Final

Archaeological Inventory Survey and Monitoring Plan, Phase I, Keaukaha Military Reservation (KMR) Hawai‘i Army National Guard Facility Waiākea Ahupua‘a, South Hilo District, Island of Hawai‘i TMKs: [3] 2-1-012:003, 131 and [3] 2-1-013:010

Prepared for
Hawai‘i Army National Guard, ENV Office

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Management Summary

Reference	Archaeological Inventory Survey and Monitoring Plan, Phase I, Keaukaha Military Reservation (KMR) Hawai‘i Army National Guard Facility Waiākea Ahupua‘a, South Hilo District, Island of Hawai‘i, TMKs: [3] 2-1-012:003, 131 and [3] 2-1-013:010 (Wheeler et al. 2014)
Date	July 2014
Project Number (s)	Cultural Surveys Hawai‘i (CSH) Job Code: WAIAKEA 10
Investigation Permit Number	The fieldwork for this project was carried out under archaeological permit number 13-06 issued by the State of Hawai‘i Department of Land and Natural Resources/ State Historic Preservation Division (SHPD) per Hawai‘i Administrative Rules (HAR) § 13-282
Project Location	The Keaukaha Military Reservation (KMR) is located in the town of Hilo on the windward side of Hawai‘i Island. It is bound by General Lyman Field/Hilo International Airport on the northwest, a County quarry and borrow pit site on the southeast, the Airport Access Road on the northeast, and undeveloped forest land on the southwest.
Land Jurisdiction	The Hawai‘i Army National Guard (HIARNG)
Agencies	The State of Hawai‘i Department of Land and Natural Resources/ State Historic Preservation Division (SHPD)
Project Description and Related Ground Disturbance	This archaeological study supports planning for potential long-range improvements at the HIARNG KMR Facility. No specific improvements are known at this time.
Area of Potential Effect (APE) and Project Acreage	The KMR encompasses TMKs: [3] 2-1-012:003, 131 and [3] 2-1-013:010, for a total area of 504 acres. However, the project or survey area encompassed vegetated portions of the KMR (not currently maintained). Therefore the project area comprises a 405.3-acre portion of the overall 509.17–acre property (refer to Figure 5), and excludes TMK: [3] 2-1-012:131 in its entirety
Document Purpose	Under Section 106 of the National Historic Preservation Act (NHPA), Federal agencies must consider the impact of a project on the historic resource(s). Section 110 of the NHPA requires Federal agencies to provide for the identification, evaluation and protection of the agency’s historic properties. The proposed project is being performed under Section 106 of the NHPA in regard to new construction projects. The purpose of this Phase I archaeological inventory survey (AIS) was to identify and document any surface archaeological features within the project area, evaluate the potential for subsurface historic properties, and assess the potential for impact to such sites. The study was also made to identify any sensitive areas that may require further investigation or mitigation before the project proceeds. This document is intended to facilitate the project’s

	planning and support the project's historic preservation review compliance. Based on the findings of this Phase I study, cultural resource management recommendations are presented.
Fieldwork Effort	The fieldwork component of the AIS was accomplished from 19 August 2013 to 24 September 2013 by CSH archaeologists Andrew Soltz, B.A., David Doig, B.A., Doug Inglis, B.A., Johnny Dudoit, B.A., Nigel Kingsbury, B.A., and Olivier Bautista, B.A. under the general supervision of Hallett H. Hammatt, Ph.D. (principal investigator). The fieldwork required approximately 76 person-days to complete.
Number of Historic Properties Identified	The pedestrian inspection identified 11 historic properties, of which five were previously identified and six are newly identified.
Historic Properties Recommended Eligible to the National Register of Historic Places and Hawai‘i Register of Historic Places	With the exception of SIHP # 50-10-35-18869, all of the historic properties documented during the inventory survey fieldwork are recommended eligible for the National Register of Historic Places (NRHP) and the Hawai‘i Register of Historic Places (HRHP). SIHP # 50-10-35-21657 is a C-shaped enclosure identified by Hammatt and Bush (2000) likely associated with military occupation. SIHP # 50-10-35-21658 is a complex of five stacked stone ahu or markers identified by Hammatt and Bush (2000) and associated with the Puna Trail. SIHP # 50-10-35-21771 is a complex identified by Tolleson and Godby (2001) associated with late nineteenth century construction along the Puna Trail. In the current AIS, CSH documented eight additional features at this site. SIHP # 50-10-35-23273 is a trail exhibiting historic modification identified by Escott and Tolleson (2002). Two associated agricultural features were not relocated. SIHP # 50-10-35-30008 is a pre-Contact to historic era lava tube shelter. SIHP # 50-10-35-30009 is a pre-Contact to historic era modified outcrop complex used for temporary habitation. SIHP # 50-10-35-30010 is a complex with five features associated with late nineteenth century construction along the Puna Trail. SIHP # 50-10-35-30011 is a late nineteenth century complex of two features of indeterminate function.

	SIHP # 50-10-35-30012 is a trail exhibiting historic modification. SIHP # 50-10-35-30038 is a trail interpreted as an intact segment of the historic Puna Trail alignment. Because the previous documentation of the Puna Trail at the KMR (SIHP # 50-10-35-18869) has indicated the site as a modern jeep road, this newly-identified segment has been assigned as a separate historic property.
Historic Properties Recommended Ineligible to the Hawai‘i Register of Historic Places	SIHP # 50-10-35-18869 is the Puna Trail within Hilo District. Hammatt and Bush (2000) found the portion of this site within KMR to be no longer significant due to modern impacts (lack of integrity); these impacts were confirmed by the present investigation.
Effect Recommendation	This investigation was undertaken for planning purposes, and does not address a specific project. For this reason, a project-specific effect recommendation cannot be made. However, future developments may potentially impact known or potential historic properties within the KMR. The recommended mitigation measures are intended to reduce potential adverse effect on significant historic properties during any future development projects.
Mitigation Recommendation	No further historic preservation work is recommended for seven of the eleven total historic properties identified within the project area (SIHP #s -18869, -21657, -23273, -30008, -30009, -30011, and -30012). Sufficient information regarding the location, function, age, and construction methods of these historic properties has been generated by the current archaeological inventory survey investigation to mitigate any adverse effect caused by proposed development activities. In the case of SIHP # -18869, no further work is recommended also because it is assessed as no longer retaining integrity. Three historic properties are recommended for preservation through avoidance, given their unique nature and/or potential for future study. These are the newly identified historic segment of the Puna Trail (SIHP # -30038), thought to have been completely obliterated; SIHP # -21658, which was recommended for preservation through avoidance by Hammatt and Bush (2000); and SIHP # -21771 which is already largely protected within a modern chain link fence. At this latter site, it is recommended the fence line be modified to contain the newly identified associated features present to the north. Two historic properties are recommended for Phase II subsurface investigation, SIHP #s -21771 and -30010. The purpose of this testing is to gain a better understanding of the age and/or function of the selected sites, and to investigate the possibility of the presence of human burial deposits. Due to the potential for additional surface and subsurface historic

	properties within the undeveloped areas at the KMR, including human burials, it is recommended initial ground disturbance within these area be attended by an archaeological monitoring program. The monitoring program will begin with the production of an archaeological monitoring plan for the review and acceptance of SHPD prior to the beginning of construction (Appendix A). Field monitoring should be carried out in accordance with the plan. An archaeological monitoring report should be submitted for review and acceptance by SHPD following the completion of all monitoring activities related to project development.

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Section 1 Introduction

1.1 Project Background

At the request of the Hawai‘i Army National Guard, ENV Office, Cultural Surveys Hawai‘i, Inc. (CSH) conducted an archaeological inventory survey (AIS), Phase I, Keaukaha Military Reservation (KMR) Hawai‘i Army National Guard Facility, Waiākea Ahupua‘a, South Hilo District, Hawai‘i Island, TMKs: [3] 2-1-012:003, 131 and [3] 2-1-013:010. The KMR is located in the town of Hilo on the windward side of Hawai‘i Island. It is bound by General Lyman Field/Hilo International Airport on the northwest, a County quarry and borrow pit site on the southeast, the Airport Access Road on the northeast and undeveloped forest land on the southwest. The KMR is depicted on a U.S. Geological Survey (USGS) 7.5-Minute Topographic Map, a Hawai‘i tax map plat, and an aerial photograph (Figure 1 through Figure 4).

The KMR encompasses a total area of 509.17 acres. However, the project or survey area encompassed vegetated portions of the KMR (not currently maintained). Therefore the project area comprises a 405.3-acre portion of the overall 509.17–acre property (Figure 5 and Figure 6), and excludes TMK: [3] 2-1-012:131 in its entirety.

The current Phase I study was completed for use in future construction projects at the KMR Facility. The purpose of the Phase I AIS is to identify any surface archaeological features within the project area, evaluate the potential for subsurface properties, and assess the potential for impact to such sites. This study includes an archaeological monitoring plan (AMP) (Appendix A) that will address sensitive areas for future projects planned at KMR. This document is intended to facilitate future project planning efforts and support historic preservation review compliance. This Phase 1 AIS report was prepared per the requirements of Hawai‘i Administrative Rules (HAR) § 13-276-5 and is intended for review and acceptance by the SHPD.

1.2 Scope of Work

The following scope of work satisfies the State of Hawai‘i requirements for archaeological inventory surveys (HAR § 13-276 and § 13-275/284):

1. Historical and previous archaeological background research to include study of archival sources, historic maps, Land Commission Awards and previous archaeological investigations. This research will focus on the specific project area’s past land use, with general background on the pre-Contact and historic settlement patterns of the *ahupua‘a* (land division usually extending from the uplands to the sea) and district. This background information will be used to compile a predictive model for the types and locations of historic properties that could be expected within the project area.

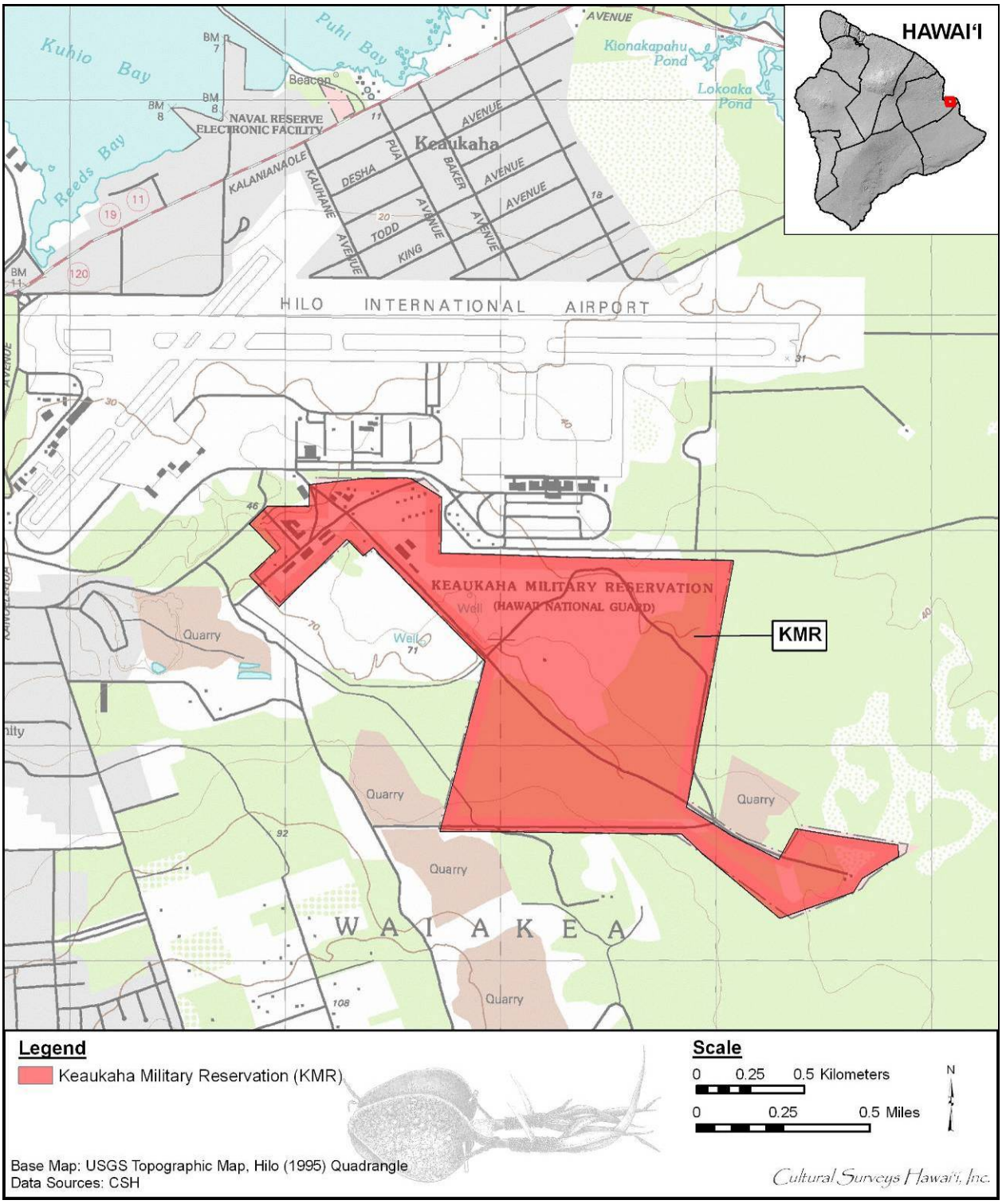

Figure 1. Portion of the 1995 Hilo USGS 7.5-minute Topographic Quadrangle, showing the location of the Keaukaha Military Reservation (KMR)

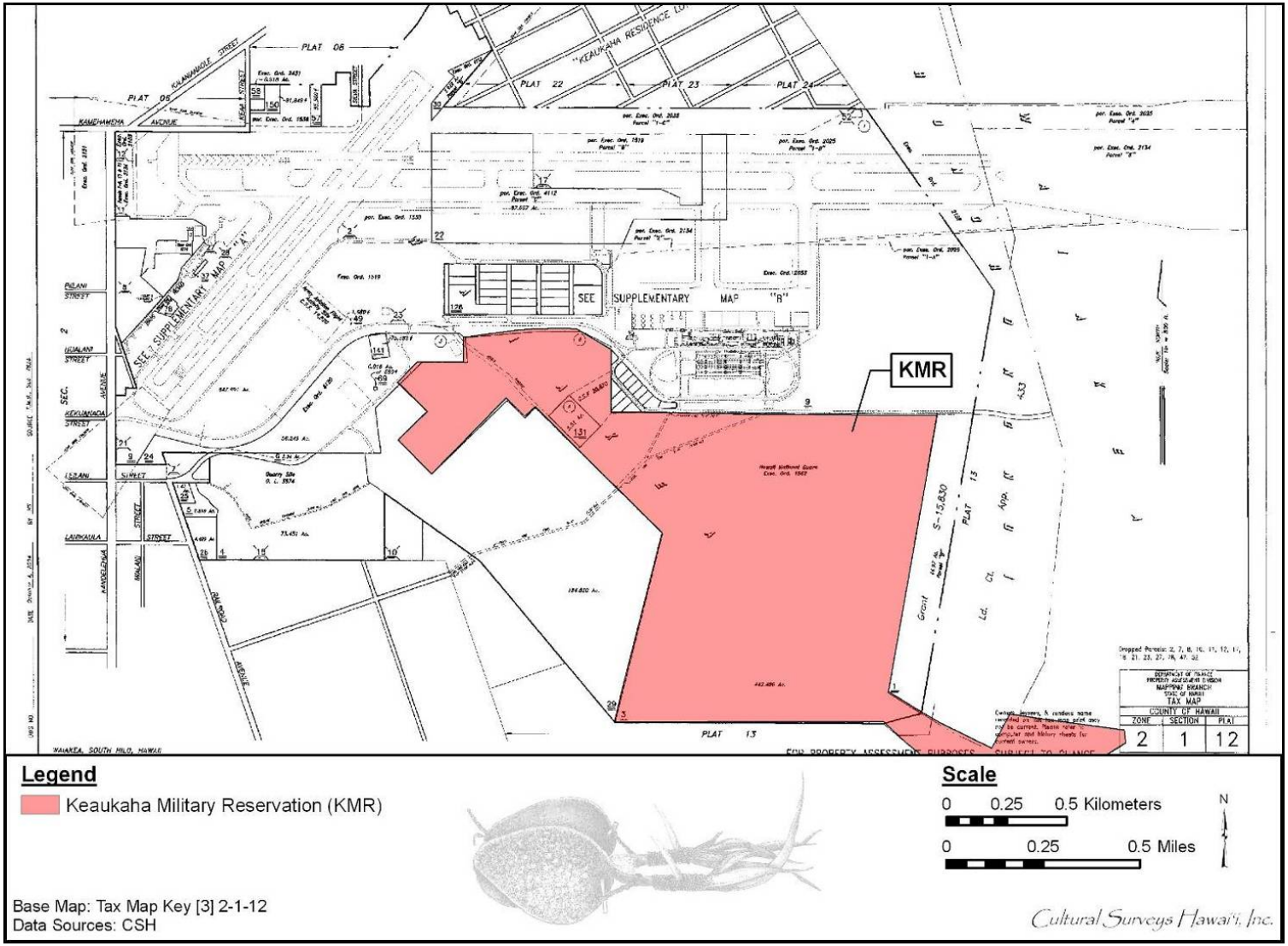

Figure 2. Tax Map Key (TMK): [3] 2-1-012, showing a portion of the KMR (Hawai‘i Tax Map Key Service 2010)

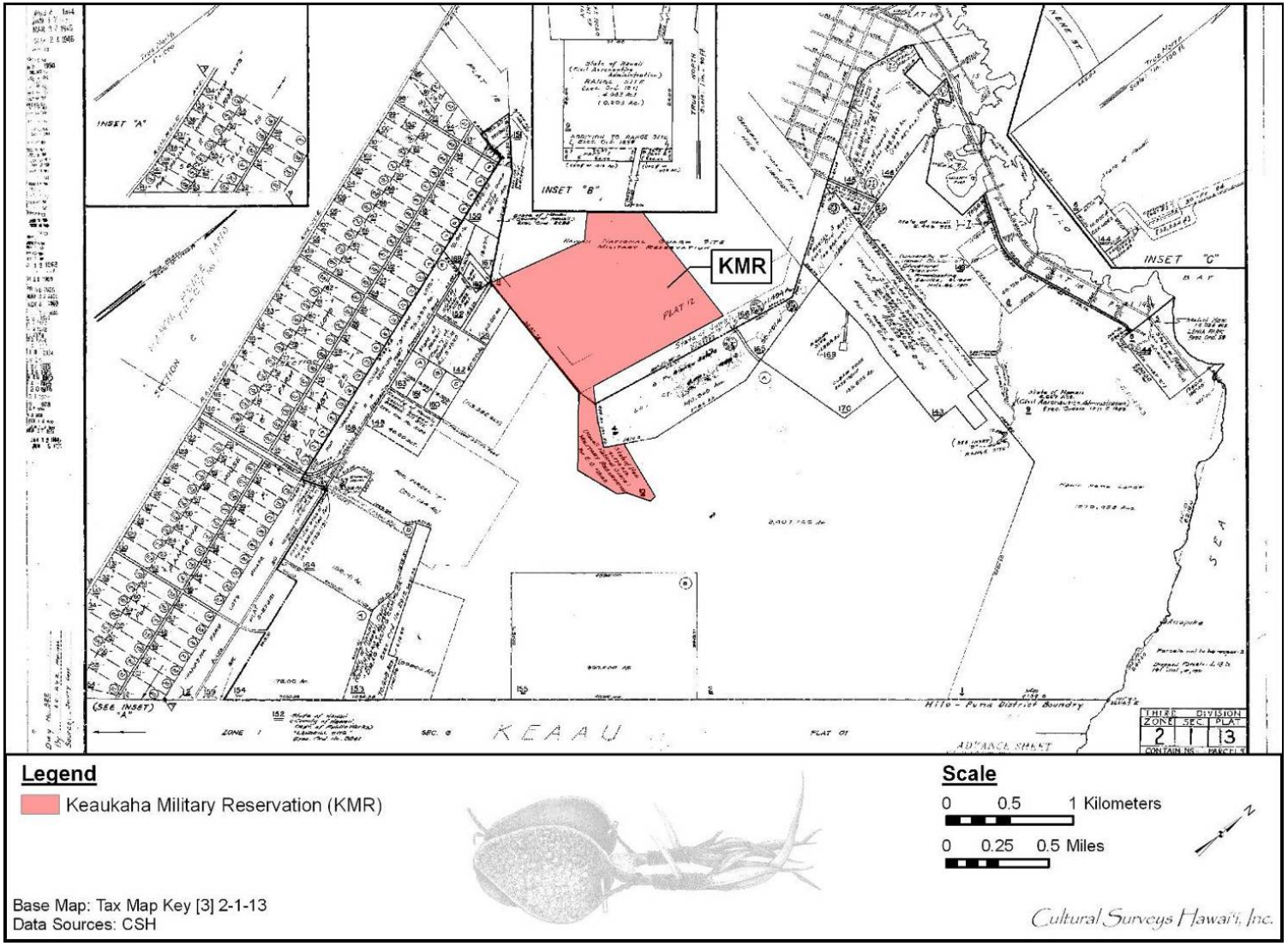

Figure 3. TMK: [3] 2-1-013, showing a portion of the KMR (Hawai‘i Tax Map Key Service 2010)

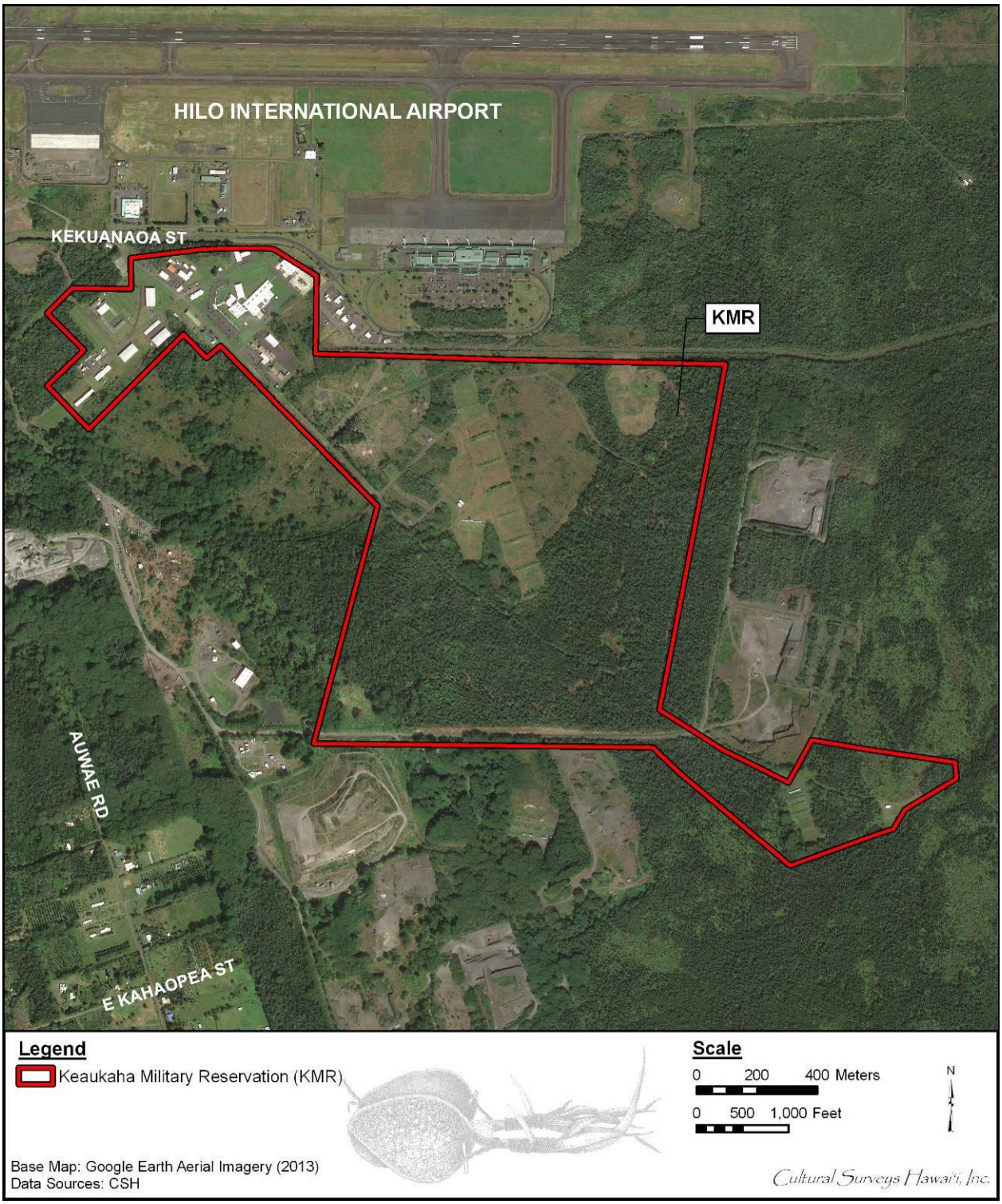

Figure 4. Aerial photograph (Google Earth 2013) showing the location of the KMR

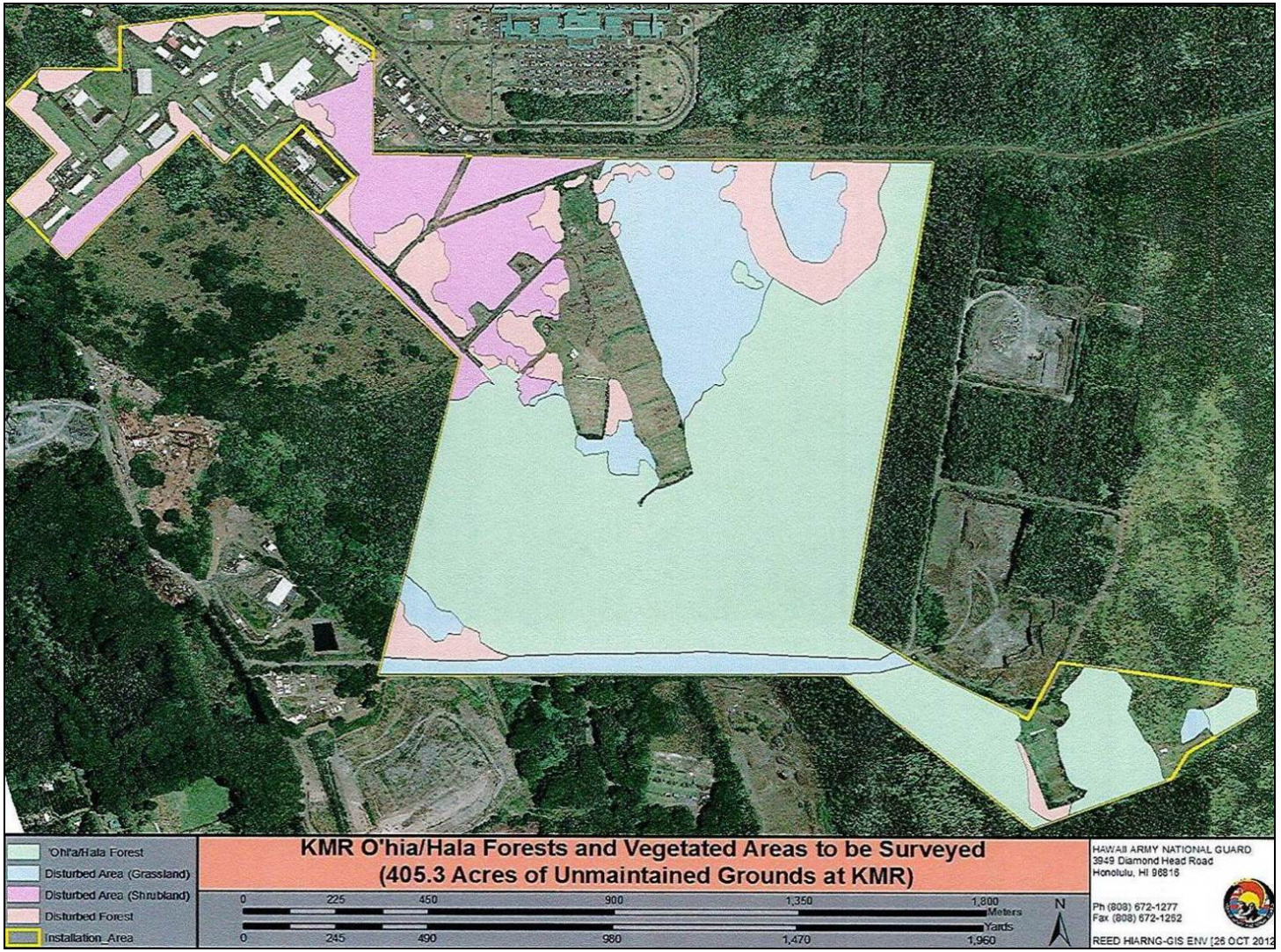

Figure 5. Map of KMR (courtesy of client) showing the unmaintained areas (in colored shading, total 405.3 acres) to be surveyed under the Phase I AIS

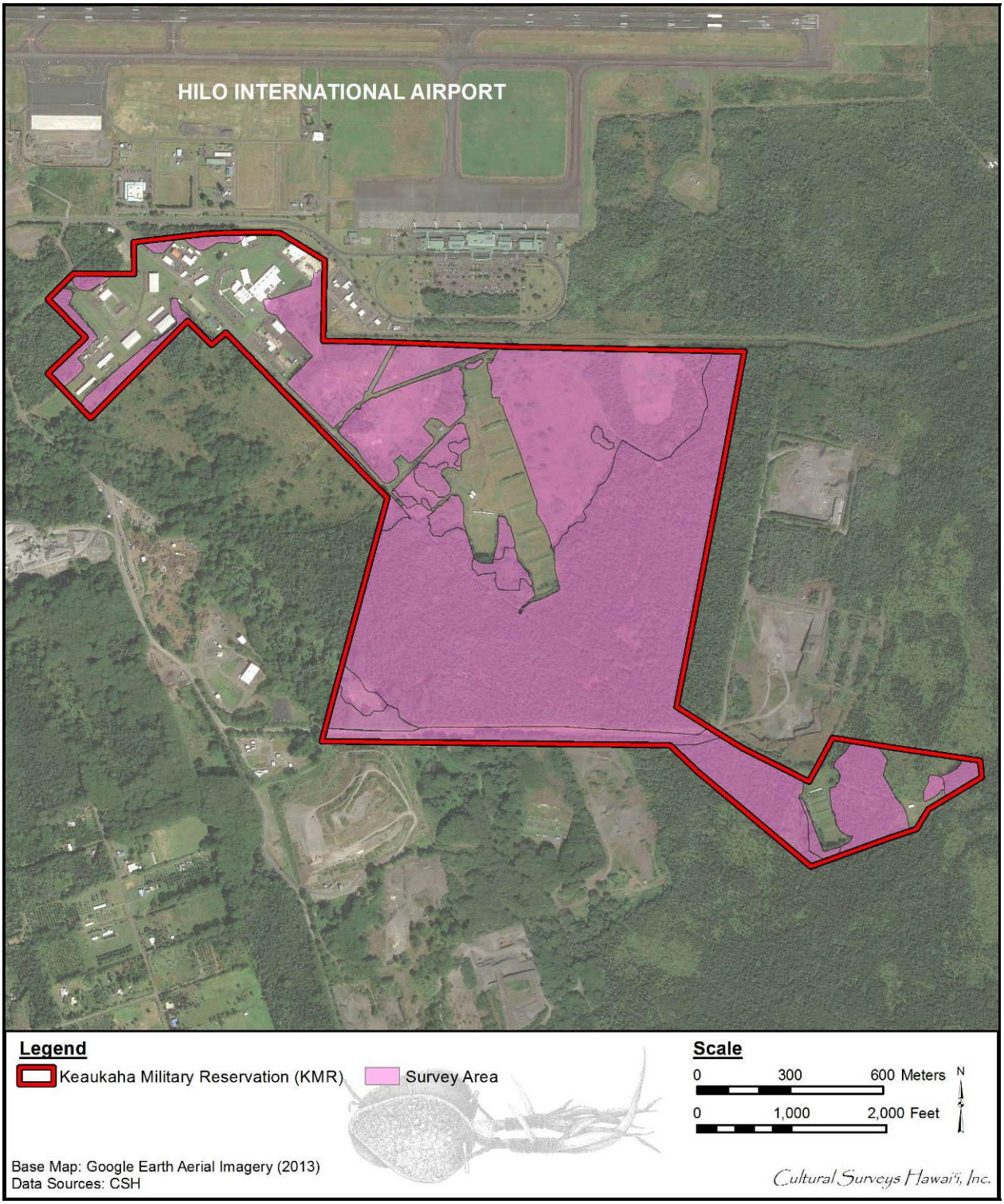

Figure 6. Aerial photograph (Google Earth 2013) showing the extent of the project or survey area (shaded in pink) within the KMR

2. A complete (100%) systematic pedestrian inspection of the project area to identify any potential surface historic properties. Surface historic properties will be recorded with an evaluation of age, function, interrelationships and significance. Documentation will be provided using warranted, limited controlled excavation of select sites and/or features.
3. Based on the project area's environment and the results of background research, subsurface testing with a combination of hand and backhoe excavation may be used to identify and document subsurface historic properties that would not be located by surface pedestrian inspection. Appropriate samples from these excavations will be analyzed for cultural and chronological information. All subsurface historic properties identified will be documented to the extent possible, including geographic extent, content, function/derivation, age, interrelationships and significance.
4. As appropriate, consultation with knowledgeable individuals regarding the project area's history, past use, and the function and age of the historic properties documented within the project area.
5. As appropriate, laboratory work to process and gather relevant environmental and/or archaeological information from collected samples.
6. Preparation of an inventory survey report, which will include the following:
    a) A project description;
    b) A section of a USGS topographic map showing the project area boundaries and the location of all recorded historic properties;
    c) Historical and archaeological background sections summarizing pre-historic and historic land use of the project area and its vicinity;
    d) Descriptions of all historic properties, including selected photographs, scale drawings and discussions of age, function, laboratory results and significance, per the requirements of HAR § 13-276. Each historic property will be assigned a Hawai‘i State Inventory of Historic Properties (SIHP) number;
    e) If appropriate, a section concerning cultural consultations (per the requirements of HAR § 13-276-5[g] and HAR § 13-275/284-8[a][2]);
    f) A summary of historic property categories, integrity and significance based upon the Hawai‘i Register of Historic Places criteria;
    g) A project effect recommendation;
    h) Treatment recommendations to mitigate the project's adverse effect on any historic properties identified in the project area that are recommended eligible for the Hawai‘i Register of Historic Places.

1.3 Environmental Setting

1.3.1 Natural Environment

The study area, located within the district of South Hilo on the windward coast of Hawai‘i Island, on the lower eastern slope of Mauna Loa, comprises 405.3 acres in the *ahupua‘a* of Waiākea. The study area is near Hilo Town in the Hawai‘i National Guard Keaukaha Military Reservation (KMR) and is bound by General Lyman Field/Hilo International Airport on the northwest, a County quarry and borrow pit site on the southeast, the Airport Access Road on the northeast and dense forest on the southwest (see Figure 5).

Elevations within the study area range from roughly 40 ft to 80 ft above mean sea level (amsl). Rainfall in the *ahupua‘a* of Waiākea below to 5,000 ft elevation averages 150–200 inches per year (Kelley et al. 1981).

Lava flows thickly covered by vegetation dominate the terrain. The study area is comprised of three land or soil types classify the lands in the study area (Sato et al. 1973) (Figure 7). The vast majority of the study area comprises Papai extremely stony muck, 3 to 25 percent slopes (rPAE). Small pockets of Keaukaha extremely rock muck, 6 to 20 percent slopes (rKFD) and Lava flows, Pāhoehoe (rLW) are present in the southeastern portion of the study area (see Figure 7). Natural terrain varies from level *pāhoehoe* (smooth, unbroken type of lava) to broken undulating *‘a‘ā* (rough) lava. Within the forested areas mobility and ground surface visibility is typically poor.

Vegetation is dense due to vast amounts of rain on the windward side of Hawai‘i Island and consists mainly of Shoebutton Ardisia (*Ardisia elliptica*), Palm Fern (*Blechnum appendiculatum*), Hapu‘u (*Cibotium* spp.), Uluhe (*Dicranopteris linearis*), Lama (*Diospyros sandwicensis*), *‘ie‘ie* (*Freycinetia arborea*), Bing-a-bing (*Macaranga mappa*), Melastoma spp., Melochia (*Melochia umbellate*), ‘Ōhi‘a (Metrosideros polymorpha), *Kolea* (*Myrsine lessertiana*), *Hala* (*Pandanus tectorius*), Strawberry Guava (*Psidium cattleianum*) and *Kopiko* (*Psychotria hawaiiensis*). Other non-forested sections of KMR consist mainly of various introduced grasses, wild orchids, and maintained lawn areas around buildings.

1.3.2 Built Environment

Between one-third and one-half of the study area has been graded to level lawn, paving or building areas related to military facilities (see Figure 5). Figure 8 indicates the training ranges and other maintained military facilities within KMR, as well as unmaintained areas (including Area A, B, and C) which overlap (in part or whole) undisturbed forest. The undisturbed forest areas at KMR, comprising a mixture of native and introduced species, are shown on Figure 9 (see also Figure 5).

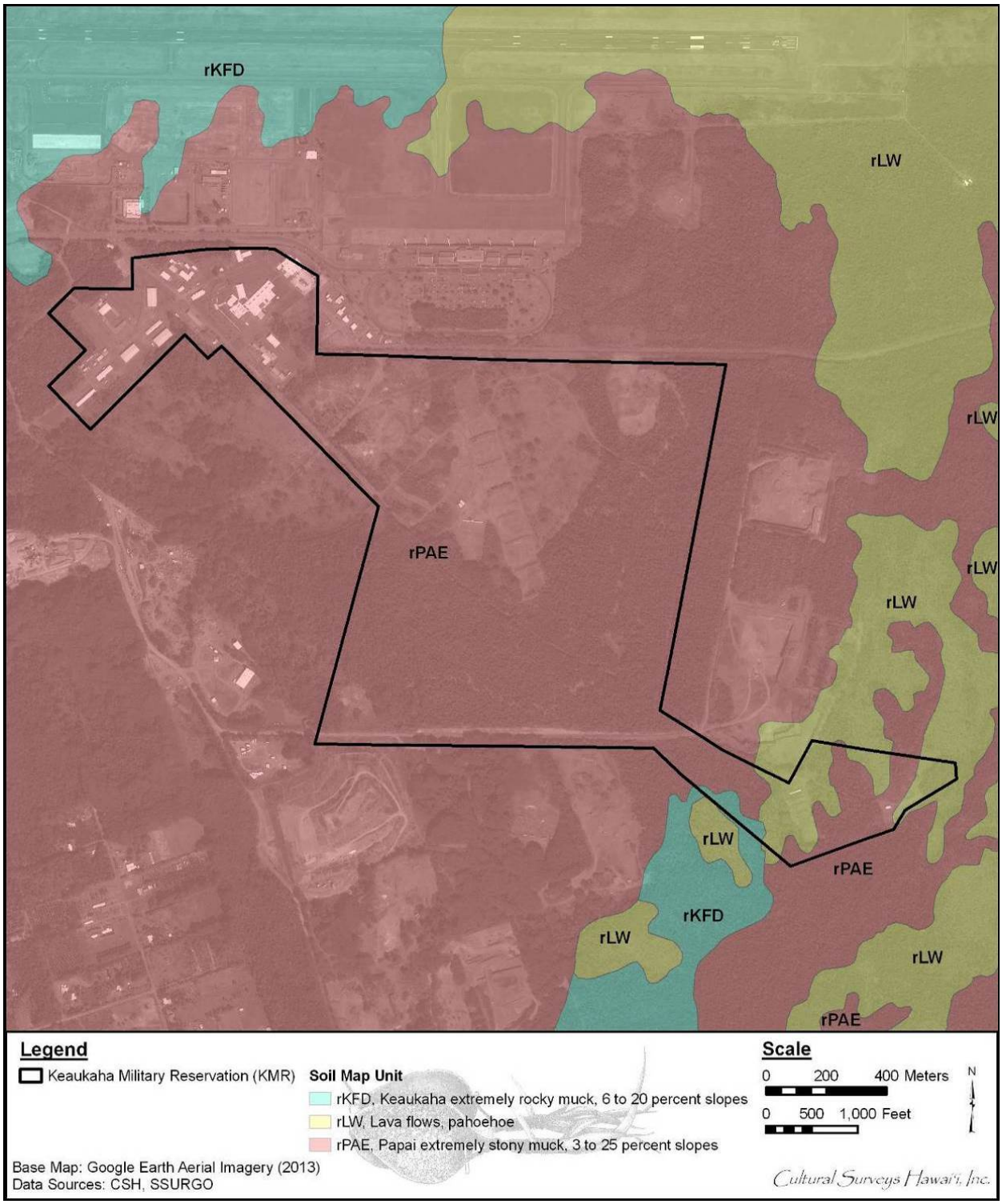

Figure 7. Aerial photograph (Google Earth 2013) overlain with soil survey data (Sato et al. 1973), showing the land and sediment types within the proposed project area

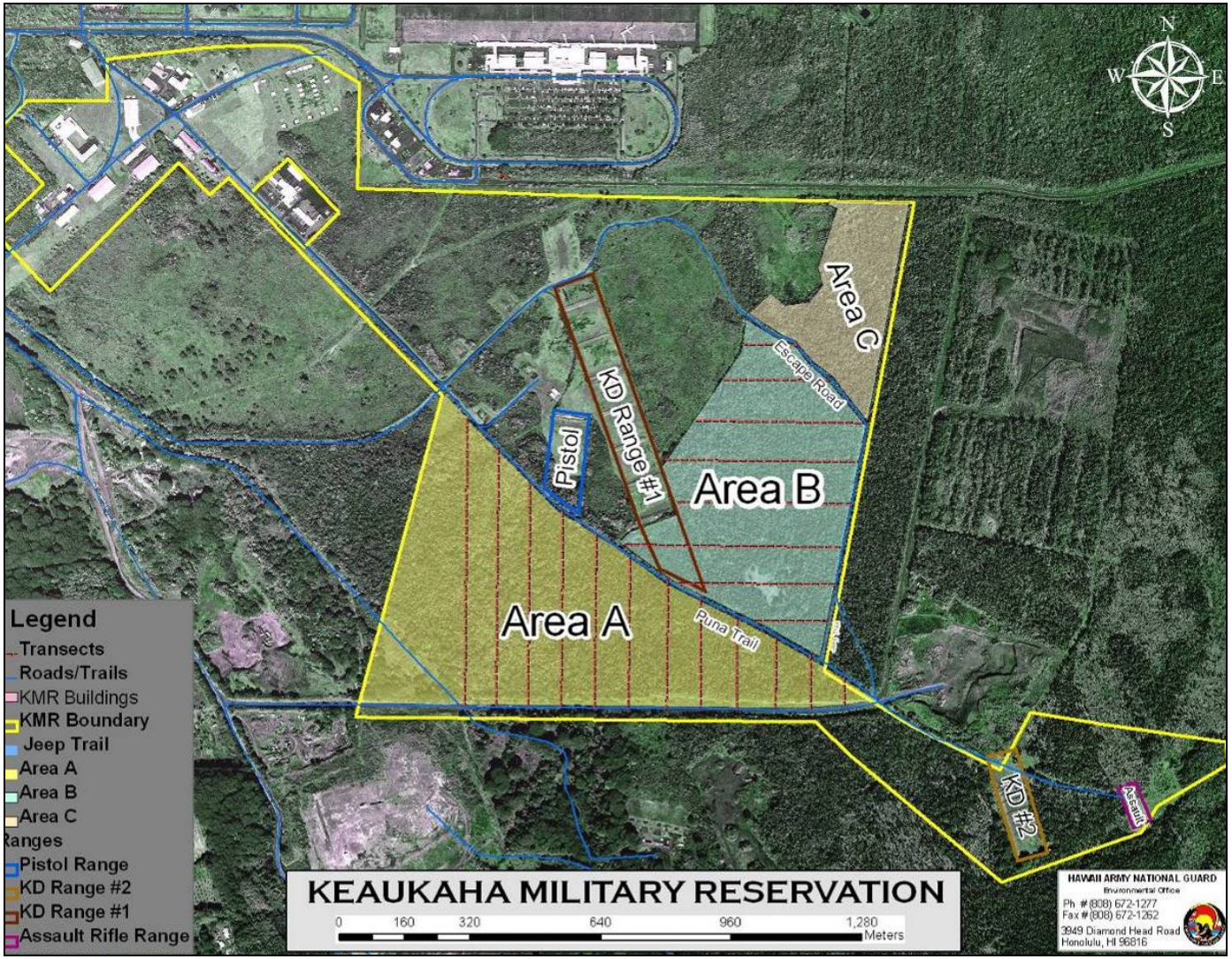

Figure 8. KMR map showing the locations of various buildings, ranges and other named areas within the KMR boundary (courtesy of client)

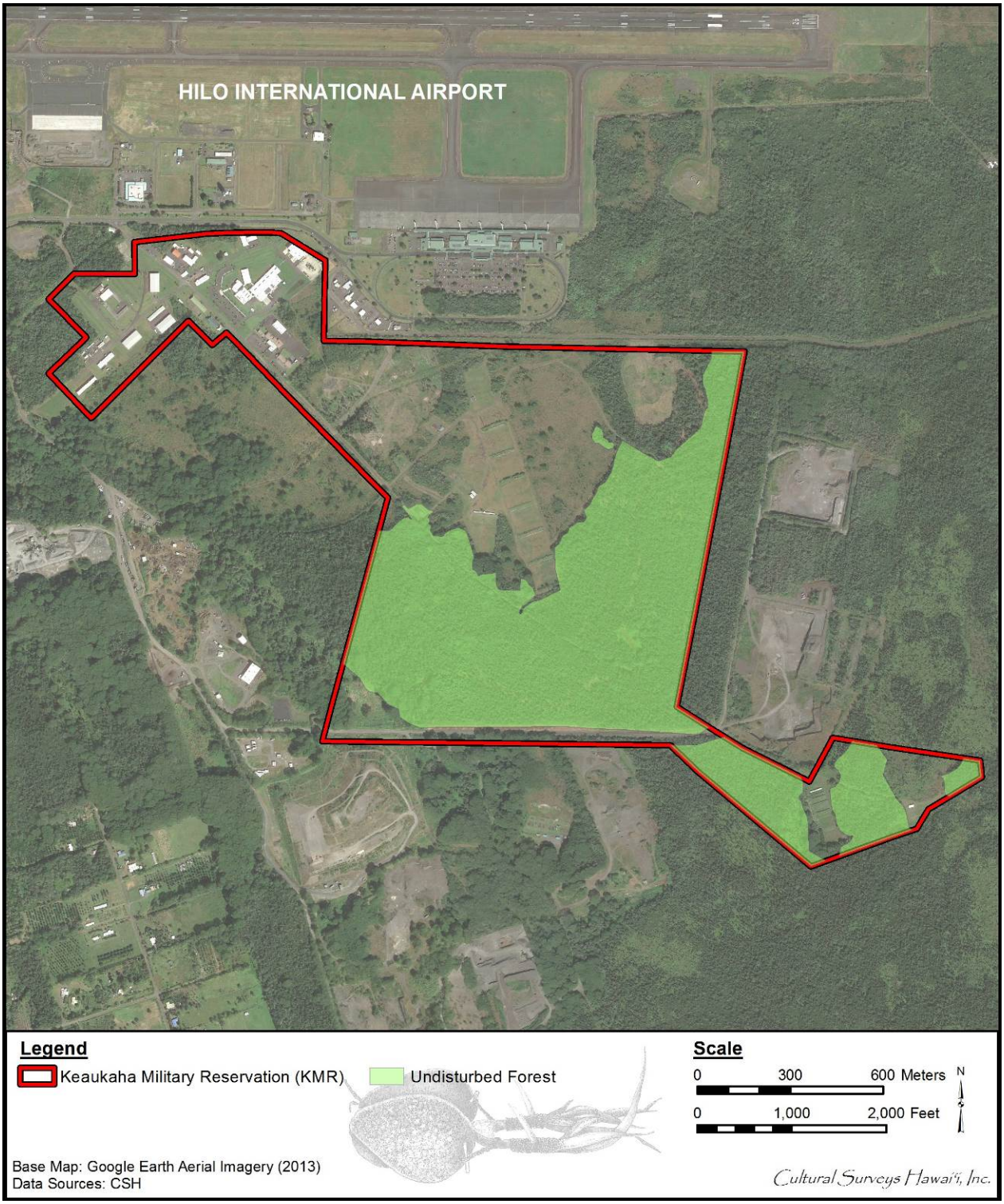

Figure 9. Aerial photograph (Google Earth 2013) showing the extent of the undisturbed forest areas within KMR (shaded in green, as indicated by the client Map of KMR; see Figure 5)

Section 2 Methods

2.1 Field Methods

The fieldwork component of the AIS investigation was carried out under archaeological research permit number 13-06, issued by the State of Hawai‘i Department of Land and Natural Resources/State Historic Preservation Division (SHPD), per HAR § 13-13-282. The fieldwork component of the AIS was conducted from 19 August 2013 through 24 September 2013 by CSH archaeologists Andrew Soltz, B.A., David Doig, B.A., Doug Inglis, B.A., Johnny Dudoit, B.A., Nigel Kingsbury, B.A., and Olivier Bautista, B.A. under the general supervision of Hallett H. Hammatt, Ph.D. (principal investigator). The fieldwork required approximately 76 person-days to complete.

A complete ground survey of the project area was undertaken for the purpose of historic property identification and documentation. While a 100% survey was attempted, ground visibility was very poor throughout much of the project area given extremely dense vegetation. The ground survey of the project area was accomplished through systematic pedestrian sweeps. The interval between the archaeologists was generally between 5 to 10 m. All historic properties were documented through detailed written descriptions, with evaluation of function, interrelationships, and significance; photographs; scale drawings using standard tape-and-compass mapping procedures; and located with a GARMIN GPSMAP60Cx unit (accuracy +/- 2-5 m). The areal designations shown on Figure 8 were used to discuss site location within the project area. The determination of site boundaries was based on factors including apparent age, architectural style, and the spatial and functional interrelationships of both natural and man-made features.

All of the site documentation prepared in the field is included in Appendices B through D of this report. As this investigation consisted of a surface survey only, no subsurface testing (i.e., excavation) was conducted.

2.2 Laboratory Methods

A small number of artifacts were collected from the surface to be analyzed at the CSH Hawai‘i Island Office laboratory. All collected materials were analyzed using current and standard archaeological laboratory techniques. Historic artifacts were identified using standard reference materials and resources.

2.3 Document Review

Background research included a review of previous archaeological studies on file at SHPD; review of documents at Hamilton Library of the University of Hawai‘i at Mānoa, the Hawai‘i State Archives, the Mission Houses Museum Library, the Hawai‘i Public Library, and the Bishop Museum Archives; study of historic photographs at the Hawai‘i State Archives and the Bishop Museum Archives; and study of historic maps at the Survey Office of the Department of Land and Natural Resources. Historic maps and photographs from the CSH library were also consulted. In addition, Māhele (portion, division, section, land division of 1848) records were examined from the Waihona ‘Aina database (Waihona ‘Aina 2000).

2.4 Consultation

Consultation was not conducted as part of the present investigation. The reasoning behind this is two-fold. First, the Phase I survey does not address a specific project being undertaken at this time. As specific developments are proposed by the HIARNG, the DLNR/SHPD and other entities have been and will continue to be consulted. Second, no historic properties have been previously or currently identified within the project area having an important value to the native Hawaiian people or to another ethnic group (i.e., assessed as significant under Criterion E).

Section 3 Background Research

3.1 Traditional Background

Waiākea literally means broad waters (Pukui et al. 1974:219), but is also a type of taro (*kalo*) grown in Kona, Hawai‘i (*lehua ke‘o ke‘o*, a variety of taro called *waiākea*) (Pukui and Elbert 1986:377). Waiākea, with its rich natural resources of forests and the sea, has long been a center of habitation for Hawaiians and is often mentioned in Hawaiian folklore and legends. According to many legends, Waiākea was also associated with Hawaiian royalty (*ali‘i*). The study parcel is located within a portion of Waiākea that lies between the area of Keaukaha at the coast to the north, and the lower reaches of the forests of Pana‘ewa to the south.

3.1.1 The Epic Tale of Hi‘iakaikapoliopele

Waiākea and Pana‘ewa are given significant attention in "The Epic Tale of Hi‘iakaikapoliopele," which tells of the journey of Hi‘iakaikapoliopele (or Hi‘iaka), the youngest sister of Pele, around the island of Hawai‘i. Pana‘ewa was the legendary home of the *mo‘o*, or lizard, vanquished by Hi‘iaka. The tale is given its most comprehensive treatment in M. Puakea Nogelmeier's 2006 translation of the story as recounted by Ho‘oulumāhiehie during the early 1900s in the Hawaiian-language newspaper *Ka Na‘i Aupuni*. In this account, Hi‘iaka set out for Hilo from the vicinity of the historic Olaa sugar mill, near the present town of Kea‘au. Hi‘iaka chose, against the advice of her companion Wahine‘ōmao, to take the "path of death" through the *lehua* (*‘ōhi‘a* [*Metrosideros macropus*] blossom) forests controlled by the *mo‘o* Pana‘ewa (Nogelmeier 2006:51).

Two of Pana‘ewa's guardians, said to be birds, immediately noticed the trespassers and went to report their presence to the *mo‘o*, though only one believed that Hi‘iaka was among them. Pana‘ewa, unsure of whether Hi‘iaka had entered his forest or not, told the guardians:

> She and her people should know that the chiefs of Hilo have no regard for them.
>
> And my *kapu*, my sacred law, is firmly set, that no man or woman may arrogantly tread amid the *lehua* trees of Pana‘ewa without my consent. But as to those stone-eating, land-eating, lehua-grove-eating women, I would never allow them to enter here into Pana‘ewa. [Nogelmeier 2006:52]

At this time, a chant voiced by Hi‘iaka rang out through the forest, requesting passage. Pana‘ewa immediately responded:

> You have no pathway here in Pana‘ewa. You are an arrogant woman, coming down from inland Puna, a marginal land used up by the gods, and you proudly assume this to be your road to travel. Certainly you know that Pana‘ewa is a sacred forest, not to be wantonly traversed by the stone-eaters. There is no road here. As though your eyes didn't see that the road for travel is seaward of Hā‘ena [currently known as Shipman Beach]. [Nogelmeier 2006:52]

Despite Pana‘ewa's threats, Hi‘iaka continued through the forest, noting that she felt sorry for the "inhabitants of this place, for they will all be sacrificed as victims to accompany the death

Pana‘ewa hopes to inflict upon us. The twilight of morning shall be Pana‘ewa’s, and it is the evening twilight that shall be ours” (Nogelmeier 2006:53).

At this time Pana‘ewa sent a flood of blood toward Hi‘iaka, which his guardians created by severing the heads of all of the ghosts of Pana‘ewa. Afloat in the flood, Hi‘iaka called upon Pele for help (Nogelmeier 2006:53). Pele heard, and commanded their brother Lonomakua to stoke the fires of Kīlauea:

> In no time, the red flames leapt up and the clouds glowed crimson, as the uplands of Maunakea, Maunaloa, and Hualālai were blanketed by smoke.
>
> The glow of the sun was blocked and darkness covered the *lehua* forest of Pana‘ewa. Because of the sudden gloom that covered the *lehua* groves, the songs of the birds dropped to a twitter, showing the extent of the inky blackness . . .
>
> Then Hi‘iaka chanted another prayer.
>
> > CHANT TWELVE
> > Great Pana‘ewa, wildwood of *lehua*,
> > *‘Ōhi‘a* that grows jaggedly toward heaven
> > In the rain, scarlet *lehua* in the rain
> > At the twitter of the birds, night has come
> > Hilo is darkened by the smoke of my land
> > Those multitudes will survive, for the fires are ablaze.
> > [Nogelmeier 2006:56]

Pele then instructed Hi‘iaka to call to her brothers Kauilanuimaka‘ehaikalani, Kamohoali‘i, Kahuilaokalani, and Ka‘ekaokalani. In this next chant Hi‘iaka called for rain, and as soon as the prayer reached her brothers “and all of the other denizens of heaven” a torrent of rain beset the forest, sweeping Pana‘ewa away and “out to the darkest depths of the ocean, where the *mo‘o* was swallowed whole into the belly of a big-mouthed fish. With this flood of water, the blood Pana‘ewa had brought about . . . was washed away . . .” (Nogelmeier 2006:57). Hi‘iaka then continued onward toward Waiākea:

> When Hi‘iaka and her companions escaped the doom which Pana‘ewa . . . had prepared for them, as shown above, they continued on their travels . . .
>
> ‘. . . [Hi‘iaka speaking] We have faced the red waters and the white waters here in Pana‘ewa. We have donned the red *lehua* and the white *lehua* of this place, and shall now leave and go to the shore of Waiākea. We will encounter many baneful ones in these places prior to reaching Waiākea. There is Pā‘ie‘ie, a supernatural woman, and Pua‘aloa, a supernatural male; Ka‘ililahilahi, a woman, and Pu‘umoho, a male; Nā‘ū is a woman, as is Haili, while Kū‘ēho‘opiokalā is a male; Ma‘ū is the wife of Makali‘i; Kapakapakaua is a male, and Honokawailani is also male. However, if I pray diligently and they heed me, then our descent through these places toward the sea should be safe, but if they pay no mind to my plea for compassion, then they shall be made victims of this magical skirt of mine.’
>
> . . . The supernaturals gathered together on the plains of Pā‘ie‘ie [according to Pukui et al. (1974:175), a ‘[l]and near Pana-‘ewa, Hilo’] and arranged themselves

> in readiness to attack Hi‘iaka when she stepped onto the field. All of these supernatural beings who had assembled were *mo‘o.* [Nogelmeier 2006:58-59]

The *mo‘o* showered Hi‘iaka’s party with arrow-like *lehua* stamens and caused trees to topple in their direction, but Hi‘iaka used her divine powers to evade the attacks and, ultimately, defeated the *mo‘o* by striking at them with her skirt. Only Haili was spared, as she had refused to join in the attack. For this, Hi‘iaka embraced her and declared to her that

> ‘. . . you shall become a foundation upon which will be built a temple for the gods our ancestors . . . because you have a kind heart, and you are a refuge for those in distress. Your name shall come to be known by distant future generations as Haili, temple of the great *kupua* (demigod or culture hero).’ [Nogelmeier 2006:60-61]

Interestingly, in 1824 the Haili Congregational Church of Hilo was founded in neighboring Ponahawai *ahupua‘a*; according to Pukui et al. (1974:35), the church was named after the “[f]orest area near Hilo” from which its timbers came.

The party leaves Pā‘ie‘ie, continuing towards Hilo. “When they got to Pū‘āinakō [not far from the current study parcel to the south], a man was coming uphill with a bundle of mullet” (Nogelmeier 2006:62). Hi‘iaka asked for some of the fish, and the man, who had an abundance, gave her five ((Nogelmeier 2006:62). By this time night had fallen, and Hi‘iaka and her companions stopped to rest at the home of Haili’s relatives, where they ate of the “heaps of cooked taro greens” (*lū‘au*); Wahine‘ōma‘o also ate “the thick *poi* [Hawaiian staff of life made from cooked taro corms, pounded and thinned with water] of that place, consuming plenty” (Nogelmeier 2006:63). After their meal, Hi‘iaka healed a member of the household suffering from consumption by placing her magic skirt upon his chest (Nogelmeier 2006:65).

The next morning, the party continued toward the Hilo Bay area and was invited to dine at the home of another family. The girl of the home, Papanuioleka, offered them *poi*, and indicated her father was fishing at Kalauokukui Point, which is across from Coconut Island (Mokuola) at Hilo Bay. The father, ‘Ohele, returned having caught only a single bait fish, blaming the rough seas (Nogelmeier 2006:67). Hi‘iaka, who had not yet revealed her name to the family, told the fisherman to return to the bay and try again. ‘Ohele suspected this woman might indeed be “from the crater,” and therefore wanted to please her, so he went back out to fish some more, and this time immediately caught an *uhu* (parrotfish) (Nogelmeier 2006:68). Right away Papanuioleka took this fish back to Hi‘iaka as an offering, and shortly after, ‘Ohele returned laden with a bounty of *uhu*. He offered this catch to her, and though she refused it, she told him that “[i]n the future, there will be an abundance of fish for you in the sea” (Nogelmeier 2006:69). Papanuioleka joined Hi‘iaka’s party and they left, continuing on to the Wailoa River.

The account of Hi‘iaka moving through Pana‘ewa to the vicinity of Hilo Bay tells us some important things about these areas. Pana‘ewa was a sacred *‘ōhi‘a* forest known for its *lehua* blossoms and home to many birds and ghostly spirits. Moving closer to the Hilo Bay area, and in closer proximity to the study area, references to the abundance of fish underscore this significant resource of the area. Descriptions of large amounts of other foods, including taro greens and *poi*, indicate cultivated crops were also grown with great success throughout this area.

3.1.2 Other Myths and Legends

The “Legend of Halemano,” as given by Fornander (1916-1919:V:2:250-251), tells of love between Halemano and his wife Kamalalawalu and their home in Waiākea, in an area called ‘Uluomālama, apparently above the cliffs of Pana‘ewa, Hilo. Halemano looked at his wife, and when he saw the tears in her eyes, his love for her again welled up within him as he remembered how they had lived at ‘Uluomālama in Waiākea, Hilo. He chanted as follows:

> We once lived in Hilo, in our own home,
> Our home that was in Panaewa . . .
> The streams of Hilo are innumerable,
> The high cliff was the home where we lived . . .
> From the waters of Wailuku where the people are carried under,
> Which we had to go through to get to the many cliffs of Hilo,
> Those solemn cliffs that are bare of people . . .
>
> *Noho i Hilo i o maua hale-e,*
> *He hale noho i Panaewa e; . . .*
> *He kini, he lehu, kahawai o Hilo e,*
> *Pali kui ka hale a ke aloha i alo ai. . . .*
> *Mai ka wai lumalumai kanaka o Wailuku,*
> *A kaua i alo aku ai i na pali kinikini o Hilo,*
> *O ia mau pali anoano kanaka ole, . . .*

There are abundant references to Waiākea in general in the myths and legends of Hawai‘i recorded by the early ethnographers Thrum, Emerson, Westervelt, and Fornander. One early account of the Hawaiian chiefdom Waiākea is told by Samuel Kamakau (1961:15-17) in a story of the unification of the Island of Hawai‘i under chief ‘Umi-a-Līloa, beginning with the chiefly residences of Waiākea in the sixteenth century. The legend establishes Waiākea as a relatively early residence of Hawaiian *ali‘i* (chief, chiefess). Hilo’s Kānoa Heiau, where human sacrifices were offered, was also mentioned in the story, indicating its early existence (Kelly et al. 1981:1).

Table 1 is a comprehensive list of Hawaiian tales that include Waiākea as a place setting. These legends were primarily found in the *Hawaiian Legends Index* (revised edition) compiled by Lillian Ching and edited by Dr. Masae Gotanda, Director of Hawai‘i State Library (1989). Many of these stories merely mention Waiākea in passing, including Fornander’s “Legend of Pamano” (1916-1919:304-305) and “Brief Stories of Ghosts and Cunning” (1916-919:422-423).

Another brief mention of Waiākea is found in Pukui and Green’s “The Story of Pele and Hi‘iaka” in *Folktales of Hawai‘i*. Hi‘iaka, Pele’s sister, “slept at Waiākea, Hilo, and in the morning kept on as far as Kukui-lau-mania, where she turned to gaze back over the country, then continued her journey toward the cliffs of Hilo” (Pukui and Green 1995:25). Waiākea was often visited by Hawaiian chiefs of high rank. In Westervelt’s “Keaomelemele, The Maid of the Golden Cloud,” chief Kahanai-a-ke-Akua (adopted son of the gods), and his friend Waiola (water of life), “went down to Waiākea, a village by Hilo . . . The men were invited to sport, but only Waiola went because Kahanai himself was of too high rank” (Westervelt 1915:133).

Table 1. Legends of Waiākea, Hawai‘i (Ching 1989)

Author	Original Publication and Year	Legend Title
Emerson, Nathaniel	*Pele and Hi‘iaka* (1915)	Pele and Hi‘iaka
Fornander, Abraham	*Fornander Collection of Hawaiian Antiquities and Folk lore*, Vol. I (1916-1919)	The Story of Umi
Fornander, Abraham	*Fornander Collection of Hawaiian Antiquities and Folk lore*, Vol. II (1916-1919)	Legend of Kuapakaa
Fornander, Abraham	*Fornander Collection of Hawaiian Antiquities and Folk lore*, Vol. II (1916-1919)	Legend of Halemano
Fornander, Abraham	*Fornander Collection of Hawaiian Antiquities and Folk lore*, Vol. I (1916-1919)	Legend of Kapuaokaoheloai
Fornander, Abraham	*Fornander Collection of Hawaiian Antiquities and Folk lore*, Vol. I (1916-1919)	Legend of Kaipalaoa, the Hoopapa Youngster
Fornander, Abraham	*Fornander Collection of Hawaiian Antiquities and Folk lore*, Vol. II (1916-1919)	Famous Men of Early Days
Fornander, Abraham	*Fornander Collection of Hawaiian Antiquities and Folk lore*, Vol. II (1916-1919)	Legend of Pamano
Fornander, Abraham	*Fornander Collection of Hawaiian Antiquities and Folk lore*, Vol. II (1916-1919)	Brief Stories of Ghosts and Cunning
Gowen	*Hawaiian Idylls of Love and Death* (1908)	Keala
Hale‘ole, S. N.	*The Hawaiian Romance of Laieikawai* (1919)	Kaipalaoa
Ho‘oulumāhiehie, translated by Nogelmeier, P.	*The Epic Tale of Hi‘iakapoliopele* (2006)	The Epic Tale of Hi‘iakapoliopele
Pukui and Green	*Folk tales of Hawai‘i* (1995)	The Story of Pele and Hi‘iaka
Thrum, Thomas G.	*More Hawaiian Folk Tales* (1923)	Umi’s Necklace War Tradition
Thrum, Thomas G.	*More Hawaiian Folk Tales* (1923)	Kai a Kahinali‘i
Thrum, Thomas G.	*More Hawaiian Folk Tales* (1923)	Ulu’s Sacrifice
Thrum, Thomas G.	*More Hawaiian Folk Tales* (1923)	The Hina’s of Hawaiian Folk-lore

Author	Original Publication and Year	Legend Title
Thrum, Thomas G.	*Hawaiian Folk Tales* (1998*)*	Stories of the Menehune's: As Heiau Builders
Westervelt, William	*Legends of Gods and Ghosts* (1915)	Keaomelemele, The Maid of the Golden Cloud
Westervelt, William	*Legends of Gods and Ghosts* (1915)	Keaunini

In the legend "Keala" (Gowen 1908:43-50), "well-known landmarks" of Waiākea are viewed by Ahi, a Hawaiian priest, in his spirit form:

> The green water below was the bay of Hilo, the mountain was the terrible Kilauea, where in Halemaumau, the house of everlasting fire, the goddess Pele was wont to ride the red surges with her sisters and tilt with lances of flaming lava. The road was the mountain-path from Waiakea to Kapapala . . . [Gowen 1908:47]

John Papa ‘Ī‘ī makes two general references to Waiākea, Hilo. According to ‘Ī‘ī, at the time of Kamehameha I (ca. 1800):

> The lands of the chief of Kau were divided within their own district, each being given a portion and each asking for what he wanted. For this reason, a skilled war leader whose name I have forgotten said to Keoua Kuahuula, son of Kalaniopuu and half brother of Kiwalao, perhaps you should go to the chief and ask that these lands be given us. Let Waiākea and Keaau be the container from whence our food is to come and Olaa the lid. [‘Ī‘ī 1959:13–14]

‘Ī‘ī’s second reference notes the well-known surf of "Kanukuokamanu in Waiākea, Hilo" (‘Ī‘ī 1959:134). Kanukuokamanu, on the western side of Wailoa River, was also mentioned in the sixteenth century story by Kamakau (1961:15-17) as a beach where chiefs and people gathered "at night . . . to amuse themselves with *hula* dancing, chanting, and the playing of games calling for forfeits of entertainment or sexual favors" (Kelly et al. 1981:1). This summary was likely drawn from two legends: "Story of Umi" and "Umi's Necklace War Tradition."

The "Story of Umi" describes the chiefly residences at Hilo and the king of Hilo, Kulukulua. The legend tells of the chiefs of Hilo gathering at a place called Kanukuokamanu, in Waiākea:

> One night there was a grand entertainment for all the chiefs of Hilo at Kanukuokamanu, in Waiākea; there was dancing and games of *papahene*, *kilu* and *lōkū*. (*A he po le‘ale‘a nui no na ‘lii o Hilo a pau ma Kanukuokamanu ma Waiākea, he hula, he papahene, a he kilu, a me a ka lōkū*). [Fornander 1916-1919:220-221]

A similar story, "Umi's Necklace War Tradition," also mentions the festive night at Kanukuokamanu, Waiākea, and ‘Umi's marriage to ‘Ī‘iwalani, the daughter of the king of Hilo (Thrum 1923).

The "Legend of Kapuaokaokeloai" makes a passing reference to Waiākea as a place where the people of "high chief rank of Hilo" lived (*O Waiākea, i Hilo ka ‘āina, o ka mua ke*

kaikunāne, o ka muli ke kaikuahine, he mau ali‘i lākou no Hilo) (Fornander 1916-1919:540-541). Again, this passage reiterates the importance of Hilo as a chiefly residence. This story is also told in “The Hina’s of Hawaiian Folklore” (Thrum 1923).

Another reference to the associated royalty of Waiākea can be found in the “Legend of Kaipalaoa, the Hoopapa Youngster” (Fornander 1916-1919:574-575). According to the legend, “Kaipalaoa” (a relative of Kukuipahu, the king of Kona) “was born in Waiākea, Hilo.”

Many legends tell of the abundant fish and shrimp of Waiākea. The fishpond of Waiākea was so valued that Kamehameha I sent runners from Kawaihae and Kailua to fetch live mullet from Waiākea. Fornander’s (1916-1919:490-491) work describes Kamehameha I sending his fastest runners, Makoa and Kāneaka‘ehu, to “Hilo to get mullet from the pond of Waiākea, on the boundary adjoining Puna” (*o ka nanawa ia o Makoa e holo ai i Hilo i ka ‘anae o ka loko o Waiākea, aia ma ka palena e pili la me Puna*).

The rich and varied resources Waiākea offered made it one of the most important locales on Hawai‘i Island. Traditional accounts concerning Waiākea include references to it being the seat of chiefly residences as early as ca. AD 1550 (Kelly et al. 1981). Chiefly associations with Waiākea continued through traditional times and into the historic era.

3.2 Historical Background

The *ahupua‘a* of Waiākea, South Hilo, is large, encompassing some 95,000 acres. It extends from the coast to approximately the 6,000-ft elevation on the windward slope of Mauna Loa. In 1979 Holly McEldowney prepared an archaeological and historical literature search and research design, as part of a lava flow control study (McEldowney 1979). In her report, McEldowney describes five zones of land use and associated resources. The five zones (Figure 10) include I. Coastal Settlement; II. Upland Agricultural; III. Lower Forest; IV. Rain forest; and V. Sub-Alpine or Montaine (McEldowney 1979:14). McEldowney generally bases the extent of these zones on elevation and distance from the coast. Following this model, the lands of the study parcel, situated at approximately 40 to 80 ft amsl, would lie along the *makai* (seaward) margin of Zone II, which was characterized by open grassland used for planting (see Figure 10). An 1851 Government Survey map (Figure 11) shows the study parcel overlapping both the “Hala Woods” and the “Panaewa Woods.” Presumably, these forests were being used to some extent agriculturally. Figure 11 also depicts the “Road to Puna” in the southern portion of the present KMR.

