

# **FINAL—Archaeological Monitoring Report for Kea‘au-Pāhoa Road Intersection Improvements, Keonepoko Iki Ahupua‘a, Puna District, Island of Hawai‘i**

**Portions of TMK: (3) 1-5-007:007, 008, 019, 020, 079, and 080**



## **Prepared For:**

Isemoto Contracting  
648 Pi‘ilani Street  
Hilo, HI 96720

March 2023



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## **MANAGEMENT SUMMARY**

Archaeological monitoring was conducted for ground disturbing activities associated with construction of a single-lane roundabout at the intersection of Kea‘au-Pāhoa Road and Old Government Road on TMK: (3) 1-5-007:007, 008, 019, 020, 079, and 080 at the northern end of Pāhoa Town, Keonepoko Iki Ahupua‘a, Puna District, on the Island of Hawai‘i. Archaeological monitoring was conducted on an as-needed basis whenever such activities were conducted. Ground disturbing work consisted of construction activities involving earthwork, pavement, landscaping, drainage improvements, signage, lighting, and relocation of utilities. The only findings were a buried asphalt road and a 1957 bottle fragment.



## CONTENTS

MANAGEMENT SUMMARY .....	i
FIGURES .....	iv
TABLES .....	iv
INTRODUCTION .....	1
The Undertaking.....	1
BACKGROUND .....	4
The Natural Setting .....	4
The June 27 <sup>th</sup> Flow .....	5
Traditional Cultural Setting.....	7
Mo‘olelo .....	7
The Mo‘olelo of Halemano.....	9
The Mo‘olelo of Papalauahi .....	10
The Mo‘olelo of Kumukahi.....	10
The Mo‘olelo of Kali‘ikuku.....	11
Traditional Land Use.....	11
Power and Conquest in Puna.....	12
The Māhele ‘Āina.....	13
Historical Background.....	14
Previous Archaeology .....	21
METHODS .....	25
RESULTS .....	26
Stratigraphy .....	26
Laboratory Analysis .....	30
Summary of Results .....	30
SUMMARY AND CONCLUSION.....	31
GLOSSARY .....	32
REFERENCES .....	34
APPENDIX A: SHPD SECTION 106 LETTER.....	39
APPENDIX B: SHPD HISTORIC PRESERVATION REVIEW LETTER .....	43
APPENDIX C: NHPA REVIEW LETTERS .....	47

## FIGURES

Figure 1. Project location on a 7.5 minute USGS 1994 Pahoa quadrangle map. ....	2
Figure 2. Project location on TMK plat 1-5-007. ....	3
Figure 3. Soils in the project area vicinity (data from Sato et al. 1973). ....	6
Figure 4. January 10, 2016 satellite image showing the June 27 <sup>th</sup> lava flow (USGS 2016b). ....	8
Figure 5. Early map of Keonepoko Nui (Naeole 1880). ....	15
Figure 6. Keonepoko Homesteads map (Moragne 1903). ....	16
Figure 7. Map of Hawai‘i showing agricultural zones ....	17
Figure 8. Portion of “Pahoa Railroad & Timber Lands” map (Jones 1910). ....	19
Figure 9. Portion of a 1928 Hawaii Territory Survey map. ....	20
Figure 10. Previous archaeological studies in the vicinity of the project area. ....	22
Figure 11. Excavations for road removal. Orientation is to the east. ....	25
Figure 12. Location of profiles and artifact on construction plans. ....	27
Figure 13. Profile 1, south face profile drawing and photo. ....	28
Figure 14. Profile 2, south face profile drawing and photo. ....	29
Figure 15. Profile 3, south face profile drawing and photo. ....	29
Figure 16. Artifact 1, Pepsi bottle likely dating to 1957. ....	30

## TABLES

Table 1. Māhele Data for Keonepoko .....	14
Table 2. Previous Archaeological Work Conducted Near the Project Area.....	23
Table 3. Sediment Descriptions.....	28



## INTRODUCTION

At the request of Isemoto Contracting, Keala Pono Archaeological Consulting conducted archaeological monitoring for construction of a single-lane roundabout at the intersection of Kea'au-Pāhoa Road and Old Government Road (also known as Pāhoa Village Road) at the northern end of Pāhoa Town on portions of TMK: (3) 1-5-007:007, 008, 019, 020, 079, and 080. The project area is located within Keonepoko Iki Ahupua'a, a land unit of the District of Puna, one of six major districts on the island of Hawai'i (Figures 1 and 2). This project converted an existing T-intersection, which is approximately 1,100 ft. (335 m) long by up to 500 ft. (152 m) wide, into a modern roundabout.

Archaeological monitoring was performed under the authority of Section 106 of the National Historic Preservation Act of 1966, as federal funding was used for the undertaking. Field procedures were conducted in accordance with an Archaeological Monitoring Plan (Wheeler et al. 2013) approved by the Hawai'i State Historic Preservation Division (SHPD). This report is drafted to meet the requirements and standards of both federal and state historic preservation law. These include Sections 106 and 110 of the National Historic Preservation Act of 1966, as amended, Chapter 6e of the Hawai'i Revised Statutes, and SHPD's draft *Rules Governing Standards for Archaeological Monitoring Studies and Reports* (§13–279).

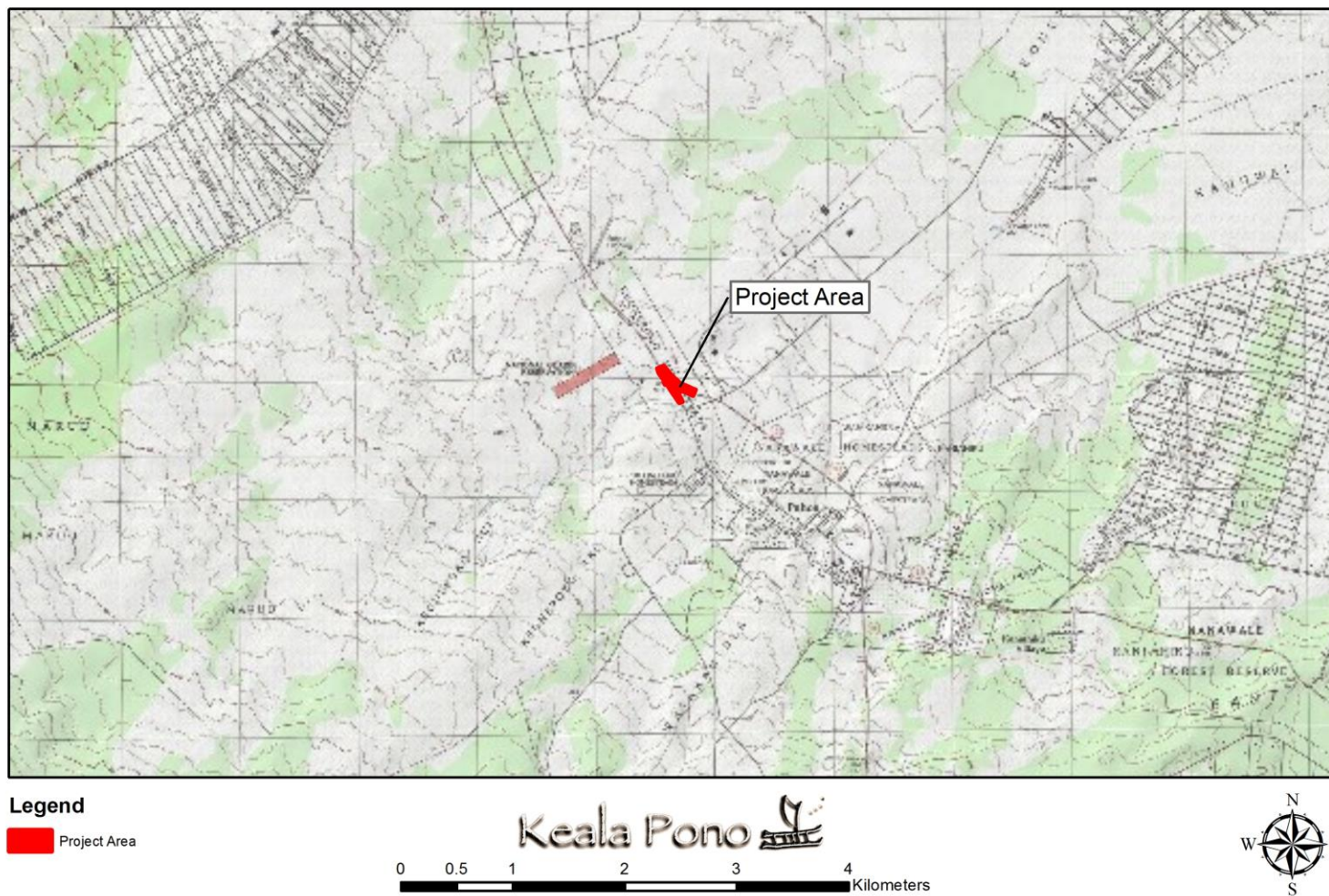
The project's archaeological monitoring plan (Wheeler et al. 2013) was reviewed and approved by the SHPD on 31 October 2013 (Appendix A). Implementation of the archaeological monitoring protocol was based on SHPD recommendations for archaeological monitoring set forth in the project's historic preservation review letter (stated above). The SHPD accepted the archaeological monitoring plan and concurred that by its implementation, a determination of "no historic properties affected" for the proposed improvement undertaking would be realized.

### The Undertaking

The proposed development constitutes a project requiring compliance with and review under State of Hawai'i historic preservation review legislation (Hawai'i Revised Statutes [HRS] 6E-42 and Hawai'i Administrative Rules [HAR] 13-284). The 9.5-mile Kea'au-Pāhoa Road Widening Project was the subject of an archaeological inventory survey (AIS), which recommended archaeological monitoring of any project-related ground disturbance (Wilkinson et al. 2010).

This undertaking is designated as State of Hawai'i Department of Transportation (HDOT) Project HSIP-0130 (031). This is considered a federal undertaking falling within the funding jurisdiction of the Federal Highway Administration (FHWA), requiring compliance with Section 106 of the NHPA [under the Code of Federal Regulations Title 36 CFR Part 800.2(c)(4)] and the National Environmental Policy Act (NEPA). To meet these requirements, project-specific consultation was undertaken by the HDOT on behalf of the FHWA (Appendix B). The Section 106 review process, as delineated in the February 1, 2013 Section 106 review letter issued by the DLNR/SHPD (Appendix C) outlined the requirements for archaeological monitoring for the current undertaking.

This archaeological monitoring report presents the results of monitoring during construction of the roundabout in Pāhoa Town. The primary focus of the monitoring was on the identification and appropriate treatment of historic properties that might be affected by any improvements and/or construction associated with the Kea'au-Pāhoa Road Intersection Improvements.



Layer Credits: USGS Topographical Pahoa North/South Quadrangle Map 1994

**Figure 1. Project location on a 7.5 minute USGS 1994 Pahoa quadrangle map.**

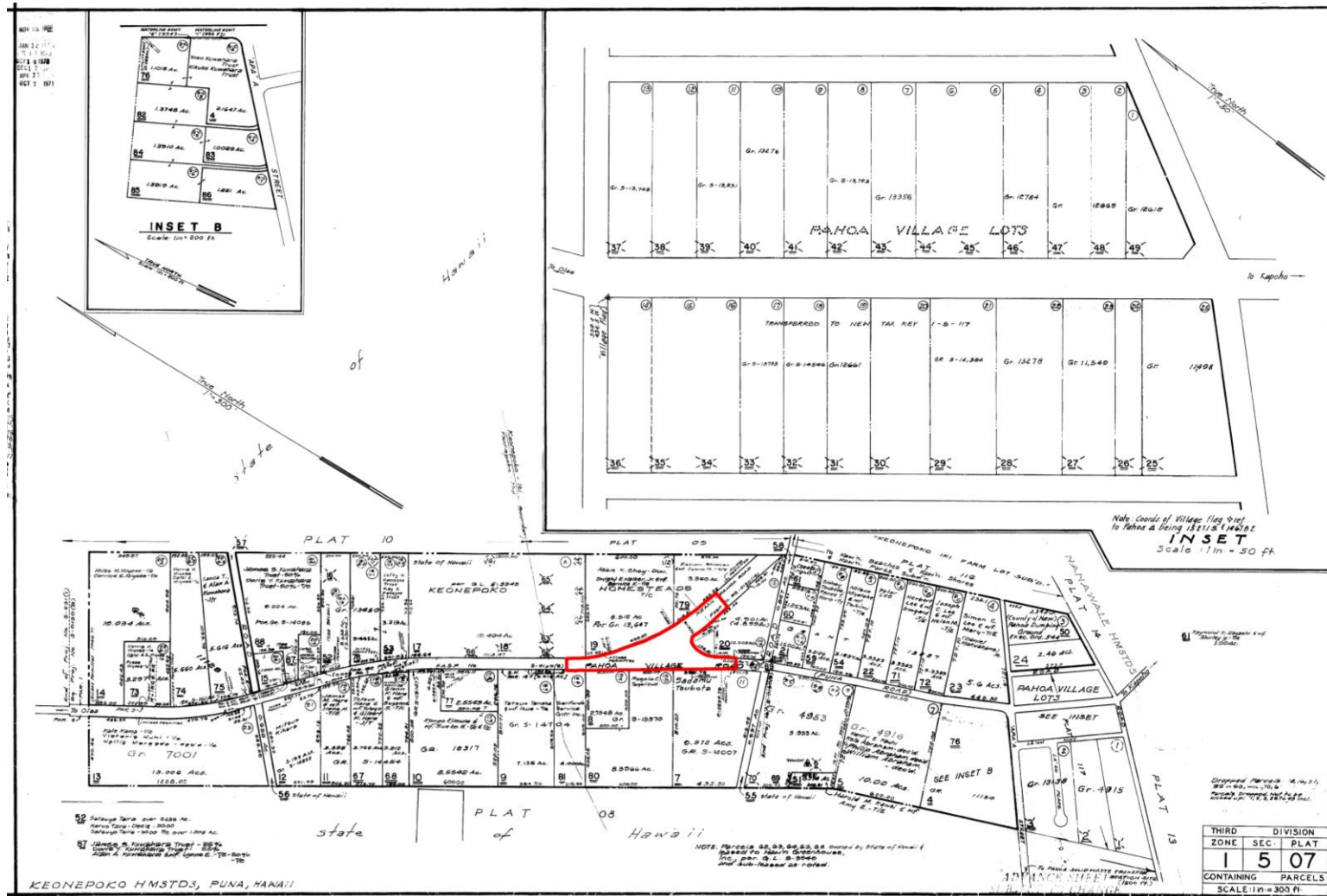


Figure 2. Project location on TMK plat 1-5-007.

