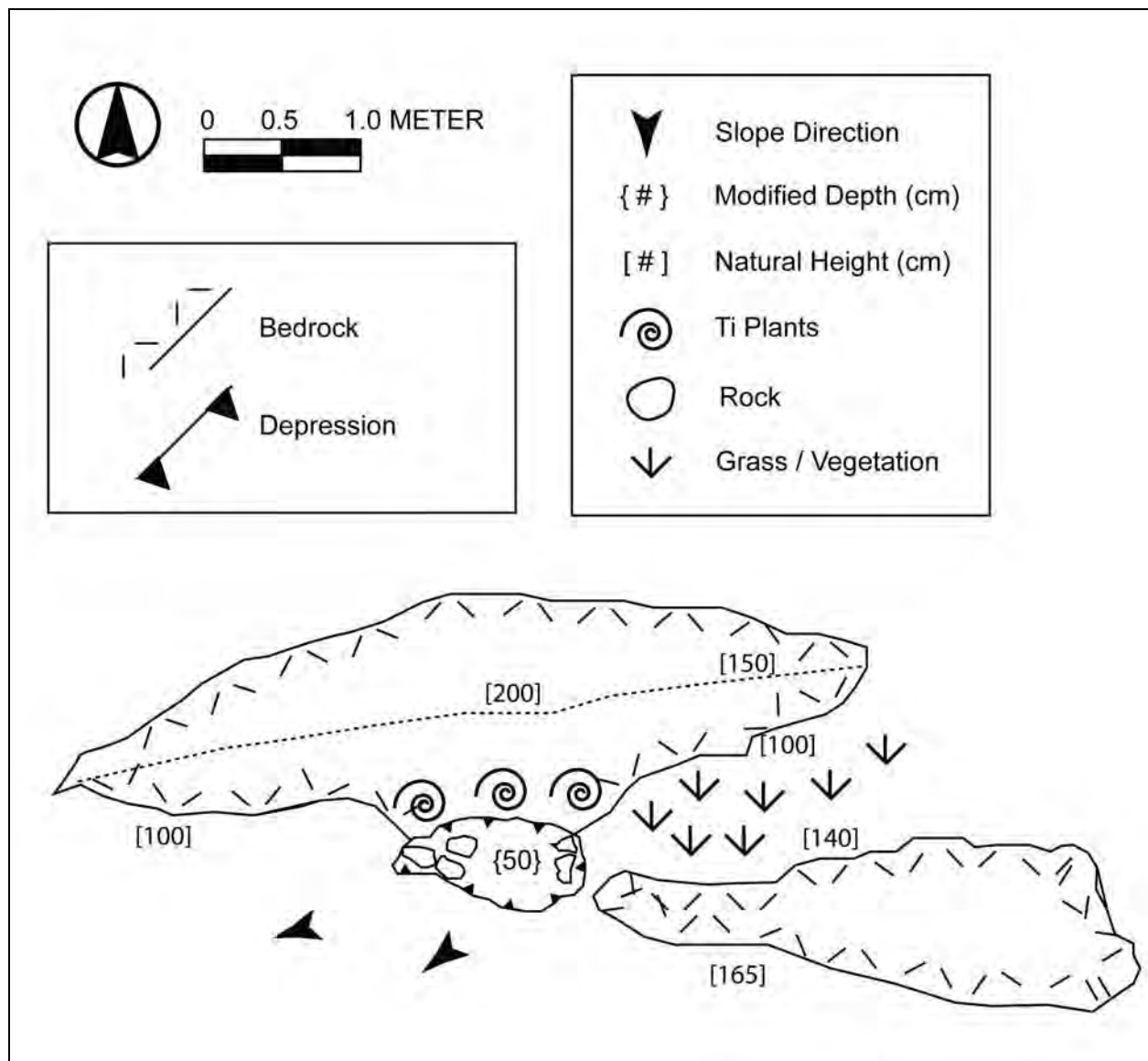


Figure 261. Plan view of SIHP # -28812

**5.2.70 SIHP # 50-10-27-28813****Temp. Site No.:** T-092110-11 (Monahan et al. 2011)**Site Type:** Modified Lava Blisters**No. of Features:** 5**Functional Interpretation:** Agriculture**Probable Age:** Prehistoric (Pre-Contact)**Overall Dimensions:** 25 m NE/SW by 15 m NW/SE**Topography:** Level *pāhoehoe* flow**Elevation:** 112-116 ft (34-35 m) AMSL**Description:**

As originally documented in Monahan et al. (2011), **SIHP # 50-10-27-28813** was described as consisting of one modified lava blister approximately 437 m north of the intersection of OTEC Road and the Queen Ka'ahumanu Highway (Figure 262 to Figure 265). The site location is depicted in Figure 25. The original site description by Monahan et al. (2011) was that it consisted of,

an oval-shaped collapsed lava blister with vertical sides that extend approximately 1.1 m below the surface. The lava blister measures 6.0 m N/S by 3.2 m E/W. The interior of the lava blister consists of a thick layer of sediment and organic debris that currently supports that growth of grasses. A wall, comprised of two to three courses of stack *pāhoehoe* cobbles and small boulders, has been constructed along the southeastern edge of the lava blister. The wall measures 2.8 m long by 0.4 m wide with a maximum height of 0.9 m. No artifacts or midden were observed in the area.

Based on these observations, SIHP # 50-10-27-28813 was interpreted as an agricultural locality likely dating from prehistoric (pre-Contact) times. The relatively thick soil-sedimentary layer within the interior of the lava blister was thought to have perhaps supported various dryland cultivars. Monahan et al. (2011) recommended data recovery (subsurface excavation) to test this hypothesis.

More recently, during the NHO survey work, several other nearby (heading *mauka*) features, broadly similar in overall structure to the one designated SIHP # -28813, were identified (note, these were designated by Harp 2011 as “Excblis 1,” “Shell,” and “Natural C-Shelter”). In order to address NHO concerns, these additional features were cleared of vegetation, inspected more carefully, evaluated for evidence of human modification or use, and documented (including making a scaled sketch map) (Figure 262). During the course of this follow-up documentation, a fourth possible additional feature—a pair of very small *pāhoehoe* pits—was also identified and similarly investigated. For the sake of simplicity and organization, standard feature designations have been given to the total of five (5) features, as follows: Feature A = the original SIHP # 28813, Feature B = “Excblis 1,” Feature C = “Shell,” Feature D = the pair of very small *pāhoehoe* pits, and Feature E = “Natural C-Shelter.”

These additional features and investigation results are described in more detail below. It was the professional opinion of CSH archaeologists that these additional features do not have any evidence of human modification (e.g., rock stacking or alignment) or use in the form of soil-

sedimentary deposits that may contain occupation debris. CSH made a preliminary conclusion that these additional features are natural, rather than archaeological. Isaac Harp has disagreed with this interpretation, and suggests more work can be done at these features to see if there is additional evidence of human occupation or use. Chris Monahan consulted with Mike Vitousek, in his capacity as SHPD archaeologist, who suggested CSH could conduct data recovery at these features to satisfy NHO concerns. See Section 5 (Project Effect and Mitigation Recommendations) for a discussion of this. There are also disagreements between CSH archaeologists and Isaac Harp as to the taxonomic identification of certain crab and shell fragments recovered from this site (see discussion at the end of this site description).

Feature A, the original SIHP # -28813, has already been described above. **Feature B (“Excbilis 1”)** is a collapsed blister or small sink that measures approximately 2.5 m E/W by 3.25 m N/S and up to 1.25 m deep at the north end (Figure 266). Once cleared of grass, the feature was found to contain boulders resting on the floor/base around the interior perimeter with a minimal open area in the center. A significant amount of soil-sediment is present, likely due to the substantial grasses present. No overhangs are present that could accommodate a person, although quite a bit of shade would be provided (late or early in the day) by the depth of the feature alone. A crab chela (pincer part) was found in this feature. There was disagreement between CSH archaeologist Ollie Bautista and Isaac Harp as to the taxonomic identification of this crab (see discussion below).

**Feature C (“Shell”)** is similar to Feature B. This collapsed blister / sink measures up to 3.0 m (NE/SW) by 2.5 m E/W and up to 1.25 m deep at the south end (Figure 267). At this feature, a concentration of boulders covers the southeastern half of the pit floor, leaving the western and northern portions of the floor relatively open. The northern end has a shallow overhang. The sink contained a substantial amount of grass and, once cleared, a significant amount of soil-sediment was observed. A snail shell was found in this feature. CSH archaeologist Oliver Bautista believes it is an African snail. Isaac Harp disagreed (see discussion below).

**Feature D (“very small *pāhoehoe* pits”)** is south of the other features. It is a small natural pit in the *pāhoehoe* flow consisting of two holes separated by a section of *pāhoehoe* that was not collapsed (Figure 268). Collapsed stones are present on the pit floors of the holes. The northern pit is roughly 0.5 m by 0.5 m and up to 1.0 m deep, while the smaller, southern pit is about 0.5 m E/W by 0.3 m N/S and up to 0.70 m deep.

**Feature E (“Natural C-Shelter”)** is the *mauka*-most feature, and is a natural C-shape formed by the edge of a *pāhoehoe* outcrop (Figure 269). A clear, level area “fronts” the C-shape to the north, and is somewhat “enclosed” by another *pāhoehoe* outcrop / tumulus reaching a height of 1.6 m. The C-shape feature is approximately 4.0 m long E/W and the level “floor” is about 1.0 m wide N/S. The outcrop edge measures 1.0 – 1.3 m high. The feature was overgrown with grass. After clearing, a substantial soil-sedimentary deposit was observed. Some very shallow overhangs / crevices are present along the outcrop edge.

There is disagreement between CSH archaeologists and Isaac Harp about the taxonomic identification of the crab and shell fragments (Figure 270). These specimens should be analyzed by a recognized expert during the data recovery work.



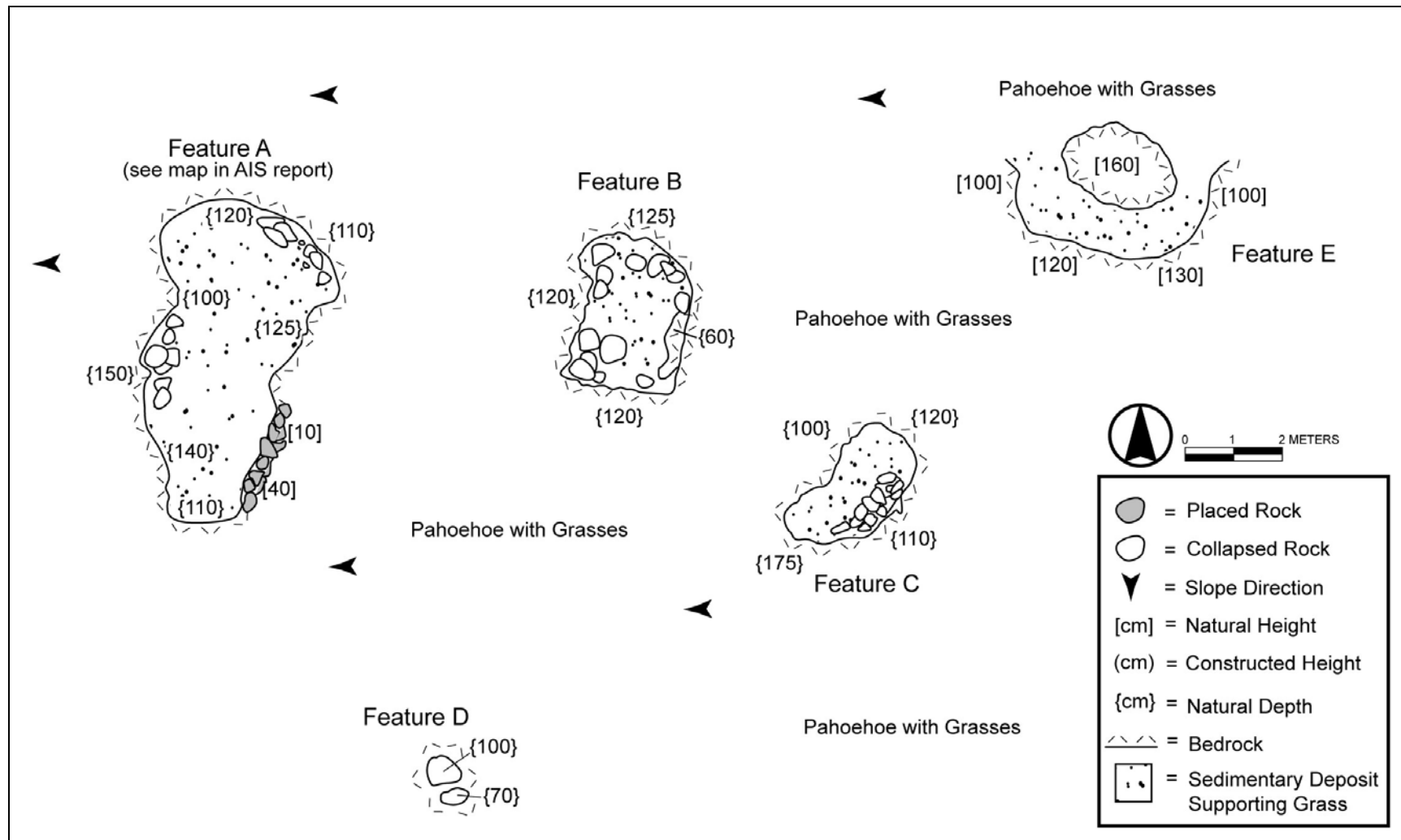


Figure 262. Plan view sketch map of SIHP # -28813



Figure 263. Photograph of SIHP # -28813 Feature A, view to north



Figure 264. Photograph of SIHP # -28813 Feature A, view to northwest

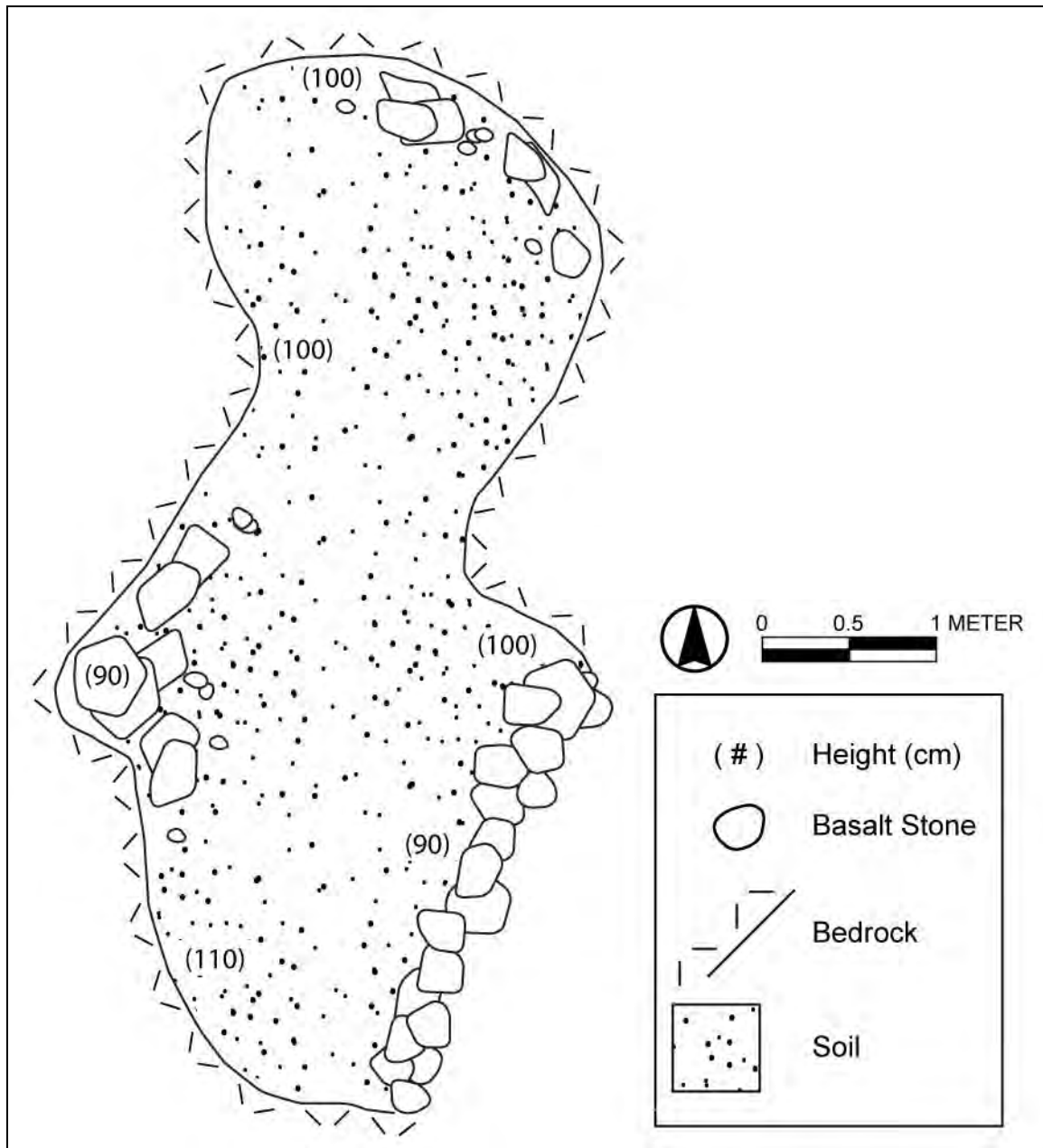


Figure 265. Plan view map of SIHP # -28813 Feature A





Figure 266. Photograph of SIHP # -28813 Feature B, view to northwest





Figure 267. Photograph of SIHP # -28813 Feature C, view to north





Figure 268. Photograph of SIHP # -28813 Feature D, view to north



Figure 269. Photograph of SIHP # -28813 Feature E, view to northeast



Figure 270. Shell (*Charonia tritonis*) fragment from SIHP # -28813 Feature C

**5.2.71 SIHP # 50-10-27-28814****Temp. Site No.:** T-092210-1 (Monahan et al. 2011)**Site Type:** Lava Tube**No. of Features:** 1**Functional Interpretation:** Indeterminate / Possible Water Catchment**Probable Age:** Prehistoric (Pre-Contact)**Overall Dimensions:** 15.0 m N/S by 13.0 m E/W**Topography:** Undulating *pāhoehoe*, level to slightly sloping**Elevation:** 143 ft (44 m) AMSL**Description:**

**SIHP # 50-10-27-28814** is a lava tube located approximately 105 m northwest of the intersection of Ka'iminani Drive and the Queen Ka'ahumanu Highway (Figure 271, Figure 272, and see Figure 26). The lava tube has formed beneath an undulating *pāhoehoe* flow. The overall extent of the lava tube measures 15.0 m N/S by 13.0 m E/W. The opening of the lava tube, located near its north end, measures 1.5 m wide with a ceiling height of 0.5. The lava tube consists of two main chambers connected by a linear passageway along with several small, tapering offshoots that become impassable. Modification to the lava tube consists of two placed *pāhoehoe* boulders that are located near the northern interior wall, adjacent to the tube opening and within the light zone (Figure 273). A thin layer of sediment and organic debris was observed beneath the tube opening within the light zone, which presently supports the growth of grasses and ferns. The remainder of the interior of the lava tube consisted of bare *pāhoehoe* bedrock. No artifacts or midden were observed in the area.

The function of SIHP # -28814 is indeterminate. Minimal soil deposition beneath the tube opening was observed, but no artifacts or midden was identified. The presence of two placed boulders near the tube opening may suggest evidence of water catchment activity. It is likely the lava tube was utilized during prehistoric (pre-Contact) times.



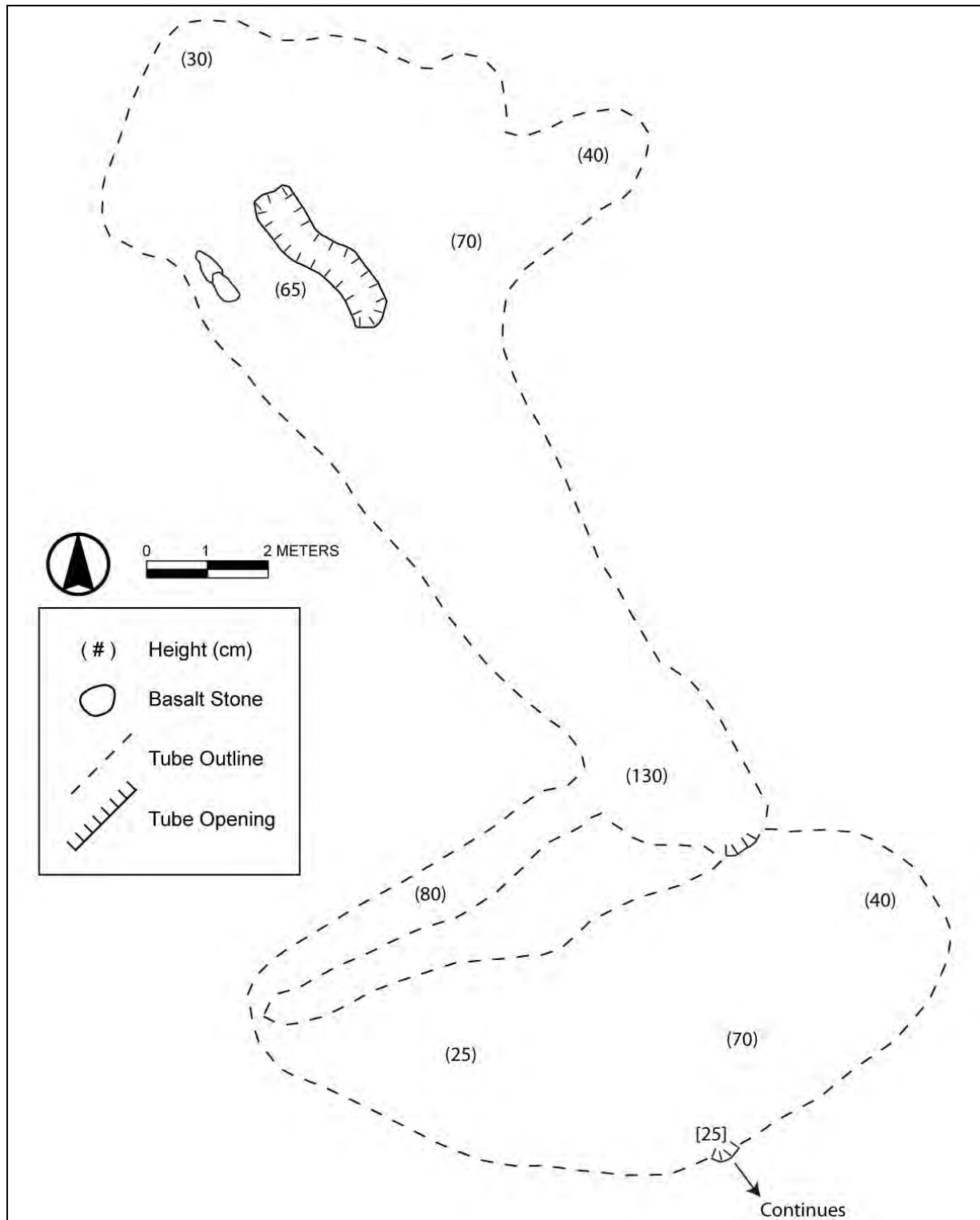


Figure 271. Plan view map of SIHP # -28814



Figure 272. Photograph of SIHP # -28814, view to south



Figure 273. Two placed boulders within SIHP # -28814, view to south

**5.2.72 SIHP # 50-10-27-28815****Temp. Site No.:** T-092210-2 (Monahan et al. 2011)**Site Type:** *Pāhoehoe* Excavation**No. of Features:** 1**Functional Interpretation:** Quarrying**Probable Age:** Prehistoric (Pre-Contact)**Overall Dimensions:** 1.1 m N/S by 1.4 m E/W**Topography:** Level *pāhoehoe* flow**Elevation:** 149 ft (45 m) AMSL**Description:**

**SIHP # 50-10-27-28815** is a *pāhoehoe* excavation located approximately 185 m northeast of the intersection of Ka'iminani Drive and the Queen Ka'ahumanu Highway (Figure 274, Figure 275, and see Figure 26). The *pāhoehoe* excavation consists of an area where an overlying, uplifted sheet of *pāhoehoe* has been quarried and removed, exposing a lower *pāhoehoe* surface. Quarry marks and scalloping were observed along the edges of the excavation. Some of the excavated material (large *pāhoehoe* cobbles) has been placed along the northeastern side of the excavation. The interior surface of the excavation consists of scattered *pāhoehoe* cobbles on solid *pāhoehoe* bedrock. The excavated area lacks soil deposition. The *pāhoehoe* excavation measures 1.1 m N/S by 1.4 m E/W with a maximum depth of 0.5 m below the adjacent ground surface. No artifacts or midden were observed in the area.

SIHP # 50-10-27-28815 is interpreted as a possible raw material quarrying locality likely dating to prehistoric (pre-Contact) times. The *pāhoehoe* excavation lacks sediment accumulation that would indicate potential agricultural use.





Figure 274. Photograph of SIHP # -28815, view to north



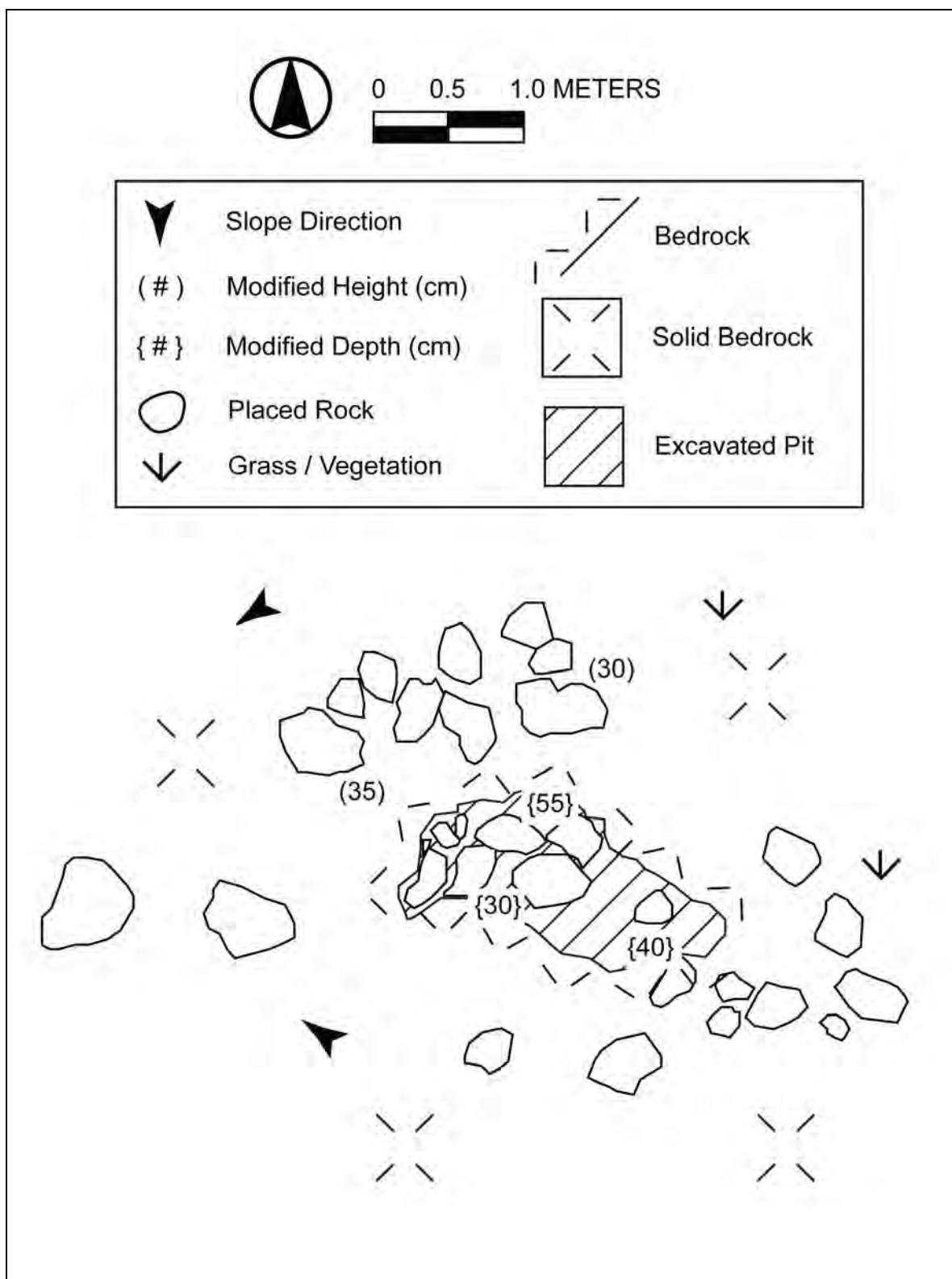


Figure 275. Plan view of SIHP # -28815

**5.2.73 SIHP # 50-10-27-19943****Temp. Site No.:** 1 (Walsh and Hammatt 1995)**Site Type:** Lava Tube**No. of Features:** 4**Functional Interpretation:** Temporary Habitation**Probable Age:** Prehistoric (Pre-Contact)**Overall Dimensions:** >35 m long lava tube (extending *makai*)**Topography:** Undulating, gently sloping *pāhoehoe* flow**Elevation:** 149 ft (46 m) AMSL**Description:**

**SIHP # 50-10-27-19943** was first formally described by CSH in 1995 (Walsh and Hammatt 1995) (see Figure 27). The site was revisited during the current archaeological inventory survey and found to be in the same physical condition (Figure 276, Figure 277). The site was described by Walsh and Hammatt (1995:39, 42) as follows:

Site 19943 is a utilized lava tube located within undulating, gently seaward sloping pahoehoe terrain. The lava tube is oriented *mauka-makai* (northwest-southeast). Access to the tube is gained from an entrance formed by a ceiling collapse . . . The lava tube entrance is located 160 feet (49 m.) from the *makai*, or eastern edge of the present highway pavement.

The lava tube contains four interior features including a mound, an alignment, an ash deposit and a surface scatter of midden. See Appendix B for detailed descriptions and dimensions of these features. One 1.0 m<sup>2</sup> hand-excavated test unit was dug into the mound (Feature A) “to determine the presence or absence of human remains” (Walsh and Hammatt 1995:42). No human skeletal remains or cultural materials of any kind were identified in excavation.

The site is interpreted as a temporary habitation likely dating from prehistoric (pre-Contact) times.

Walsh and Hammatt (1995) recommended SIHP # 19943 eligible for the National and State Registers of Historic Places under criterion D for its information relevant to prehistory and history. The site was recommended for data recovery by Walsh and Hammatt (1995); however, the Final Archaeological Treatment Plan (1999) called for “interim protection” only with no data recovery.



Figure 276. Opening to SIHP # -19943, view to west

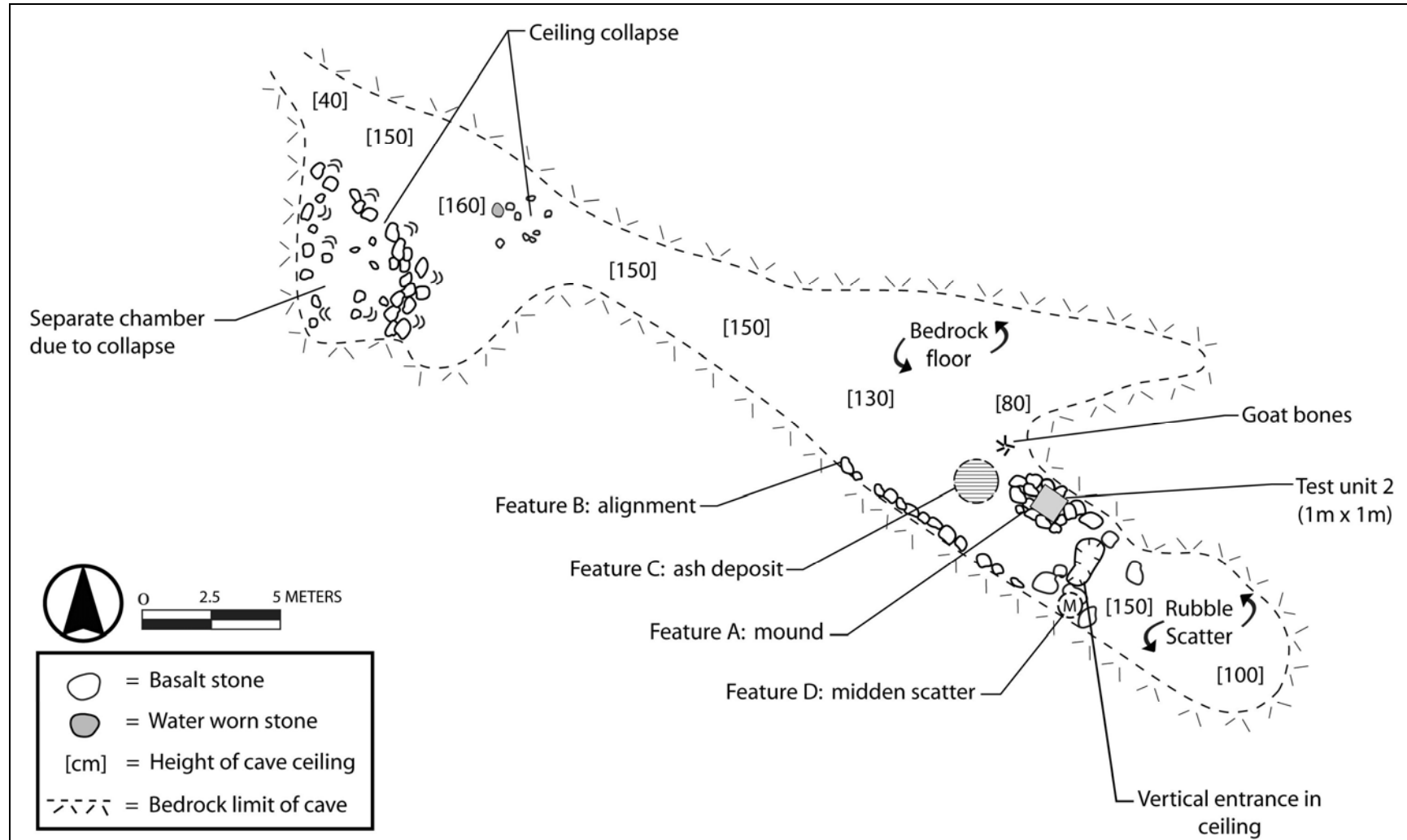


Figure 277. Plan view map of SIHP # -19943 (from Walsh and Hammatt 1995 report)



**5.2.74 SIHP # 50-10-27-19945****Temp. Site No.:** 4 (Walsh and Hammatt 1995)**Site Type:** Petroglyphs and Associated Areas of Pecked/Bashed *Pāhoehoe***No. of Features:** 2 (petroglyphs) and 7 (areas of pecking/bashing)**Functional Interpretation:** Symbolic Expression and Prospecting for Voids**Probable Age:** Prehistoric (Pre-Contact)**Overall Dimensions:** 2.0 m N/S by 2.0 m E/W (petroglyphs); bashing/pecking extends over an area of approximately 40 m E/W by 7 m N/S**Topography:** Undulating *pāhoehoe* flow sloping gently *makai***Elevation:** 147-153 ft (45-47 m) AMSL**Description:**

**SIHP # 50-10-27-19945** was first formally described by CSH in 1995 (Walsh and Hammatt 1995) as a pair of petroglyphs. The site location is depicted in Figure 27. The site was revisited during the archaeological inventory survey by Monahan et al. (2011) and found to be in the same physical condition (Figure 278, Figure 279, and Figure 280). The site was described by Walsh and Hammatt (1995:47) as follows:

Site 19945 consists of two petroglyph figures, designated Feature A and B, located on a low, horizontal pahoehoe outcrop. The petroglyphs appear to be mostly pecked although some incising may have been employed. The figures are both human representations of the basic lineal type...The petroglyphs are in good condition although there is a natural crack in the pahoehoe which partially extends through both figures. This site may be associated with Site 19944 mounds [located outside the current project area], located 8.0 m. *makai*, which have been interpreted as markers.

See Appendix B (Walsh and Hammatt 1995) for more detailed descriptions and dimensions of these petroglyphs.

More recently, during supplemental survey work with the NHOs (Monahan and Wilkinson 2012), several nearby areas of bashed/pecked *pāhoehoe* were documented. CSH archaeologists documented eight discrete areas of bashing/pecking (Figure 281 and Figure 282). One of these is located *makai* and outside of the ROW to the west. The other seven are located in area approximately 40 m E/W by 7 m N/S leading roughly *mauka* from the petroglyphs. The function of these areas of discrete bashing/pecking is unknown; however, they may represent attempts to discover voids under the *pāhoehoe*. Many of these bashed/pecked areas occur along cracks in the flow. The seven bashed/pecked areas, which were designated P-1 through P-7 for GPS recording purposes, vary in areal size as follows: P-1 (Feature C) = 50 cm by 50 cm, P-2 (Feature D) = 90 cm by 60 cm, P-3 (Feature E) = 50 cm by 35 cm, P-4 (Feature F) = 120 cm by 30 cm, P-5 (Feature G) = 70 cm by 80 cm, P-6 (Feature H) = 90 cm by 30 cm, and P-7 (Feature I) = 50 cm by 50 cm (Figure 281, Figure 282).

Referring only to the petroglyphs, Walsh and Hammatt (1995) recommended SIHP # -19945 eligible for the National and State Registers of Historic Places under criterion D for its information relevant to prehistory and history and criterion E (Hawai'i register only) for its cultural significance to Native Hawaiians. The site was recommended for preservation "to the

extent possible within the proposed highway widening plans” *and* “those portions of [the site] that cannot be avoided [should] be included in a program of data recovery” (Walsh and Hammatt 1995:57). The Final Archaeological Treatment Plan (1999), however, called for “interim protection” only for SIHP # -19945.