McEldowney (1979:19-20) discusses the characteristics of Zone II and the anomaly of the Hilo forests as observed during the early historic period:

> The constituents of gardens and tree crops in the village [Zone I] basically continued in the upland [Zone II] except that dry-land taro was planted more extensively and bananas were more numerous. Wet or irrigated taro occurred along small streams, tributaries, and rivers that cut into the ash-capped substrates . . .
>
> This same pattern occurred between Waiakea Pond and the Pana‘ewa Forest in the four or five miles of open country dominated by tall grasses. Here stands of *kukui* (*Aleurites moluccana*), pandanus, and mountain apple became more

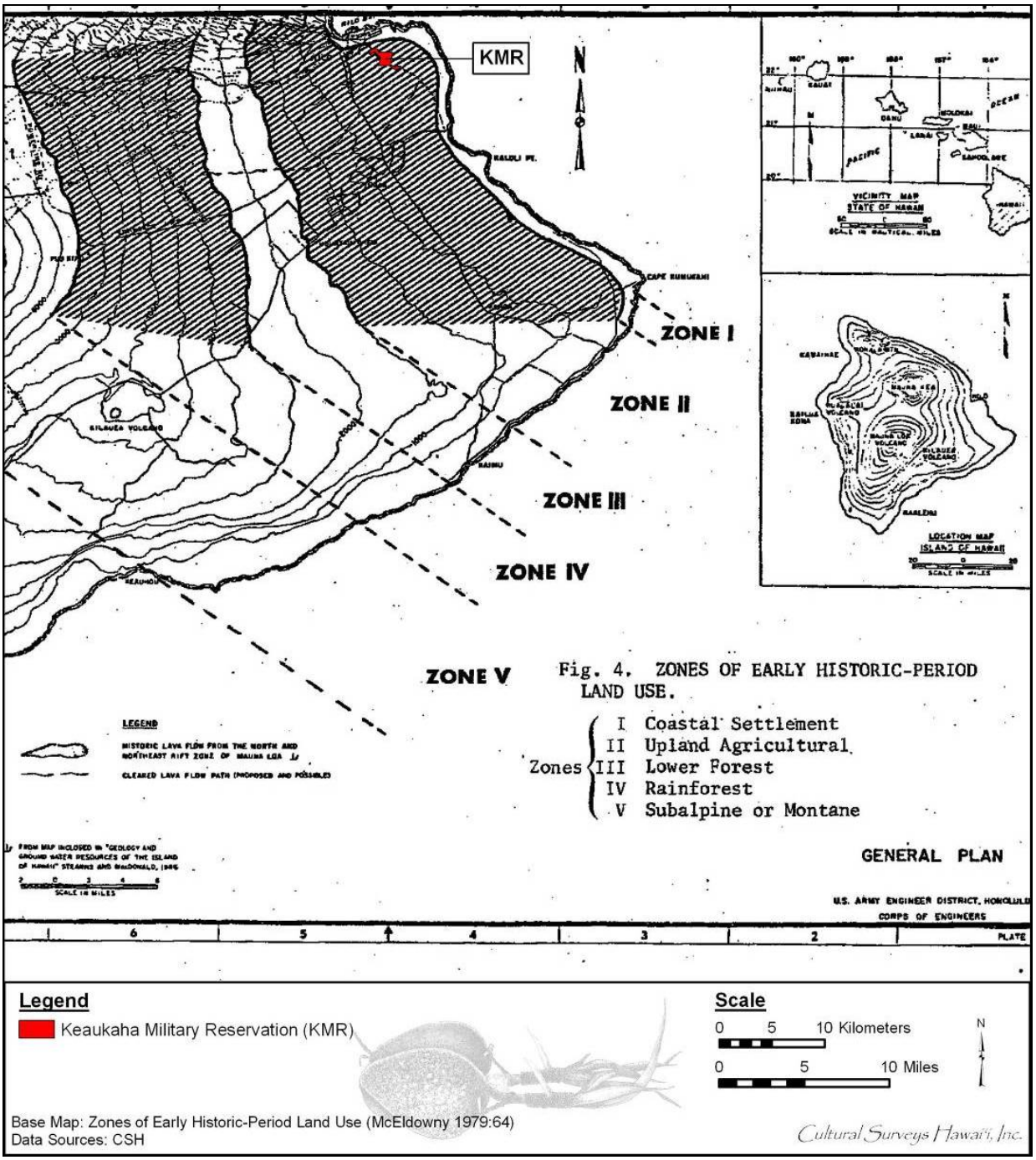

Figure 10. Settlement zone map reprinted from McEldowney (1979:64), showing the location of the KMR (in red) within Zone II

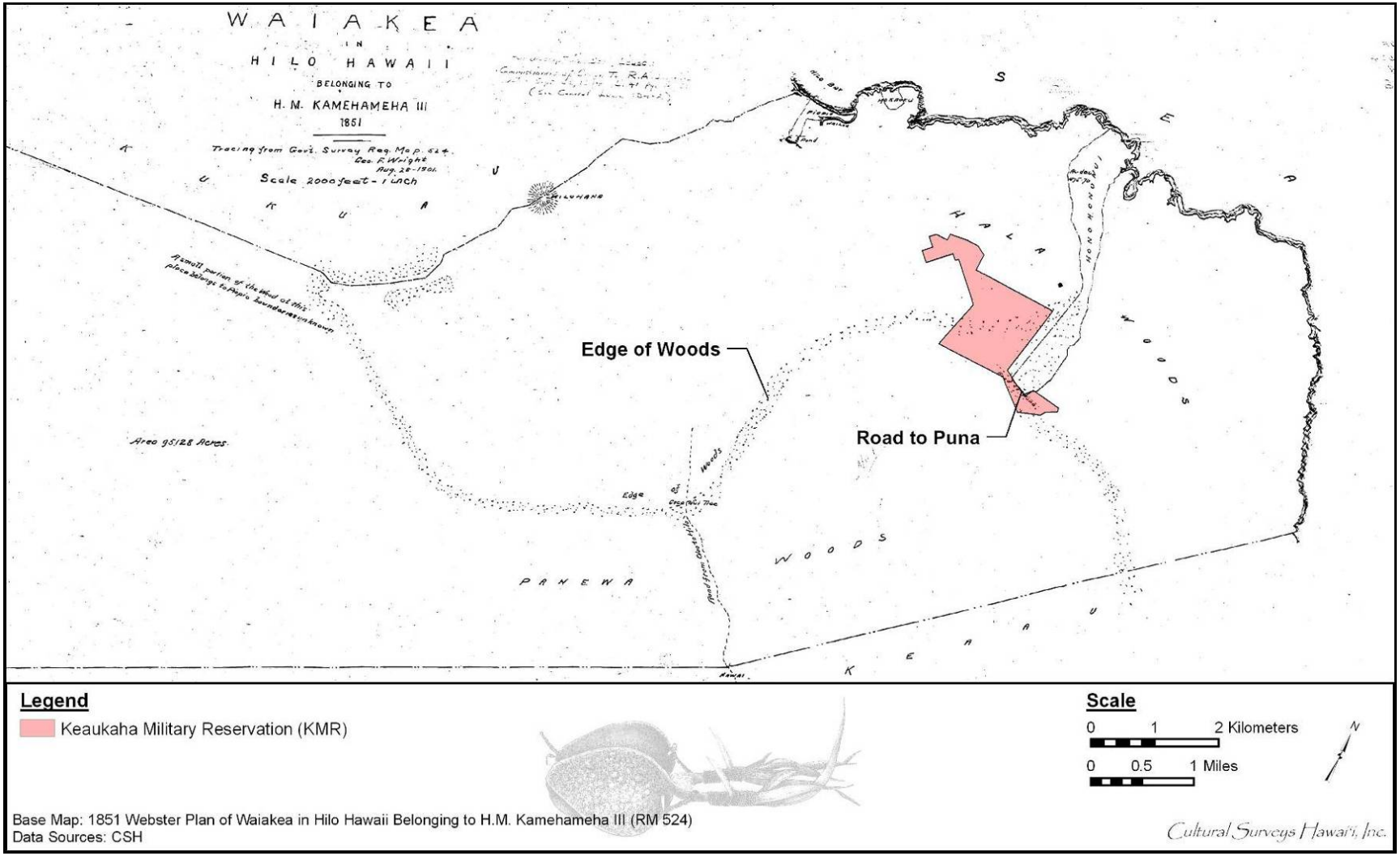

Figure 11. 1851 map of Waiākea by Webster (RM 524) showing the location of the KMR (in red) in relation to the “Hala Woods” and the “Pana‘ewa Woods”; note also the depiction of the “Road to Puna”

> conspicuous, with large areas of dryland taro planted in rocky crevices on the younger Mauna Loa flows. The 4-mile-wide forest, corresponding to the present Pana‘ewa Forest Reserve, grows on a single flow roughly 2,700 years old (Jack Lockwood, pers. comm.) and in the early l800s was one of the few forests to nearly reach the ocean. The trail leading from Hilo to the Volcano through this dense stand of *‘ōhi‘a* trees, and *‘ie‘ie* (*Freycinetia aborea*) again comes upon an unwooded landscape near what is now Kea‘au. [McEldowney 1979:19-20]

In her study, McEldowney provides some discussion about underlying factors that could have resulted in the presence of the open grasslands of Zone II. She states that, “due to the tendency of [tropical or sub-tropical] soils to be rapidly leached of nutrients,”

> . . . shifting agriculture (i.e., swidden or slash-and-burn) is practiced by most Polynesian and Pacific peoples. In forested areas, this cyclical process involves the opening of the forest canopy, burning of the resulting debris and leaf litter, planting one or more crops either simultaneously or sequentially, and harvesting. When nutrient levels drop below those needed to support further crops, the plot is left fallow, and the entire process is repeated in another plot chosen in either secondary or primary forest.
>
> The process by which forests can be reduced to open grass or shrub lands through either long-term swiddening, or by the repeated effects of intentional and/or accidental fires, has been discussed for New Zealand (Cumberland 1963), New Guinea (Robbins 1963), Indonesia (Geertz 1969), and Hawai‘i (Yen 1974:316; Handy 1972:17; Newman 1971:108-111). Changes most frequently occur when, through the shortening of the fallow periods or repeated burning, the forest fails to regenerate, the important organic layer does not accumulate, and soil properties are altered by exposure to sun and wind. The reduced rate of regeneration in semi-tropical environments (e.g., Hawai‘i), when compared to truly tropical environments, can accelerate this degradation. [McEldowney 1979:21]

Several factors are then discussed in support of McEldowney’s interpretation that, absent human interference, “. . . forest was capable of developing on, and did originally cover, most of these [grassland] slopes down to the coast”; she cites the lowland presence of the Pana‘ewa forest as an example (McEldowney 1979:24). The resources of this forest, characteristic of Zone III, would have been readily available to the population of the lower zones in Waiākea.

Since the majority of fishponds in Waiākea were concentrated northwest of the KMR, primarily at and around Hilo Bay, settlement was also concentrated northwest of the KMR. The project area may have been marginally occupied in the prehistoric period but likely did not support substantial habitation or intensive agricultural activity. However, Handy and Handy cite a 1922 article in the Hawaiian language newspaper, *Ka Nūpepa Kū‘oko‘a*, that refers to numerous residences found within the “woods of Pana‘ewa” and to planting sweet potatoes and sugar cane on *pāhoehoe* lava fields in Waiākea:

> There are *pāhoehoe* lava beds walled in by the ancestors, in which sweet potatoes and sugar cane were planted and they are still growing today. Not only one or two but several times forty (*mau ka‘au*) of them. The house sites are still there, not

> one or two but several times four hundred in the woods of Pana‘ewa. Our indigenous bananas are growing wild, these were planted by the hands of our ancestors. [Handy and Handy 1972:131-132]

Handy and Handy (1972) recorded the agricultural methods used to grow taro, sweet potatoes, and sugar cane in Waiākea in the 1930s. They describe the natural habitat and agricultural development of Waiākea and South Hilo, and again make reference to the Pana‘ewa forest:

> In lava-strewn South Hilo there were no streams whose valleys or banks were capable of being developed in terraces, but [taro] cuttings were stuck into the ground on the shores and islets for many miles along the course of the Wailuku River far up into the forest zone. In the marshes surrounding Waiākea Bay, east of Hilo, taro was planted in a unique way known as *kanu kipi* (mounded taro patches) . . . On the lava-strewn plain of Waiākea and the slopes between Waiākea and the Wailuku River, dry taro was formerly planted wherever there was enough soil. There were forest plantations in Pana‘ewa and in the lower fern-forest zone above Hilo town and along the course of the Wailuku River. [Handy and Handy 1972:538-539]

The accounts above underscore the somewhat unique nature of lowland Waiākea and Pana‘ewa in terms of their traditional land use. Despite the presence of forests here, the relatively low elevation and proximity to Hilo Bay and the coastline meant this area was also desirable for planting and related settlement.

3.2.1 Early 1800s

Land use during the early historic period was still essentially subsistence-based, although aspects of major changes were occurring. Settlement continued to be primarily focused on the coastal zone, as was most of the agricultural production of both indigenous food crops and newly introduced plants. Significant alterations to these lifeways began occurring in the 1800s. The sandalwood (*‘iliahi*, *Santalum* spp.) trade, establishment of the American Board of Commissioners for Foreign Missions (ABCFM) station in Hilo and the arrival of whalers began the shift from subsistence to a market-based economy.

During this early historic period the forest and sub-alpine zone land use changed as well. Besides the more traditional procurement of timber products and bird feathers for taxes (McEldowney 1979:35), cattle, goats, and sheep were hunted in the upper zones. These animals, first introduced in the 1790s, had spread over large portions of the interior of Hawai‘i Island, especially in the Waimea area due to an imposed 10 year prohibition on killing them. However, “by the 1830s substantial amounts of hides, jerked meat and tallow were exported from Hilo” (McEldowney 1979:36).

3.2.2 1820s

In 1823, Reverend William Ellis conducted a two-month journey around the entire island of Hawai‘i, following a route primarily along the coast. During his journey Ellis made observations of indigenous Hawaiian agriculture and population densities. The following is his account of the coastal inhabitants of the North Hilo and Hāmākua districts:

> . . . the inhabitants, excepting at Waiakea, did not appear better supplied with the necessaries of life than those of Kona, or the more barren parts of Hawaii. They had better houses, plenty of vegetables, some dogs, and few hogs, but hardly any fish, a principle article of food with the natives in general. [Ellis 1963:252]

T. Stell Newman (2000) conducted an ethnohistorical study utilizing the observations of Ellis in conjunction with modern environmental data in an attempt to define indigenous Hawaiian land use patterns ca. 1823. Through an analysis of Ellis's journal writings Newman was able to reconstruct Ellis's route around the island. Ellis's route was then plotted onto a map and all references by Ellis about indigenous Hawaiian agriculture, population density, soil type, water resources, and botany were matched to the route allowing Newman (2000) to establish four agricultural zones: Irrigation, Dryland Farming, Scattered Farms, and Field Systems (Figure 12). Based on a review of Newman's map it appears the KMR falls into the Scattered Fields agricultural zone, which is defined as having a low population density, dispersed settlement with few fishing villages at the coast, and scattered fields and gardens with no major field systems (Newman 2000). Crops that would have been cultivated consisted of dryland taro, sweet potato, bananas, yams, breadfruit, sugarcane, and paper mulberry. Note that number 25 shows the location of Hilo, which is identified as "Waiakea."

C.S. Stewart, an American missionary, traveled to Hilo in 1825 with Lord Byron on the *HMS Blonde*. He described the Waiākea vicinity as the ship landed at Coconut Island, approximately 2.5 km northwest of the KMR:

> The beach is covered with varied vegetation, and ornamented by clumps and single trees of lofty cocoa-nut, among which the habitations of the natives are seen, not in a village, but scattered everywhere among the plantations, like farm-houses in a thickly inhabited country . . . At a very short distance from the beach, the bread-fruit trees were seen in heavy groves, in every direction intersected with pandanus and tutui [*kukui*], or candle-tree, the hibiscus and the acacia, &c. The tops of these rising gradually one above another, as the country gently ascended towards the mountains in the interior, presented for twenty or thirty miles in the south-east, a delightful forest scene. [Stewart 1970:362-363]

The American Board of Commissioners for Foreign Missions (ABCFM) established themselves in Hilo in the mid-1820s. The years following the missionaries' arrival were spent introducing a new religion that was not accepted by the general population until the late 1830s (McEldowney 1979:33-34, 36).

3.2.3 1830s

A "religious revival" occurred in Hilo in the late 1830s due in part to the preaching of Titus Coan and several other factors. The Hawaiian population had been considerably reduced at this point due to the introduction of new diseases and a decline in the birth rate. Alterations to traditional religion and lifeways were prevalent and this devotion to the new religion intensified these changes:

> During the revivals height [between 1837 and 1840], as many as 10,000 people congregated in Hilo at one time. Among other consequences, this led to the severe

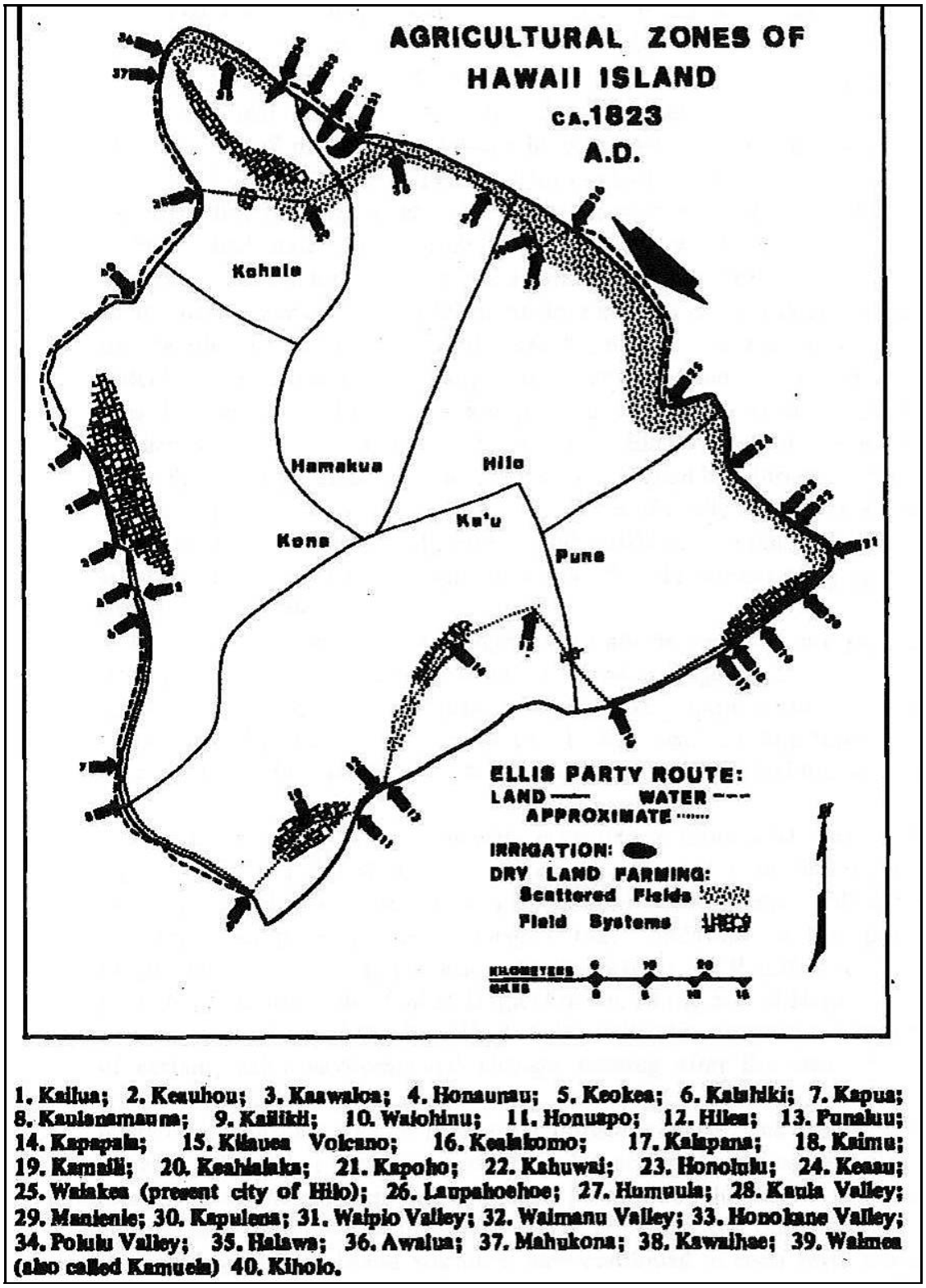

Figure 12. Map of Hawai'i Island showing the route of Reverend William Ellis and the agricultural zones delineated by Newman (Newman 2000)

> alteration of traditional habitation and garden sites within the Hilo area, the permanent or temporary abandonment of entire villages in outlying areas, and a deeper disruption of traditional Hawaiian beliefs and subsistence patterns [McEldowney 1979:37].

3.2.4 The Māhele

The Organic Acts of 1845 and 1846 initiated the process of the Māhele, the division of Hawaiian lands, which introduced private property into Hawaiian society. In 1848, the crown and the *ali‘i* received their land titles. *Kuleana* (title or ownership) awards to commoners for individual parcels within the *ahupua‘a* were subsequently granted in 1850. It is through records for Land Commission Awards (LCAs) generated during the Māhele that the first specific documentation of life in Hawai‘i, as it had evolved up to the mid-nineteenth century, come to light. Although many Hawaiians did not submit or follow through on claims for their lands, the distribution of LCA parcels can provide insight into patterns of residence and agriculture. Many of these patterns of residence and agriculture probably had existed for centuries past. By examining the patterns of *kuleana* LCA parcels in the vicinity of the study parcel, insight can be gained to the likely intensity and nature of Hawaiian activity in the area.

Waiākea Ahupua‘a was held by Kamehameha. When he died in 1819, his son Liholiho received the lands. The Kamehameha dynasty’s control over the valuable property was affirmed in the status of the *ahupua‘a* as Crown Land during the Māhele, with the *‘ili* (land section, next in importance to an *ahupua‘a* and usually a subdivision of an *ahupua‘a*) of Pi‘opi‘o, awarded to Victoria Kamāmalu (LCA 7713:16), a granddaughter of Kamehameha I and heir to Ka‘ahumanu as well.

Twenty-six LCA parcels were granted within Waiākea, none of them within or in the vicinity of the present study parcel. Most LCA parcels were within the coastal zone and for the most part focused around the edges of the large fishponds of Waiākea. The two exceptions are LCA 2663 and 2402; they were in the lower portion (i.e., approximately 100 ft amsl) of the upland agricultural zone. Land use information for the *kuleana* generally refers to cultivated fields with house lots, indicating habitation and agricultural production within the same zone, unlike leeward Hawai‘i Island where in many cases *kuleana* included coastal house lots with associated upland agricultural lots, because of elevation-dependent rainfall.

The coastal zone continued to contain the vast majority of the population. Houses and stores were concentrated in the northern half of Hilo Bay, somewhat removed from Waiākea, because at the time the main pier for Hilo was at the mouth of the Wailuku River. Hilo was being transformed into an entirely wood-framed “New Bedford type Whaling Town.” Whaling ships requiring supplies visited the port causing the export economy to grow. More foreigners were settling in Hilo and began purchasing Hawaiian lands (McEldowney 1979:38).

3.2.5 Late 1800s

Early “eco-tourist” Isabella Bird described the country area around Hilo in 1873 and its variety of crops. She wrote, “[a]bove Hilo, broad lands sweeping up cloud wards with their sugar-cane, *kalo* (taro), melons, pine-apples, and banana groves suggest the boundless liberality of nature” (Bird 1964:38).

Large-scale commercial sugar cane production began in Waiākea in the late 1870s with the establishment of the Waiakea Mill Company. The Waiakea Mill Company leased Waiākea Crown lands extending from the town of Hilo up to 1,100 ft elevation. The mill was located at the head (*mauka* or upland end) of Waiākea Fishpond and sugar was transported by barge through the pond and down Wailoa River to Hilo Bay. In 1879, a 3-mile segment of railroad was constructed from the Waiakea Mill to the cane fields, "the first in the 'Sandwich Islands' to haul sugar cane with a steam locomotive" (Condé and Best 1973:117). Three years later, on 1 October 1882, Queen Emma visited the Waiākea plantation "to take a ride on the railroad . . . and a pleasant trip was made into the cane fields, a distance of four miles from the mill" (Condé and Best 1973:118). Registered Map (RM) 1438, dating to 1886, shows the western edges of KMR adjacent to the Waiākea plantation lands (Figure 13). A 1933 map of the plantation (Figure 14) indicates that it was situated entirely west of the KMR. Even if the plantation included lands east toward KMR prior to that time, any impacts to the reservation by the cane industry would likely have been to the areas comprising the presently developed portions of the facility, as the majority of undeveloped lands at the KMR appear to be relatively undisturbed forest. Figure 13 also depicts the "Road to Puna" crossing diagonally through the KMR.

McEldowney describes other land usage activities in Waiākea during this time period. "Other examples of business, not directly related to sugar cultivation, were the continued use of the Waiākea fishponds, an active Chinese fish market, small pastures above Hilo supporting dairy cattle, and scattered vegetable gardens" (McEldowney 1979:39). Cattle ranching and timber for firewood and housing were the primary interior land uses during this period.

3.2.6 Early to Mid-1900s

Sugar and its associated industries continued to expand during the early 1900s. Haun and Henry (2000) discuss the impetus behind the extension of the railroad to Hilo Bay and development of the wharfs:

> Between 1900 and the 1930s, the population of Hilo grew dramatically with the expansion of sugar cane cultivation, pineapple production, the timber industry, and other commercial developments. In the 1910s, the Hilo Railroad Company expanded the rail system to Puna and Hilo Town. A railroad wharf was built north of the mouth of the Wailoa River. Between 1909 and 1913, the railroad was extended to North Hilo and Hamakua Districts.
>
> The pending opening of the Panama Canal and anticipated increase in trans-Pacific shipping lead to serious efforts to build a breakwater to protect shipping in Hilo Bay. Construction of the breakwater began in 1908. The breakwater was initially planned for a location just east of Coconut Island, but the plan was modified and the selected site was approximately 6,000 ft east of the island. The initial plans called for a 10,000 ft long breakwater along Blonde Reef. Stone for the structure was brought by railroad from quarries in Puna and Waiakea. The breakwater was completed in 1929 . . .
>
> By the 1910s, the existing railroad and government wharf facilities were inadequate to support shipping. In 1912, the Territorial Government contracted

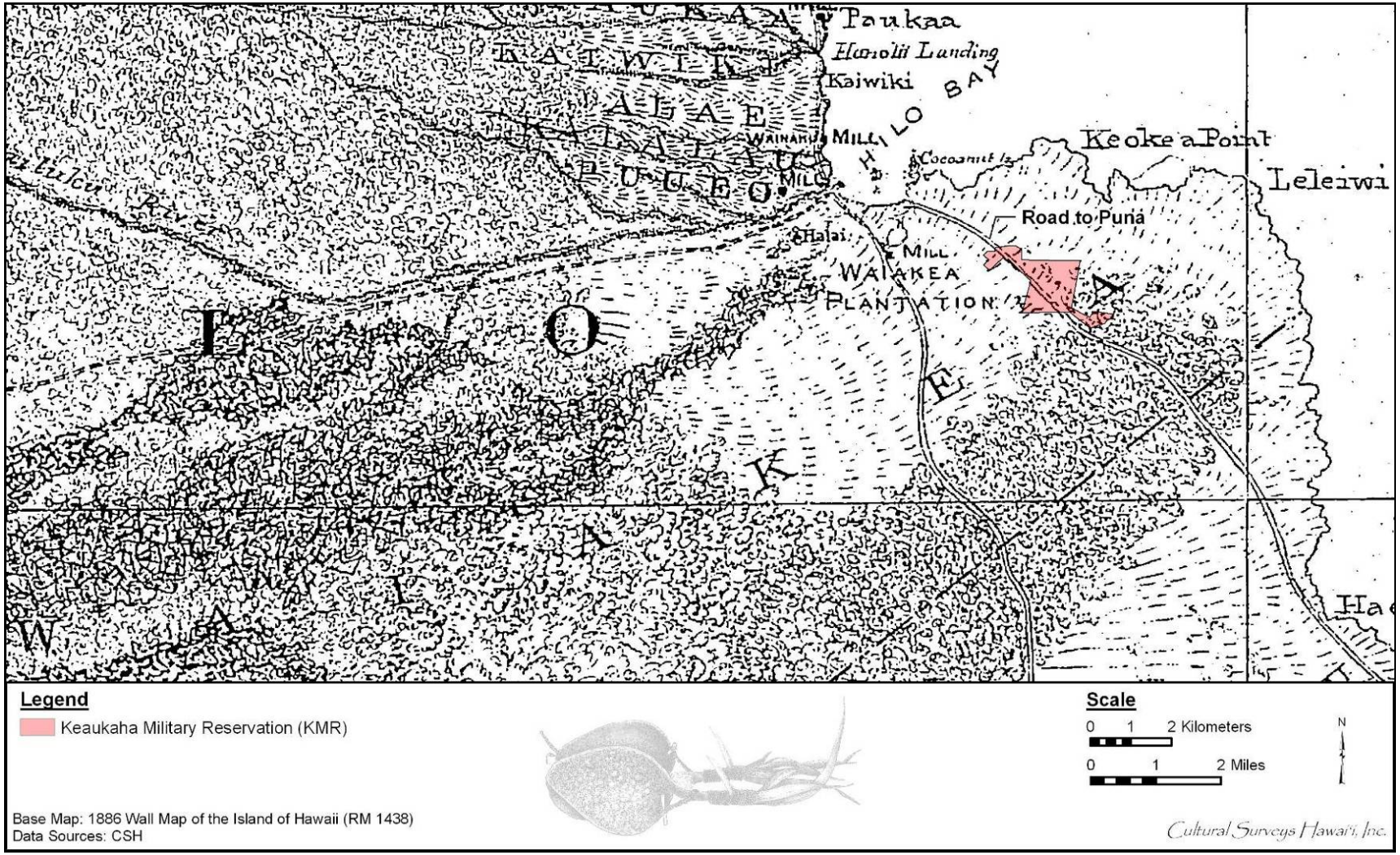

Figure 13. Portion of Walter A. Wall's 1886 map of Hawai‘i (RM 1438), showing the approximate location of the proposed project area (in red) adjacent to the lands of the "Waiakea Mill Plantation"

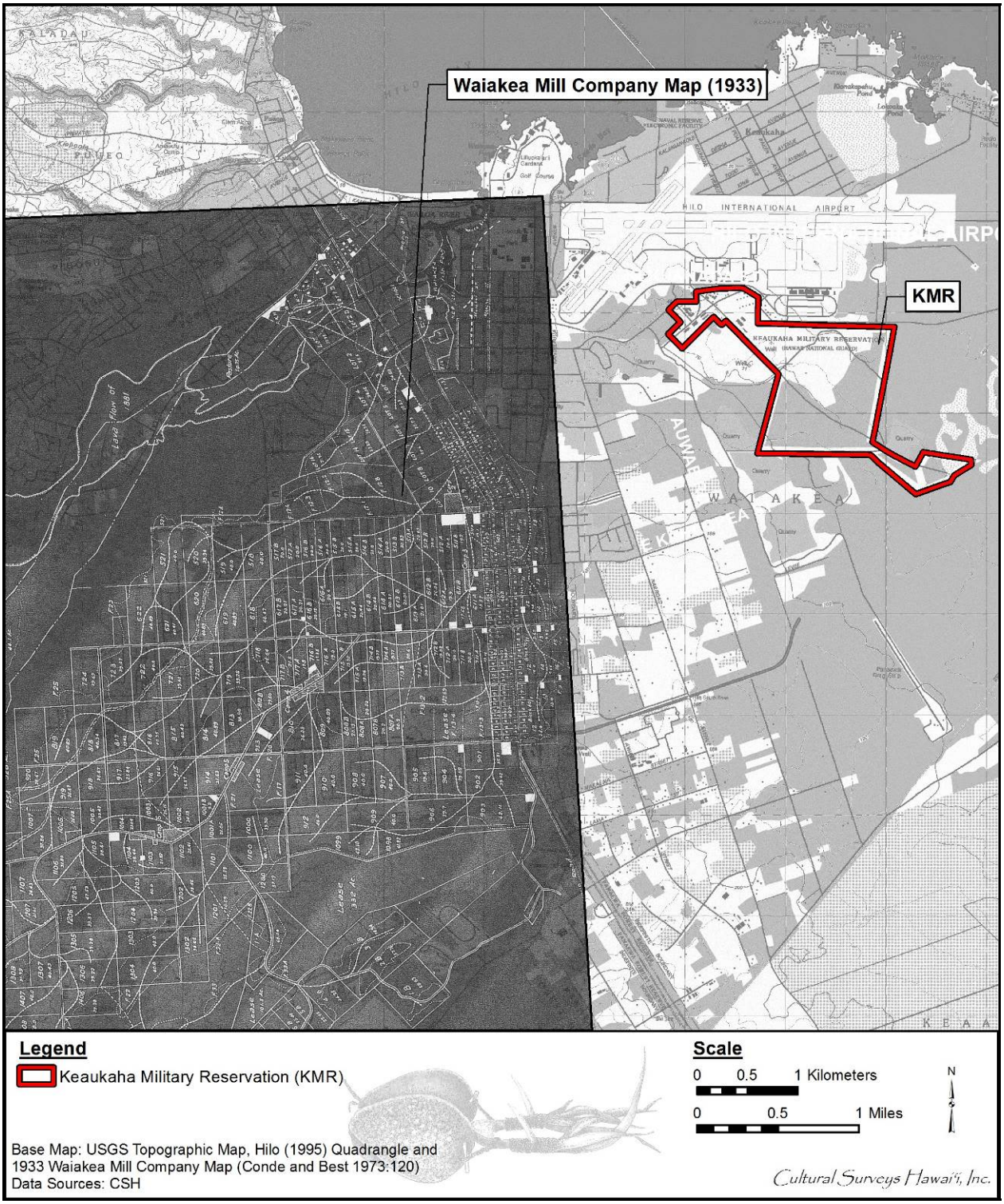

Figure 14. Portion of the 1995 Hilo USGS 7.5-minute Topographic Quadrangle, overlain with the Waiakea Mill Company Map (in Conde and Best 1973:120), showing the location of KMR in relation to the limits of the plantation as of 1933

> the construction of a new wharf approximately one mile east of Coconut Island and the dredging of the adjacent portion of the bay. The new wharf, designated Kuhio Wharf was completed in 1916. From the beginning, the wharf was congested and plans for a second wharf were made. Construction of the wharf began in 1921 and it was completed in 1923. A third wharf was completed in 1927. [Haun and Henry 2000:10]

Ranching in the Hilo area, although not specifically in Waiākea, came under the control of two large enterprises, the Parker and Shipman ranches. In Waiākea a large portion of the upland agricultural zone that was too rocky for sugar cane cultivation became available for lease as Waiākea pasture lands. The specific use of the pasture land is not known but McEldowney notes a "substantial amount of grazing land adjacent to Hilo or to sugarcane fields supported dairy cows for Hilo's several dairies" (McEldowney 1979:41).

In 1918 the 30-year lease of the Waiakea Mill Company expired and, because Hawai‘i had become a territory,

> . . . the land fell under homesteading laws that required the government to put some of it up for lease to homesteaders who would be willing to grow sugar cane on it. Waiākea Mill was to grind the crop for them. A total of about 700 acres of land was divided into cane lots (between 10 and 76 acres each) and house lots ranging from 1 to 3 acres . . . [Kelly et al. 1981:121]

A 1915 Hawaii Territory Survey map (Figure 15) shows the KMR west of the Waiakea House Lots, which were located *mauka* of the Waiakea Mill. The plantation railroad system (the present Railroad Avenue; see Figure 2 and Figure 15), was located just west and north of the KMR. This map also depicts the "National Guard of Hawaii Rifle Range" overlapping the northernmost portion of the KMR. The homestead and cane lots eventually reverted to the overall mechanized cultivation and the homestead and cane lot experiment "was declared a failure" (Kelly et al. 1981:121).

By the 1920s the Waiakea Mill Company had some 7,000 acres in cane production. Rechtman and Lang (2009) discuss some of the consequences of sugar production in this region:

> Sugar cultivation brought dramatic changes to the Hilo area. Some of its large fishponds (Hanalei, Kalepolepo, Mohouli, Waiāhole, and Hoakumau) were filled and thus destroyed. Many old residences, burial sites, trails, *heiau* (high place of worship), and more were destroyed by the development of sugar plantation fields. [Rechtman and Lang 2009:12]

In the 1920s large tracts of remaining forests in Waiākea were "designated as 'forest reserve' to maintain the forest as a 'watershed' to capture, retain, and support the continuous flow of water necessary to the sugar industry" (McEldowney 1979:42). Clearly, sugar was the dominant economic factor during this period including the institution of settlements (i.e., camps).

In 1931, the Hawaiian Cane Products Company, Ltd. began a firm that developed a new product, a fiber board product called "canec." Canec was made from bagasse, the fibrous byproduct of sugar production usually burned by sugar factories for fuel. The Waiakea Mill began selling their bagasse to the canec plant, which was located approximately 200 yards from Waiakea Sugar Mill (Condé and Best 1973:119).

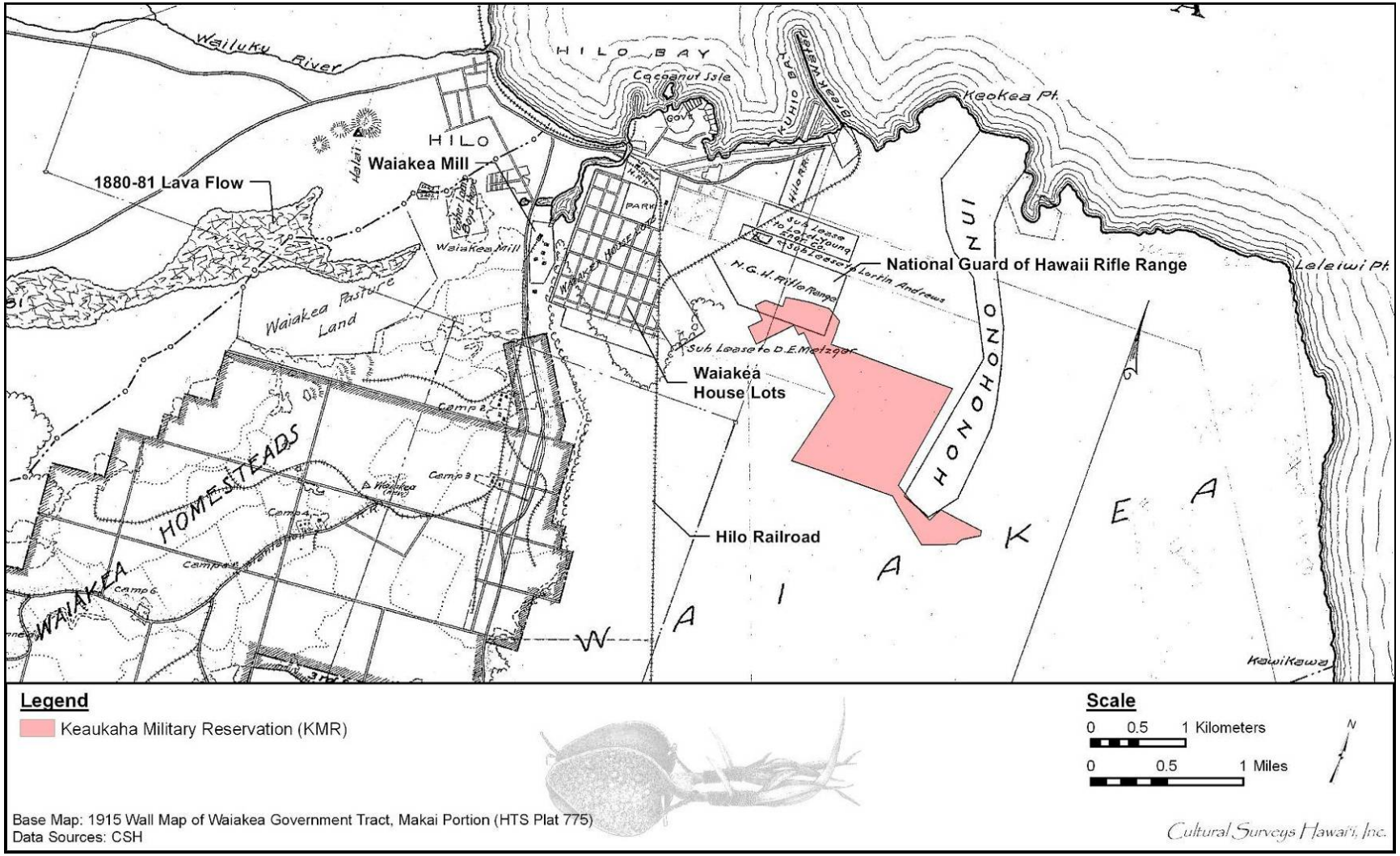

Figure 15. Portion of the 1915 Map of Waiakea Government Tract (HTS Plat 775) by W.E. Wall, showing the approximate location of the proposed project area in relation to features discussed in the text

Several major construction projects were completed in the Hilo area in the 1920s and 1930s, including Hilo Bay wharfs, bridges, and completion of the breakwater. Some of the projects were related to winter weather damage of 1923 that included storm surf in January and a tidal wave in February (Kelly et al. 1981:171).

3.2.1 The Hilo Airport and the Militarization of Waiākea

The following information comes from two main resources, a 1997 preliminary assessment for the Keauhaka Military Reserve (KMR) (located just northwest of the study area next to the Hilo Airport) by Inter Island Environmental Services, Inc. (IIES 1997), summarized in Bush and Hammatt (2000:15-19); and an online archive of historic photos and facts about aviation in Hawai‘i operated by the State of Hawai‘i (State of Hawai‘i 2012).

In 1914, the Governor of the Territory of Hawai‘i set aside 216.43 acres of land in Waiākea for a National Guard of Hawai‘i rifle range (see Figure 15). A few years later in 1925, 33 acres were withdrawn from the Guard for the construction of an aviation landing field, named Hilo Field (located just north of the present KMR) (Figure 16). In 1927, an Executive Order (EO) was issued that again increased the acreage under control of the Guard to 994.6 acres. Two years later in 1929, 10,000 sq ft of land was withdrawn from the Guard to be used for the Territorial Powder Magazine controlled by the Department of Public Works.

In the mid-1930s, the chairman of the Aeronautical Commission reported on four planned developments upcoming at the Hilo Airport: 1) development of the main runway; 2) the development of a “cross-wind” runway; 3) development by Inter-Island Airways, Ltd., of a terminal building and an airplane shelter; and 4) a request for additional land for expansion (Inter-Island Airways, Ltd. 1930). With growing international tensions about to lead to a world war in the early 1940s, precedence for further development was given to Hilo Airport over the nearby KMR.

The decision to refurbish the Hilo Airport was made partially because the airport was the best developed in the Territory. To complete the runway, prisoners were brought in and housed at KMR (Hawai‘i Territorial Aeronautical Commission 1930:13-15).

In 1938, the Guard entered into a Temporary Use Agreement (TUA) with the Territory of Hawai‘i for the construction of the civilian Waiākea or Territorial Prison Camp, to be located in the northwestern section of the Guard property, presumably to house the prisoners closer to their work projects. Structures included a jailer’s cottage and an acting jailer’s cottage, two prisoners’ dormitories, a kitchen, a laundry, and a recreation and workshop building. The Guard’s powder magazine, consisting of three structures, was constructed south of the prison camp. The Guard rifle range, which included a pistol range, storehouse, and two sheds, was constructed east of the powder magazine.

In 1941, the Governor of the Territory of Hawai’i authorized the U.S. Army to use and occupy all Hawai’i Army National Guard armory sites and military reservations. The Army Corps of Engineers constructed an airfield and facilities that included 30 assorted buildings south of Hilo Airfield at a projected cost of $670,400. This airfield was later incorporated into Hilo Airport. By 1942, the United States and the Territory of Hawai‘i were involved in World War II. During this time, expansion of the Hilo airport and the construction of the Saddle Road were major projects undertaken as part of the military presence on the island. The

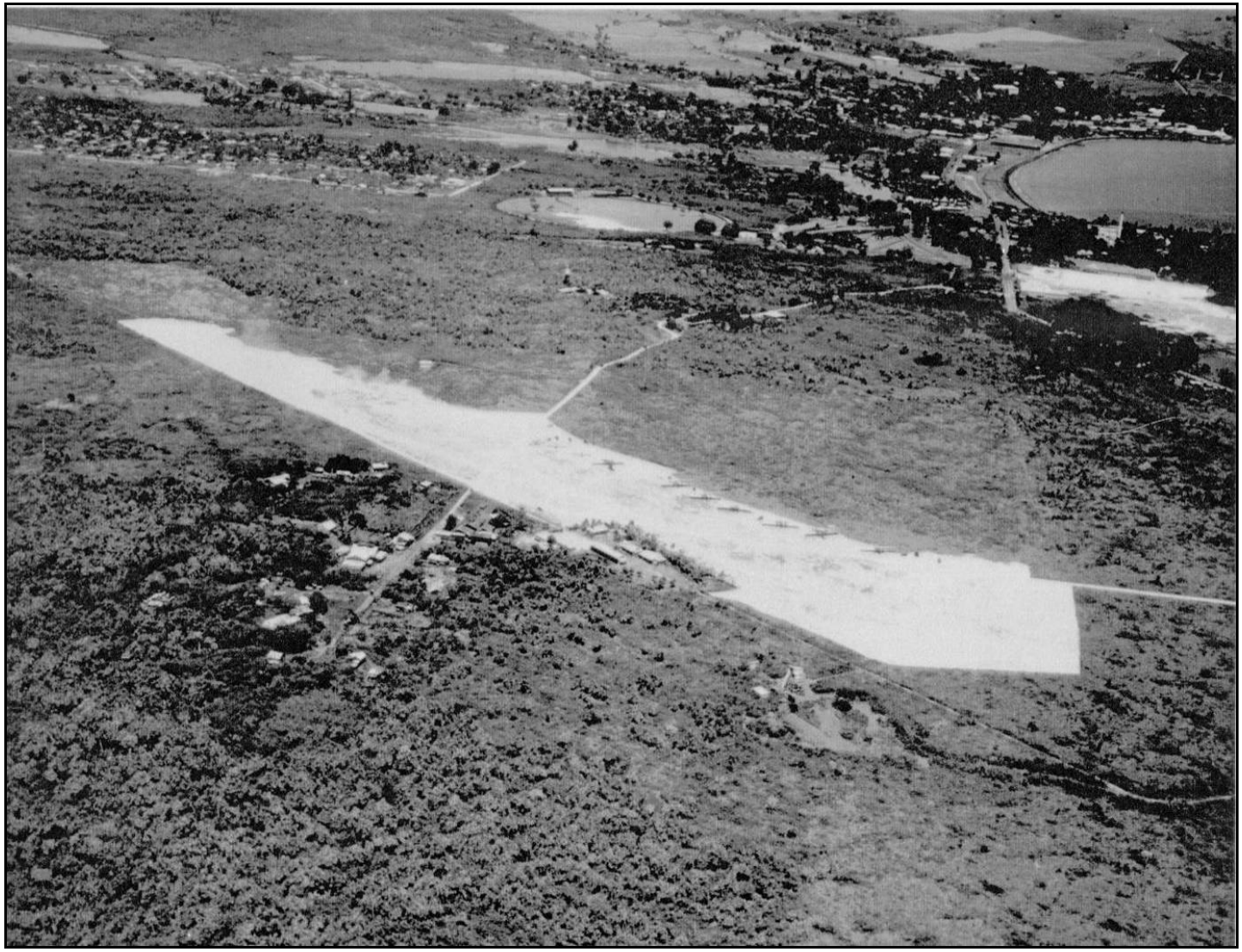

Figure 16. Aerial photograph, 2922-1 Hilo Airport Hawai‘i, Photo section A.C. 6-25-29, U.S. Army Museum of Hawai‘i (Judd 1971)

expansion of Hilo Airport caused the termination of 50 leases in Keaukaha and homes were demolished and replaced with officers' quarters and mess facilities.

The Navy Department, Bureau of Aeronautics, authorized the establishment of the Hilo Naval Air Station in 1943. The Navy allotment included a total of 1,975.88 acres for its use. The Fifty-ninth Naval Construction Battalion (NCB) constructed various Naval Air Station facilities and infrastructure in conjunction with the Hilo Army Air Base. Facilities and infrastructure completed in 1943 included the enlisted men's mess hall and barracks, water works system, communication lines, sewer system, and roads. The Guard Rifle Range was demolished during this construction. Navy facilities bordered the Hilo Airfield, renamed General Lyman Field in 1943, on the west and southwest, and abutting the west and south boundaries of the Army Air Station.

According to the State of Hawai‘i aviation website, Brigadier General Albert Kualii Brickwood Lyman "was born on the island of Hawaii on May 5, 1885, was educated at Kamehameha and Punahou Schools, and the West Point Military Academy. General Lyman was the first man of Hawaiian blood to be appointed a brigadier general of the United States Army" (State of Hawai‘i 2012)

By 1944 the Fifty-ninth NCB had completed a pistol and machine gun range and a skeet range. In April 1944, the 141st NCB replaced the Fifty-ninth NCB. During 1944 the 141st NCB completed a tank farm consisting of three gasoline storage tanks, the Radio Transmitter Building, the Station photo lab, Naval Land Bombing Targets, a second tank farm consisting of four gasoline storage tanks (most likely Buildings 511 through 514 currently located on DLNR land), a 10-ton jib crane, ammunition storage magazines, a third tank farm, loading racks for the tanks, control houses for all three tank farms, gasoline lines, a dispensary, an oxygen and acetylene warehouse, a Quonset dynamite storage building, the main gate house, extensions to taxiways and aircraft parking, the torpedo workshop, tennis courts, an automotive service station, a rocket assembly hut and magazine, 15 Quonset hut warehouses, two water wells, water mains, and a reservoir (Building 702 currently located on DLNR land). During the latter part of 1944 the Waiākea Prison Camp was moved, with assistance from the 141st NCB, to the upper ‘Ōla‘a Forest Reserve. Also during this period, replacement draftees and troops of the Fifth Marine Division, Fleet Marine Force, Pacific arrived in Hilo and were quartered in the U.S. Army barracks.

After the completion of Naval Air Station-Hilo in mid-1945, the Construction Battalion Maintenance Unit (CBMU) Number 562, responsible for upkeep of the Naval Air Station, replaced the 141st NCB. During World War II, the number of personnel at Naval Air Station-Hilo reached a peak of 4,500. The war ended shortly after the completion of Naval Air Station-Hilo, prompting the decommissioning of CBMU Number 562 and the disposal of magazines. The squadron departed in October 1945 and Naval Air Station-Hilo was reduced to caretaker status. Naval Air Station-Hilo facilities bordering Runways 3 and 8 were all cleared and moved south of Runway 8, except for the Brigade.

In 1946, the Seventh Army Air Force (AAF) arrived at General Lyman Field (GLF) to begin operations as a satellite field to support Hickam and Wheeler Air Force Bases on O‘ahu. The area of operations for the AAF included the control tower, operations building, barracks and

several other smaller buildings. In August 1946 the Navy turned over a dispensary and adjacent barracks at GLF to the Territory for use as a tuberculosis hospital.

In 1947 the Hawai‘i National Guard was reactivated on Hawai‘i Island and obtained the use of 15 buildings on KMR previously used by the Navy for offices and warehouses. These buildings lay within the boundaries of EO #286, and were intended for the 299th Regimental Combat Team. In August 1947 Naval Air Station-Hilo officially closed, however, the Navy retained 20 acres on GLF. Previous Naval Air Station-Hilo property reverted back to the Territory of Hawai‘i. After the Navy evacuation of GLF, the Guard retained the Navy facilities existing on the property for its use.

In April 1953 the old Naval Air Station-Hilo facilities housed 11 Hawai‘i National Guard units. These included the 299th Infantry Medical Company, Service Company, Tank Company, Engineer Combat Company, 110th Army Band, Headquarters Company Second Battalion, Company F, HQ Battery, 487th Field Artillery Battalion, Service Battery, 487th Field Artillery Battalion, Battery B, 487th Field Artillery Battalion, and the Medical Detachment, 487th Field Artillery Battalion. The Guard later constructed combined field, machine gun, mortar, and combat facilities. Additionally, in April 1953 the Adjutant General requested 954.67 acres of land be set aside by the Commissioner of Public Lands for the Hawai‘i Army National Guard. In 1962, 184.82 acres were withdrawn from the HIARNG for use by the Hilo Industrial Development Subdivision; in 1964, 2.874 acres were withdrawn for the extension of Runways 8 through 26. In 1973, 257.810 acres were withdrawn for construction of new airport terminal facilities. Afterwards 509.17 acres remained under EO #1562 for HIARNG use.

3.2.2 Mid-1900s to the Present

Sugar production began to decrease and the Waiakea Mill Company ceased operations in 1948. Following statehood in 1959 and the demise of the sugar mill and canec plant, tourism became the next economic mainstay. In Waiākea, C. Brewer & Company built a hotel complex at the site of the old canec plant. Other hotels were built along the Hilo Bay frontage of Waiākea near Coconut Island or Moku‘ola. Large tracts of former Waiākea Homestead and cane lots were converted to housing and sub-division tracts. The portion of Hilo including the study parcel began to experience commercial and industrial development, as indicated by Figure 17, although most of the development in Hilo still tended to be concentrated to the west.

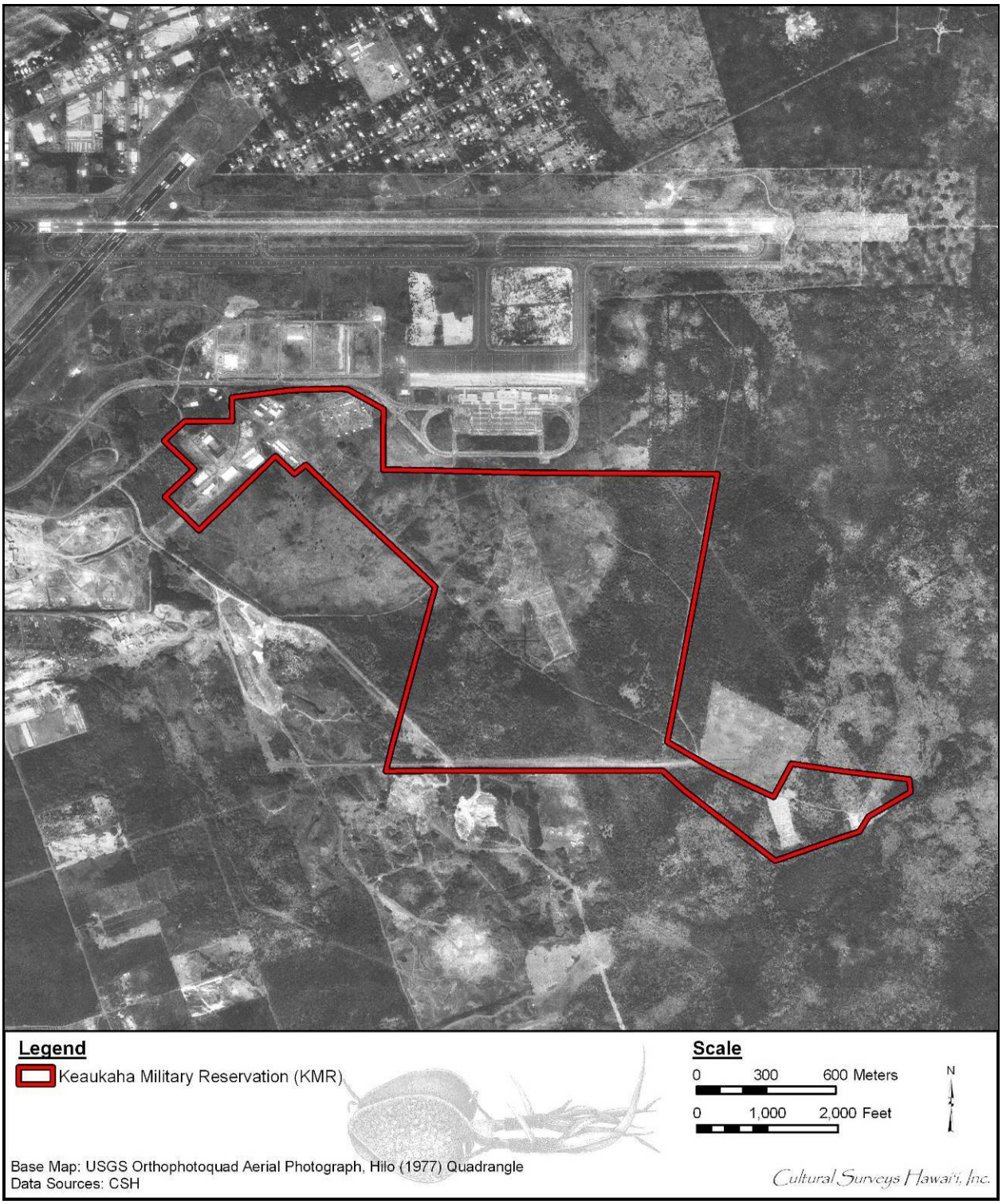

Figure 17. 1977 USGS Orthophoto, showing the extent of development in the vicinity of the proposed project area

Section 4 Previous Archaeological Research

4.1 *Heiau* of Waiākea

Thrum (1907a:40-41) lists and describes 16 *heiau* (high place of worship) in the district of Hilo (Figure 18) and remarks that "little evidence of their existence now remains" (Thrum 1907b:55). The three *heiau* located near Waiākea's coastline are Kapa‘ie‘ie Heiau (unknown class, SIHP # 50-10-35-18883), Makaokū Heiau (*luakini* class [large *heiau* where ruling chiefs prayed and human sacrifices were offered], SIHP # 50-10-3-188843) on the shore opposite Coconut Island (Mokuola), and Ohele Heiau (*luakini* class, SIHP # 50-10-3-18884). Rosendahl's thorough Waiākea Ahupua‘a research mentions one specific *heiau* within Waiākea, Kapa‘ie‘ie (Rosendahl 1994:5). Kapa‘ie‘ie Heiau was originally recorded by A.E. Hudson in a 1932 archaeological and historical literature research manuscript on east Hawai‘i (Hudson 1932). According to Rosendahl (1994:5), Kapa‘ie‘ie Heiau was located "along the old Hilo-‘Ōla‘a trail (not far from the route of modern-day Kīlauea Avenue)." Hudson writes:

> There was a *heiau* named Kapaieie near Honokawailani in Waiākea. Bloxam who passed the site on his way from Hilo to the volcano says that its center was marked by a single coconut tree. At the time of his visit nothing remained but ruined walls choked with weeds. He was told that the priests would lie in wait for passersby and dispatch them with clubs. Thrum [1908:40] states that the site was famed in the Hilo-Puna wars but its size and class are unknown. No remains of any kind could be found and no Hawaiians with whom I talked had ever heard of it. [Hudson 1932:240]

According to Thrum (1907a), Makaokū Heiau was located

> on the shore opposite Cocoanut Island, Hilo, of *luakini* class, connected with the noted Mokuola place of refuge; dimensions unknown, though it is said to have had a high pyramid of stone as if for a place of observation. The stones of this heiau were taken by Capt. Spencer in the sixties for a boat landing. [Thrum 1907a:40]

Thrum further notes, "the area of [Mokuola] included also a portion of the mainland adjoining. The *heiau* connected with it, named Makaoku, was of the *luakini* class" (1907b:56).

Thrum also reported on ‘Ohele Heiau in Waiākea (see Figure 18) near the "old Pitman store." It was reportedly "a small luakini class heiau measuring 60 feet square," and it "stood near the Puna-side shoreline where the Wailoa River enters the ocean, approximately where Suisan Fish Market now stands. This was just above the site of the former Pitman store . . ." (Rechtman 2009:18). The *heiau* "was destroyed before Pitman's time," or by the early to mid-1800s (Stokes and Dye 1991:155).

The name of this *heiau* is notable—it appears to have been situated in the vicinity of the home of the fisherman ‘Ohele mentioned in the Hi‘iaka tale (see Section 3.1.1). According to the Hi‘iaka narrative as related by Ho‘oulumāhiehie, the party "arrived at ‘Ohele," where they met the family of the fisherman of the same name; his fishing grounds were Kalauokukui Point, near

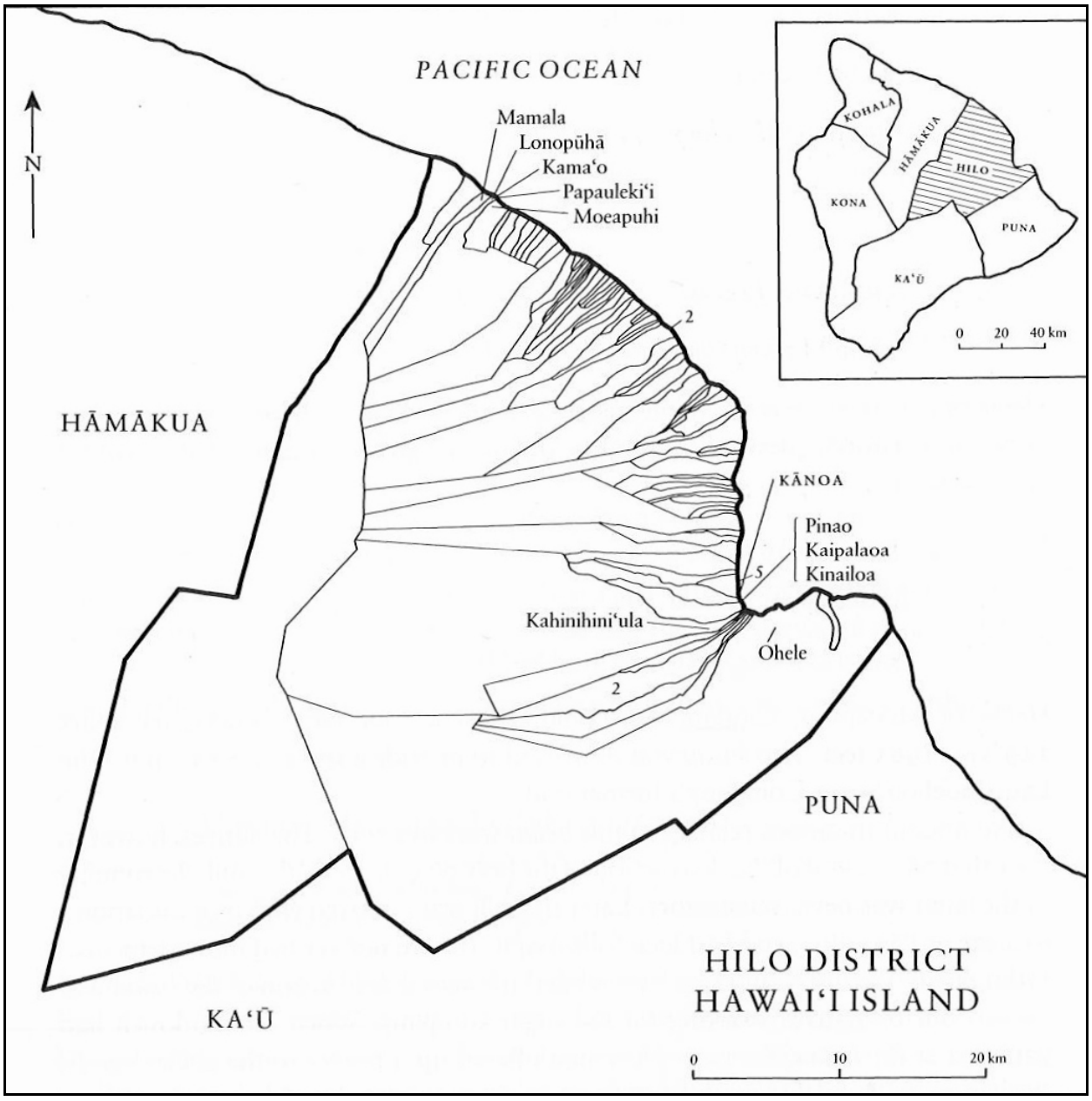

Figure 18. Locations of *heiau* documented by John F.G. Stokes in Hilo District (Stokes and Dye 1991:155)

the mouth of the Wailoa River (Nogelmeier 2006:67). None of the *heiau* described by Thrum is in close proximity to the study parcel.

4.2 Puna Trail

Accounts by nineteenth century historians ‘Ī‘ī, Kamakau and Malo, as well as accounts of early missionary and explorers relate that travel by sea was the preferred method of transportation during prehistoric and early historic times. However, these same sources also point out the importance of overland trails as means of movement and communication. Apple describes the importance of the circle-island coastal trail (*ala loa*, or “long trail”) for traditional tax collection associated with the annual Makahiki (Apple 1965:22-23). This system consisted of circle-island coastal trails, as well as numerous trails to facilitate *mauka-makai* (upland-sea) travel, connecting the coast with terrestrial resources.

Ross Cordy, in his study of the *ala kahakai* (beach), or *ala loa* (long road) trail system on the leeward coast of the Island of Hawai‘i, briefly discusses windward trails, noting that previous archaeological research shows permanent habitation on the windward side existed earlier in places such as Hilo and eastern Puna. Thus, it might be surmised that some form of trail system—perhaps including the Puna Trail—may date back as early as the years 900-1000 (Cordy 1995:8).

Wendy Goodman (Tolleson), in her study of two lots in Chalan Pago/Ordot, Guam, and her study of prehistoric trails systems in Waiawa Ahupua‘a, O‘ahu, suggested factors affecting placement and preservation of aboriginal trails (Goodman and Nees 1991; Goodman and Olmo 1993). It is common for trails in Hawai‘i to be constructed, or relocated, based on related features such as ease of overland route compared to the coast, temporary rock shelters, sources of fresh water, or markers created by travelers to make the trails less obscure.

In prehistoric times a tradition of exchange was centered in the Hilo area. The banks of the Wailuku river appear to have been the site of extensive trade between the different regions of East Hawai‘i. This trade flourished in prehistoric and early historic times, but apparently declined during the reign of Liholiho, Kamehameha II (Ellis 1974:325-326).

It should be noted that the Puna Trail mentioned by Ellis in 1823 was a coastal trail which skirted the Hilo and Puna coastline. In subsequent maps (e.g., Figure 11 and Figure 13), the road or trail to Puna appears as a transportation route that cross-cuts the Hilo and Puna regions rather than following the coastline. The ease of traveling through this cooler region, and the decreased distances it provided in spite of exhausting climbs, could have made for expedient trade and communication especially at a time in Hawaiian history when missionary activities were prevalent. Traders from such far districts as Ka‘ū traveled to Hilo, thus it is not unreasonable to suppose some traveled overland, probably along the Puna Trail.

Hudson’s (1932) manuscript noted the presence of the Puna Trail, and it was later documented to some extent by McEldowney (1979) during her study of the larger Hilo area. This portion of the Puna Trail was assigned as SIHP # 50-10-35-18869 (the site number is commonly listed incorrectly with the quadrant numbered as “99”).

Lass’ study of a portion of the “Old Government Road” in the coastal area of Kea‘au (Lass 1997:14-15), approximately 7 miles southeast of the KMR facility, discusses changes to the

routing and construction style of the Puna Trail. What she calls the “Old Government Road” is clearly a portion of the Puna Trail, assigned SIHP # 50-10-36-21273 during her study.

In the early 1840s, horses and mules began to be used in the Hilo region, though the vast majority of land travel was still by foot. The initial improvements to the Puna Trail date to the early 1840s, when the Wilkes U.S. Exploration Expedition traveled along the coast of Puna to Hilo. However, accounts of the expedition’s progress along this route do not go into detail about which trail was used. It is clear that by the mid- to late 1870s, the Puna Trail was used for horse travel (Lass 1997:17). Lass describes how the shifting importance of transportation routes after 1880 resulted in a marked decline in use of the Puna Trail immediately south of Hilo.

Despite the decline in usage of the trail for major market and horse traffic after 1890, local foot traffic continued to use the Puna Trail, including the portions that extend through the KMR, into the twentieth century. The alignment of the route is charted and labeled “Puna Trail” on the 1932 Hilo USGS Topographic Quadrangle as well as the 1961 State of Hawai‘i Department of Defense Map of the KMR facility.

4.3 Previous Archaeological Studies in the Vicinity of the KMR

A number of past archaeological studies have been conducted in Waiākea and the greater Hilo area, with a small handful at or overlapping the KMR. These studies are shown on Figure 19 and listed in Table 2. The past studies undertaken at KMR appear in bold in Table 2 and are discussed in Section 4.3.1.

In 1974, the Archaeological Research Center of Hawai‘i completed an archaeological reconnaissance for a proposed drag strip in Pana‘ewa, south of the KMR (Ching and Stauder 1974; see Figure 19). No archaeological sites were encountered within the 135-acre project area.

In 1979, the University of Hawai‘i at Hilo undertook an archaeological survey of a 39-acre portion of Hawaiian Home Lands (HHL) west of the KMR (Bonk 1979; see Figure 19). A section of a rock wall and a “broken wire fence line” were identified, though these were assessed as modern. Furthermore, the remains of an “old road” were identified. The roadway was described as 15 to 20 ft wide, marked by rock alignments 1 to 2 ft high (Bonk 1979:3). No further work was recommended for the project area.

In 1983, the SHPD investigated a claim of a *heiau* depicted on a modern TMK: [3] 2-1-007, north of KMR along the coast (Kam 1983; see Figure 19). This unnamed *heiau* also appears on a 1936 Ocean View Lease Lots map. No records were found at that time pertaining to the *heiau*; Kam (1983:1) recommended it be recorded and photographed. This site was assigned as SIHP # 50-10-35-18695, but no formal documentation ever occurred. In 2000, Haun and Associates came upon the *heiau* just outside the bounds of their survey of two parcels near Hilo Harbor (see below). Haun and Henry (2000:22) described the *heiau* but did not formally document it.

In 1988, a single set of human remains was identified near the mouth of Wailoa Stream across from the Suisan Fish Market, which is located approximately 1 mile northwest of the KMR. The remains were documented (Pietrusewsky 1989; see Figure 19) and then excavated and studied (Smith and Tourtellotte 1988; see Figure 19). As Rechtman (2009:27) writes, “[t]his discovery, while only that of a single set of remains, does indicate that the possibility exists for additional remains, especially in coastal areas of former dune deposits along the Hilo bay front.”