## BACKGROUND

A brief historic review of the project vicinity is provided below, to offer a better holistic understanding of the use and occupation of the area. In the attempt to record and preserve both the tangible (i.e., traditional and historic archaeological sites) and intangible (i.e., mo‘olelo, ‘ōlelo no‘eau) culture, this research assists in the discussion of anticipated finds. Research was conducted at the Hawai‘i State Library, the University of Hawai‘i at Mānoa libraries, the SHPD libraries, and online on the Office of Hawaiian Affairs website and the Waihona ‘Aina, Huapala, and Ulukau databases. Archaeological reports and historical reference books were among the materials examined.

### The Natural Setting

The project area is situated at approximately 675 ft. (206 m) above mean sea level (amsl) in the traditional land district (moku) of Puna on windward Hawai‘i Island (Moku O Keawe). Puna lies partly on the lower slopes of Mauna Loa, but is located mostly on the undissected lava shield of Kīlauea. The East Rift Zone traverses 28 mi. (45 km) from the Kīlauea Caldera and Halema‘uma‘u across lower Puna to Cape Kumukahi.

In the Hawaiian language, puna is translated as “a spring of water”, or “well-spring” and therefore, the district is appropriately named. Puna’s natural environment is dominated by volcanic activity, unique geological events and formations, and a variety of plant communities that provide habitat for native species. Eruptions of Kīlauea and the nearby volcano Mauna Loa continue to shape the ecology of the region, and even the land itself (World Public Library 2016).

The current project area lies within the traditional land unit, Keonepoko Iki Ahupua‘a (translated “small Keonepoko”), also known as Keonepoko 2. Keonepoko (translated, “the short sand”), was designated Government Land in the Māhele Book of Land Awards in 1848. Adjacent to Keonepoko Iki is Keonepoko Nui (translated “large Keonepoko”). At the north boundary of Keonepoko Nui is ‘Opihi, an offshore rock sometimes called Moku‘opihī (Pukui et al. 1974:171).

The moku of Puna contains many inland and shoreline springs that flow underground from rains having seeped into the porous volcanic rock from Mauna Loa. As such, these underground sources of water are known to be quite pristine, having been filtered through miles of lava rock. The system of underground subterranean lava tubes is also quite extensive throughout much of Puna. These lava tubes, having been accessible through collapsed openings, were used traditionally in the past, and are still looked after by Hawaiians today for their safe keeping.

Rainfall is abundant in Puna and at the project area; the average annual precipitation falls between approximately 120 and 160 in. (304 and 406 cm) (Juvik and Juvik 1998:57). Temperatures for this area range from between the 60s and 80s, with the cooler temperatures and heavier rainfall occurring in the winter months (October through April), with warmer temperatures and lighter rainfall occurring during the summer months (May through September). Hawaiians traditionally observed this cycle of nature, and recite the ‘ōlelo no‘eau, “Ka ua moaniani lehua o Puna / The rain that brings the fragrance of the lehua of Puna” (Pukui 1983:172).

The land and vegetation surrounding the project area have been significantly transformed by modern activity. These lands were once wet forests and woodlands before human settlement changed their character. Juvik and Juvik (1998) describe the flora of these ecosystems:

Vegetation: closed canopy forest of ‘ōhi‘a [*Metrosideros polymorpha*], sometimes with koa or ‘ōlapa codominant; dense tree fern (*Cibotium* species) understory; also, open-canopy forests or woodlands of ‘ōhi‘a and uluhe (*Dicranopteris linearis*). Forests of hala (*Pandanus tectorius*) in coastal lowlands. Shrublands of ‘ōhi‘a and ferns; also, ‘ākala (*Rubus hawaiiensis*) shrublands. Rare bogs and mosses (*Racomitrium* species), sedges, grasses, and native shrubs, Fauna: primary habitat of most extant Hawaiian honeycreepers and other forest birds ... great diversity of native invertebrates. Endangered species consist of more than 50 plants species ... birds include ‘o‘ū (*Psittirostra psittacea*), Maui parrotbill (*Pseudonestor xanthophrys*), and ‘ākohekohe (*Palmeria dolei*). (Juvik and Juvik 1998:126–127)

Deep soils in the area are relatively scarce. The project area geology can be classified as “Qp4,” Puna Basalt; this substrate was produced by an AD 1410–1460 lava flow from Kīlauea Volcano (Sherrod et al. 2007). Sato et al. (1973) classify the project area soils as the miscellaneous type rLW “Lava flows, pahoe-hoe” (Figure 3). Pāhoehoe lava with no soil development can support mosses and lichens, while in areas of higher rainfall ‘ōhi‘a, ‘ōhelo berry, and ‘a‘ali‘i grow from cracks in the lava.

Kīlauea’s eastern flank lies completely within the District of Puna, and contains slopes (usually less than 15° in angle/7.5% grade), which descend gradually to the ocean at Cape Kumukahi to the eastern point of the district. Of the approximately 500 square miles in Puna, 50 square miles have been covered since 1983. Since ancient times, human settlement has been affected by lava flows. Oral history accounts speak of the collapse of the shoreline from Ka‘ū all the way to Kumukahi that submerged many of the traditional Hawaiian resource features (Maly and Maly 2004). In spite of these dangers, early Hawaiians lived along the coast in villages around small coves where they could also access the inland areas of the ahupua‘a for gathering and planting. It was in these inland zones where soils became more fertile and the ‘ōhi‘a forests and wildlife populations grew.

Nearly the entire crest of the east rift zone is covered by lava erupted within the past 400 years. A few small, isolated patches of lava flows that range in age from 750 to 2,500 years old are still exposed at the surface. The east rift zone is 2–4 km (1.2–2.5 mi.) wide at its crest; over the past 250 years, eruptions have occurred discontinuously from vents along its length. Lava flows covered significant areas along the lower east rift zone during five eruptions in about AD 1750, 1790, 1840, 1955, and 1960. These flows cover about 68 km<sup>2</sup> (16,800 ac.) of land (USGS 2016a).

In 1878, a magnitude-7.9 earthquake, named “the great earthquake of Ka‘ū,” had far-reaching effects. It resulted from the seaward movement of the south flank of the island and from a build-up of a series of smaller earthquakes causing a landslide bounded by the southwest and east rift zones of Kīlauea Volcano. The east rift zone extends virtually the full length of Puna District plus at least another 113 km (70 mi.) under the sea floor (MacDonald and Brock 1979:313).

The Nanawale Estates subdivision is built on the 1840 flow, and much of the Sea View community near Kehena is built on the 1955 flow. Since 1955, nearly 30% of the area encompassing the east rift zone and the slope to the south has been covered by lava flows (USGS 2016a).

### **The June 27<sup>th</sup> Flow**

Most recently in June 2014, a lava flow called “the June 27<sup>th</sup> flow” erupted from a vent from the spatter cone Pu‘u ‘Ō‘ō on the east rift zone of Kīlauea. It traveled in a northwest direction and stopped short of the town of Pāhoa. Kīlauea Volcano’s east rift zone eruption began in January 1983, but most lava flows have advanced to the south, reaching the ocean about 75% of the time. The June 27<sup>th</sup> lava flow continues to advance to the northeast of its vent on the flank of Pu‘u ‘Ō‘ō.



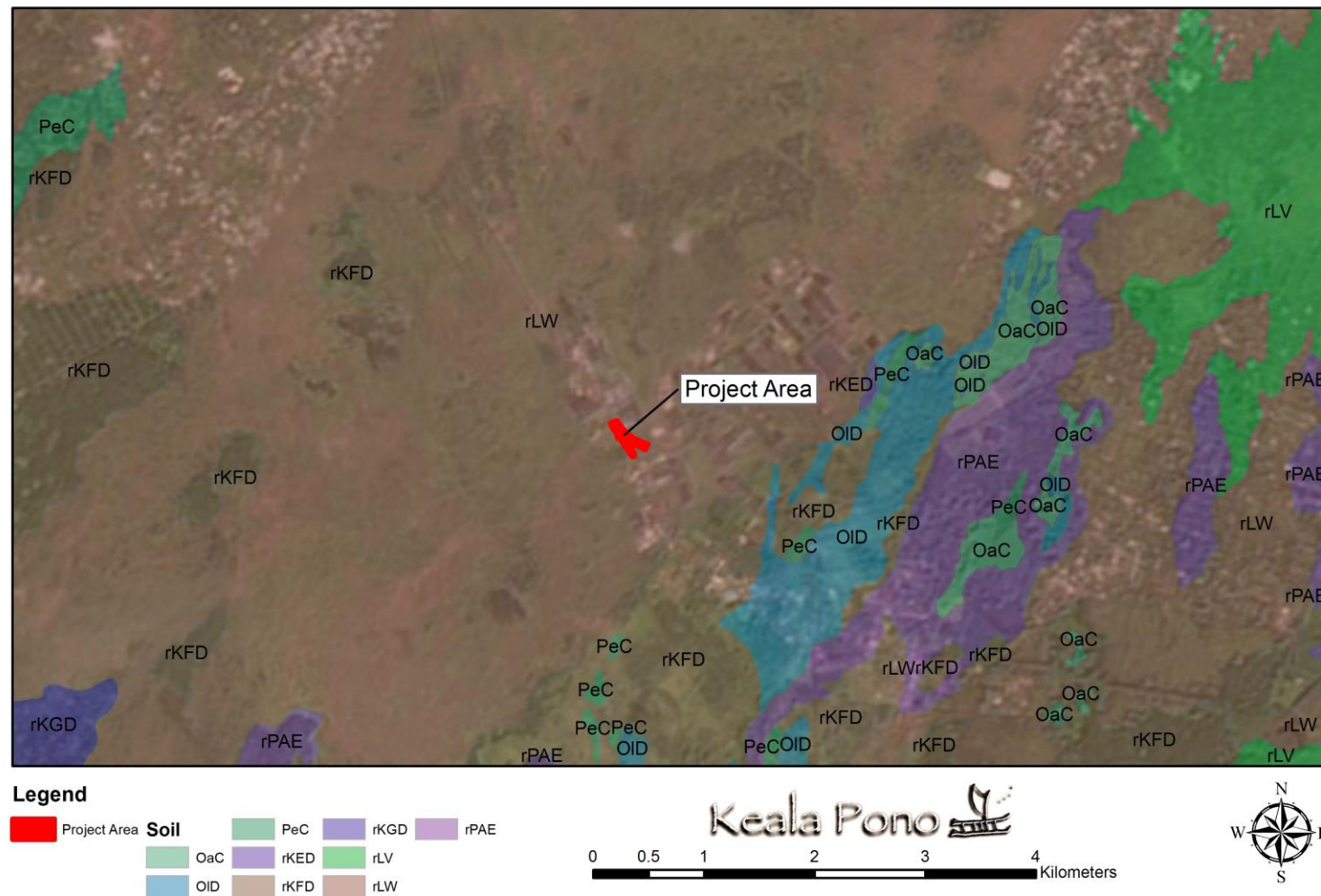


Figure 3. Soils in the project area vicinity (data from Sato et al. 1973).

A satellite image taken by the Advanced Land Imager instrument from NASA's Earth Observing 1 Satellite depicts the flow (Figure 4). The image shows that scattered breakouts continue to be active northeast of Pu'u 'Ō'ō. The farthest active lava in this image is 5.8 km (3.6 mi.) northeast of Pu'u 'Ō'ō, approximately 13 km (8 mi.) from the project area.

### **Traditional Cultural Setting**

This section includes information on mo'olelo and traditional land use of Puna Moku and Keonepoko Ahupua'a.

#### **Mo'olelo**

Mo'olelo show Puna prominently associated with both legendary and historical figures including Kāne, Pele, Hi'iaka, Halemano, Papalauahi, Kumukahi, and Kali'ikuku.

Kāne, a Hawaiian god and ancestor of the chiefs and commoners, is the god of sunlight, fresh water, verdant growth, and forests (Pukui 1983). It is said that before Pele migrated to Hawai'i from Kahiki, there was "no place in the islands . . . more beautiful than Puna" (Pukui 1983:11).

Contributing to that beauty were the groves of fragrant hala and forests of 'ōhi'a lehua for which Puna was famous:

*Puna pāia 'ala i ka hala* (Puna, with walls fragrant with pandanus blossoms)

Puna, Hawai'i, is a place of *hala* and *lehua* forests. In olden days the people would stick the bracts of *hala* into the thatching of their houses to bring some of the fragrance indoors. (Pukui 1983:301)

Although Kāne apparently had a hand in cultivating the ancestral land, no doubt that Pele's womb was ready to pour forth and rebirth the land, a living force that is undeniable, as recent events have shown. As such, Puna is the focus of regenerative power. It is the easternmost district of the Hawaiian Islands, the land where the sun first rises (Kāne's eye). It is the district where the volcano continuously creates new land, and new vegetation comes to life on this newly formed land.

McGregor (2007:147) notes that "Throughout all of the folklore for Puna, Pelehonuamea and her family of deities emerge as the natural primal elements that dominate and shape the lives of the chiefs and people of Puna."

Puna, as is Hā'ena, Hōpoe, Kea'au, and Nanahuki are the lands that inspire hula creation because of the natural movements of waves, wind, and trees. "Ke Ha'a La Puna" is the first recorded hula in the Pele and Hi'iaka story.

Hi'iaka, the youngest of the sisters, after gathering beautiful flowers for lei by the Puna sea, feels inspired by the natural beauty and interactions between the northeast tradewinds and the hala forests of Puna, and accepts her sister Pele's challenge to dance the hula and chants "Ke Ha'a La Puna I Ka Makani," translated by Leonard B. Emerson (1915).