Figure 278. Feature A, SIHP # -19945, scale measures approximately 50 cm



Figure 279. SIHP # -19945, showing Feature A (left) and Feature B (right)

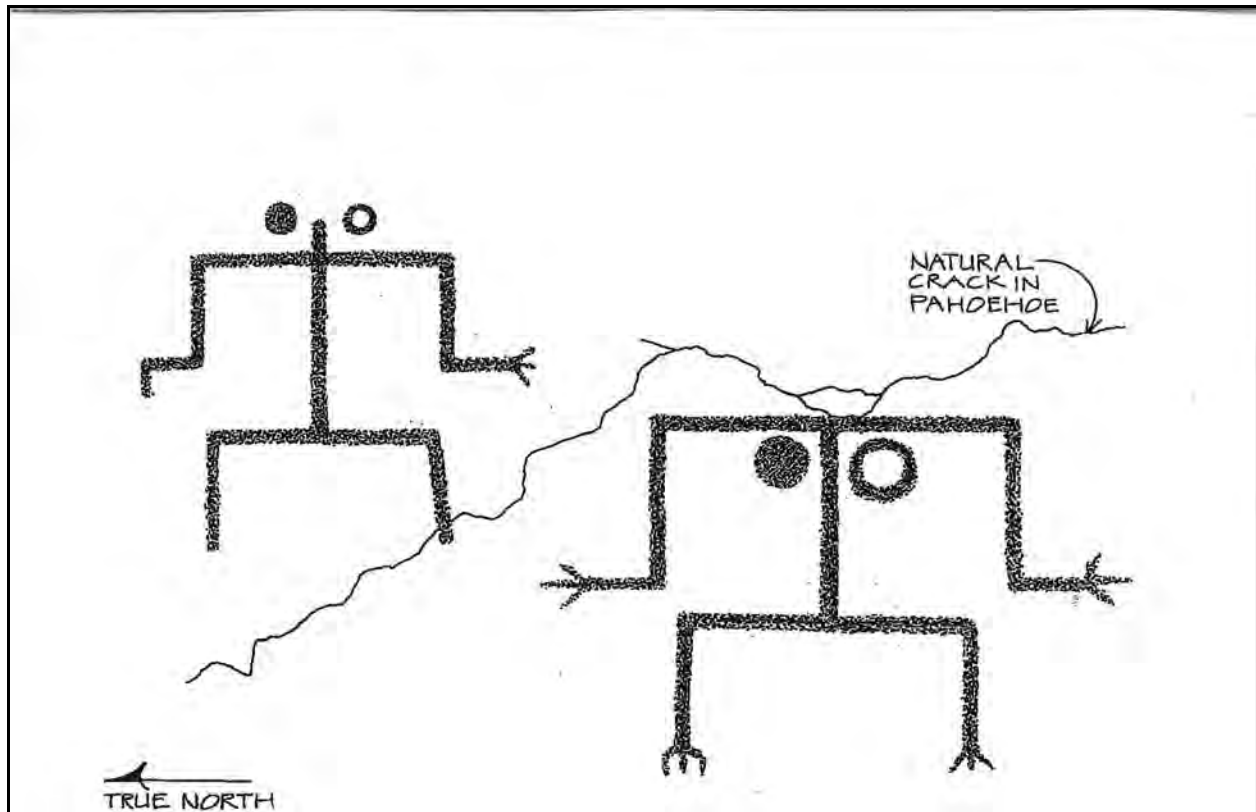


Figure 280. Plan view map of SIHP # -19445 Features A and B (taken from Walsh and Hammatt 1995)





Figure 281. Bashing / pecking area P-1 (Feature C), view to east



Figure 282. Bashing / pecking area P-5 (Feature G), view to east



**5.2.75 SIHP # 50-10-27-29348**

**Temp. Site Designation:** Rock 1 (Monahan and Wilkinson 2012)

**Site Type:** Boulder (*Pāhoehoe* Basher) in Excavated Pit

**No. of Features:** 1

**Functional Interpretation:** Prospecting for Voids (*Pāhoehoe* Basher)

**Probable Age:** Prehistoric (Pre-Contact)

**Overall Dimensions:** 2.0 m by 0.70 m (excavated pit dimensions)

**Topography:** Undulating *pāhoehoe* flow sloping gently *makai*

**Elevation:** 143 ft (34 m) AMSL

**Description:**

**SIHP # 50-10-27-29348** is an excavated pit in a *pāhoehoe* flow with a medium-sized rounded, water-worn basalt boulder within the pit. The site location is depicted in Figure 27. This site was discovered during the supplemental survey work in the north segment of the current project area (Monahan and Wilkinson 2012).

Unlike the similar, nearby site described below (SIHP # 29349), the boulder at this site does not appear to have modification (bashing) damage (Figure 283, Figure 284). Vegetation in the area consists of introduced grasses. There is no soil-sedimentary deposition within or adjacent to the excavated pit.

The boulder, which measures approximately 52 cm by 24 cm by 12 cm, is a type not locally available in the project area; it must have been carried inland from the coast.

The excavated pit was dug into the edge of an outcrop creating an informal two-leveled pit floor. The boulder is placed in the upper, southern end of the pit. About 10 small extracted boulders and cobbles have been placed along the east and west sides of the pit, which is approximately 2.0 m long N/S by 0.70 m wide (E/S). The maximum depth of the pit is 45 cm at the northern end. No other pits were observed near this pit.

SIHP # -29348 is interpreted as a location where Native Hawaiians were prospecting for voids in the *pāhoehoe* flow. Excavated pits such as the one at this site are commonly found on volcanic flows that may contain subterranean openings and caverns. The discarded boulder may have been intended to be used for this general purpose, although there is no evidence of bashing on it. Given all available evidence, this site most likely dates from prehistoric (pre-Contact) times.



Figure 283. Boulder within excavated pit at SIHP # -29348, view to east

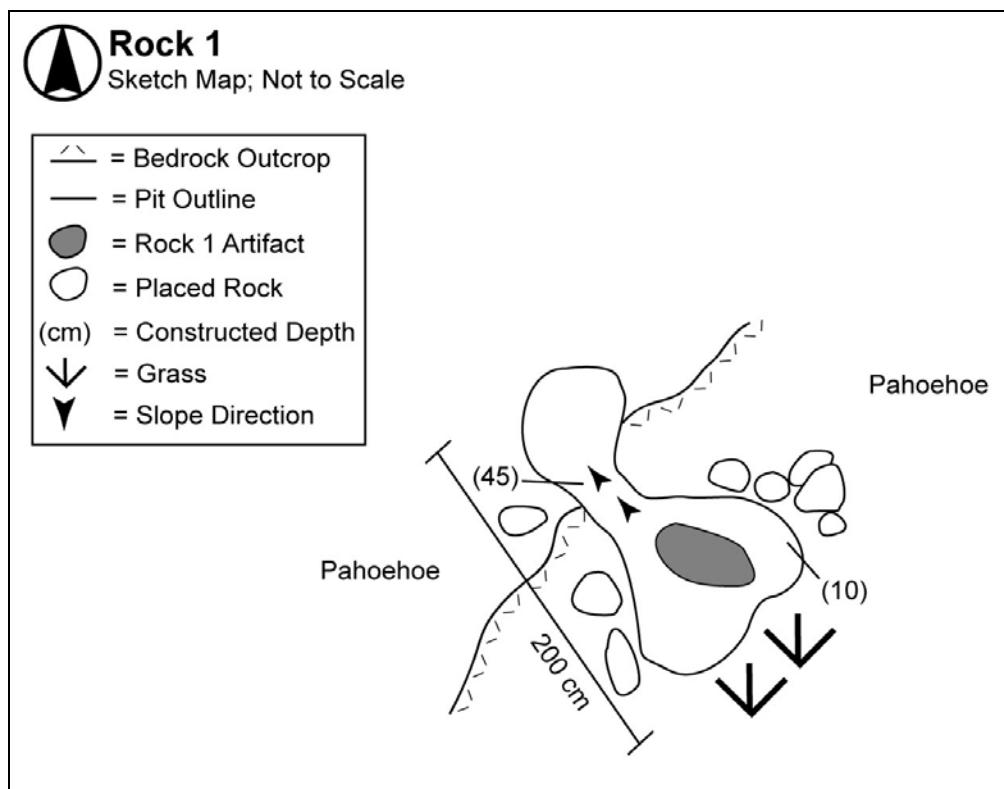


Figure 284. Plan view sketch map of boulder within excavated pit at SIHP # -29348

**5.2.76 SIHP # 50-10-27-29349**

**Temp. Site Designation:** River Rock (Harp 2011)

**Site Type:** Boulder (*Pāhoehoe* Basher) and Associated Excavated Pit

**No. of Features:** 2 (note, additional excavated pits out of project area)

**Functional Interpretation:** Prospecting for Voids (*Pāhoehoe* Basher)

**Probable Age:** Prehistoric (Pre-Contact)

**Overall Dimensions:** 12.0 m NE/SW by 2.0 m NW/SE

**Topography:** Undulating *pāhoehoe* flow sloping gently *makai*

**Elevation:** 141-142 ft (43 m) AMSL

**Description:**

**SIHP # 50-10-27-29349** is a small rounded, water-worn basalt boulder (Feature A) with use-wear (evidence of bashing) on both ends in association with an excavated pit in the *pāhoehoe* (Feature B) approximately 12.0 meters to the northeast. Vegetation in the area consists of introduced grasses and *maiapilo* (*Capparis sandwichiana*). The site location is depicted in Figure 27. This site was pointed out to CSH by Isaac Harp, and was inspected and assessed as part of the supplemental survey of the north segment of the current project area (Monahan and Wilkinson 2012).

The boulder, which measures approximately 21 cm by 15 cm by 6.5 cm, is a type not locally available in the project area; it must have been carried inland from the coast (Figure 285, Figure 286). CSH archaeologists also observed additional excavated pits *makai* and outside of the ROW. The excavated pit is roughly L-shaped and measures approximately 3.0 m long by 2.8 m wide by 0.20 m high. Cobble-sized rocks quarried from the pit are located in and around the feature (Figure 287, Figure 288). There is no soil-sedimentary deposition within or adjacent to the excavated pit.

SIHP # -29349 is interpreted as a location where Native Hawaiians were prospecting for voids in the *pāhoehoe* flow. Excavated pits such as the one at this site are commonly found on volcanic flows that may contain subterranean openings and caverns. The discarded boulder, showing evidence of bashing on both ends, was clearly used for this general purpose. Given all available evidence, this site most likely dates from prehistoric times.





Figure 285. Boulder (*pāhoehoe* basher), SIHP # -29349 Feature A, view to southeast



Figure 286. Overview showing boulder's relationship to the sea shore, view to west





Figure 287. Excavated pit designated SIHP # -29349 Feature B, view to southwest

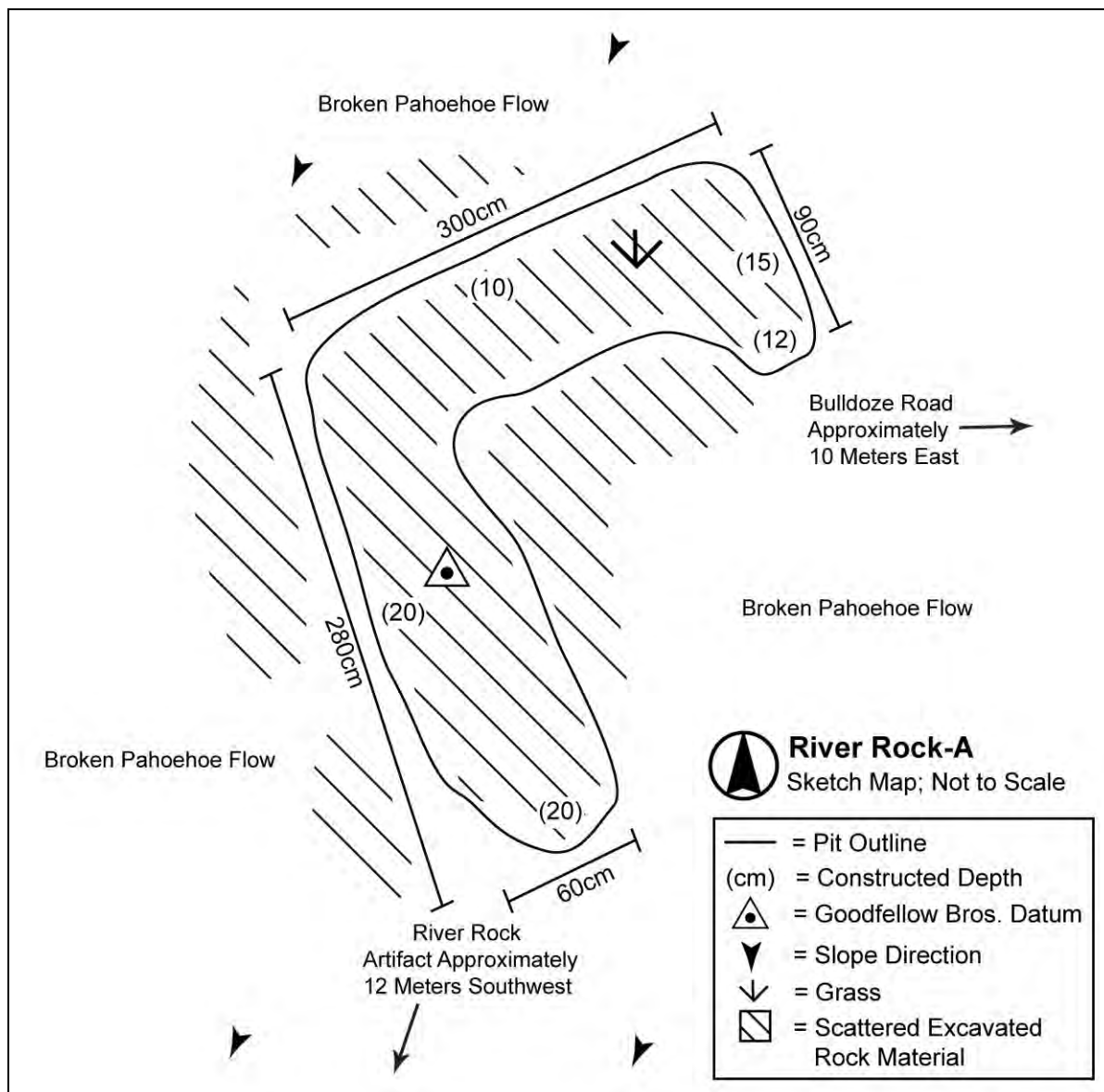


Figure 288. Plan view sketch map of excavated pit (SIHP # -29349 Feature B)

## Section 6 Significance Evaluations

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To be considered eligible for listing on the National and Hawai'i Register of Historic Places, a historic property must possess one or more of the following: integrity of location, design, setting, materials, workmanship, feeling, and/or association, and meet one or more significance criteria. The criteria, whose wording differs slightly between the National and Hawai'i standards, are generally understood as follows:

- A Associated with events that have made an important contribution to the broad patterns of our history;
- B Associated with the lives of persons significant in our past;
- C Embodies the distinctive characteristics of a type, period, or method of construction, represents the work of a master, or possesses high artistic value; also, for the National Register language only, this criterion includes historic properties “that represent a significant and distinguishable entity whose components may lack individual distinction” (see <http://www.achp.gov/nrcriteria.html>).
- D Have yielded, or is likely to yield information important for research on prehistory or history;
- E Have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property, or due to associations with traditional beliefs, events or oral history accounts – these associations being important to the group's history and cultural identity. This last criterion is included only in the Hawai'i Register language (see [http://hawaii.gov/dlnr/hpd/pdfs/revproc\\_har/275\\_284/pdfs/275.pdf](http://hawaii.gov/dlnr/hpd/pdfs/revproc_har/275_284/pdfs/275.pdf)).

Table 26 summarizes the significance evaluations for each historic property identified in the project area (i.e., the ROW). It is important to note that, in addition to the sites in the ROW, the National Park Service has determined that all sites within Kaloko-Honokōhau National Historical Park and Honokōhau Settlement National Historic Landmark are also eligible for the National Register of Historic Places.

All 75 historic properties in the project area have been assessed as significant under Criterion D, meaning that each historic property has “yielded, or is likely to yield, information important for research on prehistory or history.”

All 75 historic properties in the project area have also been assessed as significant under Criterion E in recognition of their “important value to the native Hawaiian people . . . due to associations with cultural practices once carried out, or still carried out, at the property” as well as their “associations with traditional beliefs, events or oral history accounts.” This significance criterion was added to all historic properties in the project area as a result of consultation with NHOs for this project.

All trail sites in the project area are also evaluated as significant under Criterion C in recognition of the fact that the short portions of these trails identified in the project area are components of much larger networks of trails extending down to the seashore and up the mountain slopes. In addition, two of these trails, SIHP # 10714 (the “Road to the Sea Trail”) and SIHP # 18099 (the “Trail to

Honokōhau”), should also be considered significant under Criterion A for their association with events that have made contributions to broad patterns of history in Hawai‘i.

The Māmalahoa Trail is a special case: it has previously been evaluated in the project area by Walsh and Hammatt (1995) as significant under Criteria A, C, D and E. It should also be considered eligible under Criterion B in recognition of its association with Kuakini (Governor of Hawai‘i from 1819-1844), who initiated a program of road building that included Māmalahoa (Kirch 1996).

Finally, in the context of this section on significance assessments, it is important to state that some NHOs consulted during this project believe all 75 historic properties should be considered eligible under Criterion B due to associations “with the lives of persons significant in our past.” Citing Cordy et al.’s (1991) classic historical and archaeological study of Kaloko-Honokōhau, these NHOs highlighted the project area’s associations with certain historically-significant Hawaiian *ali‘i* (chief, or person of royal birth) including Laeanuikaumanamana, Liloa, Kame‘eiamoku, Kamehameha I, Kamehameha V (a grandson of Kamehameha I also known as Kapuāiwa, or Lot Kapuāiwa), and others. CSH believes these associations highlight the overall historical significance of the entire North Kona district, or the traditional region known as Kekaha; however, specific associations between the historic properties and these historical persons in the project area are lacking (with the exception of the Māmalahoa Trail).



Table 26. Significance Evaluations for Historic Properties in the Project Area (arranged South to North)

SIHP # <sup>1</sup>	Site Type	Feat.	Age	Function	Significance Criteria <sup>2</sup>
19954	Trail ( <i>mauka-makai</i> )	1	Indeterminate	Transportation	C, D and E
29332	Mound/Paved Area within Naturally-formed <i>Pāhoehoe</i> Depression	2	Indeterminate	Indeterminate, possible burial	D and E
29334	Rock Mound within a Naturally-formed <i>Pāhoehoe</i> Depression	1	Indeterminate	Indeterminate, possible burial	D and E
28774	Trail ( <i>mauka-makai</i> )	1	Indeterminate	Transportation	C, D and E
22507	Trail ( <i>mauka-makai</i> )	1	Indeterminate	Transportation	C, D and E
29335	Rock Wall Segment	1	Indeterminate	Indeterminate	D and E
18099	Trail ( <i>mauka-makai</i> )	1	Indeterminate-Possibly Historic	Transportation	A, C, D and E
22418	Trail ( <i>mauka-makai</i> )	1	Indeterminate	Transportation	C, D and E
22417	Modified Lava Blister	1	Prehistoric (Pre-Contact)	Agriculture / Planting Pit	D and E
28778	<i>Pāhoehoe</i> Excavation	1	Prehistoric (Pre-Contact)	Agriculture / Planting Pit	D and E
22415	Platform	1	Prehistoric (Pre-Contact)	Burial	D and E
29336	Rock Terrace	1	Indeterminate	Indeterminate, possible burial	D and E
29337	Excavated Pit	1	Indeterminate	Indeterminate-Possible Quarry or Sweet Potato Planter	D and E
29339	Rock Wall Segment	1	Indeterminate	Indeterminate	D and E
29338	Excavated Pit	1	Indeterminate	Indeterminate-Possible Quarry or Sweet Potato Planter	D and E
29340	Rock Mound	1	Indeterminate	Indeterminate, possible burial	D and E

SIHP # <sup>1</sup>	Site Type	Feat.	Age	Function	Significance Criteria <sup>2</sup>
29341	Excavated Pits	2	Indeterminate	Indeterminate-Possible Quarry or Sweet Potato Planter	D and E
29342	Excavated Pit	1	Indeterminate	Indeterminate-Possible Quarry for Cinder Rock to Repair Nearby Māmalahoa Trail	D and E
00002	Māmalahoa Trail (cross slope, <i>ala loa</i> type)	1	Historic	Transportation	A, B, C, D and E
19953	Trail ( <i>mauka-makai</i> )	1	Indeterminate	Transportation	C, D and E
29343	Excavated Pit	1	Indeterminate	Indeterminate-Possible Quarry or Sweet Potato Planter	D and E
28780	'A 'ā Excavation	1	Indeterminate	Indeterminate, possible burial	D and E
28781	Paved / Leveled Area	1	Indeterminate	Indeterminate-Possible Agricultural Clearing	D and E
28782	Trail ( <i>mauka-makai</i> )	1	Indeterminate	Transportation	C, D and E
28783	Complex	6	Prehistoric (Pre-Contact)	Agriculture	D and E
28784	Trail ( <i>mauka-makai</i> )	1	Indeterminate	Transportation	C, D and E
28785	Enclosure	1	Prehistoric (Pre-Contact)	Agriculture	D and E
29333	Rock Stacking (Possible <i>Ahu</i> )	1	Indeterminate	Indeterminate	D and E
28786	Modified Depression	1	Prehistoric (Pre-Contact)	Agriculture	D and E
28787	Trail ( <i>mauka-makai</i> )	1	Indeterminate	Transportation	C, D and E
19952	Trail ( <i>mauka-makai</i> )	1	Indeterminate	Transportation	C, D and E
28788	Modified Outcrop Complex	2	Prehistoric (Pre-Contact)	Agriculture	D and E
19951	Wall	1	Historic	Ranching / Boundary	D and E
28789	Complex	6	Prehistoric (Pre-Contact)	Agriculture	D and E

SIHP # <sup>1</sup>	Site Type	Feat.	Age	Function	Significance Criteria <sup>2</sup>
19950	Modified Outcrop Complex	5	Prehistoric (Pre-Contact)	Agriculture	D and E
28790	<i>Pāhoehoe</i> Excavation	1	Prehistoric (Pre-Contact)	Quarrying	D and E
19949	Enclosure	1	Indeterminate (Historic or Possibly Modern)	Indeterminate-Possible Windbreak / Temporary Shelter	D and E
28791	Trail ( <i>mauka-makai</i> )	1	Indeterminate	Transportation	C, D and E
28792	Petroglyph	1	Prehistoric (Pre-Contact)	Symbolic Expression	D and E
29344	Excavated Pit	1	Indeterminate- Probably Prehistoric (Pre-Contact)	Indeterminate-Possible Quarry or Sweet Potato Planter or Bird Pit	D and E
10714	Trail System ( <i>mauka-makai</i> ), interpreted as part of the "Road to the Sea Trail"	3	Prehistoric (Pre-Contact) (used in Historic times as well)	Transportation	A, C, D and E
28794	Filled Crevice	1	Indeterminate	Indeterminate-Possible Agricultural Clearing Feature	D and E
28797	Mound Complex	2	Prehistoric (Pre-Contact)	Agriculture	D and E
19948	Complex	8	Prehistoric (Pre-Contact)	Agriculture and Quarrying	D and E
28799	Excavated Pit Complex	3	Prehistoric (Pre-Contact)	Agriculture	D and E
28800	<i>Pāhoehoe</i> Excavation	1	Prehistoric (Pre-Contact)	Quarrying	D and E
28801	Modified Outcrop Complex	2	Prehistoric (Pre-Contact)	Agriculture	D and E
19947	Stacked Rocks	3	Prehistoric (Pre-Contact)	Ahupua'a Boundary Markers	D and E
28802	Complex	3	Prehistoric (Pre-Contact)	Temporary Habitation	D and E

SIHP # <sup>1</sup>	Site Type	Feat.	Age	Function	Significance Criteria <sup>2</sup>
28803	Complex	2	Indeterminate	Indeterminate-Possible Agricultural Clearing Feature	D and E
28804	Filled Crevice	1	Indeterminate	Indeterminate-Possible Agricultural Clearing Feature	D and E
28805	Modified Outcrop	1	Prehistoric (Pre-Contact)	Agriculture/Clearing	D and E
15324	Trail ( <i>mauka-makai</i> )	2	Indeterminate	Transportation	C, D and E
19946	Trail ( <i>mauka-makai</i> )	1	Indeterminate	Transportation	C, D and E
28806	Mound	1	Indeterminate	Possible Marker	D and E
28807	Filled Crevice	1	Indeterminate	Indeterminate	D and E
29345	Coral-filled <i>Pāhoehoe</i> Crevice	3	Indeterminate	Indeterminate	D and E
28808	Mound Complex	5	Indeterminate	Markers	D and E
28809	<i>Pāhoehoe</i> Excavation	1	Prehistoric (Pre-Contact)	Quarrying	D and E
28810	Lava Tube	1	Prehistoric (Pre-Contact)	Indeterminate / Possible Water Catchment	D and E
29346	Rock Mound	1	Indeterminate	Indeterminate – Possible Marker or Quarrying	D and E
10154	Walled Enclosure	1	Historic	Indeterminate-Possible Habitation	D and E
06432	Core-Filled Stone Wall	1	Historic	<i>Ahupua'a</i> Boundary	D and E
29347	Rock Mound	1	Indeterminate	Possible Marker or Quarrying	D and E
29272	Level Area in 'A'ā with Trail ( <i>mauka/makai</i> )	2	Indeterminate	Possible Temporary Resting Spot / Work Area and Transportation	C, D and E
28811	<i>Pāhoehoe</i> Excavation	1	Prehistoric (Pre-Contact)	Quarrying	D and E
28812	Possible Filled Crevice	1	Indeterminate	Indeterminate	D and E
28813	Modified Lava Blisters	5	Prehistoric (Pre-Contact)	Agriculture	D and E



SIHP # <sup>1</sup>	Site Type	Feat.	Age	Function	Significance Criteria <sup>2</sup>
28814	Lava Tube	1	Prehistoric (Pre-Contact)	Indeterminate / Possible Water Catchment	D and E
28815	<i>Pāhoehoe</i> Excavation	1	Prehistoric (Pre-Contact)	Quarrying	D and E
19943	Lava Tube	4	Prehistoric (Pre-Contact)	Temporary Habitation	D and E
19945	Petroglyphs (n=2) and Bashed/Pecked <i>Pāhoehoe</i> (n=7)	9	Prehistoric (Pre-Contact)	Symbolic Expression and Prospecting for Voids in Lava Flows	D and E
29348	Boulder ( <i>Pāhoehoe</i> Basher) in Excavated Pit	1	Prehistoric (Pre-Contact)	Prospecting for Voids in Lava Flow	D and E
29349	Boulder ( <i>Pāhoehoe</i> Basher) and Associated Excavated Pit	2	Prehistoric (Pre-Contact)	Prospecting for Voids in Lava Flow	D and E

Notes:

<sup>1</sup>These State Inventory of Historic Property (SIHP) numbers begin with “50-10-27.”

<sup>2</sup>See text above (Section 6 Significance Evaluations) for explanation of significance criteria.

## Section 7 Project Effect and Mitigation Recommendations

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The following project effect discussion and cultural resource management recommendations are intended to facilitate project planning and support the proposed project's required historic preservation consultation. This discussion is based on the results of this archaeological inventory survey investigation, CSH's communication with agents for the project proponents regarding the project's potential impacts to the cultural resources described in the Results of Fieldwork section, above, and consultation with the HDOT, FHWA, SHPD/DLNR, NPS, OHA and other NHOs.

### 7.1 Project Effect

The purpose of the proposed Queen Ka'ahumanu Highway Widening Phase 2 Project is to widen the highway from the existing two (2) lanes into a four (4) lane divided highway within the existing 300-foot right-of-way. Major features of the project include: construction of new pavements and pavement markings; drainage systems; sidewalks; traffic signal systems and traffic signs; guardrails and landscape plantings; highway lighting plus the relocation and installation of utilities. The project proponent—the HDOT—will also address any mitigation of archaeological sites ("historic properties") within the project limits, and will provide temporary and permanent BMP (Best Management Practices). Finally, the project proponent is the responsible party for the process of all permits required to complete the project in conformance with appropriate Federal, State and local standards.

This archaeological inventory survey investigation identified 74 historic properties (see Table 23, see Figure 17 to Figure 27) within the project area, which is synonymous with the State highway right-of-way (ROW), and one (1) historic property was identified within the vicinity (outside) of the project area (see Appendix C).

Under Hawai'i State historic preservation review legislation, CSH's project-specific effect recommendation is "effect, with proposed mitigation commitments." Under federal historic preservation review legislation a project effect recommendation of "adverse effect" is warranted, with the understanding that the proposed mitigation measures (described below) will be carried out to mitigate the undertaking's potential effect on Hawai'i and National Register-eligible cultural resources

Table 27 and Table 28 provide detailed mitigation recommendations for these 75 historic properties.

Certain cultural resources located within the Kaloko-Honokōhau National Historical Park and the Honokōhau Settlement National Historic Landmark (SIHP 50-10-27-4138), which are immediately adjacent to (west of) the project area in Honokōhau and Kaloko Ahupua'a, may also be adversely (indirectly) affected by the proposed project (see Section 7.2.6 Other Proposed Mitigation).

Table 27. Summary of Proposed Mitigation (sites arranged numerically)

Item	Action (SIHP #)	No. Sites
1	<b>Burial Treatment Plan</b> —Preservation in Place (22415, 29275*)	2
2	<b>Preservation</b> (10154, 19943, 19950, 19951, 28780, 28781, 28788, 28789, 28790, 28792, 28797, 28799, 28802, 28806, 28810)	15
3	<b>Preservation &amp; No Further Work</b> (19945—two petroglyphs will be preserved; no further work for remaining features at this site)	1
4	<b>Avoidance During Construction</b> (19946, 28794, 28801, 28803, 28804, 28805, 28809, 29337, 29341, 29342, 29343, 29347)	12
5	<b>No Further Work</b> (06432—note, damage to 06432 will be minimized by way of archaeological and cultural monitoring , 29338,	2
6	<b>Relocation</b> (19947, 29346)	2
7	<b>Relocation &amp; Preservation</b> (28808—Relocation of 2 features, Preservation of 3 features)	1
8	<b>Data Recovery (Excavation/Dismantling)</b> (19949, 22417, 28778, 28785, 28786, 28800, 28807, 28811, 28812, 28814, 28815, 29332, 29333, 29334, 29345, 29335, 29336, 29339, 29340, 29344)	20
9	<b>Data Recovery (Archival Research) &amp; Partial Preservation</b> (00002, 10714, 15324, 18099, 19952, 19953, 19954, 22507, 28774, 28782, 28787, 28784, 28791)	13
10	<b>Data Recovery (Archival Research) only</b> (22418)	1
11	<b>Data Recovery (Collection &amp; Curation of Portable Artifacts)</b> (29348, 29349)	2
12	<b>Data Recovery (Excavation) &amp; Preservation</b> (19948, 28783, 28813, 29272)	4
	<b>TOTAL</b>	<b>75</b>

\*Contingent upon consent of the landowner

## 7.2 Mitigation Recommendations

In order to mitigate the proposed project's potential effects on significant cultural resources, the following mitigation measures are recommended (see Table 28). In general, the objective of this mitigation program is to protect and preserve as many historic properties as possible, and to obtain additional information at significant sites that cannot be avoided by current construction plans. The mitigation program includes: Archaeological and Cultural Monitoring (Section 7.2.1), Data Recovery (Section 7.2.2), Preservation and Avoidance During Construction (Section 7.2.3), Relocation (Section 7.2.4), Burial Treatment (Section 7.2.5), and Other Proposed Mitigation (7.2.6).

During consultation for the subject archaeological survey, the NPS and NHOs, including OHA, have requested the opportunity to review and comment on the Data Recovery, Preservation, Archaeological Monitoring and Burial Treatment Plans prior to ground disturbing

activities. This opportunity for review and comment is a standard part of the ongoing consultation process and will be honored.

### 7.2.1 Archaeological and Cultural Monitoring

In addition to the mitigation recommendations listed in Table 28, CSH recommends Archaeological and Cultural Monitoring of all original-ground disturbing activities in the project area (ROW). Archaeological and Cultural Monitoring shall be performed whenever disturbance of original (previously undisturbed) ground is conducted in the project area. The archaeological monitor shall continuously observe and monitor ground disturbing activities. Archaeological Monitoring shall be conducted in accordance with an Archaeological Monitoring Plan (AMP) prepared in accordance with Hawai'i Administrative Rules (HAR) 13-279. The AMP shall be reviewed and accepted by the State Historic Preservation Division (SHPD) prior to the start of ground-disturbing activities.

There are no administrative rules governing Cultural Monitoring; however, such individuals typically possess training and knowledge of the project-specific landscape and its cultural and natural resources received from their *kūpuna* (elders). CSH has worked with Cultural Monitors on many projects, and has developed daily Cultural Monitoring forms that Cultural Monitors fill out to record their observations and/or concerns. CSH has professional relationships with potential Cultural Monitors for the subject project.

### 7.2.2 Data Recovery

CSH recommends several different types of Data Recovery for this project, as described in this subsection. CSH recommends Data Recovery for a total of 40 historic properties. Data Recovery fieldwork will be conducted in accordance with a Data Recovery Plan (DRP) prepared in accordance with HAR 13-278. In consultation with the SHPD, who provided verbal concurrence in a meeting on 10 January 2011, and because many of the historic properties in the project area will be subject to *both* Data Recovery and Preservation, CSH recommends preparation of a single plan that deals with *both* data recovery and preservation mitigation. This plan will be called a Data Recovery and Preservation Plan (DRPP). The DRPP will stipulate appropriate data recovery and protection measures to be implemented. The DRPP shall be submitted for review and acceptance by the SHPD prior to the start of Data Recovery fieldwork.

Thirteen (13) of the historic properties for which Data Recovery is recommended are trails (SIHP #s 00002, 10714, 15324, 18099, 19952, 19953, 19954, 22418, 22507, 28774, 28782, 28787, 28784, 28791 and 29272), including the Māmalahoa Trail (SIHP # 00002) and 12 *mauka-makai* trails. Note that portions of most of these trails will also be partially preserved within the ROW wherever construction plans make it possible (see Section 7.2.3 Preservation and Avoidance During Construction). There is no portion of one trail (SIHP # 22418) that can be preserved; the trail is located entirely within the grading limits of the proposed project. For trails sites, Data Recovery will not include fieldwork; rather, it will consist of a comprehensive archival analysis that will place the project-area trail segments in a context that accurately reflects their cultural and historical significance.

Twenty (20) historic properties (29332, 29335, 22417, 28778, 29339, 28785, 28786, 28800, 28807, 28811, 28812, 28814, 28815, 29333, 19949, 29334, 29345, 29336, 29340, and 29344) are



recommended for Data Recovery in the form of traditional excavation and/or dismantling in the case of sites and site-features without substantial soil-sedimentary deposits.

Four (4) historic properties (19948, 28783, 28813 and 29272) are recommended for a combination of Data Recovery excavation of some features and Preservation of other features.

Two (2) historic properties (29348 and 29349) are recommended for Data Recovery that consists of collecting and curating portable artifacts.

### 7.2.3 Preservation and Avoidance During Construction

Not including the burial sites (SIHP # 22415 and 29275), which will be avoided and preserved in place (contingent upon consent of the landowner; see Section 7.2.5), CSH recommends Preservation, of either the entire site or a portion of it, for 21 historic properties (10154, 19943, 19945, 19948, 19950, 19951, 28780, 28781, 28783, 28788, 28789, 28790, 28792, 28797, 28799, 28802, 28806, 28808, 28810, 28813 and 29272). Sixteen (16) of these will be completely preserved with no data recovery work taking place. The Preservation Plan shall include *both* interim protection measures (i.e., during construction activities) and long-term preservation measures (i.e., in perpetuity), in accordance with a Preservation Plan (PP) prepared in accordance with HAR 13-277. Interim protection measures, which shall be described in detail in the PP, will mitigate against any inadvertent damage during construction activities. The PP shall be submitted for review and acceptance by the SHPD prior to the start of construction activities. As stated above, because many sites will be subject to both Data Recovery and Preservation, CSH recommends preparation of a single plan that deals with both data recovery and preservation mitigation, known as a Data Recovery and Preservation Plan (DRPP). The SHPD has concurred with this approach.

With the exception of SIHP # 22418 (which is located entirely within the grading limits), portions of all trails will be preserved to the greatest extent possible according to the currently understood construction limits (see Figure 17 through Figure 27; see also additional discussion in Section 7.2.6). Partial preservation is recommended for three non-trail sites (19948, 28783 and 28813). For SIHP # 29272, a *mauka/makai* trail site with a cleared area in addition to the trail, the entire trail segment in the ROW (designated Feature B) will be preserved (the level area, Feature A, will be subject to Data Recovery excavation).

The petroglyph site (SIHP # 19945) will be subject to Preservation for the two petroglyphs (Features A and B), but no further work for the remaining features at this site (areas of bashing/pecking the *pāhoehoe* designated Features C-I).

CSH has discussed with the NPS and with representatives of the project proponent the issue of interpretative signage for inclusion in the DRPP. CSH recommends ongoing consultation regarding the number, placement and content of such signage with other project stakeholders including NHOs.

Thirteen (13) historic properties (28794, 28801, 28803, 28804, 28805, 19946, 28809, 29337, 29339, 29341, 29342, 29343, 29347) are recommended for Avoidance During Construction, which means protection during all project-related construction activities *and* commitment by HDOT to conduct a new historic preservation review in the future should other construction projects be planned that may affect these sites.

#### 7.2.4 Relocation

During consultation with NHOs, the recommendation of relocating portable sites (such as small rock mounds) was developed. Based on these discussion, CSH recommends relocation of two (2) historic properties (SIHP # 19947 and 29346) as well as partial relocation—that is, relocating two features that will otherwise be destroyed, but preserving three others that can be saved) for one (1) historic property (SIHP # 28808).

#### 7.2.5 Burial Treatment

CSH recommends preparation of a Burial Treatment Plan (BTP) for SIHPs # 22415 and 29275 (matters regarding SIHP 29275 may be contingent upon the consent of the landowner) in accordance with Hawai'i Revised Statutes (HRS) 6E-43 and HAR 13-300. CSH recommends “preservation in place” of SIHP # 22415 and # 29275, and project proponents have expressed support for ensuring this treatment option is viable. Preparation of the BTP shall include all required consultation as described in HAR 13-300.

