

Figure 22. 'Ewa settlement model.

This is based on the richness of the resource catchment area, and is testable depending on the preservation of buried deposits.

2. Permanent agricultural settlements developed along the upper 'Ewa Plain, associated with the alluvial fans and soil of the upper Plain. Most of the cultivation was dryland, but included some runoff cultivation and some irrigation in a few of the spring-fed gully mouths.

This is based on the environmental conditions of the area and archival data regarding water potential. It is probably not testable, except for the possibility of site discovery in small undeveloped gulches.

- 2a. This area was the first area of agricultural expansion outside the Honolulu floodplain region, and probably consisted of small settlements at the mouths of the gulches.

This proposition is based on the agricultural potential, but may not be testable because of site destruction.

3. The West Loch coast of the 'Ewa Plain had fishponds and fishtraps, with an adjacent strip of dense population including elite residence. The density of population would have been greater than that along the seaward coasts.

The fishponds and traps are recorded from archival and archaeological data. The settlement argument is based on general Hawaiian models. It is probably not testable because of site destruction.

4. The area of Pu'uolo was a place of royal residence.

This proposition rests in part on the documentary evidence of the existence of a residence of Kamehameha II, and in part on a general Hawaiian settlement model of royal residence associated with rich resources areas, surfing, and canoe landing (cf. Kahala'a, Waikiki, and Kauhakakai). In the absence of traditional records noting this for royal habitation, the residence was probably a secondary one and not a royal center. The area in question has been destroyed by development, and thus the nature of this settlement can be evaluated only by means of archival research.

5. The coastline of the 'Ewa Plain was intensively occupied, primarily with temporary camps associated with resource collection. The temporary camps were tied to permanent settlements in zones 1, 3 and 6.

This rests on the archaeological data sample.

- 5a. Early settlement in this area emphasized marine exploitation and bird collection, based on temporary habitation associated with permanent habitation along the West Loch coast and the Honouliuli floodplain.

- 5b. Later settlement emphasized marine exploitation, with continued temporary habitation, but in association with permanent inland settlements (see Fig. 22, zones 6 and 7).

These propositions are based in part on archaeological data and in part on general Hawaiian settlement models. They are partially testable with additional archaeological research. Some of the cultural resources of NAS Barbers Point are appropriate for this testing.

6. The zone inland of the coast line was a region of permanent habitation, based on cultivation and marine exploitation. The settlers were focused on sinkhole clusters, which were a source of water and could be developed for cultivation.

Because of disturbance, there are few archaeological areas left in this region but several sites suggest a permanent and long-term occupation (e.g., complexes at 2700 and 2702). This model component is testable with the extensive remains at NAS Barbers Point in this topographic zone.

- 6a. The permanent occupation of the area was initiated in the A.D. 1200 to 1400 range and developed within the A.D. 1400 to 1850 range, and is associated with the construction of rectangular stone walled houses.

This is based on radiocarbon dating and evidence of occupation into the post-contact period. Additional testing of this proposition is possible, and resources at NAS Barbers Point are ideal for this.

- 6b. Early occupation occurred in the form of temporary camps related primarily to resource collection (primarily bird hunting) and was not related to development of cultivation.

This is based on archaeological information combined with settlement modeling. It is argued, for example, that there is no evidence for permanent "home settlements" from which to establish temporary agricultural camps. Additional testing is possible, but dependent on site preservation.

7. The central area of the 'Ewa Plain was occupied with permanent settlements dependent on cultivation. However, unlike the settlement in zone 6, this occurred late in the pre-contact period and with the permanence based on adaptation to long-term rainfall variation.

This proposition is based on archaeological data, and is additionally testable, particularly at NAS Barbers Point.

8. Pu'ukopolei is the sacred center of the 'Ewa Plain.

This is based on traditional information. There are probably no physical remains of Hawaiian sites left on Pu'ukopolei to determine the nature of the religious activities that may have taken place there. The proposition can be evaluated through additional archival research.

9. Land division boundaries. One possible generalized land division model for the 'Ewa Plain is shown on Figure 22. If any such divisions existed, they would have been further subdivided, probably in *ʻāle* fashion, so that parcels would have been held along the coast as well as in agricultural areas inland, possibly including lots for stream irrigation in the Honouliuli lowlands.