Ke ha'a la Puna i ka makani;  
Puna's a dance in the breeze;

Ha'a ka ulu hala i Keaau;  
The hala groves of Keaau shaken;

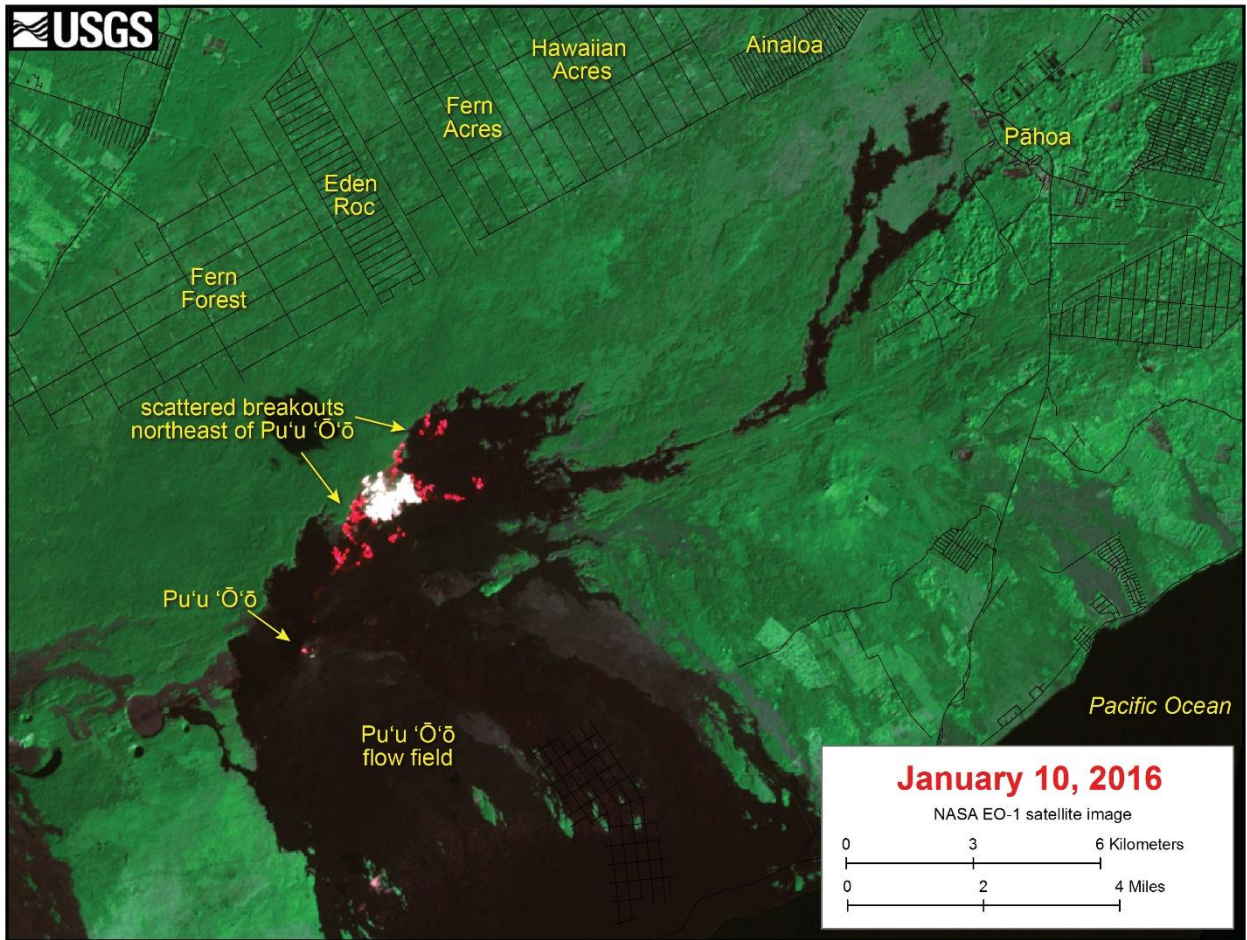


Figure 4. January 10, 2016 satellite image showing the June 27<sup>th</sup> lava flow (USGS 2016b).

Ha'a Ha'ena me Hopoe;  
Ha'ena and Hopoe are swaying;

Ha'a ka wahine,  
The thighs of the dancing nymph.

Ami I kai o Nana-huki, la  
Quiver and sway, down at Nana-huki

Hula le'a wale,  
A dance most slightly and pleasing,

I kai o Nana-huki, e-e!  
Down by the sea Nana-huki!



### *The Mo'olelo of Halemano*

Other stories significant to the land of Puna, are found in Abraham Fornander's *Collections of Hawaiian Antiquities and Folk-lore* (1919), and include the account of "Ka'ao no Halemano." Here we see the status of Puna to other islands and its relationship between various ahupua'a of the district. This account is set in the period of ca. AD 1500, just before 'Umi's rise to power.

Having been heart-stricken from not meeting the woman of his dreams, Halemano dies, but is brought back to life by his sorceress sister, Laenihi. Halemano describes this woman to his sister,

...She is very beautiful; her eyes and body are perfect; she has long, straight, black hair; is tall, dignified and seems to be of very high rank like a chiefess...her dress seems to be scented with *pele* and *mahuna* of Kauai, and her pa-u is made of some very light material dyed red. She wears a hala wreath and a *lehua* wreath on her head and around her neck.

Laenihi then says:

"It is in Puna and Hilo that the lehua blossoms are found. It is in Puna that the *ouholowai* of Laa and the *pukohukohu* are found; therefore, your lover must be a woman of Puna; she is not of the west."

In Halemano's dream, he meets her again and asks,

"What is the name of the land of your birth and what is your name?"

"Kapoho in Puna, Hawaii, is the land of my birth; it is where the sun rises, and not in the west. My name is Kamalalawalu." (Fornander 1919 Volume V, Part II:228-236)

Kamalalawalu was the daughter of Hanakaulua and Haehae, chiefs of the land of Kapoho. Having been brought up under very strict kapu, she was a virgin. No one was allowed to see her and she had no companion other than her own brother, Kumukahi.

Laenihi traveled to Puna to find the woman wahine o ka pō or dream woman that her brother sought, and verified that it was she, the woman of Halemano's dreams. To be able to meet Kamalalawalu, Laenihi transformed herself into a fish, and caused the wind from the sea to blow (called the unuloa), so that the surf off Kaimū would roll and bring out the people for surf riding. Kamalalawalu and her brother, Kumukahi took to the beach, and Kamalalawalu saw Laenihi as a special fish and asked her brother to capture it and bring it home for her. Laenihi then transformed herself into a rooster and crowed until dawn, when she then became a woman and was able to meet Kamalalawalu and make plans so that Halemano could come and steal her from Puna to marry her.

This mo'olelo tells of the trials and tribulations of Halemano's and Kamalalawalu's relationship, where they move to live on many of the Hawaiian Islands, separate to have other spouses, and try again to be together only to separate again.

Halemano, who was becoming experienced at the art of singing and chanting, once again met up with Kamalalawalu. He exhibited his prowess at the game of kilu, and chanted:

A kapu is placed over the roads of Puna by the fire of Laka,  
For I see its reflection in my eyes.  
It is like the breadfruit in the lowlands of Kookoolau;  
I am almost tempted to pick it;  
Being repelled by shame, I touch it not.  
Alas, my love!

My love from the big sea of Puna  
Whose waves beat on the sea cliffs.  
You forget your lover while you went astray in Kaimu,  
Your mouth was closed, refusing to call.  
My love of the home where we were friendless,  
That home to which we had no claim, though I made no complaint,  
Where I drew warmth from the sun at Maliu.  
Take heed to my supplications  
My own, my love!

Kamalalawalu, supplanted by the undoing's of Kikeka'ala, chanted her woe:

The wind is blowing; it is the Koolauwahine  
You will surely see Haili,  
Haili the plain of lehua entwined by the birds;  
They are carrying away the awa of Puna that grow on trees,  
The sweet sound oo of the forest,  
Whose sweet notes can be heard at eventide.  
My companion of the cold, watery home of Hilo,  
That cold wet home where you and I lived,  
O my own beloved husband!

Eventually, Halemano returned to O'ahu, and then to Kaua'i and Kamalalawalu tried to follow. Heartbroken, she settled on O'ahu but was taken back to Hawai'i after a fierce battle was waged by the Puna ali'i Hua'a and the Hilo ali'i Kulukulu'a, after they are advised by the Kalapana astrologer to bring her home to Hawai'i.

### ***The Mo'olelo of Papalauahi***

There was an ali'i of the district of Puna who organized sporting events and festivities where all the neighboring chiefs would rally. His name was Papalauahi, and he was a very accomplished athlete. On one occasion, Pele arrived as a beautiful young woman and challenged him to a hōlua race. After looking on from above, gathering in all the excitement and impulsively borrowing a sled from one of the chiefs to race with him, she was abruptly defeated. Pele became angry and stamped on the ground so that floods of lava broke out, destroying many of the chiefs as they fled in every direction. They and the spectators were transformed into pillars of stone (Westervelt 1916:30).

### ***The Mo'olelo of Kumukahi***

Kumukahi was a notable chief of Puna. He was a tall and strikingly handsome man who was a great aficionado of the ancient games. Pele found delight in this man and his love for the games; but one day, disguised as an old woman with fiery eyes, she showed up insisting that he include her in the game rivalry. When Kumukahi rebuffed her, Pele responded with fiery red rage and she chased and entrapped him on the beach by enveloping him in a great mound of lava, which she also poured far out into the ocean. Thus it is said that Cape Kumukahi, the southeast point of the island of Hawai'i, was formed by Pele's retribution when her anger flashed out in a great fountain of volcanic fire into the sea (Westervelt 1916:27–28).

The actual name of the cape came from Kumukahi, who was the mythological figure from Kahiki at the time when the gods still walked on earth. He was represented as a red stone and his wives, also stones, transformed the seasons by pushing the sun back and forth. The stones have been used to calculate the solstices (Pukui et al. 1974:124). At some point Pele destroyed Kumukahi and his family as mortal beings. However, they were powerful 'aumākua. Kumukahi could take the form of a man or a kōlea bird, while Palamoa could take the form of a rooster (Komori 1987:17).

Kumukahi translates to “first beginning” (Pukui et al. 1974:124). In the traditional processional chants “Ho‘opuka e ka Lā ma ka Hikina” and “Hiki mai ka Lā ma ka Hikina,” Kumukahi served as the eastern gateway through which sun and dancer passed on a journey that “floods the earth with light and brings forth vitality to all [they touch]” (Pukui n.d.).

### ***The Mo‘olelo of Kali‘ikuku***

Puna’s mo‘olelo tell of its Eden-like natural environment, where ‘ōhi‘a and hala trees and other plants grew in abundance. A chief of Puna, Kali‘ikuku, while on O‘ahu once bragged to a prophet of Pele, Kaneakalau, little knowing that Pele had destroyed all that he cherished. He said “My country is charming. Abundance is found there. Rich, sandy plains are there, where everything grows wonderfully” (Westervelt 1916:31). The prophet informed him that Pele had desolated Puna, that the trees are no longer in the mountains, the people burned, and the land is now barren. Upon returning home, Kali‘ikuku came around the eastern side of the island, landed his canoe, and climbed to a point where he could see Puna. He witnessed his once fertile plains now covered with smoking lava, and what remained of the forests were still burning. Because of Kali‘ikuku boasting, Pele demonstrated her power for all to see.

### **Traditional Land Use**

Traditional land use in Hawai‘i was founded on the vertical arrangement of a volcanic island’s natural ecosystems, with subsistence systems based on several biological resource zones, including the upland/inland forest zone, or the wao nahele, the agricultural zone, or the wao kanaka, and the coastal zone, or the kahakai. This latter zone included the strand area, fringing reefs, limu beds, lagoons, fishponds, and estuaries. The muliwai are mostly on the windward side of the islands and are part of another biological resource zone, the kaha wai or freshwater ecosystems and streams. The ocean (kai), near the shore can also be considered a biological resource zone (Mueller-Dombois 2007).

Since the ahupua‘a served as the complete subsistence system for Hawaiian family groups (the ‘ohana) prior to European contact in 1778, many important features would be inherent within the resource zones. Besides habitation sites in the kahakai and wao kanaka, there were also transitional habitation sites near and in the wao nahele. Both the wao kanaka and kahakai included temples (heiau) and burial places (hē) as well as irrigated terraces (lo‘i kalo) for taro cultivation (Mueller-Dombois 2007).

In pre-Contact Hawai‘i, all natural resources extending from the mountaintops to the deep sea were held in “trust” by the chiefs (mō‘ī, ali‘i ‘ai moku, or ali‘i ‘ai ahupua‘a). The right to use resources of lands and oceans was given to the hoa‘āina at the prerogative of the ali‘i and their representatives or land agents (konohiki or haku ‘āina). Following a strict code of conduct, which was based on ceremonial and ritual observances, the people of the land were generally able to harvest the land and ocean resources for their own sustenance, and to pay tribute to the class of chiefs and priests who oversaw them.

Coastal regions of the east and southern shores of Puna were noted for anchialine ponds from which ‘ōpae‘ula were harvested for bait in ‘ōpelu fishing. Puna was noted for the ‘ōpelu fisheries, and for ulua fisheries and techniques of fishing with puihi. Kūkaula fisheries in Puna included those for prized eating fish such as the ‘ula‘ula koa’e and ‘ōpakapaka. Pa‘akai (salt) making was also an important practice along the southern coastline of Puna (Maly and Maly 2004).

The people of ‘Ōla‘a and other interior parts of Puna were known to produce very fine mats and kapa made from the bark of the māmakī (Burtchard et al. 1994:48). Olonā fiber was made into fishing

nets and line because of its durability and resistance to seawater. Its excellence made it a highly valued item, not only among Hawaiians but also among foreign sailors (Abbott 1992:59). Whalers would pay high prices for olonā for making lines for whales (MacCaughey 1920:241). The olonā trade was a source of considerable profit to the ali'i (Kamakau 1996:53). Also in the uplands, 'ō'ō birds were captured for their precious yellow feathers that were fashioned into prized items such as cloaks (MacCaughey 1920:240).