#### 7.2.6 Other Proposed Mitigation

- A. National Park Service. In consultation with the NPS, other concerns have been raised about additional potential effects and methods to avoid or mitigate these. Discussion is ongoing between NPS and project planners/engineers, and may be concluded at this time. These discussion topics are described briefly below:
- (1) How will water quality in the Park be affected by the proposed project, including work conducted during construction as well as use of the highway once it is completed? The NPS is concerned about contaminated water run-off entering the groundwater system of the park and filtering down to the many anchialine ponds, fishponds and other wetlands in the Park. According to the project proponents, BMPs will be sufficient to avoid runoff coming near the fishponds and wetlands. During ongoing consultation for the subject archaeological survey, the NPS states that “nonpoint source pollution control devices, such as oil/water separators, be installed and maintained within the project area adjacent to the NHL/National Park to mitigate adverse effects to the NHL/National Park.” HDOT is proposing the use of oil absorbent inserts in their drywells to mitigate releases of hydrocarbons. In addition, vegetation (drought-tolerant and native species) will be installed in the median swales.
  - (2) Visual and auditory impacts of the proposed highway on Park users and the overall character of the Park. During ongoing consultation for the subject archaeological survey, the NPS states that “highway lighting should be effectively mitigated by including shielding (full cutoff), controls on when light is needed, and controls on spectrum and intensity. White light sources should be avoided. The lighting mitigation plan must be reviewed and approved by the National Park Service.” HDOT is planning the installation of lighting that will conform to the request of NPS. Design is pending.
  - (3) Another alternative being considered is the use of appropriate vegetation along the *makai* (down slope) edge of the highway. The NPS has offered to share its vegetation management plan to assist the project proponents.

- B. The NPS has stated that a “construction fence must be put in place along the Project Area side of the boundary the entire length of the National Park/NHL as already agreed to by the project proponents. The field installation of this fence must not cause any damage to preservation sites within the Project Area or the NHL/National Park. This protection measure should be a required component of the Preservation, Monitoring, and Burial Treatment Plans.” HDOT will include a construction fence along the edge of the construction limits and not along the highway boundary to minimize the need to disturb additional land.
- C. The NPS has stated that “no contractors shall enter the National Park/National Historic Landmark without prior notification to and approval by the National Park Service.”
- D. Treatment of Trails. The NPS has requested a comprehensive treatment of trail sites and has provided some resources—including historic Registered Map references. These can be used as a baseline for a comprehensive archival analysis that will place the project-area trail segments in a context that accurately reflects their cultural and historical significance. In addition to conducting primary archival research, CSH proposes that the primary archival research work proceed in consultation with the Trails and NPS staff. Data Recovery work for trails will not involve any additional fieldwork.
- E. Trail Access. HDOT will explore access to trails that have a *mauka-makai* alignment to provide pedestrian crossings at-grade and/or an underpass. Signage will be provided to direct pedestrians to the safe crossings. A separate connector trail will be developed along the edge of the ROW to link the *mauka-makai* segments.

During ongoing consultation for the subject archaeological survey, the NPS states that “to mitigate the cumulative effects of the original highway construction and the widening of the highway’s proposed destruction of historic trails we request that alternative transportation corridors be constructed including safe pedestrian access provided at grade across the highway at the Hina Lani Street and the National Park/West Hawaii Business park intersections. These two intersections are in proximity to the Road to the Sea Trail and the Trail to Honokohau respectively. These crossings should include raised medians and crossing islands. Additionally bicycle/pedestrian paths paralleling the highway should be included in the proposed project. These safe-access types are outlined in the USDOT/FHA Pedestrian Safety in Communities Program. The access at Trail to Honokohau should include a pedestrian underpass. By providing a safe means for pedestrians to cross the highway and access the National Park/NHL and National Trail, existing historic and prehistoric trails will continue as viable cultural connections to National Park/NHL resources. Additionally, interpretive materials, signage or other educational components should be in place to show the broader trail complex and explain the importance of these trails throughout the history of the area.”

### 7.3 Memorandum of Agreement (MOA, 1999)

The MOA executed in 1999 between the Advisory Council on Historic Preservation (ACHP), the Federal Highways Administration (FHWA), and the State Historic Preservation Office (SHPO) stipulates specific actions to be taken by FHWA to mitigate the impacts of the proposed

highway improvements on historic properties. Pursuant to the provisions of the MOA, the signatories and consulted parties will be consulted again, regarding mitigation proposed for the sites identified in Table 28 and amendments made to the MOA, as necessary, based on the recommendations contained in the subject AIS.

It is understood that the SHPD will need to be provided the opportunity to review any changes to the MOA that may result from revisions to this AIS.



Table 28. Project Effect and Mitigation Recommendations for Historic Properties in the Project Area (arranged South to North)

Site # <sup>1</sup>	Site Type	Function	Significance	Project Effects <sup>2</sup>	Recommended Mitigation <sup>3</sup>
19954	Trail ( <i>mauka-makai</i> )	Transportation	C, D and E	Destruction of a portion of site	Data Recovery (Archival Research) & Preservation
29332	Mound/Paved Area within Naturally-formed <i>Pāhoehoe</i> Depression	Indeterminate, possible burial	D and E	Entire site will not be physically impacted by construction	Data Recovery (as per SHPD letter of July 9, 2012)
29334	Rock Mound within Naturally-formed <i>Pāhoehoe</i> Depression	Indeterminate	D and E	Destruction of entire site	Data Recovery (Excavation/Dismantling)
28774	Trail ( <i>mauka-makai</i> )	Transportation	C, D and E	Destruction of a portion of site	Data Recovery (Archival Research) & Preservation
22507	Trail ( <i>mauka-makai</i> )	Transportation	C, D and E	Destruction of a portion of site	Data Recovery (Archival Research) & Preservation
29335	Rock Wall Segment	Indeterminate	D and E	Destruction of entire site	Data Recovery (Excavation)
18099	Trail ( <i>mauka-makai</i> )	Transportation	A, C, D and E	Destruction of a portion of site	Data Recovery (Archival Research) & Preservation
22418	Trail ( <i>mauka-makai</i> )	Transportation	C, D and E	Destruction of entire site	Data Recovery (Archival Research)
22417	Modified Lava Blister	Agriculture / Planting Pit	D and E	Destruction of entire site	Data Recovery (Excavation)
28778	<i>Pāhoehoe</i> Excavation	Agriculture / Planting Pit	D and E	Destruction of entire site	Data Recovery (Excavation)
22415	Platform	Burial	D and E	Entire site will not be physically impacted by construction	Burial Treatment Plan (Preservation)
29336	Rock Terrace	Indeterminate	D and E	Destruction of entire site	Data Recovery (Excavation)
29337	Excavated Pit	Indeterminate-Possible Quarry or Sweet Potato Planter	D and E	Entire site will not be physically impacted by construction	Avoidance During Construction
29339	Rock Wall Segment	Indeterminate	D and E	Entire site will not be physically impacted by construction	Avoidance During Construction
29338	Excavated Pit	Indeterminate-Possible Quarry or Sweet Potato Planter	D and E	Destruction of entire site	No Further Work
29340	Rock Mound	Indeterminate, possible burial	D and E	Entire site will not be physically impacted by construction	Data Recovery (Excavation)
29341	Excavated Pits	Indeterminate-Possible Quarry or Sweet Potato Planter	D and E	Entire site, both features (A and B), are approximately 10 feet west ( <i>makai</i> ) of grading limits, and will not be physically impacted by construction	Avoidance During Construction
29342	Excavated Pit	Indeterminate-Possible Quarry for Rock to Repair Nearby Māmalahoa Trail	D and E	Entire site will not be physically impacted by construction	Avoidance During Construction
00002	Māmalahoa Trail	Transportation	A, B, C, D and E	Destruction of a portion of site	Data Recovery (Archival Research) & Preservation
19953	Trail ( <i>mauka-makai</i> )	Transportation	C, D and E	Destruction of a portion of site	Data Recovery (Archival Research) & Preservation
29343	Excavated Pit	Indeterminate-Possible Quarry or Sweet Potato Planter	D and E	Entire site will not be physically impacted by construction	Avoidance During Construction
28780	‘A‘ā Excavation	Indeterminate, possible burial	D and E	Entire site will not be physically impacted by construction	Preservation
28781	Paved / Leveled Area	Indeterminate-Possible Agricultural Clearing	D and E	Entire site will not be physically impacted by construction	Preservation
28782	Trail ( <i>mauka-makai</i> )	Transportation	C, D and E	Destruction of a portion of site	Data Recovery (Archival Research) & Preservation
28783	Complex	Agriculture	D and E	Feature A: will not be physically impacted by construction Feature B: will be destroyed by construction Features C, D, E & F : will not be physically impacted by construction	Data Recovery (Excavation) for Feature B Preservation for Features A, C-F
28784	Trail ( <i>mauka-makai</i> )	Transportation	C, D and E	Entire site (in the ROW) will not be physically impacted by construction	Data Recovery (Archival Research) & Preservation

Site # <sup>1</sup>	Site Type	Function	Significance	Project Effects <sup>2</sup>	Recommended Mitigation <sup>3</sup>
28785	Enclosure	Agriculture	D and E	Destruction of entire site	Data Recovery (Excavation)
29333	Rock Stacking (Poss. <i>Ahu</i> )	Indeterminate	D and E	Destruction of entire site	Data Recovery (Dismantling)
28786	Modified Depression	Agriculture	D and E	Destruction of entire site	Data Recovery (Excavation)
28787	Trail ( <i>mauka-makai</i> )	Transportation	C, D and E	Entire site (in the ROW) will not be physically impacted by construction	Data Recovery (Archival Research) & Preservation
19952	Trail ( <i>mauka-makai</i> )	Transportation	C, D and E	Entire site (in the ROW) will not be physically impacted by construction	Data Recovery (Archival Research) & Preservation
28788	Modified Outcrop Complex	Agriculture	D and E	Entire site (both Feature A and B) will not be physically impacted by construction	Preservation
19951	Wall	Ranching / Boundary	D and E	East end of wall is at the edge of grading limits—construction plans will be redesigned to avoid the entire site	Preservation
28789	Mound Complex	Agriculture	D and E	Entire site (Features A-F) will not be physically impacted by construction	Preservation
19950	Modified Outcrop Complex	Agriculture	D and E	Entire site (Features A-E) will not be physically impacted by construction	Preservation
28790	<i>Pāhoehoe</i> Excavation	Quarrying	D and E	Entire site will not be physically impacted by construction	Preservation
19949	Enclosure	Indeterminate-Possible Windbreak / Temporary Shelter	D and E	Destruction of entire site	Data Recovery (Excavation)
28791	Trail ( <i>mauka-makai</i> )	Transportation	C, D and E	Entire site (in the ROW) will not be physically impacted by construction	Data Recovery (Archival Research) & Preservation
28792	Petroglyph	Symbolic Expression	D and E	Entire site will not be physically impacted by construction	Preservation
29344	Excavated Pit	Indeterminate-Possible Quarry or Sweet Potato Planter or Bird Pit	D and E	Destruction of entire site	Data Recovery (Excavation)
10714	Trail System ( <i>mauka-makai</i> ), interpreted as part of the “Road to the Sea Trail” (3 Features)	Transportation	A, C, D and E	Portions of all three features (Features A, B and C) will be destroyed by construction; portions of all three features (Features A, B and C) will not be physically impacted by construction	Data Recovery (Archival Research) & Preservation
28794	Filled Crevice	Indeterminate-Possible Agricultural Clearing	D and E	Entire site will not be physically impacted by construction	Avoidance During Construction
28797	Mound Complex	Agriculture	D and E	Entire site (both Features A-B) will not be physically impacted by construction	Preservation
19948	Complex	Agriculture and Quarrying	D and E	Features A & B: will be physically impacted by construction Features C-F: will not be physically impacted by construction Feature G: will be physically impacted by construction Feature H: will not be physically impacted by construction	Data Recovery (Excavation) for Features A, B and G Preservation for Features C, D, E, F and H
28799	Excavated Pit Complex	Agriculture	D and E	Entire site (Features A-C) will not be physically impacted by construction	Preservation
28800	<i>Pāhoehoe</i> Excavation	Quarrying	D and E	Destruction of entire site	Data Recovery (Excavation)
28801	Modified Outcrop Complex	Agriculture	D and E	Entire site (both Features A-B) will not be physically impacted by construction activities	Avoidance During Construction
19947	Stacked Rocks	Ahupua‘a Boundary Markers	D and E	Destruction of entire site (total of 3 features, Features A-C)	Relocation of all three Features (A-C) to the west (within the ROW)
28802	Complex	Temporary Habitation	D and E	Entire site (Features A-C) will not be physically impacted by construction	Preservation
28803	Complex	Indeterminate-Possible Agricultural Clearing	D and E	Entire site (both Features A-B) will not be physically impacted by construction	Avoidance During Construction
28804	Filled Crevice	Indeterminate-Possible Agricultural Clearing	D and E	Entire site will not be physically impacted by construction	Avoidance During Construction
28805	Modified Outcrop	Agriculture/Clearing	D and E	Entire site will not be physically impacted by construction	Avoidance During Construction
15324	Trail ( <i>mauka-makai</i> )	Transportation	C, D and E	Destruction of a portion of site	Data Recovery (Archival Research) & Preservation
19946	Trail ( <i>mauka-makai</i> )	Transportation	C, D and E	Destruction of a portion of site	Avoidance During Construction (as may be possible)

Site # <sup>1</sup>	Site Type	Function	Significance	Project Effects <sup>2</sup>	Recommended Mitigation <sup>3</sup>
28806	Mound	Possible Marker	D and E	Entire site will not be physically impacted by construction	Preservation
28807	Filled Crevice	Indeterminate	D and E	East end of site will be destroyed by construction; entire site is within construction limits	Data Recovery (Excavation/Removal of Coral)
29275	Lava Tube	Burial, Contemporary Habitation	D and E	Entire site will not be physically impacted by construction, in consultation with SHPD included in APE,	Burial Treatment Plan in progress, resolution contingent upon consent of landowner
29345	Coral-filled <i>Pāhoehoe</i> Crevice	Indeterminate	D and E	Entire site will not be physically impacted by construction	Data Recovery (Excavation/Removal of Coral)
28808	Mound Complex	Markers	D and E	Three (of total five) features (A, B and C) will not be physically impacted by construction; Features D and E will be physically impacted by construction	Features A-C: Preservation Features D and E: Relocation (to the west within the ROW)
28809	<i>Pāhoehoe</i> Excavation	Quarrying	D and E	Entire site will not be physically impacted by construction	Avoidance During Construction
28810	Lava Tube	Indeterminate / Possible Water Catchment	D and E	Entire site will not be physically impacted by construction	Preservation
29346	Mound	Indeterminate – Possible Marker or Quarrying	D and E	Destruction of entire site	Relocation to the west (within the ROW)
10154	Walled Enclosure	Indeterminate-Possible Habitation	D and E	Construction plans will be redesigned to avoid this entire site	Preservation
06432	Core-Filled Stone Wall	Ahupua‘a Boundary	D and E	Destruction of a small portion of site	Minimize Destruction through Archaeological and Cultural Monitoring
29347	Mound	Possible Marker or Quarrying	D and E	Entire site will not be physically impacted by construction	Avoidance During Construction
29272	Level Area in ‘A‘ā with Trail ( <i>mauka/makai</i> )	Possible Temporary Resting Spot / Work Area and Transportation	C, D and E	Feature A (Level Area): will be destroyed by construction Feature B (Trail): will not be physically impacted by construction	Feature A: Data Recovery (Excavation) Feature B: Data Recovery (Archival Research) & Preservation
28811	<i>Pāhoehoe</i> Excavation	Quarrying	D and E	Destruction of entire site	Data Recovery (Excavation)
28812	Possible Filled Crevice	Indeterminate	D and E	Destruction of entire site	Data Recovery (Excavation/Removal of Rock)
28813	Modified Lava Blisters	Agriculture	D and E	Feature A: will not be physically impacted by construction Feature B-E: will be destroyed during construction	Feature A: Preservation Features B-E: Data Recovery (Excavation)
28814	Lava Tube	Indeterminate / Possible Water Catchment	D and E	Destruction of entire site	Data Recovery (Excavation)
28815	<i>Pāhoehoe</i> Excavation	Quarrying	D and E	Destruction of entire site	Data Recovery (Excavation)
19943	Lava Tube	Temporary Habitation	D and E	Entire site will not be physically impacted by construction	Preservation
19945	Petroglyphs (n=2) and Bashed/Pecked <i>Pāhoehoe</i> (n=7)	Symbolic Expression and Prospecting for Voids in Lava Flows	D and E	Features A & B (Petroglyphs): will not be physically impacted by construction Features C through I (Pecking Marks): Most will be destroyed by construction	Preservation of Features A and B (Petroglyphs) No Further Work for Features C-I (Pecking Marks on Lava)
29348	Boulder ( <i>Pāhoehoe</i> Basher) in Excavated Pit	Prospecting for Voids in Lava Flow	D and E	Entire site is immediately adjacent to grading limits	Collection and Curation the Portable Artifact (Boulder); No Further Work for the Excavated Pit
29349	Boulder ( <i>Pāhoehoe</i> Basher) and Associated Excavated Pit	Prospecting for Voids in Lava Flow	D and E	Feature A (Boulder): will not be physically impacted by construction Feature B (Excavated Pit): will be destroyed by construction	Collection and Curation the Portable Artifact (Boulder, Feature A); No Further Work for the Excavated Pit (Feature B)
29275	Lava Tube	Burial, Contemporary Habitation	D and E	Outside APE	Preservation (Burial Treatment Plan in progress)

<sup>1</sup> State Inventory of Historic Property (SIHP) numbers begin with “50-10-27.” Other temporary site number designations will eventually be replaced with SIHP numbers.

<sup>2</sup> Based on construction limits provided to CSH by SSFM April 2012.

<sup>3</sup> Explanation of mitigation terminology: (1) **Avoidance During Construction** = protection during all project-related construction activities with interim protection measures under the preservation plan *and* commitment by HDOT to conduct a new historic preservation review in the future should other construction projects be planned that may affect these sites; (2) **Burial Treatment Plan (Preservation)** = preparation of a BTP proposing preservation in place to be submitted to the SHPD/HIBC for review, comment and approval; (3) **Collect ion and Curation** = portable artifact will be collected (removed) from its current location and curated according to the MOA; (4) **Data Recovery (Archival Research)** = for trail sites, data recovery consists of additional archival research that will place the

project-area trail segments in a wider geographic context that accurately reflects their cultural and historical significance; (5) **Data Recovery (Excavation)** = data recovery consists of traditional archaeological excavation of soil-sediment for the purposes of recovering material evidence germane to the site/feature’s function and/or age; in some cases, where there is little or no soil-sediment to excavate, data recovery consists of dismantling or removing rocks or coral in order to inspect what lies beneath; (6) **No Further Work** = no mitigation is proposed for these sites; (7) **Preservation** = protection during construction *and* permanent in-place, preservation in perpetuity; (8) **Relocation** = site will be carefully dismantled, moved west beyond the construction limits, and rebuilt within the ROW. In addition to these mitigation recommendations, Archaeological and Cultural Monitoring is recommended for all ground-disturbing activities in the project area (ROW). See text above for details.

\* These two sites (SIHP #s 00002 and 19953) are special cases. Their treatment was codified in the original 1999 MOA. Construction plans will be designed to adhere to the 1999 MOA specifications.



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## Appendix A J.S. Emerson Survey Maps

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John Emerson made a series of maps of the Kona Coast from ca. 1881 to 1891. His assistant, J. Perryman, made detailed sketches of the features mapped by Emerson. The 1882 maps pertinent to the project area are presented in Figure A to Figure E. These sketches show topographic features, such as hills, bays, coastal points, and fishponds, but also show areas of mid-to-late nineteenth century settlements, and the trails that connected the settlement along the coast and between the coast and the uplands.

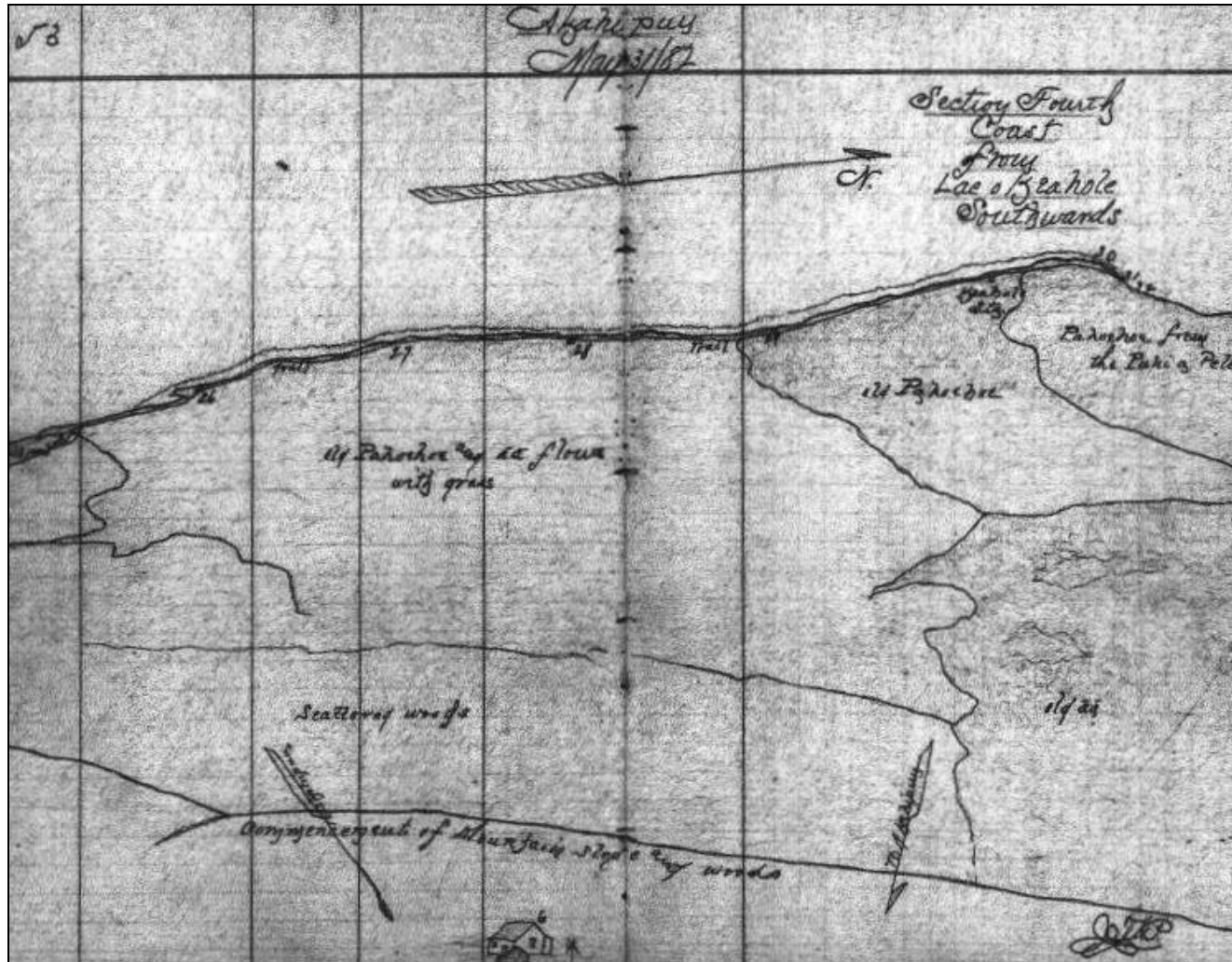


Figure A. J. S. Emerson Field Notebook Map, Book 253:53, 1882 (Hawai'i Land Survey Division), from Kohanaiki Ahupua'a (left) to Keāhole Point at Kalaoa (right); the coastal foot trail is labeled

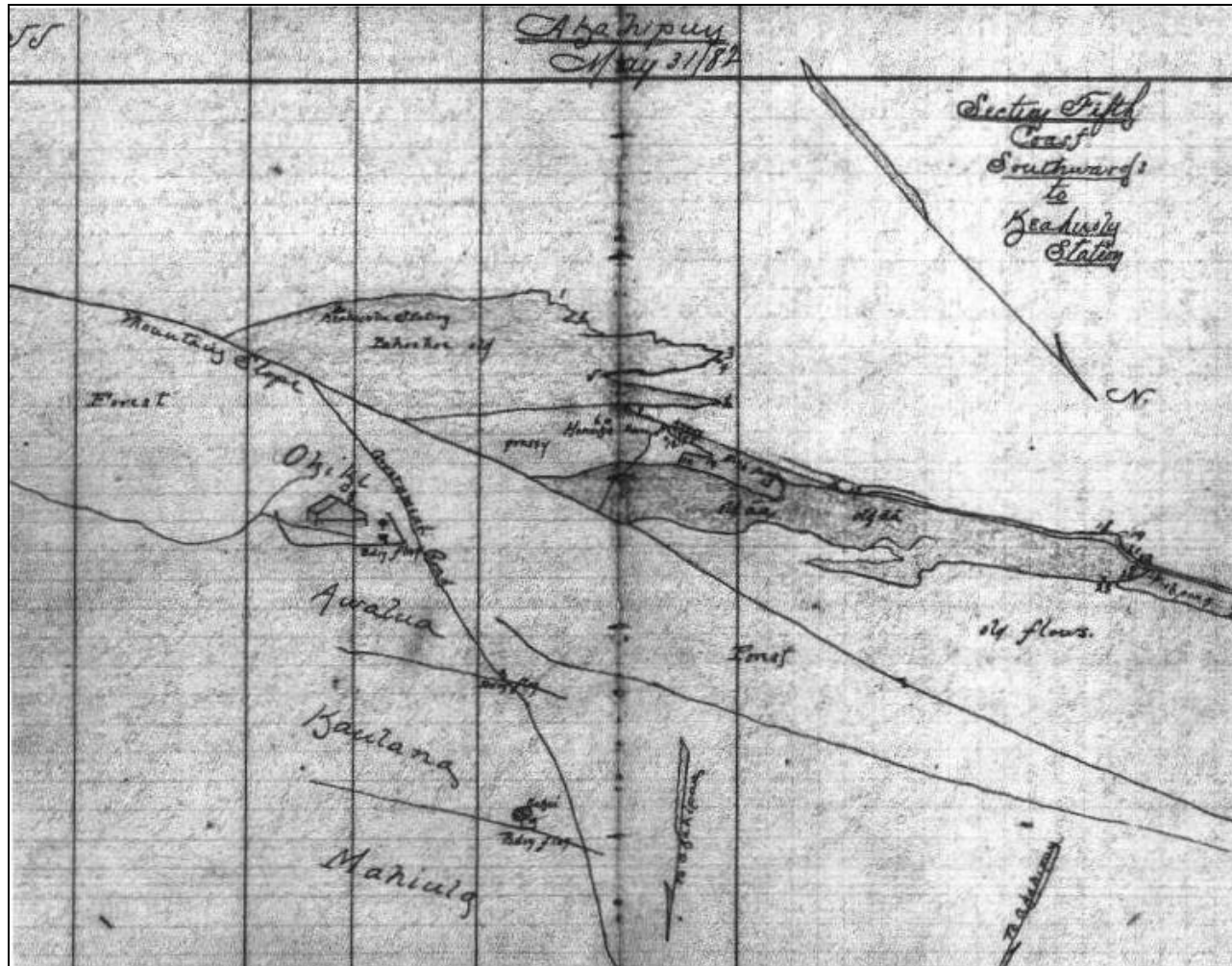


Figure B. J. S. Emerson Field Notebook Map, Book 253:55, 1882 (Hawai'i Land Survey Division), from Keahuolū Station (left) south to 'O'oma shore (right), showing Honōkohau Bay and Kaloko Fishpond in central section; map depicts the upper Government Road (now the Māmalahoa Highway)

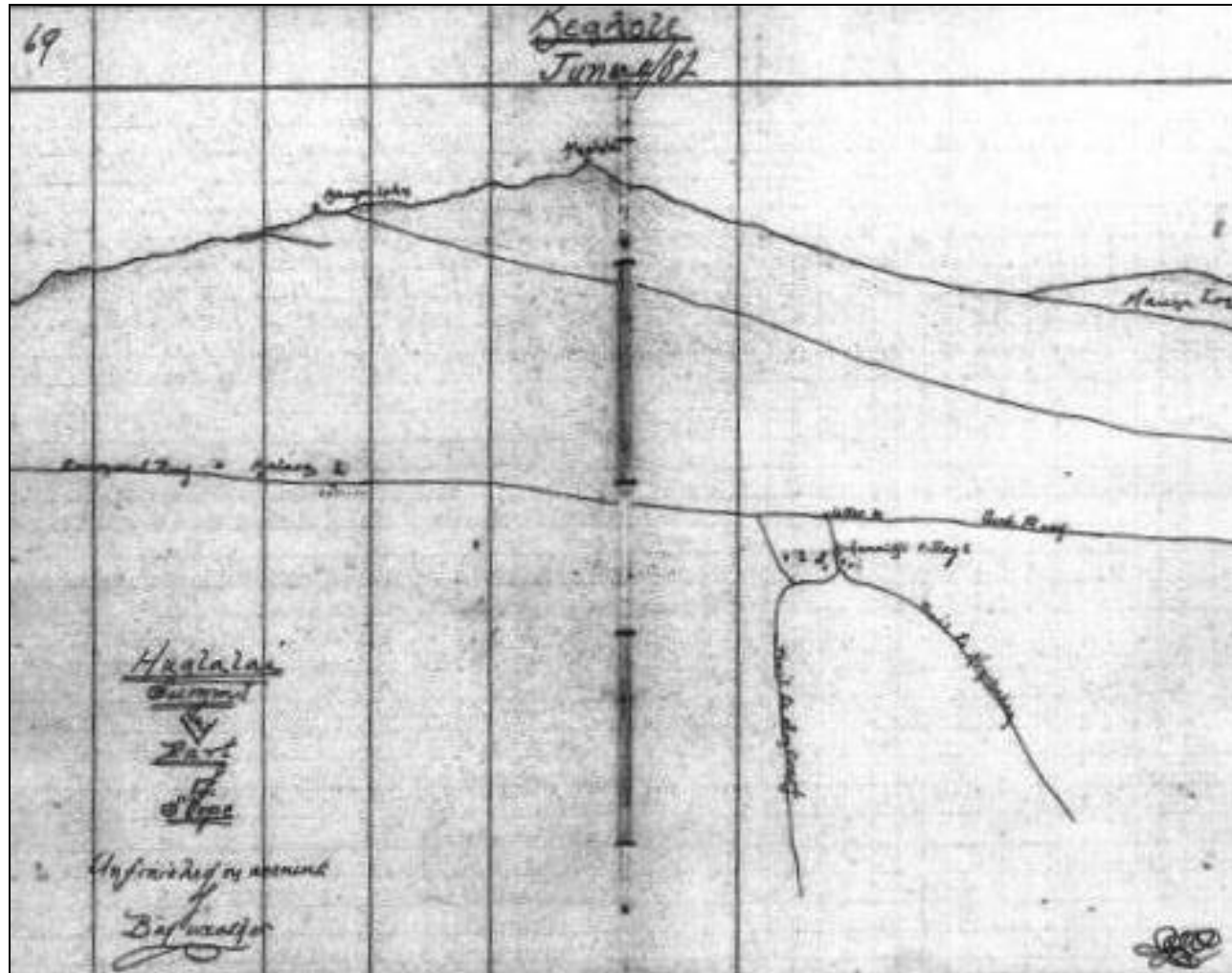


Figure C. J. S. Emerson Field Notebook Map, Book 253:69, 1882 (Hawai'i Land Survey Division), Kona Coast, view upslope to Hualālai. Note *mauka-makai* trails ("trail to Honokohau" at right and "trail to coast" at left) to Kohanaiki Village. "Kalaoa Church" is labeled on the Upper Government Road (now Māmalahoa Highway) at the left



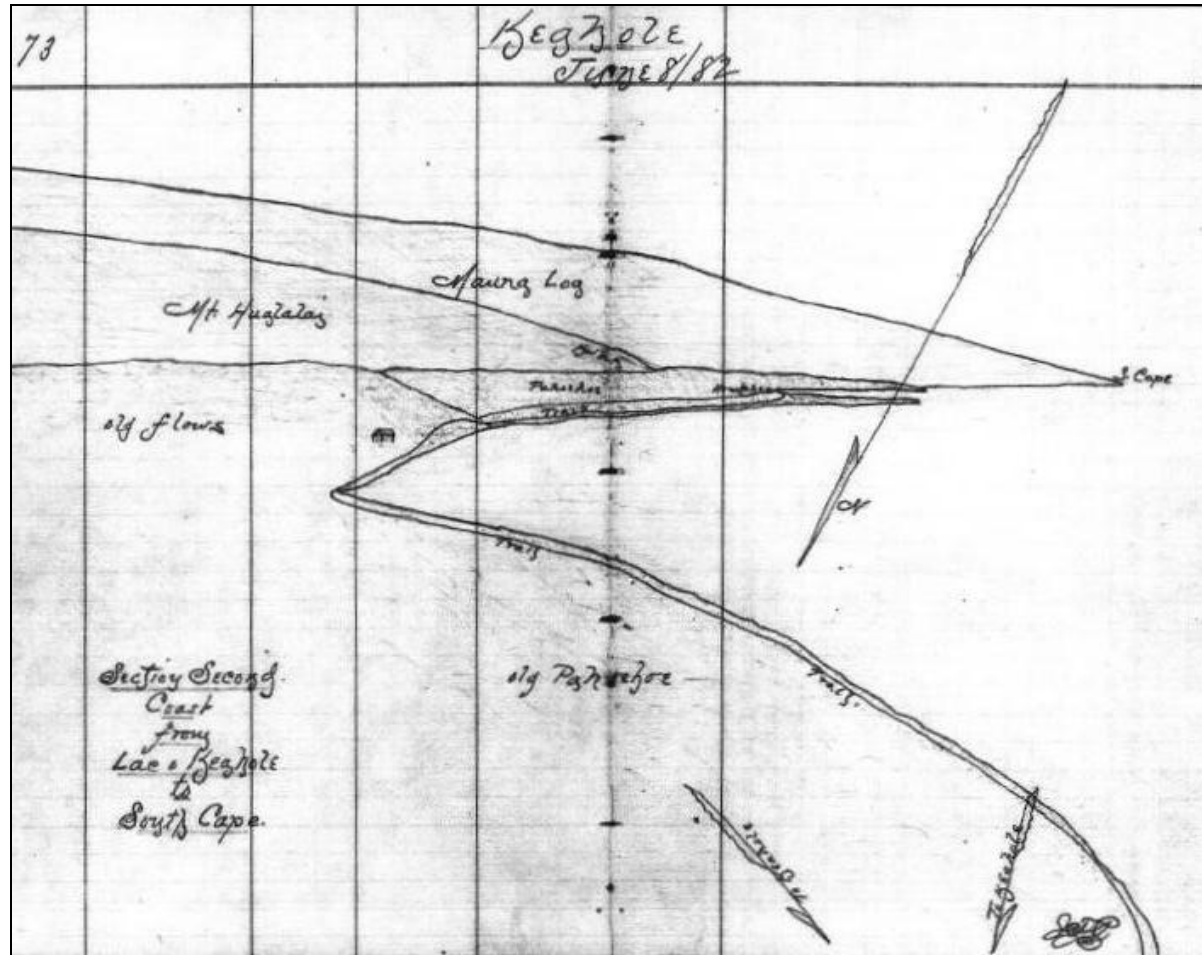


Figure D. J. S. Emerson Field Notebook Map, Book 253:73, 1882 (Hawai'i Land Survey Division), showing coast from Keāhole Point in Kalaoa south to beyond Keahuolu; house in the central area is within 'O'oma ahupua'a; two trails are shown in this section; the coastal trail (which extend to Keāhole Point) and a second parallel, but inland, cross ahupua'a trail, probably the Māmalahoa Trail



Figure E. J. S. Emerson Field Notebook Map, Book 254:77, 1882 (Hawai'i Land Survey Division), looking *makai*, from Kealakehe (left) to 'Aimakapa Fishpond at Honokōhau Ahupua'a to Kaloko Fishpond (center) and to Keāhole Point on the right; note the three *mauka-makai* trails from Kealakehe to the uplands, from Honokohau Village to the Upper Government Road (Māmalahoa Highway), and from Kaloko Fishpond to the Upper Government Road

# Appendix B Walsh and Hammatt (1995) AIS Report

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**AN ARCHAEOLOGICAL INVENTORY SURVEY  
OF THE NEW QUEEN KAAHUMANU HIGHWAY RIGHT-OF-WAY  
BETWEEN PALANI ROAD AND KEAHOLE AIRPORT**

**Within the *Ahupua'a* of Keahuolu, Kealakehe, Honokohau,  
Kaloko, Kohanaiki, O'oma 2, Kalaoa-O'oma, and Kalaoa 1-4  
Kekaha, North Kona District, Hawai'i Island**

***DRAFT***

Prepared for

Mr. Chester Koga  
R.M. Towill Corporation  
Honolulu

by

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and  
Hallett H. Hammatt, Ph.D.

Cultural Surveys Hawaii  
July, 1995  
Revised September 1995

### ABSTRACT

This report presents the results of an archaeological inventory survey with limited subsurface testing conducted by Cultural Surveys Hawaii (CSH) within the new Queen Kaahumanu Highway right-of-way between Palani Road and the Keahole Airport entrance road. The project area consists of a narrow strip of land, averaging 300 feet wide, situated along the present Queen Kaahumanu Highway (the highway) within the *ahupua'a* of Keahuolu, Kealakehe, Honokohau, Kaloko, Kohanaiki, O'oma 2, Kalaoa-O'oma, and Kalaoa 1-4.

A total of seventeen sites were identified within the project area during the inventory survey<sup>1</sup>. Five of these sites had been previously identified and were assigned state site numbers prior to this survey. Those sites include: Sites 00002, 02238, 06432, 13194 and 15324. The remaining twelve sites are newly identified and include Sites 19943 through 19954.

The seventeen sites included in this inventory survey consist of a total of 29 individual features: nine single feature sites and eight sites with multiple features. Formal site and feature types include: trails (seven); modified outcrop (four); cairns (three); walls (two); mounds (three); petroglyphs (two); enclosures (two); road; terrace; alignment; ash deposit; midden scatter; and pahoehoe excavation. Assigned functional categories include: transportation; temporary habitation; boundary/ranching; markers; symbolism; quarry; agriculture; and unknown.