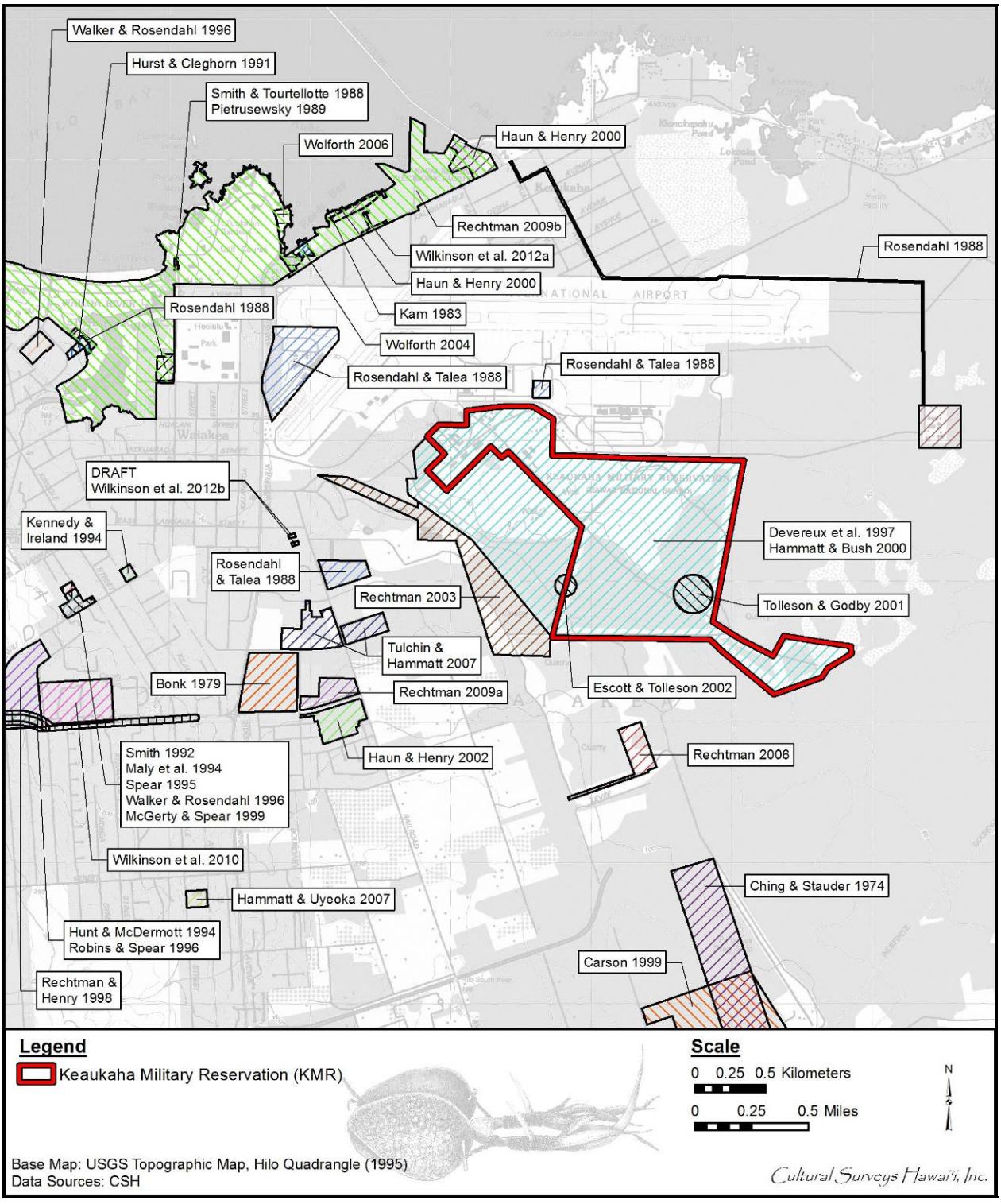

Figure 19. Portion of the 1995 Hilo USGS 7.5-minute Topographic Quadrangle, showing previous archaeological studies within and in the vicinity of the KMR

Table 2. Archaeological Studies Conducted Within and in the Immediate Vicinity of the KMR

Source	Nature of Study	Location	Results
Ching and Stauder 1974	Archaeological reconnaissance	Between Keaukaha and South Hilo–Puna boundary for proposed 2.5-mile alignment referred to as Alternative A between Keaukaha and South Hilo–Puna boundary; proposed alignment began at end of Kalaniana‘ole Avenue	Four sites identified, concentrated near South Hilo–Puna Boundary; sites included stacked *pāhoehoe* wall on South Hilo–Puna boundary, platform/monument burial, animal enclosure and habitation site; recommendations included archaeological inventory survey, moving alignment *mauka* to avoid sites and clearing land by hand to avoid sites
Bonk 1979	Archaeological inventory survey	Survey of HHL Pana‘ewa Tract 1, Waiākea, South Hilo	Historic wall segment and “old” road
Kam 1983	Records check	State lands at Reed’s Bay, Waiākea, TMK: [3] 2-1-007:011	Records check confirmed no previous records for unnamed *heiau* depicted on modern tax map; *heiau* assigned SIHP # 50-10-35-18695
Rosendahl 1988	Archaeological reconnaissance survey	Hilo Judiciary Complex five locations each 5+ acres TMKs: [3] 2-2; [3] 2-2-002:001, 054, 055, 056, 062; [3] 2-2-010:016; [3] 2-2-033:011, 012, 013, 014, 019, 020; [3] 2-3-015:001 and [3] 2-3-044:009	No historic properties identified
Rosendahl and Talea 1988	Archaeological reconnaissance survey	Proposed Irradiation Plant site, TMKs: [3] 2-1-012:106 (Potential Site A), 2-1-012:Var. (Potential Site B), 2-1-025:Por. 86 (Potential Site C)	No historic properties identified
Smith and Tourtellotte 1988	Burial removal	Wailoa Bridge, Lihiwai Street, Waiākea, TMK: [3] 2-4-001:012	Excavation and study of SIHP # 50-10-35-11115
Pietrusewsky 1989	Burial documentation	Wailoa Bridge, Lihiwai Street, Waiākea, TMK: [3] 2-1-001:012	Documentation of single set of human remains in area near mouth of Wailoa Stream, in vicinity of current Suisan Fish Market; burial designated SIHP # 50-10-35-11115
Hurst and Cleghorn 1991	Historical literature and documents survey	Hilo Judiciary Complex, Waiākea; Part 1	Preservation of pre-historic remains created by pre-existing wet marshlands recommended

Source	Nature of Study	Location	Results
Smith 1992	Field inspection for State land disposition of proposed Dept. of Water Supply office site in Hilo	Waiākea Cane Lots, Waiākea, TMK: [3] 2-4-057:001	Several stacked stone walls, mounds, large rectangular enclosure, and several C-shapes
Hunt and McDermott 1994	Archaeological inventory survey	Lands of Waiākea, Kūkūau 1 and 2; Ponahawai, South Hilo (Puainako Street Extension project)	Inventory survey (final report of Hunt 1992); historical, oral interview and archaeological data combine to demonstrate numerous stack stone features in project area (comprising of 13 properties) all related to historic sugar cane agriculture
Kennedy and Ireland 1994	Archaeological inventory survey	Proposed Hilo Forestry Office Complex Extension located at TMK: [3] 2-2-027:001 (por.) in Waiākea Ahupua‘a corner of Kāwili and Kīlauea, 0.5 acres	No historic properties identified
Maly et al. 1994	Archaeological inventory survey	Waiākea Cane Lots portion of Parcel 6, TMK: [3] 2-4-057:001; 4.5 acres	Four sites comprising 47 features (C-shaped and L-shaped walls, mounds, terraces and walls); similar to Hunt and McDermott (1994) commercial agricultural sites but date and artifacts suggested pre-contact component
Spear 1995	Data recovery excavations	SIHP #s 50-10-35-19431, -19432, -19433, and -19434, Land of Waiākea, TMK: [3] 2-4-057:001	Data recovery of Maly et al. (1994) parcel; SIHP #s 50-10-35-19431, -19432, -19433, and -19434; all features post-Contact, few T-habitations but most related to sugar cane agriculture
Robins and Spear 1996	Archaeological inventory survey	Puainako Street Realignment/Extension project expanded corridor, Waiākea, Kūkūau 1 and 2 and Ponahawai	Additional historic sugar cane agricultural features located in expansion of Hunt and McDermott (1994) corridor study area
Walker and Rosendahl 1996	Archaeological assessment study	Hilo Judiciary Complex project, seven locations TMKs: [3] 2-6-015:001, 002; [3] 2-6-016:002; [3] 2-4-049:018, 019; [3] 2-2-015:033; 2-4-001:012; [3] 2-3-036:3;00 2-3-032:001; [3] 2-4-057:001)	Four previously identified sites: SIHP #s 50-10-35-19431 C-shape, -19432 U-shape, -19433 complex, -19434 complex; one new site: -1721-1 sugar cane mill (no SIHP number given)

Source	Nature of Study	Location	Results
Devereux et al. 1997	**Archaeological reconnaissance survey**	**Keaukaha Military Reservation South Hilo District (Hawai‘i National Guard) 503.6-acre parcel, TMKs: [3] 2-1-012:003 and [3] 2-1-013:010**	**Identified two sites, C-shape enclosure and coral mound (see Hammatt and Bush 2000)**
Rechtman and Henry 1998	Archaeological inventory survey	University of Hawai‘i–Hilo Kāwili Street development, TMK: [3] 2-4-001:005	Four previously identified sites: SIHP #s 50-10-35-19431, -19432, -19433, -19434, and new site (-21461); 117 features all related to commercial sugar cane agriculture
Carson 1999	Archaeological inventory survey	176-acre Pana‘ewa Campus site, Waiākea Ahupua‘a, just SW of Pana‘ewa Drag Strip, TMK: [3] 2-3-013:154	No historic properties identified
McGerty and Spear 1999	Archaeological inventory survey	Additional unsurveyed portion of TMK: [3] 2-4-057:001, Land of Waiākea	Four previously identified sites SIHP #s 50-10-35-19431, -19432, -19433, -19434; 13 features all related to commercial sugar cane agriculture
Hammatt and Bush 2000	**Archaeological inventory survey**	**Selected portions of the Hawai‘i Army National Guard 503.6-acre Keaukaha Military Reservation, Waiākea Ahupua‘a, TMKs: [3] 2-1-012:003 and [3] 2-1-013:010**	**Same study parcel as Devereux et al. 1997 de-accessions coral mound and records four sites: SIHP #s 50-10-35-18869 Puna Trail, -21657 C-shape (military), -21658 five *ahu*, -21659 modified blister (agricultural)**
Haun and Henry 2000	Archaeological inventory survey	Hilo Harbor, Waiākea, TMKs: [3] 2-1-009:002, 012, 041, 042 and [3] 2-1-009:020–037	SIHP # 50-10-35-22486, early 1900s U.S. engineer facilities
Tolleson and Godby 2001	**Documentation of SIHP # 50-10-35-21771**	**Hawai‘i Army National Guard Keaukaha Military Reservation, Hilo, TMK:[3] 2-1-013 and 010 and 2-1-012:003**	**Artifacts including horse/mule shoes, sharpening implements, sharpening wheel and hoof files suggest relation to historical road construction along Puna Trail; site also interpreted as possibly only extant example of historic *pau hana* (recreational drinking) activity**

Source	Nature of Study	Location	Results
Escott and Tolleson 2002	**Archaeological inventory survey**	**Keaukaha Military Reservation, TMKs: [3] 2-1-012:003 and 2-1-013:010, South Hilo District, Island of Hawai‘i**	**Four sites: SIHP #s 50-10-35-18869, -21657, -21658, -21659**
Haun and Henry 2002	Archaeological inventory survey	DHHL project at Pana‘ewa Land of Waiākea, TMK: [3] 2-2-047:001, 28 acres	No historic properties identified
Rechtman 2003	Archaeological and limited cultural impact assessment	Proposed Regional Solid Waste Sorting Station, TMKs: [3] 3-1-012:004 por. and 3-2-113:011, 150, 151, 162, 167, 168	No historic properties identified
Wolforth 2004	Archaeological inventory survey	Kanakea Fishpond at Reed’s Bay, TMK: [3] 2-1-006:013 and 015	Previously identified Kanakea Pond (SIHP # 50-10-35-18896), another small, unnamed pond (SIHP # 50-10-35-24230) and remnant feature (SIHP # 50-10-35-7413) of former railroad
Rechtman 2006	Archaeological survey for determination of no historic properties affected (letter report)	Yamada and Sons Roadway and Quarry site, Waiākea Ahupua‘a, TMKs: [3] 2-1-013:002 por. and 2-1-013:148 por.	No historic properties identified
Wolforth 2006	Archaeological inventory survey	Expansion of existing Reed’s Bay Beach Park, TMK: [3] 2-1-006:013 and 015	Two previously identified sites, Kanakea Pond (SIHP # 50-10-35-18896, Hawaiian fishpond) and small portion of historic railroad (SIHP # 50-10-35-7413); three new historic properties identified: Reed’s Bay Beach (SIHP # 50-10-35-24917), Scott-Legionnaire-Orchid Hotel (SIHP # 50-10-35-24918) and three pecked basins (SIHP # 50-10-35-24919)
Hammatt and Uyeoka 2007	Archaeological monitoring	Waiākeawaena Elementary School, DOE Cesspool project, Waiākea Ahupua‘a, TMK: [3] 2-2-042:017	No historic properties identified

Source	Nature of Study	Location	Results
Tulchin and Hammatt 2007	Archaeological literature review and field inspection	Wal-Mart Expansion project, Waiākea Ahupua‘a, TMKs: [3] 2-2-047:059, 072, 074 and [3] 2-1-025: 090	No finds in either project parcel (A or B); lack of findings in Parcel A likely due to intensive land modification; no further work recommended; Parcel B densely vegetated and therefore further AIS work recommended
Rechtman 2009a	Archaeological survey for determination of no historic properties affected (letter report)	Kamoleao Laulima Community Resource Center, Waiākea Ahupua‘a, TMK: [3] 2-2-047:075	No historic properties identified
Rechtman 2009b	Archaeological assessment survey	Hilo Bayfront Trails project, Pi‘ihonua, Punahoa, Pōnāhawai, Kūkūau, and Waiākea Ahupua‘a	No historic properties identified; preparation of archaeological monitoring plan recommended given potential for disturbed and/or undisturbed subsurface burials
Wilkinson et al. 2010	Archaeological monitoring	Waiākea Elementary and Intermediate School, DOE Cesspool project, Waiākea Ahupua‘a, TMK: [3] 2-4-001:015 por.	No historic properties identified
Wilkinson et al. 2012a	Archaeological literature review and field inspection	Kumau Street Entrance Improvements, Pier 4, Hilo Harbor, Waiākea Ahupua‘a, TMK: [3] 2-1-007	No historic properties identified
Wilkinson et al. 2012b	Archaeological literature review and field inspection	County of Hawai‘i Bus Maintenance Yard project, Waiākea Ahupua‘a, TMK: [3] 2-2-058:018 por.	No historic properties identified

*References in **bold** are studies within the KMR

Also in 1988, Paul H. Rosendahl, Ph.D., Inc. (PHRI) reported on the results of an archaeological reconnaissance of five proposed locations surrounding the KMR for the Hilo Judiciary Complex (Rosendahl 1988; see Figure 19). No finds were reported. That same year, PHRI conducted an archaeological reconnaissance survey for a proposed irradiation plant site at three locations in Hilo, including one area north and east of the KMR (Rosendahl and Talea 1988; see Figure 19). Similarly, no historic properties were identified due to extensive land modifications associated with urban development.

In 1991 the Bishop Museum completed a literature and documents search for the proposed Hilo Judiciary Complex northwest of the KMR (Hurst and Cleghorn 199; see Figure 19). The report concluded with a recommendation of test excavations and borings to identify any potential pre-Contact cultural layers.

In 1992 the SHPD undertook a field inspection in the Waiākea Cane Lots west of the KMR (Smith 1992; see Figure 19). Several stacked stone walls, mounds, a large rectangular enclosure, and several C-shapes were encountered during the inspection, and inventory survey was recommended prior to any land-disturbing activity.

In 1994, PHRI completed an archaeological inventory survey at Parcel 6 within the Waiākea Cane Lots (Maly et al. 1994; see Figure 19), per the earlier recommendations of the SHPD (Smith 1992). According to the report:

> During the field work, four sites consisting of 47+ features were identified in the study parcel. The sites consist of both single and multiple- components, and their physical condition ranges from poor to good. Formal feature types include C-shape enclosures, cupboards, L-shape enclosures, mounds, terraces, and walls. Functional feature types include both temporary and long-term habitation and agriculture. As a part of the survey, two subsurface test units, totaling three square meters, and one shovel test were excavated at Sites 19431 and 19432. No substantial cultural deposits or portable remains were identified as a result of these investigations. [Maly et al. 1994:ii]

Furthermore, a "volcanic glass flake and a charcoal sample were recovered from Site 19431, a possible historic habitation with an associated agricultural site . . . [yielding] a conventional radiocarbon date of 490 ± 70 B.P." (McGerty and Spear 1999:4-6). This date range indicated the potential presence of a pre-Contact cultural layer.

In 1994 Archaeological Consultants of Hawai‘i, Inc. conducted an archaeological inventory survey for the proposed Hilo Forestry Office Complex Extension west of the KMR (Kennedy and Ireland 1994; see Figure 19). No historic properties were identified due to extensive land modifications associated with the urban development of Hilo. However, one historic property, SIHP # -19626 (stone wall), was identified bordering the perimeter of the study area. The site consists of a bi-faced, core-filled wall constructed of stacked, and in some sections, mortared basalt boulders. The site was determined to be of historic origin.

Two surveys were completed west of the KMR for the proposed Puainako Street Extension (Hunt and McDermott 1994, Robins and Spear 1996; see Figure 19). These studies along with an earlier survey (Hunt 1992) covered various road corridor alignments from 200-1,500 ft elevation, through multiple *ahupua‘a* including Waiākea, Kūkūau 1 and 2, and a small part of Ponahawai. A total of 13

sites were observed and recorded. Site types included stacked stone walls, mounds, platforms, modified outcrops, and faced terraces. Also documented were railroad-related features such as berms, sections of track, and cross-ties. The historical research and oral interviews with knowledgeable local residents provided ample evidence that all of these features were historic and related to the development of commercial sugar cane agriculture in this portion of Hilo after the 1870s. The stacked stone structures are predominantly related to field clearance. The stony soil of this region yielded large quantities of basalt cobbles and boulders that had to be stored in an efficient manner to maximize the arable land. The limited evidence of prehistoric land use within the Pu‘ainako Street Extension project clearly predated construction of the numerous stacked stone features (Hunt and McDermott 1994:104-105, 108).

In 1995, Scientific Consultant Services, Inc. (SCS) conducted data recovery at the four sites investigated by Maly et al. (1994) (Spear 1995; see Figure 19). Excavation at SIHP # -19431 found no evidence of a buried pre-Contact cultural layer. As described by McGerty and Spear (1999:6), the volcanic glass flake identified during the 1994 survey and its associated radiocarbon date were interpreted as examples of the “subtle evidence on Hawaiian use of the area . . . found only in sparse and unpredictable spatial distribution” (Hunt and McDermott 1994:108).

In 1996 PHRI conducted an assessment study at seven newly proposed locations for the Hilo Judiciary Complex (Walker and Rosendahl 1996; see Figure 19). A total of five historic sites were documented, including 47+ features relating to sugar cane cultivation and production (SIHP #s -19431 through -19434) and the old Hilo Sugar Company Mill (SIHP # -21133) (Walker and Rosendahl 1996:20-22). SIHP # -19431 is a C-shaped structure. While the architectural remains are historic, a subsurface prehistoric fire pit and volcanic glass artifact were discovered at the site, indicating “prehistoric occupation prior to early historic sugar cane cultivation” (Walker and Rosendahl 1996:22).

In 1998 PHRI conducted an archaeological inventory survey for the University of Hawai‘i at Hilo Kāwili Street Development, west of the KMR (Rechtman and Henry 1998; see Figure 19). One historic property was identified, SIHP # -21461, an agricultural field complex associated with historic sugar cane agriculture, consisting of piled rock mounds and stacked rock walls and enclosures.

In 1999 Haun and Associates returned to the vicinity of the Maly et al. (1994) and Spear (1995) study parcels to conduct an archaeological inventory survey of an adjacent unsurveyed portion of TMK: [3] 2-4-057:001 (McGerty and Spear 1999; see Figure 19). Four historic properties were identified, SIHP #s -19431, -19432, -19433, and -19434. All four sites were determined to be associated with historic sugar cane agriculture.

The same year, SCS completed an archaeological inventory survey for a proposed 176-acre Pana‘ewa Campus located south of the KMR (Carson 1999; see Figure 19). No finds were reported and no further work was recommended.

In 2000, Haun and Associates undertook a survey of two parcels near the Hilo Harbor, one parcel just west of the breakwater, and the second parcel at the Ocean View Lease Lots and within the lands abutting the eastern end of Ocean View Drive (Haun and Henry; see Figure 19). A concrete slab complex, SIHP # -22486, is located in this latter parcel, adjacent to the current project area. According to Haun and Henry (2000:22), the site “consist[s] of two concrete slabs (Features A and

B), a set of parallel concrete curbs (Feature C), and two displaced sections of concrete slab located at the water's edge (Feature D)." The report noted that despite signs of disturbance, the features remain in fair condition.

In 2002 Haun and Associates conducted an archaeological inventory survey west of the KMR (Haun and Henry 2002; see Figure 19). No historic properties were identified due to extensive land modifications associated with urban development.

The following year, Rechtman Consulting undertook an archaeological inventory survey directly west of the KMR (Rechtman 2003; see Figure 19). Within the project area, a 90-acre corridor was investigated. No finds were reported and no further work was recommended.

In 2004 and 2006 SCS undertook archaeological studies for proposed parks around Reed's Bay north of the KMR (Wolforth 2004 and 2006; see Figure 19). The 2004 study for Kūhiō-Kalaniana‘ole Park documented three sites, Kanakea Pond (SIHP # -18896), a second unnamed pond (SIHP # -24230), and a remnant (SIHP # -7413) of the former railroad that once crossed the small bay. The 2006 study for Reed's Bay Beach Park re-identified the Kanakea Pond and the railroad remnant, as well as three newly identified sites, SIHP # -24917 (Reed‘s Bay Beach), SIHP # 24918 (location of the former Scott-Legionnaire Hotel), and SIHP # -24919 (pecked basins). Both of the ponds and the railroad remnant were recommended for preservation.

In 2006, Rechtman Consulting completed an archaeological survey for development of a roadway and quarry site in Pana‘ewa south of the KMR (Rechtman 2006; see Figure 19). Extensive disturbance was noted and no historic properties were identified.

In 2007 CSH undertook an archaeological literature review and field inspection for the approximately 33-acre Wal-Mart Expansion project, located just west of the KMR (Tulchin and Hammatt 2007; see Figure 19). The study parcel was comprised of two parcels, A and B; no historic properties were identified within either parcel. Parcel A exhibited extensive past disturbance, and no further work was recommended there. Parcel B was observed to be relatively unmodified, consisting of rocky terrain with extremely dense vegetation; thus, while no historic properties were observed in Parcel B, archaeological inventory survey was recommended.

Also in 2007, CSH monitored septic upgrades at Waiākeawaena Elementary School, southwest of the KMR (Hammatt and Uyeoka 2007; see Figure 19). No finds were reported.

In 2009 Rechtman Consulting completed a pedestrian survey of approximately 13 acres for the proposed Kamoleao Laulima Community Resource Center, west of the KMR (Rechtman 2009a; see Figure 19). No finds were reported.

The same year, Rechtman Consulting undertook an archaeological assessment for the proposed Hilo Bayfront Trails project, which comprised the coastal portions of Pi‘ihonua, Punahoa, Pōnāhawai, Kūkūau, and Waiākea Ahupua‘a (Rechtman 2009b; see Figure 19). While no historic properties were identified, the study noted the potential for subsurface burials, citing the earlier investigations by Pietrusewsky (1989) and Smith and Tourtellote (1988). Development of an archaeological monitoring plan was recommended for the project. Not shown on Figure 19, a cultural impact assessment (CIA) was also completed (Rechtman and Lang 2009).

Also in 2009, CSH monitored septic upgrades at Waiākea Elementary and Intermediate Schools, west of the KMR (Wilkinson et al. 2010; see Figure 19). No finds were reported.

In 2010, CSH undertook an archaeological literature review and field inspection for the proposed Kumau Street pier, north of the KMR along the coast (Wilkinson et al. 2012a; see Figure 19). No historic properties were identified, and no further archaeological work was recommended.

In 2012, CSH carried out an archaeological literature review and field inspection west of the KMR (Wilkinson et al. 2012b); the report has not yet been finalized. While no significant historic properties were identified, the project area was found to contain WWII-era Quonset huts and other military remnants.

4.3.1 Past Archaeological Studies at KMR

As mentioned in Section 4.2, in 1932 Alfred Hudson conducted an archaeological survey of the eastern part of the Island of Hawai‘i based on fieldwork carried out during parts of 1930, 1931 and 1932 (Hudson 1932:x). Within the present area of the KMR, Hudson identified the Puna Trail and an additional site that now appears to be destroyed (SIHP # -18844; see Section 4.3.2). The later McEldowney (1979) and Barrére et al. (1980) investigations of the greater Hilo area revisited many of the sites recorded by Hudson, including the Puna Trail within the KMR.

The first archaeological survey specifically conducted at the KMR was undertaken in 1997. That year, CSH conducted a Phase I archaeological reconnaissance survey of KMR (Devereux et al. 1997; see Figure 19). Two historic properties were observed and given temporary site numbers: CSH 1 (C-shape) and CSH 2 (coral mound). Both sites were determined to be associated with the Puna Trail (also known as the “Old Puna Trail”), a route utilized for travel between the Hilo coastline and the Kīlauea Caldera (see Section 4.2). The relative age (pre-Contact or historic) of the sites was not determined.

In 2000, CSH returned to the KMR to complete a Phase II archaeological inventory survey at KMR (Hammatt and Bush 2000; Figure 19). Sample transects were conducted in the relatively unmodified areas that had been identified during the Phase I survey. Areas that had been identified during Phase I as graded were not investigated during the Phase II survey. In addition, some forested areas west of the KMR boundary were surveyed. Four archaeological sites were documented: SIHP # -18869, a section of the Puna Trail; SIHP # -21657, a C-shaped enclosure located in the southeastern portion of KMR near the alignment of the Puna Trail, which was likely constructed as a military artillery position; SIHP # -21658, a grouping of five *ahu* or mounds situated parallel to the Puna Trail, and possibly marking a freshwater source or temporary shelter; and SIHP # -21659, a modified natural blister on a *pāhoehoe* flow believed to be a traditional Hawaiian agricultural planting feature. This last site was encountered in a forested area outside of the KMR to the west; as such, it is not presented with the remaining three historic properties documented by Hammatt and Bush (2000) in Section 4.3.2.

In 2001, SCS documented SIHP # -21771, a historic complex comprising an enclosure, low platform, two modified oblong depressions (one possibly representing an *imu* or underground oven) and associated fruit trees and a meadow located adjacent to the Puna Trail within the KMR (Tolleson and Godby 2001; see Figure 19). The site was initially identified during a biological and natural resources survey. The 2001 survey area consisted of a 100-sq-m area surrounding the previously identified feature. At SIHP # -21771, Tolleson and Godby (2001) documented artifacts including numerous historic bottles, various manuports and unworked waterworn stones, a *poi* pounder, pottery sherds, a cooking pot, horse/mule shoes, and sharpening implements including a grinding

wheel and hoof files. Subsurface testing was conducted at Features 2 and 3, and yielded pottery sherds and fragments of what may have been a Chinese funerary jar, respectively (Tolleson and Godby 2001:34-38). No burials were encountered, nor midden deposits, hearths, or other remains considered indicative of permanent habitation. Citing the results of background research and the dates reflected by the bottle assemblage, the authors concluded that SIHP # -21771 was a place used by road crew for short-term layovers associated with the construction and maintenance of the Puna Trail in the late nineteenth century. The presence of an extensive assemblage of liquor bottles and a pot possibly used to prepare *okolehao* (an alcoholic drink) also led to the interpretation of the site as a place for historic *pau hana* (finish work) activity (Tolleson and Godby 2001:49, 51). The significance of the site as a rare, extant example of its type was noted, though the report did not outright call for its preservation (Tolleson and Godby 2001:51).

The following year, SCS conducted an archaeological inventory survey to document SIHP # -23273, which had been identified during a reconnaissance survey conducted by HIARNG for a proposed fence line (Escott and Tolleson 2002; see Figure 19). The site consists of a remnant portion of a curbstone trail likely associated with the Puna Trail (Feature 1), and two agricultural planting features (Features 2 and 3) exhibiting "ambiguous architectural style" (Escott and Tolleson 2002:17). While no further work was recommended for the identified features, additional survey was recommended "for the area between Site 23273 and the Historic Puna Trail to locate additional remnant portions of the Feature 1 trail, and to determine its relationship and possible physical connection to the Historic Puna Trail" (Escott and Tolleson 2002:17).

4.3.2 Historic Properties Previously Documented at KMR

As discussed in Section 4.3.1 above, six historic properties have been previously documented within the KMR. These historic properties are presented in Table 3. The locations of five of these sites are known from background research, and indicated on Figure 20. The remaining site, SIHP # -18844, has very little existing documentation. The information on file at the SHPD indicates only that it was first documented by Hudson (1932). Considering its numerical sequence, the site was likely assigned its present SIHP number around the time of McEldowney's (1979) study of Hilo; however, based on the existing information it could not be correlated with any features documented in either the Hudson (1932) or McEldowney (1979) report. The SHPD provided CSH with a screen shot from its GIS database (Figure 21), indicating the potential location of SIHP # -18844; because its location has never been verified, the site is not included on Figure 20.

Table 3. Historic Properties Previously Documented Within the KMR

SIHP # 50-10-35	Study Reference(s)	Site/Feature Type and Probable Age	Significance Criteria	Recommendation	Comments
-18844	Hudson 1932	Unknown	Not evaluated	Likely destroyed	SHPD GIS shows location of this site in previously disturbed portion of KMR (see Figure 21) and cites the 1932 Hudson survey; no additional information found
-18869	Hudson 1932; McEldowney 1979; Hammatt and Bush 2000	Historic trail	Portion within KMR no longer eligible based on consideration of modern impacts	No further work	Transportation route known as historic “Puna Trail,” “Puna-Ka‘ū Trail,” or “Old Government Road”; initially pre-Contact trail, improved in late nineteenth century as Government road with continued use in modern times; section nearer to Hilo destroyed; trail section through KMR largely modified into Jeep road; portion of trail in Puna District assigned SIHP # 50-10-36-21273
-21657	Hammatt and Bush 2000	Historic C-shaped enclosure	d	No further work	Probable military artillery position, based on construction style, context, and association with military refuse
-21658	Hammatt and Bush 2000	Likely late nineteenth century complex of five stone *ahu* or mounds (Features A through E)	d	Preservation through avoidance OR development of a mitigation plan	Series of *ahu* or mounds likely associated with Puna Trail; mounds of differing sizes and heights; may mark location of standing water or temporary shelter for travelers in adjacent collapsed lava blister

SIHP # 50-10-35	Study Reference(s)	Site/Feature Type and Probable Age	Significance Criteria	Recommendation	Comments
-21771	Tolleson and Godby 2001	Late nineteenth century complex: enclosure (Feature 1), low platform (Feature 2), and two oblong depressions (Features 3 and 4)	a, c, d	Preservation (implied)	Site associated with fruit trees and meadow; numerous artifacts ranging from *poi* pounder to grinding wheel to pottery sherds and horseshoes; site interpreted as "way station" associated with construction and maintenance of Puna Trail, and as possibly only extant example of historic *pau hana* (finish work) area; Feature 4 interpreted as possible *imu*
-23273	Escott and Tolleson 2002	Trail with sections of curbing (Feature 1) and associated agricultural features (Features 2 and 3)	Feature 1: d Feature 2 and 3: Not significant	No further work	Pre-Contact and/or historic trail possibly associated with historic Puna Trail System, with associated planting features over 50 years old; no further work recommended for these features, though additional survey recommended for area between the trail and SIHP #s -18869 and -21273

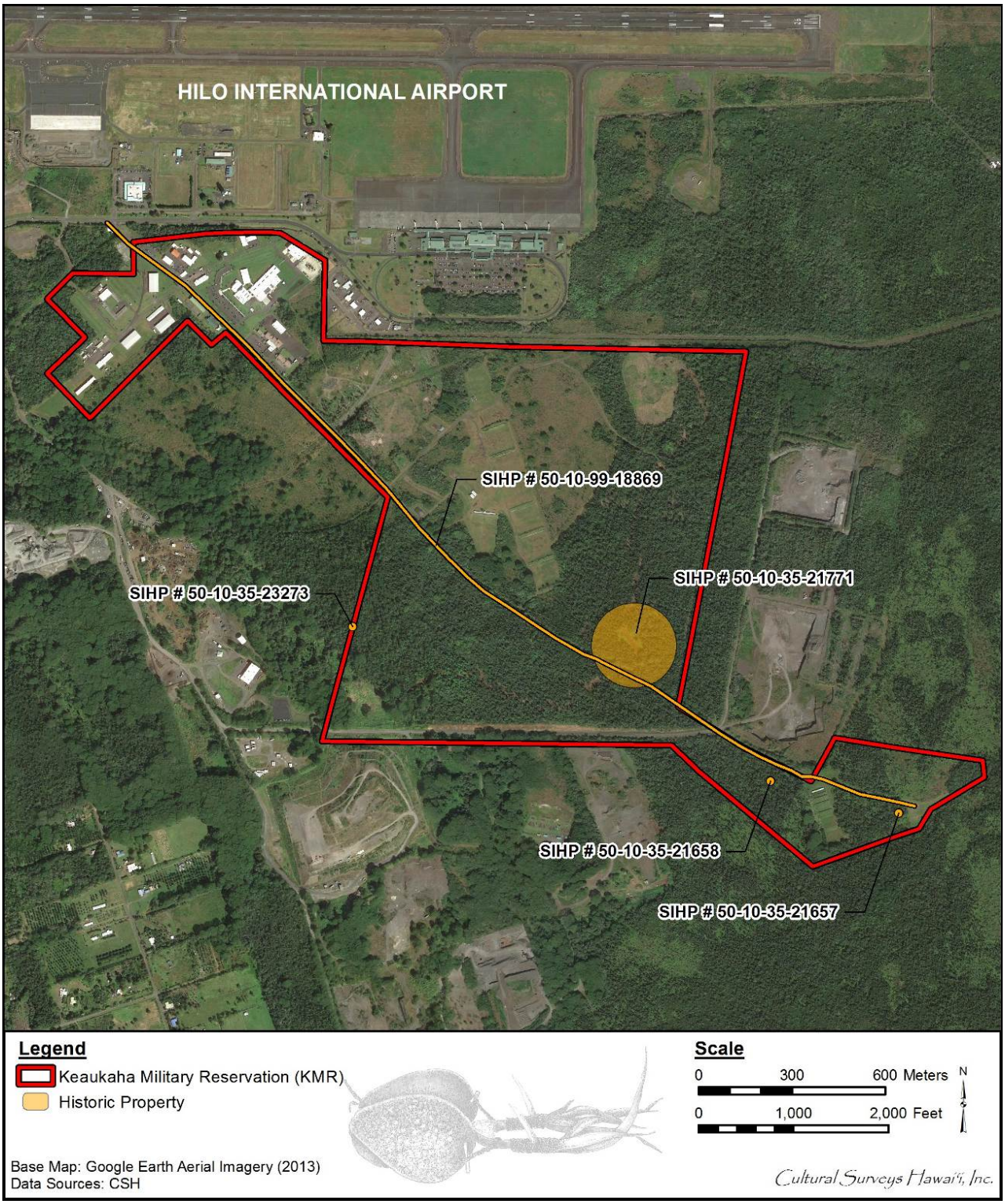

Figure 20. Aerial photograph (Google Earth 2013) showing the approximate locations of historic properties previously documented within the KMR (note: the locations and extent of the depicted historic properties are shown as understood from previous archaeological reports)

Figure 21. Adapted GIS database screen shot showing the potential location of SIHP # -18844, visible as a red dot near the center of photograph (Courtesy of SHPD)

4.4 Background Summary and Predictive Model

Waiākea, with its rich natural forest and ocean resources, has long been a center of habitation for Hawaiians and is often mentioned in Hawaiian folklore and legends. Hawaiian gods and goddesses frequented Waiākea including Pele, Hi‘iaka and Pana‘ewa. Many legends have associated Waiākea with Hawaiian *ali‘i* since the sixteenth century and describe it as a gathering place for ceremonies. The rich mountain resources of taro and sweet potato and the abundant marine resources, particularly shrimp and fish, made Waiākea very valuable to the Hawaiian people. Some 16 *heiau* of various sizes and classes stood within Waiākea.

Prehistorically the project area does not appear to have supported extensive habitation or large-scale agriculture. Habitations would have been located closer to the coast or further inland amid the more productive upland agricultural zones. This pattern is attributable to an excess of rainfall and lack of arable land within the dense forest that remains in the undisturbed portions of the project area. At present this forest is a mostly natural combination of endemic, indigenous, and introduced vegetation including such plants as *hala* (*Pandanus odoratissimus*), Melochia (*Melochia umbellate*), endemic *‘ie‘ie* (*Freycinetia arborea*), *ōhi‘a* (*Metrosideros macropus*), guava, various ferns, glory bush (*Tibouchina lepidota*) and bing-a-bing (*Macaranga mappa*).

The KMR parcel would have been used for intermittent, small-scale agriculture, with the natural depressions in lava flows used for mulch-type agriculture. Natural resources, such as the prevalent *lauhala* (leaves of the *hala* plant) used for weaving, would have been collected. The project area remained marginal in the historic period, with the probable continuation of intermittent use for traditional Hawaiian agriculture. The Puna Trail (SIHP #s 50-10-99-18869 and 50-10-36-21273) was modified and became the most notable man-made feature on KMR’s landscape. By the 1870s, the trail was a functioning horse trail. At this time the trail was a paved, 4-ft-wide trail, classified as a Type C trail following Apple’s typology (1965:65). A small handful of sites previously documented within KMR (including a series of *ahu* or cairns; a section of curbstone trail with associated planting areas; and a historic complex comprising a low platform, enclosure, and modified depressions) have all been at least tentatively associated with the Puna Trail.

Unlike portions of Waiākea further to the west, the vicinity of the KMR was not utilized for sugar cane; therefore, stacked stone mounds associated with this late nineteenth and early twentieth century agricultural activity are not expected to be extant within the project area.

The KMR parcel was subjected to extensive development beginning in 1914 with the establishment of the National Guard of Hawaii Rifle Range and continuing through World War II with Army and Navy use. Large portions of the KMR were graded for buildings, roads, firing ranges and lawns. The most extensive modifications occurred in the northwest portion of the parcel. Any archaeological remains once present in the areas at KMR that have undergone extensive military-related development have been effectively removed. All of the structures in KMR date to the military use period. While the alignment of the Puna Trail through KMR survived these changes as a Jeep road, the nineteenth century characteristics of the trail, such as paving and curbstones, apparently did not. Because it has been modified for vehicle travel (Apple 1965:65), the Puna Trail through KMR has become a Type D trail, following Apple’s trail typology.

The southeast portion of KMR is relatively undisturbed in comparison, and it is here that past survey work has located the remains of possibly prehistoric and early historic sites. However, given

the marginal nature of this area of Waiākea and the distribution of features indicted by past studies, a low site density is expected within the project area. The types of traditional archaeological sites likely to be found within KMR include small, temporary habitations or shelters, which could be associated with occupation near the Puna Trail. Agricultural areas may consist of groupings of mounds, low mounded walls, or modified pits, depressions or outcrops in exposed lava areas. These types of features are often found in marginal areas and are testimony to the Native Hawaiians' ability to utilize such areas for subsistence agriculture. If features of these types are found during the survey fieldwork, the potential for modification in early historic times or during the military era must be evaluated.

Military features may also be found within the project area. In addition to the more obvious buildings, Jeep roads, lawns, and shooting ranges, military use can leave less obtrusive remains. For example, small, crudely constructed stacked stone enclosures, similar to Native Hawaiian structures, are constructed as artillery positions during training exercises. It would not be unusual to find such structures within KMR. These features are usually distinguishable from Native Hawaiian ones by their cruder construction style, geographic association with other military structures, and their association with military debris, such as spent ammunition casings, MRE (meals ready to eat) packets and/or C-ration tins.

Section 5 Results of Fieldwork

5.1 Survey Findings

During the current AIS, CSH attempted to relocate SIHP # 50-10-35-18844. The general site location indicated on the SHPD GIS screenshot (see Figure 21) and the greater surrounding area was surveyed for any potential archaeological features. As no site description for SIHP # -18844 has been identified, this site is not presented below. Based on the findings of the present survey, this site appears to have been negatively impacted by past development at KMR and no longer exists (see Figure 5, Figure 21 and Figure 22). Other previously identified features that could not be relocated include Features B and C at SIHP # -23273 (see Section 5.2.5).

The pedestrian inspection identified 11 historic properties, including five previously identified and six newly identified sites. These sites are located on Figure 23 and Figure 24 and are summarized in Table 4. The locations of the documented sites in relation to the disturbed and undisturbed unmaintained grounds at KMR are indicated on Figure 25. The information used to obtain SIHP numbers for the newly identified sites is included in Appendix E.

The alignment of the historic Puna Trail (SIHP # -18869) was previously thought to be completely obliterated by modern improvements to the road (Hammatt and Bush 2000). During the current survey, a segment of the historic curbstone alignment was identified parallel to the modern Jeep road (see Figure 23 and Figure 24, Section 5.2.1). In order to better distinguish this historic segment from the modern jeep trail, it has been assigned a new site number (SIHP # -30038). Furthermore, at one previously identified site (SIHP # -21771) eight additional features were newly documented (see Section 5.2.4). These features were probably not identified during the Tolleson and Godby (2001) investigations at this site because of the somewhat limited (100 sq m) survey area and because of dense vegetation in the surrounding area. The boundary of SIHP # -21771 has been updated accordingly, representing a more accurate depiction of its extent (compare Figure 20 and Figure 24).

Figure 22. Photo showing the disturbed vicinity of SIHP # -18844; view to north

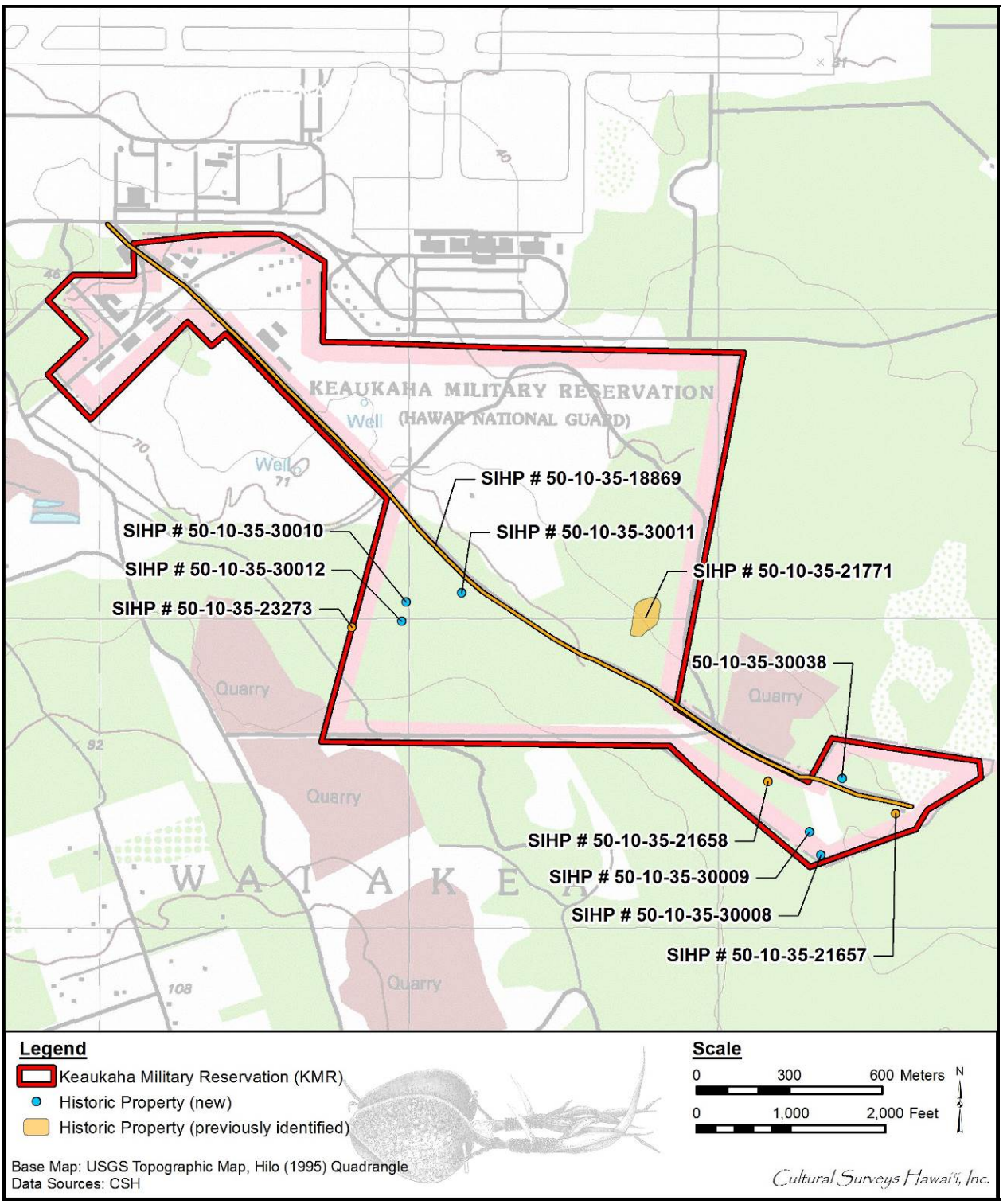

Figure 23. Portion of the 1995 Hilo USGS 7.5-minute Topographic Quadrangle, showing the locations of historic properties relocated or newly documented during the AIS within the KMR

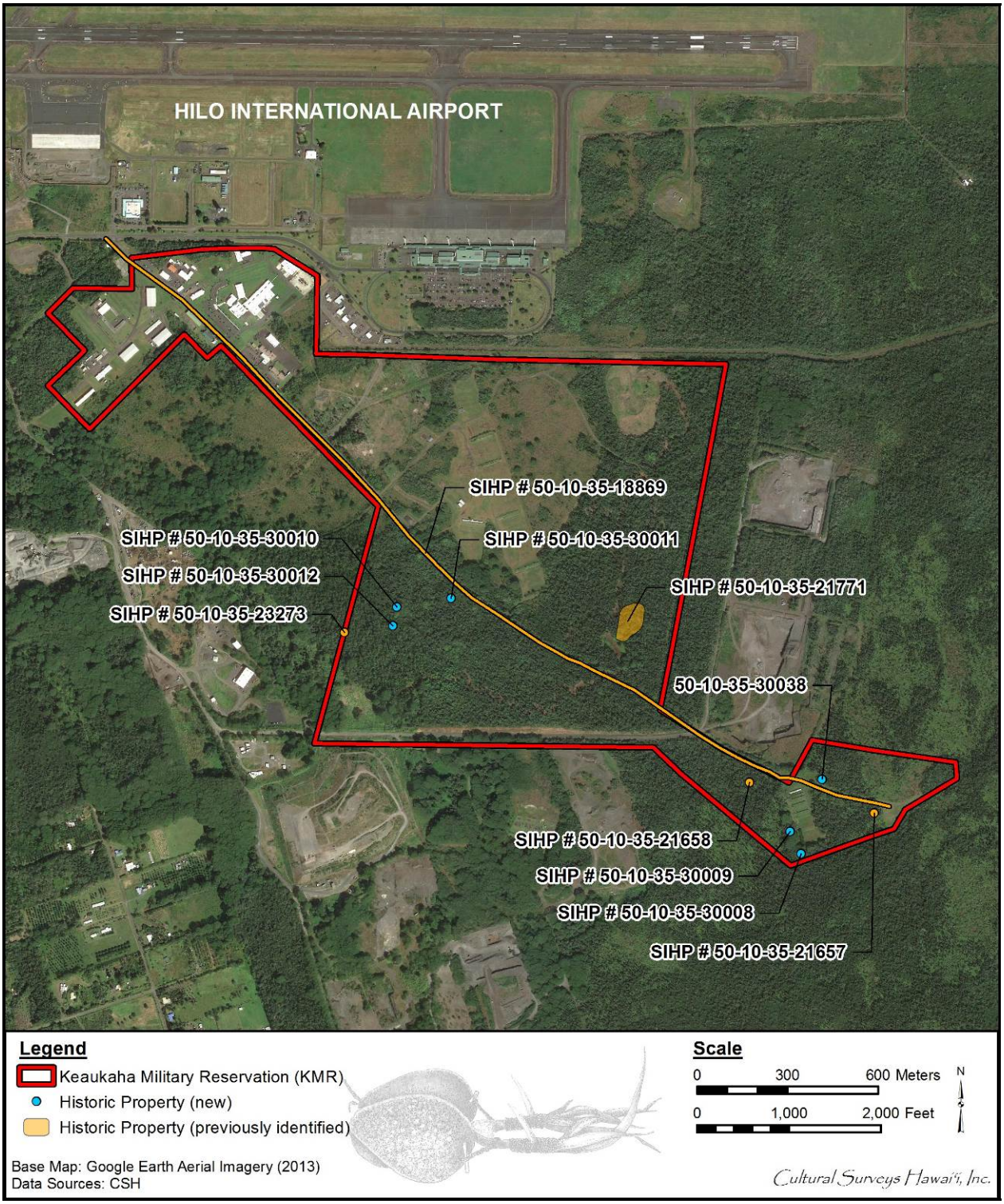

Figure 24. Aerial photograph (Google Earth 2013) showing the locations of historic properties relocated or newly documented during the AIS within the KMR

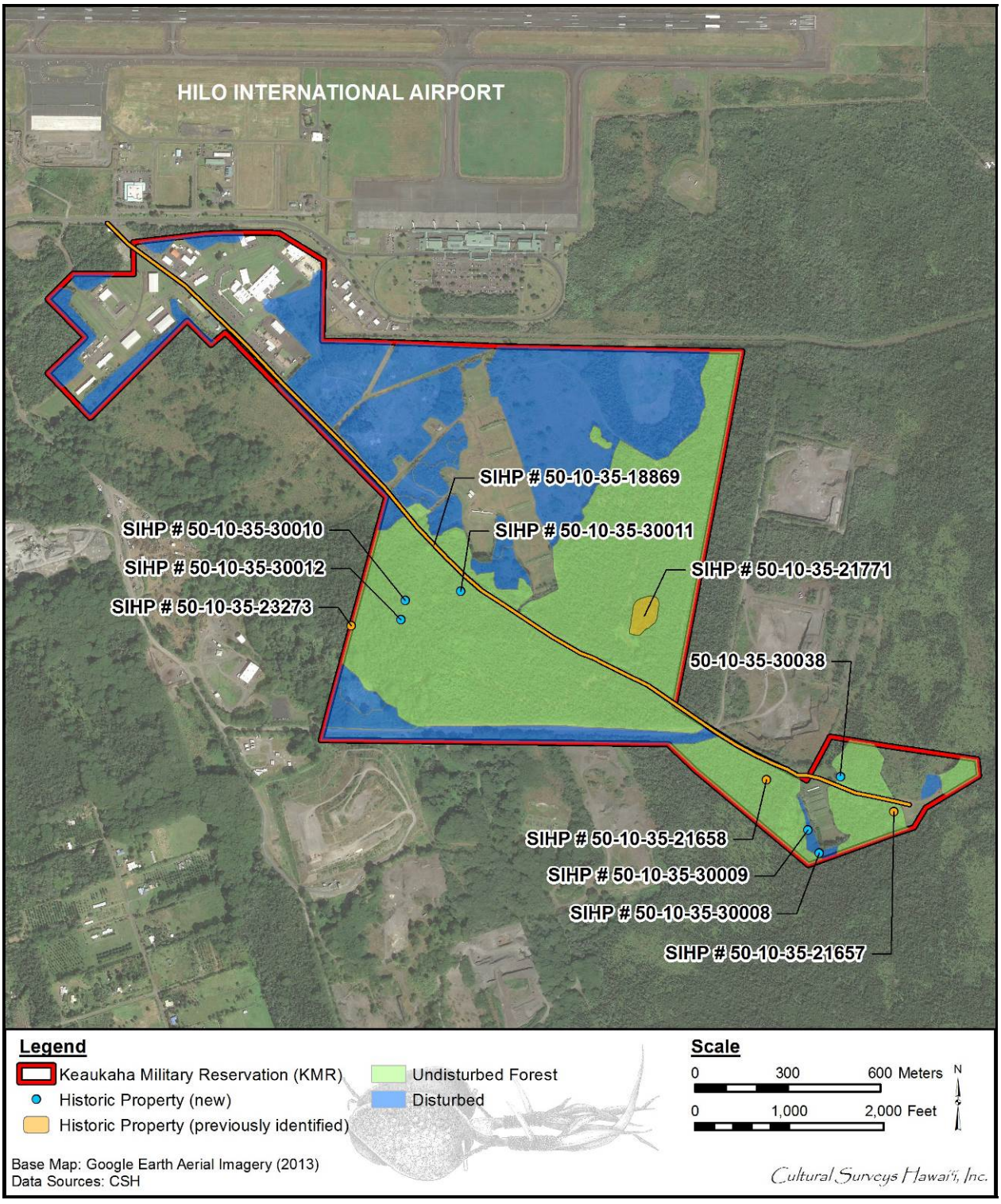

Figure 25. Aerial photograph (Google Earth 2013) showing the locations of historic properties relocated or newly documented during the AIS, in relation to both the disturbed and undisturbed portions of the survey area

Table 4. Summary of Historic Properties Documented During the Phase I AIS

SIHP # 50-10-35	Temporary CSH Site Number (2013)	# of Features	Formal Type	Function	Probable Age
-18869	CSH-003 (newly identified historic segment)	One	Trail	Transportation	Late nineteenth century/ modern
-21657	–	One	C-shaped enclosure	Military artillery position	Twentieth century
-21658	–	Five (A–E)	Complex	Markers	Late nineteenth century or older
-21771	CSH-005 (newly recorded associated features)	Twelve (A–L)	Complex	Temporary habitation; activity area; possible agriculture	Late nineteenth century
-23273	–	Three; only Feature 1 was relocated	Complex	Transportation; agriculture	Pre-Contact to late nineteenth century
-30008	CSH-001	One	Modified lava tube	Recurrent shelter	Pre-Contact to historic
-30009	CSH-002	Three (A–C)	Complex	Temporary habitation	Pre-Contact to historic
-30010	CSH-004	Five (A–E)	Complex	Temporary habitation; activity area; possible agriculture	Late nineteenth century
-30011	CSH-006	Two (A–B)	Complex	Indeterminate	Late nineteenth century
-30012	CSH-007	One	Trail	Transportation	Pre-Contact to late nineteenth century
-30038	CSH-003	One	Trail	Transportation	Late nineteenth century

5.2 Historic Properties Descriptions

5.2.1 SIHP # 50-10-35-18869

Hudson (1932) first described the Puna Trail as follows:

> Site 38. The beginning of the Puna-Kau trail is now in back of the [HIARNG] rifle range, the section nearer Hilo having been destroyed. It is about 4 feet wide, paved with bits of aa lava and flat stones, banked on the sides, and built up in crossing gullies. For the first 5 miles toward Keaau the trail runs through dense jungle which has disrupted much of the stonework. It can be followed with difficulty. [Hudson 1932:246]

The trail was briefly noted by McEldowney (1979) as "Segments of trails" occurring "at frequent intervals along the coast west of Leleiwi Point." Hammatt and Bush (2000:27-28) described SIHP # -18869 (citing also its additional segment in Puna District, SIHP # -21273) as follows:

> **Site Type:** Puna Trail (Historic Trail)
> **Function:** Transportation
> **Features (#):** 1
> **Site Length:** Approximately 3000 m within project area
> **Ahupua‘a:** Waiākea
> **Elevation:** 60 ft. amsl
>
> The Puna Trail forms the primary roadway through the KMR facility. It extends from the facility entrance, off the airport access road in the northwest corner of the facility, through the center of KMR to the southeast corner of the facility. The northwestern portion of the trail through the facility is paved. The southeastern portion of the trail is unpaved, consisting of a Jeep-road similar to the other unpaved roads which cross KMR. From the bull-dozer push-piles found at intervals along the unpaved portion of the trail, it appears that the trail was bull-dozed or graded in the past, probably by the military. No sign of the historically described paving and curbstones was observed. It appears that modifications of the route have removed all traces of the historic trail which preceded the Jeep road.
>
> The Puna Trail, taken in its entirety as it stretches from Hilo through Puna and possibly into Kau, is a significant historical property under the criteria of the State and National Register of Historic Places, for both its information content regarding historic transportation (criterion D) and for its contribution to broad patterns of history (criterion A). Lass's (1997:24) investigations of the "Old Government Road", a portion of the Puna Trail approximately 7 miles to the southeast of the KMR facility, demonstrate that portions of this historic trail are well preserved and available for future research and public education and enjoyment. However, within KMR, the remains of the Puna Trail have been altered by military use. Only the alignment of the trail remains. The available

> information for the trail, which now consists of its alignment, has been recorded on project area maps. For this reason, within KMR, the segment of the Puna Trail is considered no longer significant. [McEldowney 1979:10]

During the current AIS, CSH relocated SIHP # -18869 within the project area (Figure 26 and Figure 27). Hammatt and Bush (2000) accurately describe the general state of the Puna Trail alignment within the KMR. Based on the current findings, the site no longer retains integrity as a historic property.

Figure 26. Photograph of a portion of SIHP # -18869 within KMR, view to east

Figure 27. Photograph of a portion of SIHP # -18869 within KMR, view to west

5.2.2 SIHP # 50-10-35-21657

Hammatt and Bush (2000) described SIHP # -21657 as follows:

Site Type: C-Shape
Function: Military Artillery Position
Features (#): 1
Site Dimension: 4.25 m (meters) by 5.2 m (14 ft. x 17 ft.)
Ahupua‘a: Waiakea
Elevation: 60 ft. a.m.s.1.

Site 50-10-35-21657 is located approximately 45 m. (150 ft.) from a HIARNG quonset hut at 1,030 magnetic north, near the quarry at the southeast end of KMR. It is surrounded by sharply undulating *pahoehoe* composed of raised areas, deep crevices, and several collapsed lava tubes. The surrounding vegetation consists of *ohia*, strawberry guava, vines, *ti* and orchids.

Site -21657 is a "C-shaped" stacked-stone enclosure measuring approximately 4.25 m. (14 ft. east-west) by 5.2 m. (17 ft. north-south) [Figure 28]. The interior of the structure measured 3.6 m (12 ft. east-west) by 3.0 m. (9.5 ft.) north-south. The average height of the interior face is 118 cm (centimeters), while the exterior face is somewhat sloped with heights ranging from 125-190 cm. The enclosure is built against the south edge of a raised *pahoehoe* flow, with its south and east sides stacked up to create a protective wall of uniform height. The site is in fairly good condition though there is evidence of some collapse.

Site -21657 is constructed of roughly stacked *pahoehoe* boulders and cobbles. At the top of the structure the rocks are one course thick, while the bottom (due to sloping walls) is thicker. This feature is one to five courses wide, with the south and east sides being the steepest. The interior floor surface of the structure is sloped and consists of boulder, cobbles, smaller rocks and pockets of humus. Several small trees (*ohia*, strawberry guava), orchids and *ti* are growing within the structure. No indigenous artifacts or marine shell midden was observed. Immediately to the west of the structure several military trash items were noted, including MRE's, tuna cans, and miscellaneous unidentifiable metal fragments.

Due to the crude construction of the walls, the lack of indigenous artifacts, or other cultural material, the sloping and rocky interior, and the garbage and debris left from military activities, it is likely that the structure is military in origin.

This feature was not tested. The generally thin humus layer over bedrock that was found within and around the structure had no excavation potential.

There were difficulties with dating the construction of this site. Based on the association with the MRE packets, which came into use after the Vietnam War, it would seem the structure was used within the last 20 to 25 years. The older, C-ration, type tins also found at the structure date back to World War II, suggesting that the structure may be older than 50 years. For this reason the site was given a

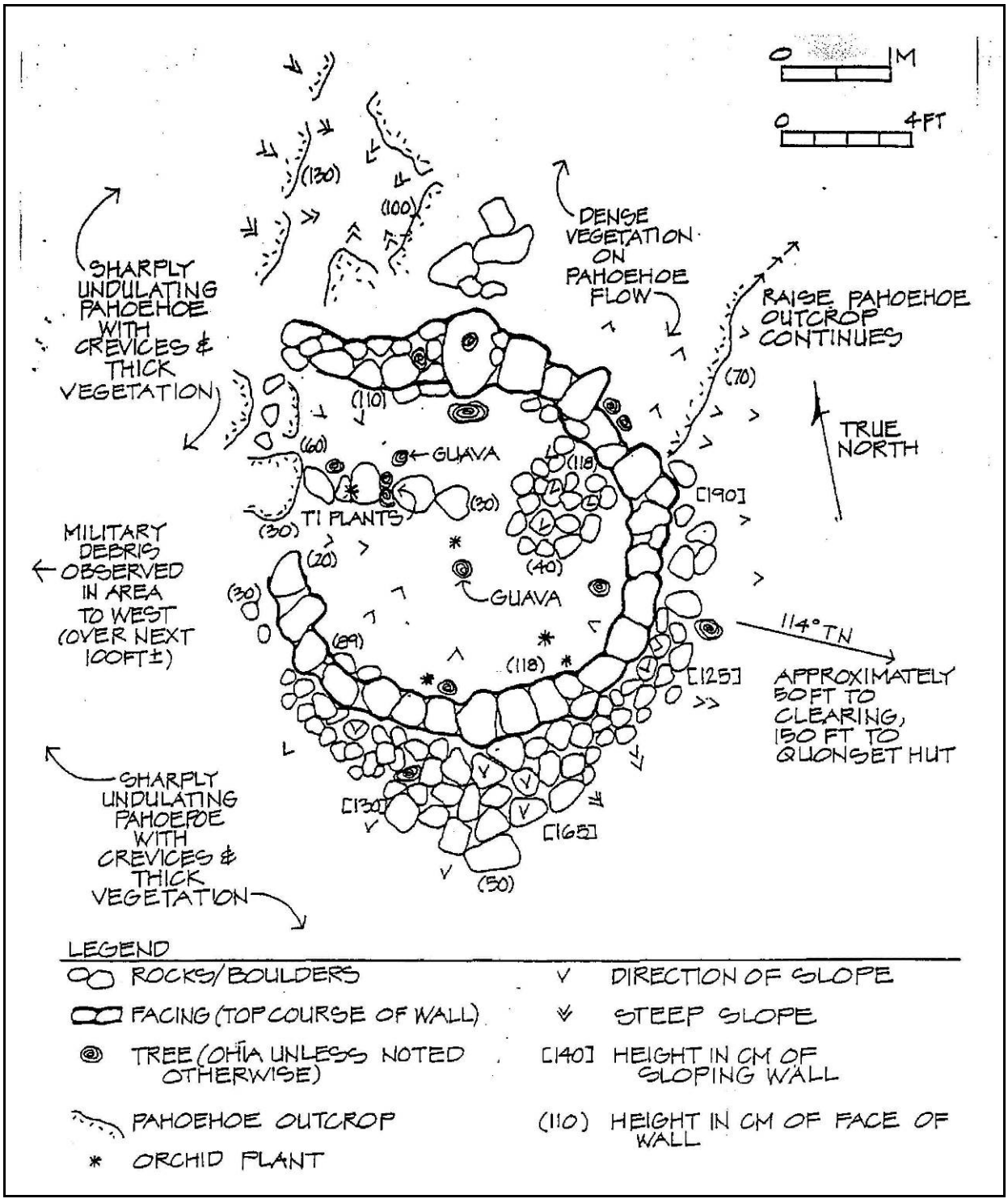

Figure 28. Plan view map of SIHP # -21657 from Hammatt and Bush (2000:30)

> state site number. The site was significant for its information content, criterion D of the National and State Registers of Historic Places. The information content of the site, including site map, photographs, and location, have been recorded during the Phase II work and is no longer considered significant. [Hammatt and Bush 2000:24-25]

During the current AIS, CSH relocated SIHP # -21657 within the project area (see Figure 23 and Figure 29). The Hammatt and Bush (2000) site description and plan view map were determined to be accurate.

Figure 29. Photograph of SIHP # -21657, view to southeast

5.2.3 SIHP # 50-10-35-21658

Hammatt and Bush (2000) described SIHP # -21658 as follows:

Site Type: Possible Mounds/*Ahu*
Function: Marking points
Features (#): 5 (Features A-E)
Site Dimension: 19 m. east-west x 4 m north-south
Ahupua‘a: Waiakea
Elevation: 60 ft. a.m.s.l.

State Site 50-10-35-21658 is a complex of five stacked-stone mounds built along the edge of a collapsed lava tube/blister [Figure 30]. The mounds are all approximately 7 m. from the Puna Trail road and approximately 200 m. northwest of site 50-10-35-21657 in the southeast region of KMR. The surrounding vegetation consisted of *uluhe* ferns, strawberry guava, various grasses and vines. The mounds are built up on a *pahoehoe* flow, but *a‘a* lava is also present in the immediate area.

The mounds are in good condition but do have evidence of tumbling, especially the ones closest to the edge of the blister. All mounds are constructed of small to medium *pahoehoe* boulders and each ranges in height from 20 cm to 147 cm above the top of ledge. Individual features are described below:

Feature A is a mound measuring 1.0 m x 1.1 m with no definite facings. It is approximately 53 cm (centimeters) high on the north side and 90 cm on the south side.

Feature B is a mound measuring 1.1 m x 1.0 m with no facing. This feature is approximately 45 cm in height on the north side, 60 cm on the east side and 20 cm on the south side. The mound is tumbled on the south side.

Feature C is a mound measuring 0.8 m x 1.0 m with no facing. It is approximately 67 cm in height on the north side, 60 cm on the south side and 80 cm on the west side.

Feature D is a mound measuring 1.0 m x 1.7m with facing on the east, south and part of the west side. It is approximately 43 cm on the north side, 68 cm on the south side, 93 cm on the west side and 147 cm on the east side.

Feature E is a mound measuring 1.2 m x 1.0 m with facing on all sides. It is approximately 116 cm in height on the north side, 123 cm on the south side, 97 cm on the west side and 122 cm on the east side.

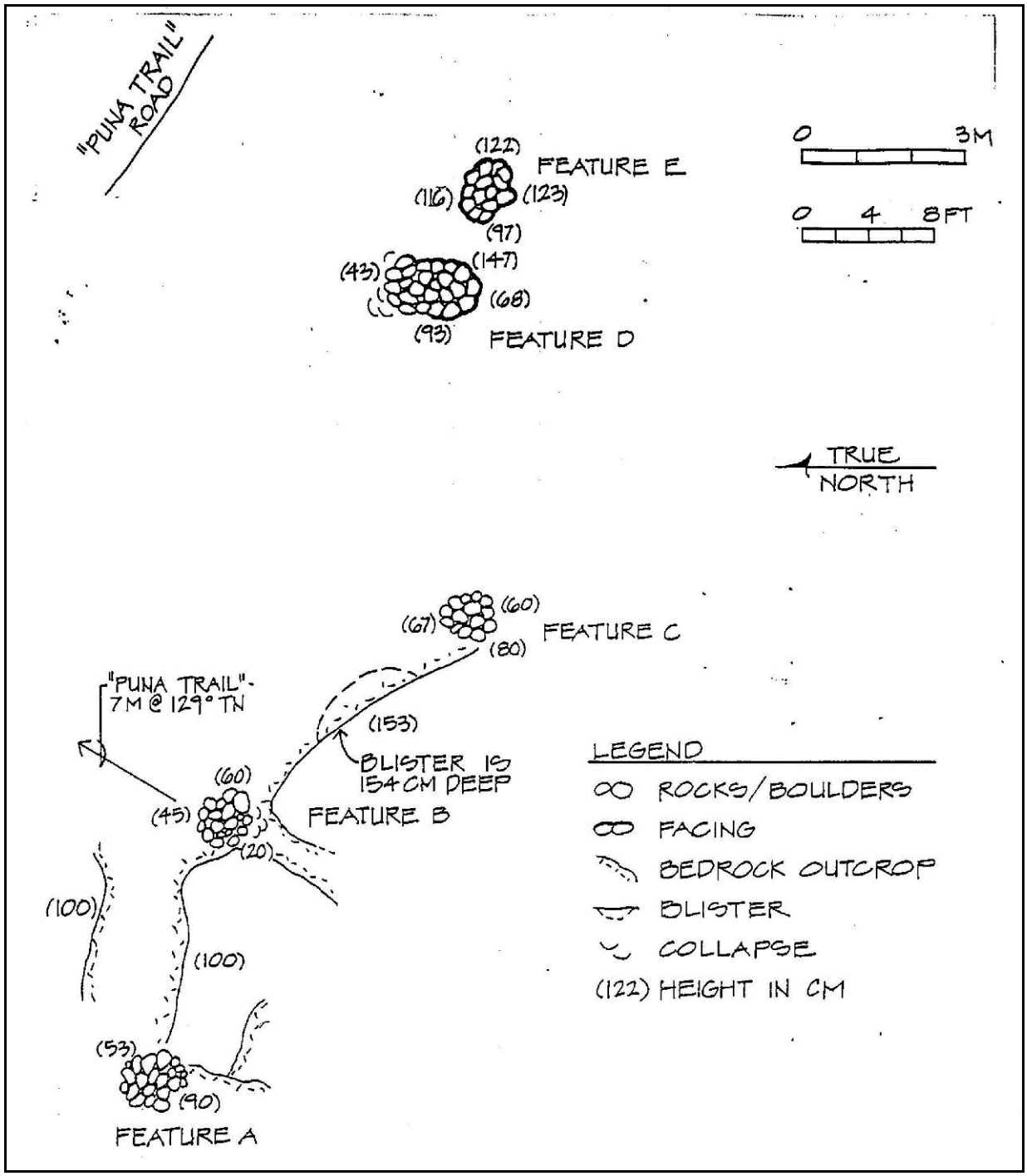

Figure 30. Plan view map of SIHP # -21658 from Hammatt and Bush (2000:32)

> Features A-C were constructed along a bedrock lava ledge of a collapsed blister. This ledge drops off 100-153 cm with the deepest drop on the northernmost side of the ledge. Two of the mounds are incorporated into a lava blister, the largest blister lying between Features B and C. This blister measures 1.5 meter across and is approximately 1.5 meter deep. No midden or modifications and very little soil were noted in the blisters or crevices.
>
> These mounds or ahu are thought to be associated with the Puna Trail. They form a rough alignment that parallels the trail. Their function is unclear, but the alignment suggests they served as markers, not for the trail itself, but rather for a specific location on the trail, perhaps of a water source or possibly the crude shelter afforded by the collapsed lava blister. This suggests that the *pahoehoe* blister associated with the features could have trapped rain water for agricultural use, for drinking water, or for horses traveling along the trail.
>
> Because the features are constructed on *pahoehoe* bedrock, there was no potential for subsurface testing.
>
> These features probably date to 19th century use of the Puna Trail, though they may be older. The features are significant for their information content, criterion D of the National and State Registers of Historic Places. They have the potential to yield information about historic trail use and/or sites associated with historic trail. [Hammatt and Bush 2000:25-26]

During the current AIS, CSH relocated SIHP # -21658 within the project area (see Figure 23, Figure 31 through Figure 35). The Hammatt and Bush (2000) site description and plan view map were determined to be accurate.

Figure 31. Photograph of SIHP # -21658 Feature A, view to east

Figure 32. Photograph of SIHP # -21658 Feature B, view to east

Figure 33. Photograph of SIHP # -21658 Feature C, view to south

Figure 34. Photograph of SIHP # -21658 Feature D, view to west

Figure 35. Photograph of SIHP # -21658 Feature E, view to north

5.2.4 SIHP # 50-10-35-21771

At SIHP # -21771, Tolleson and Godby (2001) documented a total of four features (Features 1 through 4). During the present survey, CSH relocated the site (Figure 23 and Figure 37) and documented an additional eight associated features, for a total of 12 features within the complex (see Figure 23, Figure 36, and Figure 37). The complex covers an area of 2.16 acres. A chain link fence encloses Features A through G, which are accessed through a gate at the end of a jeep trail. As CSH typically designates features alphabetically, Features 1 through 4 have been reassigned as Features A through D. This enables consistency with the designation of features at other sites within the project area. Features A through D (Tolleson and Godby's Features 1 through 4) are presented first, followed by the newly identified Features E through L.