A general model of pre-Contact settlement patterns for the Puna coastline includes both habitation sites and agricultural complexes along with ceremonial and burial areas, all associated with a fairly dense population. Regional trade networks would have provided connections facilitating the traditional Hawaiian land tenure system of subsistence farming abounding with well-cultivated plantations of kalo, 'uala, and kō; as well the collection of forest resources. In *The Hawaiian Planter*, E.S. Craighill Handy related several methods of cultivation common and unique to Puna:

In the wet, lowland forests of Puna, taro used to be planted under the pandanus trees, which were felled and cleared to let in the sun after the taro had rooted and put forth the first growth of leaves. It is said that here the cutting was planted wrapped in a roll of dry pandanus leaf to keep it moist and give it nourishment in the stony ground of the lava-covered lowlands. (Handy 1940:53)

Despite the fact that sweet potatoes were planted almost universally and many patches are still maintained [in 1931–1932], the Puna natives seem to regard this vegetable with little interest, probably because Puna people prided themselves upon and relished their breadfruit, and also because potato was nowhere and at no time the staple for this rain swept district. (Handy 1940:165)

## **Power and Conquest in Puna**

Historical accounts of the ruling chiefs of Hawai'i and Puna have been largely drawn from the works of Fornander (1973; Fornander and Thrum 1996) and Kamakau (1961); as well as Dorothy Barrere's *Political History of Puna* (1959). These accounts tell of many ruling chiefs who constantly vied for power. Their ruling scenarios fluctuated widely, some ruling over one or more ahupua'a; and others holding command over several or entire districts.

By the time of Līloa (ca. 1475), Hawai'i had been divided into the six major districts that are extant today. While each of the districts were ruled by independent chiefs, all of them recognized Līloa as the supreme chief (Kamakau 1961:1). When 'Umi-a-Līloa, the son of Līloa ascended to the throne of his father (ca. 1525), he brought all of the districts directly under his rule, subjugating rebel chiefs. Kamakau (1961) reports that:

Hua'a was the chief of Puna, but Puna was seized by 'Umi and his warrior adopted sons, ... Hua'a was killed by Po'i-mai-wa'a on the battle field of Kuolo in Kea'au, and Puna became 'Umi-a-Līloa's. (Kamakau 1961:17–18)

Fornander (1969) also notes that at this time, parts of Puna came under the rule of the famed, blind chief 'Ī-mai-ka-lani, of Ka'ū. It was only after lengthy battles, that 'Umi was able to secure all of Puna and Ka'ū under his rule (Fornander 1969:34).

In 1760 Kalani'ōpu'u became the ali'i nui of Hawai'i by defeating all of his rivals. Kalani'ōpu'u's son, Kīwala'ō was named his heir, and Kalani'ōpu'u's nephew, Kamehameha, was set in charge of the god Kūkā'ilimoku. At the time of Captain Cook's arrival (1778), Kalani'ōpu'u was on the island of Maui. Kalani'ōpu'u returned to Hawai'i and met with Cook on January 26, 1779, exchanging gifts, including an 'ahu'ula and mahiole that he was wearing. Cook also received pieces of kapa,

feathers, hogs, and vegetables. In return, Cook gave Kalani'ōpu'u a linen shirt and a sword; Cook later gave other presents to Kalani'ōpu'u, among which one of the journals mentions "a complete tool chest."

Kalani'ōpu'u died shortly thereafter (1782). Before his death, Kalani'ōpu'u gave an injunction to Kīwala'ō and Kamehameha, and to all the chiefs that Kīwala'ō would be the heir to Ka'ū, Kona, and Kohala. Disagreements arose over the division and redistribution of lands following Kalani'ōpu'u's death. John Papa I'i (1959) records that while the division of lands to be made by Kīwala'ō was being discussed, his half-brother, Keōua, was told by one of his advisers:

"Perhaps you should go to the chief and ask that these lands be given to us. Let Waiakea and Keaau be the container from whence our food is to come and Olaa the lid." Keoua did so, but the other Kau chiefs objected to this and spoke disparagingly to him. When Keoua returned, his advisor asked, "How was your venture?" When Keoua told him all that had been said, the man remarked seriously, "A break in a gourd container can be mended by patching, but a break in the land cannot be mended that way." (I'i 1959:14)

Soon after Kalani'ōpu'u's death, Kīwala'ō was killed in combat by Kamehameha's forces. After many years of warfare, Kamehameha went on to conquer all of Hawai'i Island and unify the island chain. Kīwala'ō's daughter, Keōpūolani, would end up marrying Kamehameha and mothering three heirs of the dynasty: Liholiho (Kamehameha II), Kamehameha III, and the princess Nāhienaena.

### **The Māhele 'Āina**

The change in the traditional land tenure system in Hawai'i began with the appointment of the Board of Commissioners to Quiet Land Titles by Kamehameha III in 1845. The Great Māhele took place during the first few months of 1848 when Kamehameha III and more than 240 of his chiefs worked out their interests in the lands of the Kingdom. This division of land was recorded in the Māhele Book. The King retained roughly a million acres as his own as Crown Lands, while approximately a million and a half acres were designated as Government Lands. The Konohiki Awards amounted to about a million and a half acres, however title was not awarded until the konohiki presented the claim before the Land Commission.

In the fall of 1850 legislation was passed allowing citizens to present claims before the Land Commission for parcels that they were cultivating within the Crown, Government, or Konohiki lands. By 1855 the Land Commission had made visits to all of the islands and had received testimony for about 12,000 land claims. This testimony is recorded in 50 volumes that have since been rendered on microfilm. Ultimately between 9,000 and 11,000 kuleana land claims were awarded to kama'āina totaling only about 30,000 acres and recorded in ten large volumes.

According to Māhele records, the ahupua'a of Keonepoko was returned by Lunalilo and retained by aupuni (the kingdom). It was also listed as land that does not pay tribute to any konohiki (hemo lands, Table 1). Keonepoko Iki (the current project location), is one of seven areas in Puna that were left unassigned during the Māhele, and it was decided in 1888 that these would be Government lands (Allen 1979).

Keonepoko Iki Ahupua'a was retained as Government Land. No Land Commission Awards were made or boundaries set by the Land Commission in Keonepoko Iki Ahupua'a (Waihona 'Āina database). However, the boundaries of neighboring Keonepoko Nui were surveyed in 1880 for the estate of C. Kanaina, and place names along the common boundary with Keonepoko Iki are shown

**Table 1. Māhele Data for Keonepoko**

LCA	Description	Claimant
8559 B	(‘āpana 16)	Lunalilo, William C.
11216:40	(RP 8095)	Kekau‘ōnohi, Mikahela
7713:12		Kamāmalu, Victoria
8452:15		Keohokālale, A. (wahine)

on a survey map (Figure 5). This map also shows the location of the old Government Road. Beginning in 1903, sections of the ahupua‘a in the vicinity of Pāhoa Town were commuted as grant parcels and homestead lots (Figure 6).

### Historical Background

Puna’s coast was first recorded by foreigners during Captain Cook’s third voyage in 1779 from the ship *Discovery*. Cook’s surgeon, David Samwell, and Lieutenant King provided the first written accounts:

The East part of Opoona [Puna] is flat, covered with Coco nut trees, and the land far back is of a Moderate height. As well as we could judge this is a very fine part of the Island, perhaps the best.

On the SW extremity of Opoona the hills rise abruptly from the Sea side, leaving but a narrow border, and although the sides of the hills have a fine verdure, yet they do not seem Cultivated and when we sailed pretty near and along this end of Opoona, we did not observe that it was equally populous with the eastern parts. (Beaglehole 1967:606)

Reverend William Ellis recorded his observations during a two-month journey around Hawai‘i Island in 1823. His account is the first description of an entire island and includes many observations on Hawaiian agricultural areas, practices, crops, and demography. References made by Ellis were used to define the perimeters of the agricultural zones on Hawai‘i Island during the period of his tour (Figure 7). Ellis’ main purpose, along with members of the American Board of Commissioners for Foreign Missions (ABCFM), was to seek out communities in which to establish church centers for the growing Calvinist mission. His trek along the Puna coast to Hilo Bay generated the earliest overland description of the coastal zone:

Kaimu is pleasantly situated near the sea shore, on the S.E. side of the island, standing on a bed of lava considerably decomposed, and covered over with a light and fertile soil. It is adorned with plantations, groves of cocoa-nuts, and clumps of kou-trees. It has a fine sandy beach, where canoes may land with safety; and, according to the houses numbered to-day, contains about 725 inhabitants. (Ellis 1963:196)

[W]e reached Kaau [Kea‘au], the last village in the division of Puna. It was extensive and populous, abounding with well-cultivated plantations of taro, sweet potatoes, and sugar-cane; and probably owes its fertility to a fine rapid stream of water, which, descending from the mountains, runs through it into the sea. (Ellis 1963:212)

The appointed minister of the Hilo Mission, Reverend Titus Coan, made repeated tours through the Puna and Hilo Districts as part of his regular duties in 1834 and recorded what he saw:



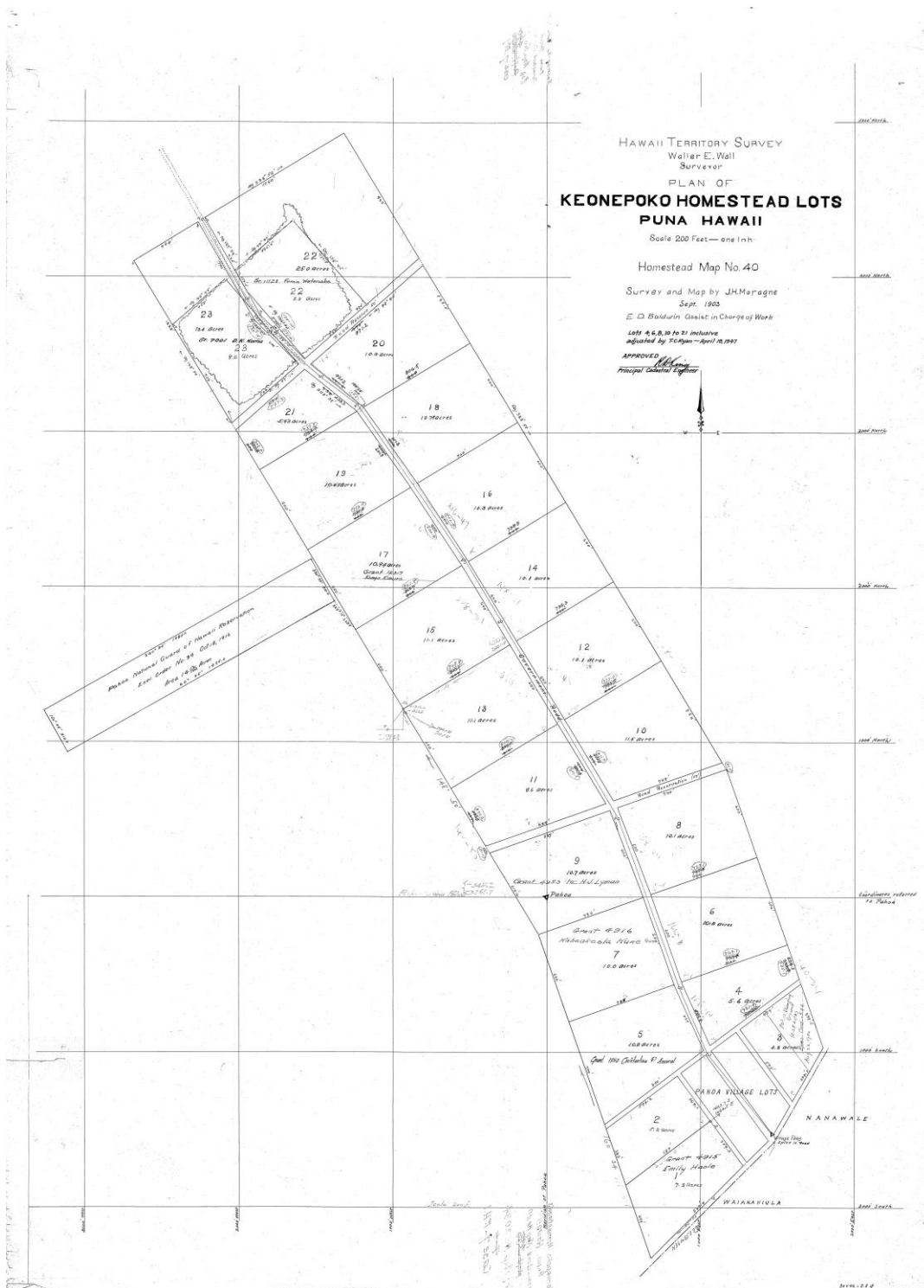
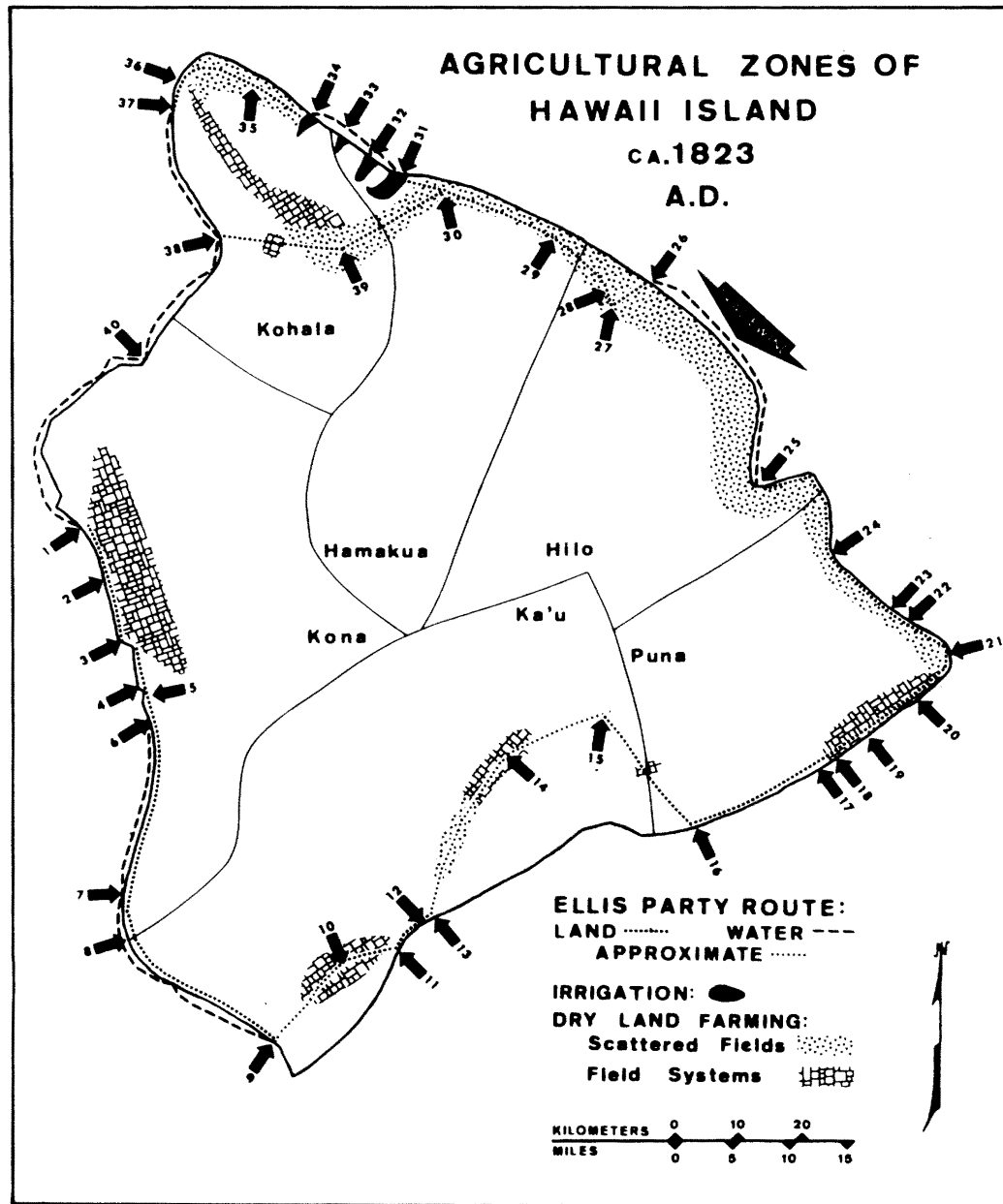


Figure 6. Keonepoko Homesteads map (Moragne 1903).