Subsurface testing was conducted at three features within the project area to determine the presence or absence of human remains. These features include: Site 02238 Feature A Terrace; Site 19943 Feature A Mound; Site 19944 Feature A Mound. The testing results determined the absence of burials within these three features.

Of the seventeen sites within the project area, eight are recommended for data recovery level study, four are recommended for preservation in addition to data recovery, and five are not recommended for further study or preservation.

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<sup>1</sup> All state site numbers are prefixed by 50-10-27- unless otherwise noted. This prefix is omitted throughout this report.



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## I. INTRODUCTION

At the request of Mr. Chester Koga of R.M. Towill Corporation, Cultural Surveys Hawaii has conducted an archaeological inventory survey of the new Queen Kaahumanu Highway right-of-way between the intersection with Palani Road and the intersection with the Keahole Airport entrance road. The project area extends through eight *ahupua'a* of the Kekaha region of the North Kona District on the Island of Hawai'i. These *ahupua'a* from south to north include: Keahuolu, Kealakehe, Honokohau, Kaloko, Kohanaiki, O'oma 2, Kalaoa-O'oma, and Kalaoa 1-4 (Figures 1-3).

This inventory survey follows and supersedes the preparation of an archaeological assessment of the project area in which previous archaeological studies in the vicinity of the project area were identified (see Figure 5), and a list of archaeological sites identified within the vicinity of the project area was generated (see Table 2). The archaeological assessment also identified those portions of the project area that had not previously undergone inventory level survey (see Figure 3). The subsequent survey and limited subsurface testing of those areas was conducted June 14-16 and June 22-23 by three archaeologists; Douglas Borthwick, Ian Masterson and Patrick Walsh.

A total of seventeen sites were identified within the project area during the inventory survey (see Table 1). Five of these sites had been previously identified and were assigned state site numbers prior to this survey. Those sites include: Sites 00002, 02238, 06432, 13194 and 15324. The remaining twelve sites are newly identified and include Sites 19943 through 19954.

### A. Project Area Description

The project area consists of a narrow strip of land, averaging 300 ft. (91 m.) wide, between the intersection of Queen Kaahumanu Highway with Palani Road and the intersection of Queen Kaahumanu Highway with the Keahole Airport entrance road, for a total length of approximately 36,000 linear feet (10,973 m.). The eastern and western boundaries of the project area conform to the new highway right-of-way which is identified on a set of 1" = 200' scale topographic maps prepared by the Hawaii State Department of Transportation and provided to CSH by R.M. Towill Corporation.

The project area lies between 2700 ft. (823 m.) and 10,000 ft. (3048 m.) from the shoreline at an elevation range between 40 ft. (12 m.) and 140 ft. (43 m.) above sea level (a.s.l.). Rainfall in the project area averages between 20 and 30 inches per year and temperatures range from an average minimum of 62-68 degrees Fahrenheit to an average maximum of 78-82 degrees (Armstrong 1973:57-58).

The land surface is comprised predominately of undissected a'a and pahoehoe lava flows. The Soil Survey of the Island of Hawaii describes a'a lava terrain as having "practically no soil covering and is bare of vegetation, except for mosses, lichens, ferns, and a few small *ohia* trees...This lava is rough and broken. It is a mass of clinkery, hard, glassy, sharp pieces piled in tumbled heaps" (Sato et al. 1973:34). The same study describes pahoehoe lavas as "a billowy, glassy surface that is relatively smooth. In some areas however, the surface is rough and broken and there are hummocks and pressure domes" (ibid).

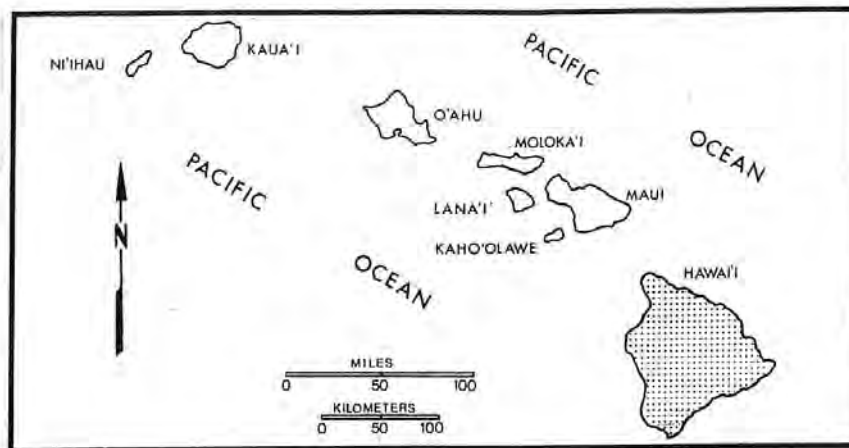


Figure 1 State of Hawai'i

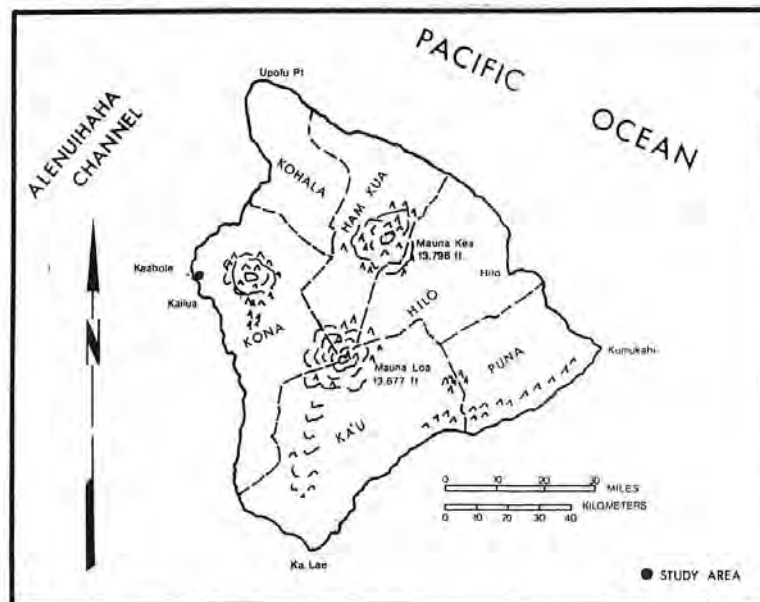
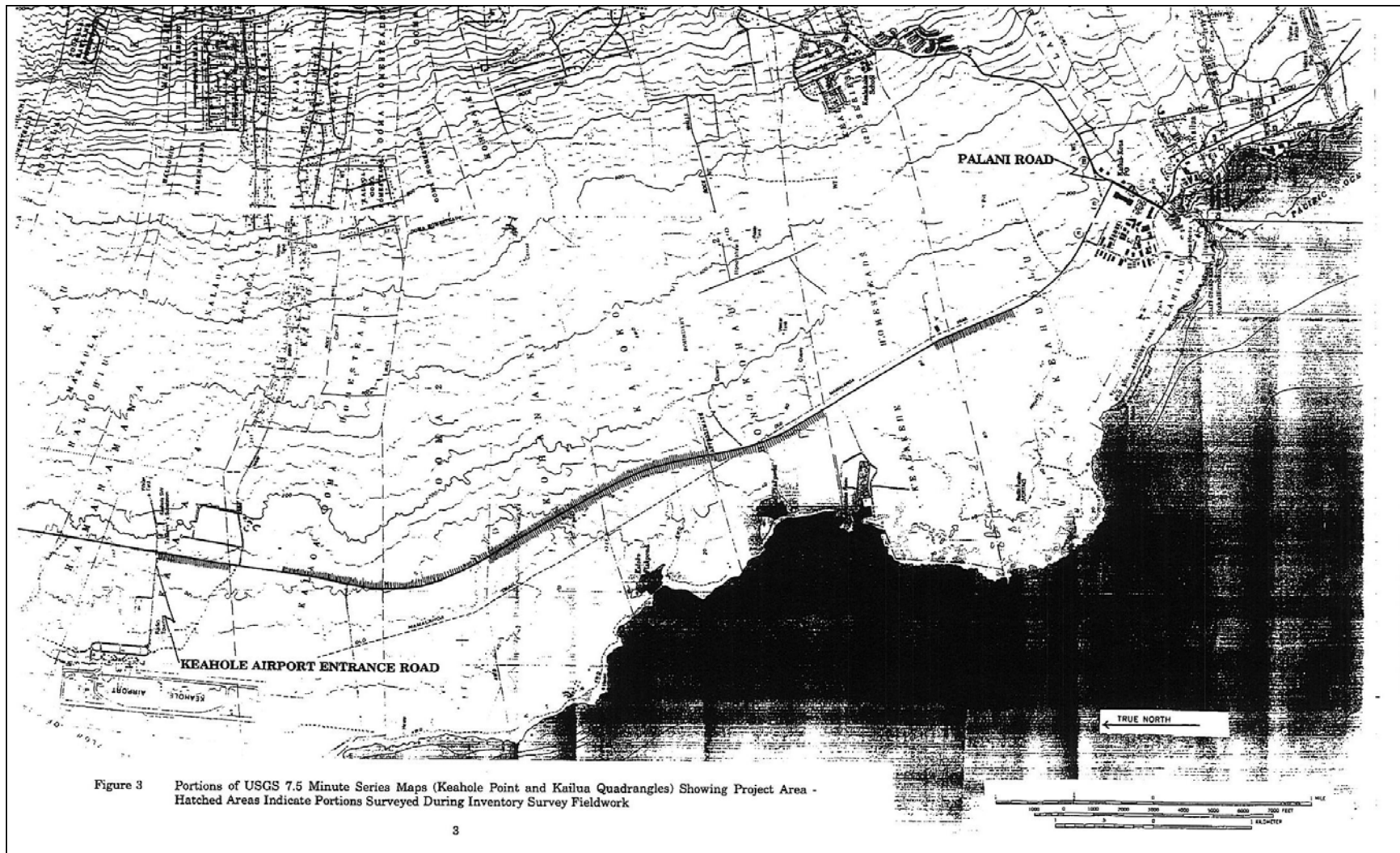
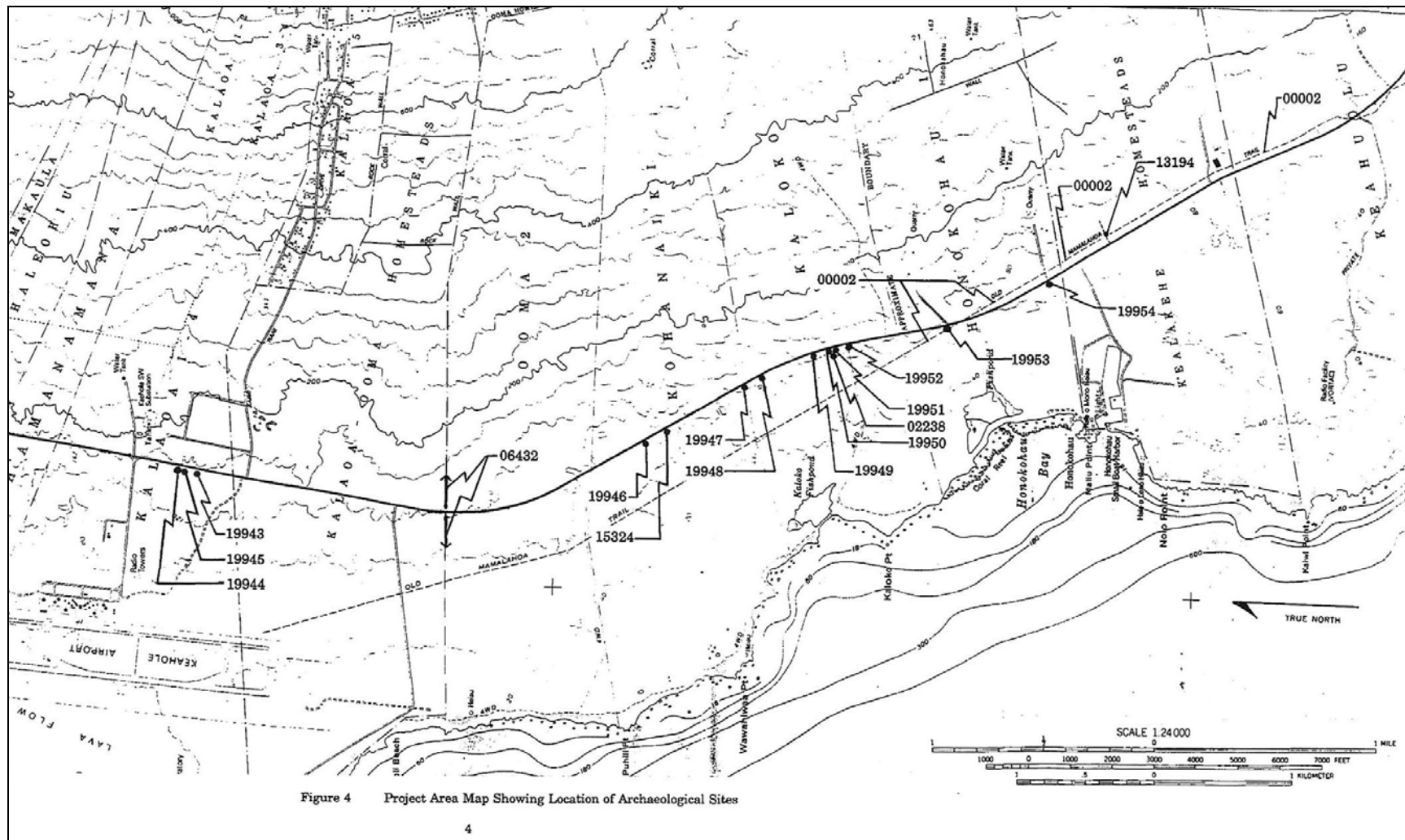


Figure 2 General Location Map, Hawai'i Island







Vegetation within the project area is of the type identified as "Fountain Grass Grassland" in The Botanical Survey of the West Hawai'i Boundary Review (Char & Associates 1992 quoted in Head and Rosendahl 1993:2). This vegetation type typically consists of low tufts of grass with scattered shrubs and a few trees. Specific plants commonly observed within the project area include: *pili* grass (*Heteropogon contortus*), Guinea grass (*Panicum maximum*), fountain grass (*Pennisetum setaceum*), *wilelaiki* or Christmas-berry (*Schinus terebinthifolius*), *klu* (*Acacia farnesiana*), *koa haole* (*Leucaena glauca*), *kiawe* (*Prosopis pallida*), and lantana (*Lantana camara*).

### B. Scope of Work

The principal objective of the inventory survey was the identification of any and all cultural resources within the project area. The inventory survey is necessary for assessing the impact of the proposed development project and planning for appropriate mitigation. The scope of work was designed to meet the requirements of the State Historic Preservation Division, department of Land and Natural Resources (SHPD-DLNR). Survey procedures included:

- 1. A complete ground survey of those portions of the project area that had not been previously surveyed at the inventory level for the purpose of site inventory. All sites were located, described, and mapped. Field documentation included an overall project area map showing the location of all sites and features within the project area, descriptions, photographs and scale drawings of all sites and selected features. All sites were assigned State site numbers. An evaluation of site functions, interrelationships, and significance was undertaken.
2. Limited subsurface testing was conducted to assist in functional determination of sites.
3. Research on the historic background and previous archaeological studies of the project area and the *ahupua'a* was undertaken. Because the project area spans eight *ahupua'a*, and a considerable amount of primary research has been undertaken by several recent studies, the background research for this report focused on presenting a summary of background information and identifying sources of information for further research.

This report presents the results of archaeological work completed by Cultural Surveys Hawaii and includes:

- (a) a map of the area surveyed showing all archaeological sites and site areas;
- (b) descriptions of all archaeological sites with selected photographs, scale drawings, and discussions of function;
- (c) historical and archaeological background sections summarizing prehistoric and historic land use as they relate to the archaeological features;

- (d) a summary of site categories with an evaluation of their significance in an archaeological and historic context;
- (e) Recommendations based on all information generated which specifies what steps should be taken to mitigate the impact of development on the identified archaeological resources - such as data recovery and preservation of specific areas. These recommendations will be developed in consultation with the landowner and the appropriate State and County agencies.

### C. Methods

The inventory survey fieldwork was preceded by the identification of all previous archaeological studies conducted within and adjacent to the present project area. The results of this research was presented in an archaeological assessment report which, in addition to accounting for previously identified sites located within or in close proximity to the project area, also identified those portions of the project area that had not yet undergone inventory-level archaeological survey (Walsh 1995). Inventory survey fieldwork was then conducted on those portions of the project area that had not previously undergone inventory survey fieldwork.

The inventory survey fieldwork consisted of a visual inspection of the ground surface by two or three archaeologists spaced 50 to 100 feet apart (depending on ground surface visibility). On the western side (*makai*) of the highway, the project area typically extends 200 feet from the pavement edge of the present highway. One archaeologist followed the bulldozed edge of the present highway right-of-way (typically 20 to 50 feet from the highway pavement edge), and another archaeologist followed the western boundary of the project area (i.e. the new highway right-of-way) as identified on 1"=200' scale topographic maps prepared by the State Department of Transportation. One additional archaeologist was situated between the edge of the present highway and the western project area boundary along selected portions of the project area, where ground surface visibility was reduced by vegetation.

On the eastern side (*mauka*) of the highway, the project area typically extends only 50 feet from the pavement edge of the present highway, roughly following the power line that parallels the highway. One archaeologist followed the eastern project area boundary, determining that the majority of this area had been bulldozed or otherwise modified during the construction of the present highway and/or the construction of the power line.

Four previously identified sites in Kaloko BM90, 2199, 2233, and 2240, all listed as trails, were actively searched for within the bounds of the present project area. Site BM 90 and 2199 are bulldozed jeep roads. Site BM 90 is in current use as one of the Kaloko-Honokohau National Park access roads. Site 2199, the former Huehue Ranch Access Road, is presently locked up with no vehicular access allowed by the National Park Service. The two other trails 2233 and 2240 though actively searched for using available maps (i.e. Cordy 1991:633) were not relocated on either side of the highway. The trails in question, - 2233 and 2240 (D13-89), were described as follows:

"This major *mauka-makai* trail connects to the jeep trail. There is a fork in the trail just *mauka* of the Mamalahoa trail both of which are currently in use" (Renger

1970:29). Additionally when summarizing the finds in "Area 6" (i.e. the entire northeast corner of Kaloko *makai* of Queen Kaahumanu Highway) Renger wrote: "In addition to the Mamalahoa trail which bisects the area there are two major *mauka-makai* trails (referring to 2233 and 2240) one of which forks just *mauka* of the Mamalahoa trail. Wear and various forms of debris along these trails indicate that they have been used continually by fishermen and horsemen. (*Ibid.* :28).

All newly identified archaeological sites, and previously identified sites not recorded at the inventory survey level, were recorded in detail. Site recording included plotting site locations on the 1"=200' project area topographic map, written descriptions, photographs, and selected sites were sketched to scale. Temporary site numbers and feature designations were assigned. An attempt was made to correlate previously identified sites to the sites identified in the field; resulting in the identification of five previously identified sites and twelve newly identified sites within the boundaries of the present project area. The seventeen sites are listed in Table 1 which includes columns for: State site number; temporary field number (i.e. CSH 1-15); *ahupua'a*; site/feature type; probable function; probable age; significance assessment; and recommended treatment.

Sub-surface testing was conducted at three sites 02238, 19943, and 19944. Testing was conducted to aid in determining site/feature function. Test units were numbered consecutively in order of excavation with Test Unit 1 in site 19944, Feature A, Test Unit 2 in site 19943, Feature A and Test Unit 3 in site 02238, feature A. Excavations were preceded by photographic documentation of the pre-excavation condition of the area to be excavated. None of the excavation units contained soil strata so no screening of excavated material was necessary. In all three units excavation consisted of removal of rocks, from the specific feature, which directly overlaid exposed bedrock. Recovered materials were extremely sparse with only 5.3 grams of midden and a possible coral abrader coming from Test Unit 1 feature A mound at site 19944 and no artifacts or midden from Units 2 and 3. Post excavation photographs and one profile per test unit were taken. The results of the testing are included with the specific site descriptions in the Survey Results section of this report.



**Table 1: Sites Included in the Present Inventory Survey**  
(Previously Identified Sites)

State Site # 50-10-27-	CSH Site/ Feature #	Ahupua'a	Site/Feature Type	Probable Function	Significance Assessments	Recommended Treatment
00002	--	Keahuolu, Kealakehe, Honokohau	Road (Mamalahoa Trail)	Transportation	A,C,D,E,*	DR, P <sup>1</sup>
02238	11	Kaloko	Complex	Temporary Habitation	D	DR
	11A		Terrace			
	11B		Enclosure			
06432	16	O'oma 2	Wall	Boundary, Ranching	D	NFW
13194	--	Kealakehe	Trail	Transportation	C,D,E,*	DR, P <sup>1</sup>
15324	6	Kohanaiki	Trail Network	Transportation	D,E,*	DR, P
	6A		Trail Branch			
	6B		Trail Branch			

(Newly Identified Sites)

19943	1	Kalaoa 1-4	Utilized Lava Tube (with interior features)	Temporary Habitation	D	DR
	1A		Mound			
	1B		Alignment			
	1C		Ash Deposit			
	1D		Midden Scatter			
19944	3	Kalaoa 1-4	Mounds (2)	Markers	D	DR
	3A		Mound			
	3B		Mound			
19945	4	Kalaoa 1-4	Petroglyphs (2)	Symbolism	D, E	DR, P
	4A		Petroglyph Figure			
	4B		Petroglyph Figure			

State Site # 50-10-27-	CSH Site/ Feature #	Ahupua'a	Site/Feature Type	Probable Function	Significance Assessments	Recommended Treatment
19946	5	Kohanaiki	Trail	Transportation	D	DR
19947	7	Kohanaiki	Cairns (3)	Boundary markers	D	NFW
	7A		Cairn			
	7B		Cairn			
	7C		Cairn			
19948	8	Kaloko	Pahoehoe Excavation	Quarry	D	NFW
19949	9	Kaloko	Enclosure	Unknown	D	NFW
19950	10	Kaloko	Modified Outcrop Complex	Agriculture	D	DR
	10A		Modified outcrop			
	10B		Modified outcrop			
	10C		Modified outcrop			
	10D		Modified outcrop			
19951	12	Kaloko	Wall	Boundary, Ranching	D	NFW
19952	13	Kaloko	Trail	Transportation	D	DR
19953	14	Honokohau	Trail	Transportation	D	DR
19954	15	Honokohau	Trail	Transportation	D	DR

KEY: A Site reflects major trends or events in the history of the state or nation  
 B Site is associated with the lives of persons significant in our past  
 C Site is an excellent example of a site type  
 D Site may be likely to yield information important in prehistory and history  
 E Site has cultural significance; probable religious structures (shrines, *heiau*) and/or burials present  
 DR Data Recovery  
 P Preserve  
 P<sup>1</sup> Preserved - included in previous Preservation Plan(s)  
 NFW No Further Work  
 \* Significance assessments of site (or portions of site) also determined in prior archaeological studies

## II. BACKGROUND RESEARCH

### A. Historical Studies

The present project area consists of an approximately 300 foot (91 meters) wide strip that extends through eight *ahupua'a* of the North Kona District. These *ahupua'a* from south to north include; Keahuolu, Kealakehe, Honokohau 1-2, Kaloko, Kohanaiki, O'oma 2, Kalaoa-O'oma (O'oma 1), and Kalaoa 1-4. Because a considerable amount of background research and previous archaeological studies have been conducted within the subject *ahupua'a*, the background study for this project will focus on presenting a summary of these previous studies with an emphasis on identifying land use and settlement patterns for the project area.

#### Legendary References

The project area is located within the Kekaha region of North Kona District. Based on a recent translation of the "Legend of Ka-Miki" by Kepa Maly (cited in Henry et al. 1993) the region or *'okana* of Kekaha extends from Keahuolu northward to the Kona-Kohala boundary. The Kekaha region is also called *Kekaha wai'ole*, or "waterless place", a name which reflects its dry and barren appearance. Despite its desolate appearance, legends and other traditional accounts indicate that Kekaha was once a populous and productive region. Referring to the lands between O'oma and Makaula, PHRI researchers Maly and Kalima summarize this point as follows:

To a contemporary visitor, the project area lands, and Kekaha in general, appear barren and desolate. It is difficult to believe that many people could have lived in the area without modern conveniences, but traditional accounts of this area describe numerous settlements, extensive agricultural fields and fishponds, and well-defined trails. There is also much praise of the fishing grounds of the region. (in Henry et al. 1993:20)

A great deal of primary research on legendary references and place names of Kekaha has been undertaken by Kepa Maly and Lehua Kalima. The results of some of this research can be found in "The Historical Documentary Research by Kepa Maly and Lehua Kalima" presented in PHRI report 1275-071493: *Archaeological Assessment Study, Kailua to Keahole Region State Lands LUC Project* (Henry et al. 1993).

#### Early Historic References

Early historical references to Kekaha and North Kona, in general, tend to emphasize its barrenness, but also hint at traditional settlement, particularly along the coast. The following observations were made by visitors to the region between 1792 and 1840.

The naturalist, Archibald Menzies who travelled along the coast in 1792, described the area as "barren and rugged with volcanic dregs and fragments of black lava... in consequence of which the native inhabitants were obliged to have recourse to fishing for their sustenance" (1920:99).

Vancouver, referring to the North Kona coast in 1794 stated: the adjacent shores... chiefly composed of volcanic matter, and producing only a few detached groves of cocoa nut trees, with the appearance of little cultivation, and very few inhabitants... (Vancouver 1798,III:62 quoted in Cordy 1985:34)

In 1823, William Ellis referred to the 1801 Huehue lava flow from Hualalai, which covered parts of Kekaha just to the north of the present project area, as having "inundated several villages, destroyed a number of plantations and extensive fish ponds, filled up a deep bay twenty miles in length and formed the present coast... stone walls, trees and houses all gave way before it" (Ellis 1963:30-31).

In 1840, the explorer C. Wilkes observed "a considerable trade is kept up between the north and south end of this district. The inhabitants of the barren portion of the latter are principally occupied in fishing and the manufacture of salt, which articles are bartered with those who live in the more fertile regions of the south, for food and clothes" (Wilkes 1845:91).

#### 1848-1852 Mahele Data

Historical data on land use and settlement for individual *ahupua'a* was generated during the Great Mahele land divisions of the mid-Nineteenth Century. Several previous archaeological and historical studies have compiled Mahele data for each of the eight *ahupua'a* through which the present project area traverses. In general, land claim testimonies indicate that there were relatively few native tenants that made land claims and the majority of lands became the property of the government. Of the few land claims made, however, it appears that the cultivation of traditional crops within the upper elevations (the Upland Zone), including taro and sweet potatoes, was the predominate land use activity. Only one claimant indicated the cultivation of a commercial crop (coffee). Besides a claim made for "salt lands" at Keahuolu, and several other claims made for rights to fish pond resources, there is very little indication of land use throughout the intermediate and lower elevations, including an absence of claims made for house lots on the coast.

The Mahele data from each of the subject *ahupua'a* supports what Cordy found in his study of land claims made at Kaloko, namely, that by the time of the Mahele, "the coast was virtually abandoned [and] the economic focus in this area had shifted to the uplands, which may have been a non-traditional pattern in this area" (Cordy et al. 1991:421). The following are excerpts from previous studies which provide brief summaries of the Mahele data for each of the subject *ahupua'a*. The excerpts are direct quotes compiled from the referenced reports.

#### O'oma 1-2 and Kalaoa 1-5

The Mahele saw all these *ahupua'a* become government lands (Indices 1929:31,35); evidently they were the king's lands which he passed to government control... Only two Land Commission Awards were given in this area (LCA 7899 and 7937), both in Kalaoa 5 [outside the present project area]; but a series of Grants were issued in the *ahupua'a* from 1852-1864 -- evidently commoners acquiring lands. All these awards were in the upland forest zone from the 800 to 2200 foot elevations... they would seem to be agricultural parcels. (Cordy 1985:35)



Kohanaiki

The entire *ahupua'a* of Kohanaiki was classified as Government Lands (Board of Commissioners 1929). Because of this, no testimony can be found on this land by any of the natives wishing to testify for Kuleana lands. Instead, parcels of the land were later sold by the government to raise money. (Lehua Kalima in O'Hare and Goodfellow 1992:A-12)

Honokohau 1&2

The *ahupua'a* were given to two members of the reigning *ali'i*... Subsequent *kuleana* awards within the two *ahupua'a* were given to eleven individuals. These awards - ranging in size from 1 to 5.75 acres... are located between 800 and 1680 feet [elevation]. Only two of the testimonies recorded for these awards mentioned specific crops grown upon the awarded parcels, [these include taro and potato *kihapais*. A house lot was claimed by only one individual]. (Robins et al. 1995:25)

Kaloko

As Kelly (1971) noted, all 12 commoner or *kuleana* awards were located within the Upland Zone, between 1200-1700 feet elevation. [In addition] six unawarded claims were found. Thus, at least 18 *kuleana* claims were filed for Kaloko in 1848. Actual crops grown in the claims fields are mentioned in only six claims. Taro predominated, although two sweet potato plots were claimed and eight mixed taro and sweet potato plots. House lots were claimed in only two of the eighteen cases - which is extremely unusual. In sum, housing data are extremely poor for this period. (Cordy et al. 1991:411, 415)

Kealakehe

At the time of the Mahele, the *ahupua'a* of Kealakehe was set aside as government land, while preserving the rights of native tenants. It is from the testimonies of these tenants that we obtain data on land use during the mid-1800s... From the [eleven] testimonies it was determined by Silva (1987) that ...claimants listed numerous cultivated parcels (*kihapai*) planted in taro and sweet potatoes. At least ten houses...[and] a fair sized banana patch was situated in the uplands. (Donham 1990b:B-4)

Keahuolu

The *ahupua'a* of Keahuolu was awarded to Ane Keohokalole (d.1857). Six native tenants made claims for *kuleana* lands at Keahuolu. [Claimants indicated taro and sweet potato *kihapais* as well as palm trees, one coffee patch and one section of salt land. None of the claimants specifically filed for house lots]. (Donham 1990:B3-5)

**Late Nineteenth and Early Twentieth Centuries**

Following are selections from previous studies which summarize the historical developments that occurred within Kekaha and selected portions of the Kekaha region:

Kekaha

By the end of the 1800s, land use in North Kona had undergone significant alterations from the dryland cultivation and fishing practiced during prehistoric

and proto-historic times. Maly summarizes the gradual replacement of Hawaiian lifestyle in this area as the result of two major factors: the 1801 eruption of Hualalai, and changing land use patterns over the last 150 years. The lava flows from Hualalai reclaimed much of the land used for settlement, agriculture and fishponds; reducing the land to a shadow of its former condition. Introduction of foreign plants and animals brought about additional changes, as once barren lava fields became overgrown with *kiaue* and other weedy shrubs, and goat and cattle raising became a mainstay of local industry. The 1850s saw the development of large-scale commercial ranching and agriculture as a result of the shift to private land ownership brought about by the Mahele and an 1850 law permitting foreigners to own land. Coffee, grazing land, tobacco and sugar cane gradually replaced traditional crops such as taro and *uala*; stripped the land of forests, and caused disruption of the water catchment systems...

Today, the upland and intermediate zones are covered with coffee plantations, housing developments, and light industry. On the coast are the Keahole Airport and the Natural Energy Laboratory. The coast has not been utilized for permanent human habitation since the 1801 lava flow. (Henry et al. 1993:50)

#### Kaloko

The historical documents suggest that by the 1840s to 1850s, the Coastal Zone had been abandoned as a residential area, except probably for a house used by the fishpond's caretaker. This pattern would have been a stunning change from prehistoric and early historic times, when many coastal residences were present. (Cordy et al. 1991:288)

By the 1870s and 1880s, housing does seem to have become focused in the Upland Zone at the Kohanaiki Homesteads and with some scattered houses across Kaloko along the Road to Kailua and the upper Government Road. Cultivation may have been shifting to cash crops (coffee), and... small-scale livestock raising may have been taking place.

By the early 1900s, large-scale ranching began in the uplands, with the acquisition of chiefly lands by Huehue Ranch. [Citing Kelly (1971), Cordy also notes], a gradual reduction in house locations...These patterns appear to be related to decreasing populations in this region of North Kona into the early 1900s. (Cordy et al. 1991:421)

#### Honokohau

Following the Mahele (ca. 1850s), the Intermediate and Upland Zones of the project area were ultimately abandoned, as suggested by Boundary Commission and Land Court Award records. As a result, the vacant lands were subsequently acquired for cattle ranching and portions leased for commercial cultivation of coffee and fruit by Japanese immigrants. By the 1920s to 1930s the Coastal Zone of Honokohau I and II was virtually vacant, with settlement associated with ranching and coffee farming centered primarily along the *mauka* roads, as it is today. (Robins et al. 1995:149)

### B. Previous Archaeological Studies

The following is an annotated list of previous archaeological studies conducted within or adjacent to the present project area. They are presented by *ahupua'a* from Keahuolu northward to Kalaoa 1-4.

Although the present project area typically extends 200 feet (61 meters) *makai* and 50 feet (15 meters) *mauka* of the present highway, the background research focused on identifying all archaeological sites previously identified within approximately 300 feet (91 meters) of both side of the present highway. Subsequent inventory survey fieldwork included the determination of which of these previously identified sites was located within the boundaries of the present project area.

#### Keahuolu

Donham, Theresa

1990a *Archaeological Inventory Survey - Queen Liliuokalani Trust Property: Land of Keahuolu, North Kona District, Island of Hawaii (TMK:3-7-4-8:por.2,12), PHRI 596-021290.*

Inventory survey of an 1100 acre parcel situated on both sides of the highway -5500 feet (1676 m.) on the east side (from Palani Road to the northern *ahupua'a* boundary) and 1500 feet (457 m.) on the west side. A total of 19 sites were identified within roughly 300 feet (91 m.) of the highway.

O'Hare, Constance R. and Paul H. Rosendahl

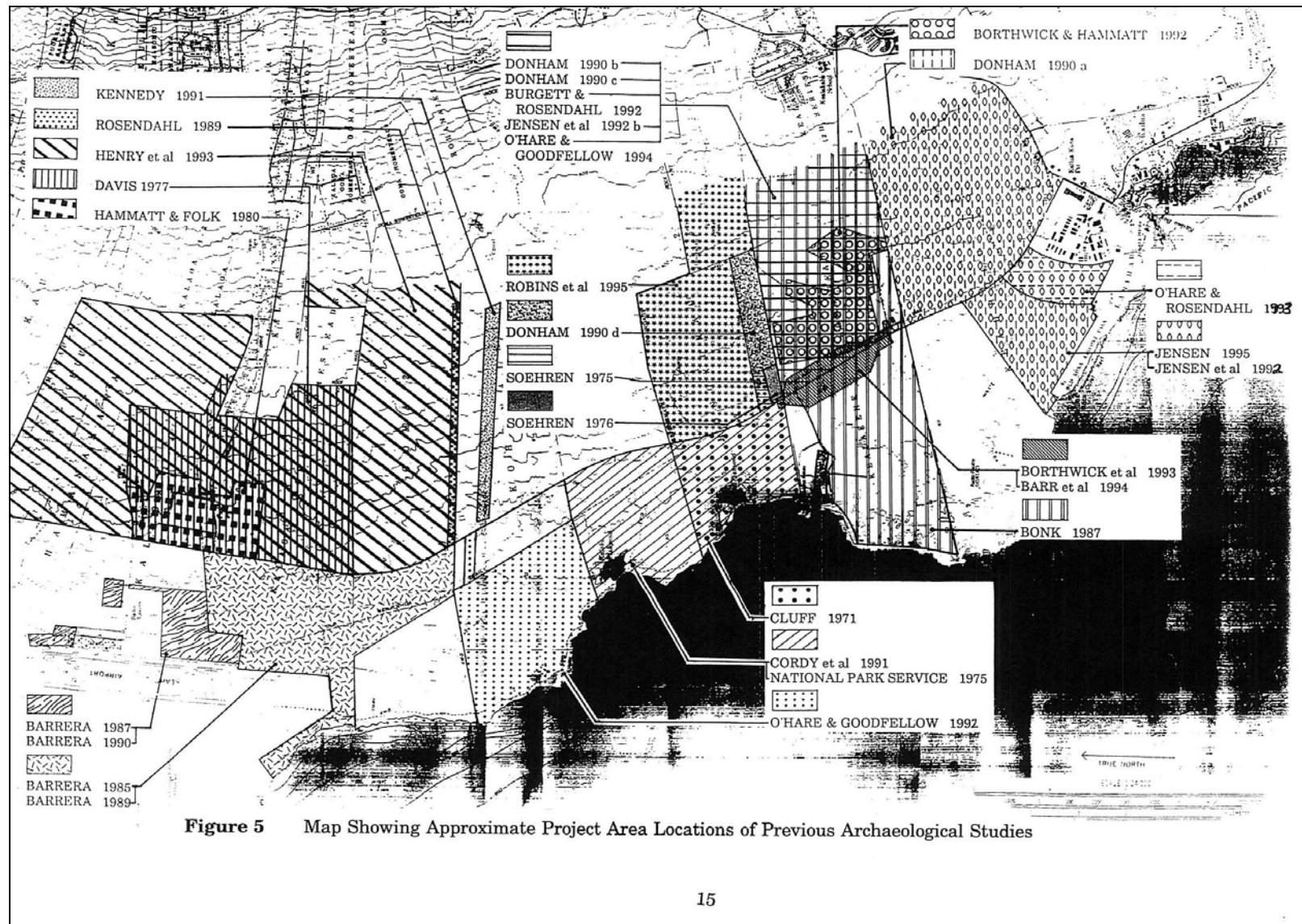
1993 *Archaeological Inventory Survey - Queen Liliuokalani Trust 100-Acre KIS Expansion Site: Land of Keahuolu, North Kona District, Island of Hawaii (TMK:3-7-4-8:por.2), PHRI 1311-010093.*

Inventory survey of a 100 acre parcel situated along the west side of the highway bordered on the south by the already developed Kona Industrial Subdivision and on the north by a portion of the project area cited above. Seven sites were identified within roughly 300 feet (91 m.) of the highway.

Jensen, Peter M.