5.2.4.1 Features Recorded by Tolleson and Godby (2001)

Feature A (Tolleson and Godby's Feature 1)

Tolleson and Godby (2001) described Feature A as follows:

> Feature 1 [A] (enclosure) lies in an area of undulating *a'a,* flows and crevices, severe uplift and heavy vegetation consisting of bing-a-bing (*[M]acaranga mappa*), *hala* (*Dicranopteris llineraris*) [sic], guava (*Psidium spp*.), ti (*Cordyline [t]erminalis*), *'ie'ie* (*Freycinetia arborea*), mango *([M]angifera [spp.]) liliko'i* (*[P]assiflora edulis*), lantana, and *lehua* ['*ōhi'a*] (*metrodideros*) [sic; *Metrosideros* spp.] and avocado (*[P]ersea americana)*. The feature measures 6.47 m (21 ft) E/W by 6.20 m (20 ft) N/S, and approximately 1 m (3 ft) in height. It is constructed of stacked *pahoehoe* cobbles on a *pahoehoe* flow. A datum marker placed for mapping, with the corners of each quadrant meeting at this central datum point. The northeast quadrant was designated quadrant A, the southeast quadrant B, southwest quadrant C, and the southwest quadrant D.
>
> Quadrant A is the least disturbed area of the enclosure, constructed of a small amount of water rounded cobbles and boulders. Quadrant A's height is uniformly 1 m, sloping south 60 cm to end as tumble at the southern edge of the quadrant.
>
> Quadrant B consists of collapsed outcrop and rubble. Several large boulders remain in place in the wall, retaining the overall shape and height in this quadrant. Quadrant C contains the large entrance to the enclosure at the west edge. The entrance is in the N/W portion of the quadrant and is approximately 80 cm wide. There is collapse along most of this quadrant except for a small section containing five boulders ranging from 60 cm to 1 m in size. The eastern end of the entrance terminates in small klinker and rubble, and the western end terminates with klinker upon *pahoehoe*. Quadrant D contains a natural hole, or *puka*, under the flow. The hole measures approximately 50 cm by 50 cm and extends 90 cm into the flow. No soil deposits or cultural materials are present. Materials recorded within the vicinity of FE1 included a poi pounder, an egg shaped water worn stone (possibly a poi pounder blank), a large oval water-worn manuport, and a broken patent medicine bottle. Only the poi pounder was collected. [Tolleson and Godby 2001:25-27]

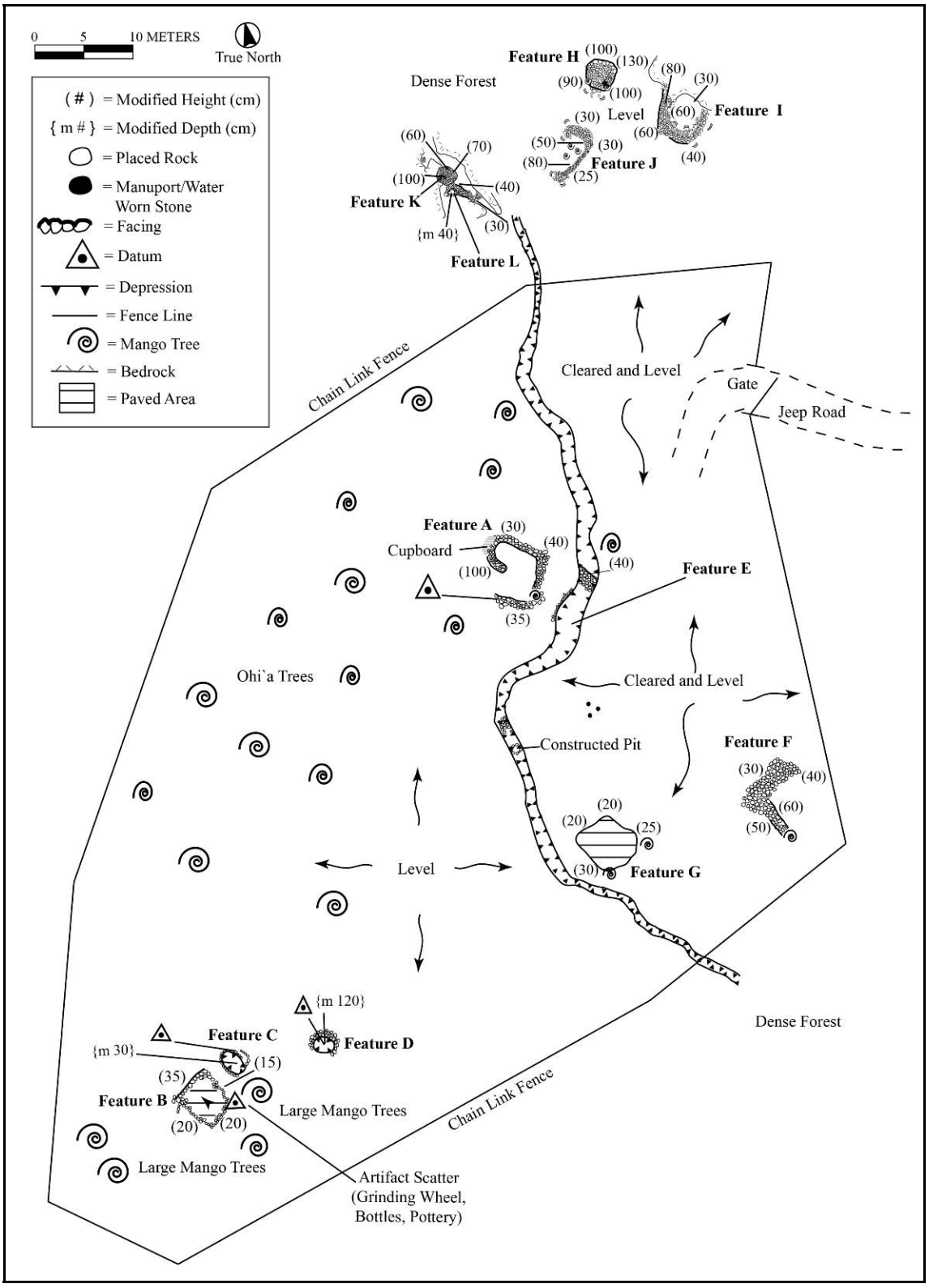

Figure 36. Plan view map of SIHP # -21771; note, top of map is oriented to 13 degress true north

Figure 37. Overview photograph of SIHP # -21771, view to northwest

During the current AIS, the Tolleson and Godby (2001) description of Feature A was determined to be generally accurate, although deterioration was noted along the eastern and western sides of the feature. Feature A was photographed and remapped (see Figure 36, Figure 38, and Figure 39).

Figure 38. Photograph of SIHP # -21771 Feature A, view to east

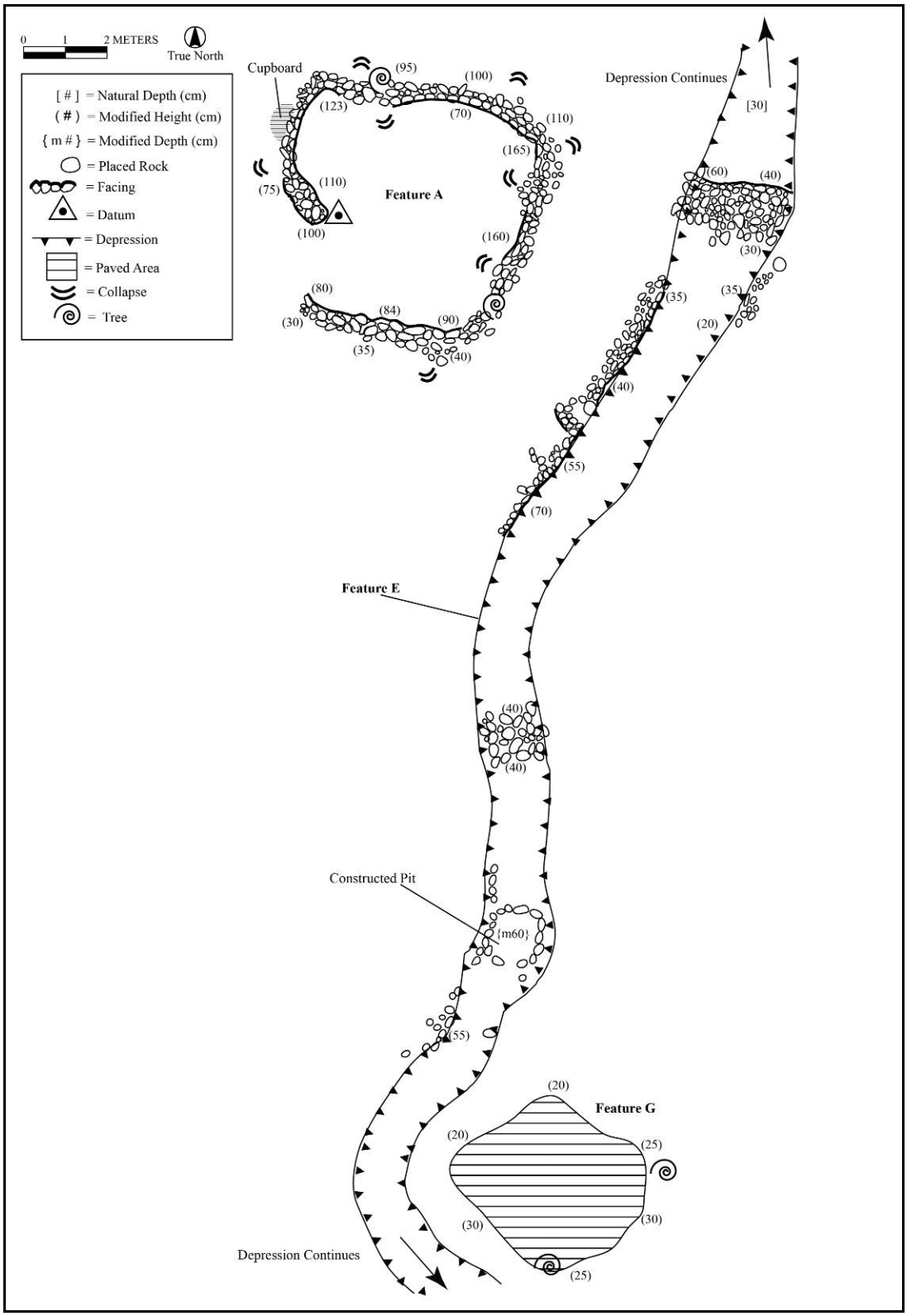

Figure 39. Plan view map showing SIHP # -21771 Features A, E, and G

Feature B (Tolleson and Godby's Feature 2)

Tolleson and Godby (2001) described Feature B as follows:

> Feature 2 [B] is roughly square platform measuring 4.0 m (13 ft) by 4.0 m (13 ft) located 60 m (197 ft) southwest of Feature 1 [A]. The N/W platform edge is approximately 20 cm (centimeters) in height above three agricultural pits. It is constructed of water rounded and rough *a'a* cobbles and boulders ranging in size from 10 cm (5 inches) to 20 cm (10 inches) in diameter. Built atop an *a'a* flow, the platform trends downward and to the northwest. The platform surface is generally flat and paved with small *a'a* klinker. There are five interior sub-features consisting of 5 postholes that are aligned along the edge of the platform. No hearths or cooking areas are present. Artifacts recovered include four horseshoes and a metal file, a manuport located in the tumble of the northeast wall and a metal pot recovered from the foot of a large mango tree located on the edge of the platform. The file and the pot both have a metal tang where a wooden handle would have been attached. [Tolleson and Godby 2001:27-28]

During the current AIS, the Tolleson and Godby (2001) description of Feature B was determined to be generally accurate. The platform measures more like 6.0 m (NW-SE) and 4.0 m (NW-SE), with the northewest edge rising 40-50 cm above the ground surface. No agricultural pits were identified along this side of the feature. Feature B was photographed and remapped (see Figure 36, Figure 40, and Figure 41). A grinding wheel identified by Tolleson and Godby (2001) was observed between Features B and C (not collected; Figure 42).

Feature C (Tolleson and Godby's Feature 3)

Tolleson and Godby (2001) described Feature 3 as follows:

> Feature 3 [C] is an oblong depression measuring 2.8m (9 ft) along an axis WSW by ENE and 1.5 m (5 ft) along an NS axis. This feature lies immediately north of the platform [Feature B]. The depression is lined with klinker and cobbles and symmetrical upright slab is placed at the one end of the depression. Pottery sherds were collected from the surface at the S/W of the feature as well as subsurface during excavation. [Tolleson and Godby 2001:28]

During the current AIS, the Tolleson and Godby (2001) description of Feature C was determined to be somewhat accurate. The orientation of the pit, which is located not north of Feature B but northeast, was presently assessed as lying along a reverse axis (ESE by WNW). The location of the former test unit (TU-1) was observed. Feature C was photographed and remapped (see Figure 36, Figure 40, Figure 43 and Figure 44).

Feature D (Tolleson and Godby's Feature 4)

Tolleson and Godby (2001) described Feature D as follows:

> Feature 4 [D] is an oblong depression located approximately 9 m north of Feature 2 [B]. The depression measures approximately 2.5 m E/W (8 ft) by 1.5 m N/S (5 ft) with the long axis orientated E/W and a depth (below surface) of 1.25 m. The steeply rising sides are lined with loosely piled medium to small sized cobbles. The bottom of the feature is flat, with some soil development. No artifacts were

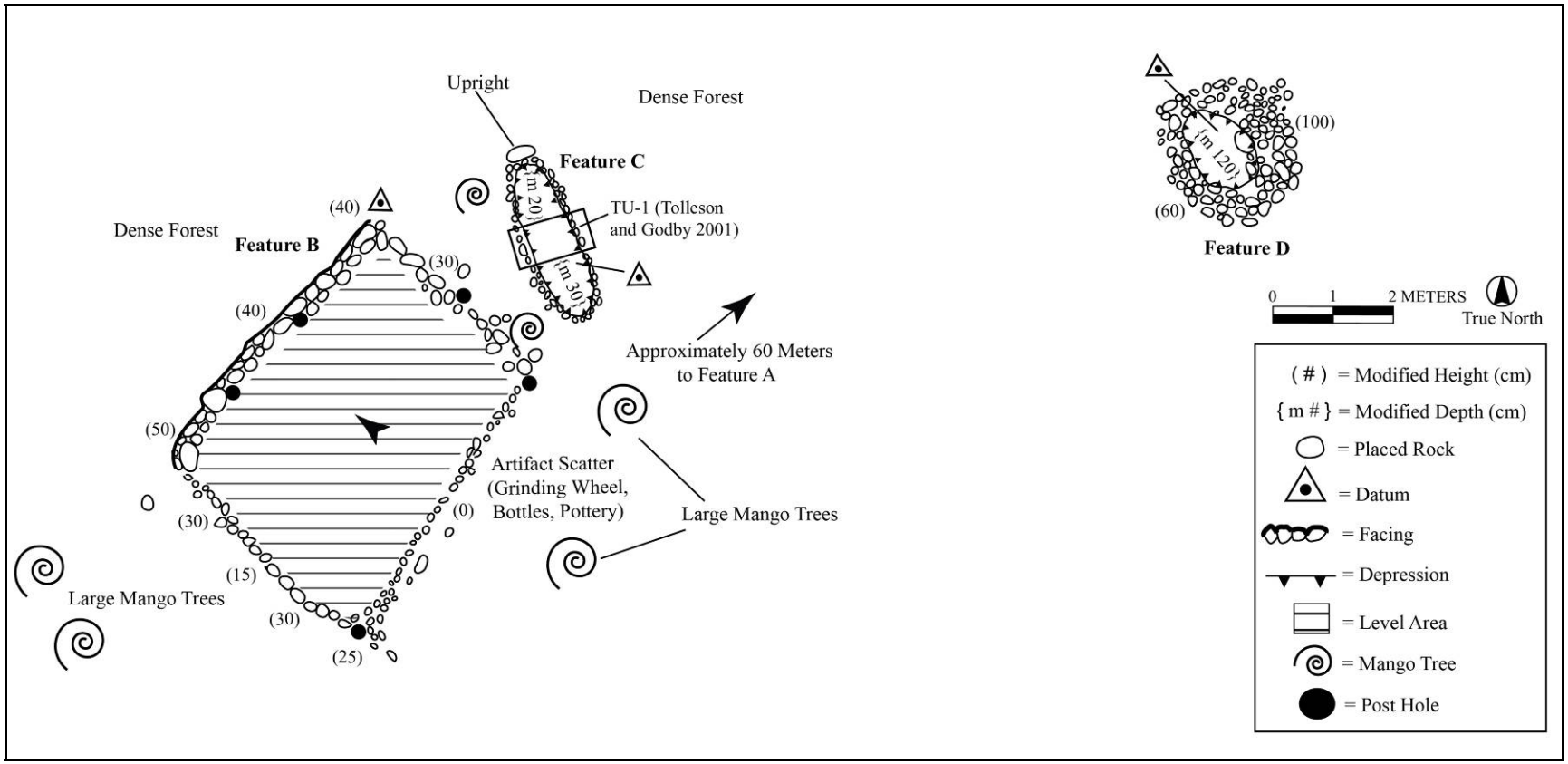

Figure 40. Plan view map showing SIHP # -21771 Features B, C, and D and the location of Tolleson and Godby's (2001) TU-1 at Feature C

Figure 41. Photograph of SIHP # -21771 Feature B, view to northwest

Figure 42. Photograph of grinding wheel near SIHP # -21771 Features B and C, view to south

Figure 43. Photograph of SIHP # -21771 Feature C, view to northwest

Figure 44. Photograph of SIHP # -21771 Feature C, showing the upright slab located along the northern end of the feature, view to northwest

> located in the depression, however, an historic bottle was found on the surface south of the feature. [Tolleson and Godby 2001:28]

During the current AIS, the Tolleson and Godby (2001) description of Feature D was determined to be somewhat accurate. The feature is located east of Feature B, not north, and it appears the dense vegetation has further deteriorated the constructed edges of the depression. Feature D was photographed and remapped (see Figure 36, Figure 40, and Figure 45).

Figure 45. Photograph of SIHP # -21771 Feature D, view to west

5.2.4.2 Newly Documented Features

During the present AIS, CSH documented eight additional features associated with SIHP # -21771 (Features E through L). Of these, three (Features E through G) are located within the fence line erected around the four previously identified features. The remaining five (Features H through L) are clustered within a densely vegetated area outside the fence line, approximately 10.0 to 15.0 m to the north (see Figure 36). The descriptions of the newly documented features are as follows:

TOPOGRAPHY: Fairly level to undulating
VEGETATION: *‘Ōhi‘a*, *hala*, *liliko‘i*, *uluhe*, guava, mango, *maile pilau*, bing-a-bing, autograph tree, octopus tree, Kosters curse
ELEVATION: 60 to 70 ft amsl
CONDITION: Poor to good
INTEGRITY: Disturbances from dense vegetation and possibly from military training
PROBABLE AGE: Late nineteenth century
FUNCTIONAL INTEPRETATION: Activity area, temporary habitation, possible agriculture

DESCRIPTION:

Feature E is a modified, linear depression that runs through the overall complex past the eastern side of Feature A (see Figure 36 and Figure 39). The depression itself is likely a natural feature, and measures approximately 100.0 m in length (north/south) by up to 1.5 m wide (east/west) and 0.7 m deep. The depression levels out within the densely forested area south of the site, and along the eastern side of Features K and L to the north.

Along the western edge of the depression and approximately 3.5 m east of Feature A, a linear retaining wall has been constructed with three to four courses of stacked and faced basalt cobbles and boulders (Figure 46). The wall measures 7.2 m long (north/south), 0.4 to 0.6 m thick (east/west), and up to 0.7 m high from the floor of the depression. Two stone causeways have been constructed across the depression. The southern causeway is constructed of stacked basalt cobbles and boulders, measuring 1.8 m long (north/south) by 1.5 m wide (east/west) with a maximum height of 0.4 m. A second causeway is located to the north adjacent to Feature A (Figure 47). This causeway is more substantially constructed using basalt cobbles and boulders, perhaps due to its proximity to the enclosure. This causeway measures 2.3 m long (east/west) by 1.5 m wide (north/south) with a maximum height of 0.6 m. A pit has been constructed within the depression between Features A and E, approximately 3.0 m north of Feature G (Figure 48). It is unclear whether the pit was a modified natural feature within the depression, or if it was excavated. The pit has been lined with neatly stacked basalt cobbles, and measures 1.6 m long (north/south) by 1.1 m wide (east/west) with a maximum depth of 0.6 m below the surrounding depression floor. All the modifications within the depression are in good condition. No artifacts or cultural deposits were observed.

Figure 46. Photograph of SIHP # -21771 Feature E, showing the retaining wall along the western bank of the depression, view to north

Figure 47. Photograph of a portion of SIHP # -21771 Feature E, showing the northern stone causeway crossing the depression, view to south

Figure 48. Photograph of SIHP # -21771 Feature E, showing the constructed pit within the depression, view to north

Feature F is an L-shaped enclosure located within and approximately 3.0 m from the fence line that surrounds the bulk of the site complex (see Figure 36, Figure 49, and Figure 50). Feature F measures 7.0 m long (north/south) by 5.0 m wide (north/east) with maximum height of 0.5 m, and the walls are 1.0 to 2.5 m thick. It consists of three to four courses of neatly stacked basalt cobbles and boulders. Some evidence of facing was noted but the northern end of the feature exhibits collapse and the southern end has been disturbed by the growth of a large tree. The interior area slopes to the north and is generally clear of stones. It appears the fence line was erected to avoid and include this feature, although it had not been previously documented. Given the areas of collapse and disturbance from vegetation, the feature is in fair condition. No artifacts or cultural deposits were observed.

Feature G is a level, paved area located 1.5 m west of the southern terminus of Feature E (see Figure 36, Figure 39, and Figure 51). This roughly square feature is indicated by a basalt cobble surface contained along its edges with larger stones; the constructed edges are now largely collapsed. The pavement measures 4.5 m long (north/south) by 4.0 m wide (east/west), with the collapsed edges rising 0.2 to 0.3 m above the surrounding ground surface. Postholes were not observed. Feature G is in poor condition as a result of the heavy surrounding vegetation. No artifacts or cultural deposits were observed.

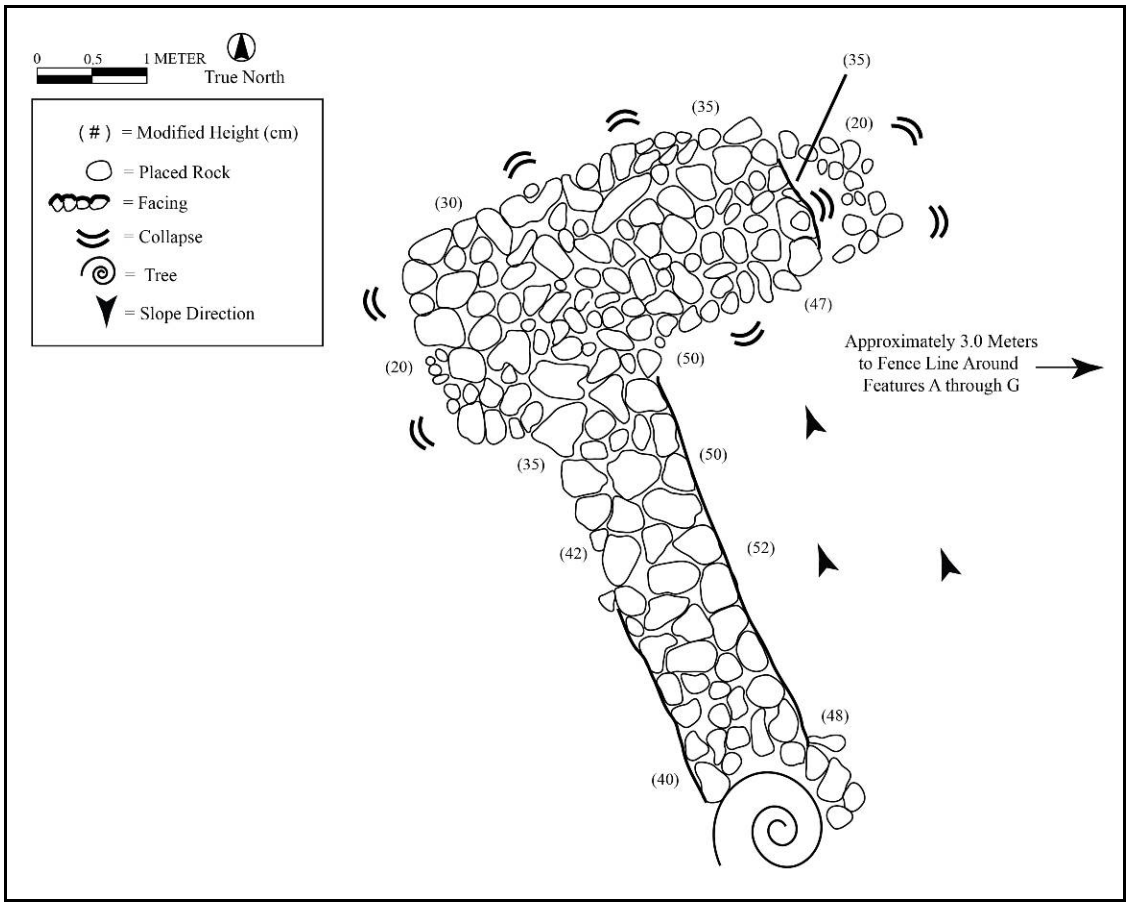

Figure 49. Plan view map of SIHP # -21771 Feature F

Figure 50. Photograph of SIHP # -21771 Feature F, view to northwest

Figure 51. Photograph of SIHP # -21771 Feature G, view to southwest

Feature H is a circular platform located approximately 15.0 m north of the protective fence line (see Figure 36, Figure 52, and Figure 53). The feature is constructed with up to seven courses of neatly stacked and faced basalt cobbles and boulders. The fairly level surface is of smaller cobbles. The feature measures 2.9 m long (north/south) by 2.8 m wide (east/west) with a maximum height of 1.2 m. Despite the presence of two large trees growing from the feature, it is in generally good condition. No artifacts or cultural deposits were observed.

Feature I is a C-shaped enclosure located 5.5 m east of Feature H (see Figure 36, Figure 52, and Figure 54). The feature abuts a natural bedrock outcrop to the north, forming a complete enclosure. It is constructed of stacked basalt cobbles and boulders, measuring 2.5 m long (north/south), 2.4 m wide (east/west) and up to 1.6 m thick with a maximum height of 0.6 m. Intact portions of the exterior northern and western wall sections exhibit formal facing; as the feature has experienced substantial collapse it is difficult to ascertain the overall formality of the original structure. The interior is full of collapsed rubble. The poor condition of the enclosure is attributable to heavy surrounding vegetation. No artifacts or cultural deposits were observed.

Feature J is a J-shaped enclosure situated 5.0 m south of Feature H (see Figure 36, Figure 52, and Figure 55). The feature is comprised of loosely piled basalt cobbles and boulders. The enclosure measures approximately 6.0 m long (east/west), 3.5 m wide (north/south) and up to 2.0 m thick with a maximum height of 0.8 m. The feature exhibits numerous areas of collapse attributable to heavy surrounding vegetation. No artifacts or cultural deposits were observed.

Feature K is a circular stone platform located approximately 15.0 m east of Feature J (see Figure 36, Figure 52, and Figure 56). The feature is constructed with four courses of neatly stacked and faced basalt cobbles and boulders. Feature K measures approximately 2.0 m long (north/south) by 2.1 m wide (east/west) with a maximum height of 1.0 m. It is in overall good condition with little collapse. No artifacts or cultural deposits were observed. A scattering of rocks surround this feature and the adjacent Feature L.

Feature L is a circular stone-lined pit located approximately 1.0 m east of Feature K (Figure 36, Figure 52, and Figure 57). What was likely a natural depression has been lined with two to four courses of stacked basalt cobbles. The constructed pit measures 0.8 m long (E/W) by 0.7 m wide (N/S) with a maximum constructed depth of 0.4 m. Above or directly north of the pit, a short wall adjoins the southeastern edge of Feature K, extending approximately 4.0 m southeast beyond the pit. This wall is of stacked basalt cobbles, measuring generally 1.0 m thick and up to 0.4 m high. Feature L is in overall good condition. No artifacts or cultural deposits were observed.

Tolleson and Godby (2001:46-47) determined SIHP # -21771 functioned as a late-nineteenth century way-station for road crew working on improvements to the pre-Contact Puna Trail. The features they identified were used as activity areas (repair/maintenance of equipment and tools, tending to horses and mules) and associated temporary habitation. The newly documented features at the site would have probably dated and functioned correspondingly.

Feature E (modified depression) was likely a natural drainage extending through the site. In fact, the overall location of the site may have been chosen in part because of the presence of this drainage, which would have provided water and an effective runoff channel in times of heavy rain. The modifications in and along the depression served to reinforce the drainage channel and

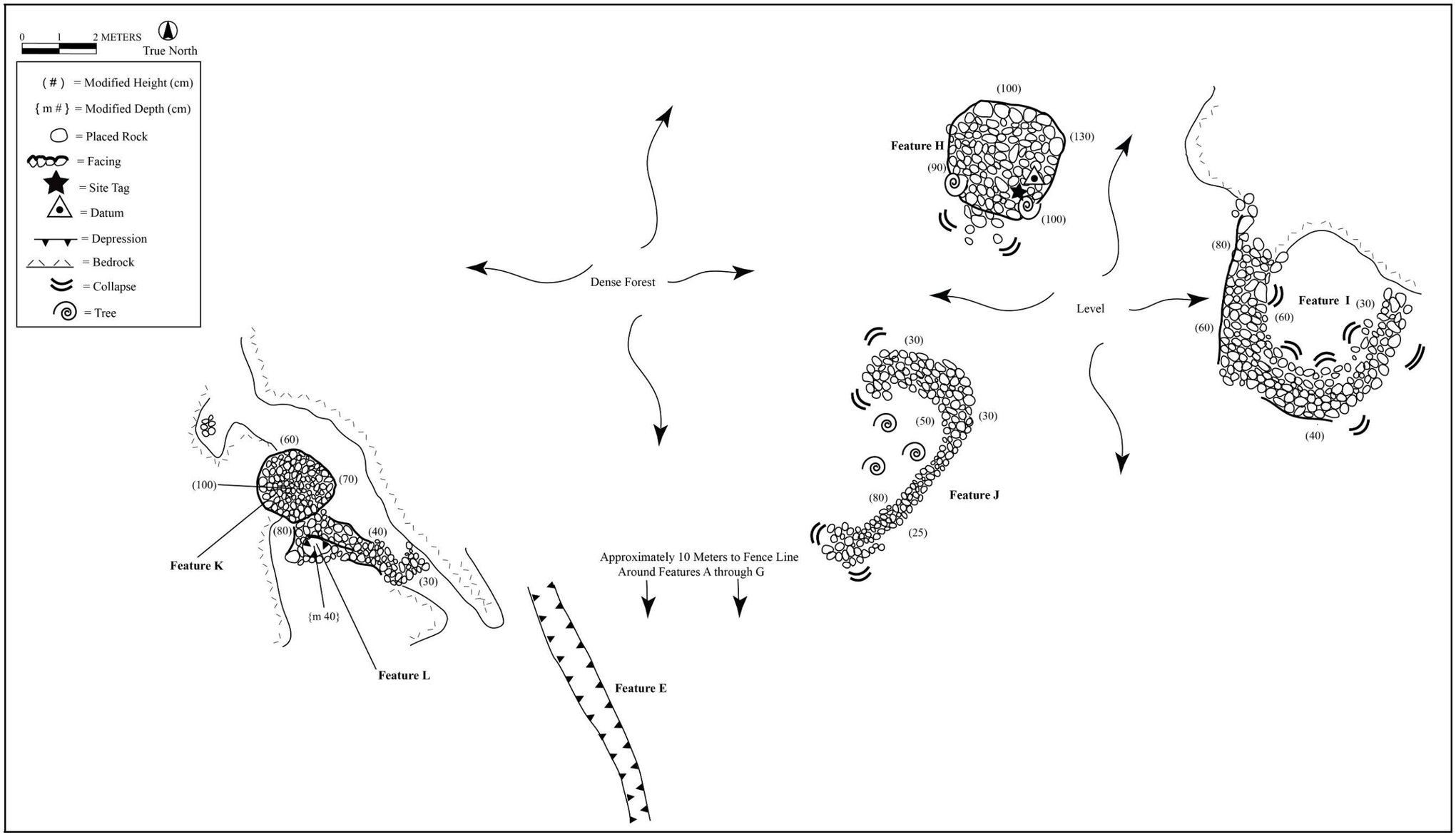

Figure 52. Plan view map of SIHP # -21771 Features H through L

Figure 53. Photograph of SIHP # -21771 Feature H, view to north

Figure 54. Photograph of SIHP # -21771 Feature I, view to east

Figure 55. Photograph of SIHP # -21771 Feature J, view to northwest

Figure 56. Photograph of SIHP # -21771 Feature K, view to northwest

Figure 57. Photograph of SIHP # -21771 Feature L, view to northeast

provide access across it. The constructed pit may have been used as an irrigated planting feature or as a trough for animals. Features F, I and J may represent temporary habitation spaces or activity areas, or may have delineated or protected planting areas. Feature G might have supported a living structure as at Feature B, although postholes were not observed. Alternatively, it may have been used agriculturally or as an activity area. Features H and K may have supported small structures such as water tanks, or served as activity areas. There is some possibility these features contain burials, given their size and formal construction. Feature L may have been used for storage associated with activities at Feature K.

Excavation potential is assessed as generally good at SIHP # -21771. Testing within the interior of Features F, G, I, and J (and possibly also E) could provide further insight into the functions of those features. Dismantling of Features H and/or K could yield similar results, and definitively rule out the presence of burials within.

The dense vegetation surrounding the features at SIHP # -21771 has caused considerable disturbance to a number of the features there. It is also possible military training exercises or other activities have also impacted the site, though no evidence of such was observed. The component features are of variable condition. Despite evidence of disturbance, the site retains of location, design, setting, workmanship, and feeling.

5.2.5 SIHP # 50-10-35-23273

Escott and Tolleson (2002:9-12) described SIHP # -23272 as follows:

> Site 23273 covers an area approximately 103 meters [338 feet] north/south and 146 meters [479 feet] east/west. There are three features associated with the site: a remnant portion of trail (Feature 1) and two planting features (Features 2 and 3). The site's boundaries are represented by *ti* plants and Feature 3 to the north, Feature 2 to the south and the remnant ends of trail Feature 1 to the east and west. There are no additional features apparent within or immediately outside of the site's boundaries. However, its proximity to the Puna Trail (300 meters east of the site) and the condition of the site's features suggest that it is an historic site.
>
> . . . Feature 1 is a remnant portion of trail this bisects the site at an axis of 72˚/252˚. It is in fair condition, is visible on the landscape for 146 meters and ranges in width from 0.8 to 0.9 meters. The width and structure of the trail are consistent with that of a foot trail. The majority of the trail consists of the unimproved ground surface and is visible as a slight depression on it. It contains no water worn stones and none of the *a'a* pebbles and cobbles in the trail surface have been worn to a high degree. The trail is bent and curved to pass over the broken and uneven *a'a* topography, and to allow passage through the less densely forested areas of the natural environment. Two large mango trees exist less than a meter north of the trail, one near the center of the site and one on the western edge of the site. There were no artifacts evident on or around the trail surface.
>
> A small segment of the trail situated in a shallow depression in the northeast quadrant of the site has been improved through the use of curbstones. The curbstones of *a'a* cobbles placed on the *a'a* flow surface one to two courses wide, one course high and aligned parallel to edges of the trail. They range in height from 0.11 to 0.17 meters above the ground surface. The alignment of curbstones on the southern edge is 7.0 m in length, and the northern alignment is 4.0 meters long. The different length of the two alignments is most likely a function of the topography on which they exist. The longer southern alignment is at the base of a small steeply sloping hillock, while the shorter northern alignment is located along the more level ground surface at the base of the depression.
>
> The eastern terminus of the remnant trail is located approximately 3.0 meters east of the curbstone alignments. At this point the trail is situated at the top of the depression through which it passes. A search for additional remnant portions of trail in all directions from the trail terminus situated atop this thickly forested low *a'a* ridge did not locate any signs of the trail's continuation. A search along the trail's western terminus had similar results. The western end of the remnant trail segment is no longer visible where it is situated across a very uneven and broken *a'a* surface. There is no apparent wear on the ground surface and it appears that trees have grown on the trail's surface.
>
> . . . Feature 2 is a rectangular agricultural planting feature located on a level *a'a* outcrop at the northern base of an *a'a* ridge. The ground surface slopes downward

> to the north and west of the level outcrop. The surrounding landscape consists of very dense mixed forest vegetation covering a very rugged and uneven *a‘a* flow. The rectangular planting feature is 0.8 meters in length (north/south), 0.3 meters in width (east/west) and 0.16 to 0.35 meters below surface at its interior. The edges of the feature are lined with a course of *a‘a* cobbles and boulder surrounding an interior surface of *a‘a* pebbles and cobbles. Fourteen ornamental palm trees of various sizes are growing around the feature and on the ridge to its south. Several palm seeds were observed to be sprouting on the ground surface near the planting feature.
>
> . . . Feature 3 is a circular agricultural planting feature located at the southeastern edge of a relatively level *a‘a* flow. The ground surface to the south of the feature slopes gently downward. The feature is approximately 1.7 meters in diameter and is constructed of a single course of *a‘a* pebbles and cobbles 0.2 meters in height enclosing a soil filled area. Two fragments of undeteriorated *kukui* shell were observed on the surface of the feature. No other artifacts were apparent on the surface near Feature 3. [Escott and Tolleson 2002:9-12]

Escott and Tolleson (2002:12) interpreted this trail as being “most likely associated with the cultivation and acquisition of forest plants,” with at least the curbstone section created or improved contemporaneous with the late nineteenth century construction along the Puna Trail. This trail is assessed as a Type B or AB trail using Apple’s (1965) typology. During the current AIS, CSH relocated SIHP # -23273 Feature 1 within the project area (see Figure 23). CSH was unable to relocate Features 2 and 3, likely due to their ambiguous nature and disturbances caused by the dense vegetative growth. The Escott and Tolleson (2002) Feature 1 site description was determined to be accurate, and the trail was photographed and remapped (Figure 58 and Figure 59).

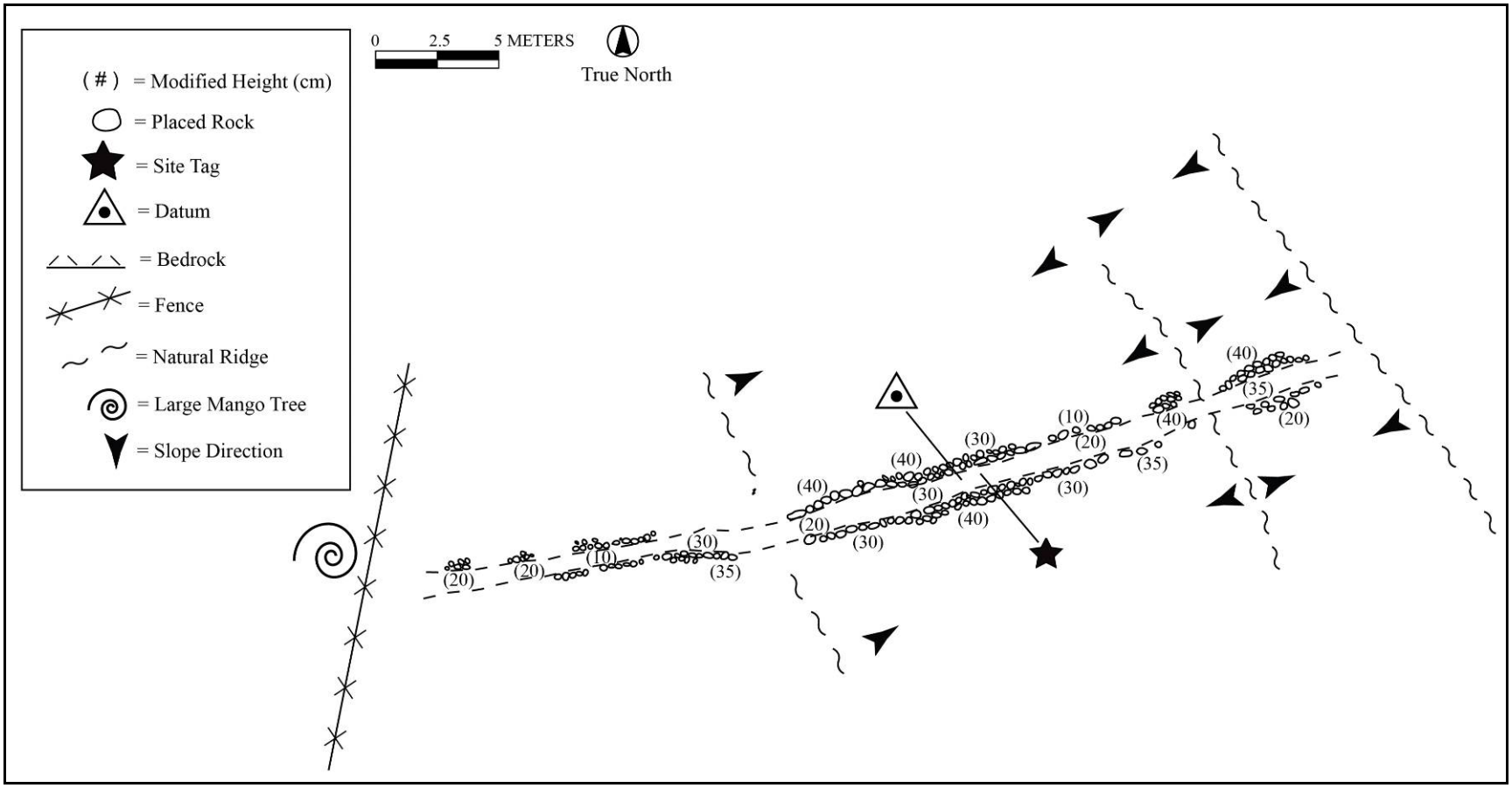

Figure 58. Plan view map of SIHP # -23273

Figure 59. Photograph of a portion of SIHP # -23273, view to southwest

5.3 Description of Newly Identified Sites

5.3.1 SIHP # 50-10-35-30008

TEMPORARY SITE NUMBER: CSH-001
SITE TYPE: Modified lava tube
NUMBER OF FEATURES: 1
TOPOGRAPHY: Uneven *pāhoehoe* flow
VEGETATION: *‘Ōhi‘a*, *hala*, *uluhe*, bing-a-bing, *maile pilau*, autograph tree, guava, mango, octopus tree, Kosters curse
ELEVATION: 63 ft amsl
CONDITION: Good
INTEGRITY: Possible disturbance related to modern usage
PROBABLE AGE: Pre-Contact to historic
FUNCTIONAL INTEPRETATION: Recurrent shelter
DIMENSIONS: 12.0 m (E/W) by 4.0 m (N/S) by 0.4-2.0 m high

DESCRIPTION: SIHP # -30008 consists of a modified lava tube located approximately 50 m south of KD #2 Range within disturbed forest (see Figure 8, Figure 24 and Figure 25) characvterized by uneven *pāhoehoe* flow and dense vegetation.

The interior of SIHP # -30008 measures 12.0 m long (northwest/southeast) by 4.0 m wide (southwest/northeast) with ceiling heights ranging from 0.4 to 2.0 m (Figure 60 through Figure 62). The opening measures approximately 4.0 m wide with heights of 0.2 m to 1.5 m. The floor of the lava tube is level with some very thin soil deposits. A substantial natural outcropping is present near the center of the tube, which is relatively devoid of rubble and roof fall. A triangular-shaped stone terrace situated just inside the northern end of the opening was likely constructed to facilitate entry into the tube. The terrace is constructed of stacked and roughly faced medium- to large-sized basalt cobbles and has a fairly level surface. It measures approximately 2.0 m long (east/west) by 2.0 m wide (north/south) with heights from 0.20-0.50 m. Numerous modern beer bottles were located hidden in the western portion of SIHP # -30008. Charcoal, marine shell midden, faunal bone and a waterworn basalt cobble were also discovered within the lava tube.

Based on its relative proximity to the Puna Trail and the presence of marine shell midden, this site was likely used in pre-Contact and/or historic times. The modern beer bottles indicate it has been used in modern times as well. Considering the apparent continued usage of the tube, it cannot be said with certainty when the terrace feature was constructed. Given the somewhat limited nature of the modifications within the tube and a lack of exterior ancillary features, SIHP # -30008 was likely used as a recurrent shelter. It would have provided a relatively dry and comfortable place to rest while traveling along the Puna Trail. Excavation potential is poor given a lack of sedimentary deposit and the relatively low height of the terrace feature. This site is in good condition. Despite indications of modern usage this site retains integrity of location, design, setting, workmanship, and feeling.

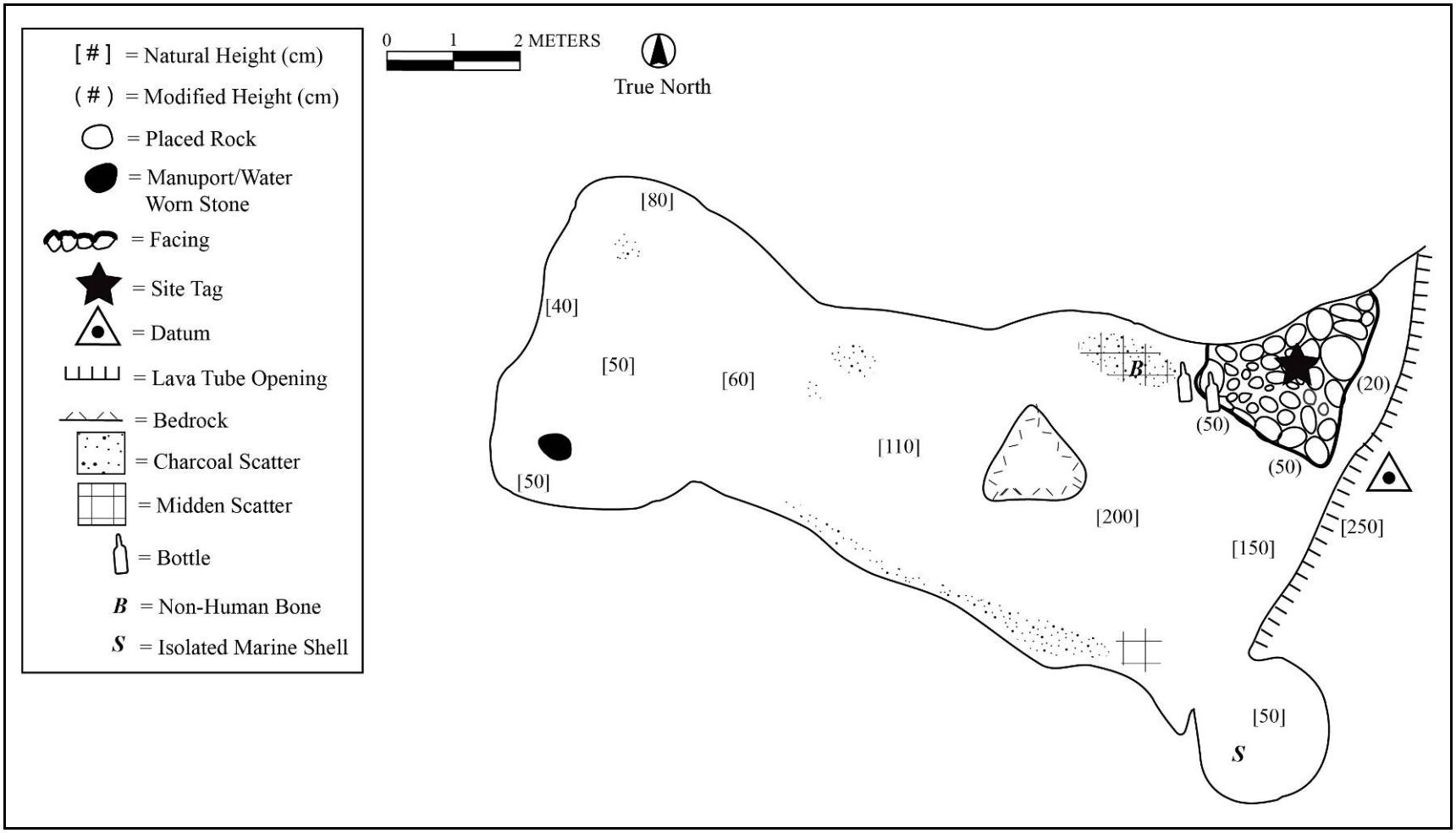

Figure 60. Plan view map of SIHP # -30008

Figure 61. Photograph of SIHP # -30008, lava tube opening, view to south

Figure 62. Photograph of SIHP # -30008, interior of tube showing the constructed terrace, view to northeast

5.3.2 SIHP # 50-10-35-30009

TEMPORARY SITE NUMBER: CSH-002
SITE TYPE: Complex
NUMBER OF FEATURES: 3 (A–C)
TOPOGRAPHY: Uneven *pāhoehoe* flow
VEGETATION: *‘Ōhi‘a, hala,* bing-a-bing*, maile pilau,* autograph tree, *uluhe, waiwī* or yellow strawberry guava *(Psidium cattleianum),* mango, octopus tree, Kosters curse
ELEVATION: 65 ft amsl
CONDITION: Good
INTEGRITY: Possible disturbance related to dense vegetation and military training
PROBABLE AGE: Pre-Contact to historic
FUNCTIONAL INTEPRETATION: Temporary habitation
DIMENSIONS: 40.0 m (N/S) by 25.0 m (E/W) by 1.0-2.0 m high (above surrounding ground surface)

DESCRIPTION: SIHP # -30009 is a complex located in the southeastern portion of the KMR, approximately 10.0 m west of a berm that is part of KD #2 Range within disturbed forest (see Figure 8, Figure 24 and Figure 25). The site comprises three features situated on a large, 1,000-sq-m rock outcrop with a wide, fairly level surface (Figure 63). Feature A consists of modifications to the outcrop surface, and Features B and C are culturally modified lava tubes located within the outcrop. A number of additional lava tubes are present within the outcrop; these were fully investigated and found to be culturally sterile. The site is situated on an uneven *pāhoehoe* flow supporting predominantly *hala* and strawberry guava, though numerous other plant species were observed in the vicinity.

Feature A is a modified outcrop (see Figure 63 through Figure 65). The overall outcrop is approximately 40 m long (north/south) by 25 m wide (east/west) and rises approximately 1.0 m to 2.0 m above the surrounding landscape. Portions of Feature A are depressed, with depths of 0.5 to 1.0 m below the surrounding outcrop surfaces. The surface is heavily vegetated with a scatter of small cobbles and a few boulders present. Two modifications were observed upon the outcrop surface. A low-lying rock wall is situated along the eastern edge of the outcrop. It is oriented north/south and defines the interior edge of a 1.0- to 2.0-m-wide, naturally level area that is slightly lower than the main outcrop area and may represent a terrace of some sort. The wall is constructed of loosely stacked cobbles and boulders and measures approximately 10 m long (north/south) by 1.0 m wide (east/west) with a maximum height of 0.75 m. Near the southern edge of the outcrop, an alignment of basalt cobbles and boulders has been placed along the edge of a shallow depression. This curved alignment measures approximately 3.0 m long (northeast/southwest) by 0.50 m wide and exhibits a maximum height of 0.50 m.

Feature B is a lava tube with an opening along the northeastern edge of the outcrop (see Figure 63, Figure 66 through Figure 68). The opening measures approximately 2.5 m wide and 0.80 m high. The interior of Feature B generally measures 4.0 m wide (southeast/northwest) with ceiling heights of 0.4 to 1.7 m. The tube extends 7.0 m (northeast/southwest), at which point it becomes impassible; the portion of the tube beyond was visually inspected as best as possible

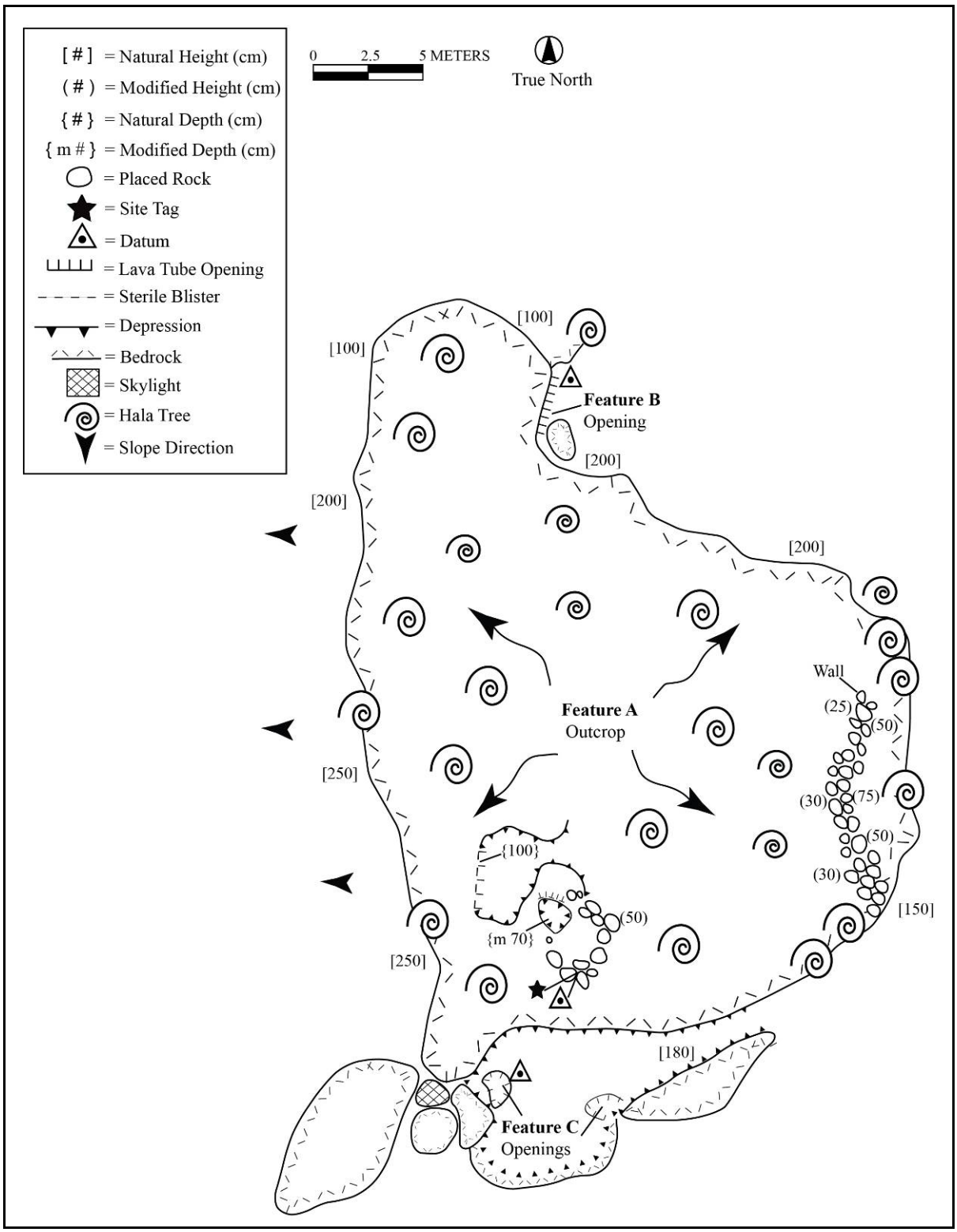

Figure 63. Plan view map of SIHP # -30009

Figure 64. Overview photograph of SIHP # -30009 Feature A, outcrop surface, view to east

Figure 65. Photograph of SIHP # -30009 Feature A, rock wall, view to north

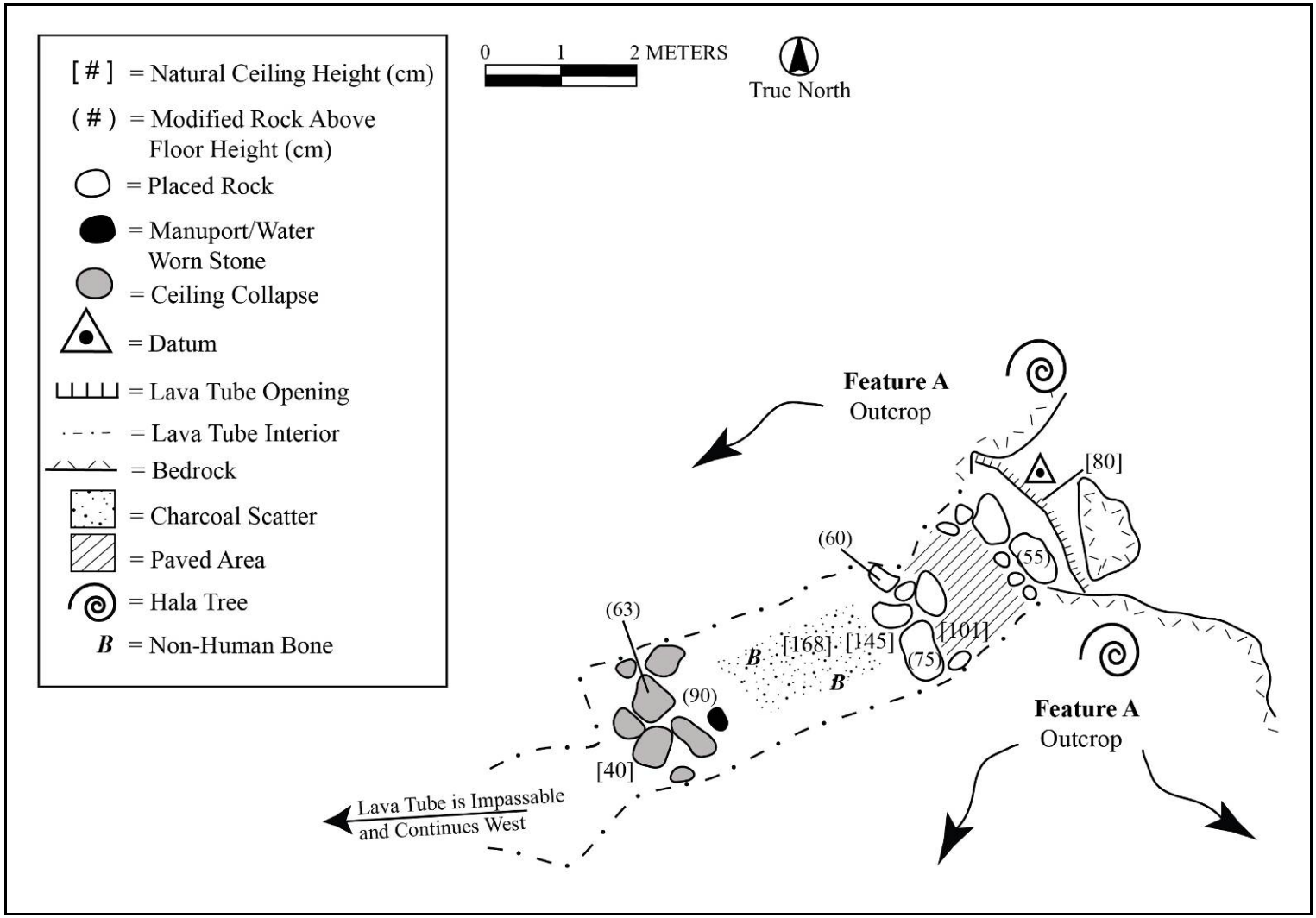

Figure 66. Detail plan view map of SIHP # -30009 Feature B interior

Figure 67. Photograph of SIHP # -30009 Feature B, lava tube opening, view to west

Figure 68. Photograph of SIHP # -30009 Feature B, paved area at entrance, view to southwest

and no cultural materials or deposits were observed. Just inside the entrance is an area roughly paved with basalt cobbles measuring 2.0 m long (southeast/northwest) by 1.6 m wide (southwest/northeast). Some boulders have been placed along the peripheries of the paved area, and may serve to support it on the interior edge as the floor of the tube beyond drops approximately 0.5 m. The floor in this back portion of the tube is fairly level. Charcoal scatter, fragments of non-human mammal bone and a waterworn basalt cobble that may have been polished were observed in this portion of the tube. Natural ceiling collapse is present along the back of the chamber.

Feature C is a lava tube with openings along the southern edge of the outcrop (see Figure 63, Figure 69 through Figure 71). Two small openings set approximately 3.0 m apart provide access to the tube. The western entrance measures approximately 0.50 m wide and 1.50 m high. The eastern entrance is larger and could be considered the "main" entrance; it measures 0.75 m wide and 1.0 m high. The interior extent of the lava tube is roughly T-shaped, with the openings set at either end of the upper portion. This portion of the tube between the openings is of roughly paved basalt cobbles, and measures up to 1.5 m wide with modified ceiling heights of 0.36 m to 0.97 m (above the pavement). The pavement at the entry area likely facilitated access into the tube. The "lower" portion of the tube beyond the pavement is approximately 3.5 m long (north/south) and up to 1.5 m wide (east/west), with natural ceiling heights of 0.50 to 0.98 m. The floor here is fairly level, and visibility is enhanced by natural skylights. A scattering of cobbles were observed, but no additional anthropogenic features or cultural deposits were noted.

Given the close proximity of SIHP # -30009 to the Puna Trail and the level of modification observed at the site, it likely functioned as a pre-Contact and/or historic temporary habitation. The presence of constructed features on the outcrop surface indicates activities beyond simple shelter were undertaken at the site; these modifications could represent activity or storage areas. The paved entry areas at Features B and C suggest a recurrent usage. Given its proximity to components of the KD #2 Range it is very possible SIHP # -30009 has been impacted by military training; it is also possible the lava tubes have been used for shelter by military personnel. This site is assessed as not exhibiting excavation potential. The tube floor sedimentary deposit at Feature B is very thin and none of the constructed features at the site are of substantial enough construction to contain burials or other cultural deposits. Overall the site is in good condition. Despite possible disturbance related to dense vegetation and military training/usage, it retains integrity of location, design, setting, workmanship, and feeling.

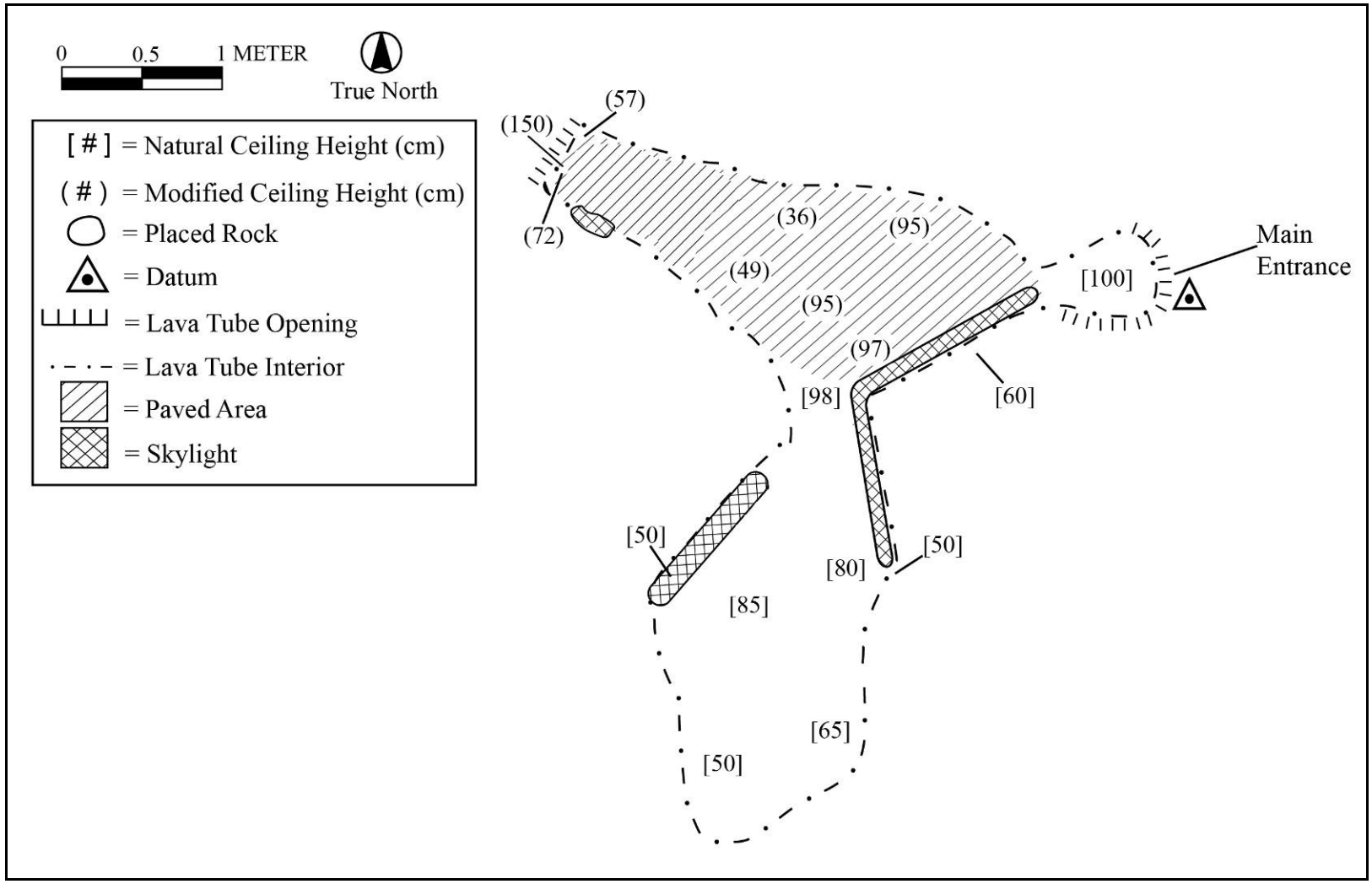

Figure 69. Detail plan view map of SIHP # -30009 Feature C interior

Figure 70. Photograph of SIHP # -30009 Feature C, lava tube entrance, view to north

Figure 71. Photograph of SIHP # -30009 Feature C, paved area at entrance, view to east

5.3.3 SIHP # 50-10-35-30010

TEMPORARY SITE NUMBER: CSH-004
SITE TYPE: Complex
NUMBER OF FEATURES: 5 (A–E)
TOPOGRAPHY: Undulating
VEGETATION: *Ōhi‘a, hala, uluhe,* bing-a-bing, *maile pilau,* guava, mango, octopus tree, Kosters curse
ELEVATION: 75 ft amsl
CONDITION: Fair to good
INTEGRITY: Possible disturbance related to dense vegetation
PROBABLE AGE: Late nineteenth century
FUNCTIONAL INTEPRETATION: Temporary habitation, activity area, possible agriculture
DIMENSIONS: 44.0 m (N/S) by 30.0 m (E/W)

DESCRIPTION: SIHP # -30010 is a complex located in Area A approximately 280 m south of the Puna Trail (see Figure 8 and Figure 24). The site, which overall measures approximately 44.0 m (north/south) by 30.0 m (east/west), is comprised of five features (Figure 72). Feature A is a cleared, level area; Feature B is a linear mound; Feature C is a small enclosure; and Feature D is a stone-lined pit. The topography in this densely forested area is undulating soil with continuous scattered basalt rock and numerous depressions and outcrops. Numerous artifacts were observed around the component features; four were collected for laboratory analysis (see Figure 72 and Section 6).

Feature A is a roughly rectangular-shaped, cleared, level area situated between two natural depressions (see Figure 72 through Figure 74). The feature is indicated as an area devoid of vegetation and rocks, and measures approximately 8.0 m (north/south) by 5.5 m (east/west). Areas of possible pavement were observed within the feature, but are somewhat ephemeral given apparent sedimentation and a cover of leaf litter. A retaining wall has been constructed at the northern edge of the level area, along its interface with the natural depression to the north. The wall consists of basalt cobbles and boulders stacked three to four courses high inside the depression. The wall measures approximately 1.8 m (northwest/southeast) by 0.5 m (northeast/southwest) with a maximum height of 0.5 m. Numerous artifacts were found scattered on the surface of Feature A, including: fragmental bottles; three large, modified waterworn basalt cobbles, of which two were collected (ART 2, 3 and 4; see Section 6.1.2); four water worn basalt cobble manuports, and a salt-glazed pottery shard. Two whole bottles were documented on the surface approximately 15.0 m west, and were collected as ART 1; see Section 6.1.2). No post holes were observed at Feature A. Overall, it is in fair condition.

Feature B is a somewhat deflated, linear rock mound located approximately 4.5 m northeast of the retaining wall at Feature A (see Figure 72 and Figure 75). Feature B is situated near the center of a shallow natural depression that measures approximately 4.5 m (north/south) by 3.5 m (east/west) and up to 0.4 m deep. The mound is constructed of loosely piled small to large cobbles, and measures 2.3 m (north/south) by 1.2 m (east/west) with a maximum height of 0.3 m. Feature B is in fair condition. A horseshoe, possibly from a mule, was observed on the surface of the mound (Figure 76).

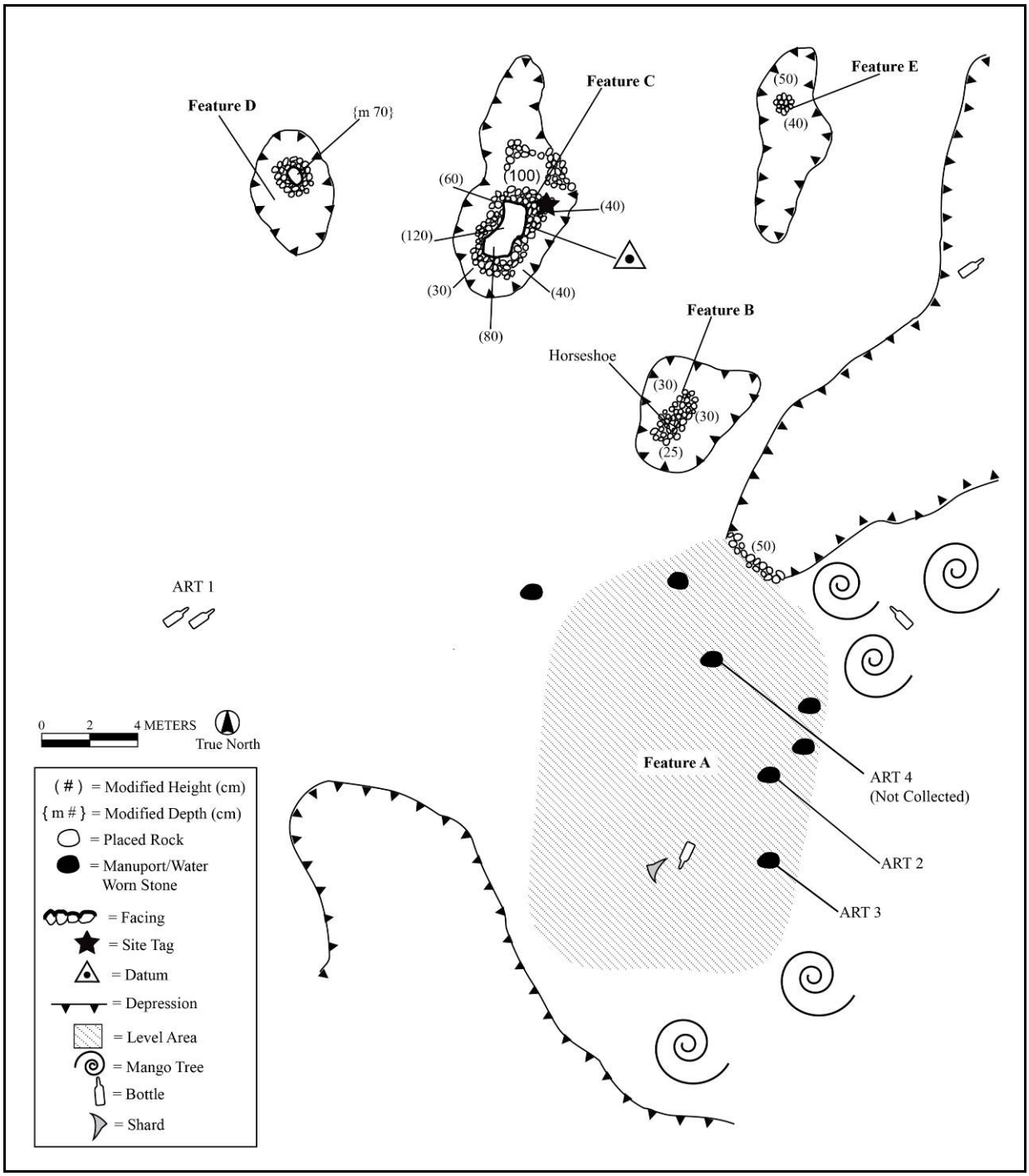

Figure 72. Plan view map of SIHP # -30010

Figure 73. Photograph of SIHP # -30010 Feature A, view to southeast

Figure 74. Photograph of SIHP # -30010 Feature A, ART 4 (modified waterworn basalt cobble, not collected) in situ, view to east

Figure 75. Photograph of SIHP # -30010 Feature B, view to east

Figure 76. Photograph showing a horseshoe located on the surface at SIHP # -30010 Feature B (not collected), view to northeast

Feature C is a rectangular enclosure (Figure 72, Figure 77, and Figure 78). The feature is located approximately 8.5 m northwest of Feature B inside a natural depression which measures approximately 10.0 m (north/south) by 5.0 m (east/west) and up to 0.5 m deep. The enclosure is constructed of two to four courses of neatly stacked and faced basalt cobbles and boulders. It measures 3.8 m (north/south) by 2.3 m (east/west) with a maximum interior height of 1.2 m and exterior height of 1.0 m. The fairly level interior contains a scatter of small to medium cobbles. The walls are generally about 0.5 m thick. Overall, this feature is in fair condition. No artifacts or cultural materials were observed in the immediate vicinity.

Feature D is a circular, stone-lined pit situated within a natural depression approximately 8.5 m west of Feature C (see Figure 72 and Figure 79). The natural depression measures approximately 5.0 m (north/south) by 3.0 m (east/west) with a depth of 0.5 m. The pit utilizes a natural crevice or more depressed portion of the overall depression. The bottom and sides of this natural feature have been lined with cobbles. The construction is roughly flush with the surrounding surface of the depression. The pit measures approximately 2.1 m (north/south) by 2.0 m wide (east/west) with a maximum constructed depth of 0.7 m. Feature D is in good condition. No artifacts or cultural materials were observed in the immediate vicinity.

Feature E is a small stone mound located approximately 9.0 m northeast of Feature C within the northern portion of a linear natural depression (see Figure 72 and Figure 80). The depression measures 8.0 m (north/south) by 2.0 m (east/west) with a maximum depth of 0.6 m. The mound is constructed of loosely stacked basalt cobbles and boulders, measuring 1.0 m (north/south) by 0.9 m (east/west) with a maximum height of 0.5 m. Feature E is in good condition. No artifacts or cultural materials were observed in the immediate vicinity.

This complex of features likely represents a late nineteenth century activity area with associated temporary habitation and possible agriculture. The construction styles, distribution of features, and assemblage of artifacts documented at the site are highly reminiscent of SIHP # -21771. While this site is situated somewhat further from the Puna Trail, it may have been located along a secondary, connecting trail once present in this portion of the KMR. Two nearby isolated trail segments (SIHP #s -23273 and -30012) may have once been a part of this secondary trail. Feature A may have served as a site for some sort of structure. The function of Feature B is indeterminate; it may represent a planting or clearing mound. It appears too low and informally constructed to contain a burial. The Feature C enclosure is too small to have served as a habitation area; it may have been used as a stall for animals or foul or may have been used for storage. Feature D is likely a privy or a storage feature; there is no evidence that it represents a well. Feature E is interpreted as a clearing or planting mound. The presence of ancillary features around a presumed occupation site (Feature A) would suggest a more permanent or at least heavily used temporary habitation function.