1. Kailua; 2. Keauhou; 3. Kaawaloa; 4. Honaunau; 5. Keokea; 6. Kalahiki; 7. Kapua; 8. Kaulanamauna; 9. Kailikii; 10. Waiohinu; 11. Honuapo; 12. Hilea; 13. Punaluu; 14. Kapapala; 15. Kilauea Volcano; 16. Kealakomo; 17. Kalapana; 18. Kaimu; 19. Kamaili; 20. Keahialaka; 21. Kapoho; 22. Kahuwai; 23. Honolulu; 24. Keaau; 25. Waiakea (present city of Hilo); 26. Laupahoehoe; 27. Humuula; 28. Kaula Valley; 29. Manienie; 30. Kapulena; 31. Waipio Valley; 32. Waimanu Valley; 33. Honokane Valley; 34. Polulu Valley; 35. Halawa; 36. Awalua; 37. Mahukona; 38. Kawaihae; 39. Waimea (also called Kamuela) 40. Kiholo.

Figure 7. Map of Hawai'i showing Newman's (1971:337) reconstruction of the agricultural zones of the island in 1823, based on observations in the journals of William Ellis.

Its [Puna's] shore line, including its bends and flexures, is more than seventy miles in extent. For three miles inland from the sea it is almost a dead level, with a surface of pahoe-hoe or field lava, and a-a or scoriaceous lava, interspersed with more or less rich volcanic soil and tropical verdure, and sprinkled with sand-dunes and a few cone and pit-craters... The rains are abundant, and subterranean fountains and streams are numerous, carrying the waters down to the sea level, and filling caverns, and bursting up along the shore in springs and rills, even far out under the sea... Puna has many beautiful groves of the cocoa-palm, also breadfruit, pandanus, and ohia, and where there is soil it produces under cultivation, besides common vegetables, arrowroot, sugar-cane, coffee, cotton, oranges, citrons, limes, grapes, and other fruits. On the highlands, grow wild strawberries, cape gooseberries, and the ohelo, a delicious berry resembling our whortleberry. (Coan 1882:26)

Mostly because of foreign diseases, population in Puna declined significantly by 1862. At this time, the population was recorded as only 2,200, and by 1890, there were only 800 people in the district (Schmitt 1968:71). In 1882, Titus Coan writes, "Our people are now greatly diminished by death, and by being drawn away to the numerous plantations of the islands, upon ranches, in various industries with foreigners, and by hundreds into Honolulu, and on board vessels..." (Coan 1882:121).

With housing then provided by W.H. Shipman, families moved further inland. In the 1890s, the Government was also opening up large tracts of homestead lands throughout Puna, which were sold for residential and agricultural use. Because the rich agricultural parcels were generally situated three or more miles inland, above the 400-ft. elevation, homestead lands could be better accessed and their produce better transported by a new and more direct inland route between Puna and Hilo. As a result, the basic alignment of the Kea'au-Pāhoa Highway (now Highway 130) was established and construction was underway by 1895. The route ran along the coastal area as the Old Government Road (Site 21273), extending from Hilo to at least Kalapana.

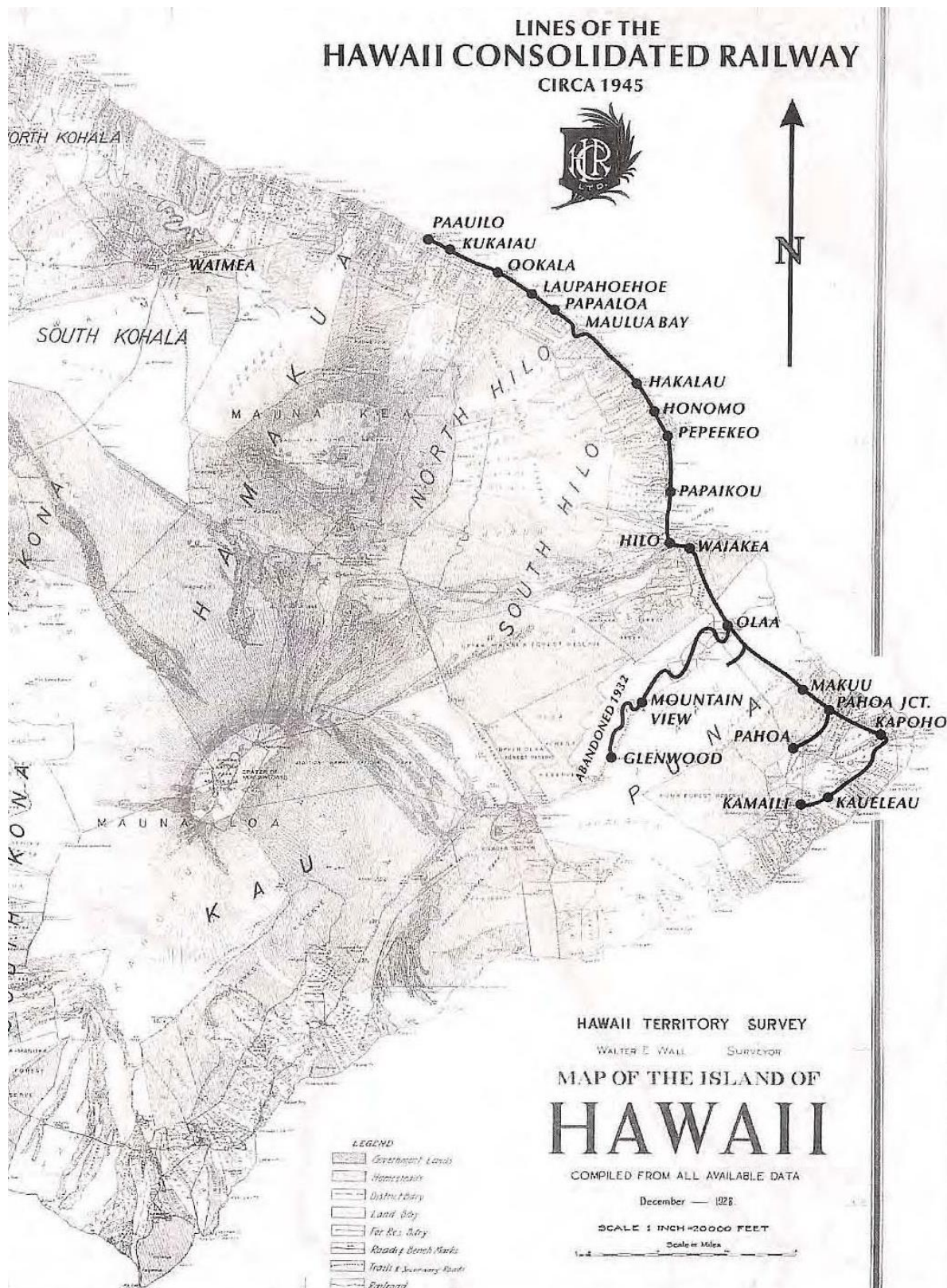
The Old Government Road (also referred to as the Puna Trail) was previously studied by Lass (1997) and Maly (1999) within the ahupua'a of Kea'au, well to the east of the current project area. Currently, this road is dirt-covered and maintained for vehicular access. Maly (1999) relates that the current alignment of the Old Government Road, which evolved from earlier trail routes, was under construction by the 1840s. The road remained the preferred route of travel between Hilo and the outlying areas of Puna until 1895, when the Kea'au-Pāhoa Road (Highway 130) was established to access the growing inland population centers and agricultural areas (Maly 1999:6).

By the 1870s a number of other business opportunities were being developed as well; they included ranching operations, the cultivation and export of 'awa and coffee, woods, and pulu, and as a result, further work on the Puna Government Road alignment was undertaken. Another modified alignment of the road was laid out in 1875 (as surveyed by J.M. Lydgate), and remained in use and under periodic maintenance until about 1895. The Hilo Railway Company was established during this time period, and in 1900, it extended tracks along the coast to the sugar fields in Kapoho and stretching inland to Pāhoa and Kamali'i (Figure 8).

During the first half of the 20<sup>th</sup> century, Puna was dominated by the sugar industry. Thousands of acres of land were turned into sugar plantations, stretching from the south Hilo border to Cape Kumukahi, then west to inland areas of south Puna, and these were connected by an extensive railway system (Figure 9). During the early 1900s, the Olaa Sugar Company acquired large plots of land and established a sugar mill in Kea'au, north of the project area. The Olaa Sugar Company also took over the Puna Sugar Company, who had their base of operations in Pāhoa. A diverse population of laborers were brought in to attend the fields, and they lived in ethnically-segregated camps in the vicinity of Old Plantation Road.



Figure 8. Portion of “Pahoa Railroad & Timber Lands” map (Jones 1910).



**Figure 9. Portion of a 1928 Hawaii Territory Survey map, annotated to show railroads in east Hawai'i (adopted from Treiber 2005:59).**

At the turn of the century, coffee was still an important agricultural industry in Puna. The Shipman family, a major landowner in the district, ran the Shipman Ranch in Kea‘au. The pineapple industry was started for export to California. In 1908, the Hawaiian Mahogany Company erected a lumber mill in Pāhoa and sent out its first shipment of 20,000 ‘ōhi‘a log ties to the Santa Fe Railroad. In 1910, the company became the Pāhoa Lumber Mill and obtained cutting rights to 12,000 ac. of Territorial Forest in Puna. Economic development in the district during the territorial years centered at ‘Ōla‘a, with a ranch and a sugar plantation, and around Pāhoa with the ‘ōhi‘a and koa lumber operations. Lower Puna was described as remaining predominantly a traditional Hawaiian subsistence area.

### **Previous Archaeology**

Early archaeological work in the Puna region includes large scale surveys by Thrum (1909) and Hudson (1932). Thrum’s research focused on recording heiau throughout the islands, although none were identified near the project area. Working throughout east Hawai‘i Island, Hudson recorded a wide range of archaeological features including heiau, burials, caves, habitations, trails, and agricultural features from Waipi‘o Valley to the Ka‘ū District. Stokes and Dye (1991) later used these early works to compile information on heiau of the island. The first evidence of traditional lava tube use in the Puna district was documented by Emory (1945), who identified habitation and burial functions for the tubes.

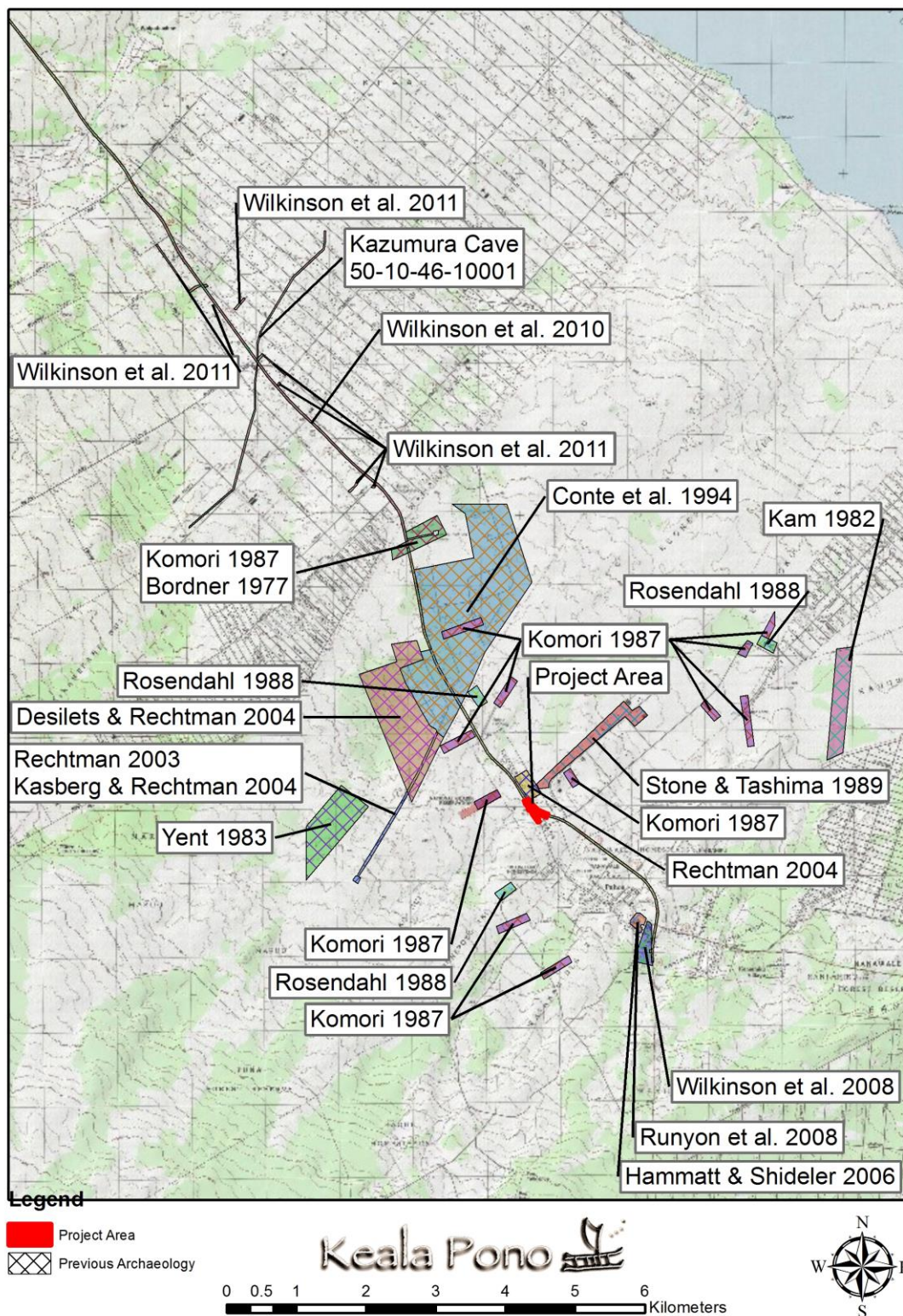
Numerous cultural and archaeological studies have been conducted within Keonepoko, although the majority of this work involved surface surveys with limited subsurface testing. The following paragraphs summarize the most relevant reports that were found in the SHPD Kapolei library. Project locations within approximately 5 km of the project area are illustrated in Figure 10 and listed in Table 2.