1992a *Archaeological Mitigation Program, Queen Liliuokalani Trust Property, Phase I: Mitigation Plan for Data Recovery, Interim Site Preservation and Monitoring, Land of Keahuolu, North Kona District, Island of Hawaii, PHRI 1152-012192.*

Data Recovery Plan for the Donham 1990 Inventory Survey project area. Eighteen of the nineteen sites identified within 300 feet (91 m.) of the highway were either recommended for further data recovery work or were determined to have been sufficiently recorded during the inventory survey. The remaining one site, Site 00002, the Mamalahoa Trail was recommended for preservation.





During the review of this data recovery plan, two amendments were added in 1993 and accepted by the Department of Land and Natural Resources-State Historic Preservation Division (DLNR-SHPD). One of these amendments called for the inclusion of the 100 acre KIS Expansion parcel (O'Hare and Rosendahl 1993) into the data recovery and preservation plans for the 1100 acre Queen Lili'uokalani Trust parcel.

The amended data recovery plan thus included the seven sites identified within 300 feet (91 m.) of the highway during the course of the inventory survey of the KIS Expansion parcel (O'Hare and Rosendahl 1993). All seven of these sites were either recommended for further data recovery work (including a section of the Mamalahoa Trail) or were determined to have been sufficiently recorded.

Jensen, Peter M.

1995

*Archaeological Preservation Plan - Queen Lili'uokalani Trust Keahuolu Lands, Land of Keahuolu, North Kona District, Island of Hawaii,*

Only one of the total 26 archaeological sites identified within 300 feet (91 m.) of the highway was recommended for preservation, site 00002, the Mamalahoa Trail. The preservation plan for site 00002 includes only the section of the trail situated on the *mauka* side of the highway, while the section on the *makai* side of the highway was slated for data recovery work only. The long-term preservation plan for the *mauka* section of the Mamalahoa Trail is outlined and includes "further data collection," and "preservation with interpretive development."

#### **Keahuolu Summary**

The highway extends approximately 8100 feet (2469 m.) through Keahuolu. The *mauka* side of the highway within Keahuolu has been completely surveyed and has subsequently undergone extensive development. Along the *makai* side of the highway approximately 2700 feet (823 m.) is developed lands within the Kailua Industrial Subdivision, approximately 3200 feet (975 m.) has been surveyed as part of the Queen Lili'uokalani Trust Lands, and approximately 2200 feet (671 m.) on the northern end of the *ahupua'a* has apparently not undergone any previous archaeological survey.

Twenty six archaeological sites were identified within 300 feet (91 m.) of the highway. Of these, only one site has been preserved; the *mauka* section of site 00002, the Mamalahoa Trail. A field check has confirmed that this section of the trail begins approximately 370 feet (113 m.) north of the centerline of Makalapua Blvd. and approximately thirty feet (9.0 m.) east of the existing Queen Kaahumanu Highway pavement edge. The trail extends through the remainder of the *ahupua'a*, roughly paralleling the highway at 321 degrees True North. An approximately 700 foot (213 m.) section is within the present project area (see Site Descriptions section of this report).

Kealakehe

Sinoto, A.  
1977

*Archaeological Reconnaissance Survey of Portions of Kealakehe, North Kona, Island of Hawaii.* MS 122177. B.P. Bishop Museum, Department of Anthropology;

This reconnaissance survey was conducted on the eastern or *mauka* side of the highway. Four sites were identified, only one of which (5011) was within 300 feet of Queen Kaahumanu Highway. The site, -5011, refers to the *mauka-makai* oriented Kealakehe/Keauhuolu boundary wall.

Sinoto, A.  
1983

*Archaeological Walk-Through Survey of the Proposed Kona Public Safety Building Site, Kealakehe, North Kona, Hawaii;* B.P. Bishop Museum, Department of Anthropology.

Reconnaissance Survey of Roughly 7 acres also on the eastern side of the highway within which no sites were found.

The areas of the two Sinoto reports (1977 and 1983) was subsequently subjected to inventory level survey (Donham 1990b, see below for details).

Bonk, William J.  
1987

*An Archaeological Walk-Through Survey of Lower Kealakehe, North Kona, Hawaii,* University of Hawaii at Hilo.

A walk-through survey over the width of the *ahupua'a* between the coast and roughly 640 feet A.M.S.L. One site, the Mamalahoa Trail was identified in close proximity to the highway, and another site, a steppingstone trail previously identified by Soehren (Soehren 1975, see Honokohau Section below) was mentioned as being just *mauka* of the highway near the northern boundary of the *ahupua'a*.

Donham, Theresa K.  
1990b

*Archaeological Inventory Survey - Kealakehe Planned Community Project Area: Lands of Kealakehe and Keahuolu, North Kona District Island of Hawaii (TMK:7-4-8:17, por.12),* PHRI 652-010890.

Donham, Theresa K.  
1990c

*Addendum Report: Archaeological Inventory Survey - Kealakehe Planned Community Project Area: Lands of Kealakehe and Keahuolu, North Kona District Island of Hawaii (TMK:7-4-8:17, por.12),* PHRI 652-051090.

Burgett, Berdena D. and Paul H. Rosendahl  
1992

*Addendum Report: Archaeological Inventory Survey - Kealakehe Planned Community Project Area: Lands of Kealakehe and Keahuolu, North Kona District Island of Hawaii,* PHRI 927-021192.

These three reports document the inventory survey of an approximately 950 acre project area situated on the east side of the highway. Four sites were identified within roughly 300 feet (91 m.) of the highway including, the Mamalahoa Trail (Site 00002), a steppingstone trail (Site 13194), and a site consisting of several *ahu* (Site 13195), and the *ahupua'a* boundary wall (Site 5011).

The steppingstone trail identified by Soehren (1975) and mentioned again by Bonk (1987) is identified in this survey (Site 13253) as being located roughly 400 feet (122 m.) from the highway (and is thus considered to be outside the present project area).

Jensen, Peter M.

1992b

*Archaeological Mitigation Program - Kealahake Planned Community Project Area - Phase I: Mitigation Plan for Data Recovery and Interim Site Preservation: Lands of Kealahake and Keahuolu, North Kona District, Island of Hawaii*, PHRI 991-101491.

This is the "mitigation plan" for the sites identified within the Kealahake Planned Community Project Area. Recommended treatment for sites 00002 and 13194 included further data collection in addition to preservation with some level of interpretive development. No further work was recommended for site 13195.

O'Hare, Constance R. and Susan T. Goodfellow

1994

*Phased Archaeological Mitigation Program, Kealahake Planned Community, Phase II: Archaeological Data Recovery, Land of Kealahake, North Kona District, Island of Hawaii*, PHRI 1201-040794.

This report is on the data recovery work undertaken within the Kealahake Planned Community Project Area and is currently under review by DLNR-SHPD. This report should include any final data collection on sites 00002 and 13194.

Borthwick, Douglas F. and Hallett H. Hammatt

1992

*Archaeological Field Inspection and Interim Preservation Plan for the Proposed Kealahake Golf Center. Kealahake, North Kona, Hawaii Island (TMK:7-1-8:por 17)*, CSH.

This project area lies within the Kealahake Planned Community Project area previously surveyed. No newly identified sites were located within 300 feet (91 m.) of the highway. Recommended treatment for the three previously identified sites (00002, 13194 and 13195) was the same as that cited above.

Borthwick, Douglas F. et al.

1993

*Archaeological Planning Reconnaissance for the Proposed Kealahake Parkway Extension*, CSH.

Barr, Timothy R. et al.

1994 *An Archaeological Inventory Survey and Limited Subsurface Testing of the Proposed Kealakehe Parkway Extension, Alternatives 10 and 11 (TMK 7-4-8: por.3,5,17,34), CSH.*

A reconnaissance and inventory level survey of two parcels, one of which is an interchange area of the highway that includes 150 feet (46 m.) on either side of an approximately 2500 foot (762 m.) section of the highway. This project area adjoins and partially overlaps with the Kealakehe Planned Community project area previously surveyed. The three sites identified in prior surveys (sites 00002, 13194 and 13195) were re-identified in this survey, but no additional sites were found within 300 feet (91 m.) of the highway including virtually the entire length of the highway through Kealakehe except for a roughly 700 foot section on the *makai* side of Queen Kaahumanu Highway at the southern end of the *ahupua'a*.

#### **Kealakehe Summary**

The highway extends approximately 4900 feet (1494 m.) through Kealakehe. The entire *mauka* side of the highway has been subjected to inventory and/or data recovery work. The *makai* side of the highway contains an approximately 700 foot section at the southern end of the *ahupua'a* which has only been subjected to reconnaissance level research and thus will need to be subjected to inventory level research.

Four sites have been identified within 300 feet (91 m.) of the present highway at Kealakehe. Two sites, Site 13195, *ahu* and site 5011 wall, has been subjected to data recovery and/or inventory level work, and no further work was recommended (Donham 1990b) and two have been included in preservation plans approved by DLNR-SHPD; site 00002, the Mamalahoa Trail and Site 13194, a steppingstone trail.

#### Honokohau

Soehren, Lloyd

1975 *Archaeological Reconnaissance Honokohau II (TMK 7-4-08:26 por.), for K.M. Young & Associates, Inc.*

Soehren, Lloyd

1976 *Archaeological Reconnaissance at Honokohau II, Letter Report to Mr. Kenneth M. Young, 1 November 1976.*

These reports are for two reconnaissance surveys conducted on adjoining parcels situated on the east side of the highway along the southern end of the *ahupua'a*. Two sites were identified within roughly 300 feet (91 m.) of the highway, the Mamalahoa Trail and a steppingstone trail (also mentioned by Bonk in his walk-through survey of Kealakehe, as this trail extends into that *ahupua'a*). The northernmost of these two parcels was subsequently included in the inventory survey by Robins et al. 1995.

Robins, Jennifer J. et al.

1995 *An Archaeological Inventory Survey of an Approximately 803 acre Subject*



*Parcel in the Ahupua'a of Honokohau I and II, North Kona District, Island of Hawai'i (TMK:7-4-8:por.5,13,34), CSH.*

This project area is situated on the east side of the highway between the two parcels surveyed by Soehren (above) and the northern *ahupua'a* boundary. Eight sites were identified within roughly 300 feet of the highway. From south to north these include 18085, 18086, 18091, 18084, 18186, 18083, 18081, and 00002. Recommended treatment includes preservation of 00002 (Mamalaho Trail) and 18081 (petroglyphs), data recovery for 18083, 18084 and 18085, and no further research of 18086, 18186 and 18091. This report (and, consequently these recommendations) have not yet been submitted to DLNR-SHPD for review and approval.

Cluff, Deborah F.

1971 *An Archaeological Survey of the Seaward Portion of Honokohau #1 and #2 North Kona, Hawaii Island, Report 69-5 Dept. of Anthropology, B.P. Bishop Museum.*

A surface survey of the *ahupua'a* west of the highway. No sites were identified within 300 feet (91 m.) of the highway.

National Park Service

1975 *Draft Environmental Statement, Proposed Kaloko-Honokohau National Cultural Park/Hawaii, Western Region National Park Service, Department of the Interior and the Honokohau Study Advisory Commission, DES 75-12.*

Report on the cultural and historical resources within the park. This report indicates that the park boundaries conform to the current highway Right of Way which is 150 feet (46 m.) *makai* of the present highway centerline. One site is indicated as being within 300 feet (91 m.) of the highway, site 00002 the Mamalahoa Trail. The present highway crosses the Mamalahoa Trail in Honokohau, and therefore the trail is present on both sides of the highway.

Information on additional archaeological sites located within 300 feet (91 m.) of the highway was provided by National Park Service Archaeologist, Laura Schuster. In addition to the Mamalahoa Trail, recent archaeological surveys conducted by National Park archaeologists have identified two *mauka-makai* trails near the highway. It was also brought to our attention that within the park (but not necessarily within the present project area), human burials had been found beneath accretion boulders within the *a'a* lava flows. The accretion boulders are formed "when a fragment of solidified lava...is rolled along and wrapped up in the viscous liquid and range in size up to 10 feet" (MacDonald and Abbott 1970:25-26). These burials had no associated archaeological surface features.

Although recent archaeological survey work has been carried out within the National Park, the area within 300 feet (91 m.) of the highway has not undergone a systematic inventory survey.

Johnson, Greg and Gary F. Somers

1991 *Kaloko-Honokohau National Historical Park Ruins Stabilization Projects 1990*, National Parks Service, Pacific Area Office, Honolulu.

This project included maintenance work at two sites within the park and at the Mamalahoa Trail (which is referred to by its name and not its state site number in this report). A portion of the trail was cleared and restored, but this portion does not lie within 300 feet (91 m.) of the highway.

#### **Honokohau Summary**

The highway extends approximately 4200 feet (1280 m.) through Honokohau *ahupua'a*. On the *mauka* side of the road, approximately 3800 feet (1158 m.) has been subjected to inventory level archaeological survey and the remaining 400 feet (122 m.) has undergone reconnaissance level survey only but is already a developed parcel thus no survey is necessary of the *mauka* side of the highway. The *makai* side of the road has been subjected to reconnaissance level survey only, including that portion of the project area that lies within the Kaloko-Honokohau National Park.

Eight sites have been identified within 300 feet (91 m.) of the highway (including two sections of the Mamalahoa Trail which are situated on both sides of the highway in Honokohau). The recommended treatment for these sites include preservation for two sites; data recovery for three, and no further work for three. These findings and recommendations have, however, not yet been reviewed and approved by DLNR-SHPD. Two additional sites, *mauka-makai* oriented trails, have also been noted as nearby the highway, although these sites had yet to be fully documented (L. Schuster, National Park Service, personal communication).

#### Kaloko

Cordy, Ross et al.

1991 *An Ahupua'a Study: The 1971 Archaeological Work at Kaloko Ahupua'a North Kona, Hawai'i - Archaeology at Kaloko-Honokohau National Historical Park*, Western Archaeological and Conservation Center, Publications in Anthropology No. 58.

This report documents the archaeological survey and testing work undertaken in the *makai* portion of Kaloko (i.e. *makai* of the highway) in 1971. Based on the map of the seaward portion of Kaloko included in this study, five sites are located within 300 feet (91 m.) of the highway, from south to north these include: Site 2199 (BPM 46), a *mauka-makai* trail; Site BPM 90 (no state site number assigned), a *mauka-makai* trail; Site 2238 (BPM 86), a wall with midden; Site 2233 (BPM 81), a *mauka-makai* trail; and Site 2240 (BPM 89A-B), a *mauka-makai* trail. Survey work was also done on the eastern side of the highway, but the information on the locations and descriptions of specific sites is missing (see p. 339), so it is unknown if any sites were identified within 300 feet (91 m.) of the highway.

National Park Service

1975 *Draft Environmental Statement, Proposed Kaloko-Honokohau National*

*Cultural Park/Hawaii*, Western Region National Park Service, Department of the Interior and the Honokohau Study Advisory Commission, DES 75-12.

Johnson, Greg and Gary F. Somers  
1991 *Kaloko-Honokohau National Historical Park Ruins Stabilization Projects 1990*, National Parks Service, Pacific Area Office, Honolulu.

These two reports are also included in this section because the national park includes a portion of Kaloko within 300 feet (91 m.) of the highway as well. No additional archaeological sites were identified within 300 feet of the highway.

#### **Kaloko Summary**

The highway extends for approximately 3800 feet (1158 m.) through Kaloko. Both sides of the highway have been subjected to some degree of archaeological study, but it is likely that the archaeological work undertaken within these areas would not be considered adequate as an inventory level survey.

Five sites were identified within 300 feet (91 m.) of the highway, four *mauka-makāi* trails (Sites BPM 90, 2199, 2233 and 2240) and one site described as a wall with midden (Site 2238). The survey in which these sites were identified was conducted in 1971, and the survey data was made available in 1991. The survey report does not include significance assessments or recommendations for future treatment.

#### Kohanaiki

Kennedy, Joseph  
1991 *Surface Reconnaissance of the Proposed Industrial Development at Kohanaiki, North Kona, Hawaii, TMK:7-3-09:15*, Letter report of 12 August, 1991 to Mr. James Leonard.

Reconnaissance survey of a 500 foot (152 m.) wide strip extending east from the highway for 7260 feet (2213 m.). No archaeological sites were identified within 300 feet (91 m.) of the highway.

O'Hare, Constance R. and Susan T. Goodfellow  
1992 *Kohana-Iki Resort Phased Archaeological Mitigation Program Phase II - Data Recovery, Land of Kohana-iki, North Kona District, Island of Hawaii (TMK:3-7-3-09:3)*, PHRI 874-121391.

Data Recovery phase of the Kohana-iki Resort Project Area. While most of the project area is situated 1500 feet (457 m.) west of the highway there is an access road that extends to the highway. No archaeological sites were identified within 300 feet (91 m.) of the highway within the access road portion of the project area.

### Kohanaiki Summary

The highway extends approximately 4300 feet (1311 m.) through Kohanaiki *ahupua'a*. One 500 foot (152 m.) wide section on the *mauka* side of the highway has been subjected to inventory level archaeological survey, and one approximately 200 foot (61 m.) wide section on the *makai* side of the highway has been included in both an inventory level survey and data recovery phase archaeological study. No sites were identified in either of these two portions of the present project area within Kohanaiki.

### O'oma 2

Rosendahl, Margaret L.K.

1989 *Archaeological Inventory Survey - Kohana-iki Resort Water Development Project Area, Land of Ooma 2, District of North Kona, Island of Hawaii (TMK:3-7-3-09:5), PHRI 477-011589.*

An inventory survey of a 200 foot (61 m.) wide corridor situated on the Ooma-Kohanaiki border extending east from the highway. No sites were identified within 300 feet (91 m.) of the highway.

Henry, Jack D. et al.

1993 *Archaeological Assessment Study, Kailua to Keahole Region State Lands LUC Project, Lands of Makaula, Hale'ohi'u, Kalaoa 1-4, Kalaoa-O'oma, and O'oma 2, North Kona District Island of Hawaii, PHRI 1275-071493.*

Assessment of a 1260 acre parcel situated on the west side of the highway in the *ahupua'a* listed above. Within Ooma 2, no sites were identified within 300 feet (91 m.) of the highway.

Barrera, William, Jr.

1985 *Ke-ahole Point, Hawaii: Archaeological Reconnaissance (Revised Version), Chiniago, Inc.*

Reconnaissance survey of a 450 acre project area situated on the west side of the highway in O'oma 2 and Kalaoa-O'oma (referred to as O'oma 1). One site was identified as being within 300 feet (91 m.) of the highway, Site 10154, a "habitation structure."

Barrera, William, Jr.

1989 *Archaeological Data Recovery at the Host Park and NELH, Kalaoa and O'oma Ahupua'a, North Kona, Hawaii Island: DLNR Submittal Version, Chiniago, Inc.*

Varying levels of data recovery work conducted on sites identified within a 450 acre project area situated on the western side of the highway within O'oma 2 and Kalaoa-Ooma (called Ooma 1 in this report).

Site 10154 is identified as having been one of the sites that "required additional recording only." This site is located on the project area map and briefly described. It is described as a well constructed shelter plus an

adjacent short wall section - age and function unknown.

#### **O'oma 2 Summary**

The highway extends through O'oma 2 for approximately 3800 feet (1158 m.). The *mauka* side of the highway has been subjected to reconnaissance level study, and the *makai* side of the road has apparently been adequately surveyed and data recovery work was carried out on selected sites.

One site has been identified within 300 feet of the highway in O'oma 2, site 10154. This site was included in the data recovery project, and is presumed to have been adequately recorded.

#### Kalaoa-O'oma (O'oma 1)

Barrera, William, Jr.

1985 *Ke-ahole Point, Hawaii: Archaeological Reconnaissance (Revised Version)*, Chiniago, Inc.

Barrera, William, Jr.

1989 *Archaeological Data Recovery at the Host Park and NELH, Kalaoa and O'oma Ahupua'a, North Kona, Hawaii Island: DLNR Submittal Version*, Chiniago, Inc.

Reconnaissance and subsequent data recovery work (see above), no sites were identified within 300 feet of the highway at Kalaoa-Ooma.

Henry, Jack D. et al.

1993 *Archaeological Assessment Study, Kailua to Keahole Region State Lands LUC Project, Lands of Makaula, Hale'ohi'u, Kalaoa 1-4, Kalaoa-O'oma, and O'oma 2, North Kona District Island of Hawaii*, PHRI 1275-071493.

This project area included the western side of the highway at Ooma 2 (see above). One site was identified as being within approximately 300 feet (91 m.) of the highway - Site 18524, identified as "pahoe hoe excavation." Recommended treatment was "further data collection."

Davis, Bertell D.

1977 *Archaeological Survey of the Proposed Agricultural Park at Ke-ahole, North Kona, Hawaii Island*, ARCH Project 14-122.

Hammatt, Hallett H. and William H. Folk

1980 *Archaeological Excavations within the Proposed Keahole Agricultural Park, Kalaoa-Ooma, Kona, Hawaii Island*, ARCH Project 14-122 II.

These two reports record the survey and salvage excavations within the proposed Keahole Agricultural Park on the eastern side of the highway. One site was identified within 300 feet of the highway, Site 6432, the boundary



wall. This is described as an historic-era wall that forms the boundary between Kalaoa-O'oma and O'oma 2 (see the Site Description section of this report).

#### **Kalaoa-O'oma Summary**

The highway extends approximately 5200 feet (1585 m.) through Kalaoa-O'oma. The *mauka* side of the road through the length of the *ahupua'a* has been subjected to varying degrees of archaeological survey including salvage excavations in some areas. The length of the *ahupua'a* along the *makai* side of the road was included in the reconnaissance and data recovery work conducted by Barrera. Two sites have been identified within 300 feet of the highway, Site 18524 Pahoehoe excavation, and Site 6432 Boundary wall.

#### **Kalaoa 1-4**

Barrera, William Jr.

1987 *Ke-ahole Airport, Hawaii: Archaeological Survey of Five Areas Proposed for Airport Expansion*, Chiniago, Inc.

1990 *Final Report: Kalaoa, North Kona, Hawaii Island: Archaeological Data Recovery for Keahole Airport Expansion*, Chiniago, Inc.

Survey and data recovery work at five areas within Kalaoa 1-4 in the vicinity of the Keahole airport (it appears that this project area did not include the area within 300 feet of the highway). No sites were identified within 300 feet of the highway.

Henry, Jack D. et al.

1993 *Archaeological Assessment Study Kailua to Keahole Region State Lands LUC Project, Lands of Makaula, Hale'ohi'u, Kalaoa 1-4, Kalaoa-O'oma, and O'oma 2, North Kona District Island of Hawaii*, PHRI 1275-071493.

This project continues through Kalaoa 1-4, but no sites were identified within 300 feet of the highway in Kalaoa 1-4.

Davis, Bertell D.

1977 *Archaeological Survey of the Proposed Agricultural Park at Ke-ahole, North Kona, Hawaii Island*, ARCH Project 14-122.

Hammatt, Hallett H. and William H. Folk

1980 *Archaeological Excavations within the Proposed Keahole Agricultural Park, Kalaoa-Ooma, Kona, Hawaii Island*, ARCH Project 14-122 II.

Survey and salvage excavations within the proposed Keahole Ag Park (see above) also extends into Kalaoa 1-4. No sites were identified within 300 feet of the highway at Kalaoa 1-4.

#### **Kalaoa 1-4 Summary**

The portion of the highway within the present project area extends 2400 feet (732 m.) into Kalaoa 1-4, between the southern boundary of the *ahupua'a* and the Keahole Airport entrance road. Along the *mauka* side of this section of the highway, the area has been subjected to both an archaeological survey and salvage excavations. On the *makai* side of the road, survey and data recovery work has been undertaken in the vicinity of the airport, but apparently not within 300 feet of the highway.

#### Other Relevant Archaeological Studies

Ching, Francis, Jr. and Deborah Cluff and Thomas Riley  
1968-9 *Preliminary Report of Archaeological Surface Survey and Salvage Operations at Keahole, North Kona, Hawaii Island: Section II Keahole Point Airport Kailua-Kawaihae Road, DLNR.*

Report is incomplete; missing section called "Kailua-Kawaihae Road Section II Survey and Salvage" pp.38-89. Contains a map of the Keahole region with site locations (site numbers 118 to 355) but no site descriptions of any specific sites.

Ching, Francis Jr. and Paul Rosendahl  
1968\* *Archaeological Surface Survey of the Kailua-Kawaihae Road (Section II, Honokohau to Keahole Point) and the Keahole Point Airport, DLNR.*

Surface survey of Section II of the highway (likely the same report that was to have been included in the report cited above). The map accompanying this report identifies a small number of sites within roughly 300 feet of the (proposed) highway: two sites in Honokohau (T2 and T3), one site in Ooma 2 (T1), one in Kalaoa-Ooma (T1), and one in Kalaoa 1-4 (T1). Minimal descriptions of these sites are provided, but the use of this data is highly problematic, see explanation by Cordy (1985:11-12).

Thompson, Kevin W. and Paul H. Rosendahl  
1992 *Archaeological Sensitivity Study Keahole-Kailua and Keahole-Keamuku Transmission Line Sites: Districts of North and South Kona, and South Kohala, Island of Hawaii, PHRI 1118-050192.*

A study in which the locations of selected existing sites along two proposed transmission line routes were identified. The sites marked on the map were limited to "sites or features considered to be culturally significant or possibly significant" (Thompson 1992:4). One of these routes is essentially the same project area as the present highway widening.

Helber, Hastert & Kimura, Planners  
1987 *Environmental Assessment: Easement Across Portion of the Mamalahoa Trail, Kohanaiki, North Kona, Hawaii, Prepared for Hawaii County Planning Dept. and DLNR.*

A study related to the request for an easement across a portion of the

Mamalaho Trail. Although this report documents the Mamalahoa Trail, it is not considered an acceptable archaeological data recovery report.

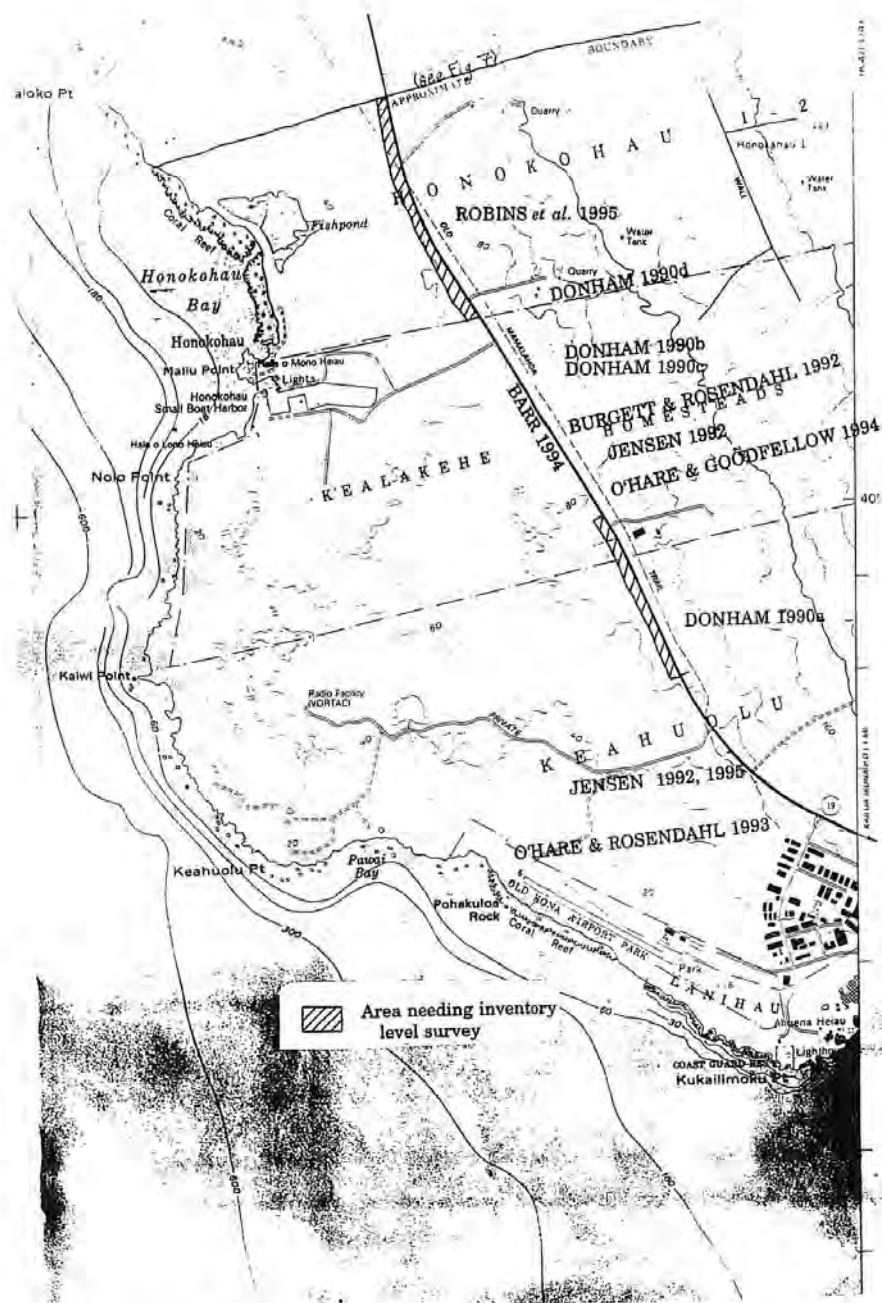
Barrera, William Jr.

1993

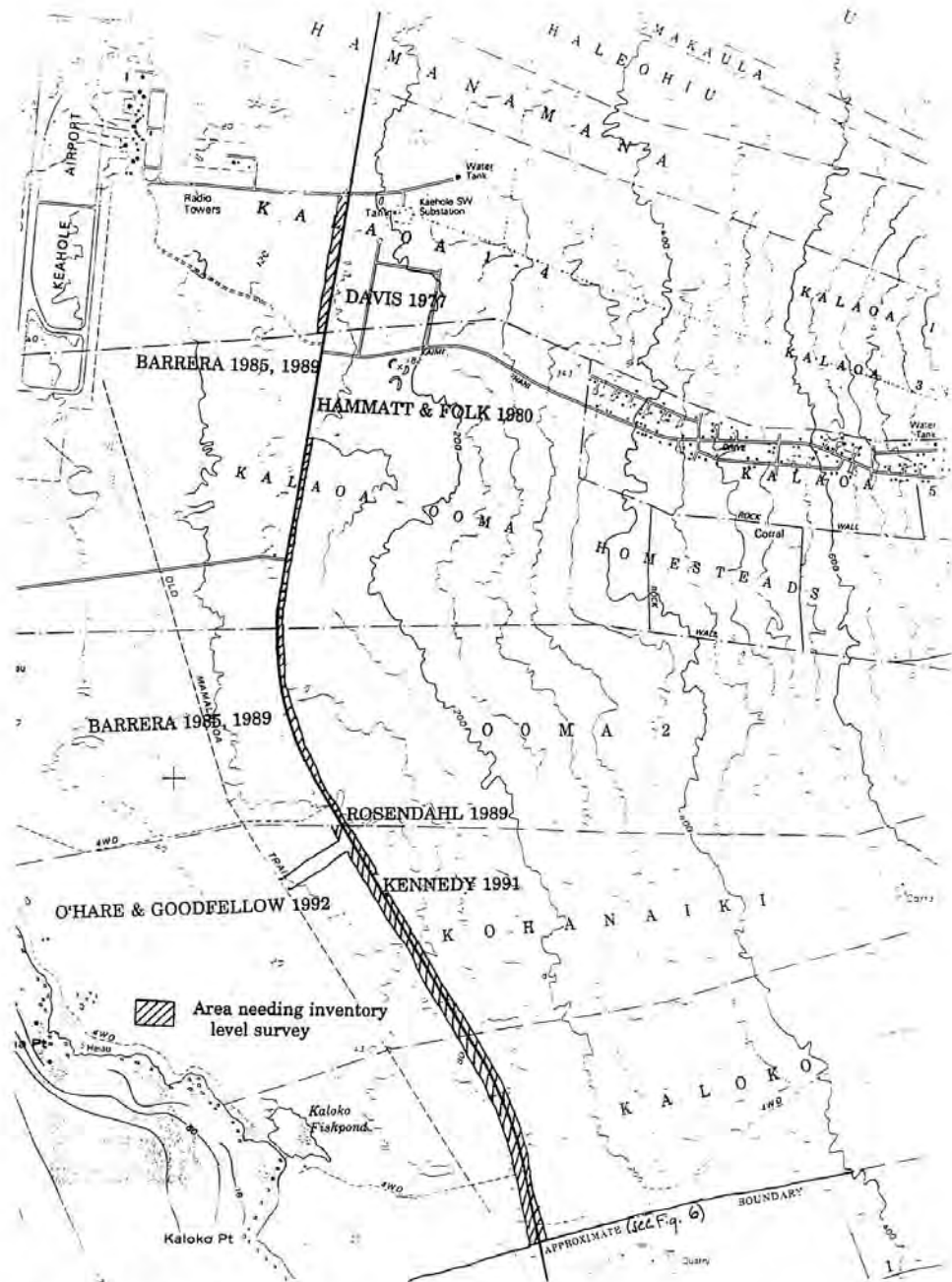
*Kalaoa, North Kona, Hawaii Island: Archaeological Documentation of Mamalahoa Trail and Immediate Vicinity at Keahole Airport, Chiniago, Inc.*

An archaeological documentation of a portion of the Mamalahoa Trail in Kalaoa 1-4.

The following Two Figures (6 and 7) depict the areas that need to be subjected to inventory level survey archaeological research as part of this particular project. The figures also include references to inventory or data recovery reports for those areas abutting Queen Kaahumanu Highway which have already been sufficiently documented.



**Figure 6** South portion of project area showing areas needing inventory level survey



**Figure 7** North portion of project area showing areas needing inventory level survey



**Table 2: Sites Previously Identified Within 300 feet of Queen Kaahumanu Highway  
(between Palani Road and Keahole Airport Entrance Road)**  
Listed by *ahupua'a* from South to North

Site #	Site Type	Ahupua'a	Level	References	Recommendation	Status
13341	Modified Outcrop Complex	Keahuolu	IS, DR	Donham 90a, Jensen 92a+	NFW	M
13340	Complex				FDC	M
13485	Mound				NFW	M
13486	Pahoehoe Excavation				NFW	M
13338	Complex				NFW	M
13484	Complex				FDC	M
13337	Complex				FDC	M
13336	Complex				FDC	M
13335	Complex				FDC	M
13334	Complex				FDC	M
13304	Pahoehoe Excavation				NFW	M
13312	Terrace				NFW	M
13481	Pahoehoe Excavation				NFW	M
13310	Alignment				NFW	M
13311	Complex				NFW	M
13313	Pecking Marks				NFW	M
13314	Pahoehoe Excavation				NFW	M
13315	Rubble Wall				FDC	M
00002*	Mamalahoa Trail				FDC, PID	P
5011	Boundary Wall	Kealakehe/ Keahuola	IS	Sinoto 1977 Donham 1990b	NFW	M
18513	Complex			O'Hare 93, Jensen 92a+	FDC	M
18514	Wall				NFW	M
18515	Complex				FDC	M
18516	Complex				NFW	M
18517	Filled Depression				NFW	M
18518	Complex				FDC	M
00002	Mamalahoa Trail				FDC, PID	M

13194*	Trail	Kealahakehe	IS, DR	Donham 90b+ Jensen 92b	P, I	P
13195	Ahu(s)				NFW	M
00002*	Mamalahoa Trail				P, I	P
18081	Petroglyphs	Honokohau	IS	Robins et al. 95	P	K
18083	Modified Outcrop				DR	K
18084	Rockshelter				DR	K
18085	Lava Tube				DR	K
18086	Pahoehoe Basin				NFR	K
18091	Petroglyph				NFR	K
18186	Wall Segment				NFR	K
00002*	Mamalahoa Trail				P	K
02199	Trail	Kaloko	S	Cordy et al. 91	None	K
BPM 90	Trail				None	K
02238*	Wall w/ midden				None	K
02233	Trail				None	K
02240	Trail				None	K
10154	Habitation Structure	O'oma 2	R, DR	Barrera 85, 89	Additional Recording Only	M
06432*	Boundary Wall	Kalaea-O'oma	S	Davis 1977	None	K
18524	Pahoehoe Excavation		R	Henry et al 93	FDC	K

**KEY**

- + Indicates there are associated addendum reports or revision letters
- IS Inventory Survey
- DR Data Recovery
- S Survey (conducted prior to establishment of current IS standards)
- NFW No Further Work
- NFR No Further Research
- FDC Further Data Collection
- PID Preservation with Interpretive Development
- P,I Preservation with Interpretation
- P Preserved - Included in a preservation plan
- M Mitigated - Site adequately recorded
- K Known - Site has been identified but findings and recommended treatment have not been made and/or have not yet approved by DLNR-SHPD
- \* Site included in present Inventory Survey

### C. Anticipated Findings for the Present Project Area

The eight *ahupua'a* through which the present project area extends have been subjected to a considerable amount of archaeological survey and research including, and in addition to the studies listed above. Based on these archaeological and historical studies, numerous models of traditional and historic land use and settlement have been developed. In an archaeological assessment study of a project area that spanned multiple *ahupua'a* in the Kekaha region, PHRI presented and synthesized five of these models, providing the most current model to date (Henry et al. 1993:50-56). The five models analyzed by PHRI were those presented originally by Rosendahl (1973:60-61, 65-66); Davis (1977:19-21); Cordy (1985); Hammatt (1987:69-71); and Barrera (1987). These models were summarized as follows:

The preceding models, though varying in detail, have several common elements. First, there is a general agreement on separation of the region into three basic environmental zones: the coastal zone, the barren or intermediate zone, and the upland zone. Second, all five models associate the coastal zone with marine exploitation and the upland zone with dryland cultivation. Depending on their proximity to the coast or uplands, sites within the barren zone are considered extensions of the two major patterns into marginal areas, or as sites related to travel between the two poles (e.g. trails, shelters, etc.). Third, and finally, all of the models posit some level of interaction between the coast and the uplands, although there is little agreement concerning the nature and intensity of this interaction. (Henry et al. 1993:55)

The following table (Table 3) summarizes some of the major characteristics of the three-zone model for the Kekaha region. It is based upon the most recent model posited by PHRI in which the five previous models are synthesized (Henry et al. 1993:55-56), with additional details from Cordy (Cordy et al. 1991:11-16) and other sources.

The present project area lies within the intermediate zone and, as such, was expected to exhibit the same range of characteristics as those outlined in the intermediate zone row of the following table.