SIHP # -30010 is considered to have good excavation potential. While the soil substrate at Features A or C is likely not very deep, its excavation could yield subsurface deposits that would provide insight into the age and function of these features. Excavation or dismantling of Features B and/or E could yield similar results. Despite potential disturbance inflicted by surrounding dense vegetation, the site retains integrity of location, design, setting, workmanship, and feeling.

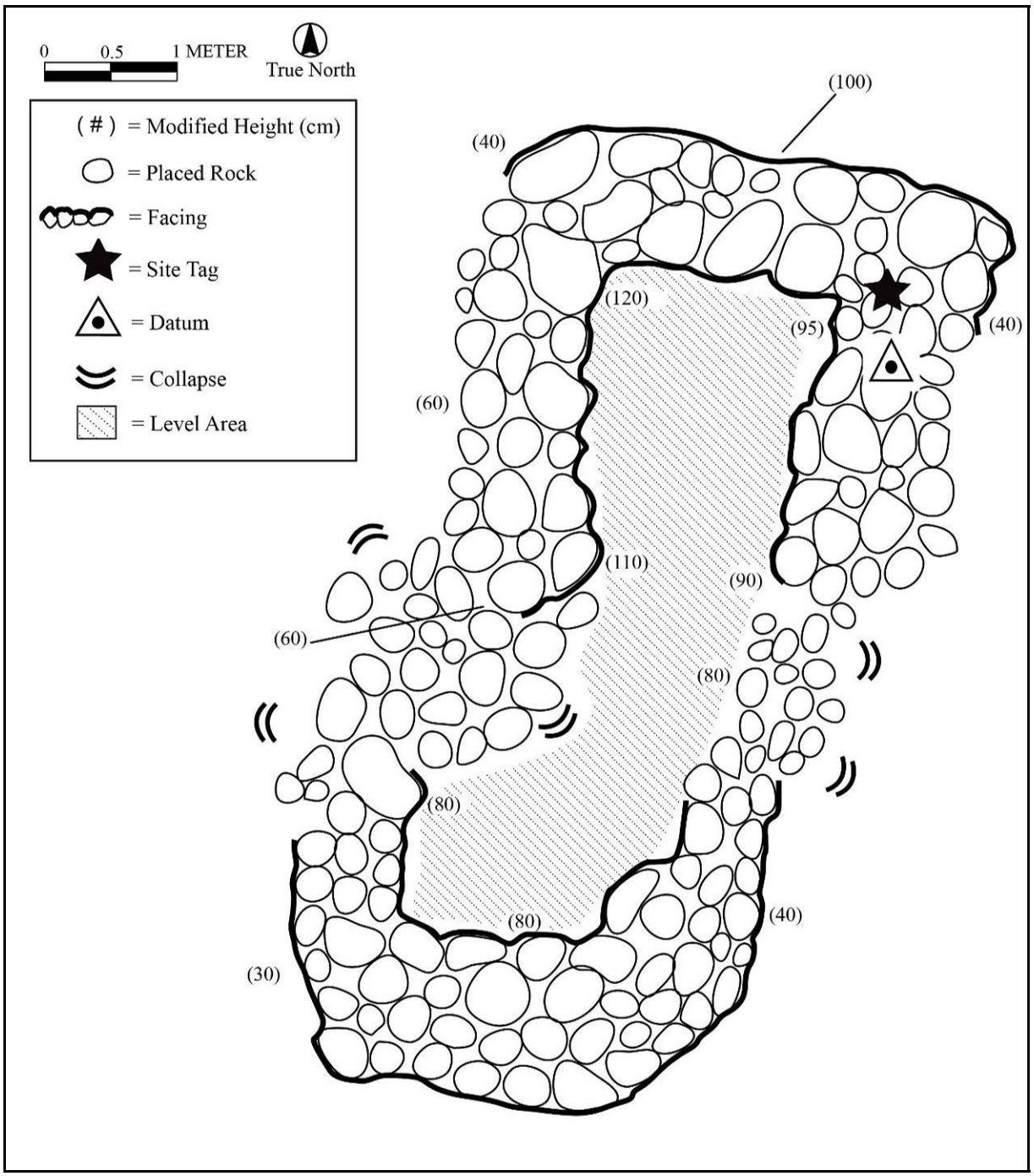

Figure 77. Plan view map of SIHP # -30010 Feature C

Figure 78. Photograph of SIHP # -30010 Feature C, view to southeast

Figure 79. Photograph of SIHP # -30010 Feature D, view to northwest

Figure 80. Photograph of SIHP # -30010 Feature E, view to north

5.3.4 SIHP # 50-10-35-30011

TEMPORARY SITE NUMBER: CSH-006
SITE TYPE: Complex
NUMBER OF FEATURES: 2
TOPOGRAPHY: Undulating
VEGETATION: *Hala, ‘ōhi‘a, kī, uluhe, waiawī,* bing-a-bing*, maile pilau,* guava, mango, octopus tree, Kosters curse
ELEVATION: 73 ft amsl
CONDITION: Good
INTEGRITY: Disturbance from surrounding vegetation and vegetation clearing activities
PROBABLE AGE: Late nineteenth century
FUNCTIONAL INTEPRETATION: Indeterminate
DIMENSIONS: 10.0 m (E/W) by 3.0 m (N/S)

DESCRIPTION: SIHP # -30011 is a complex situated 75.0 m south of the Puna Trail in an area cleared of its understory by KMR Environmental Department (see Figure 24, Figure 81 through Figure 83). It is comprised of two features, Feature A, a rock wall, and Feature B, a constructed pit. The topography is undulating soil with a continuous scatter of basalt cobbles and boulders and numerous outcrops and depressions. A bulldozer road was observed approximately 5.0 m to the east.

Feature A is a linear rock wall (Figure 81 and Figure 82). The wall is constructed of basalt boulders and cobbles neatly stacked and faced three to four courses high. It is situated on a natural outcrop and measures approximately 5.0 m (east/west) by 0.70 m (north/south) with a maximum height of 0.7 m and thickness of 0.7 m. The wall segment abuts a *hala* tree to the east and a large *‘ōhi‘a* tree to the west. While a scattering of rocks is present around these trees on the outcropping, no evidence of a continuation of the wall was observed in the surrounding areas.

Feature B is a constructed pit located 4.5 m east of Feature A (see Figure 81 and Figure 83). The pit utilizes an oblong natural depression or crevice. The natural feature has been lined with three courses of stacked basalt cobbles. It measures approximately 0.5 m (east/west) by 0.3 m (north/south) with a maximum exterior height of 0.3 m and 0.4 m maximum constructed depth.

No artifacts or cultural deposits were observed in the vicinity. Given the construction style and condition of the features, and proximity of the site to the Puna Trail and, SIHP # -30011 likely dates to the late nineteenth century. The wall is not too heavily collapsed, and the constructed pit is constructed similarly to those at nearby sites assessed to be from that time. Feature A may have delineated a planting, activity, or occupation area. Feature B may have functioned as a related storage feature, or as a privy or planting area. Excavation potential is assessed as poor, given the location of the wall on a rocky outcropping and a lack of sedimentation within the pit feature. Despite potential disturbance inflicted by surrounding dense vegetation and vegetation clearing activities, SIHP # -30011 is in overall good condition and retains integrity of location, design, setting, workmanship, and feeling.

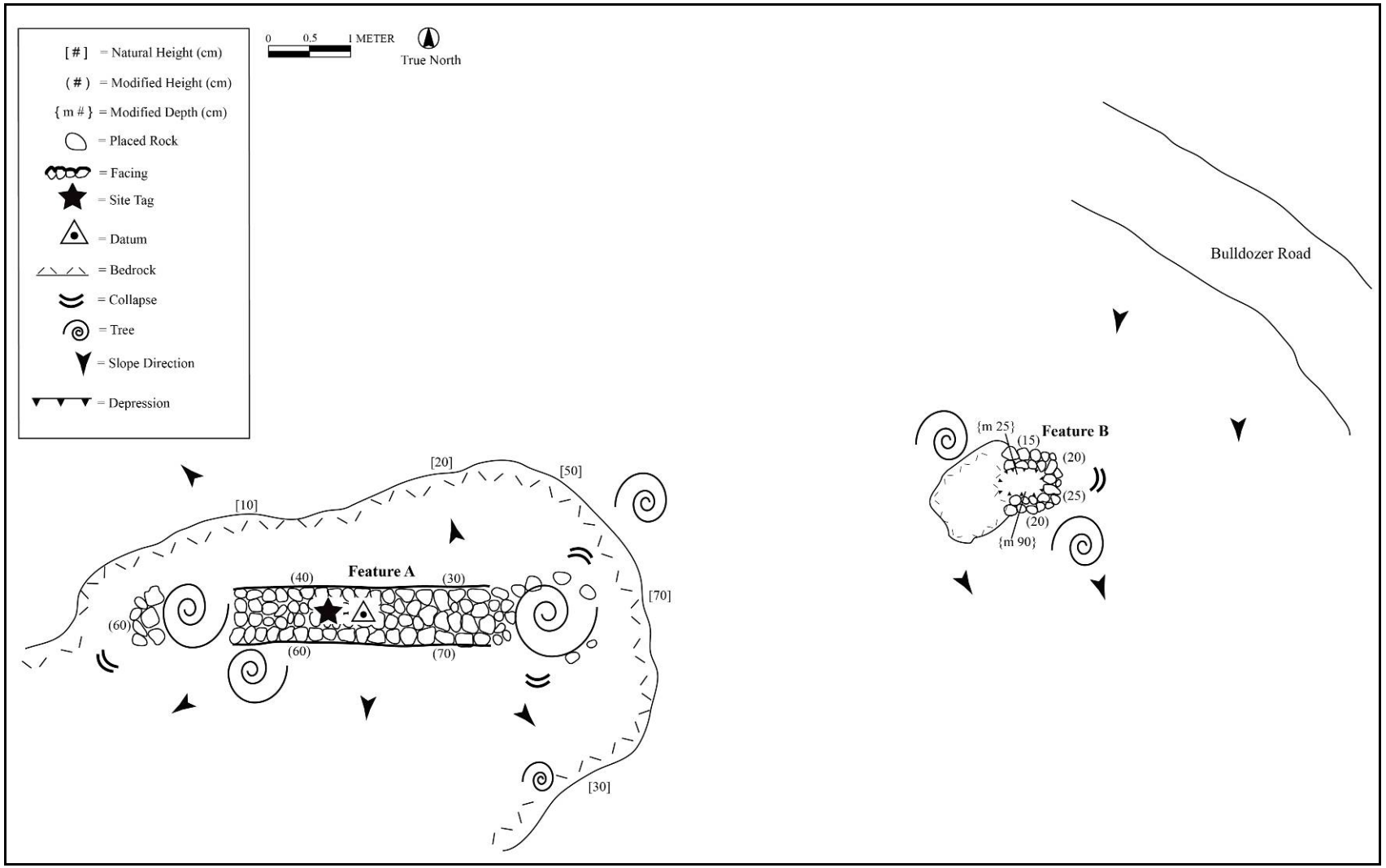

Figure 81. Plan view map of SIHP # -30011

Figure 82. Photograph of SIHP # -30011 Feature A, view to south

Figure 83. Photograph of SIHP # -30011 Feature B, view to south

5.3.5 SIHP # 50-10-35-30012

TEMPORARY SITE NUMBER: CSH-007
SITE TYPE: Trail
NUMBER OF FEATURES: 1
TOPOGRAPHY: Undulating
VEGETATION: *Hala*, *‘ōhi‘a*, *kī*, *uluhe*, *waiawī*, bing-a-bing, *maile pilau*, guava, mango, octopus tree, Kosters curse
ELEVATION: 76 ft amsl
CONDITION: Fair
INTEGRITY: Disturbance from surrounding vegetation
PROBABLE AGE: Pre-Contact to late nineteenth century
FUNCTIONAL INTEPRETATION: Transportation
DIMENSIONS: 15.0 m (NE/SW) by 1.0-1.5 m (NW/SE) by up to 0.4 m high (along curbstone alignments)

DESCRIPTION: SIHP # -30012 is a trail remnant situated approximately 60 m south of SIHP # -30010 in Area A at KMR (see Figure 8, Figure 24, Figure 84, and Figure 85). The trail is located in a densely vegetated area of undulating soil with a continuous scatter of basalt cobbles and boulders and numerous outcrops and depressions.

Both edges of the trail are marked with alignments of basalt cobble curbstones. The center of this trail is slightly depressed, probably due to compression of its surface from regular use. Numerous trees are present within and surrounding the trail alignment. The extant portion of the trail is 15 m long (northeast/southwest). Of this total length, 10 m is 1.5 m wide (southeast/northwest); a 5.0 m section at the western end narrows to 1.0 m wide. The curbstone alignments measure from 0.2 to 0.4 m high. Based on its formal style, this is a Class AB or B curbstone trail (Apple 1965).

No artifacts or cultural deposits were observed in the vicinity. Given its close proximity, the trail may be associated with SIHP # -30010. It is also possible this trail remnant may be in fact be an isolated remnant segment of the previously documented SIHP # -23273 trail (see Section 5.2.5); it trends in generally the same direction, is in the vicinity, and exhibits similar construction. These potential associations can only be inferred, as the trail becomes unrecognizable beyond its documented limits. It likely continued in either direction as a simple, unmarked path over the ridges of outcrops common in this area. SIHP # -30012 likely functioned as a pre-Contact transportation route modified in the nineteenth century contemporaneous with SIHP # -23272 and sometime before or during improvements to the Puna Trail. The trail is in fair condition. Despite disturbance from surrounding vegetation, it retains integrity of location, design, setting, workmanship, and feeling.

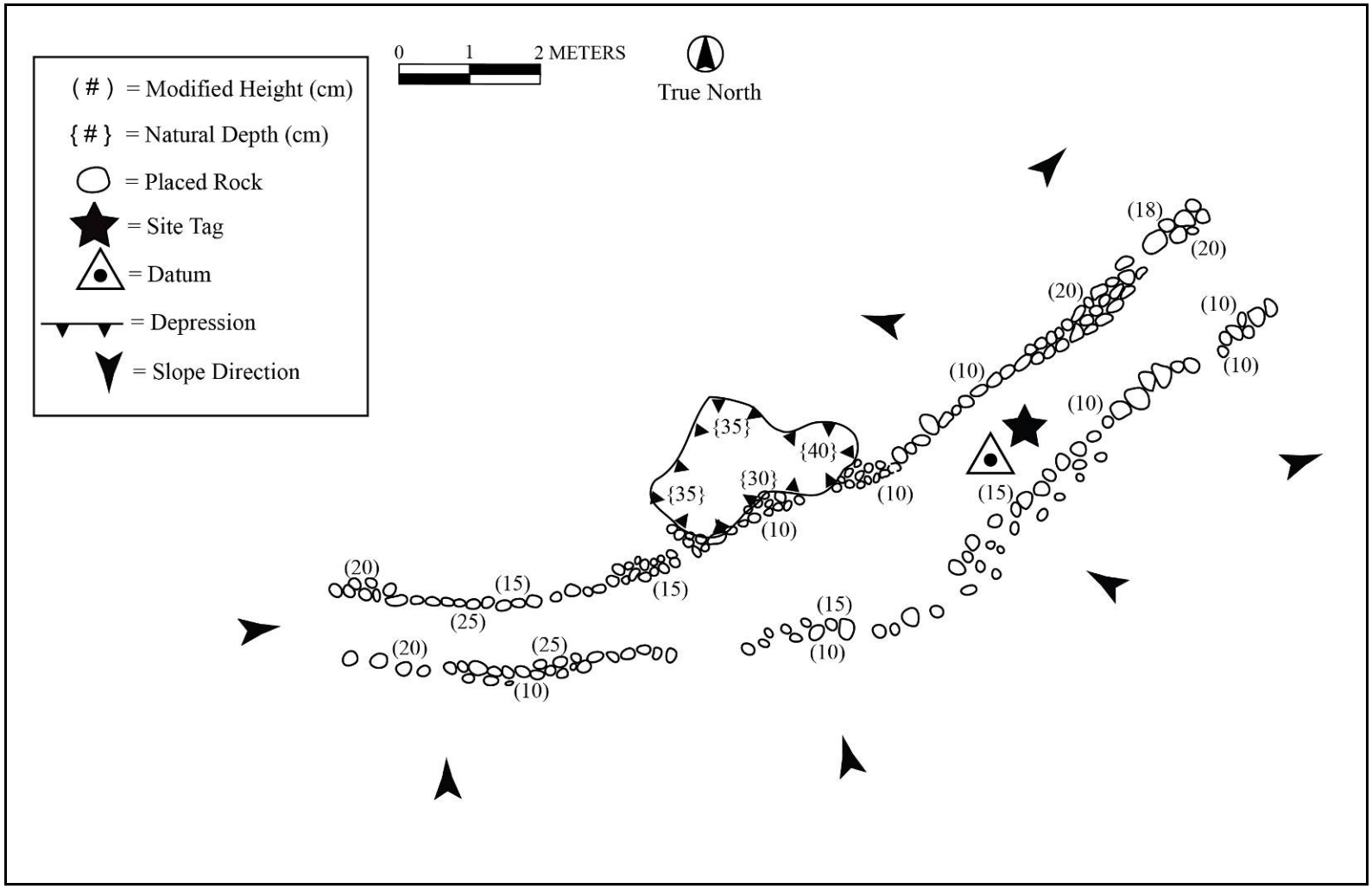

Figure 84. Plan view map of SIHP # -30012

Figure 85. Photograph of SIHP # -30012, view to northeast

5.3.6 SIHP # 50-10-35-30038

TEMPORARY SITE NUMBER: CSH-003
SITE TYPE: Trail
NUMBER OF FEATURES: 1
TOPOGRAPHY: Undulating with numerous voids
VEGETATION: *‘Ōhi‘a*, *hala*, *uluhe*, bing-a-bing, *maile pilau*, autograph tree, guava, mango, octopus tree, Kosters curse
ELEVATION: 65 ft amsl
CONDITION: Poor to remnant
INTEGRITY: Disturbance from dense vegetation
PROBABLE AGE: Late nineteenth century
FUNCTIONAL INTEPRETATION: Transportation
DIMENSIONS: 22 m (72.2 ft) in length (E/W) by 2.3 m (7.5 ft) wide (N/S)

DESCRIPTION: A remnant segment of the historic Puna Trail was identified parallel to the modern Jeep trail near a disturbed area adjacent to the KD #2 Range. The east-west trending segment is situated approximately 15.0 m (50 ft) north of the Jeep road (see Figure 24, Figure 86 and Figure 87) in an area of uneven *pāhoehoe* flow and dense vegetation. Because the Puna Trail alignment in KMR (SIHP # -18869) has been assessed as no longer eligible as a historic property based on modern impacts, this intact historic segment has been assigned as a separate historic property.

The fairly level surface of the trail is comprised of compressed and worn *‘a‘ā* cobbles. The sides of the trail are defined in places by alignments of neatly placed (and in some places stacked) basalt cobble curbstones. The curbstone alignments are spaced up to 2.3 m (7.5 ft) apart (north/south), rising 0.35 m (1.1 ft) above the interior trail surface and 0.20 m to 0.40 m (0.7 ft to 1.3 ft) above the exterior surface. The alignments are generally 0.50 m (1.6 ft) wide, making the overall width of the trail up to 3.30 m (10.8 ft) (north/south). Only a 7.5 m (24.6 ft) portion of this trail segment is curbed on both sides. The southern curb could be traced for approximately 22.0 m (72.2 ft) (east/west), while only 7.5 m (24.6 ft) of the northern curb remain. The western end of the trail has been bulldozed, likely when the area adjacent to the KD #2 Range was cleared. At the eastern terminus the trail meets a small linear depression and disappears, possibly as a result of erosion.

No artifacts or cultural deposits were observed in the vicinity. Given its location directly adjacent and parallel to the modern alignment of the Puna Trail, this segment is interpreted as an extant portion of the historic alignment. It therefore dates to the late nineteenth century, when the pre-Contact trail was improved through this area. Excavation potential is poor considering the limited prospect for new information about the Puna Trail. Overall, the trail segment is in poor to remnant condition, due mainly to the disturbance at the western terminus and the surrounding dense vegetation. Despite its disturbed condition, this segment of the historic Puna Trail retains integrity of location, design, setting, workmanship, and feeling.

Figure 86. Photograph of the newly identified remnant portion of the historic Puna Trail (SIHP # -30038), view to east

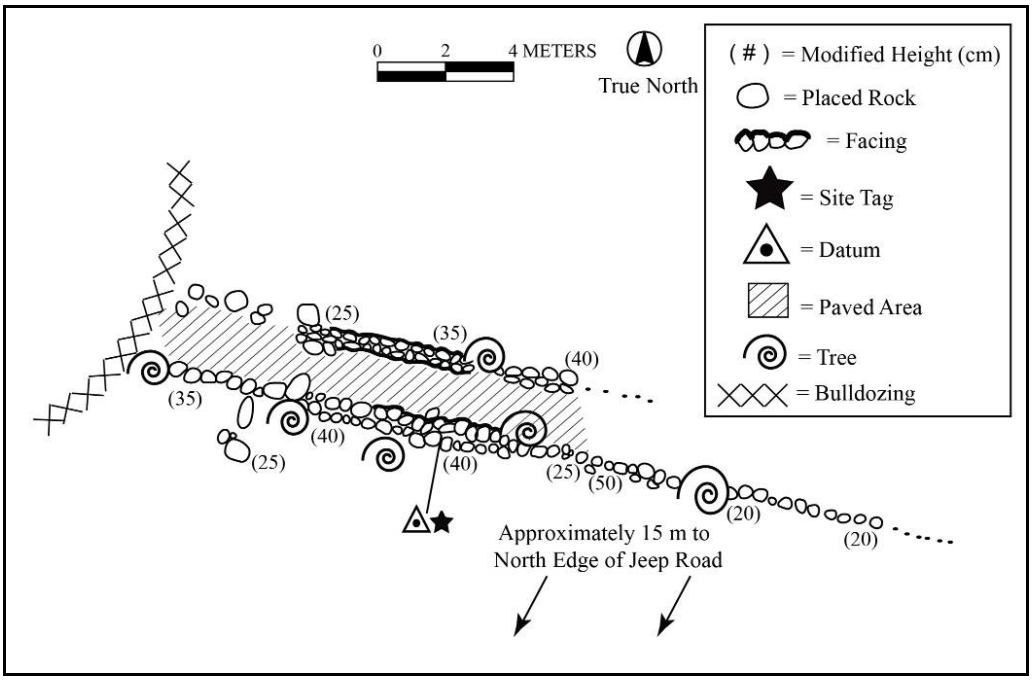

Figure 87. Plan view map of the newly identified remnant portion of the historic Puna Trail (SIHP # -30038)

Section 6 Results of Laboratory Analysis

6.1 Artifacts Collected from the Surface at SIHP # 50-10-35-30010

Four artifacts were collected during the Phase I AIS. These artifacts, all from the surface of Feature A at SIHP # -30010, are presented in Table 5.

6.1.1 Bottles

Two glass bottle artifacts (ART #1) were collected from the surface in an area relatively clear of underbrush west of SIHP # -30010 Feature A (see Table 5). The bottles were deposited in the same location, side by side, and may have been carried here from Feature A after the site was occupied. These were the only intact bottles found at the site.

Accession #1 is an amber-colored whiskey bottle (Figure 88). The quart-sized bottle is machine-made and exhibits a two-piece, applied top. The bottle is embossed on the front panel with “MACEFARLANE & Co. HONOLULU” and the monogram “M” over “C” with small “o” (Figure 89). Accession #1 is one of three types of quart-sized whiskey bottles produced by the company between 1880 and 1900. This bottle is considered to be rare (Elliot 1971:72-78, Lindsey 2014).

Accession #2 is a brown-colored whiskey bottle (Figure 90). The seamless bottle was turned in a mold. It exhibits a tooled top and is not embossed. These characteristics indicate this bottle was manufactured between 1850 and 1918 (Lindsey 2014).

6.1.2 Modified Water Worn Basalt Cobbles

Three modified waterworn stone artifacts were observed on the surface of SIHP # -30010 Feature A; two were collected (see Table 5). The remaining stone artifact was too large to collect, (ART #4); a single indentation similar to those on Accession #3 was noted upon the surface (see also Section 5.3.3 and Figure 74). That these stones are water worn indicates that they were transported from the coast or a river, either before or after their modification; such sources lie at some distance from the site.

Accession #3 is a large, modified waterworn cobble of dense basalt. The artifact exhibits two anthropogenic indentations spaced approximately 2 cm apart on one side, and a slightly flattened “base” (Table 5, Figure 91, and Figure 92). The inner or “central” indentation is slightly larger (3.5 cm in diameter) than the outer indentation (3.0 cm in diameter). Both are fairly shallow, at about 1.0 cm deep.

Accession #4 is a large, modified waterworn cobble of slightly vesicular basalt. One side of the artifact exhibits what appears to be an anthropogenic indentation that has breached at least one natural internal void. The narrow end of the artifact exhibits signs of battering (Table 5, Figure 93, and Figure 94). The modified indentation is approximately 5.0 cm in diameter, and may be up to 4.0 cm deep; it is difficult to ascertain whether the indentation breached a shallower natural void that was widened to some degree before the innermost void was breached. Nothing was observed deposited within the void.

Table 5. Artifacts Collected from the Surface of SIHP # 50-10-35-30010

Accession #	Material Type	Provenience	Attributes	Approximate Maximum Dimensions	Manufacture Date
1	Amber glass	Surface at SIHP # -30010 Feature A (ART #1)	Whisky bottle; considered rare; two-piece applied top; front panel embossed with “MACEFARLANE & Co. HONOLULU” and monogram “M” over “C” with small “o”	Length: 29 cm Width: 7.5 cm Thickness: 0.2 cm	1880-1900
2	Brown glass	Surface at SIHP # -30010 Feature A (ART #1)	Whiskey bottle; tooled top; turned in mold; seamless; no embossing	Length: 28 cm Width: 7.5 cm Thickness: 0.3 cm	1850-1918
3	Basalt	Surface at SIHP # -30010 Feature A (ART #2)	Modified basalt waterworn cobble; two shallow indentations on surface with flat base	Length: 16 cm Width: 14 cm Thickness: 11.5 cm	Like pre-Contact to early historic
4	Basalt	Surface at SIHP # -30010 Feature A (ART #3)	Modified basalt waterworn cobble; natural exposed void within deep indentation; one end exhibits battering marks	Length: 19.5 cm Width: 14 cm Thickness: 12 cm	Like pre-Contact to early historic

Figure 88. Photograph of Accession # 1, historic bottle collected from surface at SIHP # -30010 Feature A

Figure 89. Photograph of Accession # 1, showing embossed markings

Figure 90. Photograph of Accession #2, historic bottle collected from surface at SIHP # -30010 Feature A

Figure 91. Photograph of Accession #3, modified basalt waterworn cobble collected from surface at SIHP # -30010 Feature A, showing indentations

Figure 92. Photograph of Accession #3, modified basalt waterworn cobble collected from surface at SIHP # -30010 Feature A, showing flattened base

Figure 93. Photograph of Accession # 4, modified basalt waterworn cobble collected from surface at SIHP # -30010 Feature A, showing exposed void within indentation

Figure 94. Photograph of Accession #4, modified basalt waterworn cobble collected from surface at SIHP # -30010 Feature A, showing battering marks on end

The function of these artifacts is somewhat indeterminate. The indentations on Accession #3 are too shallow for a lamp or for a mortar stone. Dr. Hammatt has suggested this artifact may have been used with a hand drill to spark a fire. Alternatively, it may have been used to hold a *kukui* or other nut to facilitate extraction of the kernel. The slightly flattened base indicates it may have been modified somewhat to create a more stable base. Accession #4 could have been used in a similar fashion; however, the deeper indentation indicates it could have been worked for use as alamp or mortar stone likely abandoned when the inner void was breached. It also appears to have functioned to some degree as a battering stone.

6.2 Discussion

The assemblage of artifacts collected during the Phase I investigation is reflective of the artifacts documented at nearby SIHP # -21771 by Tolleson and Godby (2001). Both assemblages include late nineteenth century liquor bottles and “traditional Hawaiian-type” stone artifacts (at SIHP # -21771 *poi* pounders and manuports were observed). Of this latter category, it is important to note the relative portability and durability of such items. Once a desirable stone was found and modified for use, it would have become a valuable tool that would not have been casually abandoned, and that could have seen continued use over many years. Therefore, the age and place of origin of the modified basalt waterworn stones found at SIHP # -30010—whatever their purpose may have been—is difficult to interpret. We know from the presence of *poi* pounders at SIHP # -21771 that traditional methods of food preparation were occurring at that site contemporaneous with late nineteenth century construction along the Puna Trail; Hawaiians were among the roadway workforce. The stone artifacts presented above may represent pre-Contact tools found elsewhere at a later date and brought to the site in historic times. Alternatively, they could be historic models of traditional tools. If anything, the presence of these artifacts speaks of the diversity of the road crew and other travelers along the Puna Trail in the late 1800s, and to the related potential for historic (as well as modern military) occupation and modification of traditional features within the project area.

Section 7 Summary and Interpretation

Prehistorically the project area does not appear to have supported extensive habitation or large-scale agriculture. Habitations would have been located closer to the coast or further inland amid the more productive upland agricultural zones. The KMR parcel would have been used for intermittent, small-scale agriculture, with the natural depressions in lava flows used for mulch-type agriculture. Natural resources, such as the prevalent *lauhala* for weaving, would have been collected.

The project area remained marginal in the historic period, with the probable continuation of intermittent use for traditional Hawaiian agriculture. Originally a pre-Contact *ala loa*, the Puna Trail (SIHP # 50-10-35-18869) was modified, and became the most notable man-made feature on the KMR landscape. By the 1870s, the trail was a functioning horse trail. Four feet wide and paved, it represented a Type C trail, following Apple's trail typology (1965:65).

Sometime during the use of the trail, *ahu* (SIHP # -21658) were constructed to mark a point along it, and natural features in the surrounding environment were modified for use as shelters (SIHP # -30008) or temporary habitations (SIHP # -30009), and for agricultural pursuits. Secondary trails were also constructed laterally from the Puna Trail, likely to access forest resources (SIHP #s -23273 and -30012). Activity areas associated with the late nineteenth century construction of the trail led to the presence of activity areas (or "way-stations") for activities related to maintenance and associated habitation (SIHP #s -21771, -30010, and -30011).

The project area was subjected to extensive development beginning in 1914 with the establishment of the National Guard of Hawaii Rifle Range and continuing through World War II with Army and Navy use of the KMR. Large portions of the project area were graded for buildings, roads, firing ranges, and lawns. The most extensive modifications occurred in the northwest portion of the KMR. The southern and eastern portions are relatively undisturbed in comparison, and it is in these areas that CSH located the remains of the pre-Contact and/or historic sites described above.

The alignment of the Puna Trail through KMR survived the changes of the twentieth century as a Jeep road; however, the nineteenth century characteristics of the trail, such as paving and curbstones, generally did not. A previous study at KMR (Hammatt and Bush 2000) determined the historic alignment had been completely obliterated by the Jeep road construction, but a remnant segment of the trail was documented during the current investigation in the southeastern portion of the reservation. Since much of the Puna Trail through KMR has been modified for vehicle travel, it has largely become a Type D trail, following Apple's trail typology (Apple 1965:65). The extant segment represents the former Class C alignment.

A substantial portion of the KMR has been extensively modified by military development. This development has effectively removed any archaeological remains that may once have been present in these areas. The present Phase I survey focused on the portions of the KMR that have not been heavily modified. Generally, the Phase I survey findings support the assessment that KMR was a marginal area prehistorically and through the nineteenth century. The types of historic properties encountered within the KMR pre-dating the late nineteenth century

modification of the Puna Trail suggest intermittent use for forest resource procurement and possible distribution to adjacent *ahupua‘a* or districts. The lands along the Puna Trail saw increased usage as the trail was modified for equestrian travel, necessitating the creation of associated way-stations for maintenance and rest.

A low site density within KMR was expected; results of the AIS support this expectation, particularly when considering traditional land use. Examination of the traditional settlement pattern and present results suggests habitation focused along the coast, and not within the more densely forested *mauka* areas. It is likely this is the result of drier conditions along the coastline. The lack of arable land within the interior areas was also a factor in the paucity of permanent habitation and agricultural sites within the *mauka* regions of Waiākea Ahupua‘a. However, indications of agricultural pursuits have been identified within the KMR and it is not unreasonable to assume that more of these agricultural sites were once present. Additional features of this type have likely deteriorated over time and/or become obscured by the dense vegetation characterizing the undeveloped portions of the KMR. The fact that historic properties were newly-recorded in previously-surveyed areas underscores the problematic nature of feature identification within the forests of the KMR.

Section 8 Significance Assessments

The current archaeological inventory survey investigation has documented 11 historic properties within or adjacent to the project area (see Figure 23 and Figure 24, Table 4). Five historic properties (SIHP #s 50-10-35-18869, -21657, -21658, -21771, and -23273) were previously identified and evaluated during SHPD-approved archaeological inventory surveys (Escott and Tolleson 2002; Hammatt and Bush 2000; Tolleson and Godby 2001). Additional features were found during the present investigation at SIHP # -21771. The six newly identified sites were evaluated for significance according to the historic property significance criteria listed under HAR §13-275-6 and (Table 6). The criteria are the following:

1. Criterion “a.” Associated with events that have made an important contribution to the broad patterns of our history;
2. Criterion “b.” Associated with the lives of persons important in our past;
3. Criterion “c.” Embodies the distinctive characteristics of a type, period, or method of construction, represents the work of a master, or possesses high artistic value;
4. Criterion “d.” Have yielded, or is likely to yield information important for research on prehistory or history;
5. Criterion “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.

The National Register of Historic Places (NRHP) is is maintained by the U.S. Secretary of Interior under authority of section 2(b) of the Historic Sites Act of 1935 (49 Stat. 666, 16 U.S.C. §461) and section 101(a)(1) of the National Historic Preservation Act (16 U.S.C. §470a). Criteria for evaluation are as follows:

> The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and
>
> A) That are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> B) That are associated with the lives of persons significant in our past; or
>
> C) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> D) That has yielded or may be likely to yield information important in prehistory or history.

Table 6. Historic Property Significance Criteria and Recommended Treatment

SIHP # (50-10-35)	Site Type	Features	Probable Age	Functional Interpretation	Significance Criteria	Recommended Treatment
-18869	Trail (“Puna Trail”)	One	Late nineteenth century	Transportation	N/A	No further work
-21657	C-shaped enclosure	One	Twentieth century	Military artillery position	d	No further work
-21658	Complex	Five	Likely late nineteenth century or older	Markers	d	Preservation through avoidance
-21771	Complex	Twelve	Late nineteenth century	Activity area, temporary habitation, possible agriculture	a, c, and d	Preservation through avoidance; extend existing protective fence line to encompass newly recorded features; Phase II subsurface testing
-23273	Complex	Three; only one identified during present AIS	Historic	Transportation	d (Feature 1)	No further work
-30008	Modified lava tube	One	Pre-Contact	Temporary habitation	d	No further work
-30009	Complex	Three	Late pre-Contact/early historic	Activity area, temporary habitation, possible agriculture	d	No further work
-30010	Complex	Five	Historic	Temporary habitation	d	Phase II subsurface testing
-30011	Complex	Two	Pre-historic/historic	Indeterminate	d	No further work

SIHP # (50-10-35)	Site Type	Features	Probable Age	Functional Interpretation	Significance Criteria	Recommended Treatment
-30012	Trail	One	Historic	Transportation; potential remnant section of SIHP # -23273	d	No further work
-30038	Trail	One	Late nineteenth century	Transportation; remnant historic-era segment of the Puna Trail, which has been largely obliterated in the KMR (SIHP # -18869)	a, d	Preservation through avoidance

The Hawai‘i Register of Historic Places (HRHP) criteria for consideration, listed under HAR §13-198-8, are almost identical to those for the NRHP.

SIHP # -18869 is the Hilo District portion of the Puna Trail, a pre-Contact trail that was modified for horse travel in the late nineteenth century. The historic property was documented under studies by Hudson (1932), McEldowney (1979), and Hammatt and Bush (2000). As a whole, the trail is significant under both Criteria “a” and “d”. Within the KMR, the trail’s original alignment has been developed into a modern Jeep road. These alterations have generally obliterated its nineteenth century characteristics, such as paving and curbstones. As such, Hammatt and Bush (2000) reported that the portion of the Puna Trail through the KMR was not considered eligible for the HRHP and NRHP.

SIHP # -21657 is thought to be an historic military artillery position. The historic property was previously identified by Hammatt and Bush (2000) and evaluated generally significant for information content. The results of the current AIS support the recommendation of eligibility under National/Hawai‘i Register Criterion D and determination of significance under HAR §13-275-6 Criterion “d.”

SIHP # -21658 is a series of five possible *ahu* or trail markers along the Puna Trail. The historic property was previously identified by Hammatt and Bush (2000) and evaluated generally significant for information content. The results of the current AIS support the recommendation of eligibility under National/Hawai‘i Register Criterion D and determination of significance under HAR §13-275-6 Criterion “d.”

SIHP # -21771 is a late nineteenth century complex located adjacent to the paved portion of the Puna Trail. Four features at this historic property were previously identified by Tolleson and Godby (2001) and evaluated generally significant for their association with events that made an important contribution to the broad patterns of our history, their embodiment of the distinctive characteristics of a type, period, or method of construction, and their information content. In the current AIS, CSH documented eight additional features at this site. The results of the current AIS support the recommendation of eligibility under National/Hawai‘i Register Criterion D and determination of significance under HAR §13-275-6 Criteria “a,” “c,” and “d.”

SIHP # -23273 is an historic era complex consisting of a remnant trail (Feature 1) and two agricultural planting areas (Features 2 and 3). The historic property was previously identified by Escott and Tolleson (2002); Feature 1 was evaluated generally significant for information content under Criterion D, while Features 2 and 3 were considered not significant. The results of the current AIS support the recommendation of eligibility under National/Hawai‘i Register Criterion D and determination of significance of Feature 1 under HAR §13-275-6 Criterion “d.”

SIHP # -30008 is a pre-Contact to historic era lava tube shelter identified during the current AIS. It is recommended eligible under National/Hawai‘i Register Criterion D and determined significant under HAR §13-275-6 Criterion “d” for its information content.

SIHP # -30009 is a pre-Contact to historic era complex of three features situated on a large natural outcropping identified during the current AIS. It is recommended eligible under National/Hawai‘i Register Criterion D and determined significant under HAR §13-275-6 Criterion “d” for its information content.

SIHP # -30010 is a late nineteenth century complex of five features identified during the current AIS. It is recommended eligible under National/Hawai‘i Register Criterion D and determined significant under HAR §13-275-6 Criterion “d” for its information content. While similar in some ways to SIHP # -21771, it is not assessed as significant under Criteria “a” and “c” as it does not embody these characteristics as well as that historic property.

SIHP # -30011 is a late nineteenth century complex of two features identified during the current AIS. Feature A is a wall and Feature B is a circular depression. It is recommended eligible under National/Hawai‘i Register Criterion D and determined significant under HAR §13-275-6 Criterion “d” for its information content.

SIHP # -30012 is a historic era or older trail identified during the current AIS. It is recommended eligible under National/Hawai‘i Register Criterion D and determined significant under HAR §13-275-6 Criterion “d” for its information content.

SIHP # -30038 is an isolated remnant segement of the late nineteenth century Puna Trail within KMR. While the Puna Trail through KMR (SIHP # -18869) had been assessed as no longer eligible to the National/Hawai‘i Register due to its modern improvements, SIHP # -30038 does represent a relatively intact portion of the historic alignment. This trail segment has been heavily disturbed by bulldozing and dense surrounding vegetation. Despite these disturbances, this segment of the historic trail retains integrity and is therefore eligible as an historic property. It is recommended eligible under National/Hawai‘i Register Criterion D and determined significant under HAR §13-275-6 Criterion “a” for its association with changes in infrastructure (e.g., *ala loa*) through the historic period, and Criterion “d” for its information content.

Section 9 Project Effect and Mitigation Recommendations

9.1 Project Effect

This investigation was undertaken for planning purposes, and does not address a specific project. For this reason, a project-specific effect recommendation cannot be made. However, future developments may have the potential to impact known or potential historic properties within the KMR. The recommended mitigation measures are intended to reduce potential adverse effect on significant historic properties during any future development projects.

9.2 Mitigation Recommendations

9.2.1 Historic Properties at which Sufficient Data Has Been Recovered

No further historic preservation work is recommended for seven of the 11 total historic properties identified within the project area (SIHP #s 50-10-35-18869, -21657, -23273, -30008, -30009, -30011, and -30012). Sufficient information regarding the location, function, age, and construction methods of these historic properties has been generated by the current archaeological inventory survey investigation to mitigate any adverse effect caused by proposed development activities.

9.2.2 Preservation through Avoidance

Because of their evaluated significance during past and present studies, three historic properties within the KMR are recommended for preservation through avoidance.

SIHP # -21658 was recommended for preservation through avoidance by Hammatt and Bush (2000). CSH presently concurs with this recommendation, to allow for future study.

CSH also concurs with the recommendation for preservation of SIHP # -21771 implied by Tolleson and Godby (2001). This historic property provides a unique picture of the history of this portion of Hilo in the late nineteenth century. The bulk of this historic property is already preserved within a modern chain link fence. It is recommended that the fence line be modified to contain the newly identified associated features present to the north. Figure 95 shows how alteration of the existing fenceline at SIHP # -21771 would fulfill this recommendation. The portion of fencing presently situated between the Features A through G and Features H through L clusters could be removed, if desired, to create a single continuous enclosed space.

SIHP # -30038 is an isolated remnant segment of the late nineteenth century Puna Trail. All of the historic components of this trail were previously thought to have been obliterated by the modernization of the overall trail into a Jeep road (SIHP # -18869). Because this segment likely represents the only “intact” segment of the historic trail within the KMR, it should also be avoided to allow for future study.

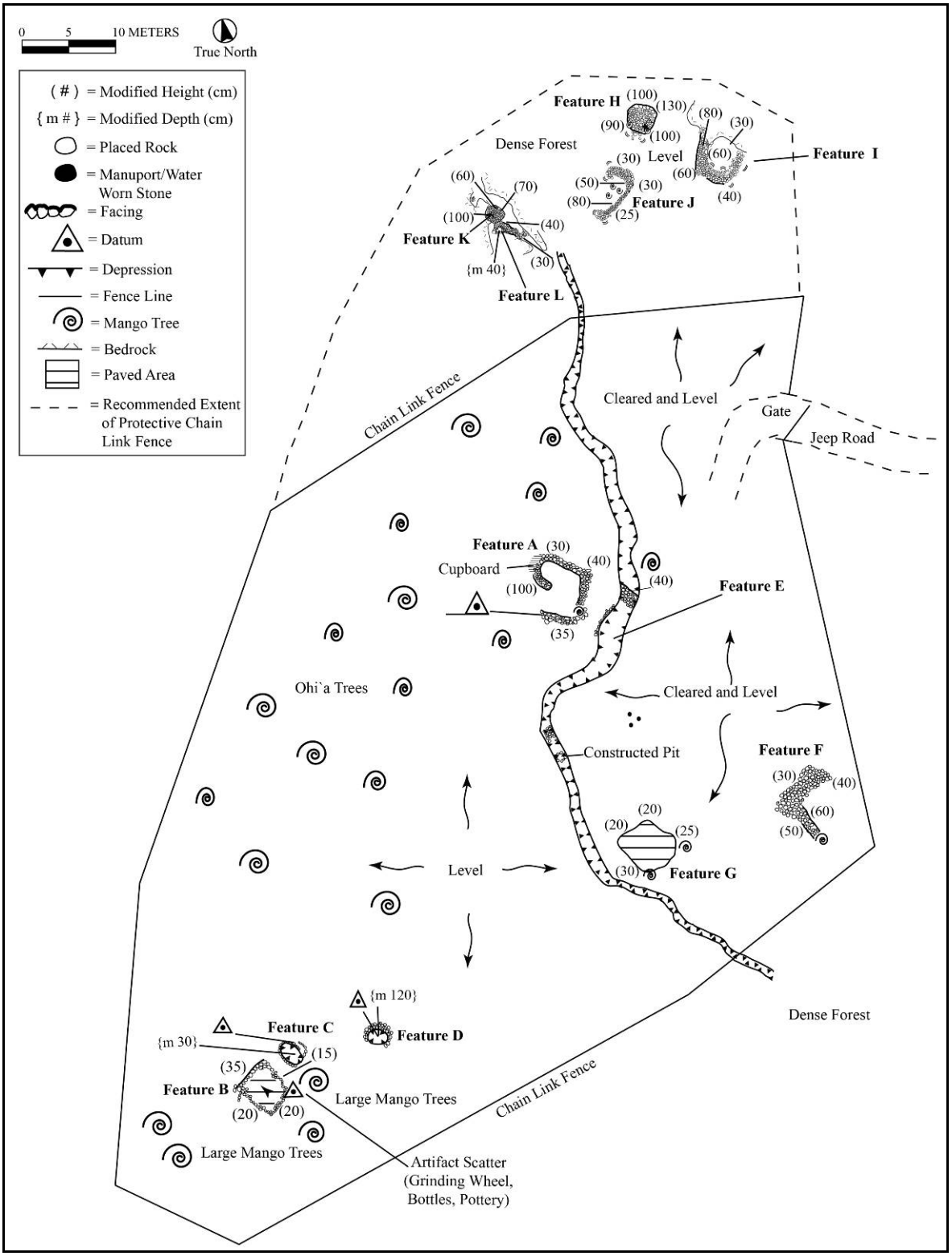

Figure 95. Plan map of SIHP # -21771, showing the recommended extension of the protective chain link fence line (dashed line)

9.2.3 Phase II Subsurface Investigation

Given their potential for containing additional information regarding feature age and/or function, and to rule out the possibility (however unlikely) of the presence of human burial deposits, subsurface investigation (i.e., test excavation) is recommended for two historic properties, SIHP #s -21771 (also recommended for preservation through avoidance) and -30010. This work would be completed under a Phase II contract with the HIARNG, *if* concurrence that such testing is warranted has been obtained in consultation with that agency and the SHPD.

9.2.4 Archaeological Monitoring

The results of the current Phase I investigation underscored the difficult nature of site identification within the heavily forested, undeveloped portions of the KMR. Due to the potential for additional surface and subsurface historic properties within these areas, including human burials, it is recommended that initial ground disturbance within the presently unmodified portions of the KMR be attended by an archaeological monitoring program. The monitoring program will begin with the production of an archaeological monitoring plan for the review and acceptance of SHPD prior to the beginning of construction (Appendix A of this report). Field monitoring should be carried out in accordance with the plan. An archaeological monitoring report should be submitted for review and acceptance by SHPD following the completion of all monitoring activities related to project development.

9.3 Disposition of Materials

Materials collected during the current archaeological inventory survey will remain temporarily curated at the CSH storage facility in Pāhoa, Hawai‘i. CSH will make arrangements with the landowner regarding the disposition of this material. Should the landowner request archiving of material, an archive location will be determined in consultation with SHPD.

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Appendix A Phase I Archaeological Monitoring Plan

Archaeological Monitoring Plan, Phase I, Keaukaha Military Reservation (KMR) Hawai‘i Army National Guard Facility Waiākea Ahupua‘a, South Hilo District, Island of Hawai‘i TMK (3) 2-1-012: 003, 131 and (3) 2-1-013:010

Prepared for
Hawai‘i Army National Guard, ENV Office

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Kailua, Hawai‘i
(Job Code: WAIAKEA 11)

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Introduction

At the request of the Hawai‘i Army National Guard, ENV Office, Cultural Surveys Hawai‘i, Inc. (CSH) has prepared this archaeological monitoring plan (AMP) as part of Phase I investigations at Keaukaha Military Reservation (KMR) Hawai‘i Army National Guard Facility, Waiākea Ahupua‘a, South Hilo District, Hawai‘i Island, TBD: TMK (3) 2-1-012:003, 131 and (3) 2-1-013:010. The proposed project area is near Hilo Town in the Hawai‘i Army National Guard (HIARNG) KMR and is bound by General Lyman Field/Hilo International Airport on the northwest, County Quarry and Borrow Pit Site on the southeast, the Airport Access Road on the northeast and dense forest on the southwest. The proposed project area is depicted on a U.S. Geological Survey (USGS) 7.5 Minute Topographic Map, Hawai‘i Tax Key Map (TMK), an aerial photograph and project area site plan of KMR (see Figure 1 through Figure 4).

The KMR encompasses a total area of 509.17 acres. However, the project or survey area encompassed the portions of the KMR that are vegetated (not currently maintained). Therefore the Phase I Archaeological Inventory Survey (AIS) project area, and subject of the present AMP, comprises a 405.3-acre portion of the overall 509.17–acre property (see Figure 5 and Figure 6), and excludes TMK (3) 2-1-012:131 in its entirety. The Phase I investigation is understood as being undertaken in support of planning for potential long-range improvements at the HIARNG KMR Facility. No specific improvements are known to us at this time. Development of this AMP will assure compliance with State of Hawai‘i and Federal Historic Preservation regulations, and aid in the discovery and treatment of any historic properties encountered during future projects within the project area.

This undertaking is subject to both Federal and State of Hawai‘i Historic Preservation Regulations. With regard to Federal regulations, this undertaking is subject to historic preservation review under Section 106 of the National Historic Preservation Act of 1966, as amended, and implementing regulation 36 CFR Part 800. In the event that human burials of Native Hawaiian descent are encountered, all consultation and subsequent work would be conducted under the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA), as well as State of Hawai‘i Administrative Rules (HAR) Title 13 §13-300.

Scope of Work

The following scope of work satisfies the State of Hawai‘i requirements for archaeological monitoring plans (Hawai‘i Administrative Rules [HAR] § 13-279-4). The written plan shall specify:

1. The type of archaeological remains or historic properties anticipated or require protection;
2. The location of these properties within the project are or where they are anticipated to be;
3. The fieldwork need to protect or document known or anticipated historic properties; which may include, but not limited to, profile documentation of stratigraphy, drawings, lithic sourcing and excavations or exposed feature;

4. That the archaeological monitor has the authority to halt ground-disturbing activities in the immediate area of the find, in order to implement the plan;
5. That a coordination meeting between the archaeological team and the construction team will be held to inform the contractor of the plan;
6. Any laboratory work that is expected;
7. That a final report of monitoring activities will be prepared;
8. Archiving of any collections.

This plan must be approved by SHPD before subsurface work in the project area can begin.

Results of Phase I AIS and Recommendations

CSH conducted the Phase I surface AIS from August 19, 2013 to September 24, 2013. The pedestrian inspection identified 11 historic properties, of which five were previously-identified and six are newly-identified. While these sites are largely associated with the late ninteenth century modification of the Puna Trail for equestrian travel, some appear to pre-date this activity and were likely related to traditional and or/earlier historic resource procurement within the forests of Waiākea. Evidence of possible shelter, temporary habitation, and agriculture were also documented. See Section 5 of the AIS report for further discussion of these historic properties and their context within the lands of the KMR.

Of the 11 historic properties documented, seven were recommended for no further work, two were recommended to undergo Phase II subsurface testing, and three were recommended for preservation through avoidance (note that one site, SIHP # 50-10-35-21771, was recommended for both subsurface testing and preservation through avoidance) (see also Section 9.2). The locations of all eleven historic properties are given on Figure 23 and Figure 24. Figure 25 depicts these historic properties in relation to both the disturbed and undisturbed portions of the unmaintained grounds at KMR.

Following concurrence of the SHPD with the evaluations and recommendations as presented in the AIS report, only the sites recommended for Phase II subsurface testing and preservation through avoidance would require protection during future development projects at KMR. If Phase II subsurface testing was completed prior to any development, the results of those investigations could decrease the number of historic properties requiring protection. Presently, subsurface testing is recommended for SIHP #s -21771 and -30010; as SIHP # -21771 is also recommended for preservation through avoidance, the results for testing at this site would not bear on the present plan. However, if testing yielded a recommendation of no further work at SIHP # -30010, protection of that site may no longer be required.

Archaeological Monitoring Provisions

In consultation with SHPD, on-site archaeological monitoring is recommended for all ground disturbances in unmaintained areas within KMR (see Figure 6) to facilitate the identification and treatment of any burials that might be discovered during project construction, and to alleviate the project’s effect on non-burial archaeological deposits. The AIS identified previously unrecorded archaeological features within previously surveyed areas in both disturbed and undisturbed

portions of the unmaintained grounds at KMR (see Figure 25). These results indicate some potential for additional features within any of these unmaintained areas, regardless of past disturbance. Archaeological monitoring is not recommended for any ground disturbance within the presently-maintained grounds, including the existing ranges indicated on Figure 5.

Under Hawai‘i State historic preservation legislation, “Archaeological monitoring may be an identification, mitigation, or post-mitigation contingency measure. Monitoring shall entail the archaeological observation of, and possible intervention with, on-going activities which may adversely affect historic properties” (HAR § 13-279-3). For this project, the proposed monitoring program will serve as a mitigation measure that insures proper documentation should historic properties be encountered during the road reconstruction/rehabilitation work. The archaeological monitoring firm would need to be permitted to conduct archaeological studies in the State of Hawai‘i and compliant with any federal regulations governing archaeological monitoring.

Specific Provisions

Hawai‘i State historic preservation legislation governing archeological monitoring programs requires that each monitoring plan discuss eight specific items (HAR § 13-279-4). The monitoring provisions below address these eight requirements.

1. Anticipated Historic Properties:

   Based on background research and the results of the current Phase I AIS, historic properties (i.e., archaeological sites) in the form of pre- and post-Contact surface or subsurface features may be encountered during archaeological monitoring of ground disturbance within the project area. Subsurface features including anthropogenic constructions, cultural deposits and burials can occur within lava tubes.

   Evidence of indigenous Hawaiian land use could include surface architectural features or cultural deposits obscured by dense vegetation; subsurface cultural deposits might contain midden, artifacts and/or human burials. Evidence of post-Contact land use could include surface features associated with the Puna Trail or subsurface cultural deposits in the form of trash pits and/or human burials.

2. Locations of Historic Properties:

   Historic properties may be encountered anywhere within the entire project area.

3. Fieldwork:

   Full-time on-site archaeological monitoring is recommended whenever disturbance of original (previously undisturbed) ground is conducted in the project area. The archaeological monitor shall continuously observe and monitor ground disturbing activities. Any departure from full time on-site archaeological monitoring will only follow consultation with and written concurrence from SHPD.

   Each piece of mechanical earth-disturbing machinery shall be monitored by an archaeological monitor. If more than one piece of machinery needs to be monitored, additional monitors shall be employed.

The monitoring fieldwork may encompass the documentation of surface or subsurface archaeological features (e.g., anthropogenic constructions, or cultural deposits such as midden scatters or trash pits) and will employ current standard archaeological recording techniques. For surface features, this would include documentation of features by written description, tape and compass mapping, photographs, and GPS. For subsurface features, this would include drawing and recording the stratigraphy of excavation profiles where cultural features or artifacts are exposed, as well as representative profiles. These exposures will be photographed, located on project area maps and sampled. Photographs and representative profiles of excavations will be taken even if no historically-significant sites are documented. As appropriate, sampling will include the collection of representative artifacts, bulk sediment samples and/or the on-site screening of measured volumes of feature fill to determine feature contents.

If human remains are identified, no further work will take place, including no screening of back dirt, no movement of rocks, no cleaning and/or excavation of the burial area and no exploratory work of any kind unless specifically requested by the SHPD. All human skeletal remains that are encountered during construction will be handled in compliance with NAGPRA, HAR § 13-300, and in consultation with SHPD.

4. Archaeologist's Role:

   The on-site archaeologist(s) will have the authority to stop work immediately in the area of any findings so that documentation can proceed and appropriate treatment can be determined. In addition, the archaeologist will have the authority to slow and/or suspend construction activities in order to insure that the necessary archaeological sampling and recording can take place.

5. Coordination Meeting:

   Before work commences on the project, the on-site archaeologist shall hold a coordination meeting to orient the construction crew to the requirements of the archaeological monitoring program. At this meeting, the monitor will emphasize his or her authority to temporarily halt construction and that all historic finds, including objects such as bottles, are the property of the landowner and may not be removed from the construction site. At this time it will be made clear that the archaeologist must be on site whenever disturbance of original (previously undisturbed) ground is conducted in the project area; and that multiple machines working in different areas need multiple monitors.

6. Laboratory Work:

   Laboratory work will be conducted in accordance of HAR § 13-279-5-(6). Laboratory analysis of non-burial related finds will be tabulated into table form and standard artifact and midden recording will be conducted as follows: artifacts will be documented as to provenience, weight, length, width, type of material, and presumed function. Photographs of representative artifacts will be taken for inclusion into the

archaeological monitoring report. Bone and shell midden materials will be sorted down to species, when possible, and then tabulated by provenience.

As appropriate, collected charcoal material obtained within intact cultural deposits will be analyzed for species identification. Charcoal samples ideal for dating analyses will be sent to Beta Analytic, Inc. for radiocarbon dating. If appropriate, artifacts may be sent to the University of Hawai‘i-Hilo Geoarchaeology lab for Energy-Dispersive X-ray Fluorescence (EDXRF) analysis in order to identify and possibly geographically locate the source material. All analyzed samples, provenience information, and results will be presented in table form within the archaeological monitoring report.

7. Report Preparation:

   One of the primary objectives of the report will be to present a stratigraphic overview of the project area which will allow for predictive assessments of adjacent properties, which may be the subject of future development. The report will contain a section on stratigraphy, description of archaeological findings, monitoring methods and results of laboratory analyses. The report will address the requirements of a monitoring report (HAR § 13-279-5). Photographs of excavations will be included in the monitoring report even if no historically-significant sites are documented. Should burial treatment be completed as part of the monitoring effort, a summary of this treatment will be included in the monitoring report. Should burials and/or human remains be identified, then other letters, memos, and/or reports may be requested by SHPD's Burial Sites Program.

8. Curation:

   All burial materials will be addressed as directed by the SHPD. Materials not associated with burials will be temporarily stored at the contracted archaeologist's facilities until an appropriate curation facility is selected, in consultation with the landowner and SHPD.

Research Objective

The research objective for archaeological monitoring fieldwork will focus on gathering information related to the cultural history of the area surrounding the current project area. In particular, the focus would be to clarify our understanding of pre-Contact land use in the forests of Waiākea, and to further document historical activities within the KMR and relationship of such activities to the Puna Trail.

Temporal analysis (radiocarbon dating) will also be conducted if dateable material (e.g., charcoal) can be collected from discrete subsurface features that are associated with a particular event (such as the construction of fire pits), rather than from bulk sediment samples which reflect extended depositional events. The results of this research will be presented in the project's final archaeological monitoring report.

Appendix B CSH Site Inventory Records and Plan View Maps

SIHP # 50-10-35-18869 (CSH-003)

Cultural Surveys Hawai'i Site Inventory Record

Date: 8/29/13 Name: OMB Checked By: _____

Job Code Project: Waiakea 10	**CSH Site #** 003	**Feature:** —
Area/Transect: —	**State Site #** —	—
Elevation: c. 150 Amsl	**Landmarks:** Puna Trail	**Sheet** 1 **of** ____

Site/Feature Type: Enclosure Platform Terrace Wall Alignment Mound Modified: _____

Shelter Lava Tube Cairn Rock Art (Trail) Other: _____

Function: Habitation Activity Area Marker Ceremonial Shelter Burial Agriculture Water Control

Animal Husbandry Transportation Rock Art Indeterminate Other: _____

Age: Prehistoric (Historic) Military Plantation Ranch Indeterminate Other: _____

Evidence of Age: core filled construction of curbstones

Geology: a'a	**Topography:** undulating numerous voids
Vegetation: Uluhe Ohia, Panedanus	**Disturbance:** Puna Trail Road

HISTORIC PROPERTY MEASUREMENTS

	Meters	Orientation		Meters	Orientation
Length	22m	E/W	**Height**	60 max exterior	
Width	interior 1.80 wide	N/S	**Thickness**		
Site Complex Dimensions		Length:		Width:	

Condition: Excellent / (Good) / Poor / Remnant

Excavation Potential: Excellent / Good / Fair / (Poor)	**Evidence:** —
Photo(Roll or Disk/ Frame) /	**Midden:** none **Artifact:** none

Description: CSH-003 is a class B type trail segment. The feature is located c. 20m north of the existing Puna Trail road. Vegetation is very dense (mostly uluhe). The trail consists of neatly stacked curbstones spaced 1.80m apart and rising 35cm above the trail surface. The surface of the trail is comprised of a'a cobbles (fairly level). Only a 7.5m portion of the trail is curbed on both sides. The northern curb extends for c. 22m. The western end may have been bulldozed during construction of the Puna trail road and KD2 Range. The eastern terminus abuts a small depression and disappears. Site is in good condition. Historic time frame. No artefacts present. Excavation Potential Poor for burials (it's a trail) Possibly original Puna Trail alignment.

Map Checklist: N. arrow: Scale: Legend: Site #: Heights: Name Date Job Code

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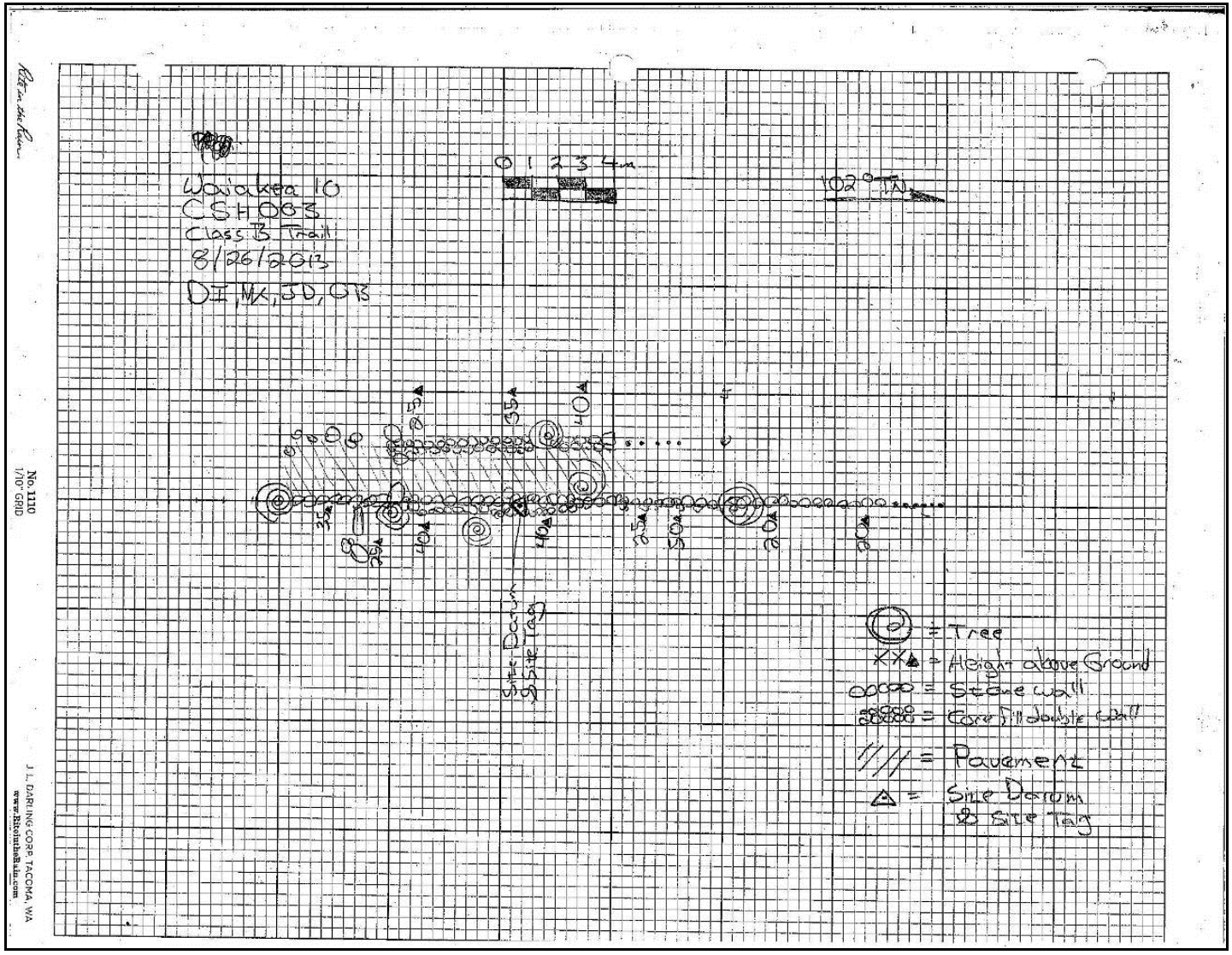
Trends E/W for 22m


Waiakea 10
CSH003
Class B Trail
8/26/2013
DH, MK, JD, CB
0 1 2 3 4 m
102° TN
Tree
Height above Ground
= Stone wall
= Cored fill boulder wall
= Pavement
= Site Datum
& Site Tag
Site Datum & Site Tag
No. 1110
1/10" GRID
J. L. DARLING CORP. TACOMA, WA

SIHP # 50-10-35-21771 (Features H to L = CSH-005)

Cultural Surveys Hawai'i Site Inventory Record

Date: 09/06/13 Name: ASoltz/NGarcia Checked By: _____

Job Code Project: waikea 10	**CSH Site #** ~	**Feature:** (1) Enclosure
Area/Transect:	**State Site #** 5010-35-21771	
Elevation:	**Landmarks:**	**Sheet** 1 **of** 1

Site/Feature Type: (Enclosure) Platform Terrace Wall Alignment Mound Modified: _____

Shelter Lava Tube Cairn Rock Art Trail Other: _____

Function: Habitation Activity Area Marker Ceremonial Shelter Burial Agriculture Water Control

Animal Husbandry Transportation Rock Art (Indeterminate) Other: _____

Age: Prehistoric Historic Military Plantation Ranch Indeterminate Other: _____

Evidence of Age: lichen & moss present on undisturbed portions / Natural disturbance

Geology: Pahoe'hoe / Broken a'a / heavy lava flow **Topography:** level surface, w/ feature in Pit a'a

Vegetation: Mango / Ohia / Iliiko'i / guava / ingabing in area **Disturbance:** area to SW heavily disturbed by clearing

HISTORIC PROPERTY MEASUREMENTS

	Meters	Orientation		Meters	Orientation
Length	—	—	**Height**	—	—
Width	—	—	**Thickness**	—	
Site Complex Dimensions		Length: 8m		Width: 6.5m	

Condition: Excellent / Good / (Poor) / Remnant

Excavation Potential: Excellent / (Good) / Fair / Poor **Evidence:** —

Photo(Roll or Disk/ Frame) / **Midden:** — **Artifact:** —

Description: Basalt enclosure, with U-shape and modified basalt storage pit within the western facing of enclosure. Enclosure composed of basalt boulders approximately 30-40cm stacked. Portions of western and eastern facing have been disturbed by natural collapse (see map). Stacked pahoe'hoe, with entrance located on western portion of feature, a 1m x 50cm x 90cm deep 90cm Puka in the northwest portion of the feature was likely used as a storage pit. There is collapse of most of the Eastern wall visible. Unable to relocate priviously recorded poi pounder. No contextual cultural material observed with proximity of enclosure feature. Eastern and Western extremities of site terminate in Klinkere and rubble with evident natural deteriation.

Map Checklist: N. arrow: ✓ Scale: ✓ Legend: ✓ Site #: ✓ Heights: ✓ Name ✓ Date ✓ Job Code ✓

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Cultural Surveys Hawai'i Site Inventory Record

Date: 9/11/13 Name: OMB Checked By: emz

Job Code Project: Waiakea 10	**CSH Site #** —	**Feature:** 7
Area/Transect: B	**State Site #** 21771	
Elevation: —	**Landmarks:** —	**Sheet** 1 **of** 1

Site/Feature Type: Enclosure Platform Terrace Wall Alignment Mound Modified: —

Shelter Lava Tube Cairn Rock Art Trail Other: paved area

Function: Habitation Activity Area Marker Ceremonial Shelter Burial Agriculture Water Control

Animal Husbandry Transportation Rock Art Indeterminate Other: —

Age: Prehistoric Historic Military Plantation Ranch Indeterminate Other: —

Evidence of Age: "PAU HANA SITE"

Geology: aa + PHH	**Topography:** level
Vegetation:	**Disturbance:** vegetation; large trees

HISTORIC PROPERTY MEASUREMENTS

	Meters	Orientation		Meters	Orientation
Length	4.5	E/W	**Height**	20-30 cm	—
Width	3.0	N/S	**Thickness**	—	—
Site Complex Dimensions		Length: —		Width: —	

Condition: Excellent / Good / Poor / Remnant

Excavation Potential: Excellent / Good / Fair / Poor	**Evidence:** good for historic artifacts
Photo(Roll or Disk/ Frame) /	**Midden:** None **Artifact:** None

Description: Feature 7 is a level and paved area located 1.5 meters (W) from the southern terminus of feature 5. The feature is roughly square and consists of larger stones along collapsed edges. The feature rises 20-30 cm above the surrounding ground surface. Possibly activity area. Very disturbed by roots + vegetation. Also previously unrecorded

Map Checklist: N. arrow: Scale: Legend: Site #: Heights: Name Date Job Code

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Cultural Surveys Hawai'i Site Inventory Record

Date: 04/26/13 Name: ASoltz/Ngarcia Checked By: em

Job Code Project: Waiakea 10	**CSH Site #**	**Feature:** (2) platform
Area/Transect:	**State Site #** 50-10-35-21771	
Elevation:	**Landmarks:**	**Sheet** 1 **of** 1

Site/Feature Type: Enclosure (Platform) Terrace Wall Alignment Mound Modified: _____

Shelter Lava Tube Cairn Rock Art Trail Other: _____

Function: Habitation Activity Area Marker Ceremonial Shelter Burial Agriculture Water Control

Animal Husbandry Transportation Rock Art (Indeterminate) Other: _____

Age: Prehistoric (Historic) Military Plantation Ranch Indeterminate Other: _____

Evidence of Age: overgrown vegitation, lichen and moss in undisturbed areas, historic artifacts

Geology: Pahoe'hoe/Broken a'a **Topography:** level plane sligh undulation in a'a flow

Vegetation: Mango/ohia/bingabing/liliko'i/guava **Disturbance:** Natural turbation/overgrow vegitation

HISTORIC PROPERTY MEASUREMENTS

	Meters	Orientation		Meters	Orientation
Length			**Height**		
Width			**Thickness**		
Site Complex Dimensions		Length: 4m		Width: 5m	

Condition: Excellent / Good / Poor / Remnant

Excavation Potential: Excellent / (Good) / Fair / Poor **Evidence:** historic Artifacts on surface in area

Photo(Roll or Disk/ Frame) / **Midden:** **Artifact:**

Description: Platform has a generally flat surface with associated a'a klinker lining the ground surface. Platform is built on top of a'a flow and degrades in slope to northwest, constructed of sub-angular, rounded and rough a'a cobbles and boulders from 10cm to 30cm in diameter. Platform feature is roughly square in shape and measures 4m by 5m with klinker extending to a point in the northeast portion. Feature 2 is aproximatery 65m southwest of the enclosure (Fea. 1). Artifacts observed include (1) ceramic earthenware pot sherd, (3) two piece mold glass bottle fragments and (1) stone grinding wheel with steel crank to rotate stone for crushing protanding from central portion, 40cm circumfrence. No hearths or evidence of cultural material outside of the historic artifacts listed were observed. historic artifacts found within northeastern portion of feature platform. (3) Water worn stones in a group were observed recorded and documented 26m East of feature (1), likely manuports.