In 1977, an archaeological reconnaissance survey was conducted for the Federal Aviation Administration for a proposed radar site and access road in Maku‘u, north of the current project area (Bordner 1977). One site was identified: State Inventory of Historic Places (SIHP) 50-10-46-21217, a small ahu built with stacked pāhoehoe. The ahu was located in the proposed access road, approximately 76 m from State Route 130. The age of the ahu is uncertain.

In 1982, an investigation was conducted concerning a report of human burials within a lava tube system at Pāhoa Cave (Kam 1982). A memo to the State Parks Administrator mentioned the presence of at least 20 human burials. The remains were likely post-Contact in age. Yent (1983) surveyed and mapped portions of the lava tube/cave system. The lava tube exhibited several entrances, and modifications observed within the tubes include platforms, terraces, walls, and a ramp. Several human burials were also noted in various parts of the lava tubes. The Pāhoa Cave system was given the site number 50-10-45-14900. Several years later, the cave was reexamined (Stone and Tashima 1989) to determine the cave’s extent beneath the Pāhoa Phase II Agricultural. This took place near the current project area, to the northeast. A total of eight sites were recorded, including habitation areas and human burials. It appears that no SIHP numbers were given to the eight sites.

In 1987, a cultural and biological resources survey was completed for the proposed Pohoiki to Puna-substation 69kv Transmission Corridor (Komori 1987). An area designated as Area B extended to the Keonepoko Homesteads, which is close to the current project area. A total of 14 sites were recorded: eleven pre-Contact and three post-Contact in age. They were located southeast of Kea‘au town (Komori 1987:13). The sites consisted of agricultural and habitation areas with components such as terraces, irrigation ditches, platforms, modified outcrops, petroglyphs, burial caves, and a historic foundation. The area is thought to have been settled after AD 1450, when population expanded inland from the coast (Komori 1987:29–31). There were no findings near the project area.





**Figure 10. Previous archaeological studies in the vicinity of the project area.**

**Table 2. Previous Archaeological Work Conducted Near the Project Area**

<b>Author and Year</b>	<b>Work Completed</b>	<b>Findings</b>
Bordner 1977	Archaeological Reconnaissance	Documented SIHP 50-10-46-21217, a small marker (ahu), constructed of pāhoehoe. Not dated.
Kam 1982	Memorandum of Examination	Located and described sections of the Pāhoa Cave system. Identified two large lava tubes containing at least 20 burials.
Yent 1983	Archaeological Survey	Documented SIHP 50-10-45-14900, the Pāhoa Cave (lava tube system).
Komori 1987	Archaeological Reconnaissance Survey	Recorded SIHP # 50-10-46-21217, a small ahu, or marker.
Rosendahl 1988	Archaeological Reconnaissance Survey	No historic properties identified.
Stone and Tashima 1989	Archaeological Survey	Eight historic properties identified within Pāhoa Cave.
Conte et al. 1994	Archaeological Inventory Survey	No historic properties identified.
Rechtman 2003	Archaeological Assessment	No historic properties identified.
Desilets and Rechtman 2004	Archaeological Inventory Survey	Documented SIHP 50-10-45-24231, an enclosure complex, and 50-10- 45-24232, a terrace.
Kasberg and Rechtman 2004	Archaeological Monitoring	No historic properties identified.
Rechtman 2004	Request for SHPO Concurrence – No Historic Properties Affected	Noted a lava tube in project area; lava tube possibly represented portion of the Pāhoa Cave.
Hammatt and Shideler 2006	Literature Review	No historic properties identified.
Runyon et al. 2008	Archaeological Monitoring	No historic properties identified.
Wilkinson et al. 2008	Archaeological Monitoring	No historic properties identified.
Wilkinson et al. 2010	Archaeological Inventory Survey	No new historic properties identified. Relocated SIHP 50-10-44-26874, an abandoned 1930s concrete bridge with associated asphalt.
Wilkinson et al. 2011	Archaeological Inventory Survey (Addendum report to Wilkinson et al. 2010)	Noted a possible agricultural terrace just outside of their project area.
Wheeler et al. 2013	Archaeological Monitoring Plan for Current Project	Identified no known historic properties within the project area, although lava tubes have been recorded nearby.

In 1988, a reconnaissance survey was conducted for three proposed sites for Pāhoa Elementary School, to the west, east, and south of the current project (Rosendahl 1988). There were no findings.

In 1994, an archaeological inventory survey was conducted for 735 acres of the Maku‘u Farm and Agricultural Lots, to the north of the current project area (Conte et al. 1994). No archaeological sites were identified, likely because of poor soil development (Conte et al. 1994:11). At least one culturally-sterile lava tube was investigated during the fieldwork.

In 2003, an archaeological and limited cultural assessment were conducted for the proposed Maku‘u Water Line System (Rechtman 2003). The proposed system would transport water to the Maku‘u Farms subdivision from a reservoir near the portion of the Pāhoa Cave System recorded by Yent (1983). No archaeological resources were found, yet archaeological monitoring was recommended because of the potential for encountering lava tubes. Archaeological monitoring for the project produced no findings (Kasberg and Rechtman 2004).

In 2004, an archaeological inventory survey was completed for proposed residences in Maku‘u (Desilets and Rechtman 2004). This was located northwest of the current project area. Two sites were identified in the northernmost reaches of their project area. These were SIHP 50-10-45-24231, an enclosure complex dating to the pre-Contact period; and SIHP 50-10-45-24232, a terrace of undetermined age (Desilets and Rechtman 2004:24–25).

Also in 2004, an archaeological inventory survey and Section 106 consultation were completed for the proposed Pāhoa Fire Station (Rechtman 2004). This is adjacent to the north side of the current project area. It was reported that a lava tube was found during initial grading along the northeastern property boundary (Rechtman 2004:4). A survey of the lava tube did not yield any findings, and large amounts of modern debris were present within the tube.

In 2006, a literature review and field inspection were conducted for four schools in Puna as part of a cesspool project (Hammatt and Shideler 2006). Pāhoa Elementary, Intermediate, and High School were included in the study. These constitute two adjacent campuses to the south of the current project area near the intersection of Kea‘au-Pāhoa Road and Kapoho Road. The school campuses and Pāhoa town are historic, and lava tubes were noted in the vicinity. Monitoring was conducted during the cesspool installation, although there were no findings (Wilkinson et al. 2008; Runyon et al. 2008).

An archaeological inventory survey was carried out for widening of a 9.5-mile segment of Highway 130 that includes the current project area (Wilkinson et al. 2010). Several roadside memorials were identified along the highway, and two sites were recorded. SIHP 50-10-44-26874 is a concrete bridge and road located on the north side of their project corridor, far to the north of the current project area. SIHP 50-10-55-7388 is the Pāhoa Historic and Commercial District. This is located on the far south of their project corridor, south of the current project area. The Sacred Heart Catholic Church and Cemetery are part of the historic district near the Wilkinson et al. (2010) project area. An addendum archaeological inventory survey was later completed for the road widening project, with several additional areas surveyed (Wilkinson et al. 2011). The new survey areas were located near the Hawaiian Paradise Park subdivision, far to the north of the current project site. There were no findings within the addendum survey areas, although a possible terrace was noted outside the addendum project boundaries (Wilkinson et al. 2011:16–17).

An archaeological monitoring plan was prepared for the current project (Wheeler et al. 2013). Although there were no known historic properties identified within the project area, lava tubes such as those of the Pāhoa Cave System, have been documented nearby. Because of this, there is a potential for encountering lava tubes in the project area, and archaeological monitoring was recommended for all ground disturbance.



## METHODS

Archaeological monitoring was conducted between October 14, 2015 and May 31, 2016. An archaeologist was on site for 82 days during this time period, with one archaeological monitor present per day. Monitors included Lizabeth Hauani'o, BA, Leischene Calingangan, BA, and Iolani Kauhane, BA. Windy McElroy, PhD served as Principal Investigator for this project, overseeing all aspects of fieldwork, attending a pre-construction meeting, and conducting one site visit.

Archaeological monitoring was guided by an archaeological monitoring plan (Wheeler 2013) that was previously approved by SHPD. On October 14, 2015, before the start of the first work day, the Principal Investigator and archaeological monitors met with the construction team to discuss the monitoring plan to ensure that they understood the purpose of the monitoring and that the monitor has the authority to halt construction activity. Ground disturbance included grading, grubbing, tree removal, augering for street light installation, and excavations for the road, sidewalks, and utilities (Figure 11).

Representative profiles were drawn and photographed. Sediments were described using Munsell Soil Color Charts and a sediment texture flow chart (Thien 1979) and the U.S. Department of Agriculture soil manual. Profile locations were marked on construction plans based on landmarks in the area; GPS points were not taken. The scale in all field photographs is marked in 10 cm increments. The north arrow on all maps points to magnetic north. Throughout this report rock sizes follow the conventions outlined in *Field Book for Describing and Sampling Soils*: Gravel <7 cm; Cobble 7–25 cm; Stone 25–60 cm; Boulder >60 cm (Schoeneberger et al. 2002:2-35). One glass bottle fragment was collected; it is temporarily being curated with Keala Pono Hawai'i Island staff before being turned over to the landowner.



**Figure 11. Excavations for road removal. Orientation is to the east.**

## RESULTS

Archaeological monitoring was conducted between October 14, 2015 and May 31, 2016 the intersection of Kea‘au-Pāhoa Road and Old Government Road (also known as Pāhoa Village Road) at the northern end of Pāhoa Town. This is located on portions of TMK: (3) 1-5-007:007, 008, 019, 020, 079, and 080, which lie within Keonepoko Iki Ahupua‘a.

Several profiles were drawn throughout the duration of archaeological monitoring. Three representative profiles are presented here (Figure 12). Stratigraphy generally consisted of fill atop natural soil (Table 3). A portion of the Old Government road may have been identified, and one glass bottle fragment was collected. No cultural deposits or lava tubes were encountered.

### Stratigraphy

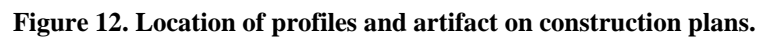
The primary characterization of the surrounding landscape is one of undissected volcanic slopes of the East Rift Zone of Kīlauea. Soils within the project area are scant consisting of pāhoehoe lava with no soil development, and are primarily derived from the decomposition of underlying lava (bedrock) (Sato et al. 1973). Volcanic ash and the underlying lava are from the Kīlauea Volcano AD 1410–1460 flow (Sherrod et al. 2007). There have been frequent modern disturbances of the land and vegetation surrounding the project area. Three representative profiles are presented below.

Profile 1 was drawn of excavations on the southern side of Pāhoa Bypass Road (Highway 130) and consists of two layers (Figure 13). Layer I is a sandy clay loam-based fill with a small amount of basalt cobbles and fine roots. Layer II is comprised entirely of cinder fill.

Profile 2 was taken at the southern end of the project area at the Old Government Road (Pāhoa Village Road) and consists of three layers (Figure 14). Layer I is comprised of asphalt. Layers II and III are road base course deposits that are basalt cobbles and pebbles mixed with sandy clay loam fill.

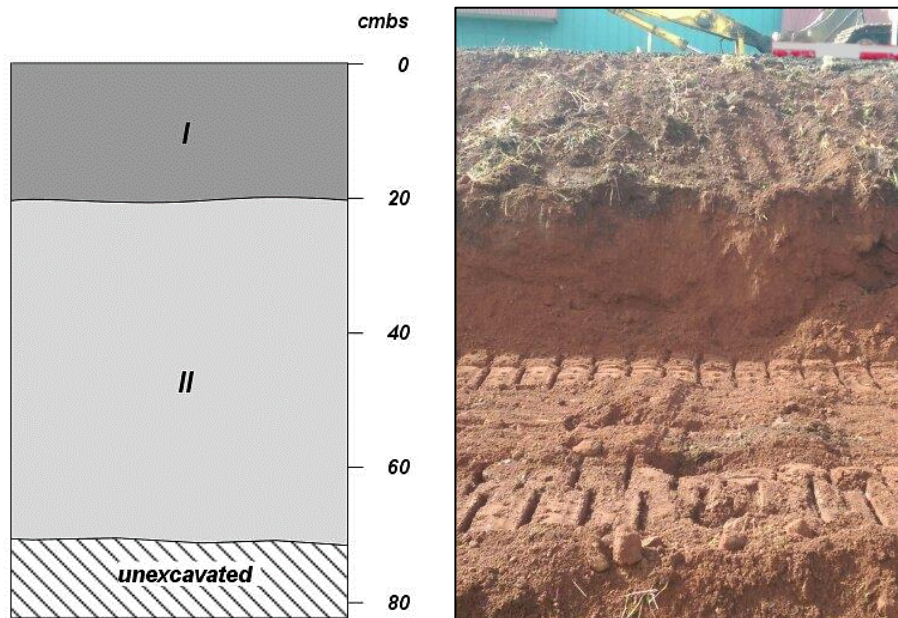
Profile 3 was drawn from excavations at the intersection of Kea‘au-Pāhoa Road and Old Government Road (Pāhoa Village Road) just west of the entrance to the Pāhoa Marketplace. Profile 3 is comprised of four layers (Figure 15). The first two layers (Layers I and II) were part of the modern road system, while the bottom two layers (Layers III and IV) were constituents of the old roadway (likely the Old Government Road). Layer I is asphalt, and Layer II is road base course comprised of basalt cobbles and pebbles mixed with sandy clay loam fill. Layer III is asphalt and the top portion of the old road. Layer IV is the old road base course comprised mainly of basalt cobbles and pebbles, and mixed with sandy clay loam fill.