Table 3: Summary of Zone Model Characteristics

Zone	Elevation	Topography	Climate	Present Vegetation	Occupation Activities (Traditional and Historic)	Site/Feature Types	Site Density/ Distribution
Coastal	Coastline to 300 m. inland; 0 to 9 m. contour (0 to 30 feet)	Relatively flat to gradual slope (5-10%), undissected lavas, rocky, little or no soils; includes isolated bays, inland ponds	Central Kona patterns; Avg. Temp. range 67-83 F; Rainfall 10 inches/yr	Strand, pond & Kiawe thicket communities	Primary traditional use: permanent and temporary occupance & marine resource exploitation. Other uses: limited agriculture, quarrying, transportation, burials, art/communication	caves, cairns, enclosures, trails, midden scatters, modified outcrops, overhangs, pahoehoe excavations, petroglyphs, platforms, sinkholes, terraces, lava tubes, pavements	Moderate, concentrated along the shoreline and around inland ponds
Inter-mediate (Barren or Middle)	300-600 m. inland; 9-12m. contour (30-39 ft) to 130 m. contour (425 ft)	Gradual slope, undissected lavas, little or no soils	Central Kona Patterns; Rainfall 10-30 in./yr	Grasses dominate, some shrubs	Primary traditional use: temporary or transitory occupance. Other uses: habitation (mostly temporary or recurrent), transportation, quarrying, limited agriculture, burials art/communication, ranching	trails, pahoehoe excavations, cairns, midden scatters, platforms, terraces, enclosures, caves, mounds, walls	Very low and scattered, some concentrations along <i>mauka-makai</i> trails
Upland	Extends up to 6 km. inland from shore; 130 m. contour (425 ft) to 1030 m. contour (3379 ft)	Gradual slope, minimal soils below 800 ft-moderate to strong soil development above	Central Kona patterns; Rainfall 40-50+ in./yr	Non-native secondary forest dominates	Primary traditional use: permanent and temporary occupance & intensive dryland agriculture. Other uses: forest resource exploitation, ranching, commercial agriculture	upland agricultural features, platforms, mounds, walls, enclosures, cairns, terraces, trails, lava tubes, pahoehoe excavations	Medium to high, very high around 2000 ft elevation and 25 in/yr rainfall area

### III. FINDINGS AND CONCLUSIONS

#### A. Formal Site Types

During the inventory survey a total of 17 sites were recorded in the project area. These sites comprised a total of 29 individual archaeological features.

Thirteen formal site or feature types were identified among the 29 features (Table 4). These classifications are based on physical characteristics and commonly refer to structural elements of a site or feature as described:

Ahu or Cairn: Stacked or piled stones in a heap or small mound.

Alignment: A single row of stones one course high.

Ash Deposit: A concentration of residue from thoroughly burned organic material.

C-Shape, U-Shape, and L-Shape: A walled structure which partially encloses an area.

Enclosure: A walled structure which completely encloses an area. Enclosures are further categorized by their configurations which are referred to as: *rectangular, circular, or irregularly-shaped*.

Lava Tube: Modifications or apparent usage of a subterranean lava formation characteristic of pahoehoe lava flows.

Midden Scatter: A distribution of midden material on the ground surface.

Modified Outcrop: Natural outcrop altered by the placement or removal of stones.

Mound: Linear, circular or amorphous stone pile which typically lacks a vertical face and level surface.

Petroglyphs and Papamu: Images or configurations carved or pecked on a rock surface.

Road: A corridor or pathway for vehicular traffic.

Rock Shelter: Varying degrees of construction which modifies a rock shelter (or outcrop overhang). This structure is distinguished by an apparent primary focus on the enhancement of natural features.

Terrace: A raised stone construction partially built against or level to a ground or outcrop surface. These structures commonly resemble platforms. Unlike platforms, however, they are not totally free-standing.

Trail: A trodden lava surface, pavement, or stone alignment set into the ground or outcrop surface.

Wall: A bifaced and free-standing stone structure which is an isolated segment or defines large boundaries (such as land tracts or cattle barriers).



**Table 4: Formal Feature/Site Type Classifications of Identified Sites**

Formal Site/Feature Type	Number of Features	Percent
Alignment	1	3
Ash Deposit	1	3
Cairn	3	10
Enclosure	2	7
Midden Scatter	1	3
Modified Outcrop	4	14
Mound	3	10
Pahoehoe Excavation	1	3
Petroglyph	2	7
Road	1	3
Terrace	1	3
Trail	7	24
Wall	2	7

### B. Functional Categories

The function of a site or individual component feature is determined based on the following elements: construction and complexity of the archaeological structure; locational context (association with other site function types or geographical determinants); type of associated cultural material, if any; and comparisons with other similar site/feature types in the project area. External correlations are also made with other known archaeological sites in Hawai'i.

Seven functional categories are assigned to 16 of the sites in the project area (and the remaining one site is of an unknown function). Seven sites are attributable to transportation use (47%), two sites are attributable to temporary habitation use (12%), two sites are attributable to boundary/ranching use (12%), two sites are interpreted as markers (12%), and one site is attributable to each of the following: symbolism (6%), quarry (6%), and agriculture (6%).

**Table 5: Functional Categories of Identified Sites**

Site Number	Site Type	Function
00002	Road	Transportation
13194	Trail	Transportation

15324	Trail Network	Transportation
19946	Trail	Transportation
19952	Trail	Transportation
19953	Trail	Transportation
19954	Trail	Transportation
02238	Complex	Temporary Habitation
19943	Utilized Lava Tube	Temporary Habitation
06432	Wall	Boundary, Ranching
19951	Wall	Boundary, Ranching
19944	Mounds	Markers
19947	Cairns	Markers
19945	Petroglyphs	Symbolism
19948	Pahoehoe Excavation	Quarry
19950	Modified Outcrops	Agriculture
19949	Enclosure	Unknown

#### Transportation

Seven of the sites identified within the project area are transportation-related sites and include three general types: foot trails (three with steppingstones and two without); a curb-lined footpath; and a curb-lined horse path (also subsequently used as a jeep road).

Russell A. Apple (1965) provides classifications of Hawaiian trails based on architectural design, location and orientation. As a result of these classifications, it can be suggested what method of transportation (i.e., foot, horse or wheeled vehicle) was facilitated by the trail, and during what time period. According to Apple's classifications, the three types of trails present in the project area include Types A, AB, and C.

Apple describes Type A trails as being prehistoric and early historic (prior to abolishment of the *kapu* system), "single-file foot trails, characterized by many turnings and one-man width." Apple notes that Type A trails include coast-inland trails within each *ahupua'a*. Those that traverse over soil and a'a lava surfaces are more easily recognizable and may have steppingstones. Those that traverse over pahoehoe surfaces are much more difficult to follow, but may have filled cracks, steppingstones, occasional markers of piled stones and perhaps petroglyphs (ibid: Appendix 2). Type A trails within the project area include Sites 13194, 15324, 19946, 19953 and 19954.

Apple characterizes Type AB trails as Type A trails that have been widened to accommodate horses and have been modified with stone curbing. One trail within the project area is constructed with curbstones, Site 19952, and is thus considered to be a Type AB trail.

Apple characterizes Type C trails as wider "two-horse trails, built as straight as possible between two major points" (ibid). The Mamalahoa Trail (Site 00002) is a Type C trail that was also used during modern times as a jeep road. The Mamalahoa Trail - as delineated on a 1952 *Hawaii Territory Survey Kailua Sections* map - extended in a straight northerly direction from its origin at Kailua Bay.

While the seven trails identified within the project area are distributed among as many *ahupua'a*, the following description of trails identified in Honokohau provides an *ahupua'a*-specific context that may be applied to the other *ahupua'a* within the project area and within the Kekaha region in general.

The two primary *mauka/makai* trails (sites 13006 and 18099) and various spur trails in the project area reveal that the Honokohau residents had a significant network of travel routes that provided access to resources and exchange of resources between the coast and upland regions of the two *ahupua'a*. Using Apple's classifications, it is suggested that most of the trails in Honokohau are attributable to prehistoric and early historic use and because of a continued use of the trails during historic times, the traditional trails were subsequently modified for horse travel into kerbstone constructions. Thus, the trails alone attest that the two Honokohau *ahupua'a* were commonly traversed during both prehistoric and historic times. (Robins et al. 1995:93)

#### Habitation

Two sites in the project area are interpreted as temporary habitation sites. One of these sites, Site 02238 is a complex of two features constructed on or adjacent to a dome-shaped pahoeohoe bluff. The other site, Site 19943, consists of a small, low ceiling lava tube with four interior features.

Site 02238, complex, consists of a terrace constructed on the top of the pahoeohoe dome (Feature A) and an enclosure constructed at the base of the pahoeohoe dome, a portion of which is formed by the pahoeohoe outcrop. Both features reflect simple modifications of the natural pahoeohoe bluff: the terrace consists of a filled and levelled area within a natural crevice on the top of the pahoeohoe dome, and the enclosure consists of a free-standing wall segment that abuts the vertical edge of the pahoeohoe outcrop forming a U-shaped enclosure. Subsurface testing within Feature A revealed no cultural deposits.

The floor area of the enclosure interior measures 8.4 m.<sup>2</sup> and the floor area of the terrace measures 6.0 m.<sup>2</sup>, with an average of 7.2 m.<sup>2</sup>. This size range correlates well with Jeffrey Clark's model which estimates temporary habitation floor areas to be "generally less than 10 m.<sup>2</sup> and most between 3 to 7 m.<sup>2</sup>" (Clark 1987:197).

Two of the features within Site 19943 lava tube also represent simple modifications; a mound (Feature A) and an alignment (Feature B). The other two features of this site are non-structural; an ash deposit (Feature C) and a midden scatter (Feature D).

#### Boundary/Ranching

Two sites within the project area are interpreted as related to historic boundary

delineation and cattle ranching, Sites 06432 and 19951. These two functions (i.e. boundary delineation and cattle ranching) are combined for the functional classification of these two sites because both sites are walls that are presumed to have functioned as both boundary delineation walls and cattle exclusion (or inclusion) walls.

The walls at both sites are well constructed of small and medium boulders with a pebble and cobble "core fill". The sides of the free-standing portions of both walls are faced. Site 06432 extends *mauka-makai* in a straight line along the *ahupua'a* boundary of O'oma 2 and Kalaoa O'oma (O'oma 1), which may have also been an historic property boundary. Site 19951 also extends *mauka-makai*, but meanders between outcrops, with free-standing sections adjoining outcrop protrusions.

#### Markers

Two sites within the project area are interpreted as being markers, Sites 19944 and 19947.

Site 19944 consists of two mounds situated at the interface of an a'a and pahoehoe lava flow. This site lies approximately 6.0 m. away from two petroglyph figures (Site 19945), and it seems probable that the two sites are associated (either the mounds are markers for the petroglyphs or the mounds and the petroglyphs are associated with an adjacent trail, although no evidence of a nearby trail was found). The larger of the two mounds (Feature A) was tested for possible human remains, but none were encountered.

Site 19947 consists of three cairns or *ahu*. All three cairns are rather small (roughly 0.5 m. in diameter and 0.5 m. high). The cairns are situated at the approximate *ahupua'a* boundary between Kohanaiki and Kaloko, and it is likely they functioned as *ahupua'a* boundary markers.

#### Symbolism

The symbolism (the art or practice of using symbols) functional classification is used for one site in the project area Site 19945, Petroglyphs. The petroglyph site consists of two pecked human images "of the basic lineal type" (Cox and Stasack 1970:39). The site does not appear to be associated with any habitation sites or trails, although a nearby site consisting of two mounds may be associated (Site 19944).

#### Quarry

One site, Site 19948 Pahoehoe Excavation, has been interpreted as a quarry site (probably modern). It consists of a disturbed area within a gently undulating pahoehoe surface. It appears that pahoehoe slabs have been pried from the outcrop surface, partially piled or stacked along the edge of the disturbed area, and possibly removed. This is believed to be a modern site based on the authors' observation of pahoehoe quarrying taking place nearby in which wall builders were removing pahoehoe slabs for stone wall construction. The resulting ground surface appeared similar to that observed at Site 19948. A similar site was also observed outside the project area boundary at O'oma 2, and a pair of modern gloves was observed at that site, supporting a modern interpretation.

#### Agriculture

One site, Site 19950, consisting of four modified outcrops, has been interpreted as an agricultural site. The individual features are all minor modifications of a pahoehoe outcrop consisting of small boulders and cobbles piled along the outcrop edge. The modifications are interpreted as representing minor pilings from the clearing of adjacent or nearby planting areas.

These features are considered to be associated with an expansive agricultural landscape modification in the lower *kula* subzone of the Kona region. Estimated to be between sea level and 500 ft. (Schilt 1984:6), this subzone encompasses the most arid lands in the North Kona-Kailua region. It is generally considered to be a marginal environment for agriculture, since typically the lower elevations were only provided with seasonal rainfall, however, this subzone is known to have accommodated limited agriculture. Based on mid-1800's *mahele* testimonies, sweet potatoes, gourd, and *wauke* were common crop types grown in the dry, *kula* subzone (Schilt 1984:6).

This site may be associated with the temporary habitation site (Site 02238) located approximately 12 m. to the south. It is possible that the habitation site was utilized in association with seasonal or intermittent agricultural use of the area, or perhaps the habitation site was used in the processing of agricultural products grown nearby. Mrs. Mary Pukui (in Handy and Handy 1972:134) describes the processing and subsequent storage of sweet potatoes or '*uala* in a *hale papa'a*:

...After all the moisture was gone, the baskets of '*uala* were stored away in a *hale papa'a* or store-house, which was a small platform or floor on four posts, walled and roofed. Every now and then the baskets were put out in the wind. Thus my people dried '*uala* and took them to the seashore when the summer fishing season opened. When wire fencing and mosquito screening became common, my old folks used these for '*uala* drying racks.

#### Unknown

One site within the project area has not been assigned a functional classification, Site 19949 Enclosure. This site consists of a small circular enclosure constructed on top of a smooth pahoehoe surface. The walls of the enclosure are loosely constructed of small boulders and cobbles and several boulder-sized pahoehoe slabs. The walls are low and mostly collapsed, indicating minimal effort in their construction. The site does not appear to be associated with any other sites or features, and no soil deposits are present within or nearby the enclosure, resulting in poor excavation potential. It is possible that the site is modern, perhaps a pig or goat hunting blind, or a hastily constructed windbreak shelter.

### **C. Conclusions**

The present project area is a very narrow slice through the intermediate zone of the Kekaha region, and within that slice, much of the ground surface has been disturbed by the construction of Queen Kaahumanu Highway and development that has occurred adjacent to the highway since its construction. The following excerpt was taken from a settlement pattern summary of the intermediate zone for one of the eight *ahupua'a* of the present project area, Honokohau (Robins et al. 1995:144-145). It is presented here as model through which the current findings can be viewed.



### **Traditional Hawaiian Landuse - Intermediate Zone**

The entire Intermediate Zone of Honokōhau I was inspected during the present study and most of the Honokōhau II Intermediate zone was inspected during the inventory survey of the Honokōhau Industrial Park (Donham 1990a).

As indicated by the archaeological resources in the present study area, Honokōhau I Intermediate Zone contained a scattered distribution of habitations of different modes (i.e., temporary, recurrent and permanent sites), which were generally associated with some type of agricultural activity. Permanent habitation sites in this zone are typically small multiple-structured complexes located adjacent to or in close proximity to the *mauka/makai* trail (state site 50-10-27/28-18099). The multiple-structured complexes or *kauhale* likely represent isolated residences which were relatively self-sufficient. Recurrent and temporary habitations were also located adjacent to the *mauka/makai* trail or in outer lying areas associated with agricultural and animal containment features. Clearly the environmental factors of low and inconsistent rainfall and virtual absence of soil, limits agricultural use within the Intermediate Zone. Nonetheless, small concentrations of mounds, modified outcrops (enclosing minimal soil areas) and some pahoehoe excavations evidence a degree of agricultural productivity. Lava tubes and blisters are abundant in this zone and contain temporary, recurrent and refuge habitation components, and post-habitation burial interments.

According to the Donham et al. report (Donham 1990a) the Honokōhau II Intermediate Zone habitation sites were found to be scattered and none of the habitations were interpreted as permanent residences: "The features most likely represent short-term shelters and are associated with agricultural features in 80% of the cases" (ibid:20). A curbstone trail in Honokōhau II was identified within the present study area and Honokohau Industrial Park Project area. The trail likely represented an original prehistoric trail used for traveling between the coast and upland localities which was later (ca. 1840's) modified.

Radiocarbon dates obtained from Honokōhau I and II (Honokōhau II dates: Donham 1990a:18) extend into the modern era with broad date ranges from A.D. 1630 to 1955. Based on the archaeological context of the Honokōhau I dates (e.g., lack of historic artifacts), the late prehistoric times is most plausible period of Intermediate Zone occupation. The refuge cave yielding a radiocarbon preferred date in late prehistory correlates with the period of civil strife on Hawai'i from ca A.D. 1600 to 1779 (Shilt 1984).

### **Historic Non-traditional Land Use - Intermediate Zone**

There were no historic residences within the Intermediate Zone of Honokōhau I and II *ahupua'a*. However, lava tubes were utilized for burial interment (evidenced by coffin-style interments) and based on the historic modification of the original *mauka/makai* trails for horse travel (curbstone trails), the region was certainly traversed during historic times.

During modern times, at least since the early 1970's, the Intermediate Zone of Honokōhau II has been the focus of quarrying activities and industrial

development.

The findings of the present inventory survey are consistent with the anticipated findings for the intermediate zone of the *ahupua'a* of the Kekaha region. Site types, site density and interpreted site functions reflect a limited range of traditional and historic land use activities. Ross Cordy summarized the archaeological findings of the intermediate zone (back from the shore) at Kaloko as generally "characterized by trails and associated markers and temporary habitation shelters. The shelters show varying amounts of use, based on the presence or number of features present" (Cordy et al. 1991:347. He also noted that site density in the intermediate zone was generally quite low, with a marked clustering along *mauka-makai*..."off the trails, few sites are present" (ibid:342).

#### IV. SURVEY RESULTS

A total of seventeen sites were identified within the project area during the inventory survey. Five of these sites had been previously identified and were assigned state site numbers prior to this survey. Those sites include: Sites 00002, 02238, 06432, 13194 and 15324. The five sites were re-recorded during the present survey due to the previous recording was not at the inventory level. The remaining twelve sites are newly identified and include Sites 19943 through 19954.

The seventeen sites included in this inventory survey consist of a total of 29 individual features: nine single feature sites and eight sites with multiple features. Formal site and feature types include: trails (seven); modified outcrop (four); cairns (three); walls (two); mounds (three); petroglyphs (two); enclosures (two); road; terrace; alignment; ash deposit; midden scatter; and pahoehoe excavation. Assigned functional categories include: transportation; temporary habitation; boundary/ranching; markers; symbolism; quarry; agriculture; and unknown.

Subsurface testing was conducted at three features within the project area to aid in determining function with emphasis on the presence or absence of human remains. These features include: Site 02238 Feature A Terrace; Site 19943 Feature A Mound; Site 19944 Feature A Mound.

In addition to the general project area map showing the locations of these archaeological sites (Figure 4), portions of the 1"=200' scale topographic project area maps showing more precise site and feature locations and orientations (particularly for the trails and walls) are provided in Appendix A of this report (i.e. Figures 3 and 4).

##### A. Site Descriptions and Testing Results

**State Site #:** 00002  
**Site Type:** Road (Mamalaho Trail)  
**Function:** Transportation  
**Features (#):** 1  
**Ahupua'a:** Keahuola to Kalaoa

**Description:** Site 00002 is an historic cross-*ahupua'a* road commonly referred to as the Mamalahoa Trail. The construction of the road is dated to 1836-1855. It is considered to have been the major seaward road through the region between its construction and 1888, when use of the road became infrequent (Cordy 1991:403,406). The road, in general, is described as a remarkably straight curb-lined path - typically 2.0 to 3.0 m. wide. In some areas the road surface is raised, with low points in the terrain filled in and leveled with stone.

The trail has been used sporadically in late historic and modern times and some parts of the road show evidence of vehicular use. The road has been breached in numerous places between Kailua-Kona and the Keahole Airport in modern times. As a result, the trail exists as a series of discontinuous segments in varying conditions. The following segments are within the present project area:

**Keahuolu** An approximately 700 foot (213 m.) section which begins 370 feet (113 m.) north of Makalapua Blvd. (centerline) and 30 feet (9 m.) east from the



**Figure 8** Site 00002 Mamalahoa Trail at Keahuolu, View South



**Figure 9** Site 00002 at Honokohau (Eastern side of Highway), View northwest



highway pavement edge (Figure 8). The road extends at 321 degrees T.N. and continues at this angle beyond the project area boundary. This segment of the road was included in the PHRI inventory survey of Queen Liliuokalani Trust Lands (Donham 1990a), and was included in a subsequent preservation plan (Jensen 1995).

- Kealakehe** An approximately 1800 foot (549 m.) section of the road lies within the present project area in the vicinity of the Kealakehe Parkway Interchange. The road roughly parallels Queen Kaahumanu Highway at 200 feet (61 m.) east of the present pavement edge. This segment of the road was included in the PHRI inventory survey of the Kealakehe Planned Community (Donham 1990b) and was included in two subsequent preservation plans (Jensen 1992b, Borthwick and Hammatt 1992).
- Honokohau** At Honokohau, Queen Kaahumanu Highway breaches the Mamalahoa Trail and two sections lie within the present project area. On the eastern side of the highway, one 30-40 foot (10 m.) section remains within the project area. It consists of a short ramp section below the present power line. The area surrounding this section has been cleared, presumably during the construction of the present highway. On the western side of the highway, an approximately 490 foot (149 m.) section lies within the project area (Figure 9). This section begins 30 feet (9 m.) west of the present highway pavement edge and extends through the project area at 147 degrees T.N. The road continues at this angle beyond the project area boundary and into the Kaloko-Honokohau National Park.

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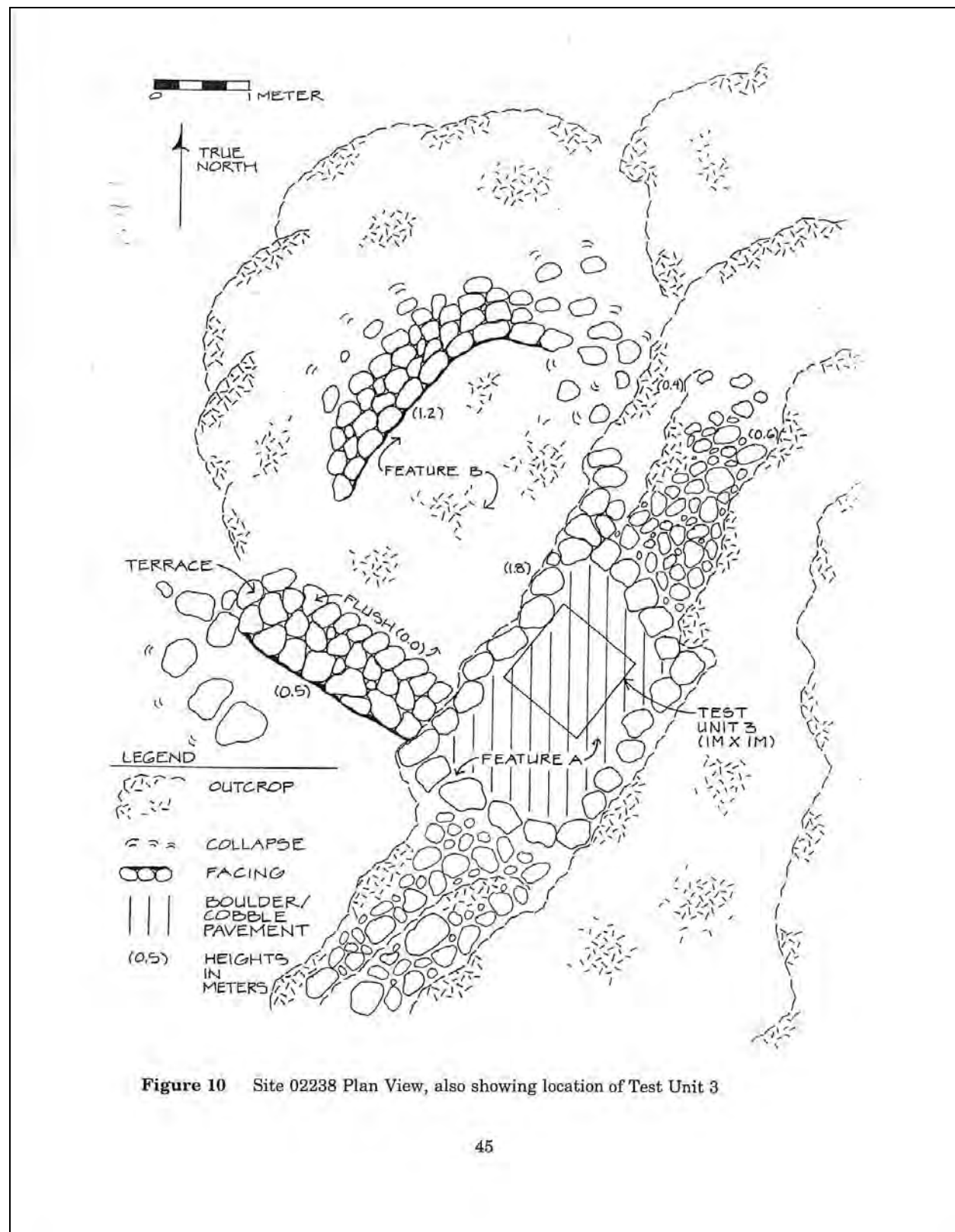
<b>State Site #:</b>	02238	<b>CSH Site #:</b> 11
<b>Site Type:</b>	Complex (previously identified as "wall w/ midden" [Renger 1970])	
<b>Function:</b>	Temporary Habitation	
<b>Features (#):</b>	2	
<b>Ahupua'a:</b>	Kaloko	

**Description:** Site 02238 is a complex consisting of a terrace and an adjoining enclosure, designated Features A and B respectively (Figure 10). This site is located on a small, prominent, dome-shaped pahoe-hoe bluff. Feature A, terrace, is constructed on top of the bluff, and Feature B, enclosure, utilizes the northern side of the bluff as southern interior wall of the enclosure.

Feature A is a terrace constructed of small boulders and cobbles placed within a natural crevice on the surface of a dome-shaped pahoe-hoe bluff (Figure 11). The modified, or "filled in" portion of the bluff extends 8.0 m. NW/SE by 1.0 to 2.2 m. NE/SW, and stands 1.8 m. above the surrounding ground surface. The northwestern edge of the terrace is a vertical outcrop face, 1.8 m. high (which also forms the southeastern edge of the enclosure Feature B), and the southeastern edge of the terrace is outcrop that gradually slopes 1.5 m. to the surrounding ground surface. The northern and southern ends of the terrace both become increasingly narrow and slope downward to the surrounding ground surface.

Feature B is a U-shaped enclosure constructed of a free-standing wall segment which adjoins a vertical outcrop face (Figure 12). The free-standing wall that forms the







**Figure 11** Site 02238 Feature A Photograph, View East



**Figure 12** Site 02238 Feature B Photograph, View North

northwestern and northeastern walls of the enclosure is approximately 4.2 m. long and reaches a maximum of 1.2 m. high and 0.9 m. wide. It is constructed of cobbles, small boulders and medium boulders, 4-6 courses high, and is well faced on the interior except for the eastern end where it is partially collapsed. The vertical outcrop face that forms the southern wall of the enclosure is 1.8 m. high. The floor of the enclosure is mostly level bedrock, but the southwestern end has been extended by a small terrace. The terraced portion of the floor is constructed of small boulders and cobbles and the southwestern edge is 0.5 m. high and faced. The resulting interior dimensions of the enclosure are 4.3 m. NE/SW by 2.1 m. NW/SE.

This site has been interpreted as a temporary habitation site and is presumed to be associated with the agricultural features of site 19950 located approximately 40 feet (12 m.) to the northeast. Both features are in good condition. While the site is considered to be a temporary habitation site, subsurface testing was conducted at Feature A to determine the presence or absence of human remains.

This site appears to correlate with site BPM D13-86 previously identified by Renger in 1970 (1970:29), and subsequently assigned state site number 02238. The site was described as "D 13-86 a wall segment 8 feet long and 5 feet high, it parallels the vertical face of a large pahoehoe block with a 3' by 5' leveled area on the top. Scattered shell fragments were found behind the wall" (Renger 1970:25) and the levelled portion of the pahoehoe dome was noted. It is believed that the "wall with midden" is the free-standing portion of Feature B enclosure (although no midden was observed during the present survey), and the levelled area is Feature A terrace.

### Testing Results

A single 1.0 m<sup>2</sup> test unit, designated Test Unit 3, was excavated from the center of Feature A-terrace to determine the presence or absence of human remains as filled crevices are not an uncommon burial feature (Bowen 1961:138). Excavation consisted of demarcating a 1.0 m. by 1.0 m. area on the terrace surface and removing the terrace fill until bedrock was reached (see Figures 10-14).

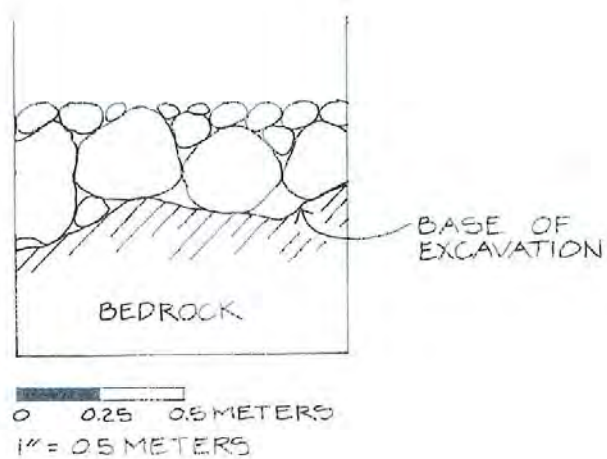
The terrace fill consisted of small pahoehoe boulders and cobbles that had been placed within the natural crevice on the top of the pahoehoe dome. No human remains were encountered within or below the terrace fill. The terrace fill contained no artifacts or midden, but several pieces of partially burnt wood (1.3 gms.) were recovered for possible future identification. At the base of the terrace fill, the undulating pahoehoe bedrock was encountered at 0.4 m. below the terrace surface with no soil deposits present. Within the bedrock several narrow cracks continued downward, these cracks were not filled and no soil deposits were present.

Subsurface testing at this site has confirmed that the terrace is not a burial feature and that the interpretation of this site as a temporary habitation site may be the most appropriate. Although no artifacts or midden were observed; the feature types, the assumed association with nearby agricultural features, and previous identification of this site as "wall with midden" supports a temporary habitation interpretation.





**Figure 13** Site 02238 Feature A Test Unit 3 Post-Excavation Photograph



**Figure 14** Site 02238 Feature A Test Unit 3 Profile, South Face

<b>State Site #:</b>	06432	<b>CSH Site #:</b> 16
<b>Site Type:</b>	Wall	
<b>Function:</b>	Boundary/Ranching	
<b>Features (#):</b>	1	
<b>Ahupua'a:</b>	O'oma 2	

**Description:** Site 6432 is a free-standing stone wall that forms the boundary between Kalaoa-O'oma and O'oma 2 (Figures 15 & 16). The wall has been breached in the construction of the present highway, but continues both *mauka* and *makai* for more than several hundred feet. The wall is typically 1.1 m. high and 0.7 m. wide. The wall is well constructed with small and medium boulders and core filled with pebbles and cobbles. Both sides of the wall are well-faced and the wall is generally in excellent condition.

The wall was previously identified by Davis in 1977 and described as follows: Site 6432 is the stone boundary wall between Kalaoa-O'oma and Kalaoa *ahupua'a*. Given the fact that this wall is nearly transit-line straight and is constructed of core-filled masonry, it is likely a historic feature. No further work is recommended (1977:33).

Pahoehoe excavations were observed within a hundred feet (30 m.) on either side of the wall and it is probable that these reflect the quarrying of stones for the construction of the wall. One such area may be the same as site 18524, which is a pahoehoe excavation identified in this general area by PHRI (Henry et al. 1993) but *mauka* of the present study area.

<b>State Site #:</b>	13194	<b>CSH Site #:</b>
<b>Site Type:</b>	Trail	
<b>Function:</b>	Transportation	
<b>Features (#):</b>	1	
<b>Ahupua'a:</b>	Kealakehe	

**Description:** Site 13194 is a stepping stone trail originally identified by PHRI in 1989 during the inventory survey for the Kealakehe Planned Community (Donham 1990b). The site was described as follows:

The trail consists of a cleared and packed path through the aa with spaced pahoehoe slabs that are inset into the aa. Most of the slabs are a minimum of 0.20 m. and a maximum of 0.35 m in size. The rest of the slabs are small cobbles. The western end of the trail is cut off by the Queen Kaahumanu Highway. Efforts to relocate it on the west side of the highway were unsuccessful. To the east of the highway, the Mamalahoa Trail seems to have crossed over this trail. To the east of the Mamalahoa Trail, it has been broken by two different bulldozer paths over the aa. At the eastern end of the aa, the trail appears to make a sharp turn to the north. This turn may be an intersection of two trails; efforts to locate a continuation over the pahoehoe to the north and east were unsuccessful. (Donham 1990:A-14)

The trail was recommended for preservation with interpretive development and has since been included in two preservation plans (Jensen et al 1992, Borthwick and Hammatt 1992).

A field check of the western end of the trail during the present survey confirmed that





**Figure 15** Site 06432 (Eastern Side of Highway) Photograph, View West



**Figure 16** Site 06432 (Western Side of Highway), View East - Note Site 10154 in background

portion of the trail has been preserved as is. The trail begins 95 feet (29 m.) from the highway pavement edge and extends 85 feet (26 m.), where it intersects with the Mamalahoa Trail. The trail continues east of the Mamalahoa Trail for another 73 feet (22 m.) where it becomes obscured by a bulldozed path. The trail continues within or just adjacent to the bulldozed path for roughly 100 feet (30 m.), beyond which it was observed to continue inland apparently undisturbed.

<b>State Site #:</b>	15324	<b>CSH Site #:</b> 6
<b>Site Type:</b>	<i>Mauka-makai</i> Trail	
<b>Function:</b>	Transportation	
<b>Features (#):</b>	2	
<b>Ahupua'a:</b>	Kohanaiki	

**Description:** Site 15324 consists of two converging trail segments designated Features A and B (Figure 17). Both trail segments extend in a roughly *mauka-makai* direction, but angle toward each other and converge into one trail that continues inland. The point where the two trails meet is located at the edge of the bulldozed portion of the present highway right of way, 164 feet (50 m.) from the *makai* edge of the highway pavement. Both trail segments were observed to continue over 300 feet (91 m.) *makai*. On the *mauka* side of the highway, the trail was observed at the edge of the bulldozed portion of the powerline (the new right-of-way boundary) and continuing inland at 65 degrees T.N. for at least another 100 feet (30 m.).

Both trail segments (Features A and B) average 0.6 m. wide and consist of a trodden surface that meanders over pahoehoe and a'a lava surfaces. A few isolated stepping stones consisting of pahoehoe slabs were observed along Feature B. Both trail segments are well worn and clearly visible, especially on the a'a lava surfaces. The portion of Feature A within the new right-of-way is approximately 40 feet (12 m.) long, and the portion of Feature B within the new right-of-way is 50 feet (15 m.) long.

A PHRI site tag was found along the trail on the *mauka* side of the highway labelled 92-1118 1118-12. This site is now known to be state site #15324. The inventory survey report containing the site description and significance evaluations developed by PHRI was not available to the public at the time of this report (i.e. not yet submitted to DLNR).

<b>State Site #:</b>	19943	<b>CSH Site #:</b> 1
<b>Site Type:</b>	Utilized Lava Tube	
<b>Function:</b>	Temporary Habitation	
<b>Features (#):</b>	1	
<b>Ahupua'a:</b>	Kalaoa 1-4	

**Description:** Site 19943 is a utilized lava tube located within undulating, gently seaward sloping pahoehoe terrain. The lava tube is oriented *mauka-makai* (northwest-southeast). Access to the tube is gained from an entrance formed by a ceiling collapse (Figure 18). The lava tube entrance is located 160 feet (49 m.) from the *makai*, or eastern edge of the present highway pavement.

The lava tube contains four interior features, designated Features A-D. The features include a mound (Feature A), an alignment (Feature B), an ash deposit (Feature C) and a midden scatter (Feature D) (Figure 19).