This is based on the known local names of the 'Ewa Plain and a general Hawaiian settlement model. Testing may be possible with additional archival research, although the searches of land records have not provided any information outside the Honouliuli floodplain. Some limited testing may be possible with archaeological remains, including in areas of NAS Barbers Point.

- 10 (not on Figure 22). Scattered Hawaiian occupation existed on the Plain into the mid-19th century. This was a time of low population. Families occupied a number of scattered residences and use areas, including coastal fishing camps and inland houselots and walled cultivation areas.

This is based in part on archival data and in part on preliminary archaeological data. It is testable by detailed analyses of existing archaeological information and through additional archaeological research. NAS Barbers Point has resources suitable for testing this proposition.

'Ewa Plain Settlement and the Cordy O'ahu Model

In order to place the 'Ewa settlement in context, the Cordy model (1996) of the development of O'ahu (with some modifications) is summarized in graphic and schematic form (Figs. 25-26). This is also shown with a model of population growth for Hawaii as a whole (Dye and Komori 1992a), and the comparative development of 'Ewa Plain settlement based on radiocarbon dates.

APPENDIX D

Historical Features of the 'Ewa Plain from 1825 to World War II (Figure 5, Map and Key)
 In *Synthesis of Cultural Resource Studies of the 'Ewa Plain*.
 By David Tuggle and M.J. Tomonari-Tuggle
 (1997: Section II, pp.32-33)

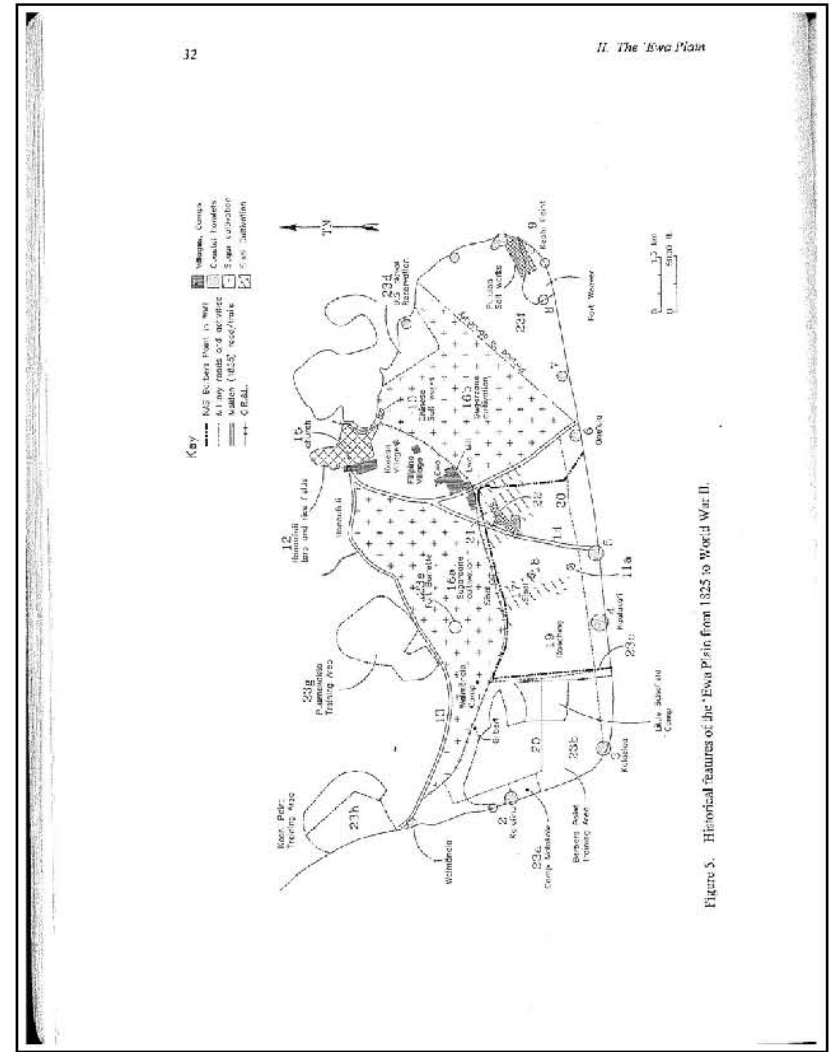


Figure 5. Historical features of the 'Ewa Plain from 1825 to World War II.