In summary, stratigraphic profiles showed asphalt, and basalt cobbles and pebbles mixed with sandy clay fill as the primary deposition units in the project areas. These are typically associated with the construction of roads and highways. Variations identified in strata relate to hue differentials (red-volcanic cinder) and varying composition of road base course (brown to very dark brown). As subsurface investigations have been confined to the project area, and no cultural deposits were encountered, future work in the vicinity would provide the stratigraphic records necessary for comparative studies to help shed light on the nature of cultural deposits and archaeological sites for the area.



**Table 3. Sediment Descriptions**

Profile	Layer	Depth (cmbs)	Color	Description	Interpretation
1	I	0–20	7.5YR 4/2	Sandy clay loam; 15% basalt cobbles and gravel, 2% fine roots; smooth, very abrupt boundary.	Fill
	II	20–70+	2.5YR 4/6	Cinder; base of excavation.	Fill
2	I	0–15	N/A	Asphalt; smooth, very abrupt boundary.	Road
	II	15–40	10YR 4/2	Sandy clay loam; 80% basalt cobbles and pebbles; smooth, very abrupt boundary.	Road Base Course
	III	40–75+	10YR 3/2	Sandy clay loam; 80% basalt cobbles and pebbles; base of excavation.	Road Base Course
3	I	0–9	N/A	Asphalt; smooth, very abrupt boundary.	Road
	II	9–22	10YR 4/2	Sandy clay loam; 50% basalt cobbles and pebbles; smooth, very abrupt boundary.	Road Base Course
	III	17–21	N/A	Asphalt; broken, very abrupt boundary.	Old Road
	IV	22–42+	7.5YR 3/2	Sandy clay loam; 75% basalt cobbles and pebbles; base of excavation.	Old Road Base Course



**Figure 13. Profile 1, south face profile drawing and photo.**



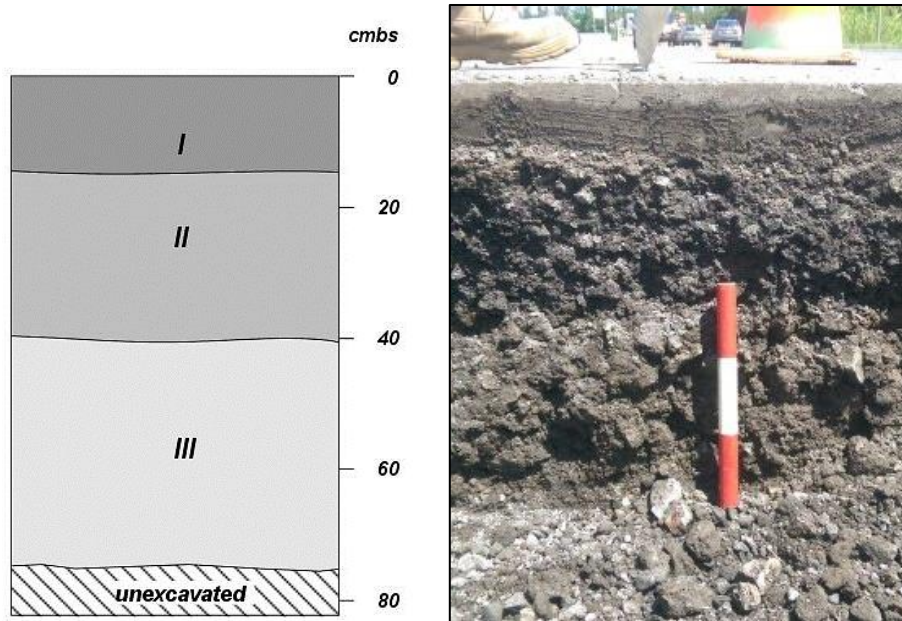


Figure 14. Profile 2, south face profile drawing and photo.

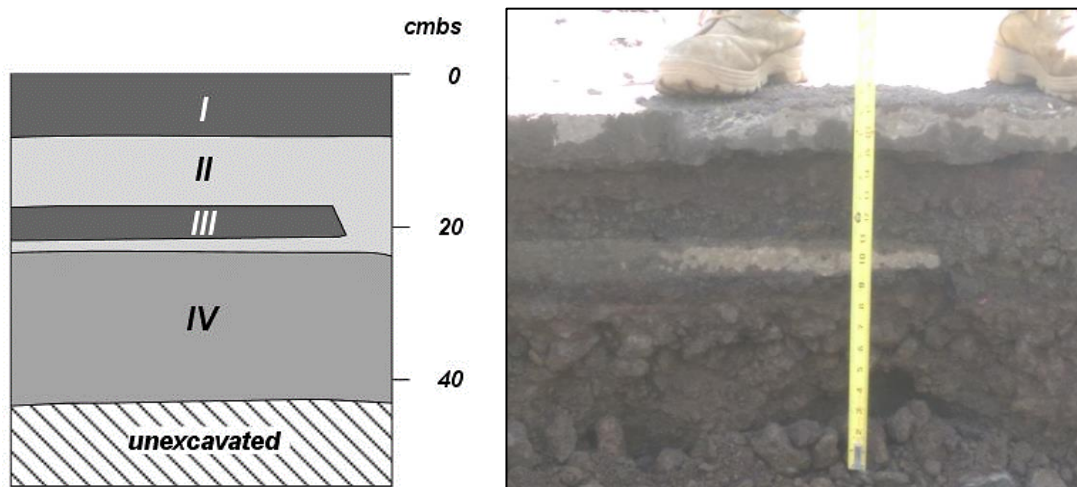


Figure 15. Profile 3, south face profile drawing and photo.

### **Laboratory Analysis**

One item was collected during archaeological monitoring, this was labeled as Artifact 1. It was found on the northwestern side of the project on the mauka edge of the road (see Figure 12). The artifact is a bottle made of clear glass that is broken at the neck. “PEPSI COLA” and a hatched pattern are embossed on the shoulder (Figure 16). Embossed on the base are the Duraglas symbol in script and “57,” likely indicating a manufacture date of 1957.

### **Summary of Results**

In sum, archaeological monitoring was conducted for ground disturbance associated with construction of a roundabout at the north end of Pāhoa Town. The shallow excavations exposed fill and base course deposits. The only findings were a portion of buried asphalt road and a 1957 Pepsi bottle fragment.



**Figure 16. Artifact 1, Pepsi bottle likely dating to 1957.**

## **SUMMARY AND CONCLUSION**

In summary, archaeological monitoring was conducted for ground disturbing activities associated with construction of a single-lane roundabout at the intersection of Kea‘au-Pāhoa Road and Old Government Road on TMK: (3) 1-5-007:007, 008, 019, 020, 079, and 080 at the northern end of Pāhoa Town, Keonepoko Iki Ahupua‘a, Puna District, on the Island of Hawai‘i.

Archaeological monitoring was conducted on an as-needed basis whenever such activities were conducted and in consultation with SHPD. Soil deposition was consistent with stratigraphy associated with the construction of roads and highways. The only findings were a portion of an old asphalt road and a 1957 Pepsi bottle fragment.

Previous archaeological investigations have recorded several important sites near the current project area. The potential for encountering resources and/or burials associated with the Pāhoa Cave and lava tube system (SIHP 50-10-45-14900) is considered high. In addition, the possibility of unearthing historic artifacts and alignments associated with the Pāhoa Historic and Commercial District (SIHP 50-10-55-7388) is a possibility with future construction in the area. Because of the potential for cultural resources to occur along the project route, it is recommended that archaeological monitoring is conducted for any future work in the vicinity.

## GLOSSARY

<b>‘a‘ali‘i</b>	<i>Dodonaea viscosa</i> , the fruit of which were used for red dye, the leaves and fruits fashioned into lei, and the hard, heavy wood made into bait sticks and house posts.
<b>ahupua‘a</b>	Traditional Hawaiian land division usually extending from the uplands to the sea.
<b>ali‘i</b>	Chief, chiefess, monarch.
<b>‘aumakua</b>	Family or personal gods. The plural form of the word is ‘aumākua.
<b>‘awa</b>	The shrub <i>Piper methysticum</i> , or kava, the root of which was used as a ceremonial drink throughout the Pacific.
<b>hala</b>	The indigenous pandanus tree, or <i>Pandanus odoratissimus</i> , which had many uses in traditional Hawai‘i. Leaves were used in mats, house thatch, and basketry; flowers were used for their perfume; keys were utilized in lei and as brushes; roots and leaf buds were used medicinally; and wood was fashioned into bowls and other items.
<b>hāpu‘u</b>	<i>Cibotium splendens</i> , a fern endemic to Hawai‘i; a forest fern to 5 m high.
<b>heiau</b>	Place of worship and ritual in traditional Hawai‘i.
<b>hoa‘āina</b>	Native tenants that worked the land.
<b>hōlua</b>	Traditional Hawaiian sled used on grassy slopes.
<b>kahakai</b>	Beach, seashore, coast.
<b>kalo</b>	The Polynesian-introduced <i>Colocasia esculenta</i> , or taro, the staple of the traditional Hawaiian diet.
<b>kapa</b>	Tapa cloth.
<b>kapu</b>	Taboo, prohibited, forbidden.
<b>kilu</b>	A small container used for storing precious objects or for feeding a favorite child; a quoit in the kilu game in which a player would attempt to hit an object with the kilu to win a kiss from a member of the opposite sex.
<b>kō</b>	The Polynesian introduced <i>Saccharum officinarum</i> , or sugarcane, a large grass traditionally used as a sweetener and for black dye.
<b>koa</b>	<i>Acacia koa</i> , the largest of the native forest trees, prized for its wood, traditionally fashioned into canoes, surfboards, and calabashes.
<b>kōlea</b>	The Pacific golden plover <i>Pluvalis dominica</i> , a bird that migrates to Hawai‘i in the summer; the native trees and shrubs <i>Myrsine</i> , the sap and charcoal of which were used as a dye, the wood used for houses and for beating kapa.
<b>konohiki</b>	The overseer of an ahupua‘a ranked below a chief; land or fishing rights under control of the konohiki; such rights are sometimes called konohiki rights.
<b>kuleana</b>	Right, title, property, portion, responsibility, jurisdiction, authority, interest, claim, ownership.
<b>Māhele</b>	The 1848 division of land.
<b>māmaki</b>	<i>Piptarus</i> spp., a small native tree. Fiber from its bark was used to make a kind of coarse tapa. Sometimes spelled mamake in old texts.



<b>mamo</b>	<i>Drepanis pacifica</i> , Hawaiian honey creeper whose yellow feathers were prized for use in featherwork.
<b>mauka</b>	Inland, upland, toward the mountain.
<b>mō‘ī</b>	King.
<b>moku</b>	District, island.
<b>mo‘olelo</b>	A story, myth, history, tradition, legend, or record.
<b>muliwai</b>	River mouth, estuary, or pool near the mouth of a stream, enlarged by ocean water left there at high tide.
<b>‘ōhelo</b>	<i>Vaccinium reticulatum</i> , a native shrub with small edible berries. Found in higher altitudes.
<b>‘ōhi‘a lehua</b>	The native tree <i>Metrosideros polymorpha</i> , the wood of which was utilized for carving images, as temple posts and palisades, for canoe spreaders and gunwales, and in musical instruments.
<b>‘ōlelo no‘eau</b>	Proverb, wise saying, traditional saying.
<b>‘ō‘ō</b>	<i>Moho nobilis</i> , the extinct black honey eater. Its black and yellow feathers were used in featherwork.
<b>‘ōpakapaka</b>	The blue snapper fish, <i>Pristipomoides sieboldii</i> , <i>P. microlepis</i> , <i>Aphareus furcatus</i> , <i>A. rutilans</i> .
<b>‘ōpae‘ula</b>	Red shrimp.
<b>‘ōpelu</b>	Mackerel scad ( <i>Decapterus pinnulatus</i> and <i>D. maruadsi</i> ).
<b>pa‘akai</b>	Salt.
<b>pāhoehoe</b>	Smooth lava; surface unbroken.
<b>puhi</b>	Eel, considered by some to be an ‘aumakua.
<b>pulu</b>	Fern fibers obtained from the hāpu‘u pulu ( <i>Cibotium glaucum</i> ), tree fern.
<b>‘uala</b>	The sweet potato, or <i>Ipomoea batatas</i> , a Polynesian introduction.
<b>‘ula‘ūla koa‘e</b>	The red snapper fish of the family <i>Lutjanidae</i> thought to been named after the tropic bird for the long streamer on its tail.
<b>ulua</b>	An adult of various Carangid fishes.
<b>wao</b>	A general term for inland areas, usually forested and uninhabited.

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**APPENDIX A: SHPD SECTION 106 LETTER**



NEIL ABERCROMBIE  
GOVERNOR OF HAWAII



**HISTORIC PRESERVATION DIVISION  
DEPARTMENT OF LAND AND NATURAL RESOURCES**

601 Kamokila Boulevard, Suite 555  
Kapolei, HI 96806

**WILLIAM J. AILA, JR.**  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE MANAGEMENT

**ESTHER KIA'AINA**  
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**WILLIAM M. TAM**  
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES  
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BUREAU OF CONVEYANCES  
COMMISSION ON WATER RESOURCE MANAGEMENT  
CONSERVATION AND COASTAL LANDS  
CONSERVATION AND RESOURCES ENFORCEMENT  
ENGINEERING  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
KAHOLAWE ISLAND RESERVE COMMISSION  
LAND  
STATE PARKS

July 16, 2013

Glenn M. Okimoto, Director of Transportation  
Department of Transportation  
869 Punchbowl Street  
Honolulu, HI 96813-5097

LOG NO: 2013.0415  
DOC NO: 1301SN16  
Archaeology

Dear Mr. Okimoto:

**SUBJECT: Chapter 6E-8 and National Historic Preservation Act (NHPA) Section 106 Review –  
Kea'au-Pahoa Road Intersection Improvements at Kahakai Boulevard  
Keonepoko 2 Ahupua'a, Puna District, Island of Hawai'i  
TMK: (3) 1-5-007: various parcels and roadway**

Thank you for submitting the plan titled *Draft Archaeological Monitoring Plan for the Kea'au-Pahoa Road Intersection Improvements at Old Government Road Project, Keonepoko 2 Ahupua'a, Puna District, Island of Hawai'i TMK: (3) 1-5-007: various parcels and roadway* (M. Wheeler, S. Wilkinson, and H. Hammatt), May, 2013. This plan was received by our office on June 13, 2013. The plan outlines the proposed monitoring provisions for this undertaking for the conversion of an existing T-intersection into a single-lane roundabout. The project's area of potential effect (APE) is an area approximately 1,100 feet long by up to 500 feet wide within the overall 9.5 mile Kea'au-Pāhoa Road Widening Project.