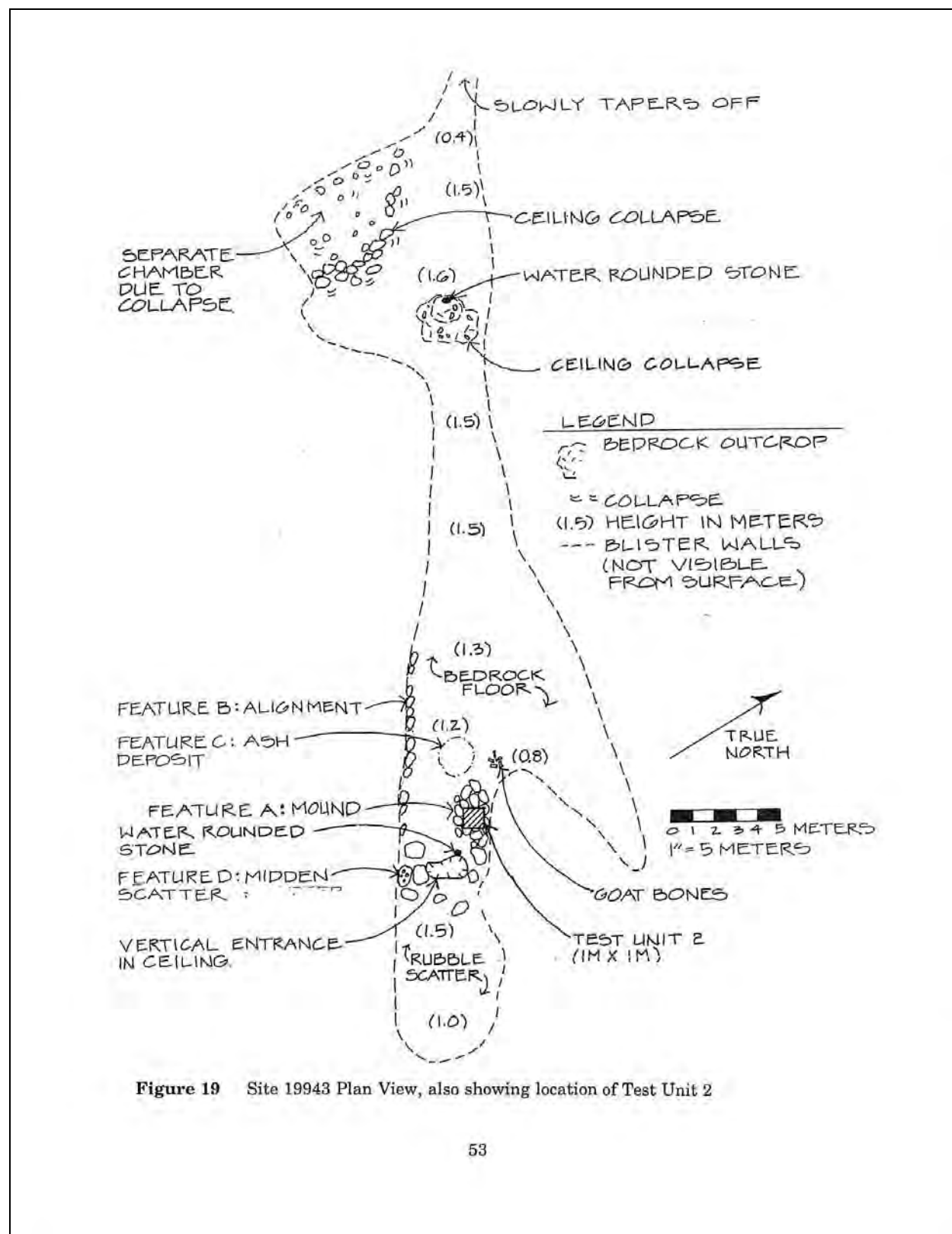


**Figure 17** Site 15324 Feature A Photograph, View West



**Figure 18** Site 19943 Lava Tube Entrance Photograph





The main chamber of the tube extends *makai* (northwest) of the entrance for approximately 35.0 m., beyond which the tube becomes prohibitively narrow and low, and continues in the same direction for at least another 8.0 m. The latter portion was too small to be investigated. The main chamber also extends *mauka* of the entrance for 8.0 m. The width of the main chamber ranges from 2.5 m. to 9.5 m., and ceiling heights range from 0.4 to 1.6 m. The floor of the tube consists of bedrock with little or no soil deposits.

Feature A mound is located just *makai* of the entrance against the northern interior wall and measures 1.5 m. NW/SE by 2.5 m. NE/SW by 0.5 m. in height. It is constructed of large, medium and small boulders loosely piled on the floor of the tube. This mound was tested during the inventory survey fieldwork (see the Testing Results section following). The alignment, Feature B, is located along the southern wall of the main chamber and begins just *makai* of the entrance and extends northwest for approximately 8.5 m. It consists of a single course of small and medium boulders. The ash deposit, Feature C, is located just *makai* of the entrance between the mound Feature A and the alignment Feature B. It consists of a roughly circular (2.0 m. diameter) very thin deposit (less than two centimeters) within the crevices and undulations of the bedrock floor. Feature D, midden, was observed scattered within a 5.0 m. radius of the entrance with a small but dense concentration just south of the entrance. Midden was observed to include 'opihi, pipihi, cowry, and conus shells and sea urchin spines. The skeletal remains of a goat were also observed on the floor of the tube.

Based on the presence of midden and internal features, this lava tube is interpreted as a temporary habitation site. Feature A mound was considered to be a possible human burial, but subsurface testing has eliminated this possibility. The site is in good condition with evidence of minor modern disturbance including a note left behind by visitors in 1982 and evidence of use by goats.

### Testing Results

A single 1.0 m<sup>2</sup> test unit, designated Test Unit 2, was hand excavated within Feature A mound to determine the presence or absence of human remains. The test unit was placed over the center of the mound (see Figure 19). Excavation consisted of dismantling the mound structure to the bedrock floor of the lava tube, which was encountered 0.5 m. below the mound surface (Figures 20 & 21).

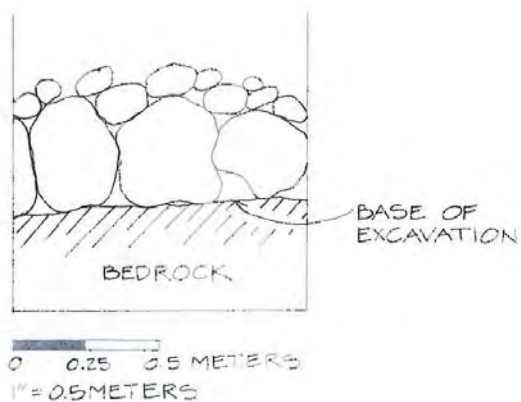
The mound was found to be a loose pile of boulders (maximum height 0.5 m.) resting directly on the bedrock lava tube floor. No soil strata were encountered. No human remains were encountered. Additionally, no artifacts, midden or charcoal were observed within the mound or on the floor of the tube beneath the mound.

Based on the negative testing results and the lack of formalized architecture, the mound is interpreted as a clearing mound.





**Figure 20** Site 19943 Feature A Test Unit 2 Post-excavation Photograph



**Figure 21** Site 19943 Feature A Test Unit 2 Profile, North Face

<b>State Site #:</b>	19944	<b>CSH Site #:</b> 3
<b>Site Type:</b>	Mounds	
<b>Function:</b>	Markers	
<b>Features (#):</b>	2	
<b>Ahupua'a:</b>	Kalaoa 1-4	

**Description:** Site 19944 consists of two mounds designated features A and B (Figures 22 & 21). The mounds are situated at the interface of a pahoehoe and an a'a lava flow. The mounds are aligned in a roughly north-south direction and are 4.7 m. apart (center to center). Both are constructed of loosely piled small boulders, cobbles and pebbles.

Feature A mound is the northernmost and largest of the two mounds. It measures 1.2 m. N/S by 1.45 m. E/W with a maximum height of 0.35 m. This feature was tested for the presence of human remains (see Testing Results section following). Feature B mound is smaller, measuring 1.2 m. N/S by 1.0 m. E/W with a maximum height of 0.35 m.

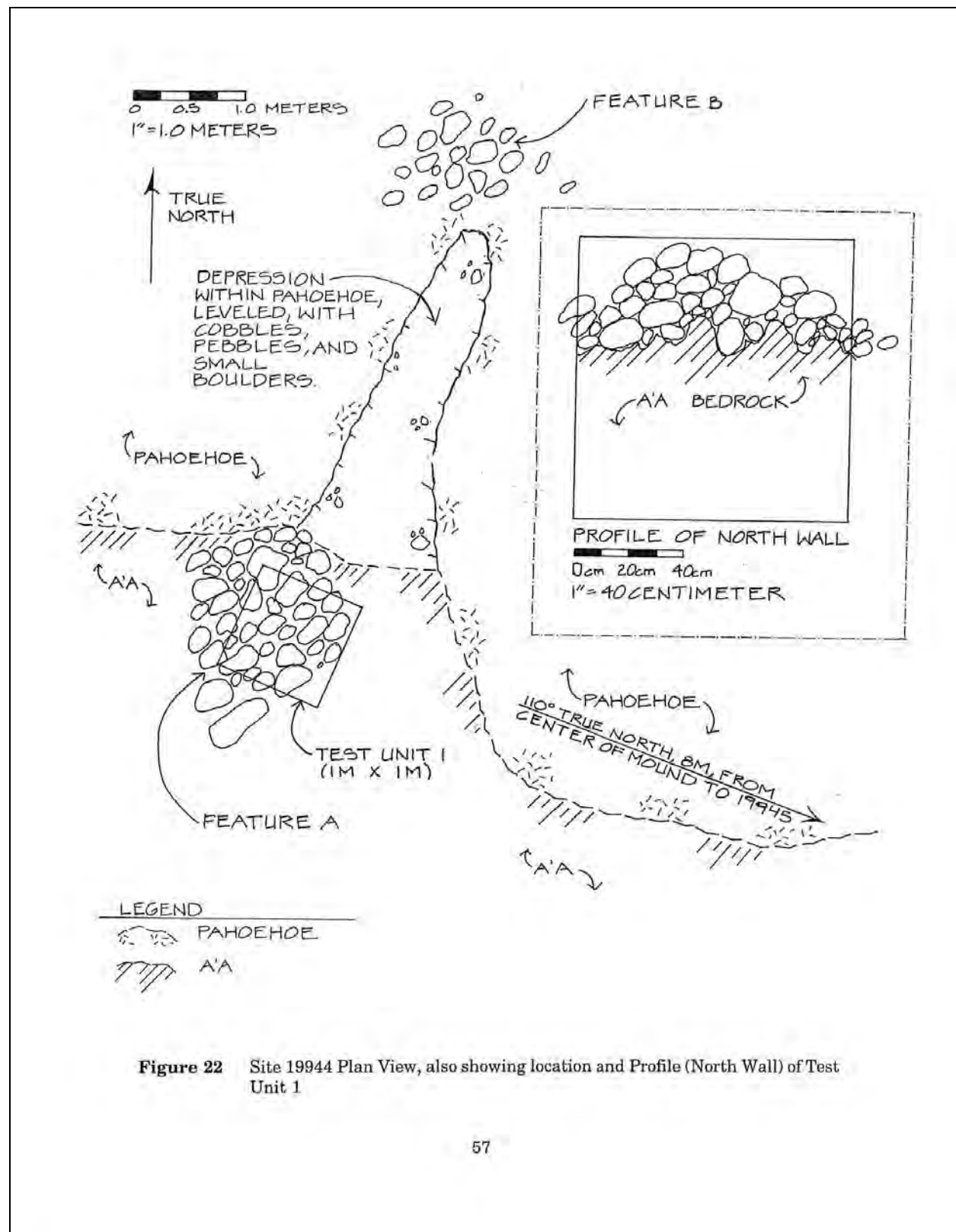
This site is located approximately 6.0 m. *makai* of 19945 petroglyphs, and may have functioned as a marker for the petroglyph site, or perhaps a marker for a nearby trail, although a trail has not been identified in close proximity to this site during this or previous archaeological surveys.

#### Testing Results

A single 1.0 m<sup>2</sup> test unit, designated Test Unit 1, was hand excavated within Feature A mound to determine the presence or absence of human remains. The test unit was placed over the east-central portion of the mound (see Figure 22). Excavation consisted of dismantling a 1.0 m<sup>2</sup> portion of the mound structure to bedrock, which was encountered between 0.25 and 0.35 m. below the mound surface (Figures 23 & 24).

The mound was found to be loosely constructed of small boulders, cobbles and pebbles resting directly on the undulating a'a lava surface. No soil strata were encountered. No human remains were encountered. A possible coral abrader and a small amount of midden was found at the base of the mound within the a'a bedrock. The midden consisted of 1.9 gms. of kukui endocarps, 1.7 gms. snakehead cowry (*Cypraea caputserpentis*), and 1.7 gms. sea urchin (*Echinoderm*).

Based on the testing results, the location of the site, and the lack of formalized architecture, this site is interpreted as a marker, most likely built to mark the location of the nearby petroglyphs, or a presently indistinguishable trail. The midden may reflect a single or temporary use of the site or possibly a ritual offering.





**Figure 23** Site 19944 Photograph, Feature A Foreground, View North



**Figure 24** Site 19944 Feature A Test Unit 1 Post-excavation Photograph



<b>State Site #:</b>	19945	<b>CSH Site #:</b> 4
<b>Site Type:</b>	Petroglyphs	
<b>Function:</b>	Symbolism	
<b>Features (#):</b>	2	
<b>Ahupua'a:</b>	Kalaoa 1-4	

**Description:** Site 19945 consists of two petroglyph figures, designated Feature A and B, located on a low, horizontal pahoeohoe outcrop. The petroglyphs appear to be mostly pecked although some incising may have been employed. The figures are both human representations of the "basic lineal type" (Cox and Stasack 1970:39) (Figure 25).

Feature A petroglyph figure measures 0.55 m. wide by 0.50 m. high. Feature B figure measures 0.84 m. wide by 0.42 m. high. The pecked image lines, or grooves average three centimeters in width. Both figures each have two circles, one completely pecked like a *piko*, and the other with only the circle outline pecked. On Figure A, the circles are located above the shoulder line of the image, and on Figure B the circles are located below the shoulder line, possibly distinguishing a male and female image. Feature A image has no "feet", a single downward pointing line for a right hand and three outward pointing "finger" lines on the left hand. The image has a "neck" line and no head. Feature B is slightly lower than Feature A (the shoulder line of Feature B is roughly halfway down Feature A image), and larger, especially in width. Feature B has both feet and hands, each consisting of three lines, pointing outward on the hands and downward on the feet. Feature B has no neck line or head.

The petroglyphs are in good condition although there is a natural crack in the pahoeohoe which partially extends through both figures. This site may be associated with Site 19944 mounds, located 8.0 m. *makai*, which have been interpreted as markers.

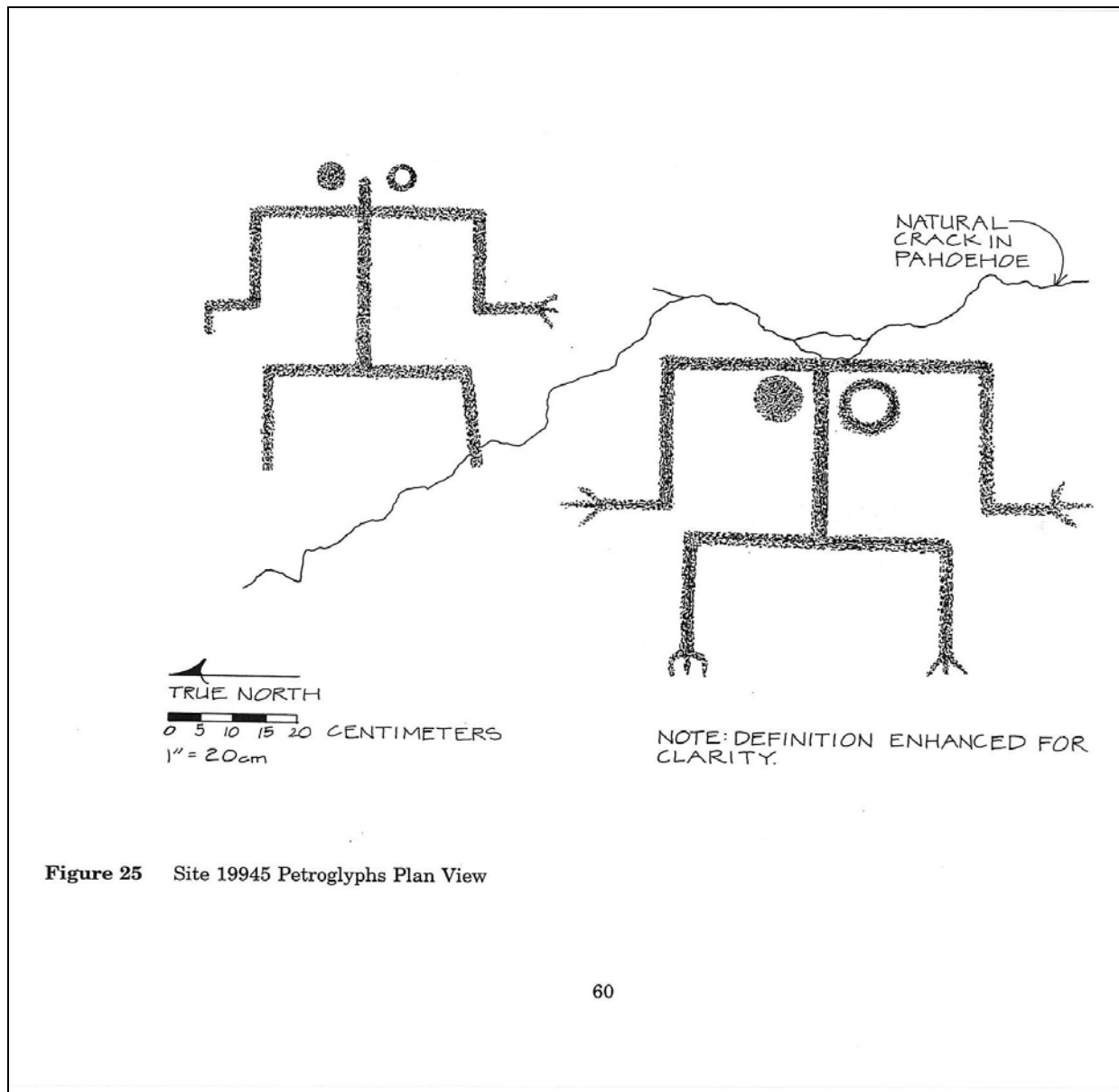
<b>State Site #:</b>	19946	<b>CSH Site #:</b> 5
<b>Site Type:</b>	<i>Mauka-makai</i> Trail	
<b>Function:</b>	Transportation	
<b>Features (#):</b>	1	
<b>Ahupua'a:</b>	Kohanaiki	

**Description:** Site 19946 consists of a trail segment extending in a *mauka-makai* direction over an a'a lava flow. The identifiable portion of the trail is 190 feet (58 m.) long and begins at the edge of the bulldozed portion of the present highway right-of-way and ends at the edge of the a'a lava flow. The portion of the trail segment within the new right-of-way is approximately 65 feet (20 m.) long. The trail ranges between 1.0 and 1.5 m. wide and consists of a partially cleared trodden surface of a'a bedrock, cobbles and pebbles. No stepping stones or curbing was observed.

A small cairn was observed on the edge of the a'a flow on the northern side of the trail and is considered to be a trail marker. The cairn consisted of loosely piled small a'a boulders 0.5 m. high and 0.5 m. in diameter.

While the trail segment is considered to be a portion of a trail extending from the coast inland, the trail could not be discerned on the pahoeohoe lava terrain that continued *makai*, nor on the *mauka* side of the road. The trail segment is considered to be in fair to poor condition.





<b>State Site #:</b>	19947	<b>CSH Site #:</b> 7
<b>Site Type:</b>	Cairns	
<b>Function:</b>	Boundary Markers	
<b>Features (#):</b>	3	
<b>Ahupua'a:</b>	Kohanaiki	

**Description:** Site 19947 consists of three small cairns, designated Features A-C. The cairns are located within a low point of gently undulating pahoehoe terrain. They are constructed of loosely stacked pahoehoe cobbles and small boulders on top of slightly raised pahoehoe outcrops. Two of the cairns are aligned in a roughly north-south axis and the third is to the west of these, forming a triangle with each mound approximately 2.0 m. from each other (Figure 26).

Feature A, the northern most cairn, measures 0.8 m. in diameter and is 0.6 m. high. Feature B, the southern most cairn measures 0.6 m. N/S by 0.9 m. E/W and is 0.6 m. high. Feature C, the western most cairn, measures 0.7 m. in diameter and 0.7 m. high.

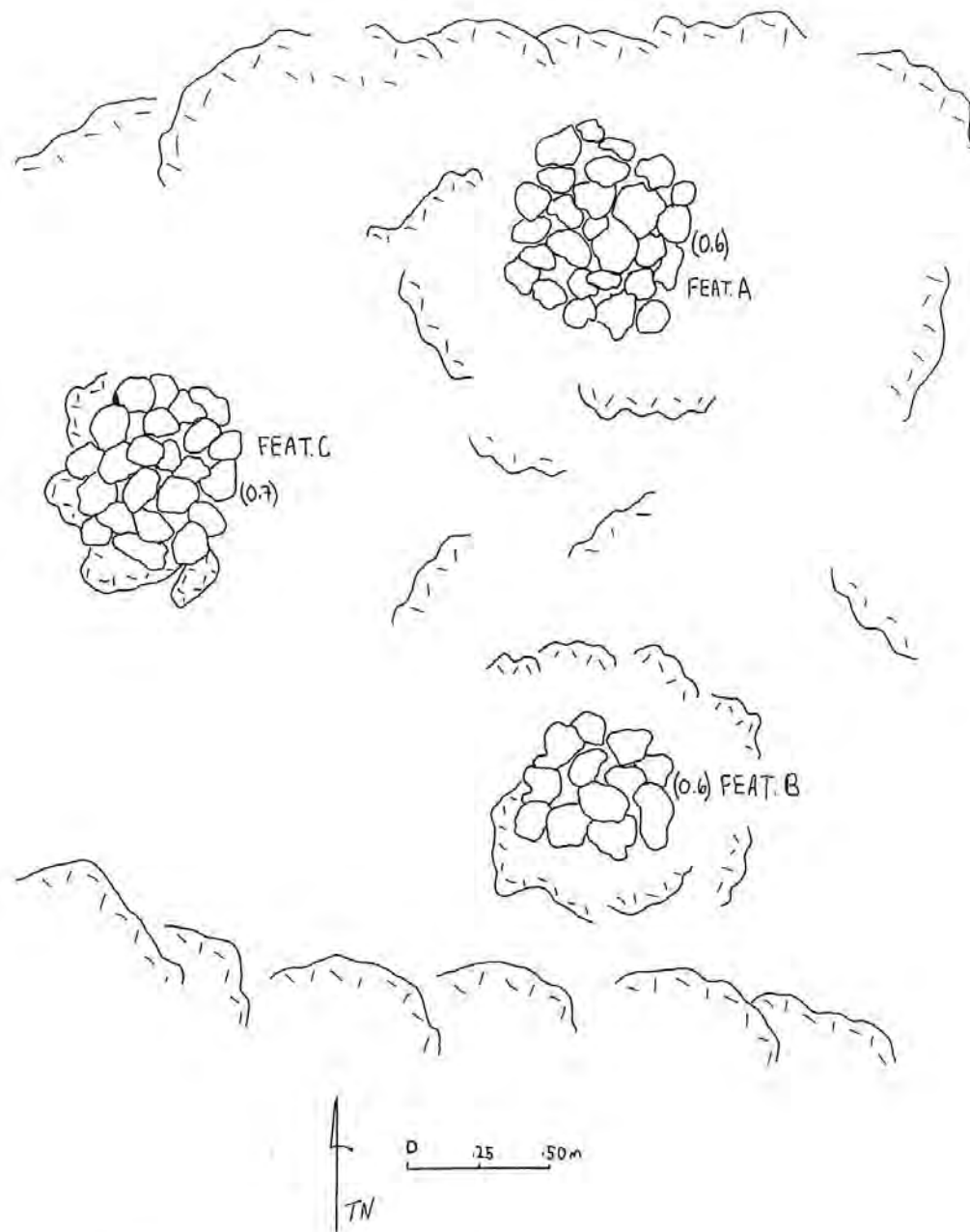
The cairns are located at the approximate *ahupua'a* boundary between Kohanaiki and Kaloko, and are considered to be *ahupua'a* boundary markers. All three are in fair to good condition.

<b>State Site #:</b>	19948	<b>CSH Site #:</b> 8
<b>Site Type:</b>	Pahoehoe Excavation	
<b>Function:</b>	Quarry	
<b>Features (#):</b>	1	
<b>Ahupua'a:</b>	Kaloko	

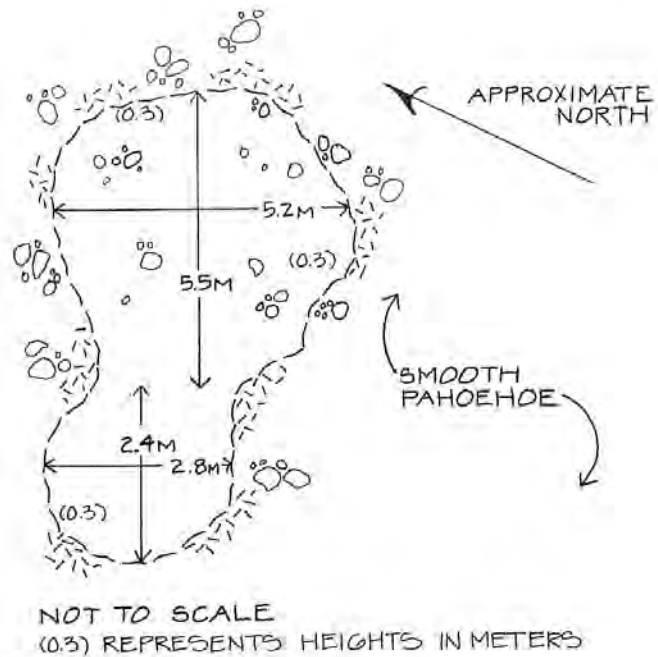
**Description:** Site 19948 is a pahoehoe excavation which consists of an area from which pahoehoe slabs have been broken up, partially piled or stacked and, perhaps, removed (Figure 27). The area consists of two adjoining, roughly circular areas, the larger of which is 5.5 m. by 5.2 m. and the smaller is 2.4 m. in diameter. The excavations have created depressions approximately 0.3 m. deep.

The larger area is partially cleared and contains medium boulder-sized pahoehoe slabs strewn about within the excavation and around the edge of the excavation. The smaller area has been cleared and the floor of the excavation consists of an underlying pahoehoe outcrop.

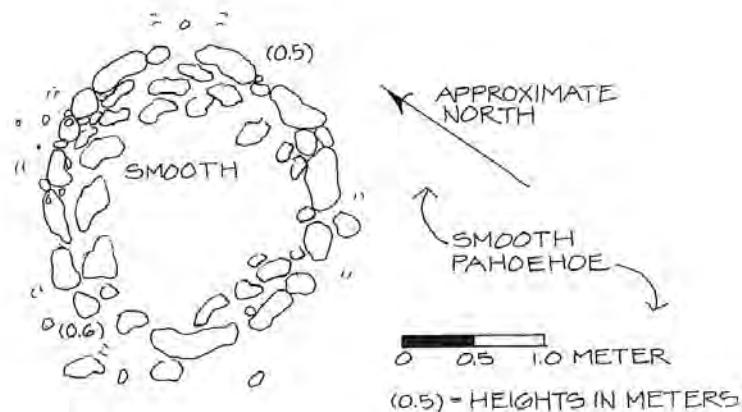
This site may be modern, as similar excavations were observed being made nearby by modern wall builders quarrying pahoehoe slabs for rock wall stones. Another similar excavation site was observed during this survey at O'oma 2 *ahupua'a*, and is believed to be modern based on the presence of a pair of gloves beneath a pile of boulders adjacent to the excavations.



**Figure 26** Site 19947 Three small cairns Plan View



**Figure 27** Site 19948 Pahoehoe Excavation Plan View



**Figure 28** Site 19949 Enclosure Plan View

<b>State Site #:</b>	19949	<b>CSH Site #:</b> 9
<b>Site Type:</b>	Enclosure	
<b>Function:</b>	Unknown	
<b>Features (#):</b>	1	
<b>Ahupua'a:</b>	Kaloko	

**Description:** Site 19949 is a small circular enclosure situated on top of smooth pahoehoe terrain (Figure 28). The enclosure is constructed of minimally stacked or aligned small pahoehoe slabs and small a'a boulders and cobbles. The interior of the enclosure measures 2.0 m. and the enclosure walls measure between 0.5 and 0.6 m. high. The enclosure appears to have been hastily constructed and the walls are loosely stacked and fragile. It may have functioned as an historic or modern hunting blind.

<b>State Site #:</b>	19950	<b>CSH Site #:</b> 10
<b>Site Type:</b>	Modified Outcrop Complex	
<b>Function:</b>	Agriculture	
<b>Features (#):</b>	4	
<b>Ahupua'a:</b>	Kaloko	

**Description:** Site 19950 is a complex consisting of four modified outcrops designated Features A-D (Figure 29). The modifications consist of piled or mounded small boulders and cobbles along the edges of slightly raised pahoehoe outcrop.

Feature A is 2.3 m. N/S by 0.8 m. E/W. and is 0.5 m. high. Feature B is 2.2 m. N/S by 1.0 m. E/W and is 0.4 m. high. Feature C is a discontinuous narrow pile with a total length of 6.5 and a maximum width of 1.0 m. Feature C is 0.6 m. high. Feature D is roughly 1.5 m. N/S by 2.0 m. E/W and is 0.4 m. high. Other minor piling was observed to the north and east.

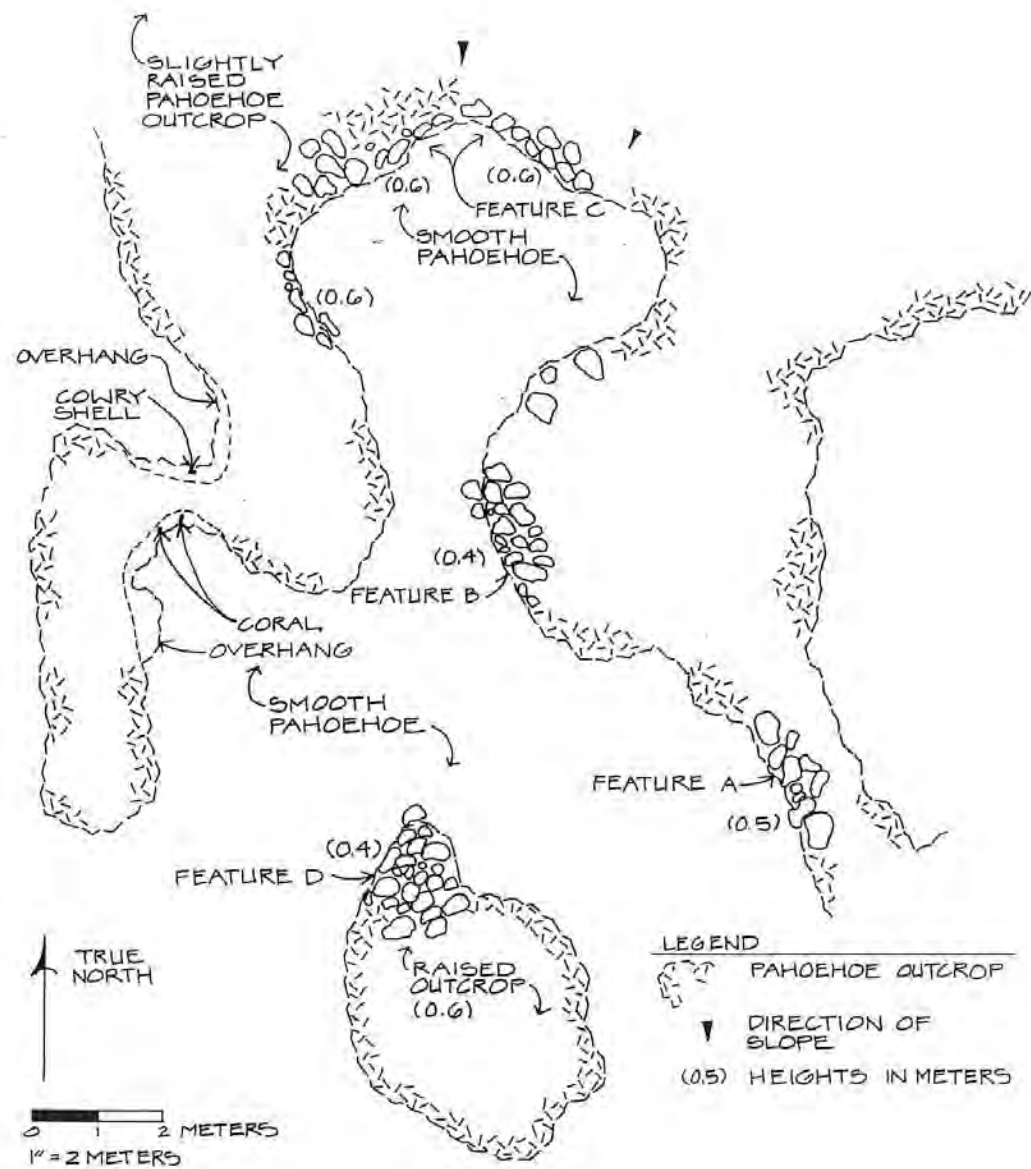
This site is interpreted as an agricultural site and the individual features, the modified outcrops, appear to be piled or mounded rocks cleared from the adjacent small soil areas. The presence of two pieces of coral and one cowry shell reflect probable traditional use of the site. It is likely that this site is associated with the habitation site (Site 02238) located approximately 40 feet (12 m.) to the south.

<b>State Site #:</b>	19951	<b>CSH Site #:</b> 12
<b>Site Type:</b>	Wall	
<b>Function:</b>	Ranching/Boundary delineation	
<b>Features (#):</b>	1	
<b>Ahupua'a:</b>	Kaloko	

**Description:** Site 19951 consists of a serpentine wall that extends in a general *mauka-makai* direction (Figure 30). The wall consists of free-standing sections which adjoin natural and modified outcrops. The free-standing sections are constructed of small and medium boulders, faced on both sides and "core-filled" with cobbles and pebbles. The free-standing sections average 1.0 m. high and 0.8 m. wide. Those sections of the wall formed by natural and modified outcrops reach a maximum height of 1.3 m.

The wall begins 100 feet (30 m.) *makai* of the highway pavement edge (the extent of bulldozing for the construction of the present highway) and continues *makai* at least 200





**Figure 29** Site 19950 Modified Outcrop Plan View



**Figure 30** Site 19951 Wall Photograph, View West



**Figure 31** Site 19952 Trail Photograph, View West

feet (61 m.) beyond the project area boundary. The wall is not present on the *mauka* side of the highway, as that area has been landscaped and developed as the Kaloko Industrial Park. The wall is in good condition.

<b>State Site #:</b>	19952	<b>CSH Site #:</b> 13
<b>Site Type:</b>	<i>Mauka-makai</i> Trail	
<b>Function:</b>	Transportation	
<b>Features (#):</b>	1	
<b>Ahupua'a:</b>	Kaloko	

**Description:** Site 19952 consists of a *mauka-makai* oriented trail segment (Figure 31). The trail is discernable as a trodden surface roughly 1.0 m. wide extending over the finger of an a'a lava flow. The trail becomes increasingly faint as it continues *makai* over pahoehoe lava terrain. Some remnant curbstones were observed along the trail where it crosses the a'a.

The trail begins approximately 125 feet (38 m.) *makai* of the highway pavement edge (the extent of bulldozing for the construction of the present highway), and can be followed *makai* for roughly 200 feet (61 m.), beyond which becomes increasingly difficult to discern. The condition of the trail is poor and it appears to have been at least partially disturbed by modern construction activities.

<b>State Site #:</b>	19953	<b>CSH Site #:</b> 14
<b>Site Type:</b>	<i>Mauka-makai</i> Trail	
<b>Function:</b>	Transportation	
<b>Features (#):</b>	1	
<b>Ahupua'a:</b>	Honokohau	

**Description:** Site 19953 consists of a slightly meandering, but generally *mauka-makai* oriented trail (Figures 32 & 33). The trail consists of a partially cleared and trodden surface over A'a lava terrain. The trail measures 0.5 to 0.6 m. wide. It begins 53 feet (16 m.) from the highway pavement edge and continues *makai* for at least 200 feet (61 m.) beyond the project area boundary. A roughly 20 foot (6 m.) section of the trail has been destroyed where it intersects with the Mamalahoa Trail at approximately 150 feet (46 m.) from the highway pavement edge.

One waterworn basalt cobble was observed on the trail 20 feet (6 m.) *makai* of a surveyor's pin (a metal nail set in concrete with "10" etched into the concrete, presumed to be a boundary marker for the National Park), and a coral abrader fragment was observed on a large boulder just to the south of the trail.

The trail is in fair to good condition and has previously been identified and flagged, probably by National Park archaeologists who, we have been informed, have done some surveying in the area and have identified several *mauka-makai* trails. The site has not been previously recorded however, and a state site number had not been previously assigned (personal communication with National Park archaeologist Catherine Glidden 6/27/95).

<b>State Site #:</b>	19954	<b>CSH Site #:</b> 15
<b>Site Type:</b>	<i>Mauka-makai</i> Trail	
<b>Function:</b>	Transportation	
<b>Features (#):</b>	1	
<b>Ahupua'a:</b>	Honokohau	

**Description:** Site 19954 consists of a *mauka-makai* oriented trail (Figures 34 & 35). The trail begins 93 feet (28 m.) from the present highway pavement edge (extent of bulldozed portion of old right-of-way) and meanders through the A'a along the edge of a pahoehoe outcrop, then up and over an outcrop and continues *makai* beyond the project area boundary into the National Park. Some portions of the trail contain pahoehoe slabs placed as steppingstones, and it appears that the slabs were taken from the adjacent pahoehoe outcrop. The trail measures 0.4 to 0.5 m. wide. The trail is in fair to good condition and has previously been identified and flagged, probably by National Park archaeologists who, we have been informed, have done some surveying in the area and have identified several *mauka-makai* trails. The site has not been previously recorded however, and a state site number had not been previously assigned (personal communication with National Park archaeologist Catherine Glidden 6/27/95).





**Figure 32** Site 19953 Trail Photograph, View West



**Figure 33** Site 19953 Trail Photograph, View East (Note intersection with Mamalahoe Trail)





**Figure 34** Site 19954 Trail Photograph, View West



**Figure 35** Site 19954 Trail Photograph, View East

## V. SITE SIGNIFICANCE AND RECOMMENDED TREATMENT

### A. Significance Evaluations

A total of seventeen sites with varied archaeological significance are present in the project area (see Table 1). Individual site significance was evaluated according to the broad criteria established for the National and State Registers of Historic Places. The five criteria are:

- A Site reflects major trends or events in the history of the state or nation
- B Site is associated with the lives of persons significant in our past
- C Site is an excellent example of a site
- D Site may be likely to yield information important in prehistory and history
- E Site has cultural significance; probable religious structures (shrines, *heiau*) and/or burials present

Federal significance assessments do not include criterion E as a cultural significance (state Criterion E) it comes under criterion A, thus all sites evaluated with State Criterion E are also assessed under criterion A in the federal system.

Thirteen of the sites (Sites 02238, 06432, 19943, 19944, and 19946 through 19954) are considered significant solely to yield information important in prehistory and history (Criterion D). Two sites (Sites 15324 and 19945) are considered to have cultural significance (Criterion E) in addition to being considered likely to yield information important in prehistory and history (Criterion D). One site (Site 13194) is considered to be an excellent example of a site type (Criterion C) in addition to being considered having cultural significance and likely to yield information important in prehistory and history (Criteria E and D). One site (Site 00002-Mamalahoa Trail) is considered to reflect major trends in the history of the state (Criterion A), as well as being considered an excellent example of a site type (selected portion of the site) and likely to yield information important in prehistory and history (Criteria C and D).