Map Checklist: N. arrow: ✓ Scale: ✓ Legend: ✓ Site #: ✓ Heights: ✓ Name ✓ Date ✓ Job Code

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Cultural Surveys Hawai'i Site Inventory Record

JMW Feat C

Date: 09/06/13 Name: ASoltz/NGarcia Checked By: _____

Job Code Project: Waiakea10	**CSH Site #**	**Feature:** (3) depression
Area/Transect:	**State Site #** 50-10-35-21771	
Elevation:	**Landmarks:**	**Sheet** 1 **of** 1

Site/Feature Type: Enclosure Platform Terrace Wall Alignment Mound Modified: _____
Shelter Lava Tube Cairn Rock Art Trail Other: depression

Function: Habitation Activity Area Marker Ceremonial Shelter Burial Agriculture Water Control
Animal Husbandry Transportation Rock Art Indeterminate Other: Possible storage

Age: Prehistoric Historic Military Plantation Ranch Indeterminate Other: _____

Evidence of Age: lichen & moss within undisturbed portions/Natural vegitation growth

Geology: Pahoe'hoe/Broken a'a	**Topography:** level plone w/ sligh undulation
Vegetation: Mango/guava/liliko'i/bingabing	**Disturbance:** Natural turbation

HISTORIC PROPERTY MEASUREMENTS

	Meters	Orientation		Meters	Orientation
Length			**Height**		
Width			**Thickness**		
Site Complex Dimensions		Length: 2.2m		Width: 1.4m	

Condition: Excellent / Good / (Poor) / Remnant

Excavation Potential: Excellent / (Good) / Fair / Poor **Evidence:** historic artifacts on surface/Previous testing

Photo(Roll or Disk/ Frame) / **Midden:** — **Artifact:** —

Description:

WSW-ENE
Feature 3 is composed of an aproximately 2.2m long by 1.4m (N-S Axis) wide by 30cm bs(?) shallow oblong in shape depression. This feature is located aproximately 2m north of featur(2). The ground surface has klinker and cobble size a'a. There is an upright basalt slab placed within the depression on the western portion. Evidence of a previous test unit (1mx50cm) was observed bisecting the feature, as evidenced by soil turbation. No cultural material observed on surface associated w/ feature 3. upright basalt slab measures 50cm high by 80cm wide.

Map Checklist: N. arrow: ✓ Scale: ✓ Legend: ✓ Site #: ✓ Heights: ✓ Name ✓ Date ✓ Job Code ✓

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Cultural Surveys Hawai'i Site Inventory Record

/MW Feat. D

Date: 09/06/13 Name: ASoltz/NGarcia Checked By: _____

Job Code Project: Waiakea 10	**CSH Site #**	**Feature:** (4) depression
Area/Transect: KN	**State Site #** 50-10-35-21771	
Elevation:	**Landmarks:** large clearing	**Sheet** 1 **of** 1

Site/Feature Type: Enclosure Platform Terrace Wall Alignment / Mound Modified: _____

Shelter Lava Tube Cairn Rock Art Trail Other: depression

Function: Habitation Activity Area Marker Ceremonial Shelter Burial Agriculture Water Control

Animal Husbandry Transportation Rock Art Indeterminate Other: Possible storage

Age: Prehistoric Historic Military Plantation Ranch Indeterminate Other: _____

Evidence of Age:

Geology: Pahoe'hoe / Broken a'a	**Topography:** level plane w/ slight undulation
Vegetation: mango/guava/ohia/;ilikoi/bingabing	**Disturbance:** recent vegitation clearing

HISTORIC PROPERTY MEASUREMENTS

	Meters	Orientation		Meters	Orientation
Length			**Height**		
Width			**Thickness**		
Site Complex Dimensions		Length: 3m		Width: 2m	

Condition: Excellent / Good / Poor / Remnant

Excavation Potential: Excellent / Good / Fair / Poor **Evidence:**

Photo(Roll or Disk/ Frame) / **Midden:** ✓ **Artifact:** ✓

Description:

Feature 4 is composed of an aproximately 3m x 2m oblong depression, roughly 11m north east of feature (2). The depression measures 3m east/west by 2m north/south and a depth of 1.15m65. The sides and ground surface are lined by a'a klinker small to medium size basalt cobbles. feature has suffered degridation, which is evidenced by the poor condition and deteriocation of ~~stn~~ klinker and sidings. The eastern face of the depression sharply slopes upwards. No soil development within depression. No cultural material was observed in association with feature 4.

3x2

Map Checklist: N. arrow: ✓ Scale: ✓ Legend: ✓ Site #: ✓ Heights: ✓ Name ✓ Date ✓ Job Code ✓

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Cultural Surveys Hawai'i Site Inventory Record

Date: 9/4/13 Name: OMP Checked By: _____

Job Code Project: Waiakea 10	**CSH Site #**	**Feature:** 5
Area/Transect: B	**State Site #** 50-10-35-21771	
Elevation: —	**Landmarks:**	**Sheet** 1 **of** 1

Site/Feature Type: Enclosure Platform Terrace (Wall) Alignment Mound Modified: _____
Shelter Lava Tube Cairn Rock Art Trail (Other) stone bridge

Function: Habitation Activity Area Marker Ceremonial Shelter Burial (Agriculture) (Water Control)
Animal Husbandry (Transportation) Rock Art Indeterminate Other: _____

Age: Prehistoric (Historic) Military Plantation Ranch Indeterminate Other: _____

Evidence of Age: Historic "Pauhana" site component

Geology: a'a + PHH (weathered) **Topography:** level

Vegetation: Same as west of site **Disturbance:** vegetation

HISTORIC PROPERTY MEASUREMENTS

	Meters	Orientation		Meters	Orientation
Length	60 m	N/S	**Height**	—	—
Width	1.5 m	E/W	**Thickness**	—	—
Site Complex Dimensions		Length: —		Width: —	

Condition: Excellent / (Good) / Poor / Remnant

Excavation Potential: Excellent / Good / (Fair) / Poor **Evidence:** None

Photo(Roll or Disk/ Frame) / **Midden:** None **Artifact:** None

Description: 21771 feature 5 is a linear depression that has been modified to possibly serve as an anvil. Construction consists of a stacked (linear) and faced (3-4 courses) wall segment located on the west side of the depression. The wall is c. 7.20 m long (N/S) by 40-60 cm wide. Near the walls northern terminus a bridge of basalt cobbles and boulders spans the depression. The stone bridge measures c. 1.5 m wide (N/S) by 2.3 m long (E/W) max height on faced and stacked north side is 60 cm. The bridge leads to and from feature 1 which is located c. 3.5 m to the west. The depression itself trends (N/S) and is 1.5 m wide and c. 60 m long. Near the east terminus of the depression approx 10 m north within the depression is a circular pit lined with cobbles measures 1.5 m by 1.0 m E/W by 60 cm deep. Possible agricultural feature.

Map Checklist: N. arrow: Scale: Legend: Site #: Heights: Name Date Job Code

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Cultural Surveys Hawai'i Site Inventory Record

/MW
#Feat. F

Date: 9/11/13 Name: O. BAUTISTA Checked By: _____

Job Code Project: Waiakea 10	**CSH Site #** ____	**Feature:** ~~#~~ 6 (was 7)
Area/Transect: B	**State Site #** 50-10-35-21771	
Elevation: ____	**Landmarks:**	**Sheet** 1 **of** 1

Site/Feature Type: (Enclosure) Platform Terrace Wall Alignment Mound Modified: _____
Shelter Lava Tube Cairn Rock Art Trail Other: _____

Function: Habitation Activity Area Marker Ceremonial Shelter Burial Agriculture Water Control
Animal Husbandry Transportation Rock Art (Indeterminate) Other: _____

Age: Prehistoric (Historic) Military Plantation Ranch Indeterminate Other: _____

Evidence of Age: Associated with "PAU HANA" site

Geology: PAHOEHOE + A'A	**Topography:** fairly level
Vegetation: OHIA, LAU HALA, Binga Binga ferns, mango, lilikoi	**Disturbance:** None

HISTORIC PROPERTY MEASUREMENTS

	Meters	Orientation		Meters	Orientation
Length	~~7~~ m	~~E/W~~ N/S	**Height**	~~,50~~	____
Width	5m	E/W	**Thickness**	~~1~~ 1-2.5m	____
Site Complex Dimensions		**Length:** ____		**Width:** ____	

Condition: Excellent / (Good) / Poor / Remnant

Excavation Potential: Excellent / (Good) / Fair / Poor **Evidence:** good place to dig for historic artefacts

Photo(Roll or Disk/ Frame) 1	**Midden:** NONE	**Artifact:** None

Description: Site 21771 Fea. #6 is a previously unrecorded L-shaped enclosure located within the chain link fence that surrounds the site complex; it abuts the fence at the south east corner (see map). The feature consists of neatly stacked basalt cobbles + boulders. (stacked 3-4 courses high). The feature measures c. 7.0 m long (N/S) by 5.0m wide (E/W) max height 50cm. Walls are 1-2.5m thick. The area within the enclosure slopes to the north and is clear of stones. The feature may represent an activity area. Historic in nature. No artifacts were observed. Very surprised that this was missed in the initial survey. It would be interesting to see whats in the interior of this enclosure - good potential for historic artifacts.

Map Checklist: N. arrow: Scale: Legend: Site #: Heights: Name Date Job Code

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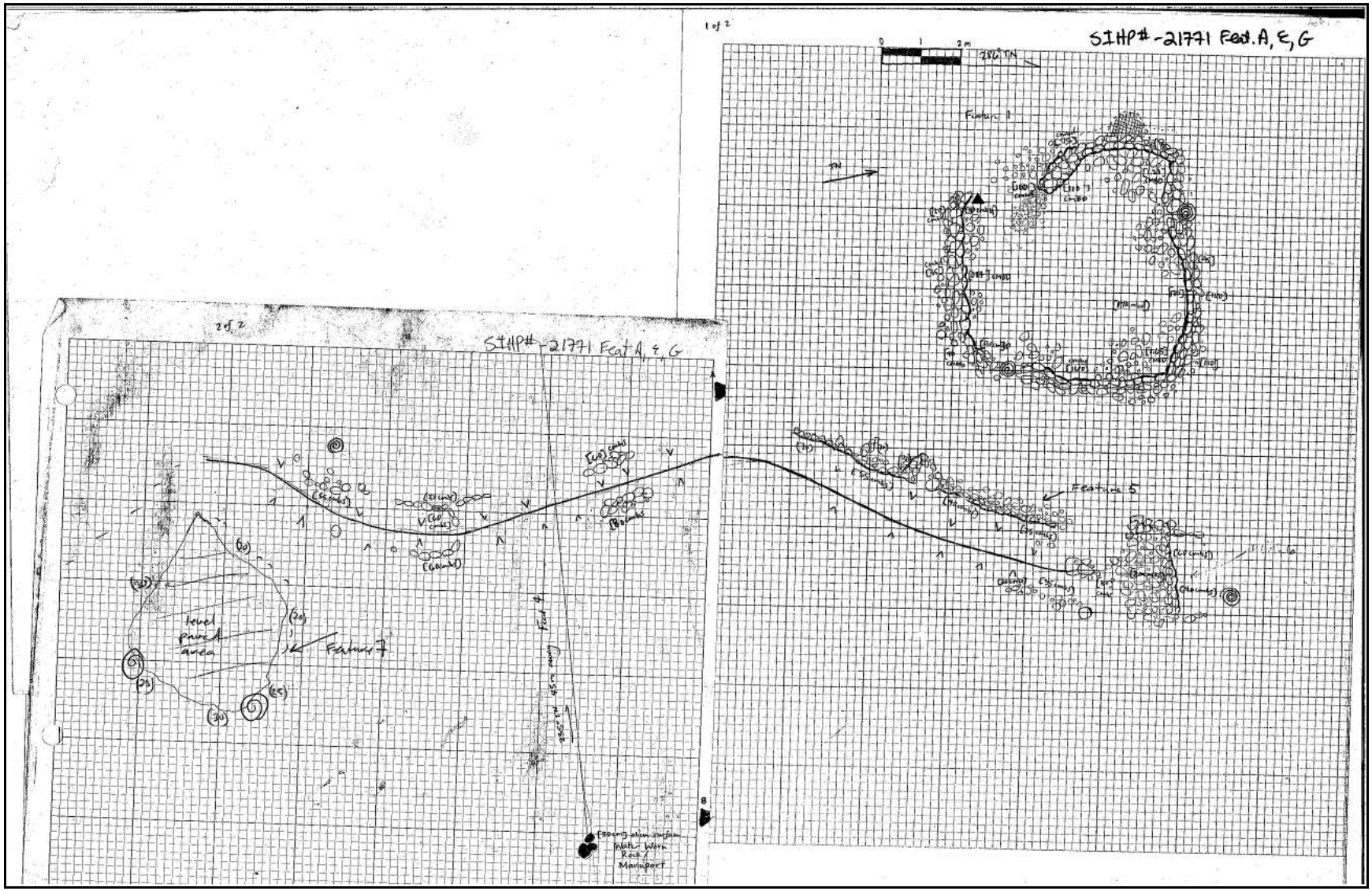
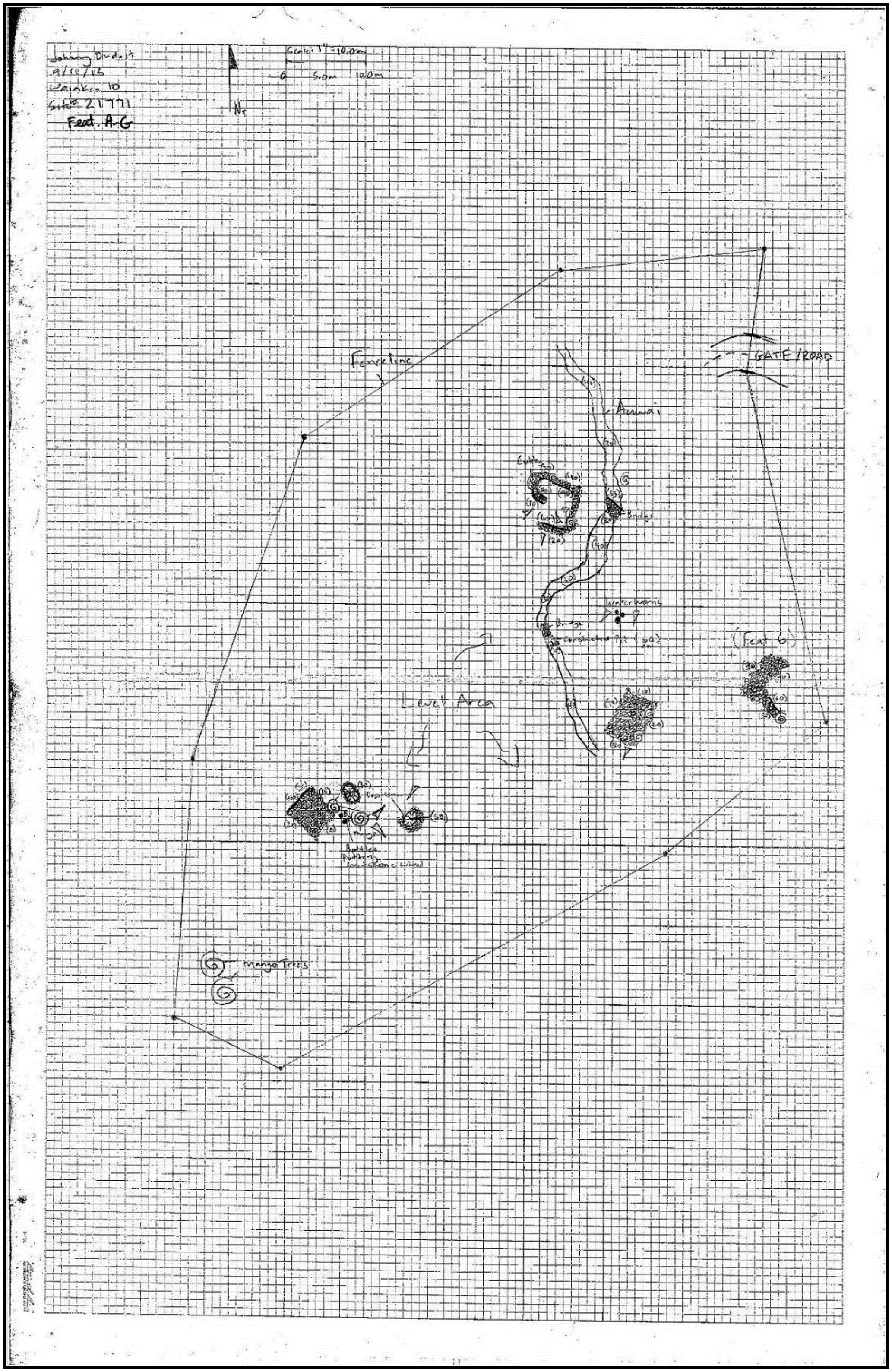
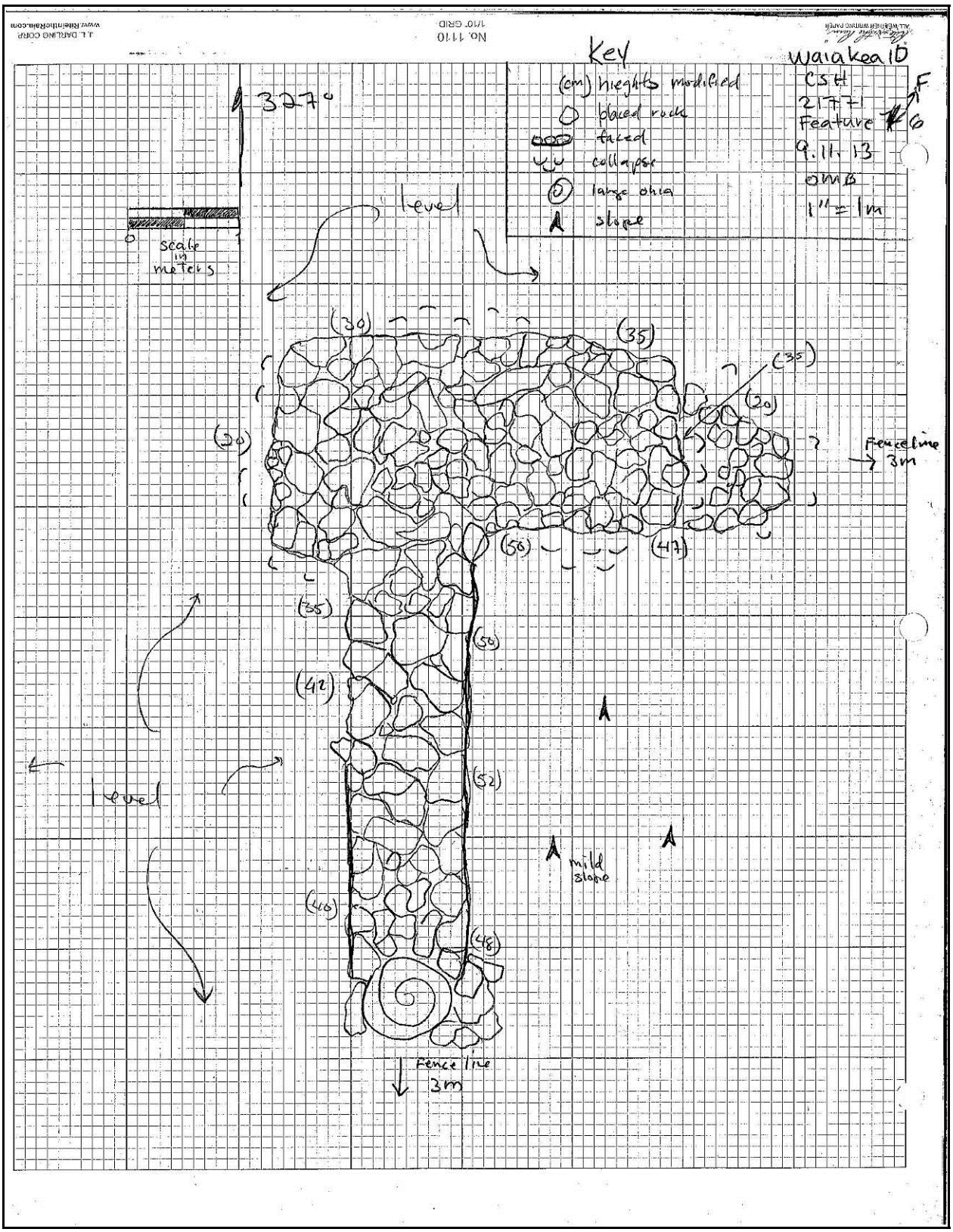
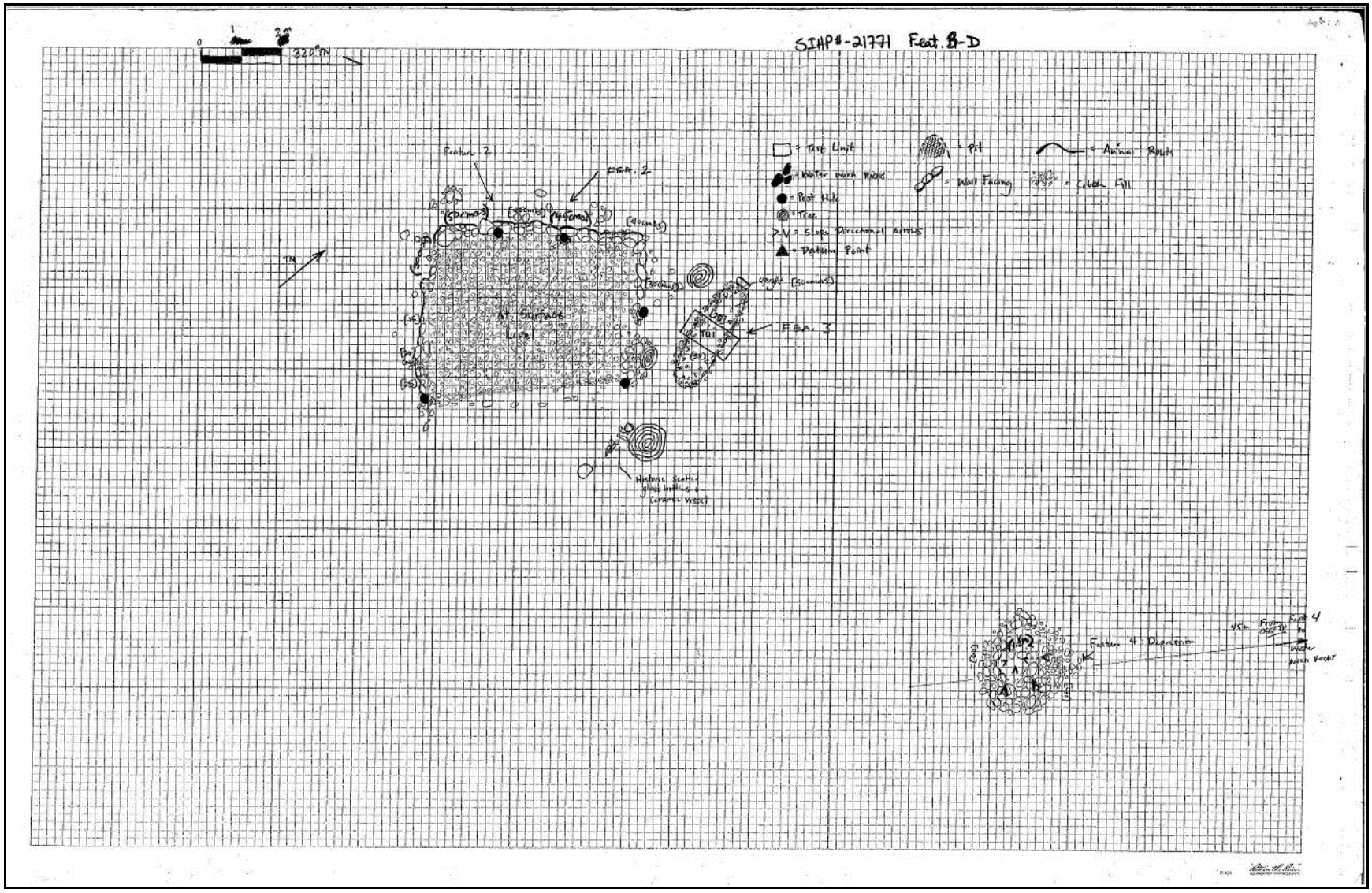

SIHP# -21771 Feat. A, E, G
Feature 7
Feature 5
SIHP# -21771 Feat A, E, G


Johnny Dudoit
9/11/13
Waiakea 10
Site# 21771
Feat. A-G
N
Scale 1" = 10.0m
0 5.0m 10.0m
Fenceline
GATE/ROAD
Auwai
Bridge
(Feat 6)
Level Area
Mango Trees


Key
(cm) heights modified
placed rock
faced
collapse
large ohia
slope
Waiakea 10
CSH
2177
Feature F
9.11.13
OMB
1" = 1m
327°
level
scale in meters
(30)
(35)
(35)
(30)
(30)
Fenceline 3m
(50)
(47)
(35)
(50)
(42)
(52)
level
mild slope
(40)
(48)
Fence line 3m


SIHP#-21771 Feat. B-D
Feature 2
Feature 4 : Depression

*Part of SIHP # -21771

Cultural Surveys Hawai'i Site Inventory Record

Date: 9/6/13 Name: TRT Checked By: _____ H I J K L

Job Code Project: WAIAKEA 10	**CSH Site #** 005	**Feature:** A, B, C, D, E
Area/Transect: B	**State Site #** 21771	—
Elevation: —	**Landmarks:** —	**Sheet** 1 **of** 2

Site/Feature Type: Enclosure Platform Terrace Wall Alignment Mound Modified: _____

Shelter Lava Tube Cairn Rock Art Trail Other: _____

Function: Habitation Activity Area Marker Ceremonial Shelter Burial Agriculture Water Control

Animal Husbandry Transportation Rock Art Indeterminate Other: _____

Age: Prehistoric (Historic) Military Plantation Ranch Indeterminate Other: _____

Evidence of Age:

Geology: **Topography:** Ungulating

Vegetation: Custards curd, bingo bingo, lahala **Disturbance:**

HISTORIC PROPERTY MEASUREMENTS

	Meters	Orientation		Meters	Orientation
Length			**Height**		
Width			**Thickness**		
Site Complex Dimensions		Length:		Width:	

Condition: Excellent / (Good) / Poor / Remnant

Excavation Potential: Excellent / (Good) / Fair / Poor **Evidence:**

Photo(Roll or Disk/ Frame) / **Midden:** None **Artifact:** None observed

Description: Just outside of "Pau hana" site north corner. All features in full canopy top. w/ ungleating terrain.

Feature A - Circular basalt platform, 7 courses high, no artifacts; possible burial, 14 see meters N of N corner of fence line. Tree disturbence. L:2.9m X D:2.8m X H:1.2m level on top.

Feature B - Stone C shaped incloser situated 5.5 m E of feature A. Stacked of both loosely stacked and neatly stacked cobbles. Stacked 4 courses high. Incompasses bedrock outcrop to the N. Interier of inclosure has depression 75cm deep at max. Likely historic in good condition, No artifacts, Fair for excavations L: W: H:

Feature C - J shaped stone encloser. Situated 5m S of feat. A Construction consits of loosely compiled cobbles and boulders. L: W: H: interior level, good condision, No Artifacts, excavation fair.

Map Checklist: N. arrow: Scale: Legend: Site #: Heights: Name Date Job Code

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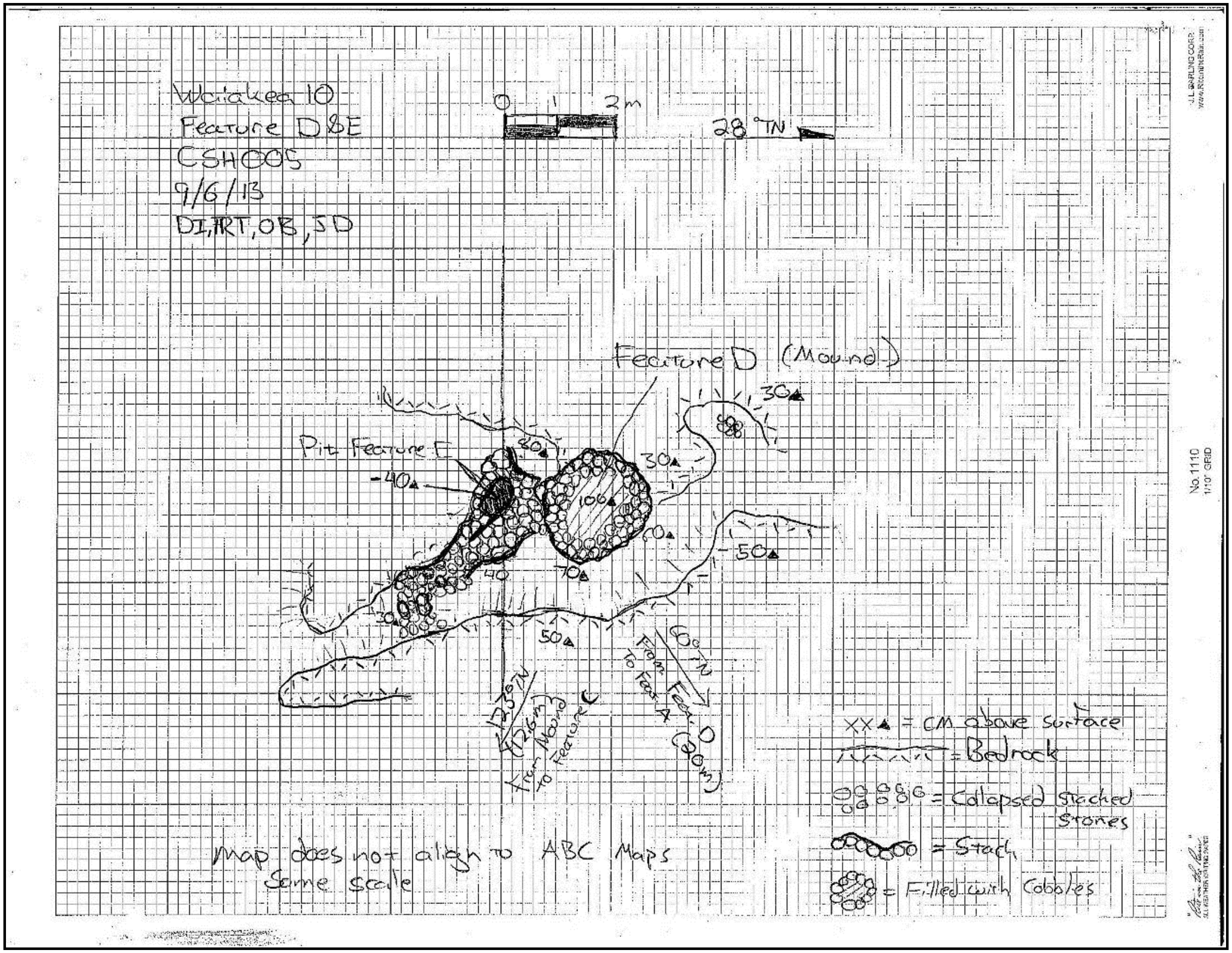
* Area within the 3 features is level


Waiakea 10
Feature D&E
CSH005
9/6/13
DI,RT,OB,JD
0 1 2m
28°TN
Feature D (Mound)
Pit Feature E
-40
30
30
100
60
50
40
70
50
30
60°TN
From Feat. D To Feat. A (30m)
173°TN
(12.6m) From Mound To Feature C
XX▲ = CM above surface
= Bedrock
= Collapsed Stacked Stones
= Stack
= Filled with Cobbles
Map does not align to ABC Maps
Same scale

Cultural Surveys Hawai'i Site Inventory Record

Date: 9/6/13 Name: TRT Checked By: _____

Job Code Project: WAIAKEA 10	**CSH Site #** 00S	**Feature:** A, B, C, D, E
Area/Transect: B	**State Site #** 21771	
Elevation: _____	**Landmarks:** _____	**Sheet** 2 **of** 2

Site/Feature Type: Enclosure Platform Terrace Wall Alignment Mound Modified: _____

Shelter Lava Tube Cairn Rock Art Trail Other: _____

Function: Habitation Activity Area Marker Ceremonial Shelter Burial Agriculture Water Control

Animal Husbandry Transportation Rock Art Indeterminate Other: _____

Age: Prehistoric (Historic) Military Plantation Ranch Indeterminate Other: _____

Evidence of Age:

Geology:	**Topography:**
Vegetation:	**Disturbance:**

HISTORIC PROPERTY MEASUREMENTS

	Meters	Orientation		Meters	Orientation
Length			**Height**		
Width			**Thickness**		

Site Complex Dimensions	Length:	Width:

Condition: Excellent / (Good) / Poor / Remnant

Excavation Potential: Excellent / (Good) / Fair / Poor	**Evidence:**
Photo(Roll or Disk/ Frame) /	**Midden:** **Artifact:**

Description: Feature D - Basalt stone mound. loose and tight cobble stacking. 4 courses high, level on top. Condition is good, possible burial. L: 2m W: 2.1m H: 1m No artifacts, veg. disturbance 22m from Feat. A

Feature E - Stone lined hole, circular. 2 courses. Just off SE corner of Feat. D. L: .8m W: .7m H: .6 Veg. Disturbance, No artifacts Good condition, Fair chance of excavation 1m from Feat. D

Map Checklist: **N. arrow:** **Scale:** **Legend:** **Site #:** **Heights:** **Name** **Date** **Job Code**

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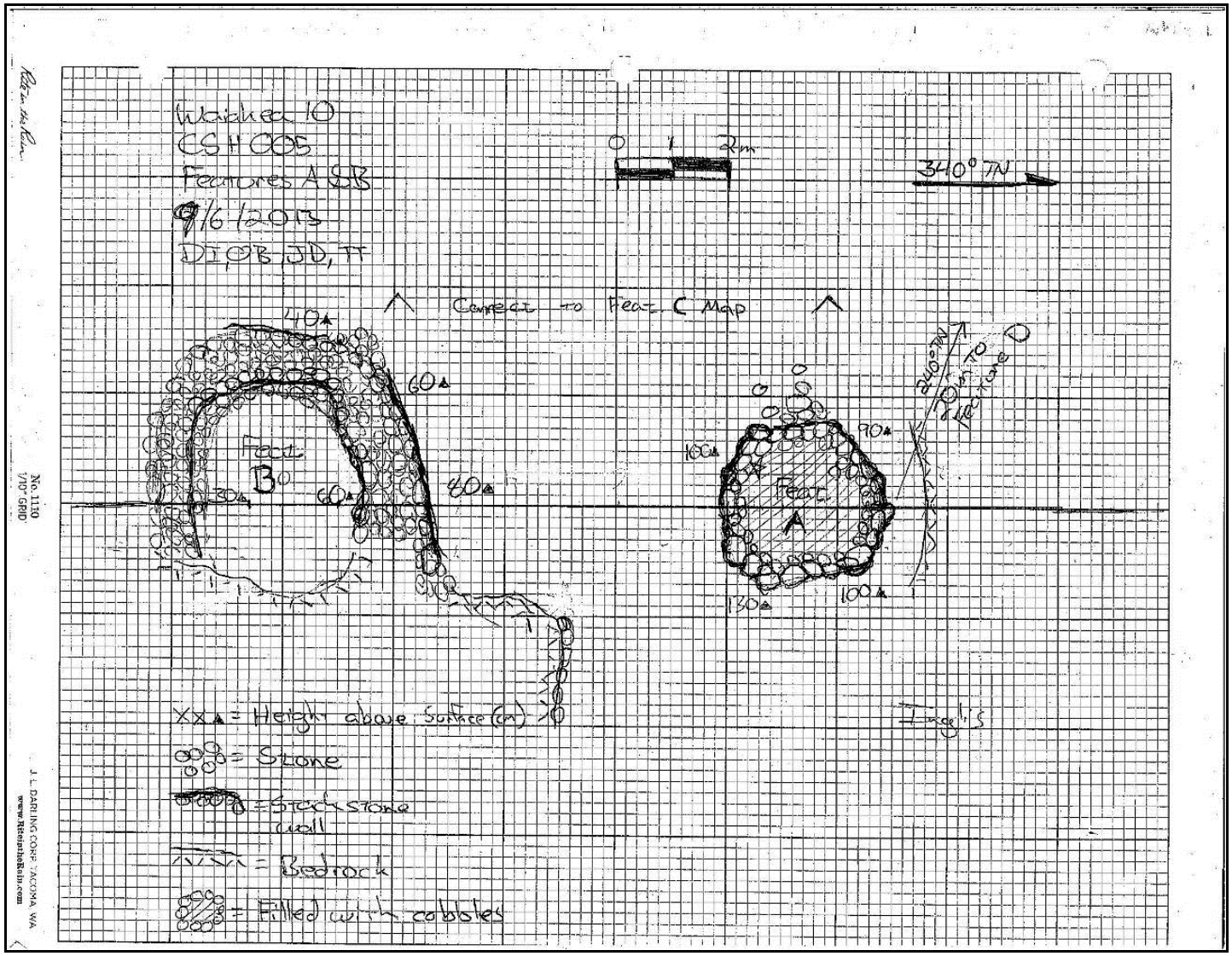
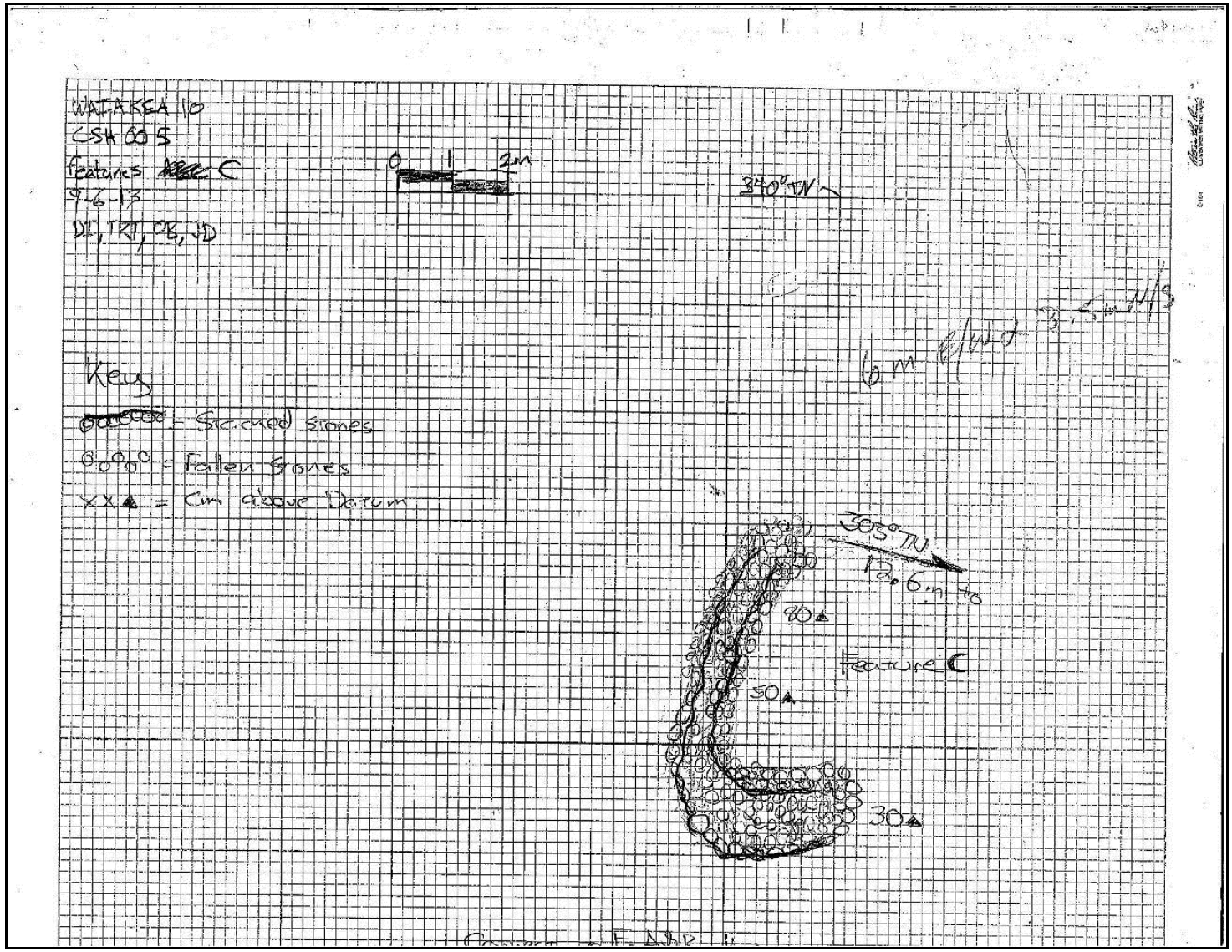

Waiakea 10
CSH 005
Features A & B
9/6/2013
DI, OB, JD, TT
Connect to Feat. C Map
340° TN
0 1 2m
40
60
60
60
Feat. B
Feat. A
90
100
100
130
Image 15
XX = Height above Surface (cm)
= Stone
= Stacked Stone Wall
= Bedrock
= Filled with cobbles
No. 1130
1/10" GRID
J. L. DARLING CORP. TACOMA, WA
www.RitesintheRain.com


WAIAKEA 10
CSH 005
Features
9-6-13
DL, TRT, CB, JD
0 1 2m
340° TN
Keys
= Stacked Stones
= Fallen Stones
XX▲ = cm above Datum
305° TN
12.6m to
20▲
Feature C
30▲
30▲

SIHP # 50-10-35-23273

Cultural Surveys Hawai'i Site Inventory Record

Date: 9/13/13 Name: OMB/JD Checked By: _____

Job Code Project: Waiakea 10	**CSH Site #**	**Feature:** —
Area/Transect: B	**State Site #** 23273	
Elevation:	**Landmarks:**	**Sheet** 1 **of** 2

Site/Feature Type: Enclosure Platform Terrace Wall Alignment Mound Modified: _____

Shelter Lava Tube Cairn Rock Art Trail Other: _____

Function: Habitation Activity Area Marker Ceremonial Shelter Burial Agriculture Water Control

Animal Husbandry Transportation Rock Art Indeterminate Other: _____

Age: Prehistoric Historic Military Plantation Ranch Indeterminate Other: _____

Evidence of Age: none

Geology: weathered a'a	**Topography:** undulating
Vegetation: Mamo ohia guava, ferns	**Disturbance:** vegetation - roots

HISTORIC PROPERTY MEASUREMENTS

	Meters	Orientation		Meters	Orientation
Length	38m	SW/NE	**Height**	10-20 cm (curbstone)	—
Width	1.0 - 1.20m	SE/NW	**Thickness**	—	—
Site Complex Dimensions		Length: —		Width: —	

Condition: Excellent / Good / Poor / Remnant

Excavation Potential: Excellent / Good / Fair / Poor **Evidence:** N/A

Photo(Roll or Disk/ Frame) 1 **Midden:** None **Artifact:** None

Description: Site 23273 is a trail. The trail is situated under dense canopy c. 3m NE of an existing fence line that is the PF Boundary. The trail remnant measures c. 38.0m long (SW/NE) by 1.0-1.20m wide (SE/NW) with a maximum curbstone height of 20cm. Curbstones are evident in only a 8m section of the trail. The rest of the trail is recognizable only as a worn area with mildly raised edges. No artefacts observed. The trail is in poor condition due to heavy vegetation.

Map Checklist: N. arrow: Scale: Legend: Site #: Heights: Name Date Job Code

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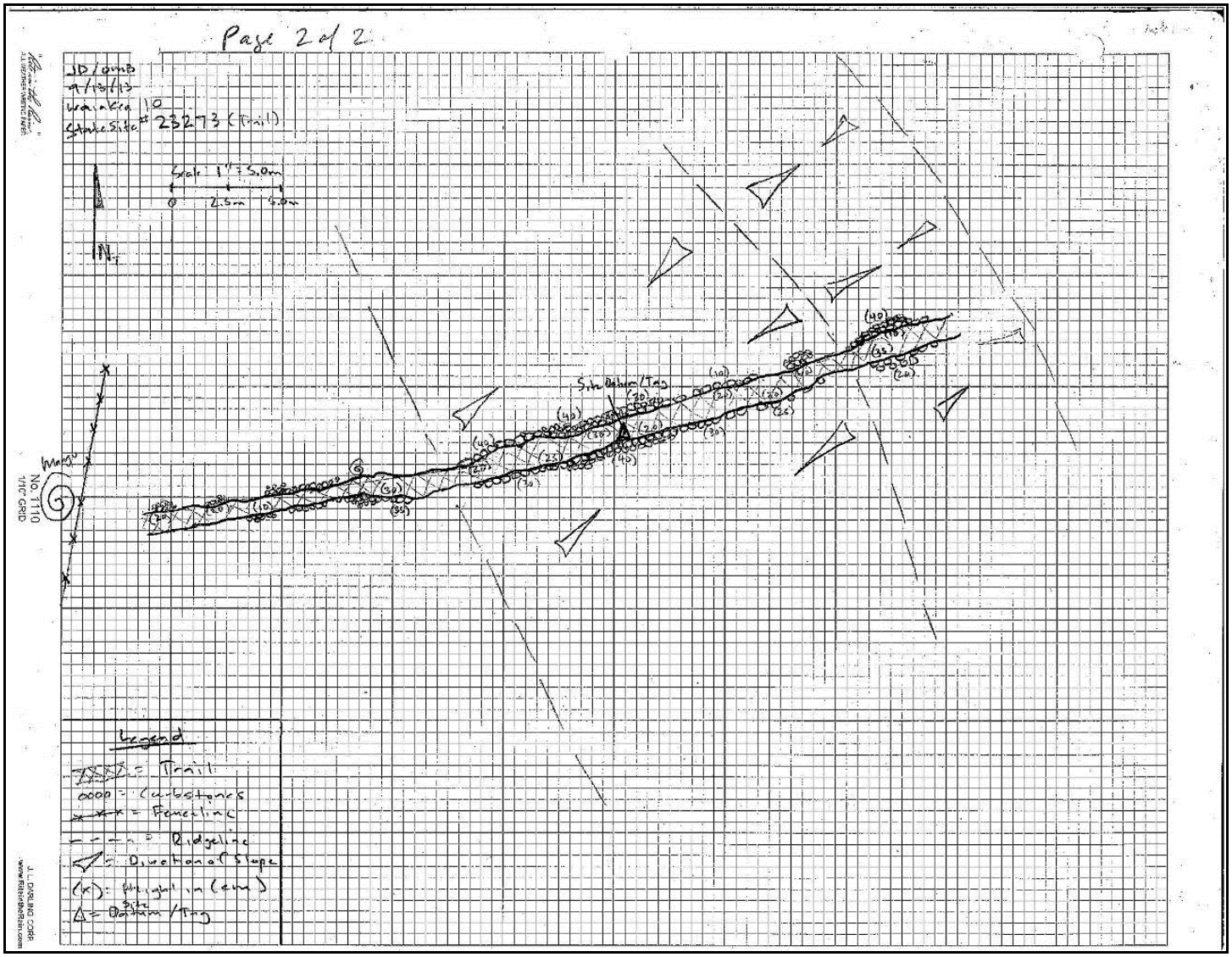
Page 2 of 2
JD / omB
9/13/13
Waiakea 10
Shake Site # 23273 (Trail)
Scale: 1" = 5.0m
0
2.5m
5.0m
N
Map
No. 1110
1/10" GRID
Legend
Trail
Curbstones
Fenceline
Ridgeline
Direction of Slope
(x): Height in (cm)
Datum / Tag
J.L. DARLING CORP.

SIHP # 50-10-35-30008 (CSH-001)

Cultural Surveys Hawai'i Site Inventory Record

Date: 8/28/13 Name: JD Checked By: OB

Job Code Project: Waiakea 10	**CSH Site #** CSH-001	**Feature:**
Area/Transect:	**State Site #**	
Elevation:	**Landmarks:**	**Sheet** 1 **of** 2

Site/Feature Type: Enclosure Platform Terrace Wall Alignment Mound Modified:
Shelter (Lava Tube) Cairn Rock Art Trail Other:

Function: (Habitation) Activity Area Marker Ceremonial Shelter Burial Agriculture Water Control
Animal Husbandry Transportation Rock Art Indeterminate Other:

Age: Prehistoric Historic Military Plantation Ranch (Indeterminate) Other:

Evidence of Age: None

Geology: PAHOEHOE	**Topography:** Fairly level
Vegetation: None	**Disturbance:** None

HISTORIC PROPERTY MEASUREMENTS

	Meters	Orientation		Meters	Orientation
Length	12.0		**Height**	0.4 to 2.0	
Width	4.0		**Thickness**		
Site Complex Dimensions		Length:		Width:	

Condition: Excellent / (Good) / Poor / Remnant

Excavation Potential: Excellent / Good / (Fair) / Poor	**Evidence:** None
Photo(Roll or Disk/ Frame) /	**Midden:** Yes **Artifact:** modern bottles

Description: Site CSH-001 consists of a Lava Tube located approximately (50.0m NW) of KMR range. The Lava Tube runs 160°/SE & measures (12.0m) long, (4.0m) wide with heights ranging from (0.4m to 2.0m). The entrance of Lava Tube measures approx. (4.0m wide) w/ height of (0.2m to 1.5m) & exterior entrance height of (2.5m). A constructed Terrace of med / large subangular basalt cobbles is constructed along western edge (0.5m) from entrance measuring (2.0m x 2.0m) w/ height of (0.5m). Charcoal, Bone, marine Shell, Bottles observed within cave (see map).

Map Checklist: **N. arrow:** **Scale:** **Legend:** **Site #:** **Heights:** **Name** **Date** **Job Code**

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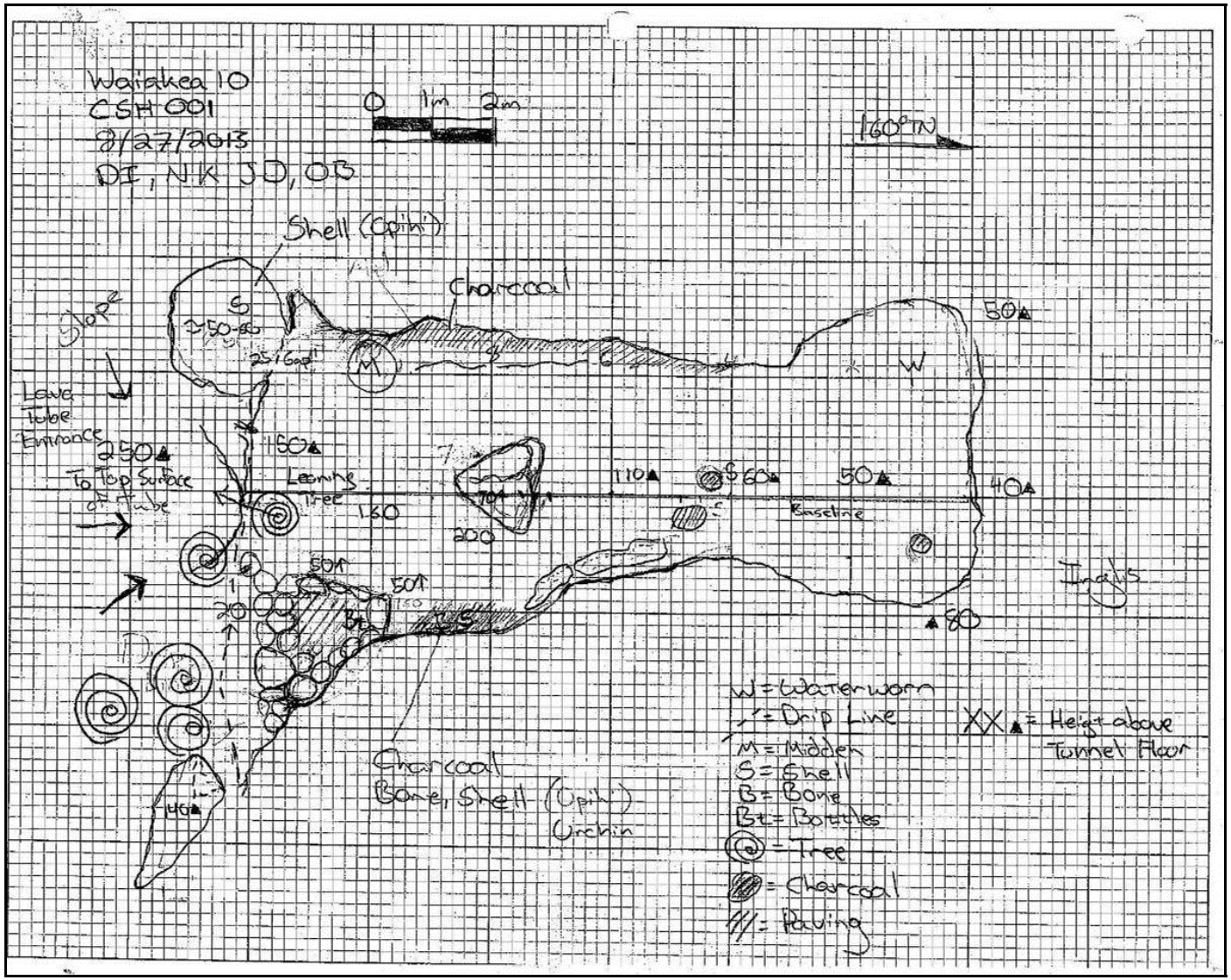
Waiakea 10
CSH 001
3/27/2013
DI, NIK JD, OB
0 1m 2m
160° TN
Shell (Opihi)
Charcoal
Slope
Lava Tube Entrance
To Top Surface of Tube
Leaning Tree
Baseline
Ingalls
Charcoal
Bone, Shell (Opihi)
Urchin
W = Waterworm
' = Drip Line
M = Midden
S = Shell
B = Bone
Bt = Bottles
= Tree
= Charcoal
= Paving
XX▲ = Height above Tunnel Floor

SIHP # 50-10-35-30009 (CSH-002)

Cultural Surveys Hawai'i Site Inventory Record

Date: 8/28/13 Name: DI Checked By: _____

Job Code Project: Waiakea	**CSH Site #** 002	**Feature:** A
Area/Transect:	**State Site #**	
Elevation:	**Landmarks:** Large Rock outcrop near shooting range	**Sheet** 1 **of** 2

Site/Feature Type: Enclosure Platform (Terrace) (Wall) (Alignment) Mound Modified: Outcrop
Shelter Lava Tube Cairn Rock Art Trail Other:

Function: (Habitation Temp) (Activity Area) Marker Ceremonial (Shelter) Burial (Pos Agriculture doubt) Water Control
Animal Husbandry Transportation Rock Art Indeterminate Other:

Age: (Prehistoric) (Historic) (Military) Plantation Ranch Indeterminate Other:

Evidence of Age:

Geology: Pahoehoe Outcrop	**Topography:** Level, depressed center
Vegetation: Lauhala, Guava?, Ohia, bingabing, Autograph tree, Maile Pilau	**Disturbance:** 10m from shooting range

HISTORIC PROPERTY MEASUREMENTS

	Meters	Orientation		Meters	Orientation
Length	40m	N-S	**Height**	1-2m above surr. Area	
Width	25m	E-W	**Thickness**		
Site Complex Dimensions		Length:		Width:	

Condition: Excellent / (Good) / Poor / Remnant

Excavation Potential: Excellent / Good / (Fair) / Poor	**Evidence:** Pos. Soil area, no deposition
Photo(Roll or Disk/ Frame) /	**Midden:** **Artifact:**

Description: A large 25m x 40m Rock Outcrop with a flat, wide central area. Part of a multi component site including two lava tubes that served as temporary habitation (see Feat. B & C) and a rock alignment near a collapsed lava tube. Outcrop is 1 to 2m above the surrounding landscape. Central areas contains moderate jungle with sparse undergrowth. There is a rock wall along the eastern side; it runs south and segregates a 1-2m wide terrace (which is slightly lower) from the rest of the outcrop. Although flat, the outcrop shows minimal signs of modification. In addition to the modified lava tubes on the S (Feat. C) and N (Feat. B) ends, there are a number of other lava tubes that were inspected, but did not show signs of use. Site is in close proximity to the trail, and may have be used for a stop over site. Lava tubes offer immediate shelter from the weather. Modern trash in the tubes suggests continued use during military occupation of area.

Map Checklist: N. arrow: ✓ Scale: ✓ Legend: ✓ Site #: ✓ Heights: ✓ Name ✓ Date ✓ Job Code ✓

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Cultural Surveys Hawai'i Site Inventory Record

Date: 8/28/13 Name: _____ Checked By: _____

Job Code Project: Waiakea 10	**CSH Site #** 002	**Feature:** A
Area/Transect:	**State Site #**	
Elevation:	**Landmarks:**	**Sheet** 2 **of** 3

Site/Feature Type: Enclosure Platform Terrace Wall Alignment Mound Modified: _____

Shelter Lava Tube Cairn Rock Art Trail Other: _____

Function: Habitation Activity Area Marker Ceremonial Shelter Burial Agriculture Water Control

Animal Husbandry Transportation Rock Art Indeterminate Other: _____

Age: Prehistoric Historic Military Plantation Ranch Indeterminate Other: _____

Evidence of Age:

Geology:	**Topography:**
Vegetation:	**Disturbance:**

HISTORIC PROPERTY MEASUREMENTS

	Meters	Orientation		Meters	Orientation
Length			**Height**		
Width			**Thickness**		
Site Complex Dimensions		Length:		Width:	

Condition: Excellent / Good / Poor / Remnant

Excavation Potential: Excellent / Good / Fair / Poor	**Evidence:**
Photo(Roll or Disk/ Frame) /	**Midden:** **Artifact:**

Description: Area in center has small cobbles and v. few boulders. central area is sunken .5-1 m below surrounding perimeter. The E. side is 10 m from the edge of the tall shooting range berm.

Map Checklist: **N. arrow:** **Scale:** **Legend:** **Site #:** **Heights:** **Name** **Date** **Job Code**

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Cultural Surveys Hawai'i Site Inventory Record

Date: 08/27/2013 Name: Nigel T. Kingsbury Checked By: _____

Job Code Project: Waiakea 10	**CSH Site #** CSH 002	**Feature:** B
Area/Transect: — N/A	**State Site #**	
Elevation:	**Landmarks:** CSH Feature A	**Sheet** 1 **of** 2

Site/Feature Type: Enclosure Platform Terrace Wall Alignment Mound Modified: lava tube

Shelter (Lava Tube) Cairn Rock Art Trail Other: _____

Function: (Habitation) Activity Area Marker Ceremonial (Shelter) Burial Agriculture Water Control

Animal Husbandry Transportation Rock Art Indeterminate Other: _____

Age: (Prehistoric) Historic Military Plantation Ranch Indeterminate Other: _____

Evidence of Age: ~~Pahoehoe~~

Geology: Pahoe'oe	**Topography:** Part of A
Vegetation:	**Disturbance:**

HISTORIC PROPERTY MEASUREMENTS

	Meters	Orientation 260°		Meters	Orientation
Length	25 m		**Height**		
Width	2 m		**Thickness**		
Site Complex Dimensions		Length:		Width:	

Condition: Excellent / (Good) / Poor / Remnant

Excavation Potential: Excellent / Good / Fair / Poor	**Evidence:**
Photo(Roll or Disk/ Frame) /	**Midden:** Faunal bone **Artifact:** Polished basalt

Description: CSH 002 is a modified lava tube. The lava tube is located on the Northern (end) edge of CSH feature A (a modified basalt outcrop). The floor of lava tube (CSH 002) had deposits of charcoal scatter, faunal bone fragments, and a polished basalt. Entrance to CSH 002 appeared to have a roughly constructed raised basalt paving.

Entrance of CSH 002 measured 2.5 m across (at drip line) × ~~80~~ cm high to dust inside habitation area paved area 2 m wide × 1.6 m long and 40 cm high. Edges of lava tube were constructed w/ large Pahoe'oe rocks. Following the paved area the floor of the lava tube drops down 25 cm, the remaining 2.3 m long × 2 m wide temp living area removed of ~~state~~ dark charcoal scatter throughout. The ceiling height in this area ranges between 148 and 168 cm. Unmodified mammal bone fragment (likely non-human) and a polished basalt stone were observed following tramp hab area there is a large Pahoe oe boulders that restrict the tube to 40 cm ~~to~~ high. The tube also squeezes and is 3 m long that could not be accurately mapped.

Map Checklist: **N. arrow:** **Scale:** **Legend:** **Site #:** **Heights:** **Name** **Date** **Job Code**

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Cultural Surveys Hawai'i Site Inventory Record

Date:__/__/__ Name: _____ Checked By: _____

Job Code Project:	**CSH Site #** CSH 002	**Feature:**
Area/Transect:	**State Site #**	
Elevation:	**Landmarks:**	**Sheet** 2 **of** 2

Site/Feature Type: Enclosure Platform Terrace Wall Alignment Mound Modified: _____

Shelter Lava Tube Cairn Rock Art Trail Other: _____

Function: Habitation Activity Area Marker Ceremonial Shelter Burial Agriculture Water Control

Animal Husbandry Transportation Rock Art Indeterminate Other: _____

Age: Prehistoric Historic Military Plantation Ranch Indeterminate Other: _____

Evidence of Age:

Geology:	**Topography:**
Vegetation:	**Disturbance:**

HISTORIC PROPERTY MEASUREMENTS

	Meters	Orientation		Meters	Orientation
Length			**Height**		
Width			**Thickness**		
Site Complex Dimensions		Length:		Width:	

Condition: Excellent / Good / Poor / Remnant

Excavation Potential: Excellent / Good / Fair / Poor	**Evidence:**
Photo(Roll or Disk/ Frame) /	**Midden:** **Artifact:**

Description: ~~The~~ CSH 002 is presumed to be a temp hab/shelter area based on charcoal, bone fragments, polished stone and work put into the construction of the raised paved entrance area.

CSH 002 is a component of of csh 002 feature a (modified outcrop) which is an area that shows signs of temp habitation and Activity area. dense canopy lauhala, Str. guava, ohia, gunpowder tree, soil accumulation just outside outcrop area which may have been used as agriculture.

Map Checklist: **N. arrow:** **Scale:** **Legend:** **Site #:** **Heights:** **Name** **Date** **Job Code**

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Cultural Surveys Hawai‘i Site Inventory Record

Date: 08/28/2013 Name: Nigel Kingsbury Checked By:

Job Code Project: Waiakea 10	**CSH Site #** CSH 002	**Feature:** C
Area/Transect: N/A	**State Site #**	
Elevation: N/A	**Landmarks:**	**Sheet** ___ **of** ___

Site/Feature Type: Enclosure Platform Terrace Wall Alignment Mound Modified: over hang
Shelter Lava Tube Cairn Rock Art Trail Other: Temporary shelter

Function: Habitation Activity Area Marker Ceremonial (Shelter) Burial Agriculture Water Control
Animal Husbandry Transportation Rock Art Indeterminate Other: Temporary shelter.

Age: (Prehistoric) Historic Military Plantation Ranch Indeterminate Other:

Evidence of Age: basalt cobble Paved entrance area.

Geology: Pahoe oe	**Topography:**
Vegetation: lauhala, Ti leaf, Bingabing, VAiVi	**Disturbance:** none - low

HISTORIC PROPERTY MEASUREMENTS

	Meters	Orientation		Meters	Orientation
Length	2.8x		**Height**		
Width	1.4		**Thickness**		
Site Complex Dimensions		Length:		Width:	

Condition: Excellent / (Good) / Poor / Remnant

Excavation Potential: Excellent / Good / Fair / (Poor) **Evidence:** Basalt Paved floor, lack of sed & bedrock.

Photo(Roll or Disk/ Frame) /	**Midden:** N/A	**Artifact:** N/A

Description: Feature c ~~is~~ consists of 2 basalt over hangs. The over hangs are located on the Southern most edge of CSH 002 feature a, a modified basalt outcrop. The Northern most overhang entrance at the dripline measured (width) 1.4m x (height) 60cm. Paved w/ small to large Sub angular basalt cobbles. Paving beings at entrance and runs the entire length and width of the over hang area. At the rear (North end) of over hang their is a small lava tube entrance (too small to explore) Interior ceiling heights ~~w/in~~ ranges from 49cm - 98cm.

(25xH) The Southern most overhang measures 2.5m in (L) and 1.1m in (w). The over hang has two entrances. The east facing entrances (~~measured~~ at dripline) measured 1.3m w/ a height of 50cm. The west facing entrance measured (@dripline) 1.1m w/ a height of 50cm. The floor of the over hang area has been cleaned out (rocks removed).

The Paved floor in the northern most over hang is only form of cultural material observed w/in either over hang. Feature c is presumed to be a temp shelter site based on paved flooring, interior ceiling heights ranged from 150 + 85 [illegible] showing

Map Checklist: N. arrow: Scale: Legend: Site #: Heights: Name Date Job Code

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Cultural Surveys Hawai'i Site Inventory Record

Date: 8/28/13 Name: DI Checked By: _____

Job Code Project: Waiakea10	**CSH Site #** 602	**Feature:** D
Area/Transect:	**State Site #**	
Elevation:	**Landmarks:** Large Rock outcrop near shooting range	**Sheet** 1 **of** 1

Site/Feature Type: Enclosure Platform Terrace Wall (Alignment) Mound Modified: Blister

Shelter (Lava Tube) Cairn Rock Art Trail Other: _____

Function: Habitation Activity Area Marker Ceremonial Shelter Burial Agriculture Water Control

Animal Husbandry Transportation Rock Art (Indeterminate) Other: _____

Age: Prehistoric Historic Military Plantation Ranch (Indeterminate) Other: _____

Evidence of Age:

Geology: Pahoihoi Blister	**Topography:** On Outcrop
Vegetation: lauhala, Gahwi(?) Ohia binyabinya	**Disturbance:**

HISTORIC PROPERTY MEASUREMENTS

	Meters	Orientation		Meters	Orientation
Length	2.3 m	N-S	**Height**	50cm to 109cm	
Width	2.5 m	E-W	**Thickness**	Alignment 30cm thick	N-S/E-W
Site Complex Dimensions		Length:		Width:	

Condition: Excellent / (Good) / Poor / Remnant

Excavation Potential: Excellent / Good / Fair / (Poor) **Evidence:**

Photo(Roll or Disk/ Frame) / **Midden:** **Artifact:**

Description: Rock alignment beside collapsed blister. Part of a multi component site that includes a large (25x40m) depressed, flat outcrop with a wall (Feature A), & temp hab. lava tubes to N & S (B & C). Blister sinks 1m below surrounding surface. A line of rocks have been stacked along the W. & S. sides. Rock rises 50cm above surrounding land surface. A large exposed lava tube entrance is 3.8m to East. It does not exhibit signs of use. Blister opening is ≈1.5m in diameter. The exposed tunnel is only 1.2m long. There is an open at its southern end. It seems about 50cm in diameter, though the southern opening is just a crevasse. Site tag tied to small rock a N. End of alignment. Function is indeterminate, as is age. Perhaps used for storage?