The archaeological monitoring provisions indicate that archaeological monitoring is recommended for all ground disturbing activities associated with the project's construction. The archaeological monitors will be onsite to mitigate any inadvertently discovered historic properties. Archaeological monitors will have the authority to halt work in the event of a discovery, and any inadvertently discovered human skeletal remains will be cared for in compliance with Hawaii Administrative Rule (HAR) 13-300. In addition, this AMP indicates that if cultural material is encountered, sufficient laboratory analysis will be conducted in order to prepare a report that meets the standards of HAR 13-279.

As per a phone conversation on July 15, 2013 with Sarah Wilkinson at CSH, minor revisions in the background research section have been requested (see attached) and with these changes in place, this plan meets the requirements of HAR 13-279-4 as well as the *Secretary of the Interior's Standards* and is therefore accepted by SHPD. Please include changes and send one hardcopy of the document, clearly marked **FINAL**, along with a copy of this review letter and a text-searchable PDF version on CD to the Kapolei SHPD office, attention SHPD Library. Please contact Sean Nāleimaile at (808) 933-7651 or [Sean.P.Naleimaile@Hawaii.gov](mailto:Sean.P.Naleimaile@Hawaii.gov) if you have any questions or concerns regarding this letter.

Aloha,

Theresa K. Donham  
Archaeology Branch Chief and  
Deputy State Historic Preservation Officer

cc: Wayne Kaneshiro, FHWA ([wayne.kaneshiro@dot.gov](mailto:wayne.kaneshiro@dot.gov))

**Attachment**

*Draft Archaeological Monitoring Plan for the Kea 'au-Pahoa Road Intersection Improvements at Old Government Road Project, Keonepoko 2 Ahupua'a, Puna District, Island of Hawai'i TMK: (3) 1-5-007:various parcels and roadway (M. Wheeler, S. Wilkinson, and H. Hammatt), May, 2013*

**Background Research**

1. Page 16, following the chant done by Halemano, the fourth paragraph begins with "When Kamalalawalu ceased chanting..." It appears that there is a chant missing in which Kamalalawalu responds to Halemano.

**APPENDIX B: SHPD HISTORIC PRESERVATION REVIEW LETTER**





NEIL ABERCROMBIE  
GOVERNOR OF HAWAII



**HISTORIC PRESERVATION DIVISION  
DEPARTMENT OF LAND AND NATURAL RESOURCES**

601 Kamokila Boulevard, Suite 555  
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CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
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ENGINEERING  
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HISTORIC PRESERVATION  
KAHOOLAWE ISLAND RESERVE COMMISSION  
LAND  
STATE PARKS

August 6, 2014

Jason Tagawa  
Isemoto Contracting  
648 Piilani Street  
Hilo, HI 96720

LOG NO: 2014.03485  
DOC NO: 1408SN09  
Archaeology

Dear Mr. Tagawa:

**SUBJECT: Chapter 6E-8 Historic Preservation Review –  
Kea'au-Pāhoa Road Intersection Improvements at Kahakai Boulevard  
Keonepoko 2 Ahupua'a, Puna District, Island of Hawai'i  
TMK: (3) 1-5- various: roadway**

Thank you for the opportunity to review the aforementioned permit application that was received by our office on July 5, 2014. According to the application, 2.5-acres will be graded in order to facilitate the improvements to the Pāhoa Bypass Road (Route 130). A review of our records indicates the subject parcel was subjected to an archaeological inventory survey in 2010 (Wilkinson et. al 2010). No evidence of historic properties were identified within this project area of potential effect (APE) during the 2010 inventory survey. The project proposes to convert the existing T-intersection of Kea'au-Pāhoa Road and Old Governmental Road in Pāhoa into a traffic roundabout. Improvements will seek to improve current operations and address and reduce the number of traffic accidents at the existing T-intersection. The project will include the following construction activities: earthwork, pavement, landscaping, drainage improvements, signage, lighting, adjustment and relocation of utilities, permit applications, construction phasing and traffic control. The project intersects various TMK parcels (3-1-5-007:007, 008, 019, 020, 079, and 080), and connects to the Pāhoa Village Road; the APE has been previously impacted by the existing Kea'au-Pāhoa Bypass Road and Pāhoa Village Road improvements.

Our records indicate the presence of a significant lava tube system (Pāhoa Cave) near the western extent of the the current project APE. This lava tube system was utilized in the past; therefore the possibility exists that subsurface historic properties associated with pre- and post-contact land use (including but not limited to burials) may be present beneath this APE. SHPD believes that there is a potential for effect during ground disturbing activities that can impact subsurface historic properties. The 2010 inventory survey report for the Kea'au-Pāhoa Road widening project area recommended that archaeological monitoring as a mitigation measure to occur during all ground altering activities. SHPD concurred with this recommendation and accepted a monitoring plan submitted to our office for review and approval (*Log No. 2013.0415 Doc. No. 1301SN16*). Based on our current information and with the approved monitoring measures in place, SHPD believes that the effect of the proposed project will be mitigated and we maintain our previous determination of **no historic properties affected** by the proposed improvements.

Please contact Sean Nāleimaile at (808) 933-7651 or [Sean.P.Naleimaile@Hawaii.gov](mailto:Sean.P.Naleimaile@Hawaii.gov) if you have any questions or concerns regarding this letter.

Aloha,

Michael Vitousek,  
Lead Archaeologist Hawaii Island Section  
Historic Preservation Division



## **APPENDIX C: NHPA REVIEW LETTERS**



NEIL ABERCROMBIE  
GOVERNOR OF HAWAII



DIRECTOR'S OFFICE  
DEPT. OF  
TRANSPORTATION



2013 FEB -8 A 8:01

**HISTORIC PRESERVATION DIVISION  
DEPARTMENT OF LAND AND NATURAL RESOURCES**

601 Kamokila Boulevard, Suite 555  
Kapolei, HI 96806

DIR 0167

WILLIAM J. ARLA, JR.  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE MANAGEMENT

ESTHER KJA'APPA  
FIRST DEPUTY

WILLIAM M. TAM  
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES  
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HISTORIC PRESERVATION  
KAOHOLAWE ISLAND RESERVE COMMISSION  
LAND  
STATE PARKS

February 1, 2013

Glenn M. Okimoto, Director of Transportation  
Department of Transportation  
869 Punchbowl Street  
Honolulu, HI 96813-5097

LOG NO: 2013.0415  
DOC NO: 1301SN16  
Archaeology

Dear Mr. Okimoto:

**SUBJECT: Chapter 6E-8 and National Historic Preservation Act (NHPA) Section 106 Review –  
Kea'au-Pāhoa Road Intersection Improvements at Kahakai Boulevard  
Keonepoko 2 Ahupua'a, Puna District, Island of Hawai'i  
TMK: (3) 1-5-007; various parcels and roadway**

This is in response to your letter dated January 8, 2013 requesting comments on this undertaking's effect on historic properties and/or possible mitigation measures within the area of potential effects (APE). The subject undertaking proposes to convert the existing T-intersection of Kea'au-Pāhoa Road and Old Governmental Road in Pāhoa into a traffic roundabout. Improvements will seek to improve current operations and address and reduce the number of traffic accidents at the existing T-intersection. This undertaking will be funded by the FHWA (Federal Aid Project No. HSIP-0130 (031)), triggering consultation pursuant to Section 106 of the National Historic Preservation Act and 36 CFR Section 800.2(c)(4). The project will include the following construction activities: earthwork, pavement, landscaping, drainage improvements, signage, lighting, adjustment and relocation of utilities, permit applications, construction phasing and traffic control. The project intersects various TMK parcels (3-1-5-007:007, 008, 019, 020, 079, and 080), and connects to the Pāhoa Village Road; the APE has been previously impacted by the existing Kea'au-Pāhoa Bypass Road and Pāhoa Village Road improvements.

The APE is an area approximately 1100 feet long by 500 feet wide, located within the proposed 9.5 mile Kea'au-Pāhoa Road widening project area [Project No. STP-0130(27)], which was subjected of an archaeological inventory survey in 2010 (Wilkinson et. al 2010). No evidence of historic properties was identified within this project APE during the 2010 inventory survey of the larger APE. Our records indicate the presence of a significant lava tube system (Pāhoa Cave) near the western extent of the the current project APE. This lava tube system was utilized in the past; therefore the possibility exists that subsurface historic properties associated with pre- and post-contact land use (including but not limited to burials) may be present beneath this APE. SHPD believes that there is a potential for ground disturbing activities to impact subsurface historic properties.

The 2010 inventory survey report for the Kea'au-Pāhoa Road widening project area recommended that archaeological monitoring occur during ground altering activities in areas with a potential for subsurface findings. SHPD concurred with this recommendation and requested that a monitoring plan be submitted to our office for review and approval pursuant to Hawaii Administrative Rule (HAR) §13-279 prior to the start of construction (Log 2011.1759, Doc. 1106TD17).

Given the above information, we recommend that archaeological monitoring occur during ground disturbance for this project, and that a monitoring plan be submitted to our office for review and approval pursuant to HAR13-279 and the Secretary of the Interior's Standards prior to the start of construction. The monitoring program will facilitate the identification and proper treatment of any historic properties that may be discovered during project construction.

Mr. Glenn Okimoto  
February 1, 2013  
Page 2

We look forward to the opportunity to work with HDOT on the proposed undertaking. Please contact Sean Naleimaile at (808) 933-7651 or [Sean.P.Naleimaile@Hawaii.gov](mailto:Sean.P.Naleimaile@Hawaii.gov) if you have any questions or concerns regarding this letter.

Aloha,



Theresa K. Donham  
Archaeology Branch Chief and  
Deputy State Historic Preservation Officer

cc: Wayne Kaneshiro, FHWA ([wayne.kaneshiro@dot.gov](mailto:wayne.kaneshiro@dot.gov))

DEPT. OF TRANSPORTATION  
HIGHWAYS DIVISION  
HAWAII DISTRICT  
ROUTE SLIP

FEH 3 20 2/14  
TO  
1 ☐ District Engineer  
2 ☐ Assistant District Engineer  
☐ Construction Engineer  
☐ Consultant Engineer  
☐ Maintenance Engineer  
3 ☐ Design Engineer  
☐ Testing Laboratory  
☐ MVSO  
4 ☐ Office Manager

FOR  
3, 2 ☐ Your information  
☐ Comments & recommendations  
☐ Appropriate attention or action  
☐ Creating reply & other necessary papers  
4 ☐ Direct reply  
☐ Signature  
☐ File



NEIL ABERCROMBIE  
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**HISTORIC PRESERVATION DIVISION  
DEPARTMENT OF LAND AND NATURAL RESOURCES**

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**WILLIAM J. AILA, JR.**  
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KAHOOLAWE ISLAND RESERVE COMMISSION  
LAND  
STATE PARKS

October 31, 2013

Roy Siegel, P.E., Transportation Engineer  
300 Ala Moana Blvd. Room 3-306  
Honolulu, HI 96813-5097

LOG NO: 2013.5848  
DOC NO: 1310SN11  
Archaeology

Dear Mr. Siegel:

**SUBJECT: National Historic Preservation Act (NHPA) Section 106 Review –  
Kea'au-Pāhoa Road Intersection Improvements (Roundabout) at Kahakai Boulevard  
Keonepoko 2 Ahupua'a, Puna District, Island of Hawai'i  
TMK: (3) 1-5-007: various parcels and roadway (Project No. HISP-0130(031))**

Thank you for correspondence regarding the subject undertaking at the Federal Highway Administration (FHWA) intends to provide funding (Federal-aid Project Number HSIP-0130 (031)). The submittal was received by our office on October 10, 2013. The FHWA has authorized the Hawai'i Department of Transportation to act on behalf of them regarding NHPA Section 106 notification and consultation. The information in the letter summarizes our former correspondence relating to the proposed undertaking and mitigation measures (*Log 2013.0415, Doc 1301SN16*).

The proposed mitigation measures indicate that archaeological monitoring will be conducted during for all ground disturbing activities associated with the project's construction. The area of potential effects at the intersection of Kea'au-Pāhoa Road and the Old Government Road is an area approximately 1,100 feet long and up to 500 feet wide. In a previous review of this project, SHPD expressed concerns regarding the presence of Kazumura Cave (SIHP Site 50-10-46-1001) in the general vicinity (*Log 2010.3298, Doc 1212SN09*). The improvements to the intersection include earthwork, pavement, landscaping, drainage improvements, signage, lighting, and adjustments and relocation of utilities, permit applications, construction phasing and traffic control. The archaeological monitors will be present during all ground disturbance. Archaeological monitors will have the authority to halt work in the event of a discovery, and any inadvertently discovered human skeletal remains will be cared for in compliance with Hawaii Administrative Rule (HAR) 13-300. In addition, this AMP indicates that if cultural material is encountered, sufficient laboratory analysis will be conducted in order to prepare a report that meets the standards of HAR 13-279.

Based on the current information, we concur with your effect determination of **no historic properties affected** by the proposed improvement undertaking, with the implementation of the accepted archaeological monitoring plan. Please contact Sean Nāleimaile at (808) 933-7651 or [Sean.P.Naleimaile@Hawaii.gov](mailto:Sean.P.Naleimaile@Hawaii.gov) if you have any questions or concerns regarding this letter.

Aloha,

Theresa K. Donham  
Archaeology Branch Chief and  
Deputy State Historic Preservation Officer

cc: Steven Yoshida, HDOT [steven.yoshida@hawaii.gov](mailto:steven.yoshida@hawaii.gov)