These significance assessments are summarized here:

Criterion D only:	02238, 06432, 19943, 19944, 19946, 19947, 19948, 19949, 19950, 19951, 19952, 19953, 19954
Criteria D and E:	15324, 19945
Criteria C, D and E:	13194
Criteria A, C, D and E:	00002

### B. Recommended Treatment

It is recommended that eight of the sites (Sites 02238, 19943, 19944, 19946, 19950, 19952, 19953, and 19954) be subjected to a program of data recovery to address scientific and informational concerns and to mitigate the impact of future construction. It is recommended that four sites (Sites 00002, 13194, 15324 and 19945) be preserved to the extent possible within the proposed highway widening plans, and those portions of these four sites that cannot be avoided be included in a program of data recovery. No further work is recommended for the remaining five sites (Sites 06432, 19947, 19948, 19949, and 19951).

**Table 6: Sites Included in the Present Inventory Survey (same as Table 1)**  
(Previously Identified Sites)

State Site #	CSH Site/ Feature #	Ahupua'a	Site/Feature Type	Probable Function	Preliminary Significance	Recommended Treatment
00002	--	Keahuolu, Kealakehe, Honokohau	Road (Mamalahoa Trail)	Transportation	A,C,D,E,*	DR, P <sup>1</sup>
02238	11	Kaloko	Complex	Temporary Habitation	D	DR
	11A		Terrace			
	11B		Enclosure			
06432	16	O'oma 2	Wall	Boundary, Ranching	D	NFW
13194	--	Kealakehe	Trail	Transportation	C,D,E,*	DR, P <sup>1</sup>
15324	6	Kohanaiki	Trail Network	Transportation	D,E,*	DR, P
	6A		Trail Branch			
	6B		Trail Branch			

(Newly Identified Sites)

19943	1	Kalaoa 1-4	Utilized Lava Tube (with interior features)	Temporary Habitation	D	DR
	1A		Mound			
	1B		Alignment			
	1C		Ash Deposit			
	1D		Midden Scatter			
19944	3	Kalaoa 1-4	Mounds (2)	Markers	D	DR
	3A		Mound			
	3B		Mound			
19945	4	Kalaoa 1-4	Petroglyphs (2)	Symbolism	D, E	DR, P
	4A		Petroglyph Figure			
	4B		Petroglyph Figure			
19946	5	Kohanaiki	Trail	Transportation	D	DR
19947	7	Kohanaiki	Cairns (3)	Boundary markers	D	NFW

State Site #	CSH Site/ Feature #	Ahupua'a	Site/Feature Type	Probable Function	Preliminary Significance	Recommended Treatment
	7A		Cairn			
	7B		Cairn			
	7C		Cairn			
19948	8	Kaloko	Pahoehoe Excavation	Quarry	D	NFW
19949	9	Kaloko	Enclosure	Unknown	D	NFW
19950	10	Kaloko	Modified Outcrop Complex	Agriculture	D	DR
	10A		Modified outcrop			
	10B		Modified outcrop			
	10C		Modified outcrop			
	10D		Modified outcrop			
19951	12	Kaloko	Wall	Boundary, Ranching	D	NFW
19952	13	Kaloko	Trail	Transportation	D	DR
19953	14	Honokohau	Trail	Transportation	D	DR
19954	15	Honokohau	Trail	Transportation	D	DR

KEY: A Site reflects major trends or events in the history of the state or nation  
 B Site is associated with the lives of persons significant in our past  
 C Site is an excellent example of a site type  
 D Site may be likely to yield information important in prehistory and history  
 E Site has cultural significance; probable religious structures (shrines, *heiau*) and/or burials present  
 DR Data Recovery  
 P Preserve  
 P<sup>1</sup> Preserved - included in previous Preservation Plan(s)  
 NFW No Further Work  
 \* Significance assessments of site (or portions of site) also determined in prior archaeological studies

#### Data Recovery

The eight sites that are recommended for data recovery should be subjected to further documentation and, when appropriate, excavation to address scientific and informational concerns. Data recovery should proceed in accordance with a data recovery plan which is to be submitted to DLNR State Historic Preservation Division and Hawaii County for review and approval.

The sites selected for data recovery include four functional site types: trails (Sites 19946, 19952, 19953 and 19954); temporary habitation (Sites 02238 and 19943); marker (Site 19944); and agriculture (Site 19950). The following research objectives might be considered in the future study of these sites:

1. **Trails** - An attempt could be made to trace and record the full extent of each of the trails which extend through the project area. During the inventory survey fieldwork, each of the trails was followed only for several hundred feet outside of the project area, where possible. Future research might also include a search for historical documentation of the specific trails identified as well as an attempt to find linkages with trail sections identified in other archaeological studies both *mauka* and *makai* of the identified trail segments.
2. **Temporary Habitation Sites** - Additional excavation and/or surface collection could be made at the two sites interpreted as temporary habitation sites to gather additional evidence to assist in determining the nature and extent of activities which occurred there. An attempt might also be made to find evidence of a nearby trail, as is suggested by previous studies of habitation sites in the intermediate zone of Kekaha.
3. **Marker and Agricultural Sites** - Additional excavation might be conducted at these sites to accumulate additional evidence for site interpretation including collecting samples for radiocarbon and/or pollen analysis.

#### Preservation/Data Recovery

The four sites recommended for preservation and data recovery include three trails (Sites 00002, 13194, and 15324) and one petroglyph site (Site 19945). Because these sites are wholly or partially located along the outside boundary of the new highway right of way, it is hoped that an effort could be made to avoid all or portions of these four sites during the future construction associated with the highway widening. For those portions of these four sites (i.e. sections of trails) which cannot be avoided during construction, inclusion in a data recovery program is recommended.

It should also be noted that two of these sites (Sites 00002 and 13194) have been recommended for preservation in previous archaeological studies and have been included in interim and possibly long-term preservation plans that have been approved by DLNR-SHPD (e.g. Jensen 1995, Borthwick and Hammatt 1992).

#### No Further Work

No further work is recommended for the remaining five sites in the project area (Sites 06432, 19947, 19948, 19949, and 19951, as it is believed sufficient information has been obtained by the documentation of the sites completed during the inventory survey.



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**APPENDIX A: ADDITIONAL SITE LOCATION INFORMATION**

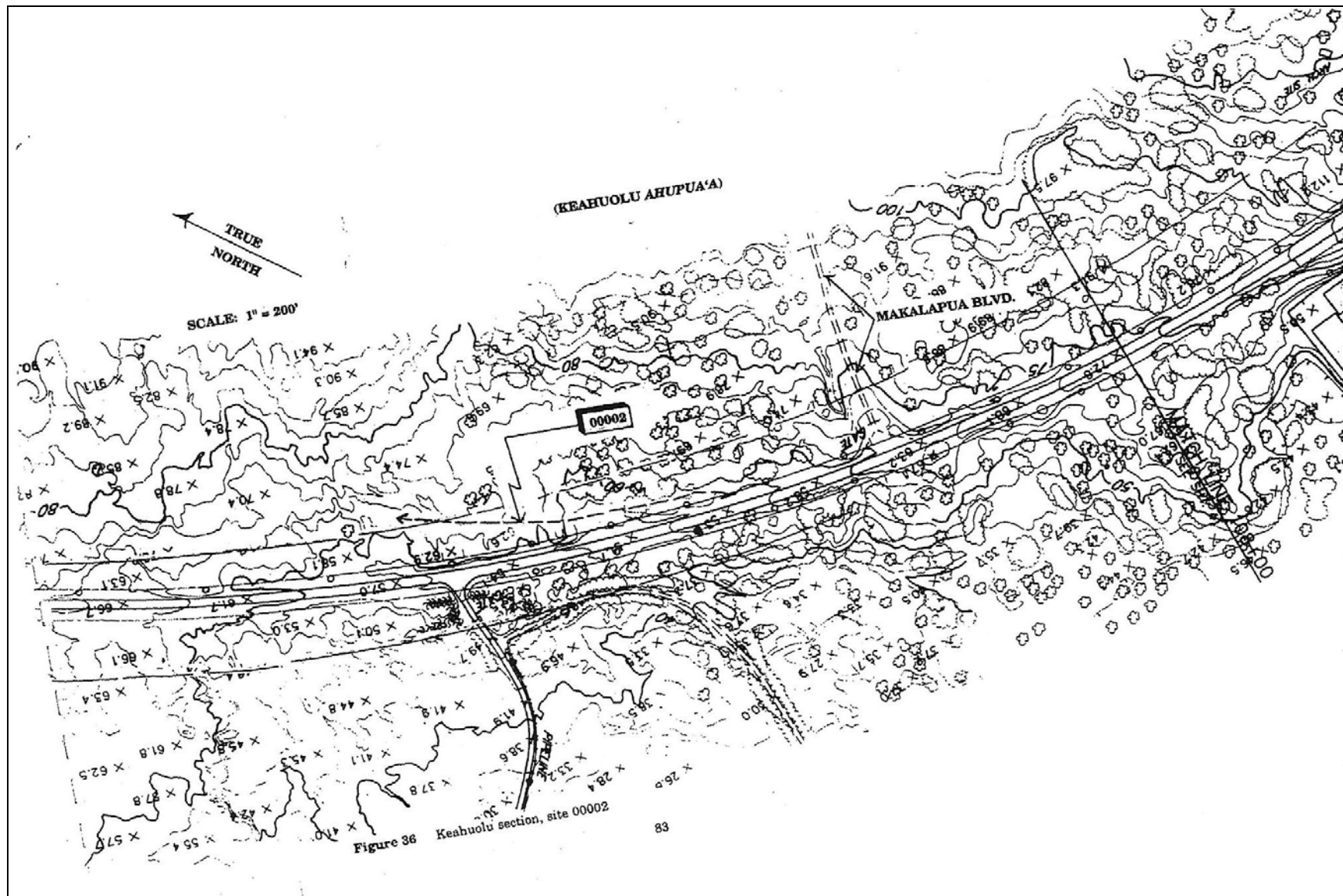
**Table 7: Additional Site Location Information**

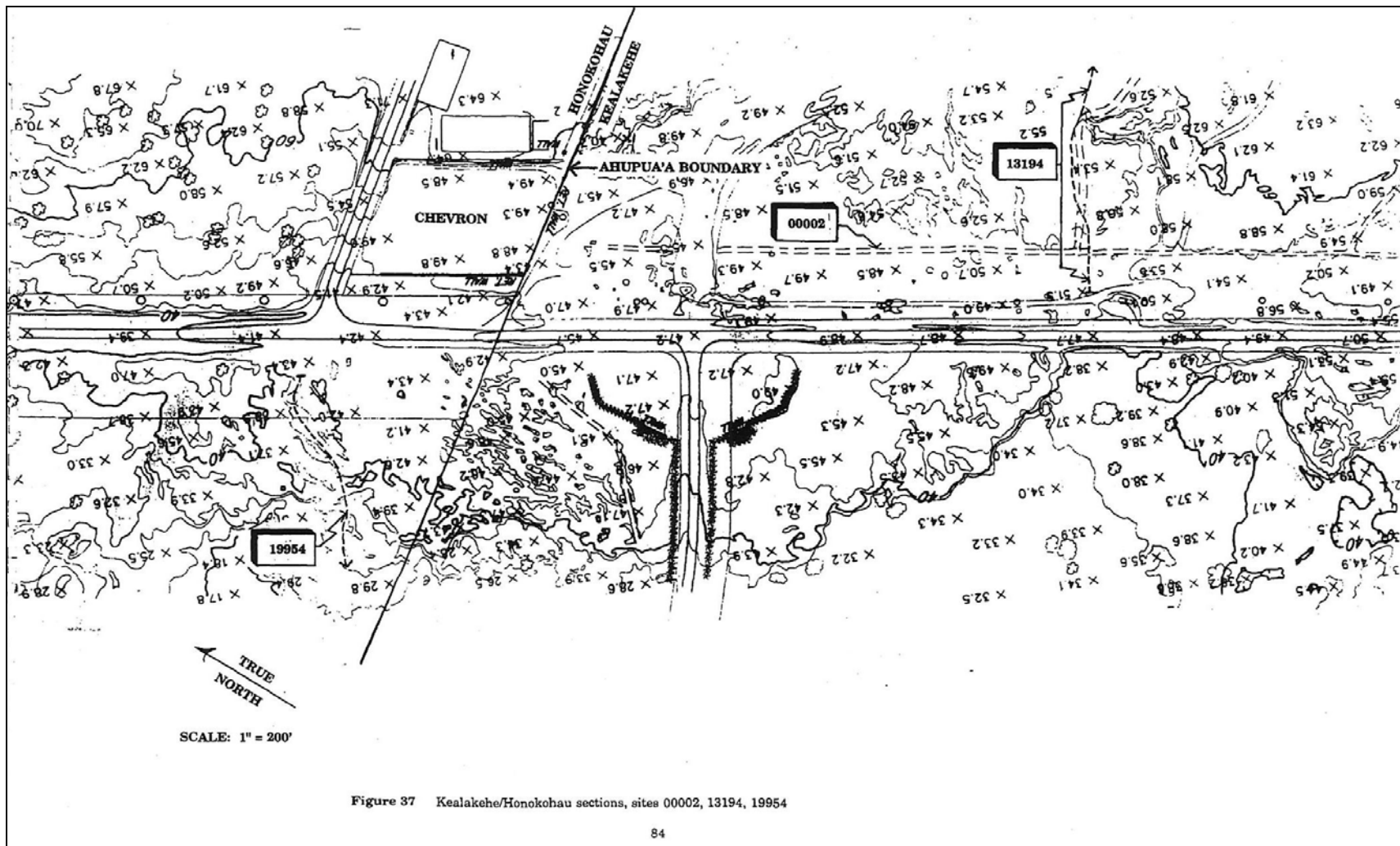
State Site #; Site Type	CSH Temp. Site #	Ahupua'a & Locational Info	Recommended Treatment
19943 Lava Tube	CSH 1 A-D	Kalaoa 1-4; 160' from <i>makai</i> pavement edge	DR
19944 Mounds	CSH 3 A-B	Kalaoa 1-4; 250' from <i>makai</i> pavement edge	DR
19945 Petroglyphs	CSH 4 A-B	Kalaoa 1-4; 150' from <i>makai</i> pavement edge	DR, P
19946 Trail	CSH 5	Kohanaiki; begins 150' from <i>makai</i> pavement edge - 60' section within new R/W	DR
15324 Trails	CSH 6 A-B	Kohanaiki; begins 160' from <i>makai</i> pavement edge - one 60' and one 40' section within new R/W	DR, P <sup>1</sup>
19947 Cairns	CSH 7 A-C	Kohanaiki; 70' from <i>makai</i> pavement edge	NFW
19948 Pahoehoe excavation	CSH 8	Kaloko; 110' from <i>makai</i> pavement edge	NFW
19949 Enclosure	CSH 9	Kaloko; 80' from <i>makai</i> pavement edge	NFW
19950 Modified outcrops	CSH 10 A-D	Kaloko; 140' from <i>makai</i> pavement edge	DR
02238 Platform, enclosure	CSH 11 A-B	Kaloko; 170' from <i>makai</i> pavement edge	DR
19951 Wall	CSH 12	Kaloko; begins 100' from <i>makai</i> pavement edge, 80' section within new R/W	NFW
19952 Trail	CSH 13	Kaloko; begins 125' from <i>makai</i> pavement edge, 70' section within new R/W	DR
19953 Trail	CSH 14	Honokohau; begins 53' from <i>makai</i> pavement edge, 150' section within new R/W (includes 20' section obscured by M. Trail)	DR
19954 Trail	CSH 15	Honokohau; begins 90' from <i>makai</i> pavement edge, 100' section within new R/W	DR
06432 Wall	CSH 16	Ooma 2/Kalaoa Ooma; begins 20' from <i>makai</i> pavement edge, 170' within new R/W; also begins 90' from <i>mauka</i> edge of pavement, 20' within new R/W (total 190')	NFW
00002 Mamalahoa Trail	None	Keahuolu: begins 30' from <i>mauka</i> edge, parallels highway - 700' section w/in new R/W Kealakehe: parallels highway 200' from <i>mauka</i> edge - 1800' section w/in new R/W Honokohau: one ramp section located 110' from <i>mauka</i> edge (directly beneath power line), 35' section w/in new R/W; also begins 30' from <i>makai</i> edge, 490' section w/in new R/W	DR, P <sup>1</sup>
13194 Trail	None	Kealakehe; begins 95' from <i>mauka</i> edge, discontinuous (obscured by M. Trail and B/D path), roughly 215' still intact w/in new R/W	P <sup>1</sup>
81			

## KEY:

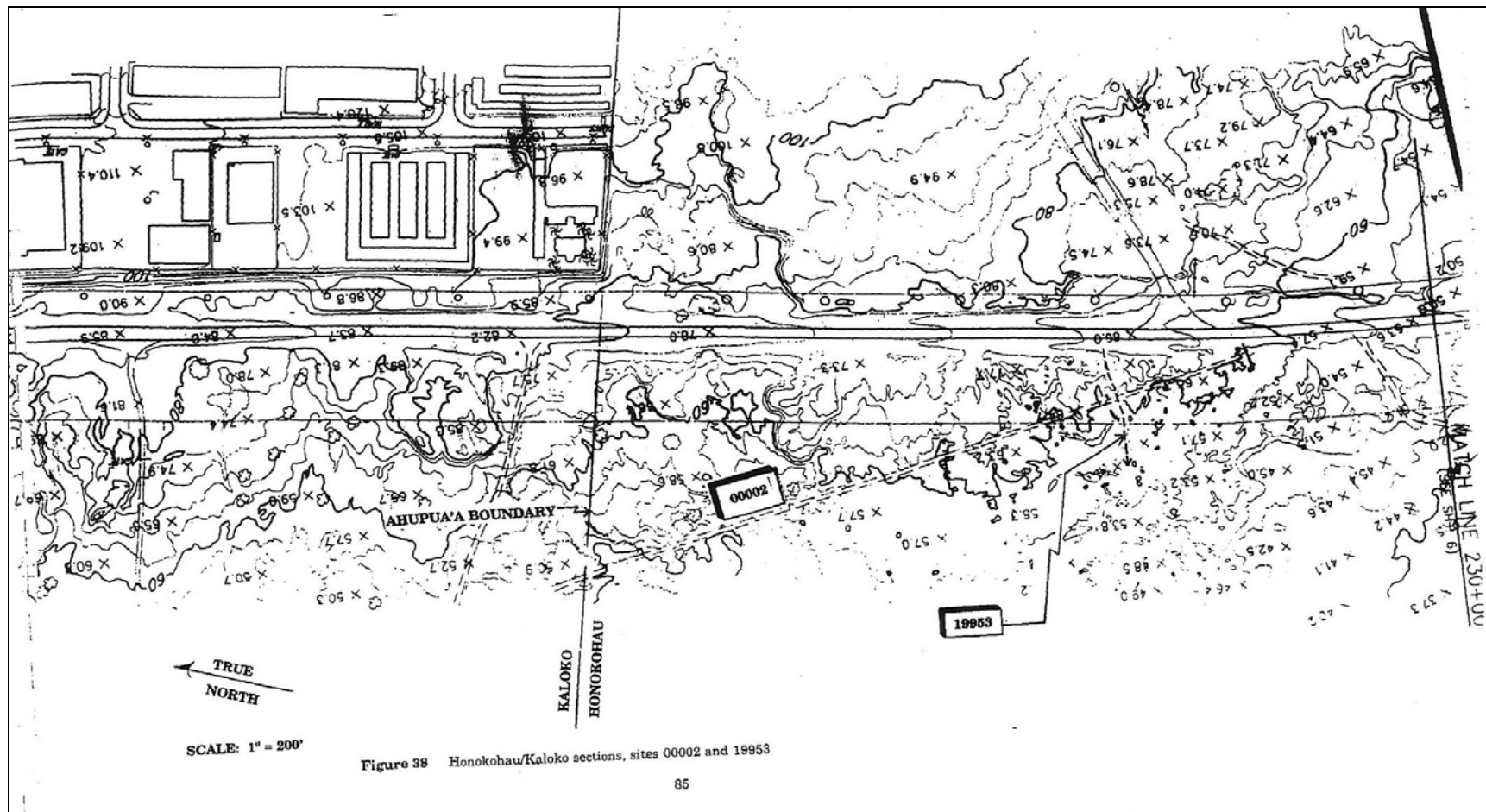
- A Site reflects major trends or events in the history of the state or nation
- B Site is associated with the lives of persons significant in our past
- C Site is an excellent example of a site type
- D Site may be likely to yield information important in prehistory and history
- E Site has cultural significance; probable religious structures (shrines, *heiau*) and/or burials present
- DR Data Recovery
- P Preserve
- P<sup>1</sup> Preserved - included in previous Preservation Plan
- R/W Highway Right-of-way
- NFW No Further Work

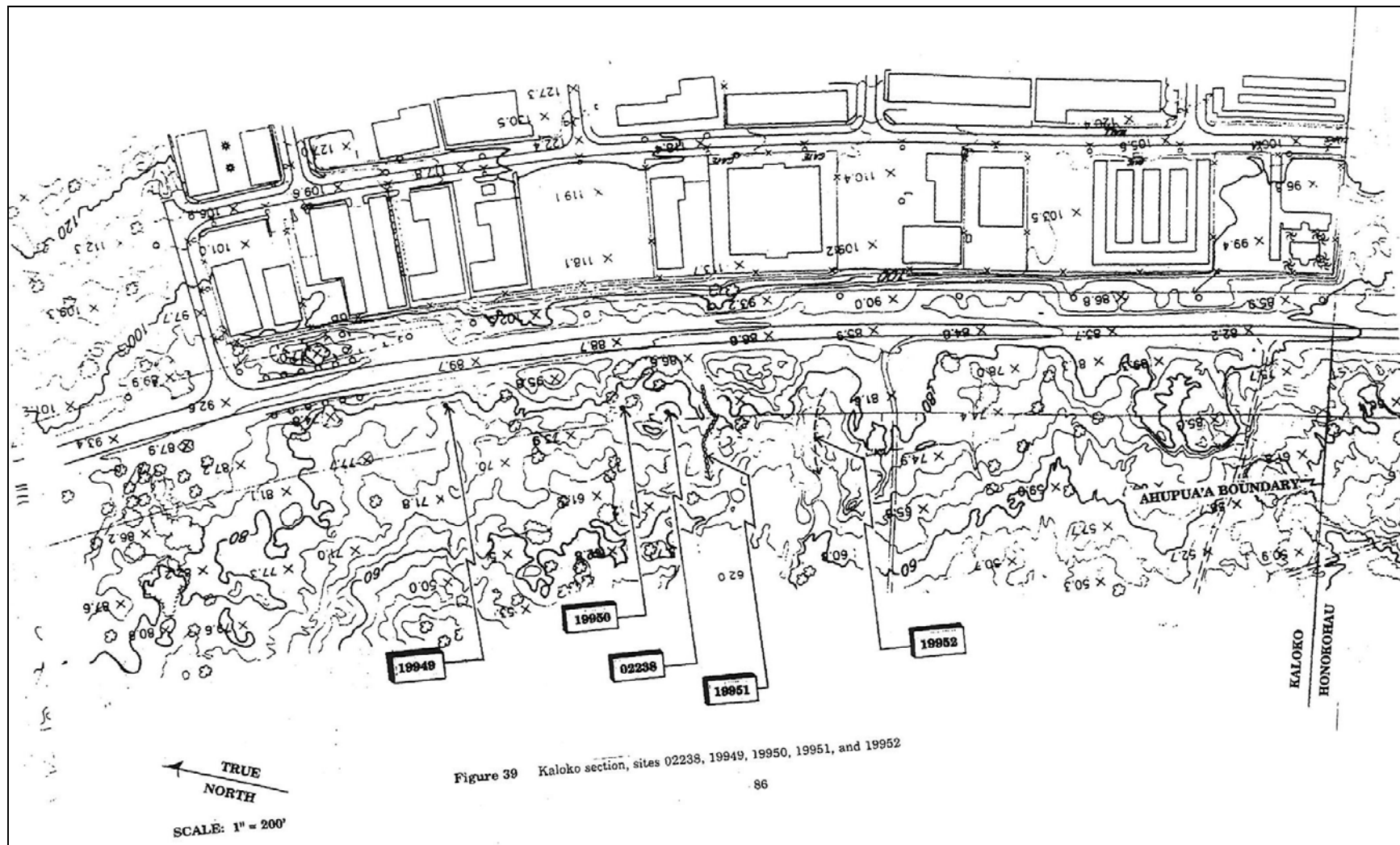
The following maps are portions of the 1"=200' scale topographic maps of the project area provided by R.M. Towill Corporation showing the location of the archaeological sites identified within the project area.

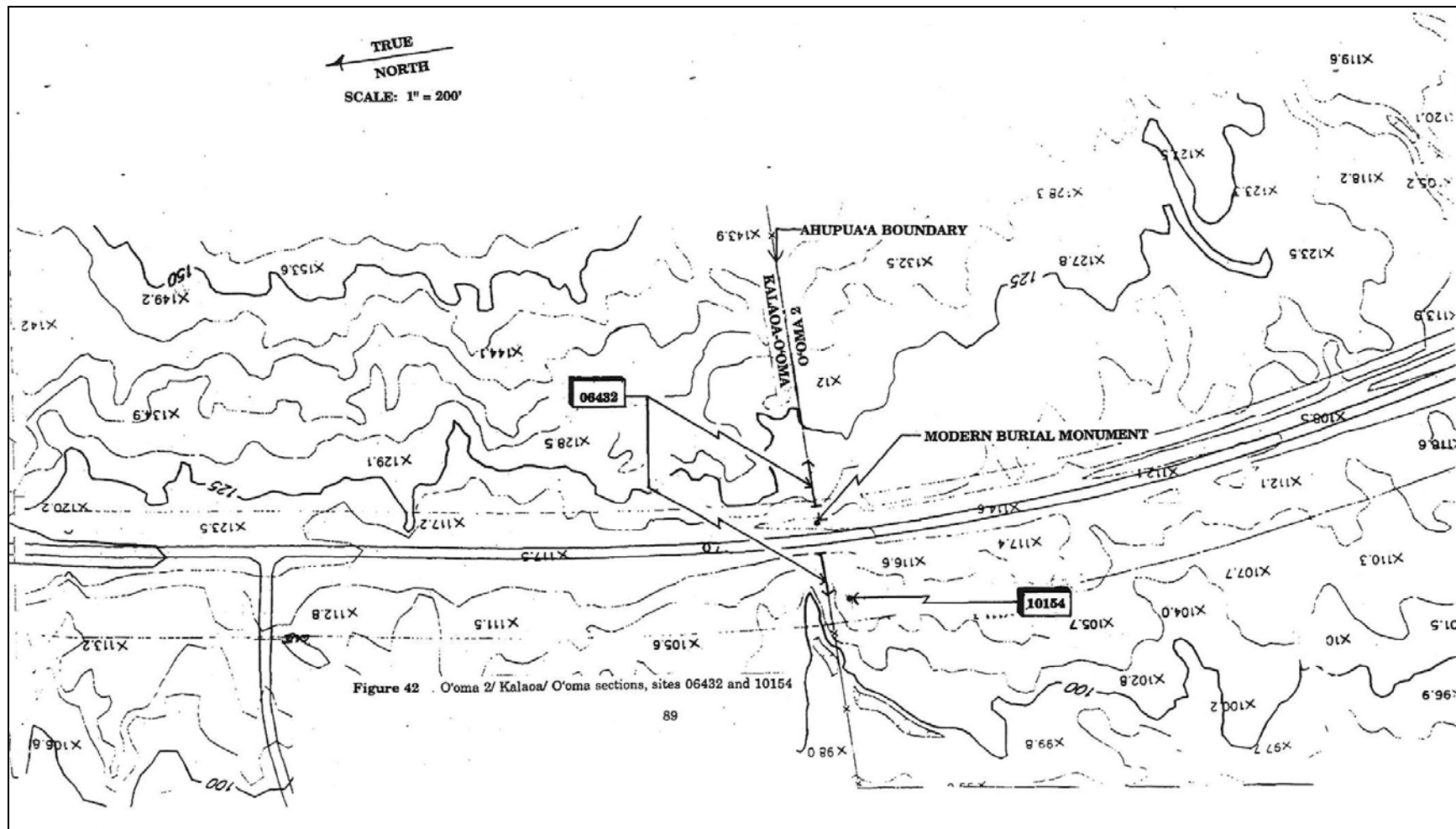












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## Appendix C SIHP # 50-10-27-29275

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**Temp. Site No.:** Big Cave (Harp 2011)

**Site Type:** Lava Tube

**No. of Features:** 1

**Functional Interpretation:** Burial

**Probable Age:** Indeterminate

**Overall Dimensions:** 22.0 m N/S by 7.0 m E/W

**Topography:** Undulating *Pāhoehoe* flow

**Elevation:** Approximately 95 ft (29 m) AMSL

**Description:** (below)

An SHPD review letter (dated July 9, 2012; Log No 2012.1443, Doc No 1206MV26) of an earlier (May 2012) draft of this archaeological inventory survey asked that the “Big Cave” Site 50-10-27-29275 be included within the Archaeological Inventory Survey and be included within the project Area of Potential Effect (APE). Following consultation between FHWA and the ACHP it was agreed that the “Big Cave” (SIHP 50-10-27-29275) and the intervening land located west of the ROW would not be included within the APE. The historic property is however included in this Appendix of this study in an effort to address SHPD concerns.

The lava tube in which the subject burial site is located was initially reported under a volunteer survey undertaken by community members Isaac and Jacob Harp in late 2011. Under this survey, the lava tube was assigned the temporary name “Big Cave”; the burial itself *was not* noted at that time. The 2011 volunteer survey would serve as the preliminary basis for the supplementary AIS of NHO sites in the Queen Ka‘ahumanu Highway North Segment project area (Monahan and Wilkinson 2012). While the subject burial site was not documented in the Monahan and Wilkinson (2012) AIS report (given its location outside of the State ROW), the burial was discovered during the fieldwork component of that study.

As SIHP 29275 was not fully documented during the Monahan and Wilkinson (2012) supplementary AIS, the current project included a fieldwork component. The fieldwork consisted of standard site documentation at the burial tube, including scale tape-and-compass mapping of the passable extent of the lava tube, detailed written description, skeletal inventory, and photographs. A photo log of all digital images associated with the project was maintained. The photo log included the date and the initials of the photographer, the approximate cardinal direction the photographer was facing, the subject matter of the image, and the CSH temporary field number. All photos included a clear, visible photo scale and north arrow. Pursuant to HAR Chapter 13-300-32, photographs *were not* taken of the burial feature. The site was located using a Garmin GPSmap 60CSx.

**SIHP 50-10-27-29275** “Big Cave” [as named during 2011 NHO survey for Queen Ka‘ahumanu Highway] is a cave-like natural feature consisting of tilted and uplifted *pāhoehoe* slabs containing human remains. The cave is located approximately 20 meters (m) west, or *makai*, of the present Queen Ka‘ahumanu Highway right-of-way. The surrounding landscape is sparsely vegetated with fountain grass and the occasional native *maiapilo* (*Capparis spinosa*). The ground surface slopes mildly to the west over undulating *pāhoehoe*. The cave or lava tube is orientated north to south and can be accessed by two openings on the northern end of the cave

which lead into the main chamber (Figure 289). The eastern entrance measures circa (c) 2.0 m long (E/W) by 1.0 m wide (N/S) and the western entrance (Figure 290) is c. 1.3 m long (E/W) by 1.2 m wide (N/S). The smaller, western entrance provides the easiest access into the tube. Outside of the tube next to the western entrance someone has placed a Bible.

Once inside the lava tube the main chamber measures c. 10.0 m long (N/S) by 7.0 m wide (E/W) with a maximum ceiling height of 2.2 m (Figure 289). The floor of the main chamber is fairly level *pāhoehoe* with very few boulders or cobbles. Approximately 10.0 m south of the entrance area, the tube is divided into upper and lower chambers by a lava shelf (see Figure 289). The upper chamber measures c. 8.5 m long (N/S) and 3.0 m wide (E/W), with a maximum ceiling height of c. 1.5 m. The floor of the upper chamber consists of level *pāhoehoe* with numerous scattered cobbles and boulders (likely roof fall). The ceiling of the upper chamber is fractured along its axis allowing light and air to enter (see Figure 289 and Figure 291). Modern rubbish is scattered about the main and upper chamber, likely the result of recent human habitation. The upper chamber may have recently been used as a latrine.

Directly beneath the upper chamber the lava tube splits into two small passages (see Figure 289). The eastern passage is c. 9.0 m long (N/S) by 1.50 m wide (E/W), with a maximum ceiling height of 80 cm. The western passage measures c. 12.0 m+ long (N/S) by 0.30-2.0 m wide (E/W), with a maximum ceiling height of 1.0 m. This passage becomes impassable at c. 12.0 m. The interior of the tube is fairly spacious, ventilated, and well-lit due to the extent of the skylight and the entrances.

A single set of human remains is located against the eastern wall of the main chamber in a shallow crevice (see Figure 289). A few small *pāhoehoe* slabs have been placed on and around the remains—it is possible that some of these slabs have been removed to expose the burial. A skeletal inventory did not account for an entire set of remains, though the remains do appear to represent a single primary burial, fully articulated and oriented N/S (with the head to the south). The sex and age of the remains were not determined, though they are certainly more than 50 years old (years before present). However, the precise age (years before present) and ethnicity of the burial is indeterminate. There are no artifacts or grave items placed with the burial that would help indicate its precise age.

No additional remains were discovered during documentation of the lava tube, and no other structural modifications were observed.

SIHP 50-10-27-29275 is a burial cave and is evaluated as significant under National Register of Historic Places criteria D and under Hawai'i Register of Historic Places criteria D and E.

Resolution of Treatment of this burial site will involve the private land owner, the State Historic Preservation Division, the Hawai'i Island Burial Council and any recognized lineal and/or cultural descendants.

Cultural Surveys Hawaii has been retained to move forward with a burial treatment plan. A legal notice regarding the burial has been placed in *West Hawaii Today* (May 26, 27 & 30) and in the *Honolulu star-Advertiser* (May 26, 27 & 30) expressing a preference for preservation in place.



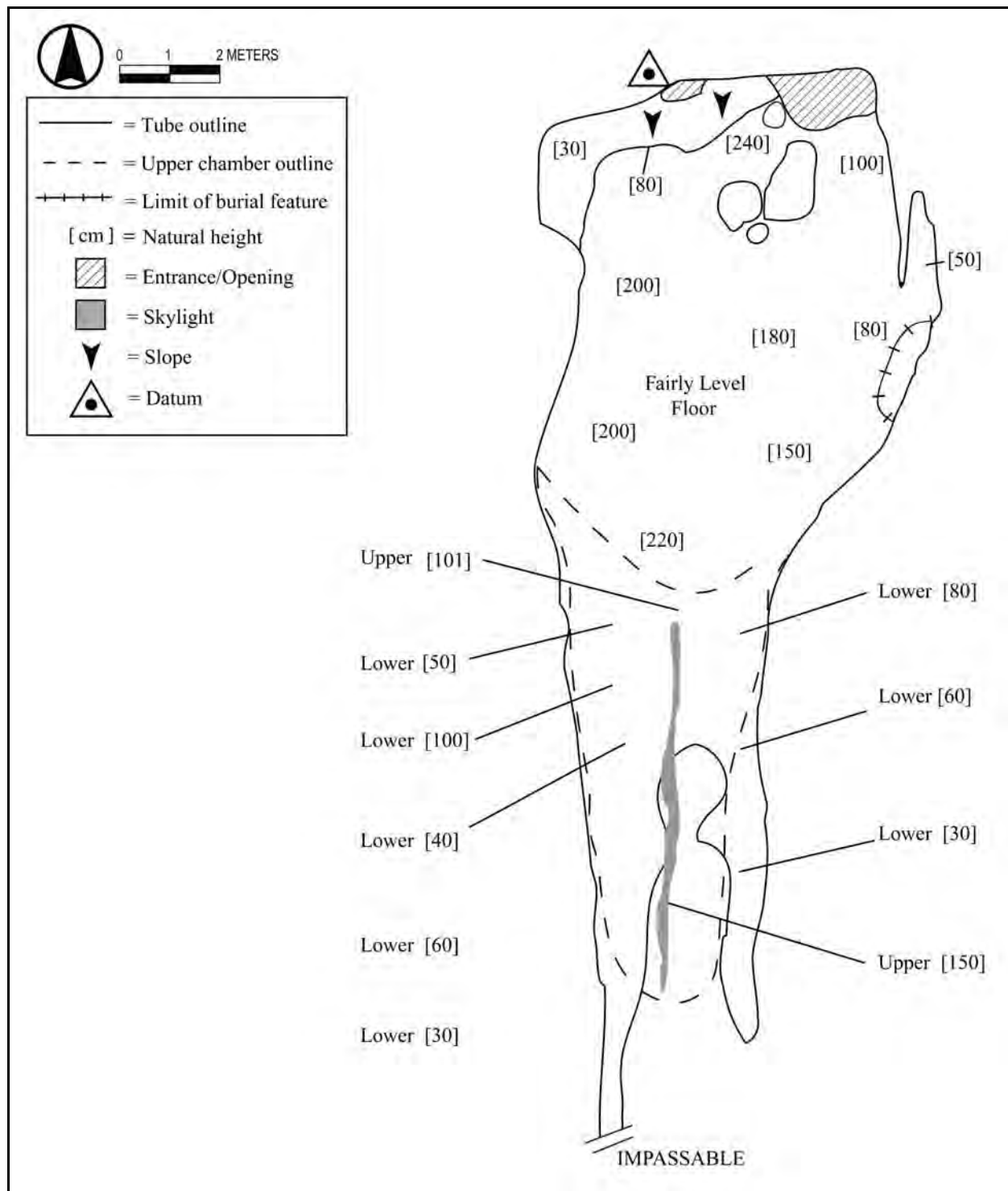


Figure 289. Plan map of SIHP 29275



Figure 290. Photo showing the western entrance to SIHP 29275; view to the south



Figure 291. Photo taken from the western entrance of SIHP 29275, showing the interior of the lava tube; note the shelf dividing the tube into upper and lower chambers, the presence of modern trash, and the amount of light provided by the skylight along the upper chamber and the two entrances; the burial feature is out of the frame to the left; view to the south