Map Checklist: N. arrow: ✓ Scale: ✓ Legend: ✓ Site #: ✓ Heights: ✓ Name ✓ Date ✓ Job Code ✓

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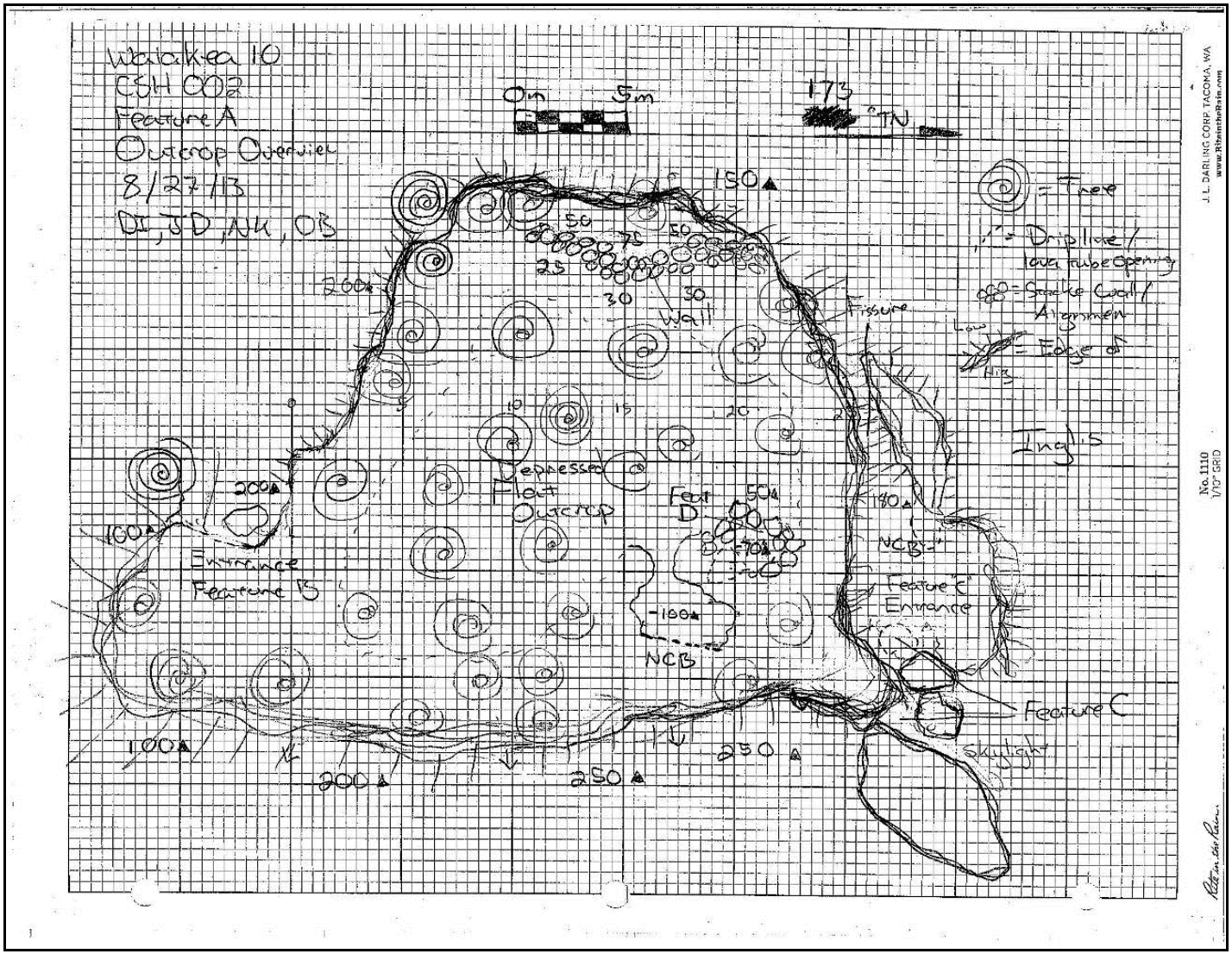
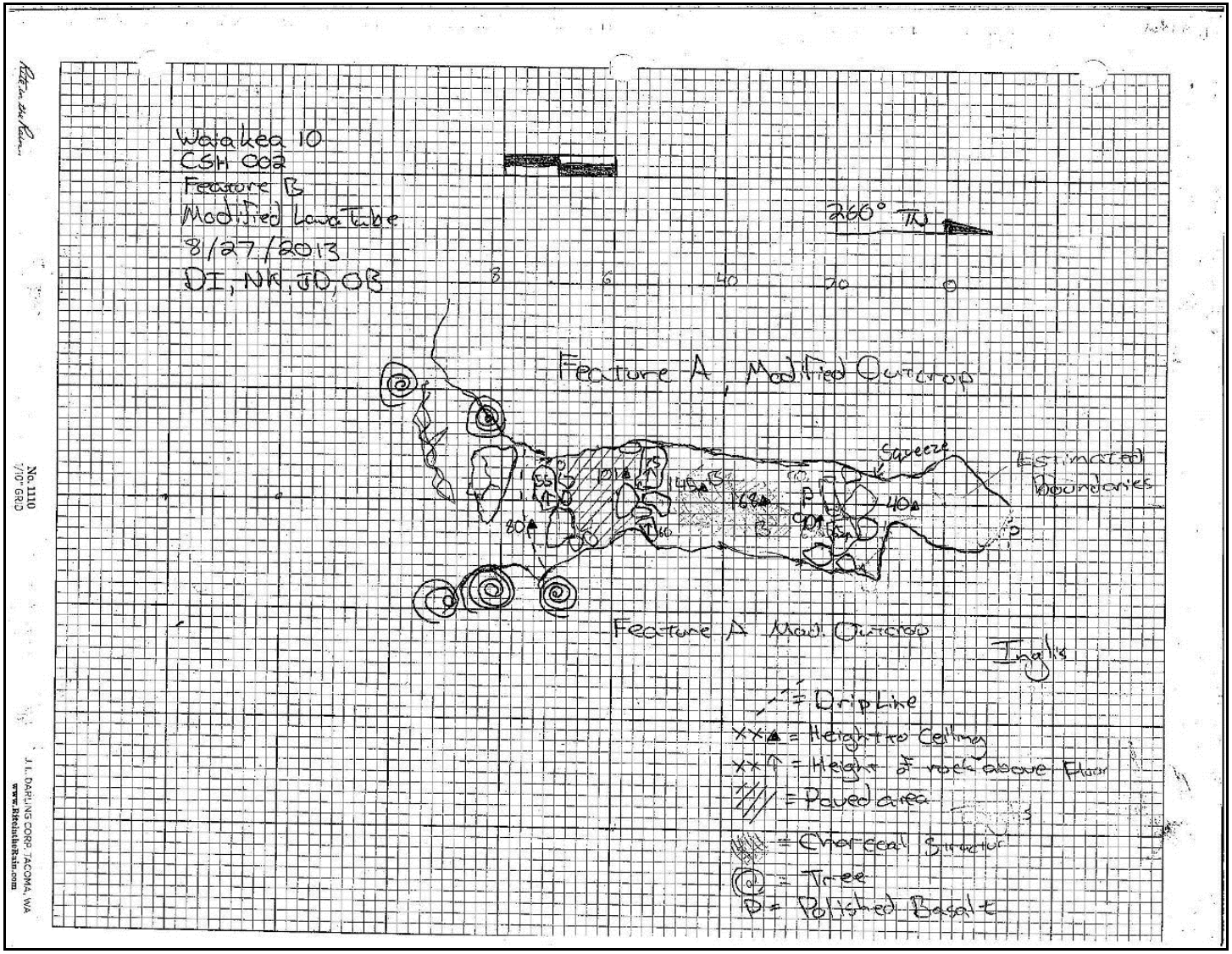
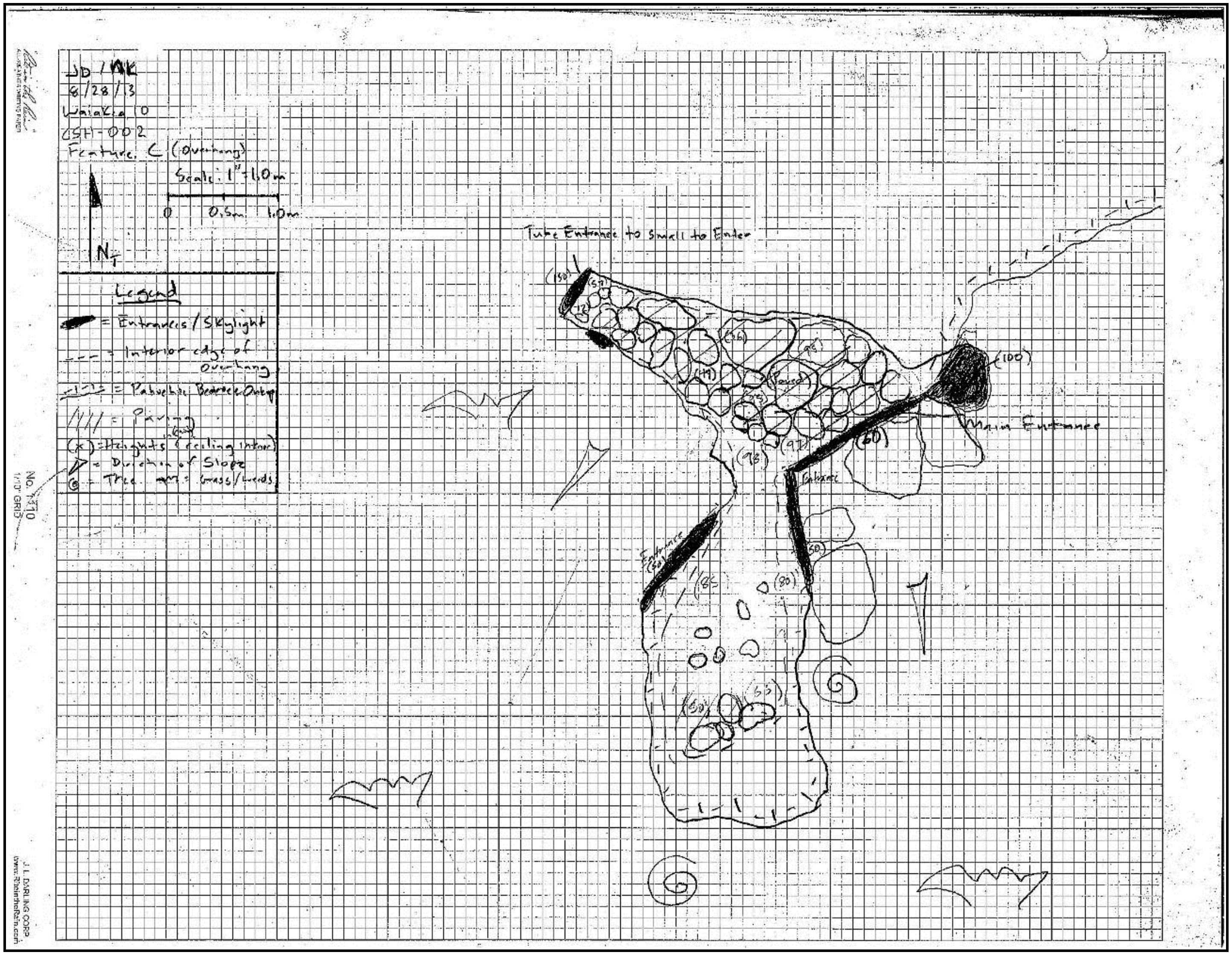
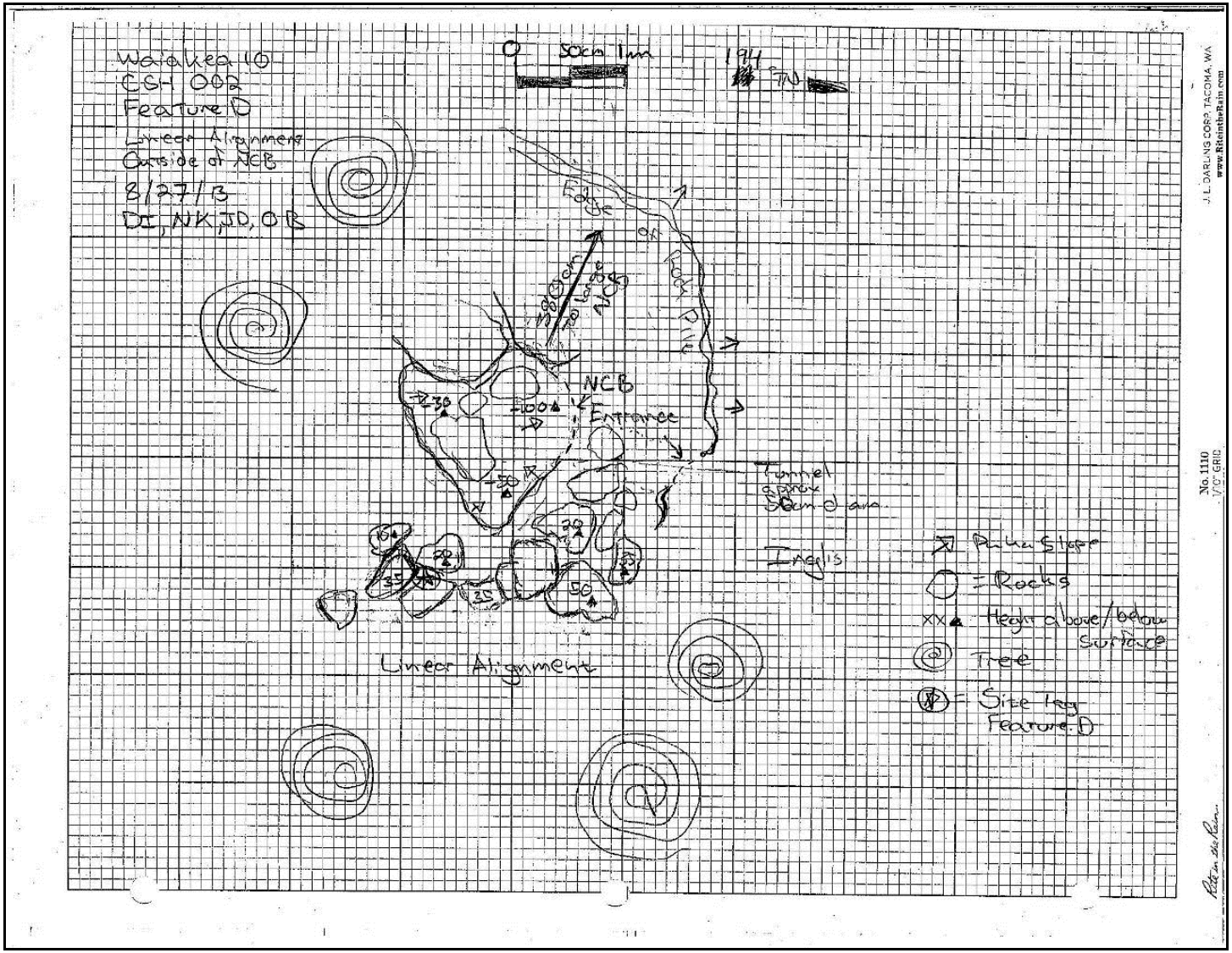

Waiakea 10
CSH C02
Feature A
Outcrop Overview
8/27/13
DI, JD, AK, OB
0m 5m
173°TN
150
50
75
50
25
30
30
Wall
200
Fissure
= Free
= Dripline / lava tube opening
= Smoke Wall / Alignment
= Edge of
Low Wall
Ingli's
10
15
20
Depressed Flat Outcrop
Feat D
50
70
180
NCB
Feature C Entrance
100
200
Entrance Feature B
-100
NCB
Feature C
100
200
250
250
Skylight
No. 1110
1/10 GRID
J.L. DARLING CORP. TACOMA, WA


Waiakea 10
CSH 003
Feature B
Modified Lava Tube
8/27/2013
DI, NR, JD, CB
266° TN
Feature A, Modified Outcrop
Squeeze
Estimated boundaries
Feature A Mod. Outcrop
Ingalls
= DripLine
= Height to Ceiling
= Height of rock above Floor
= Paved area
= Charcoal Stain
= Tree
= Polished Basalt
No. 1110
10" GRID
J.L. DARLING CORP. TACOMA, WA
www.RiteInTheRain.com



JD / AK
8/28/13
Waiakea 10
CSH-002
Feature C (Overhang)
Scale: 1" = 1.0m
0 0.5m 1.0m
N
Legend
= Entrances / Skylight
= Interior edge of overhang
= Pahoehoe Bedrock Outcrop
= Paving
= Heights (ceiling Interior)
= Direction of Slope
= Tree
= Grass / weeds
Tube Entrance to Small to Enter
Main Entrance
Entrance


Waiakea 10
CSH 002
Feature D
Linear Alignment
Outside of NCB
8/27/13
DI, NK, JD, OB
Scale 1in
194 TN
Edge of Rock Pile
NCB
Entrance
Tunnel approx
Inglis
Linear Alignment
= Rocks
Height above/below Surface
Tree
= Site 149 Feature D

SIHP # 50-10-35-30010 (CSH-004)

Cultural Surveys Hawai'i Site Inventory Record

Date: 9/6/13 Name: TRT Checked By: _____

Job Code Project: WAIAKEA 10	**CSH Site #** 004	**Feature:** A, B, C, D, E
Area/**Transect:** B	**State Site #** —	
Elevation:	**Landmarks:**	**Sheet** 1 **of** 2

Site/Feature Type: Enclosure Platform Terrace Wall Alignment Mound Modified: _____

Shelter Lava Tube Cairn Rock Art Trail Other: _____

Function: (Habitation) Activity Area Marker Ceremonial Shelter Burial Agriculture Water Control

Animal Husbandry Transportation Rock Art Indeterminate Other: _____

Age: Prehistoric (Historic) Military Plantation Ranch Indeterminate Other: _____

Evidence of Age: Historic, Due to artifacts encountered and prox. to Puna trail

Geology:	**Topography:**
Vegetation:	**Disturbance:**

HISTORIC PROPERTY MEASUREMENTS

	Meters	Orientation		Meters	Orientation
Length			**Height**		
Width			**Thickness**		
Site Complex Dimensions		Length:		Width:	

Condition: Excellent / (Good) / Poor / Remnant

Excavation Potential: Excellent / (Good) / Fair / Poor	**Evidence:** Surface artifacts
Photo(Roll or Disk/ Frame) / **Midden:**	**Artifact:**

Description: Possible hab. site due to features, landscape, vegitation, and artifact observation.

landscape: Basalt land with undulation.

Vegitation: Site has coverat canapy. Veg. consists of several mango trees, lahala trees, Ohea tree, strawberry guava, assorted ferns, ...

Artifacts: bottles, stone wear (salt glazed), water rounded basalt, horse or mule shoe, (oil lamp (basalt) possible)

Map Checklist: **N. arrow:** **Scale:** **Legend:** **Site #:** **Heights:** **Name** **Date** **Job Code**

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07/02/13
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Cultural Surveys Hawai'i Site Inventory Record

Date: 9/6/13 Name: TRT Checked By: _____

Job Code Project: WAIAKEA 10	**CSH Site #** 004	**Feature:** A, B, C, D, E
Area/**Transect:** B	**State Site #** —	
Elevation: —	**Landmarks:** —	**Sheet** 2 **of** 2

Site/Feature Type: Enclosure Platform Terrace Wall Alignment Mound Modified: _____

Shelter Lava Tube Cairn Rock Art Trail Other: _____

Function: ~~Habitation~~ Activity Area Marker Ceremonial Shelter Burial Agriculture Water Control

Animal Husbandry Transportation Rock Art Indeterminate Other: _____

Age: Prehistoric ~~Historic~~ Military Plantation Ranch Indeterminate Other: _____

Evidence of Age: Historic, Due to artifacts encountered and proximity to Puna trail

Geology:	**Topography:**
Vegetation:	**Disturbance:**

HISTORIC PROPERTY MEASUREMENTS

	Meters	Orientation		Meters	Orientation
Length			**Height**		
Width			**Thickness**		
Site Complex Dimensions		Length:		Width:	

Condition: Excellent / Good / Poor / Remnant

Excavation Potential: Excellent / ~~Good~~ / Fair / Poor	**Evidence:** surface artifacts
Photo(Roll or Disk/ Frame) /	**Midden:** **Artifact:**

Description: Possible habbitation camp site that consists of Five features. Feature A - a level area scattered with manuports such as water worn basalt stones. At the NW corner is a basalt retaining wall. Feature B - A rock stacking in a rectangular shape with a metal horseshoe (or mule) placed on the middle of it. Stacking was in a depression, liniar in shape, and about 20cm high. Feature C - irregular shaped basalt incloser. Neatly stacked at North end. Incloser is 230 x 380cm Feature D - Possible lua circular basalt inclosr, 2 to 3 coursos of stacking, visible depth 60cmbs. Feature E - small basalt pile in ground depression 60cm across

Map Checklist: **N. arrow:** **Scale:** **Legend:** **Site #:** **Heights:** **Name** **Date** **Job Code**

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07/02/13
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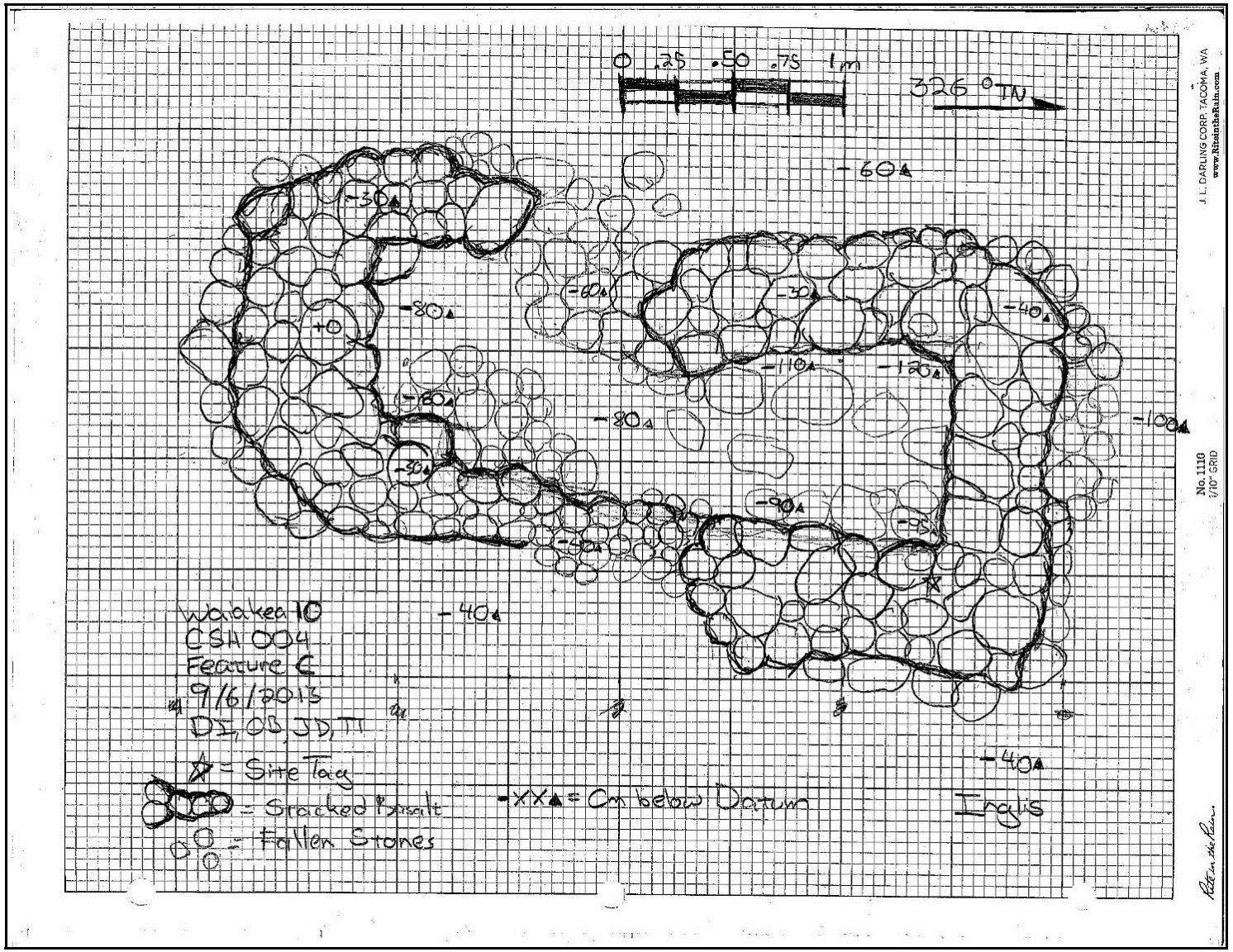
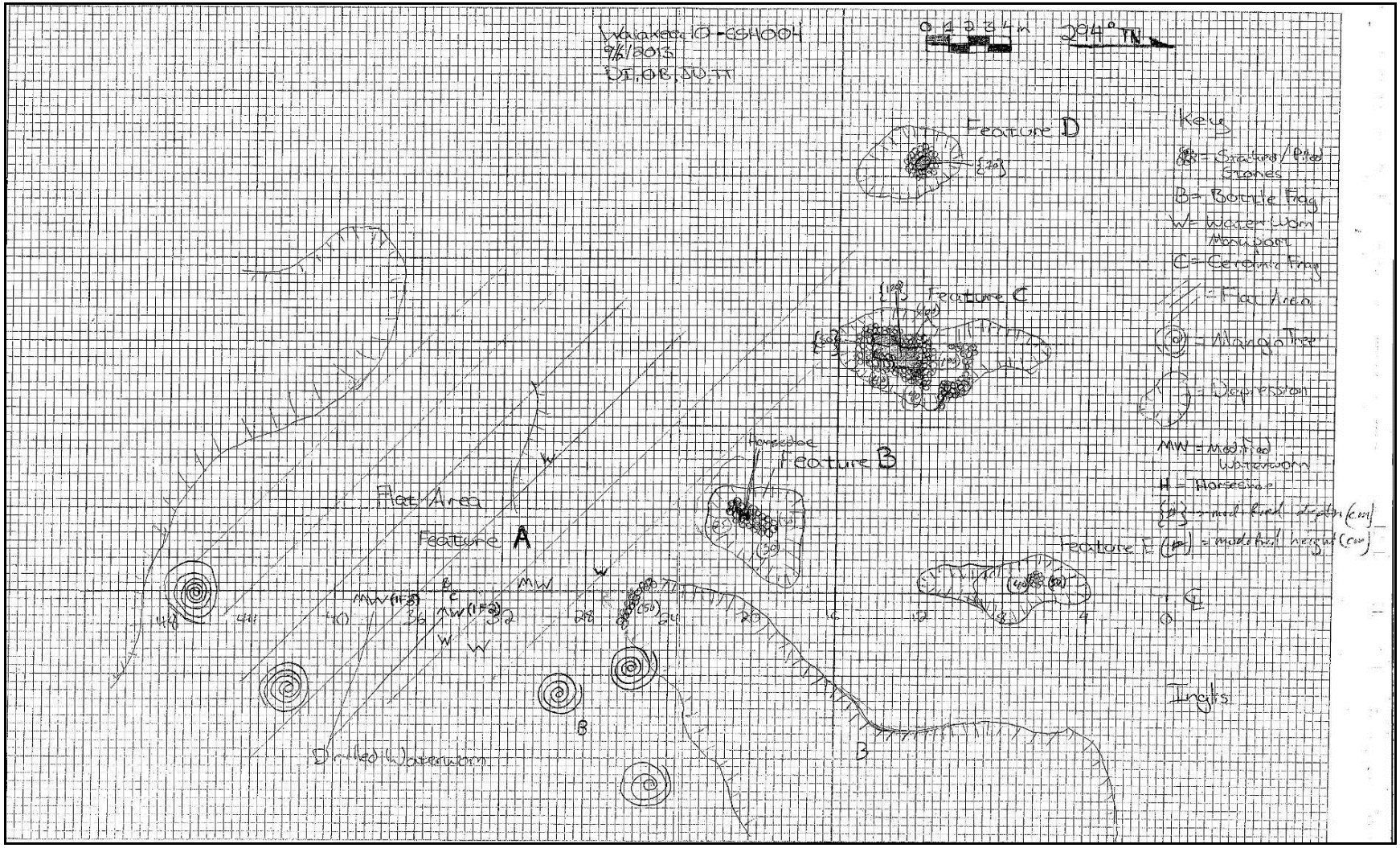

0 .25 .50 .75 1m
326° TN
-60▲
-30▲
-80▲
+0
-60▲
-30▲
-40▲
-110▲
-120▲
-80▲
-100▲
-90▲
-40▲
-40▲
-40▲
Waiakea 10
CSH 004
Feature C
9/16/2013
DI, OS, JD, TT
☆ = Site Tag
= Stacked Basalt
= Fallen Stones
-XX▲ = Cm below Datum
Inglis
J.L. DARLING CORP. TACOMA, WA
www.KitaniteSkin.com
No. 1110
1/10" GRID


Waiakea 10-co1004
9/6/2013
0 1 2 3 4 m
294° TN
Feature D
Feature C
Feature B
Feature A
Flat Area
Feature E
Keys
Trenches
Drilled Waterworm

SIHP # 50-10-35-30011 (CSH-006)

Cultural Surveys Hawai'i Site Inventory Record

Date: 9/9/13 Name: O. BAUTISTA Checked By: _____

Job Code Project: Waiakea 10	**CSH Site #** 006	**Feature:** A
Area/Transect: B	**State Site #** —	
Elevation: —	**Landmarks:** —	**Sheet** 1 **of** 2

Site/Feature Type: Enclosure Platform Terrace (Wall) Alignment Mound Modified: _____
Shelter Lava Tube Cairn Rock Art Trail Other: _____

Function: Habitation Activity Area Marker Ceremonial Shelter Burial Agriculture Water Control
Animal Husbandry Transportation Rock Art (Indeterminate) Other: _____

Age: Prehistoric / (Historic) Military Plantation Ranch Indeterminate Other: _____

Evidence of Age: Puna trail c. 75 m. to the North

Geology: PHH	**Topography:** undulating
Vegetation: OHIA, Ti, Lauhala, guiui, Binga Binga	**Disturbance:** Vegetation, large trees

HISTORIC PROPERTY MEASUREMENTS

	Meters	Orientation		Meters	~~Orientation~~
Length	5.0 m	E/W	**Height**	0.70 m max	3-4 courses
Width	0.70 m	—	**Thickness**	0.70 m	—
Site Complex Dimensions		Length: —		Width: —	

Condition: Excellent / (Good) / Poor / Remnant

Excavation Potential: Excellent / Good / Fair / (Poor)	**Evidence:** none
Photo(Roll or Disk/ Frame) /	**Midden:** none **Artifact:** none

Description: CSH-006 Fea. A is a small stone linear wall remnant. The wall is situated c. 75 m south of PUNA trail in a cleared area. The understory has been cleared, but large trees remain. The wall is constructed of basalt boulders and cobbles neatly stacked and faced. 3-4 courses, The wall is on a small natural outcrop. The wall measures 5.0 m long (E/W) by 0.70 m wide (N/S) with a max height of 0.70 m. The wall segment abuts a lauhala tree to the east and a very large ohia to the west. No evidence of the wall exist past these trees. Age possibly pre-contact or early historic period as the wall is not complex. The wall is in good condition. No artifacts observed.

Map Checklist: **N. arrow:** **Scale:** **Legend:** **Site #:** **Heights:** **Name** **Date** **Job Code**

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Cultural Surveys Hawai'i Site Inventory Record

Date: 9/9/13 Name: D. BAUTISTA Checked By: _____

Job Code Project: Waiakea 10	**CSH Site #** CSH-006	**Feature:** B
Area/Transect: A	**State Site #** —	
Elevation: —	**Landmarks:** —	**Sheet** 1 **of** 2

Site/Feature Type: Enclosure Platform Terrace Wall Alignment Mound Modified: _____
Shelter Lava Tube Cairn Rock Art Trail Other: modified depression

Function: Habitation Activity Area Marker Ceremonial Shelter Burial Agriculture Water Control
Animal Husbandry Transportation Rock Art Indeterminate Other: storage ?

Age: Prehistoric / Historic Military Plantation Ranch Indeterminate Other: _____

Evidence of Age: associated with feature A

Geology: same as Fea. A	**Topography:** undulating
Vegetation: " "	**Disturbance:** Ohia tree

HISTORIC PROPERTY MEASUREMENTS

	Meters	Orientation		Meters	Orientation
Length	.50	E/W	**Height** - exterior	0.10 - 0.30	—
Width	.30	N/S	**Thickness**	0.30	—
Site Complex Dimensions		Length: —		Width: —	

Condition: Excellent / Good / Poor / Remnant

Excavation Potential: Excellent / Good / Fair / Poor **Evidence:** none

Photo(Roll or Disk/ Frame) 1 **Midden:** None **Artifact:** None

Description: CSH-006 Feature B. is a circular depression lined with stacked basalt (3 courses) cobbles. The feature is located c. 4.5m east of feature A. Feature B measures 50cm long (E/W) by 30cm wide (N/S) max exterior height of 30cm and 40cm max depth. Feature is in good condition. No artifacts observed. Could be a storage feature.

Historic - possible -

Excavation may reveal function

Map Checklist:	**N. arrow:**	**Scale:**	**Legend:**	**Site #:**	**Heights:**	**Name**	**Date**	**Job Code**

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08/14/13
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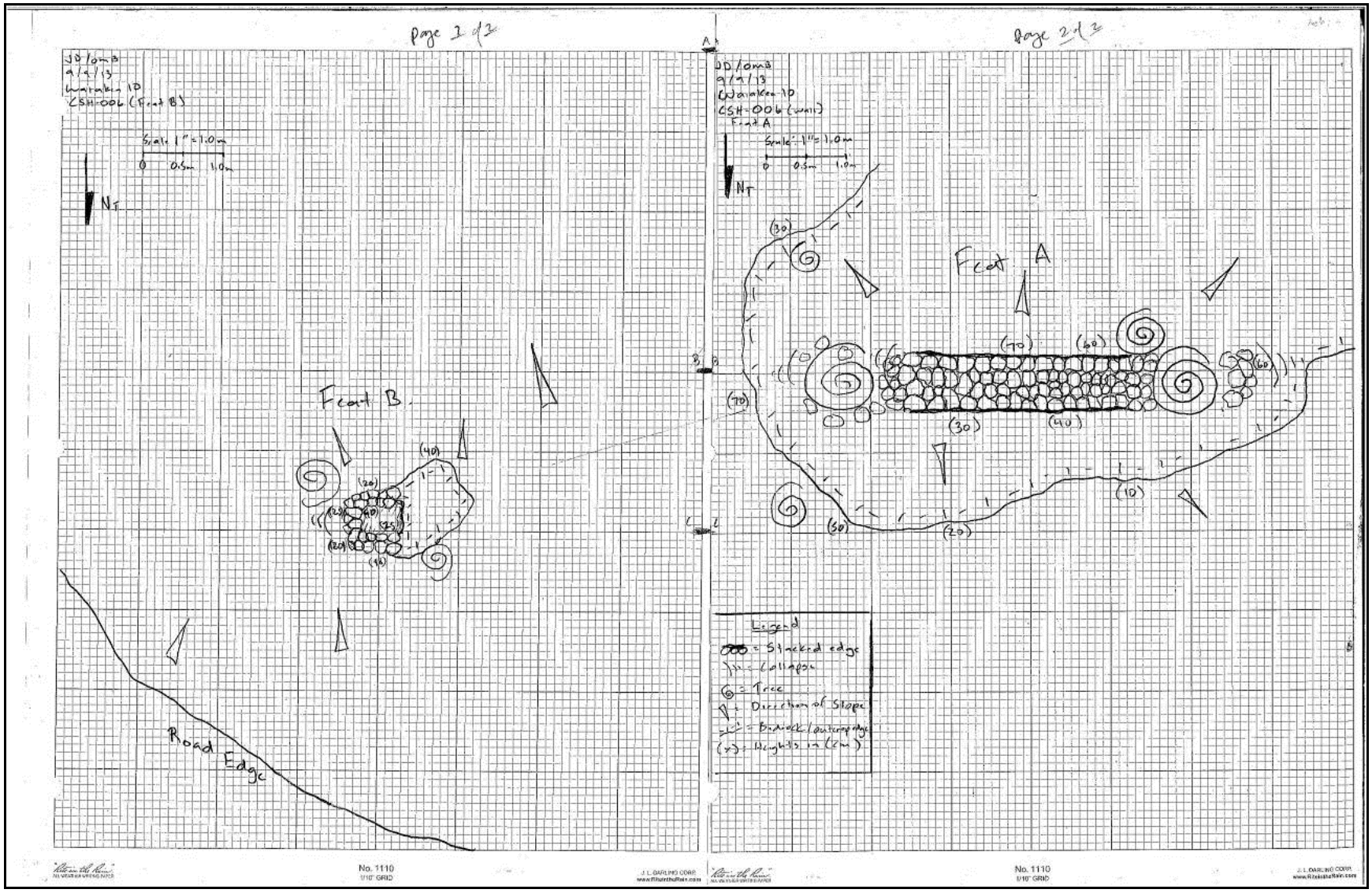
Page 1 of 3
JD/omb
9/9/13
Waiakea 10
CSH-006 (Feat B)
Scale: 1" = 1.0m
0 0.5m 1.0m
NT
Feat B.
(40)
(20)
(20)
(40)
(25)
(20)
(10)
Road Edge
No. 1110
1/10" GRID
Page 2 of 3
JD/omb
9/9/13
Waiakea 10
CSH-006 (wai)
Feat A
Scale: 1" = 1.0m
0 0.5m 1.0m
NT
Feat A
(30)
(70)
(60)
(70)
(60)
(30)
(40)
(10)
(50)
(20)
Legend
= Stacked edge
= Collapse
= Trace
= Direction of Slope
= Bedrock outcropping
(xx) = Heights in (cm)
No. 1110
1/10" GRID

SIHP # 50-10-35-30012 (CSH-007)

Cultural Surveys Hawai'i Site Inventory Record

Date: 9/17/13 Name: O. BAUTISTA Checked By: _____

Job Code Project: Waiakea 10	**CSH Site #** 007	**Feature:**
~~**Area/Transect:**~~ A	**State Site #**	
Elevation: c. 150 AMSL	**Landmarks:**	**Sheet** ____ **of** ____

Site/Feature Type: Enclosure Platform Terrace Wall Alignment Mound Modified: _____
Shelter Lava Tube Cairn Rock Art Trail Other: _____

Function: Habitation Activity Area Marker Ceremonial Shelter Burial Agriculture Water Control
Animal Husbandry Transportation Rock Art Indeterminate Other: _____

Age: Prehistoric Historic Military Plantation Ranch Indeterminate Other: _____

Evidence of Age: Associated with other trail & sites in area

Geology: a'a'	**Topography:** undulating
Vegetation: N/A	**Disturbance:** roots + vegetation

HISTORIC PROPERTY MEASUREMENTS

	Meters	Orientation		Meters	Orientation
Length	15.0	NE/SW	**Height**	40cm max	curbstone
Width	1.0-1.5	NW/SE	**Thickness**		
Site Complex Dimensions		Length:		Width:	

Condition: Excellent / Good / Poor / Remnant

Excavation Potential: Excellent / Good / Fair / Poor **Evidence:**

Photo(Roll or Disk/ Frame) 7 **Midden:** N/A **Artifact:** N/A

Description: CSH-007 is a curbstone trail remnant. Situated 60m south of CSH-006. Vegetation is dense jungle canopy. The trail is lined along the edges with basalt cobbles resting as curbstones. The center of the trail is fairly level. The trail measures (NE/SW) 15m overall; 10m of which is c. 1.50m wide (SE/NW) and a 5m section at the southwestern portion is only 1.0m wide. Curbstone height is 20-40cm. Trail remnant is in good condition. No artifacts. Trail may lead to CSH 006 historic site, but it is hard to see. No other curbstones are evident.

Map Checklist: N. arrow: Scale: Legend: Site #: Heights: Name Date Job Code

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08/14/13
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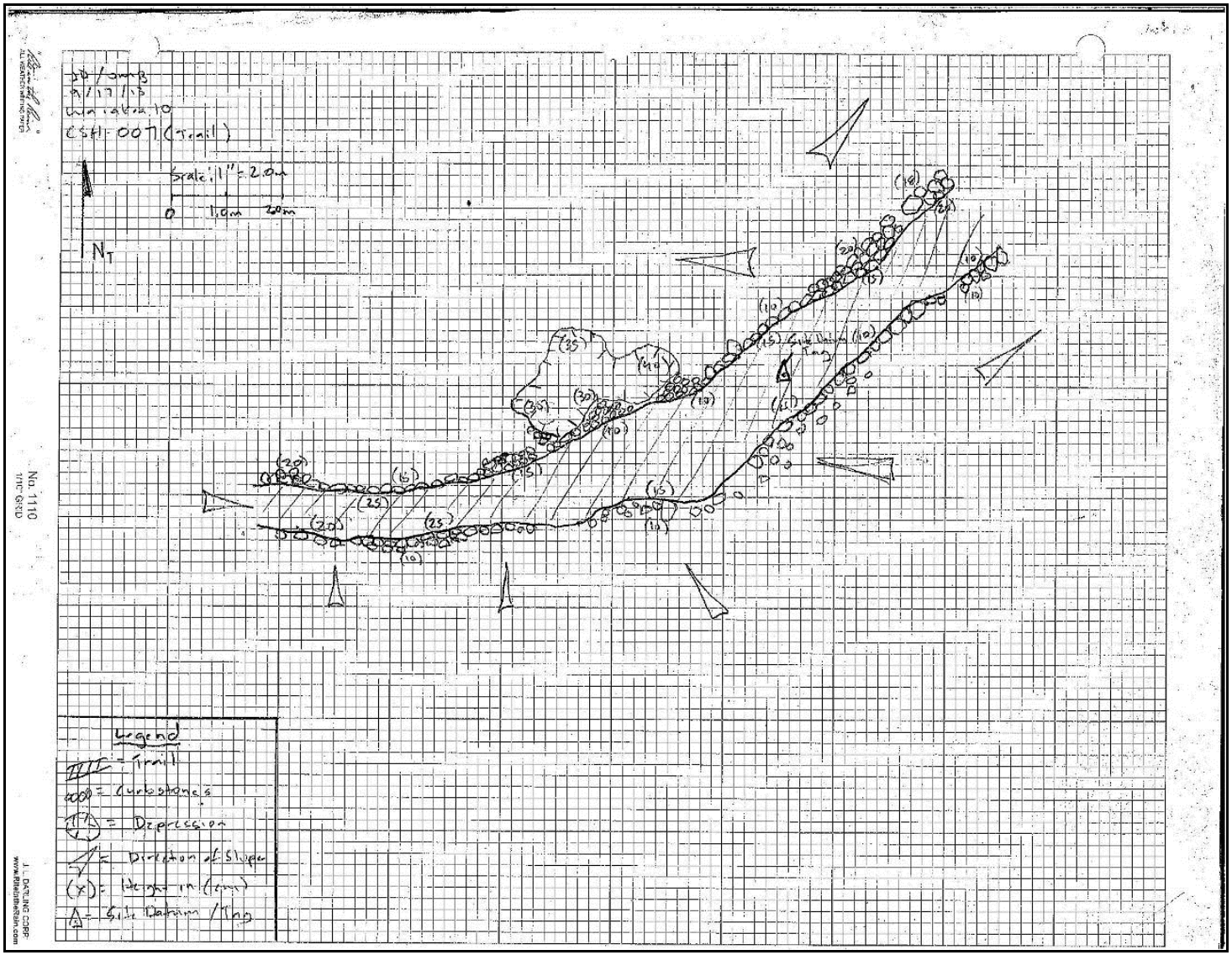
Legend
= Trail
= Curbstones
= Depression
= Direction of Slope
(X): Height in (cm)
= Site Datum / Mag
Scale 1" = 20m
0 10m 20m
N

Appendix C CSH Photo Logs

Cultural Surveys Hawaii, Inc.
PHOTOGRAPHIC RECORD FORM (Digital Camera)

Project Name:	KMR	CSH Job Code:	Waiakea 10
Camera:	CSH-D	Photographer(s):	OMB, NK, DI, JD
File Name[1] (Job Code--Camera—Dates of Photos):	Waiakea 10 - CSH-D - 8.27.2013		

Frame No.	Date	Time (Military)	Direction (Facing to)	Description
132	8/27	/	SW	CSH-002 FEA. B LAVA TUBE (back of tube)
133	"	/	SW	" "
134	"	/	SW	" "
135	"		SW	" "
136	"		-	" overview of mammal bone
137	"		-	" " " "
138	"		-	" charcoal scatter
139	"		-	" " mammal bone overview
140	"		-	" " polished basalt
141	"		-	" " "
142	"		SW	" " interior of tube
143	"		E	" " interior looking out
144	"		E	" " " "
145	"		E	" " paved area
146	"		SW	" " paved area
147	"		SW	" " paved area + entrance
148	"		SW	" " "
149	"		SW	" entrance

1: For example "KOHAN 1—CSH G—3-2-07 to 3-17-07"

Page 1 of 1

Cultural Surveys Hawaii, Inc.
PHOTOGRAPHIC RECORD FORM (Digital Camera)

Project Name:	KMR	CSH Job Code:	Waiakea 10
Camera: CSH-D		Photographer(s):	OMB, DI
File Name[1] (Job Code--Camera—Dates of Photos):	Waiakea 10 – CSH-D - 08282013		

Frame No.	Date	Time (Military)	Direction (Facing to)	Description
150	8/28			CSH-BREAK PHOTO JD / Crew OMB
151			N	CSH-002 Feat. D mod. Blister
152			NE	〃 〃 〃 〃
153			NW	〃 〃 〃 〃
154			N	〃 〃 〃 〃
155			SW	〃 〃 〃 〃
156			N	〃 〃 〃 〃
157			N	〃 〃 〃 〃
158			W	CSH-002 Feat A Large outcrop (non-cult Blister/shelter)
159			NE	〃 〃 〃 Overview Large Pahoehoe Outcrop
160			E	〃 〃 〃 〃 〃
161			E	〃 〃 〃 〃
162			N	〃 〃 〃 〃 Wall / Terrace
163			NW	〃 〃 〃 〃 〃
164			NW	〃 〃 〃 〃
165			SE	〃 〃 〃 〃
166			W	〃 〃 〃 Outcrop Overview 〃
167			S	〃 〃 〃 〃
168			NE	〃 〃 〃 〃
169			W	〃 〃 Feat B Lava Tube
170			SW	〃 〃 Feat A Large Outcrop
171			SW	〃 〃 〃 〃
172			NW	〃 〃 〃 〃
173			E	KD Range Berm (–)
174			W	CSH-002 Feat A Large Outcrop

1: For example "KOHAN 1—CSH G—3-2-07 to 3-17-07"

Page 1 of 1

Cultural Surveys Hawaii, Inc.
PHOTOGRAPHIC RECORD FORM (Digital Camera)

Project Name:	KMR	CSH Job Code:	Waiakea 10
Camera: CSH-D		Photographer(s):	DI
File Name[1] (Job Code--Camera—Dates of Photos):	Waiakea 10 - CSH-D - 08282013		

Frame No.	Date	Time (Military)	Direction (Facing to)	Description
175	8/28		N	CSH-002 Feat C. Overhang (N) Northern overhang
176			W	" " " (S) Southern overhang
177			N	" " " (N)
178			NW	" " " "
179			E	" " " "
180			NW	" " " "
181			NW	" " " Small Tube entrance
182			N	" " " "
183			W	" " " "
184			NW	" " " "
185			E	" " " "
186			NW	" " " "
187			E	" " " "
188			N	" " " "
189			N	" " " "
190			NE	" " " "
191			NW	" " " "
192			S	" " Overhang (S) Southern Overhang
193			S	" " " "
194			E	Overview of trail CSH 003
195			E	close up of two walls together CSH 003
196			N	N curb stone alignment "
197			E	curb stones on side "
198			S.	trail looking over both N + S. wall "
199			S	close up of S. wall curb stones "
200			W	ephemeral wall east end "
201			W	" " " "
				202 N wall face "

1: For example "KOHAN 1—CSH G—3-2-07 to 3-17-07"

Cultural Surveys Hawaii, Inc.
PHOTOGRAPHIC RECORD FORM (Digital Camera)

Project Name:	age KMR	CSH Job Code:	Waiakea 10
Camera: CSH - D		Photographer(s):	Crew.
File Name[1] (Job Code–Camera—Dates of Photos):			

Frame No.	Date	Time (Military)	Direction (Facing to)	Description
204	9/6/13		E	CSH-004 Isolated Feat IF#2 mod. waterworn, Blob top Bottle, Ceramic
205			E	" " " "
206			SE	CSH-004 Feat A Hab. Site
207			SE	" " " "
208			SE	CSH-004 IF# 3 mod. waterworn (2) depressions
209			N	CSH-004 Feat A. IF# 3 in foreground
210			E	CSH-004 Feat. A mod waterworn not collected,
211			N	CSH-004 Feat. B mound w/in depression.
212			E	" " " "
213			Overview	" " " close up Horsestail
214			NW	CSH-004 Feat. D constructed Pit
215			NW	" " " "
216			N	CSH-004 Feat E mound w/in depression
217			SE	" " " "
218			E	CSH-004 Feat C Enclosure
219			W	" " "
220			W	" " "
221			SE	" " "
222			SE	" " "
223			S	" " "
224			W	" " "

1: For example "KOHAN 1—CSH G—3-2-07 to 3-17-07"

Page 1 of 1

Cultural Surveys Hawaii, Inc.
PHOTOGRAPHIC RECORD FORM (Digital Camera)

Project Name:	Waiakea 10	CSH Job Code:	
Camera: NGarcia_Digital		Photographer(s):	N. Garcia
File Name[1] (Job Code--Camera—Dates of Photos):			

Frame No.	Date	Time (Military)	Direction (Facing to)	Description
3227	9/6/13		NW	Platform General View Feat 2
3228	9/6/13		NW	" " " " "
3229	9/6/13		NW	" " " " "
3230	9/6/13		NE	" " " " "
3231	9/6/13		NE	" " " " "
3232	9/6/13		SW	Side Wall " " " "
3233	9/6/13		SW	" " " " " "
3234	9/6/13		SW	" " Profile " " "
3235	9/6/13		SW	" " " " " "
3236	9/6/13		Over View	Historic Artifacts
3237	9/6/13		Over View	" "
3238	9/6/13		Over View	Bottle (Glass)
3239	9/6/13		Over View	Bottle (Glass) - Makers Mark
3240	9/6/13		Over View	Stone Grinding Wheel
3241	9/6/13		NW	Depression Feat 3 General View
3242	9/6/13		NW	" " " "
3243	9/6/13		SW	" " " " w/ Feat. 4 in Background
3244	9/6/13		SW	" " " " " " " "
3245	9/6/13		NW	Upright on Westside of Feat 3
3246	9/6/13		W	General View Depression Feature 4
3247	9/6/13		W	" " " " "
3248	9/6/13		S	" " " " "
3249	9/6/13		S	" " " " "
3250	9/6/13		SE	Profile " " " "
3251	9/6/13		SE	" " " " "

1: For example "KOHAN 1—CSH G—3-2-07 to 3-17-07"

Page 1 of 1

Cultural Surveys Hawaii, Inc.
PHOTOGRAPHIC RECORD FORM (Digital Camera)

Project Name:	Waiakea J9	CSH Job Code:	
Camera: N. Garcia_Digital		Photographer(s):	N. Garcia
File Name[1] (Job Code--Camera—Dates of Photos):			

Frame No.	Date	Time (Military)	Direction (Facing to)	Description
3252	9/6/13		E	General View Feature 1
3253	9/6/13		E	" " " "
3257	9/6/13		W	" " " "
3258	9/6/13		W	" " " "
3259	9/6/13		W	Profile " Basalt Storage Pit of Feat 1
3260	9/6/13		W	" " " " " " " "
3261	9/6/13		NE	Over view of Water Worn stone near Feat 1.
3262	9/6/13		NE	Over view of Water Worn stone near " "
3263	9/6/13		NW	General View Open Area of Site

1: For example "KOHAN 1—CSH G—3-2-07 to 3-17-07"

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Cultural Surveys Hawaii, Inc.
PHOTOGRAPHIC RECORD FORM (Digital Camera)

Project Name:	KMR	CSH Job Code:	Waiakea 10
Camera:	CSH-C	Photographer(s):	omB
File Name[1] (Job Code--Camera—Dates of Photos):	Waiakea 10 - CSH-C - 9.9.13		

Frame No.	Date	Time (Military)	Direction (Facing to)	Description
627 1	9/9/13		S	CSH-006 Feat. A, wall segment
628 2			SE	" " " "
629 3			S	" " " "
630 4			SW	" " " "
631 5			S	CSH-006 Feat. B Constructed Pit
632 6			W	" " " " Feat A in Background
633 7			S	" " " " close up
634 8			S	" " " "
635 9			E	SHPD Site # 21658 Ahu Feat. A
636 10			E	" " " " Feat B in Background
637 11			E	" " " "
638 12			E	" " " " Feat B
639 13			ESE	" " " "
640 14			ESE	" " " "
641 15			S	" " " " Feat. C
642 16			S	" " " "
643 17			SW	" " " "
644 18			SW	" " " "
645 19			N	" " " " Feat. E
646 20			N	" " " "
647 21			W	" " " " Feat. D in background
648 22			W	" " " " Feat D
649 23			SW	" " " "
650 24			SE	" " " " Feat E in background
651 25			SE	" " " "

1: For example "KOHAN 1—CSH G—3-2-07 to 3-17-07"

Page 1 of 1

756 8468

Cultural Surveys Hawaii, Inc.
PHOTOGRAPHIC RECORD FORM (Digital Camera)

Project Name:	KMR	CSH Job Code:	Waiakea 10
Camera:	CSH C	Photographer(s):	OMB
File Name[1] (Job Code--Camera—Dates of Photos):	Waiakea 10 - CSH-C - 9.9.13		

Frame No.	Date	Time (Military)	Direction (Facing to)	Description
652 26	9/9		SE	SHPD Site # 21657 C-shape Enclosure
653 27	"		E	" " " "
654 28	"		SE	" " " " close up interior wall
655 29	"		N	" " " " Exterior wall
656 30	"		N	" " " " "
657 31	"		S	" " " "
658 32	"		S	" " " "

1: For example "KOHAN 1—CSH G—3-2-07 to 3-17-07"

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Cultural Surveys Hawaii, Inc.
KMR PHOTOGRAPHIC RECORD FORM (Digital Camera)

Project Name:	Waiakea 10	CSH Job Code:	Waiakea 10
Camera:	CSH-D	Photographer(s):	CMB
File Name[1] (Job Code--Camera—Dates of Photos):	WAIAKEA 10 – CSH-C – 9.11.13		

	Frame No.	Date	Time (Military)	Direction (Facing to)	Description
659	33	9/11		NW	2177 Fea 6 L-Shape enclosure
660	34	"		W	" "
661	35	"		NW	" "
662	36	"		NW	" "
663	37	"		N	" "
664	38	"		S	2177, Feature 7 Paved area
665	39	"		S	"
666	40	"		SE	"
667	41	"		SW	"

1: For example "KOHAN 1—CSH G—3-2-07 to 3-17-07"

Page 1 of 1

Cultural Surveys Hawaii, Inc.
PHOTOGRAPHIC RECORD FORM (Digital Camera)

Project Name:	KMR	CSH Job Code:	WAIAKEA 10
Camera:	CSH-C	Photographer(s):	CMB
File Name[1] (Job Code--Camera—Dates of Photos):	WAIAKEA 10 - CSH-C - 9.13.2013		

Frame No.	Date	Time (Military)	Direction (Facing to)	Description
49	9/13		SW	SHPD# 23273 Trail "curbstones"
50	"		SW	" (tape @ 1m)
51	"		NE	" "
52	"		SW	" "
53	"		NE	" "
54	"		SW	" (tape @ 2m)
55	"		NE	" "
56			NW	CSH-005 Feat C. L-shape
57			N	" " "
58			NE	" " " Feat A in background
59			NW	" " "
60			S	CSH-005 Feat A. Platform
61			SW	" " " "
62			SE	" " " " surface
63			E	" " " " "
64			N	" " " "
65			E	CSH-005 Feat B. Enclosure
66			E	" " " close up stacking
67			E	" " " "
68			NE	" " "
69			SW	" " "
70			NW	CSH-005 Feat D. Mound
71			NW	" " "
72			NE	" " Constructed Pit
73			NE	" " "

1: For example "KOHAN 1—CSH G—3-2-07 to 3-17-07"

Page 1 of 1

KMR

Cultural Surveys Hawaii, Inc.
PHOTOGRAPHIC RECORD FORM (Digital Camera)

Project Name:	Waiakea 10	CSH Job Code:	Waiakea 10
Camera: CSH C		Photographer(s):	ESMS
File Name[1] (Job Code—Camera—Dates of Photos):	Waiakea CSH C 9.17-2013		

Frame No.	Date	Time (Military)	Direction (Facing to)	Description
79	9/17		SW	CSH-007 Trail remnant
80	"		SW	" "
81	"		SW	" "
82	"		NE	" "
83	"		NE	" "
84	"		NE	" "
85	"		NE	" "

1: For example "KOHAN 1—CSH G—3-2-07 to 3-17-07"

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Cultural Surveys Hawaii, Inc.
PHOTOGRAPHIC RECORD FORM (Digital Camera)

Project Name:	KMR	CSH Job Code:	WAIAKEA 10
Camera:	CSH-C	Photographer(s):	OMR
File Name[1] (Job Code--Camera—Dates of Photos):	WAIAKEA 10 - CSH-C - 9.24.13		

Frame No.	Date	Time (Military)	Direction (Facing to)	Description
753	9/24		S	CSH-001 entrance
754	"		S	" "
755	"		S	" "
756	"		SE	" constructed area
757	"		SE	" "
758	"		NW	" "
759	"		NW	" "
760	"		S	" large boulder in ctr of cave
761	"		S	" " "

1: For example "KOHAN 1—CSH G—3-2-07 to 3-17-07"

Page 1 of 1

Cultural Surveys Hawaii, Inc.
PHOTOGRAPHIC RECORD FORM (Digital Camera)

Project Name:	KMR	CSH Job Code:	Waiakea 10
Camera:	OB1 phone	Photographer(s):	CMB
File Name[1] (Job Code--Camera—Dates of Photos):	Waiakea 10 - OB1 phone - 9.27.13		

Frame No.	Date	Time (Military)	Direction (Facing to)	Description
1996	9/27		S	CSH-001 Lava tube: lg boulder in center of tube
1997	"		SW	" "
1998	"		SW	" Back of tube
1999	"		SW	" "
2001	"		SE	" constructed area - w/beer bottles
2002	"		SW	" east portion - east of lg boulder
2003	"		SW	" "
2004	"		S	" Exterior - opening of tube
2005	"		S	" " "
2006	"		S	" " "
2007	"		SE	" " "

1: For example "KOHAN 1—CSH G—3-2-07 to 3-17-07"

Page 1 of 1

Cultural Surveys Hawaii, Inc.
PHOTOGRAPHIC RECORD FORM (Digital Camera)

Project Name:	KMR	CSH Job Code:	Waiakea 10
Camera:	OB iphone	Photographer(s):	OMB
File Name[1] (Job Code--Camera—Dates of Photos):	Waiakea 10 – OB iphone – 10-31-13		

Frame No.	Date	Time (Military)	Direction (Facing to)	Description
2066	10/31		N	KMR: Area where Hudson site used to be
2067	"		NW	" "
2068	"		W	" "
2069	"		S	Site 21771 Feature E modified depression stone causeway
2070	"		S	" "
2071	"		W	" "
2072	"		SE	" "
2073	"		S	" "
2074	"		S	Site 21771 Pit in depression; Feature E
2075	"		S	" "
2076	"		W	" "
2077	"		W	" "
2078	"		—	Oli's Thumb – Delete
2079	"		N	stone causeway near pit 21771 Fea. E
2080	"		W	21771 Fea E stone alignments on west bank
2081	"		W	21771 Fea E with Fea A in background
2082	"		W	" "
2083	"		N	21771 Fea E stone alignments on west bank
2084	"		NW	" "

1: For example "KOHAN 1—CSH G—3-2-07 to 3-17-07"

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Cultural Surveys Hawaii, Inc.
PHOTOGRAPHIC RECORD FORM (Digital Camera)

Project Name:	KAHALUU 13	CSH Job Code:	KAHALUU 13
Camera:	CSH-C	Photographer(s):	OMB
File Name[1] (Job Code--Camera—Dates of Photos):	KAHALUU 13-CSH-C - 10.30-13		

Frame No.	Date	Time (Military)	Direction (Facing to)	Description
922	10/30	-	-	Mcfarlane bottle (Also Acc #1) IF #1
923	"	-	-	" "
924	"	-	-	" "
925	"	-	-	" "
926	"	-	-	" "
927	"	-	-	Unmarked Wiskey btl. (Also Acc #2) IF #1
928	"	-	-	" "
929	"	-	-	" "
930	"	-	-	waterworn cobble w/indentations (Acc #3) IF #3
931	"	-	-	" "
932	"	-	-	" "
933	"	-	-	" "
934	"	-	-	waterworn/modified (Acc #) IF #2
935	"	-	-	" "
936	"	-	-	" "
937	"	-	-	" "
938	"	-	-	" "
939	"	-	-	" "
940	"	-	-	" "
941	"	-	-	" "
942	"	-	-	Acc #1 / IF #1 Macfarlane + Co base of btl.
943	"	-	-	" "

1: For example "KOHAN 1—CSH G—3-2-07 to 3-17-07"

Page 1 of 1

Appendix D CSH GPS Logs

CSH GPS LOG

Project Name: Waiakea 10 **CSH Job Code:** WAIAKea 10

GPS Unit: CSH 1 **Operator:** OMB **Date:** 08/27/13 **Sheet** ___ **of** ___

Downloaded to File[1]: _____

Point ID #	Date	UTM Coordinates Northing/Easting (NAD 83 Zone 4 or 5 north unless otherwise indicated)	Description
044	08/27	0287330 2179235	CSH001 lava tube point taken @ entrance.
045		2179325 0287288	CSH 002 lava tube point taken @ entrance.

1: File name on server;

CSH GPS LOG

Project Name: WAIAKEA 10 **CSH Job Code:** WAIAKEA 10

GPS Unit: CSH 01 **Operator:** OMB **Date:** 08/27/13 **Sheet** ___ **of** ___

Downloaded to File[1]: _____

F. = feature

Point ID #	Date	UTM Coordinates Northing/Easting (NAD 83 Zone 4 or 5 north unless otherwise indicated)	Description
048	08/28	0287295 2179312	CSH 002 F.a mod. out point taken in center of feature
049		0287291 2179304	CSH 002 F. D mod. blister Taken in center of feature
050		0287295 2179289	CSH 002 F.C mod. over hang point taken @ entrance
051		0287288 2179326	CSH 002 F.B mod lavatube taken @ entrance
052		0287402 2179484	CSH 003 Class B trail point taken @ 8.5 long tape

1: File name on server;

CSH GPS LOG

Project Name: KMR **CSH Job Code:** Waiakea 10

GPS Unit: CSH-2 (Pahoa) **Operator:** JD **Date:** 9/6/13 **Sheet** ____ **of** ____

Downloaded to File[1]: _____

Point ID #	Date	UTM Coordinates Northing/Easting (NAD 83 Zone 4 or 5 north unless otherwise indicated)	Description
038	9/6/13	2180027 / 0285992	(Isolated Find) IF # 1 at CSH-004 Hist. Bottles
039		2180055 / 0285993	CSH-004 Hab. Site Complex (Point taken at CSH-004 Feature)
040		2180043 / 0286018	IF # 2 at CSH-004 mod. water worn
041		2180041 / 0286022	IF # 3 at CSH-004 mod. water worn
042		2180062 / 0286784	CSH-005 Platform / complex

P:\DOC\RESOURCES\Field and Lab Forms\1. Field Forms\GPS Record Form.pdf

CSH GPS LOG

Project Name: Waiakea 10 **CSH Job Code:** Waiakea 10

GPS Unit: Garmin CSH4 **Operator:** A. Soltz **Date:** 9/6/13 **Sheet** 1 **of** 1

Downloaded to File[1]:

Point ID #	Date	UTM Coordinates Northing/Easting (NAD 83 Zone 4 or 5 north unless otherwise indicated)	Description
059	9/6/13	0286749/2179976	Feat. 2 Platform, Broken A'a, Hist. Artifacts
060	"	0286753/2179979	Feat 3 Depression w/ Upright
061	"	0286757/2179977	Feat 4 Oblong Depression
062	"	0286781/2180000	Water Worn Basalt Cobbles (20-40cm) (Grouping of 3)
063	"	0286769/2180019	Feat 1 Basalt Enclosure w/ Storage Pit + "U" shape

1: File name on server;

KMR

CSH GPS LOG

Project Name: Waiakea 10 **CSH Job Code:** Waiakea 10

GPS Unit: CSH-1 **Operator:** CMB **Date:** 9.9.13 **Sheet** 1 **of** 1

Downloaded to File[1]:

Point ID #	Date	UTM Coordinates Northing/Easting (NAD 83 Zone 4 or 5 north unless otherwise indicated)	Description
064	9/9/13	0286171 2180085	CSH-006 wall segment Point taken in ctr
065	"	0287207 2179516	21658 AHU's Feature B in ctr
066	"	0287570 2179398	21657 C-shape Enclosure

1: File name on server;

CSH GPS LOG

Project Name: KMR CSH Job Code: Waiakea 10

GPS Unit: CSH - 1 Operator: CMD Date: 9/13/13 Sheet 1 of 1

Downloaded to File[1]:

Point ID #	Date	UTM Coordinates Northing/Easting (NAD 83 Zone 4 or 5 north unless otherwise indicated)	Description
068	9/13	0285906 2179976	Site # 23237 Trail (area A) Intersection

1: File name on server;

CSH GPS LOG

Project Name: KMR **CSH Job Code:** waiakea 10

GPS Unit: CSH-1 **Operator:** amb **Date:** 9.17.13 **Sheet** ___ **of** ___

Downloaded to File[1]: _____

Point ID #	Date	UTM Coordinates Northing/Easting (NAD 83 Zone 4 or 5 north unless otherwise indicated)	Description
69	9/17	0245977 2179993	CSH-007 Trail - taken in etr

1: File name on server;

CSH GPS LOG

Project Name: KMR **CSH Job Code:** Waiakea 10

GPS Unit: CSH-1 **Operator:** OMR **Date:** 9.24.13 **Sheet** 1 **of** 1

Downloaded to File[1]:

Point ID #	Date	UTM Coordinates Northing/Easting (NAD 83 Zone 4 or 5 north unless otherwise indicated)	Description
070	9/24	0287333 2139237	CSH-001 lava tube at entrance

1: File name on server;

Appendix E SIHP Site Number Requests

Sarah Wilkinson

From: Sean.P.Naleimaile@hawaii.gov
Sent: Wednesday, December 18, 2013 2:15 PM
To: Sarah Wilkinson
Subject: Re: SIHP number request for AIS study at KMR in Hilo

SIHP Site #50-10-35-30008-30012

30008	CSH-001	CSH	South Hilo	Waiākea	TMK (3) 2-1-013:10	9/24/2013
30009	CSH-002	CSH	South Hilo	Waiākea	TMK (3) 2-1-013:10	8/27-28/2013
30010	CSH-004	CSH	South Hilo	Waiākea	TMK (3) 2-1-012:3	9/6/2013
30011	CSH-006	CSH	South Hilo	Waiākea	TMK (3) 2-1-012:3	9/9/2013
30012	CSH-007	CSH	South Hilo	Waiākea	TMK (3) 2-1-012:3	9/17/2013

Sean P. Naleimaile
Hawai'i Island Archaeologist
State Historic Preservation Division
(808)933-7651

State Historic Preservation Division

From: "Sarah Wilkinson" <swilkinson@culturalsurveys.com>
To: <Theresa.K.Donham@hawaii.gov>,
Cc: <sean.p.naleimaile@hawaii.gov>, <obautista@culturalsurveys.com>
Date: 12/18/2013 01:22 PM
Subject: SIHP number request for AIS study at KMR in Hilo

Aloha Theresa,
CSH would like to request SIHP numbers for sites documented during our recent AIS at Keaukaha Military Reservation in Hilo. The required information is attached.

As you will note, we are seeking SIHP numbers for 5 newly-identified sites. However, during our study we found new/additional features at two previously-recorded sites (SIHP 50-10-99-18869—Puna Trail and 50-10-35-21771). I have included information on the new features in the excel spreadsheet, including GIS location data, so that you can update your database with this information.

To keep the size down I haven't included photos with the site descriptions, but there are plan view maps.
Thanks!
Sarah

1

Sarah Wilkinson
Cultural Surveys Hawai`i, Inc.
swilkinson@culturalsurveys.com
office (808)965-6478
cell (808)756-8468
fax (808)965-6582
[attachment "WAIAKEA 10 Site Number Request.xlsx" deleted by Sean P Naleimaile/DLNR/StateHiUS] [attachment "WAIAKEA 10 SIHP Site No. Request Form.doc" deleted by Sean P Naleimaile/DLNR/StateHiUS]

2

STATE HISTORIC PRESERVATION DIVISION

PRELIMINARY SITE INFORMATION FORM
FOR REQUESTING HAWAI‘I STATE INVENTORY OF HISTORIC PLACES (SIHP) NUMBERS
(revised 4/30/08)

Instructions: Submit this completed .doc with attached USGS map, TMK map (with site location(s) plotted on both) and site Plan(s). In addition, please fill out the .xls site data form and include with submission. Email the request to your island's DLNR/SHPD.

Total SIHP #'s being requested: 5

Date: 12/18/2013
Firm/Agency: Cultural Survey's Hawai‘i, Inc.
PI: Hallett H. Hammatt, Ph.D.

Island: Hawai‘i
Ahupua‘a: Waiākea
District: South Hilo

Project Area size (acreage): A 405.3 acre portion of the overall parcels

TMK(s): (3) 2-1-012:003; (3) 2-1-013:010

Owner/Developer: The Hawai‘i Army National Guard (HIARNG)
Address: Hawai'i Army National Guard, ENV Office
Kristine Macdonald, Cultural Resources Specialist
3949 Diamond Head Road
Honolulu, HI 96816-4495

Site Description: Include (attach) a description of each historic property that will be designated by a site number. Include individual descriptions of features and/or components of the site, measurements, etc., and any other relevant information gathered to date.

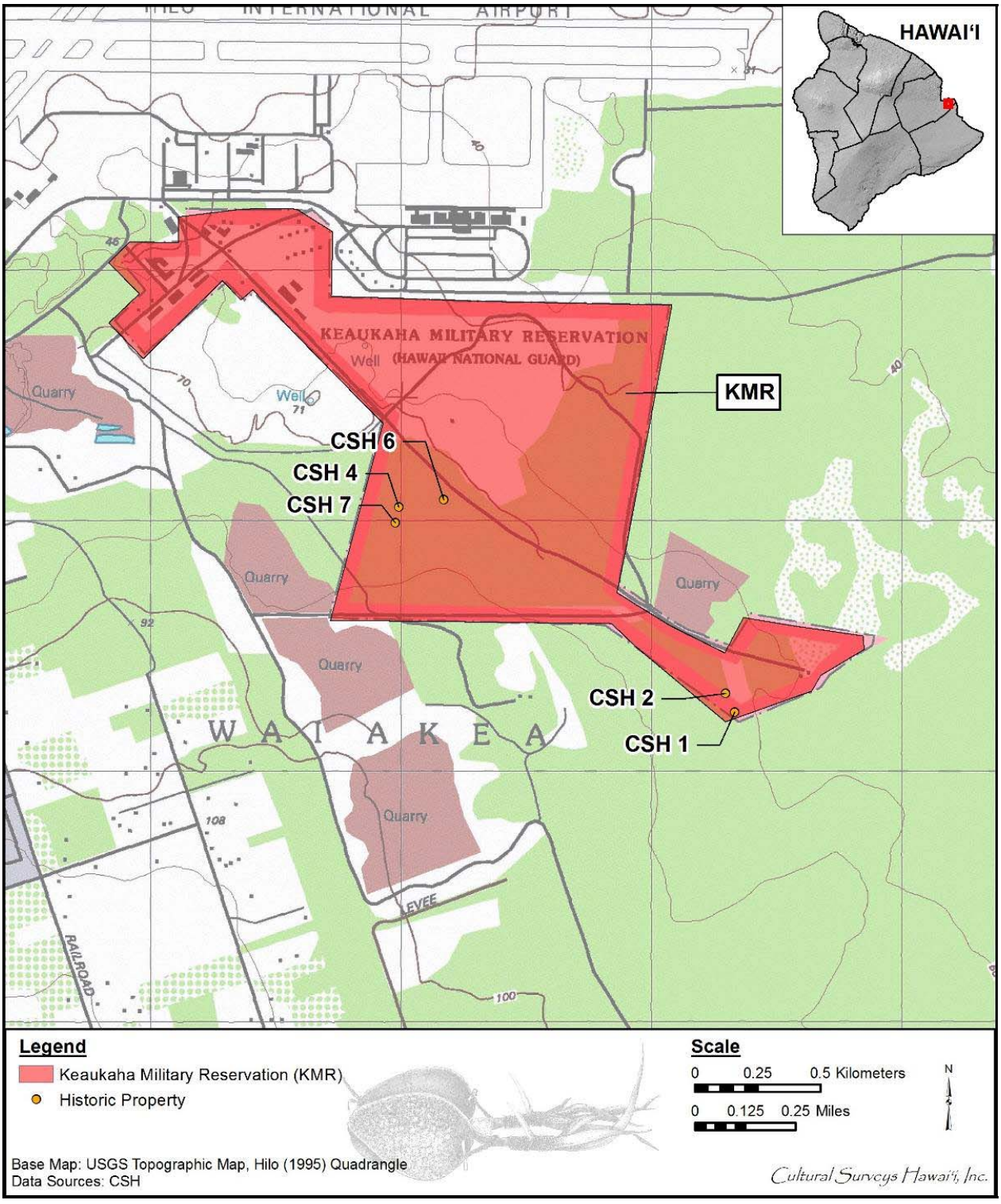

Figure 1. Portion of the 1995 U.S. Geological Survey 7.5-minute Topographic Map, Hilo Quadrangle, showing the locations of the newly-identified sites at KMR; the Puna Trail (SIHP 50-10-99-18869) is visible as a diagonal line bisecting the KMR

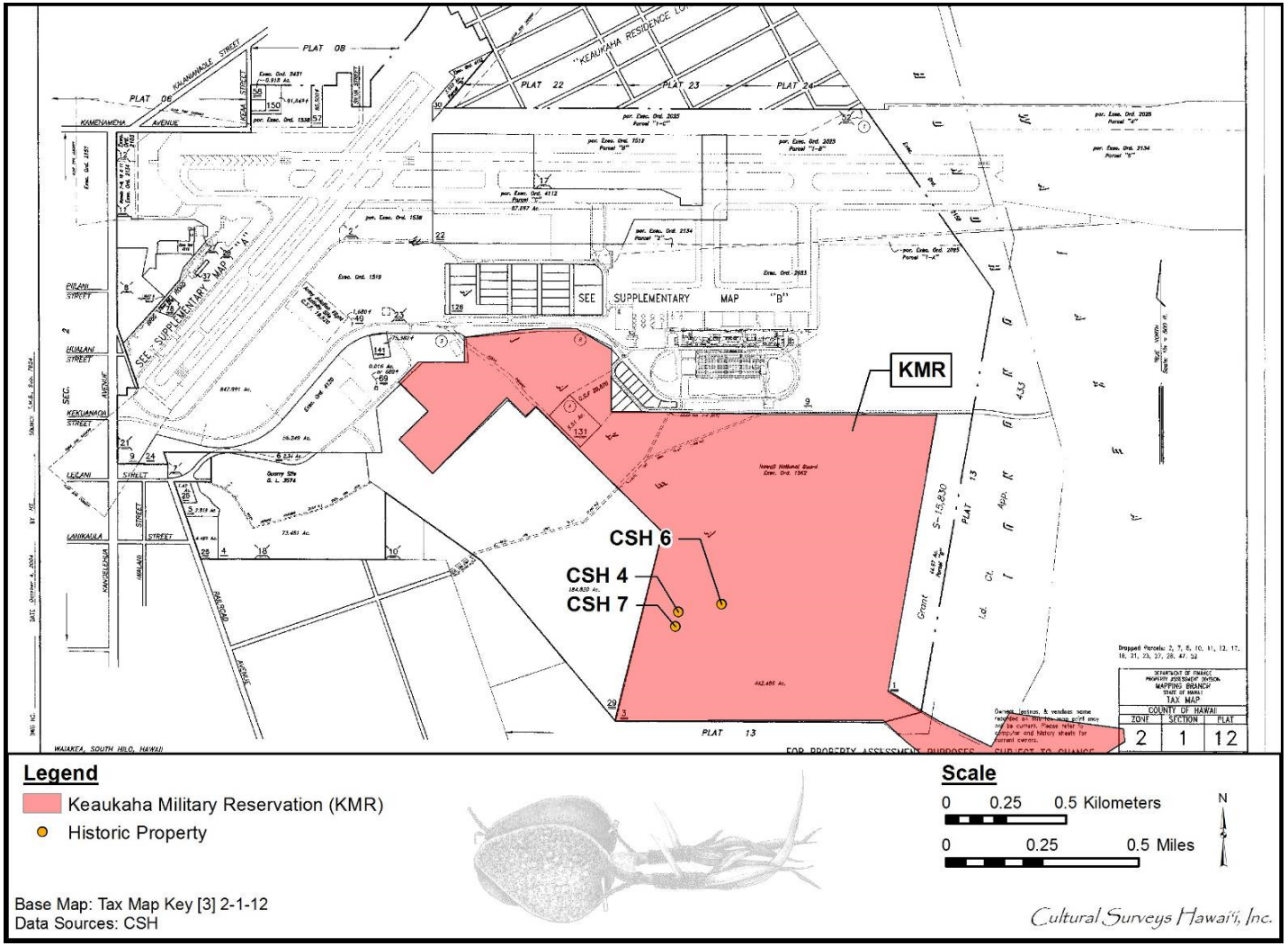

Figure 2. Tax Map Key [3] 2-1-012, showing the locations of newly-identified sites at KMR

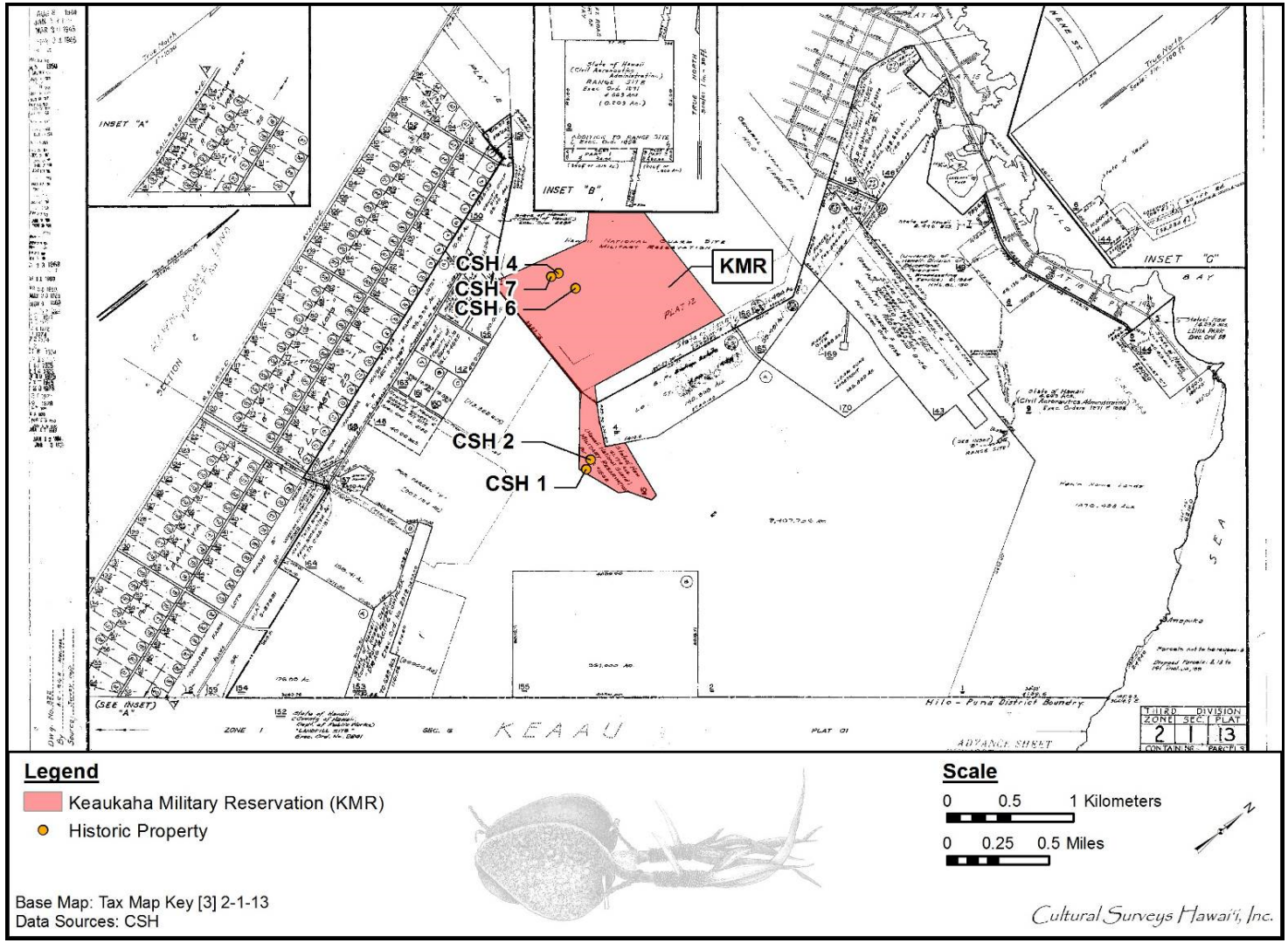

Figure 3. Tax Map Key [3] 2-1-013 showing the locations of newly-identified sites at KMR

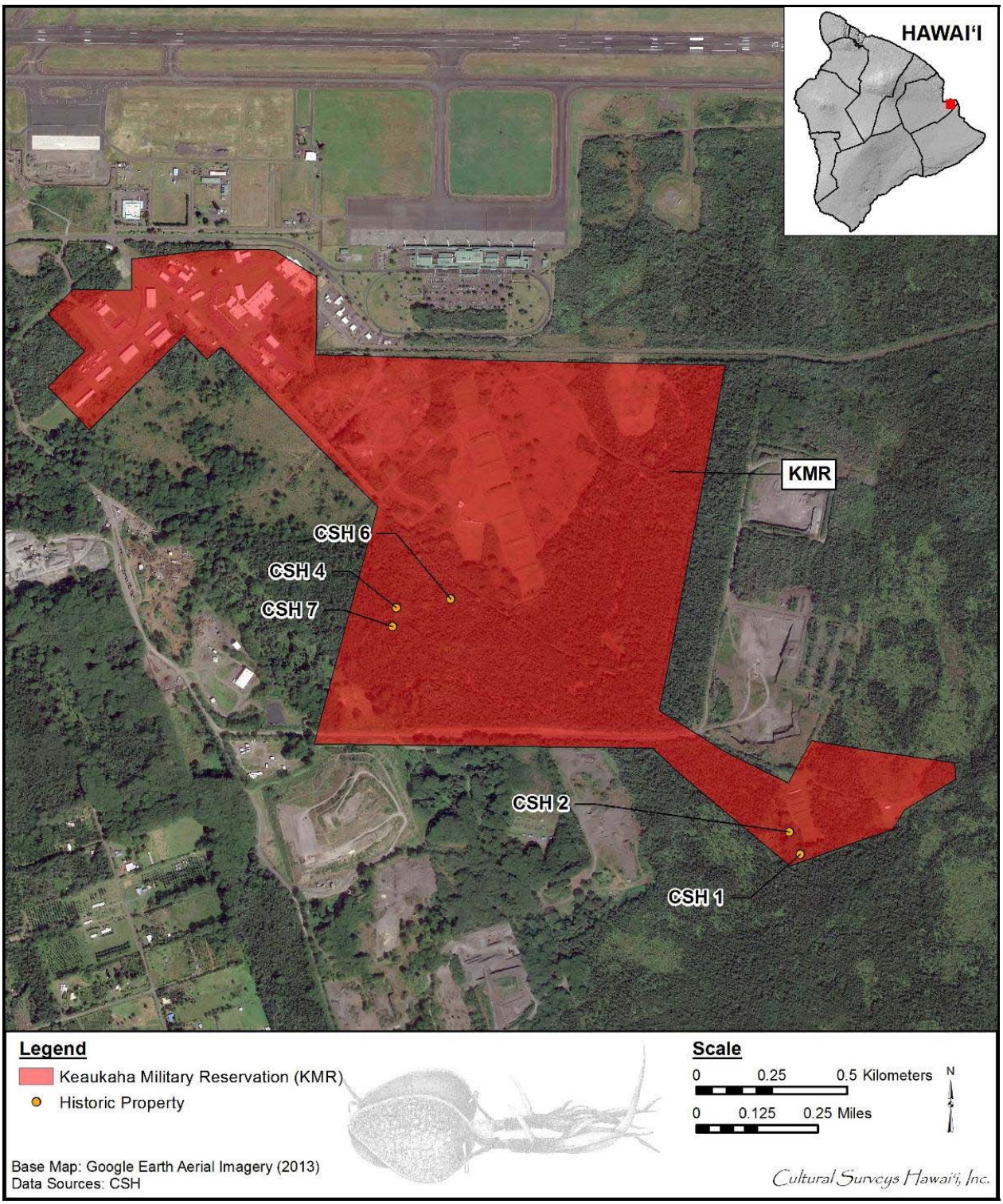

Figure 4. Aerial photograph showing the locations of the newly-identified sites at KMR (Google Earth 2013)

CSH-1
SITE TYPE: Modified Lava Tube
NUMBER OF FEATURES: 1
TOPOGRAPHY: Uneven pāhoehoe flow
VEGETATION: ‘Ōhi‘a (Metrodideros macropus), hala (Pandanus odoratissimus), uluhe (Dicranopteris linearis), bing-a-bing (Macaranga mappa), maile pilau (Paederia scandens), autograph tree (Clusia rosea), guava (Psidium spp.), mango (Mangifera indica), octopus tree (Brassaia actinophylla), Kosters curse (Clidemia hirta)
ELEVATION: 63 ft amsl
CONDITION: Good
INTEGRITY: Possible disturbance related to modern usage
PROBABLE AGE: Late pre-Contact to early Historic
FUNCTIONAL INTEPRETATION: Temporary Habitation
DIMENSIONS: 12.0 m (E/W) by 4.0 m (N/S) by 0.4-2.0 m high

DESCRIPTION: CSH-1 consists of a modified lava tube located approximately 50 m south of KD #2 range (see Figure 1, Figure 4 and Figure 5) in an area of uneven pāhoehoe flow and dense vegetation.