Key to Figure 5. Historical Features of the 'Ewa Plain from 1825 to World War II.

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9. Pu'uhua salt works, hamlet, and residence of Kamehameha II, 1800s (Malden 1825; Alexander 1873; Wilkes 1840; Sand, Curs, and Wilson 1873; Silva 1987).
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- 23e. Ft. Barrett (at Pu'uokapele).
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Appendix I

Cultural Impact Report

FINAL
CULTURAL IMPACT ASSESSMENT
OF THE PROPOSED
KA MAKANA ALI'I
MIXED-USE COMPLEX
KAPOLEI, HONOULIULI AHUPUA'A
'EWA DISTRICT, O'AHU ISLAND
TMK 9-1-016:142



Pacific Legacy: Exploring the past, informing the present, enriching the future.

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ABSTRACT

As part of the Environmental Impact Statement process, Hawai'i DeBartolo, LLC, has requested a Cultural Impact Assessment (CIA) for the proposed Ka Makana Ali'i mixed-use complex and mauka half of Keoneula Road, which is slated for a parcel in central 'Ewa Plain, Honouliuli Ahupua'a, 'Ewa District, O'ahu [TMK: 9-1-016:142]. This assessment is based upon archival research as well as ethnographic interviews. Under Act 50, the Hawaii State Department of Health "Guidelines for Cultural Impact Assessments" mandate that the subject property be studied as well as surrounding areas where construction or development have impact potential. These guidelines also recommend personal interviews with traditional cultural practitioners and knowledgeable informants on cultural practices.

The results of archival research indicate that this general area of 'Ewa Plain has a long and rich cultural history. From the archaeological record, traditional stories and myths, and Historic documents attributed to the vast plain, it is evident that these lands have been the backdrop to many significant acts in the long drama of O'ahu's pre- and post Contact history. However, no archaeological research has been conducted on the project area. Archival research has pointed out that a major feature of pre-Contact and early Contact Honouliuli, the Kualaka'i Trail, cut across or passed near to the project area. Though the trail no longer exists, cultural resources, such as archaeological features attributed to this trail, may exist beneath the plantation era soil. Additionally, the project area borders the Historic OR&L Railroad to the south. This Historic railway, in operations from 1889 to 1947, was accepted into the National Register of Historic Places in 1975. Hawai'i DeBartolo, LLC is not proposing to disturb any portion of the OR&L Railroad for Ka Makana Ali'i or Keoneula Road at this time.

For this study, seven interviews were performed and information from previous interviews of one cultural informant was authorized to be used for this report. Based on these consultations, two cultural resources were identified as being potentially impacted by the proposed development: 'uha loa (*Waltheria indica*) used for traditional Hawaiian medicine and 'alae (red clay) used for coloring salt, medicine, dye, and spiritual purification. A total of three cultural practitioners were documented as gatherers of these cultural resources. This particular location is purportedly desired for its easy access, abundance of the resources, and the lack of pesticide spray in its interior. However, these cultural resources exist in localities outside of this project area. Hence, the proposed Ka Makana Ali'i and Keoneula Road development will undoubtedly impact these activities, but not prevent the cultural practitioners from collecting these resources. There is also the concern about water usage by the planned development as preventing cultural practices, such as traditional forms of horticulture, agriculture, and aquaculture.

In addition, ethnographical evidence supports the possibility of a variety of cultural practices that occurred on the property prior to the large scale cultivation of sugar cane, the remnants of which may encapsulated under plantation era and modern sediment. Several informants voiced concerns about potential damage to subsurface archaeological sites. Unsettled spirits are also a concern, where unwanted paranormal activities could plague the new development or, conversely, haunt surrounding localities due to displacement.



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Frontispiece: Artistic rendering of proposed Ka Makana Ali'i (courtesy of Hawai'i DeBartolo, LLC).