The interior of CSH-1 measures 12.0 m long (NW/SE) by 4.0 m wide (SW/NE) with ceiling heights ranging from 0.4 to 2.0 m. The opening measures approximately 4.0 m wide with heights of 0.2 m to 1.5 m. The floor of the lava tube is level with some very thin soil deposits. A substantial natural outcropping is present near the center of the tube, which is relatively devoid of rubble and roof fall. A triangular-shaped stone terrace is situated just inside of the northern end of the opening, and was likely constructed to facilitate entry into the tube. The terrace is constructed of stacked medium- to large-sized basalt cobbles with a fairly level surface. It measures approximately 2.0 m long (E/W) by 2.0 m wide (N/S) with heights from 0.20-0.50 m. Numerous modern beer bottles were located hidden in the western portion of SIHP # CSH-1. Charcoal, marine shell midden, faunal bone and a water worn basalt cobble were also discovered within the lava tube.

Based on the relative proximity to the Puna Trail and the presence of marine shell midden, this site was likely used in late pre-Contact and/or early Historic times. The modern beer bottles indicate that it has been used in modern times as well. Considering the apparent continues usage of the tube, it cannot be said with certainty when the terrace feature was constructed. Given the nature of the modifications within the tube, CSH-01 was likely used as a recurrent shelter. Excavation potential is poor given the lack of sedimentary deposit and the relatively low height of the terrace feature. This site is in good condition. Despite indications of modern usage this site retains integrity of location, design, setting, workmanship, and feeling.

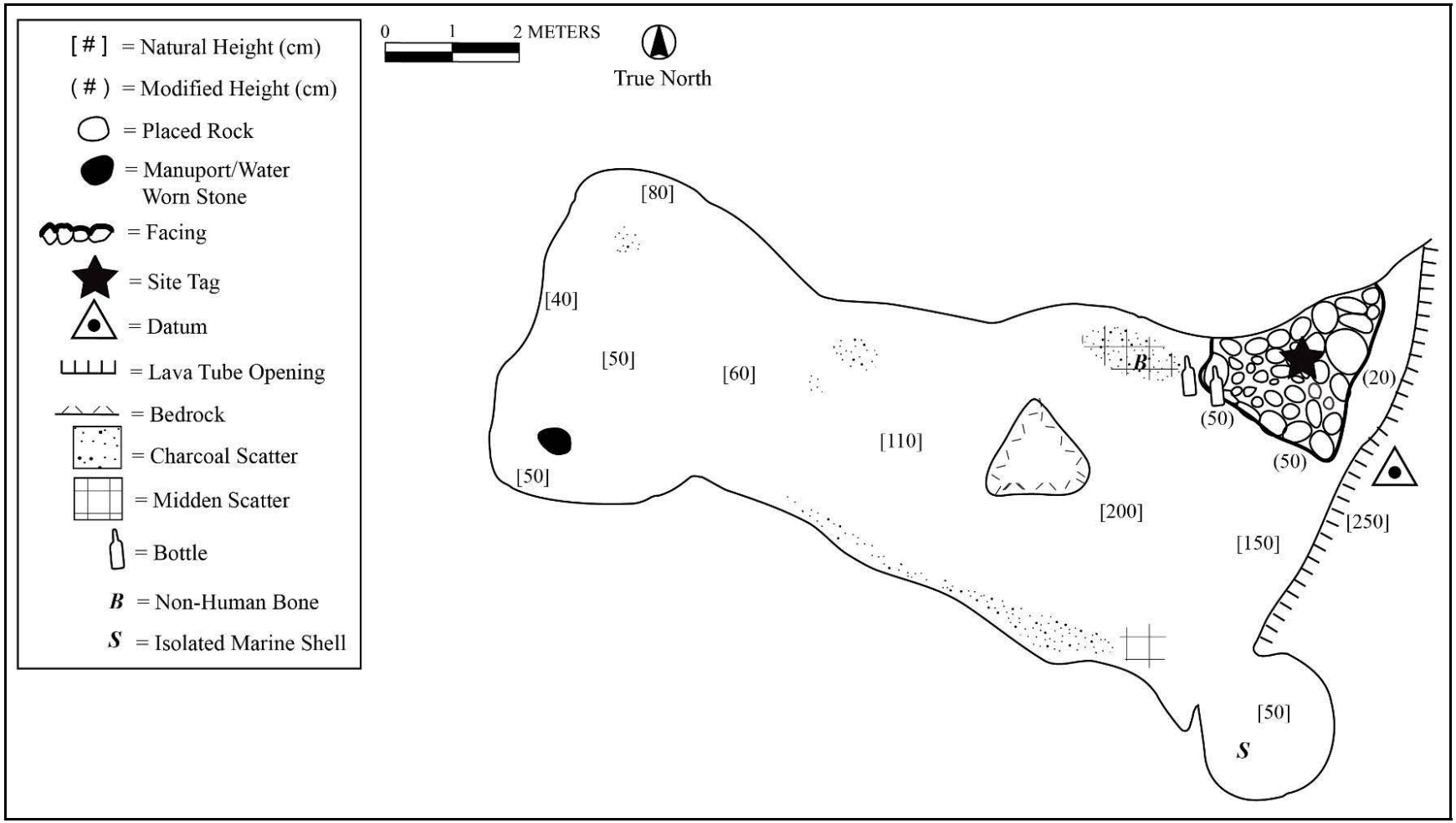

Figure 5. Plan view map of CSH-1

CSH-2
SITE TYPE: Complex
NUMBER OF FEATURES: 3 (A-C)
TOPOGRAPHY: Uneven pāhoehoe flow
VEGETATION: ‘Ōhi‘a, hala, bing-a-bing, maile pilau, autograph tree, uluhe, waiwī or yellow strawberry guava (Psidium cattleianum), mango, octopus tree, Kosters curse
ELEVATION: 65 ft amsl
CONDITION: Good
INTEGRITY: Possible disturbance related to dense vegetation and Military training
PROBABLE AGE: Late pre-Contact to early Historic
FUNCTIONAL INTEPRETATION: Temporary Habitation
DIMENSIONS: 40.0 m (N/S) by 25.0 m (E/W) by 1.0-2.0 m high (above surrounding ground surface)

DESCRIPTION: CSH-2 is a complex situated on a large, 1,000-sq-ft rock outcrop with a wide, fairly level surface (see Figure 1, Figure 4 and Figure 6). The site comprises three features: Feature A consists of modifications to the outcrop surface; Features B and C are culturally modified lava tubes located within the outcrop. A number of additional lava tubes are present within the outcrop; these were fully investigated and to be culturally sterile. The site is located approximately 10 m west of a berm that is part of KD#2 Range. The site is situated on uneven pāhoehoe flow supporting predominantly hala and strawberry guava, though numerous other plant species were observed in the vicinity.

Feature A is a modified outcrop (see Figure 6). The overall outcrop is approximately 40 m long (N/S) by 25 m wide (E/W) and rises approximately 1.0 m to 2.0 m above the surrounding landscape. Portions of Feature A are depressed, with depths of 0.5 to 1.0 m below the surrounding outcrop surfaces. The surface is heavily vegetated and a scatter of small cobbles and a few boulders is present. Two modifications were observed upon the outcrop surface. A low-lying rock wall is situated along the eastern edge of the outcrop. It is oriented (N/S) and defines the interior edge of a 1.0 to 2.0 m-wide, naturally level area that is slightly lower than the main outcrop area and may represent a terrace of some sort. The wall is constructed of loosely-stacked cobbles and boulders and measures approximately 10 m long (N/S) by 1.0 m wide (E/W) with a maximum height of 0.75 m. Near the southern edge of the outcrop, an alignment of basalt cobbles and boulders has been placed along the edge of a shallow depression. This curved alignment measures approximately 3.0 m long (NE/SW) by 0.50 m wide and exhibits a maximum height of 0.50 m.

Feature B is a lava tube with an opening along the northeastern edge of the outcrop (see Figure 6 and Figure 7). The opening measures approximately 2.5 m wide and 0.80 m high. The interior of Feature B generally measures 4.0 m wide (SE/NW) with ceiling heights of 0.4 to 1.7 m. The tube extends 7.0 m (NE/SW), at which point it becomes impassible; the portion of the tube beyond was visually inspected as best as possible and no cultural materials or deposits were observed. Just inside the entrance is an area roughly paved with basalt cobbles measuring 2.0 m long (SE/NW) by 1.6 m wide (SW/NE). Some boulders have been placed along the peripheries of the paved area, and may serve to support it on the interior edge as the floor of the tube beyond drops approximately 0.5 m. The floor in this back portion of the tube is fairly level. Charcoal

scatter, fragments of non-human mammal bone and a water worn basalt cobble that may have been polished were observed in this portion of the tube. Natural ceiling collapse is present along the back of the chamber.

Feature C is a lava tube with openings along the southern edge of the outcrop (see Figure 6 and Figure 8). Two small openings set approximately 3.0 m apart provide access to the tube. The western entrance measures approximately 0.50 m wide and 1.50 m high. The eastern entrance is larger and could be considered the "main" entrance; it measures 0.75 m wide and 1.0 m high. The interior extent of the lava tube is roughly T-shaped, with the openings set at either end of the upper portion. This portion of the tube between the openings is of roughly paved basalt cobbles, and measures up to 1.5 m wide with modified ceiling heights of 0.36 m to 0.97 m (above the pavement). The pavement at the entry area likely facilitated access into the tube. The "lower" portion of the tube beyond the pavement is approximately 3.5 m long (N/S) and up to 1.5 m wide (E/W), with natural ceiling heights of 0.50 to 0.98 m. The floor here is fairly level, and visibility is enhanced by natural skylights. A scattering of cobbles were observed, but no additional anthropogenic features or cultural deposits were noted.

Given the close proximity of CSH-2 to the Puna Trail and the level of modification observed at the site, it likely functioned as a late pre-Contact and/or historic temporary habitation. The presence of constructed features on the outcrop surface indicates that activities beyond simple shelter were undertaken at the site; these modifications could represent activity or storage areas. The paved entry areas at Feature B and C suggest a recurrent usage. Given its proximity to components of the KD #2 Range it is very possible that CSH-2 has been impacted by Military training; it is also possible that the lava tubes have been used for shelter by Military personnel. This site is assessed as not exhibiting excavation potential. The tube floor sedimentary deposit at Feature B is very thin, and none of the constructed features at the site are of substantial enough construction to contain burials or other cultural deposits. Overall the site is in good condition. Despite possible disturbance related to dense vegetation and Military training/usage, it retains integrity of location, design, setting, workmanship, and feeling.

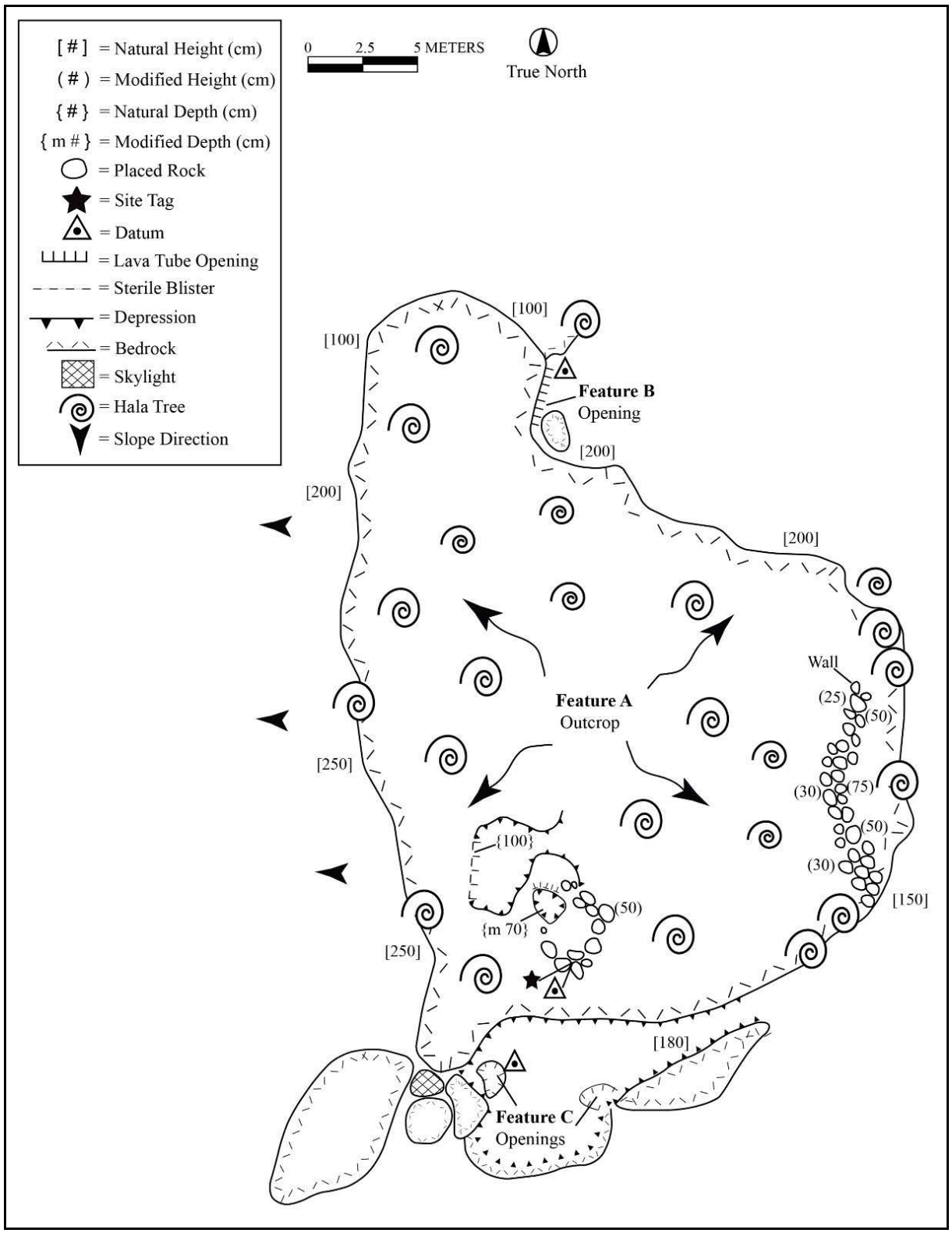

Figure 6. Plan view map of CSH-2

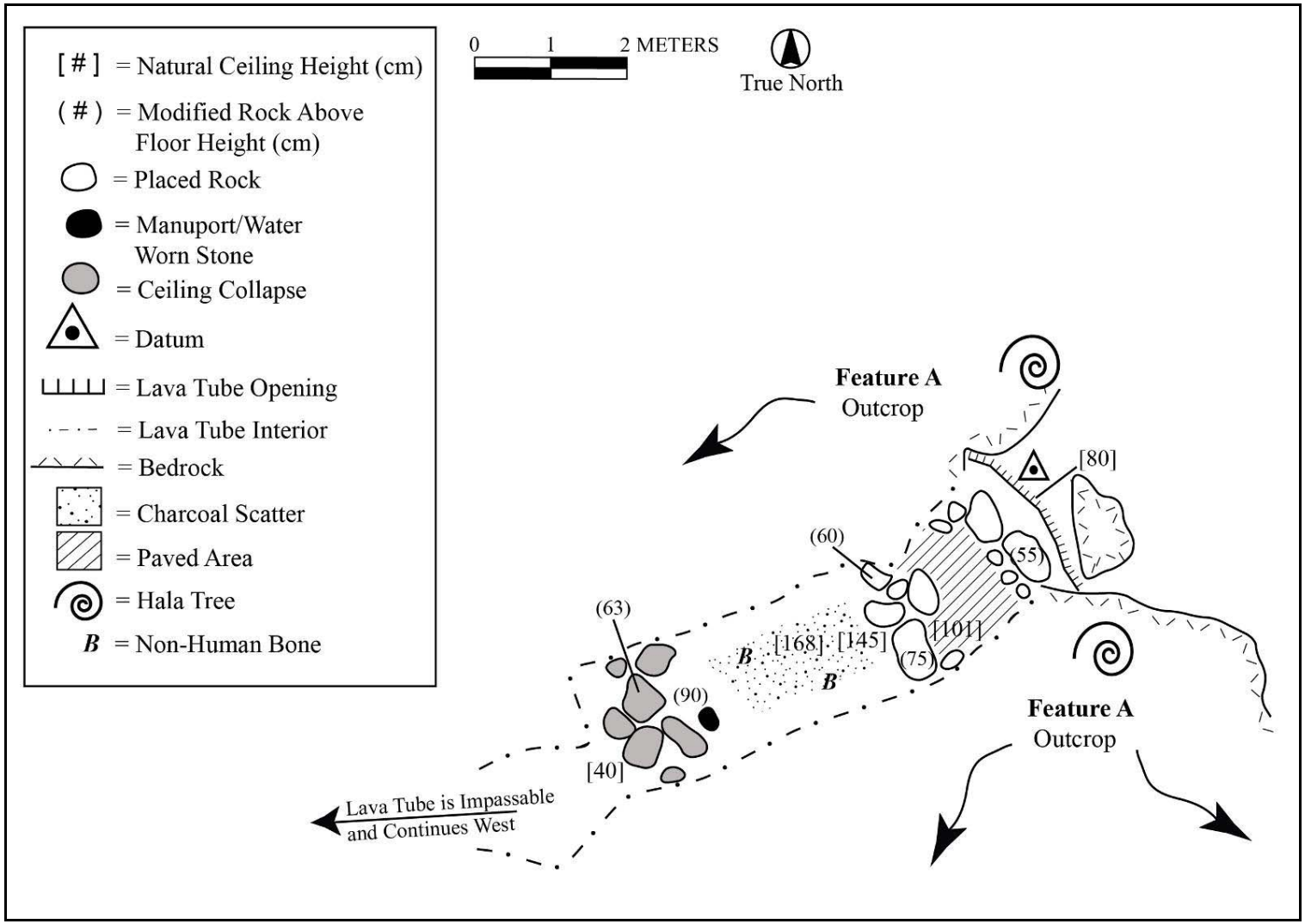

Figure 7. Detail plan view map of CSH-2 Feature B

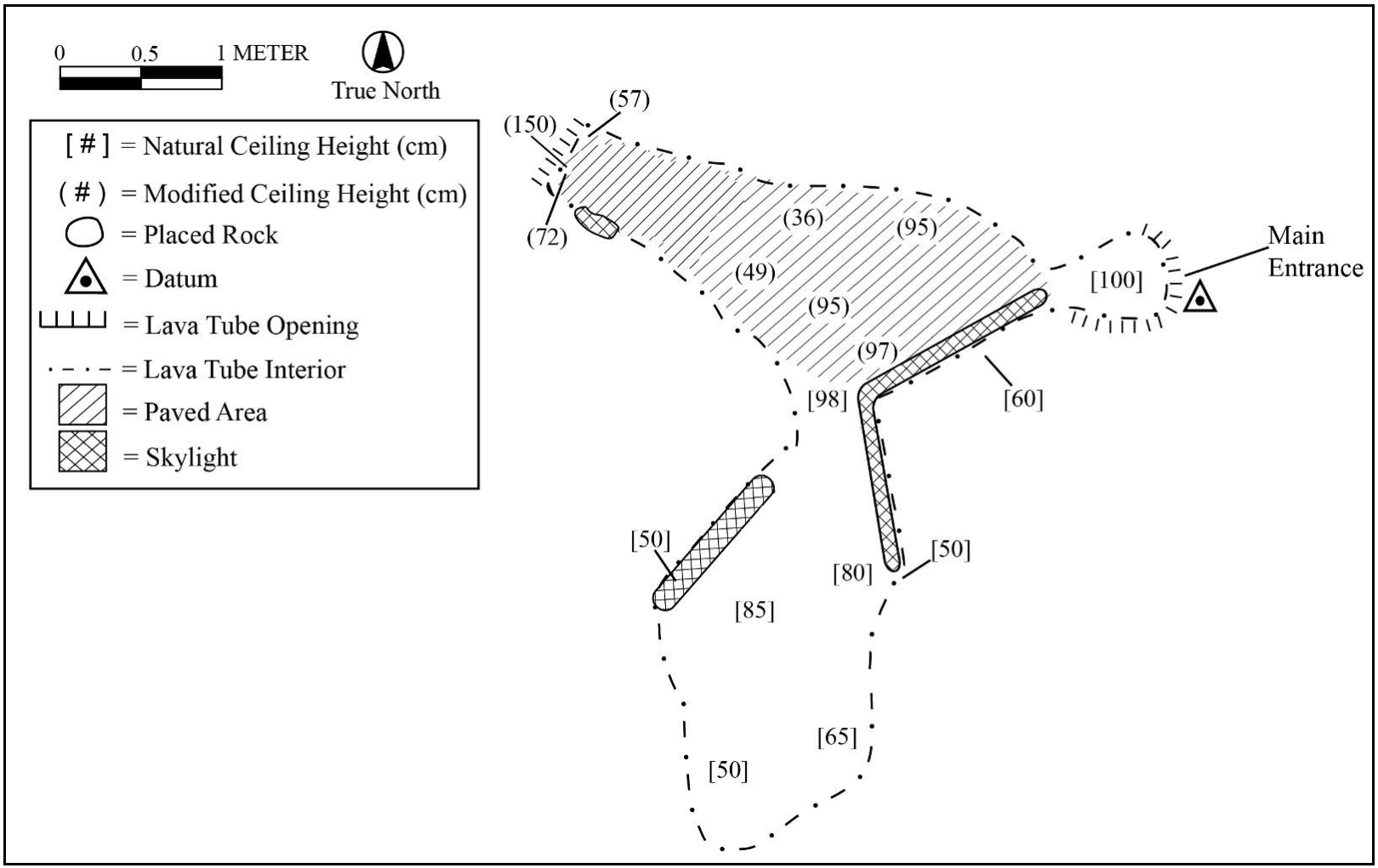

Figure 8. Detail plan view map of CSH-2 Feature C

CSH-4

SITE TYPE: Complex

NUMBER OF FEATURES: 5 (A-E)

TOPOGRAPHY: Undulating

VEGETATION: ‘Ōhi‘a, hala, uluhe, bing-a-bing, maile pilau, guava, mango, octopus tree, Kosters curse

ELEVATION: 75 ft amsl

CONDITION: Fair to good

INTEGRITY: Possible disturbance related to dense vegetation

PROBABLE AGE: Late Pre-Contact/Early Historic

FUNCTIONAL INTEPRETATION: Habitation, possible agriculture

DIMENSIONS: 44.0 m (N/S) by 30.0 m (E/W)

DESCRIPTION: CSH-4 is a complex located in Area A approximately 280 m south of the Puna Trail (see Figure 1, Figure 4 and Figure 9). The site, which overall measures approximately 44.0 m (N/S) by 30.0 m (E/W), is comprised of five features: Feature A is a cleared, level area; Feature B is a linear mound; Feature C is a small enclosure; and Feature D is a stone-lined pit. The topography in this densely forested area is undulating soil with scattered basalt rock and numerous depressions and outcrops. Numerous artifacts were observed around the component features and collected for laboratory analysis.

Feature A is a roughly rectangular-shaped cleared, level area situated between two natural depressions (see Figure 9). The feature is indicated as an area devoid of vegetation and rocks, and measures approximately 8.0 m (N/S) by 5.5 m (E/W). Areas of possible pavement were observed within the feature, but are somewhat ephemeral given apparent sedimentation and a cover of leaf litter. A retaining wall has been constructed at the northern edge of the level area, along its interface with the natural depression to the north. The wall consists of basalt cobbles and boulders stacked three to four courses high inside the depression. The wall measures approximately 1.8 m (NW/SE) by 0.5 m (NE/SW) with a maximum height of 0.5 m. Numerous artifacts were found scattered on the surface of Feature A, including three large, modified waterworn basalt cobbles (Isolated Find [IF] #2, #3 and #4), four water worn basalt cobble manuports, a blob-top bottle fragment and a salt-glazed pottery shard. Overall, Feature A is in fair condition. It may have served as a site for some sort of structure. No post holes were observed.

Feature B is a somewhat deflated, linear rock mound located approximately 4.5 m northeast of the retaining wall at Feature A (see Figure 9). Feature B is situated near the center of a shallow natural depression that measures approximately 4.5 m (N/S) by 3.5 m (E/W) and up to 0.4 m deep. The mound is constructed of loosely piled small to large cobbles, and measures 2.3 m

(N/S) by 1.2 m (E/W) with a maximum height of 0.3 m. Feature B is in fair condition. A horseshoe, possibly from a mule, was observed on the surface of the mound.

Feature C is a rectangular enclosure (see Figure 9 and Figure 10). The feature is located approximately 8.5 m northwest of Feature B inside of a natural depression which measures approximately 10.0 m (N/S) by 5.0 m (E/W) and up to 0.5 m deep. The enclosure is constructed of two to four courses of neatly stacked and faced basalt cobbles and boulders. It measures 3.8 m (N/S) by 2.3 m (E/W) with a maximum interior height of 1.2 m and exterior height of 1.0 m. The fairly level interior contains a scatter of small to medium cobbles. The walls are generally about 0.50 m thick. Overall, this feature is in fair condition. No artifacts or cultural materials were observed in the immediate vicinity.

Feature D is a circular, stone-lined pit situated within a natural depression approximately 8.5 m west of Feature C (see Figure 9). The natural depression measures approximately 5.0 m (N/S) by 3.0 m (E/W) with a depth of 0.5 m. The pit utilizes a natural crevice or more depressed portion of the overall depression. The bottom and sides of this natural feature have been lined with cobbles. The construction is roughly flush with the surrounding surface of the depression. The pit measures approximately 2.1 m (N/S) by 2.0 m wide (E/W) with a maximum constructed depth of 0.7 m. Feature D is in good condition. No artifacts or cultural materials were observed in the immediate vicinity.

Feature E is a small stone mound located approximately 9.0 m northeast of Feature C within the northern portion of a linear natural depression (see Figure 9). The depression measures 8.0 m (N/S) by 2.0 m (E/W) with a maximum depth of 0.6 m. The mound is constructed of loosely stacked basalt cobbles and boulders, measuring 1.0 m (N/S) by 0.9 m (E/W) with a maximum height of 0.5 m. Feature E is in good condition. No artifacts or cultural materials were observed in the immediate vicinity.

This complex of features likely represents a late pre-Contact to early Historic habitation site with possible related agriculture. The assemblage of artifacts documented at the site indicates a historic occupation, but may be the result of continued usage from pre-Contact times. Feature A may represent a former house site at which the structure has been removed. The function of Feature B is indeterminate; it may represent a planting or clearing mound. It appears too low and informally constructed to contain a burial. The Feature C enclosure is too small to have served as a habitation area; it may have been used to contain small animals or foul or may have been used for storage. Feature D is likely a privy or a storage feature; there is no evidence that it represents a well. Feature E is interpreted as a clearing or planting mound. The presence of ancillary features around a presumed occupation site (Feature A) would suggest a more permanent or at least heavily-used temporary habitation function.

CSH-4 is considered to have good excavation potential. While the soil substrate at Features A or C is likely not very deep, its excavation could yield subsurface deposits that would provide insight into the age and function of these features. Excavation or dismantling of Features B and/or E could yield similar results. Despite potential disturbance inflicted by surrounding dense vegetation, the site retains integrity of location, design, setting, workmanship, and feeling.

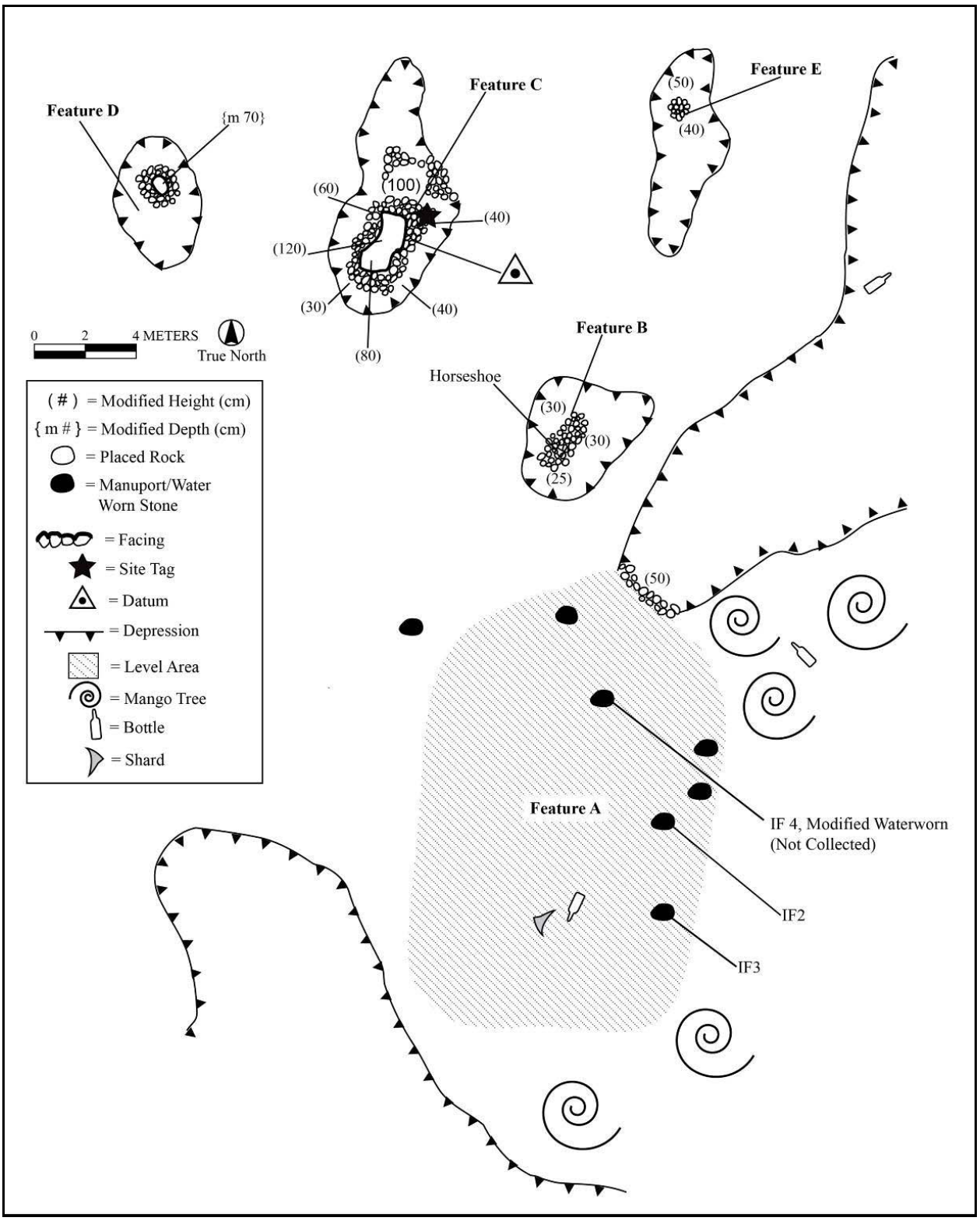

Figure 9. Plan view map of CSH-4

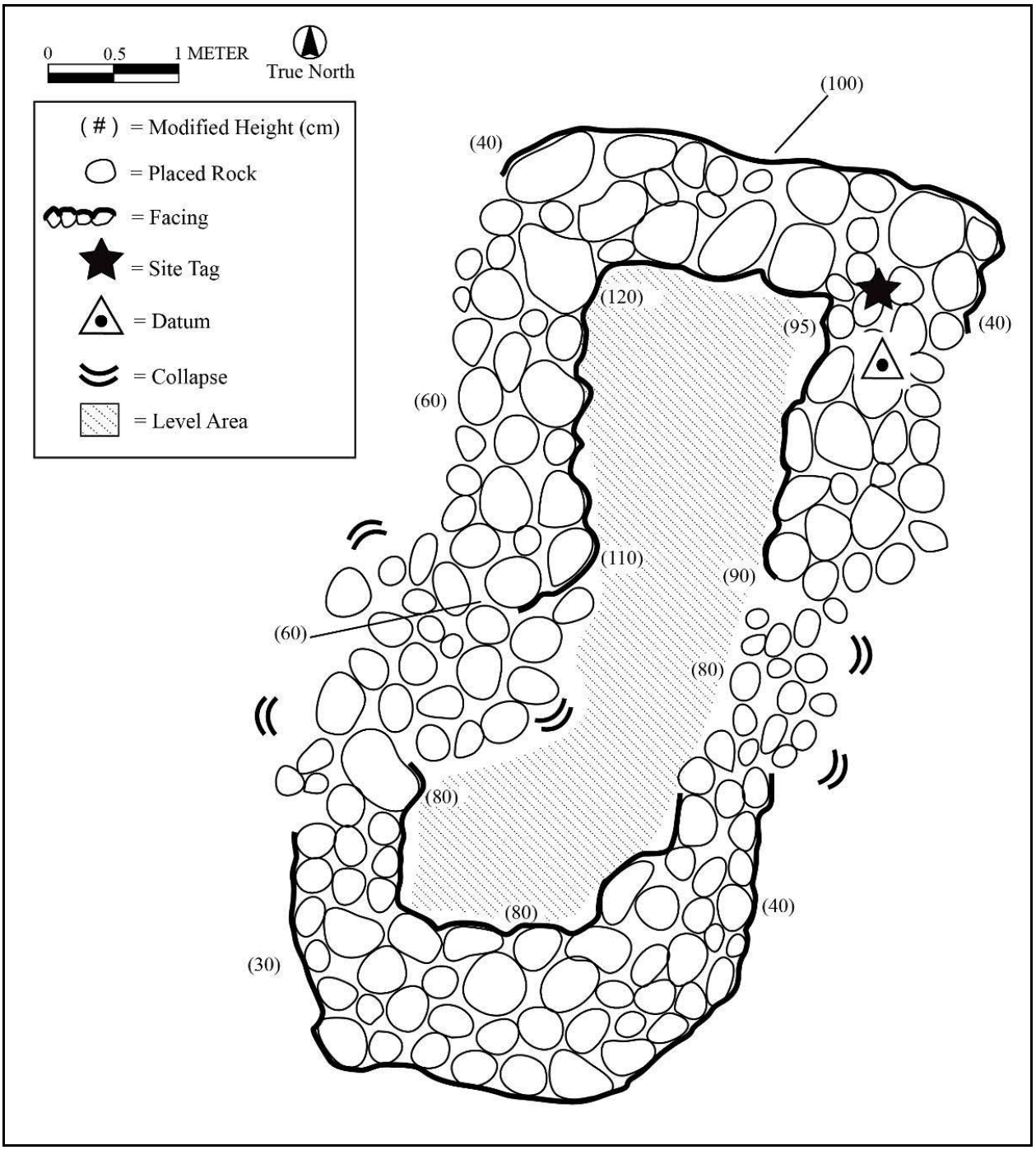

Figure 10. Detail plan view map of CSH-4 Feature C

CSH-6

SITE TYPE: Complex

NUMBER OF FEATURES: 2

TOPOGRAPHY: Undulating

VEGETATION: Hala, ‘ōhi‘a, kī, uluhe, waiawī, bing-a-bing, maile pilau, guava, mango, octopus tree, Kosters curse

ELEVATION: 73 ft amsl

CONDITION: Good

INTEGRITY: Disturbance from surrounding vegetation and vegetation clearing activities

PROBABLE AGE: Late Pre-Contact/Early Historic

FUNCTIONAL INTEPRETATION: Indeterminate

DIMENSIONS: 10.0 m (E/W) by 3.0 m (N/S)

DESCRIPTION: CSH-6 is complex situated 75.0 m south of the Puna Trail in an area cleared of its understory by KMR Environmental Department (see Figure 1, Figure 4 and Figure 12). It is comprised of two features: Feature A, a rock wall, and Feature B, a constructed pit. The topography is undulating soil with a continuous scatter of basalt cobbles and boulders and numerous outcrops and depressions. A bulldozer road was observed approximately 5.0 m to the east.

Feature A is a linear rock wall (see Figure 12). The wall is constructed of basalt boulders and cobbles neatly stacked and faced three to four courses high. It is situated on a natural outcrop and measures approximately 5.0 m (E/W) by 0.70 m (N/S) with a maximum height of 0.7 m and thickness of 0.7 m. The wall segment abuts a hala tree to the east and a large ‘ōhi‘a tree to the west. While a scattering of rocks is present around these trees on the outcropping, no evidence of a continuation of the wall was observed in the surrounding areas.

Feature B is constructed pit located 4.5 m east of Feature A (see Figure 12). The pit utilizes an oblong natural depression or crevice. The natural feature has been lined with three courses of stacked basalt cobbles. It measures approximately 0.5 m (E/W) by 0.3 m (N/S) with a maximum exterior height of 0.3 m and 0.4 m maximum constructed depth.

No artifacts or cultural deposits were observed in the vicinity. Given the proximity of CSH-6 to the Puna Trail and its construction style, it likely dates to the late pre-Contact or early Historic period. Feature A may have delineated a planting, activity or occupation area. Feature B may have functioned as a related storage feature, or as a privy or planting area. Excavation potential is assessed as poor, given the location of the wall on a rocky outcropping and a lack of sedimentation within the pit feature. Despite potential disturbance inflicted by surrounding dense vegetation and vegetation clearing activities, the site is in overall good condition and retains integrity of location, design, setting, workmanship, and feeling.

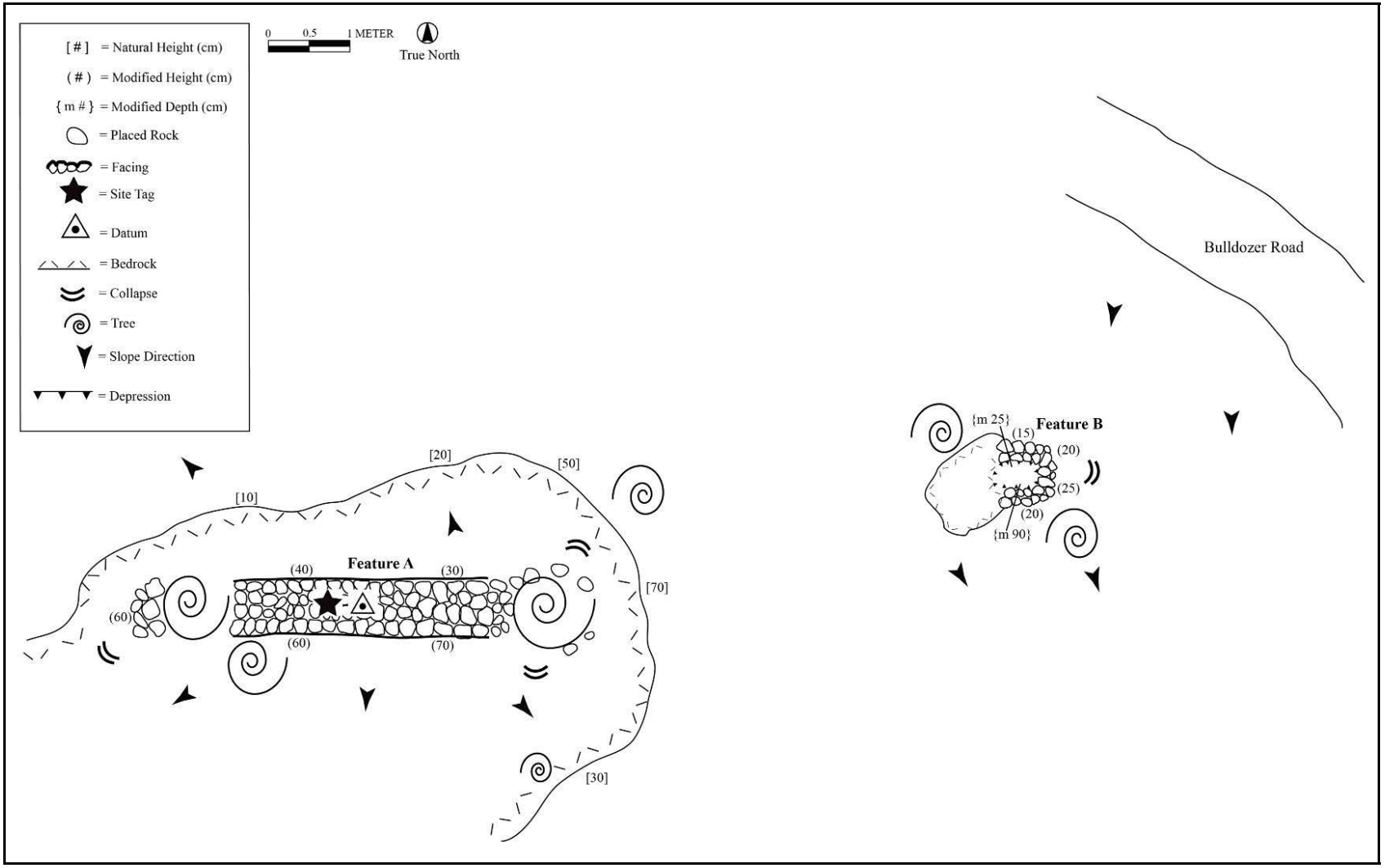

Figure 12 [sic]. Plan view map of CSH-6

CSH-7

SITE TYPE: Trail

NUMBER OF FEATURES: 1

TOPOGRAPHY: Undulating

VEGETATION: Hala, ‘ōhi‘a, kī, uluhe, waiawī, bing-a-bing, maile pilau, guava, mango, octopus tree, Kosters curse

ELEVATION: 76 ft amsl

CONDITION: Fair

INTEGRITY: Disturbance from surrounding vegetation

PROBABLE AGE: Early Historic

FUNCTIONAL INTEPRETATION: Transportation

DIMENSIONS: 15.0 m (NE/SW) by 1.0-1.5 m (NW/SE) by up to 0.4 m high (along curbstone alignments)

DESCRIPTION: CSH-7 is a trail remnant situated approximately 60 m south of CSH-4 in Area A at KMR (see Figure 1, Figure 4 and Figure 15). The trail is located in a densely-vegetated area of undulating soil with a continuous scatter of basalt cobbles and boulders and numerous outcrops and depressions.

Both edges of the trail are lined with alignments of basalt cobbles, making this a Class B curbstone trail (Apple 1965). The center of this trail is slightly depressed, probably due to compression of its surface from regular use. Numerous trees are present within and surrounding the trail alignment. The extant portion of the trail is 15 m long (NE/SW). Of this total length, 10 m is 1.5 m wide (SE/NW); a 5.0 m section at the western end narrows to 1.0 m wide. The curbstone alignments measure from 0.2 to 0.4 m high.

No artifacts or cultural deposits were observed in the vicinity. CSH-7 functioned as an historic transportation route, and was likely constructed in the 1830s or 1840s. Given its close proximity and age, the trail may be associated with CSH-4. It is also possible that this trail remnant may be in fact be an isolated remnant segment of the previously-documented SIHP #50-10-35-23273 trail; it is trends in generally the same direction, is in the vicinity, and exhibits similar construction. These potential associations can only be inferred, as the trail becomes unrecognizable beyond its documented limits. It likely continued in either direction as a simple, unmarked path over the ridges of outcrops that are common in this area. The trail is in fair condition. Despite disturbance from surrounding vegetation, it retains integrity of location, design, setting, workmanship, and feeling.

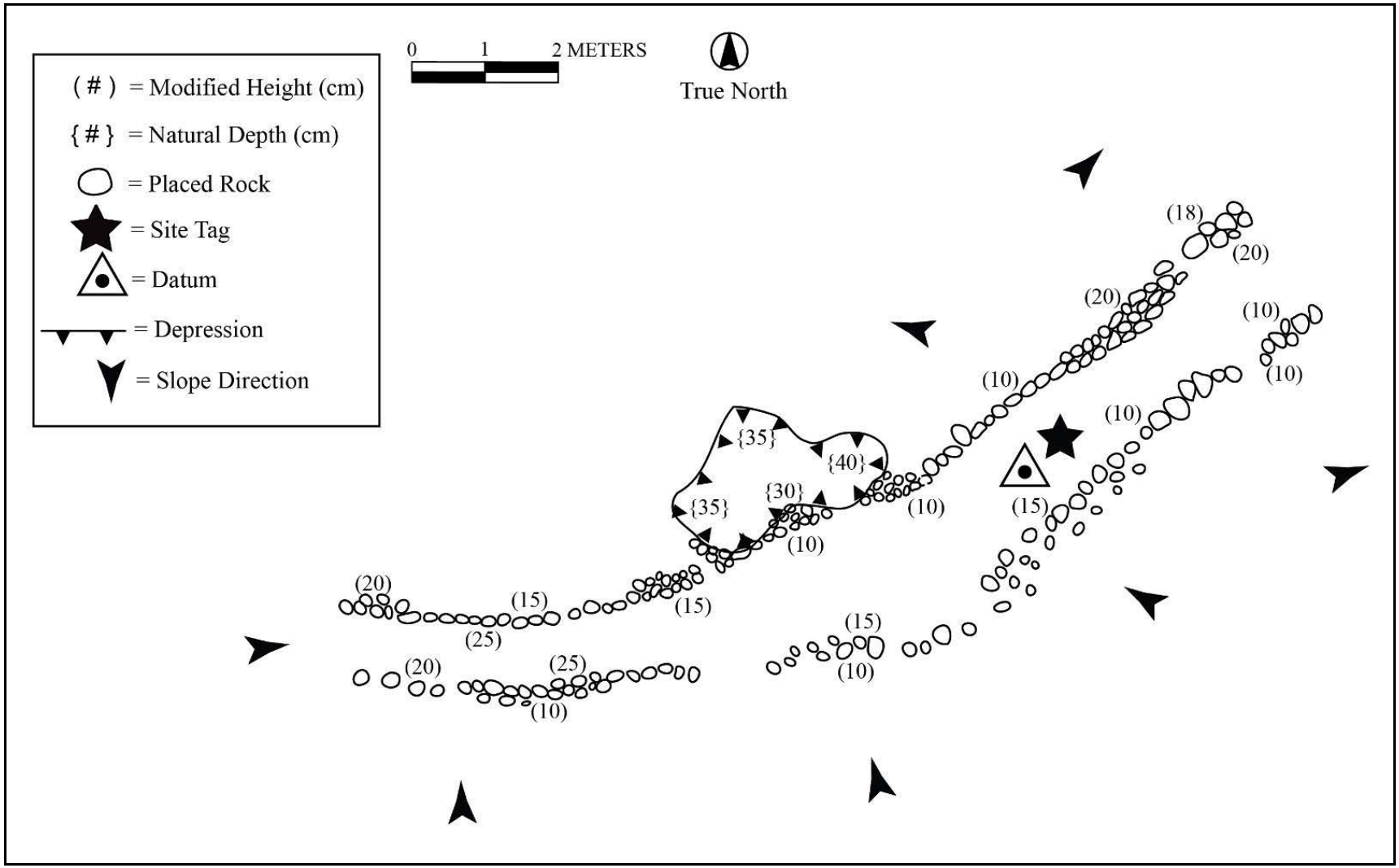

Figure 15 [sic]. Plan view map of CSH-7

SIHP Site	Temp ID	Consultant	District	Ahupua`a	TMK (x) x-x-xx:xx	Date Assigned	Formal Site Type	Site Function	USGS Quad Name/No.	Number of Features	Shape	UTM Datum/Zone	Easting	Northing
50-10-99-18869	CSH-003 (Newly-identified segment)	Hudson (1932), McEldowney (1979), CSH (2000 and 2013)	South Hilo	Waiākea	TMK (3) 2-1-013:10 (Newly-identified segment)	8/28/2013 (newly-identified section)	Trail	Transportation	Hilo (1995) (Portion in KMR)	1	linear	NAD 83/Zone 5N	287295	2179484
50-10-35-21771	(New features initially grouped under CSH 005)	Tolleson and Godby 2001; CSH 2013	South Hilo	Waiākea	TMK 2-1-12:3	New coordinates assigned 9/6/2013	Complex	Historic habitation/ work areas/ agriculture/ indeterminate	Hilo (1995)	Total 12: 4 features found by Tolleson and Godby 2001 (originally numbered 1 to 4, CSH has renamed them as Features A to D); CSH 2013 documented 8 new additional features (E to L)	irregular	NAD 83/Zone 5N	Feature A: 0286769; Feature B: 0286749; Feature C: 0286753; Feature D: 0286757; Feature H: 0286784	Feature A: 2180019; Feature B: 2179976; Feature C:2179979; Feature D: 2179977; Feature H: 2180062
	CSH-001	CSH	South Hilo	Waiākea	TMK (3) 2-1-013:10	9/24/2013	Lava Tube	Temporary Habitation	Hilo (1995)	1	linear	NAD 83/Zone 5N	287333	2179237
	CSH-002	CSH	South Hilo	Waiākea	TMK (3) 2-1-013:10	8/27-28/2013	Complex	Temporary Habitation, Activity Area, Shelter, Possible Agriculture	Hilo (1995)	3	irregular	NAD 83/Zone 5N	Feature A: 0287295. Feature B: 0287288. Feature C: 0287295.	Feature A: 2179312. Feature B: 2179326. Feature C: 2179289.
	CSH-004	CSH	South Hilo	Waiākea	TMK (3) 2-1-012:3	9/6/2013	Complex	Temporary Habitation	Hilo (1995)	5	irregular	NAD 83/Zone 5N	285993	2180055
	CSH-006	CSH	South Hilo	Waiākea	TMK (3) 2-1-012:3	9/9/2013	Complex	Indeterminate	Hilo (1995)	2	irregular	NAD 83/Zone 5N	286171	2180085
	CSH-007	CSH	South Hilo	Waiākea	TMK (3) 2-1-012:3	9/17/2013	Trail	Transportation	Hilo (1995)	1	linear	NAD 83/Zone 5N	285977	2179993

Sarah Wilkinson

From: Sean.P.Naleimaile@hawaii.gov
Sent: Thursday, February 06, 2014 10:16 AM
To: Sarah Wilkinson
Subject: Re: Site Number Request

Here you go...

50-10-35-30038

30038	CSH-3	CSH	South Hilo	Waiakea	TMK (3) 2-1-013:10	8/28/2013 Tr

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Sean P. Naleimaile
Hawai'i Island Archaeologist
State Historic Preservation Division
(808)933-7651

State Historic Preservation Division

From: "Sarah Wilkinson" <swilkinson@culturalsurveys.com>
To: <sean.p.naleimaile@hawaii.gov>,
Cc: <Theresa.K.Donham@hawaii.gov>
Date: 02/05/2014 03:37 PM
Subject: Site Number Request

Aloha e Sean,
We've decided that we need another site number for a feature found during our AIS at KMR in Hilo. Please see the attachments.
Thanks!!
Sarah

Sarah Wilkinson
Cultural Surveys Hawai`i, Inc.
swilkinson@culturalsurveys.com
office (808)965-6478
cell (808)756-8468
fax (808)965-6582

[attachment "SIHP Site No Request WAIAKEA 10_CSH-3.doc" deleted by Sean P Naleimaile/DLNR/StateHiUS] [attachment "Site# Request Spreadsheet - WAIAKEA 10_CSH-3 Trail.xls" deleted by Sean P Naleimaile/DLNR/StateHiUS]

1

STATE HISTORIC PRESERVATION DIVISION

PRELIMINARY SITE INFORMATION FORM
FOR REQUESTING HAWAI'I STATE INVENTORY OF HISTORIC PLACES (SIHP) NUMBERS
(revised 4/30/08)

Instructions: Submit this completed *.doc* with attached USGS map, TMK map (with site location(s) plotted on both) and site Plan(s). In addition, please fill out the *.xls* site data form and include with submission. Email the request to your island's SHPD.

Total SIHP #'s being requested: 1

Date: 2/5/14
Firm/Agency: Cultural Survey's Hawai‘i, Inc.
PI: Hallett H. Hammatt, Ph.D.

Island: Hawai‘i
Ahupua`a: Waiākea
District: South Hilo
Project Area size (acreage): A 405.3 acre portion of the overall parcels

TMK(s): (3) 2-1-012:003; (3) 2-1-013:010

Owner/Developer: The Hawai‘i Army National Guard (HIARNG)
Address: Hawaii Army National Guard, ENV Office
Kristine Macdonald, Cultural Resources Specialist
3949 Diamond Head Road
Honolulu, HI 96816-4495

Site Description: Include (attach) a description of each historic property that will be designated by a site number. Include individual descriptions of features and/or components of the site, measurements, etc., and any other relevant information gathered to date.

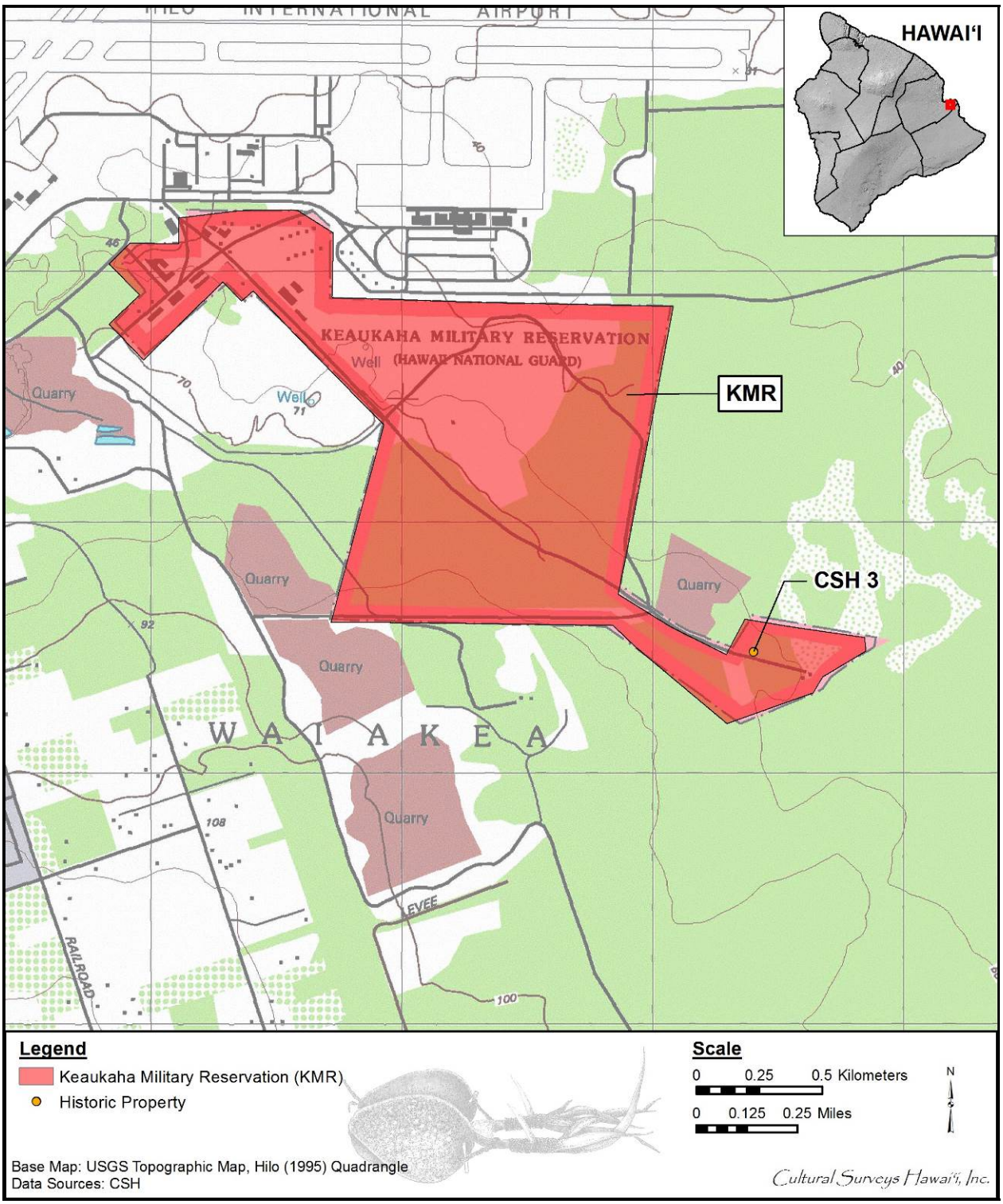

Figure 1. Portion of the 1995 U.S. Geological Survey 7.5-minute Topographic Map, Hilo Quadrangle, showing the location of CSH-3 along the Jeep trail/Puna Trail alignment (SIHP 50-10-99-18869) at KMR

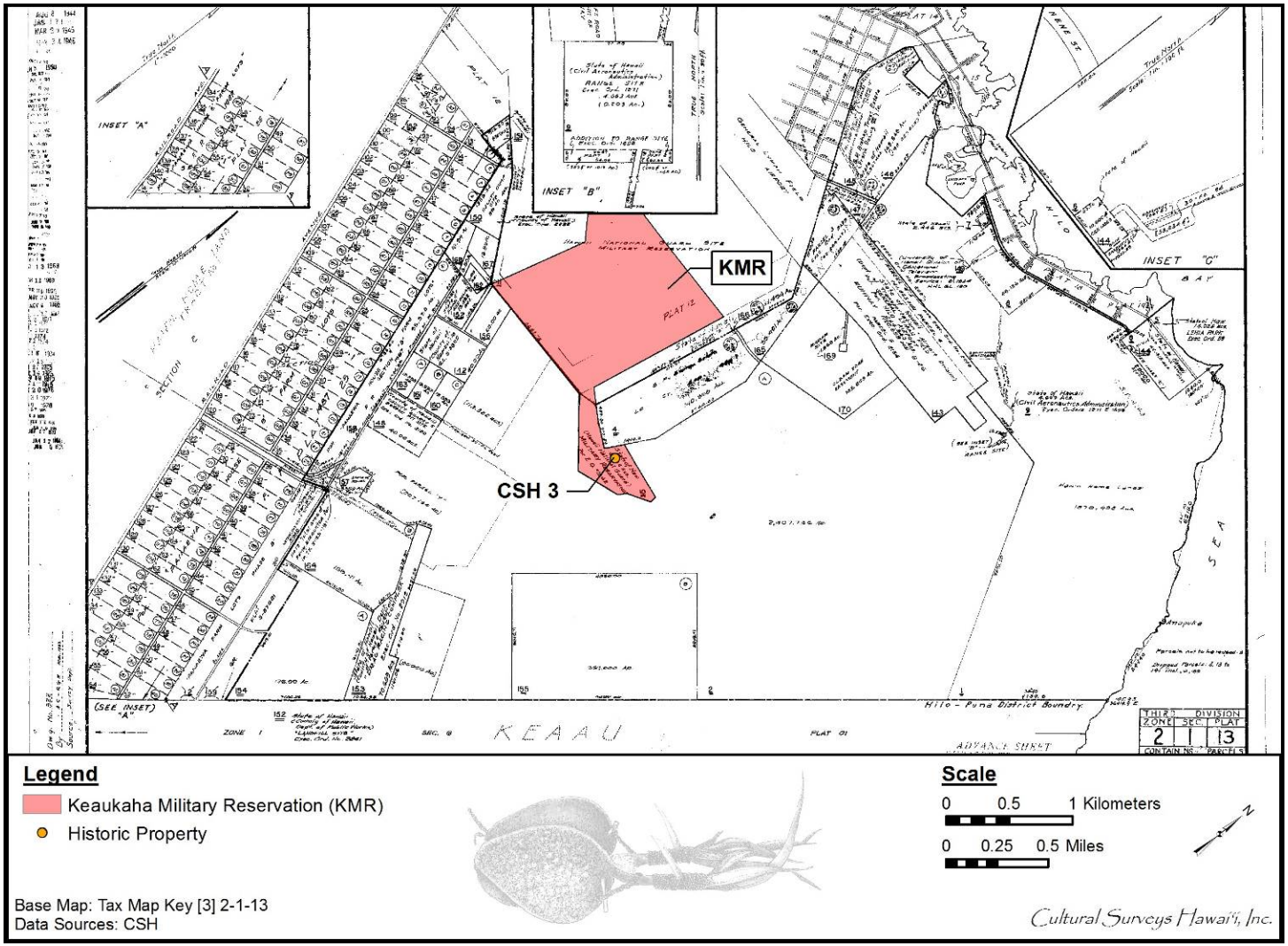

Figure 3 [sic]. Tax Map Key [3] 2-1-013 showing the location of CSH-3 at KMR

TEMPORARY SITE NUMBER: CSH-3

SITE TYPE: Trail

NUMBER OF FEATURES: 1

TOPOGRAPHY: Undulating with numerous voids

VEGETATION: ‘Ōhi‘a, hala, uluhe, bing-a-bing, maile pilau, autograph tree, guava, mango, octopus tree, Kosters curse

ELEVATION: 65 ft amsl

CONDITION: Poor to remnant

INTEGRITY: Disturbance from dense vegetation and bulldozing related to nearby Range development

PROBABLE AGE: Late nineteenth century

FUNCTIONAL INTEPRETATION: Transportation

DIMENSIONS: 22 m in length (E/W) by 2.3 m wide (N/S)

DESCRIPTION: A remnant trail segment was identified parallel to the modern Jeep trail/Puna Trial alignment (SIHP # -18869) near a disturbed area adjacent to the KD #2 Range. The east-west trending segment is situated approximately 15.0 m north of the Jeep trail (see Figure 1, Figure 3 and Figure 4) in an area of uneven pāhoehoe flow and dense vegetation.

The fairly level surface of the trail is comprised of compressed and worn ‘a‘ā cobbles. The sides of the trail are defined in places by alignments of neatly placed (and in some places stacked) basalt cobble curbstones. The curbstone alignments are spaced up to 2.3 m apart (north/south), rising 0.35 m above the interior trail surface and 0.20 m to 0.40 m above the exterior surface. The alignments are generally 0.50 m wide, making the overall width of the trail up to 3.30 m (north/south). Only a 7.5 m portion of this trail segment is curbed on both sides. The southern curb could be traced for approximately 22.0 m (east/west), while only 7.5 m of the northern curb remain. The western end of the trail has been bulldozed, likely when the area adjacent to the KD #2 Range was cleared. At the eastern terminus the trail meets a small linear depression and disappears, possibly as a result of erosion.

No artifacts or cultural deposits were observed in the vicinity. Given its location directly adjacent and parallel to the modern alignment of the Puna Trail, this segment is interpreted as an extant portion of the historic Puna Trail alignment, which was believed to be completely obliterated by the modern Jeep trail. It therefore dates to the late nineteenth century, when the pre-Contact trail was improved through this area. Overall, the trail segment is in poor to remnant condition, due mainly to the bulldozer disturbance at the western terminus and the surrounding dense vegetation. Excavation potential is poor considering the limited prospect for new information about the Puna Trail. Despite its disturbed condition, this segment of the historic Puna Trail retains integrity of location, design, setting, workmanship, and feeling.

Figure 3. Photograph of CSH-3, view to east

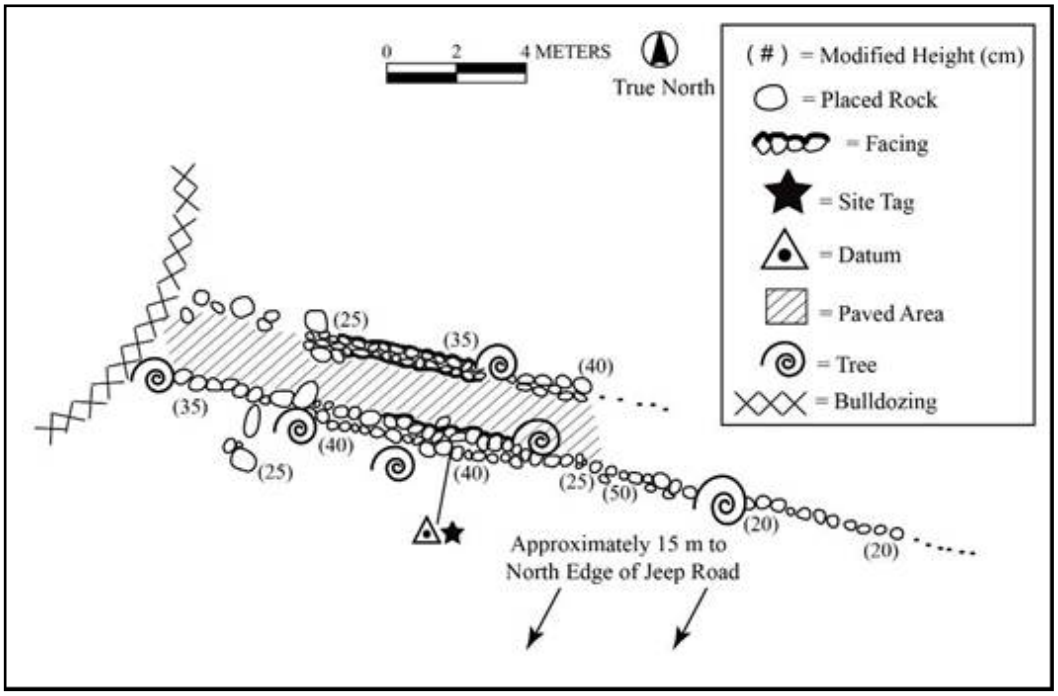

Figure 4. Plan view map of CSH-3

SIHP Site	Temp ID	Consultant	District	Ahupua`a	TMK (x) x-x-xx:xx	Date Assigned	Formal Site Type	Site Function	USGS Quad Name/No.	Number of Features	Shape	UTM Datum/Zone	Easting	Northing
	CSH-3	CSH	South Hilo	Waiakea	TMK (3) 2-1-013:10	8/28/2013	Trail	Transportation	Hilo (1995)/Quad No. 35	1	Linear	NAD 83/Zone 5N	287295	2179484