1.0 INTRODUCTION

Pacific Legacy Inc., under contract to Hawai'i DeBartolo, LLC, conducted a Cultural Impact Assessment (CIA) for the proposed Ka Makana Ali'i mixed-use complex (Figure 1) and mauka half of Keoneula Road (Figure 2), in East Kapolei, Honouliuli Ahupua'a, 'Ewa District, O'ahu, Hawai'i [TMK 9-1-016:142]. Ka Makana Ali'i is slated to be built on ca. 67 acres directly southwest of the intersection of North-South Road and Kapolei Parkway. The 6 acre Keoneula Road add-on will provide access to the eastern side of Ka Makana Ali'i. At the present time, this proposed roadway is not to continue south of the central east driveway of Ka Makana Ali'i. The function of this assessment is to determine if any traditional practices will be displaced or disrupted by the proposed development of the mixed-use complex and roadway.

Preparation for this document was conducted in compliance with rules outlined in Chapter 343 (HRS) and Act 50, and Hawai'i State Department of Health (DOH), Office of Environmental Quality Control (OEQC) Guidelines for Cultural Impact Assessments, adopted by the State of Hawai'i Environmental Council in 1997 and amended in 2000 (OEQC 2011). These guidelines mandate that archival research be performed on and around the subject property as well as cultural consultations to provide pertinent information on cultural practices that may be impacted by the proposed development. A copy of the OEQC guidelines is provided in Appendix A.

Community consultations and archival research was performed by Kimberly M. Mooney, B.A. under the general guidance of Paul L. Cleghorn, Ph.D. For this study, eight community consultations were performed. While numerous contacts were pursued, concerted attempts to interview additional informants were unsuccessful. A complete list of contacted members of the community, with project affiliation and communication log is provided in Appendix B.



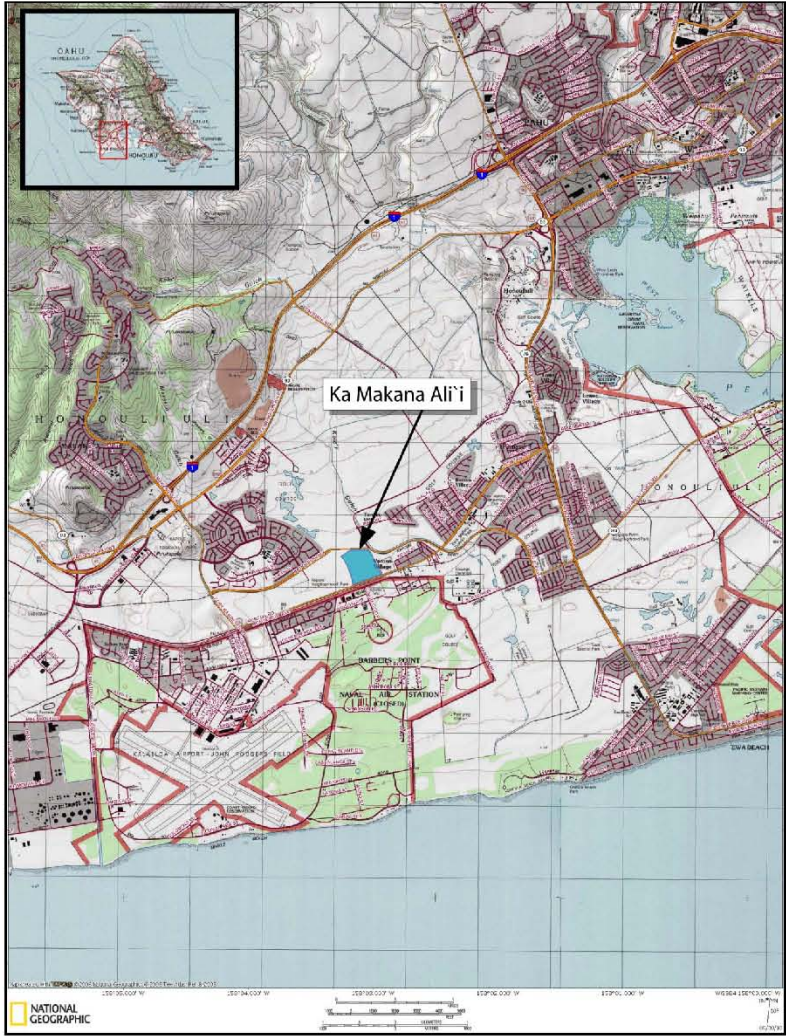


Figure 1. Location of project area (courtesy of National Geographic).

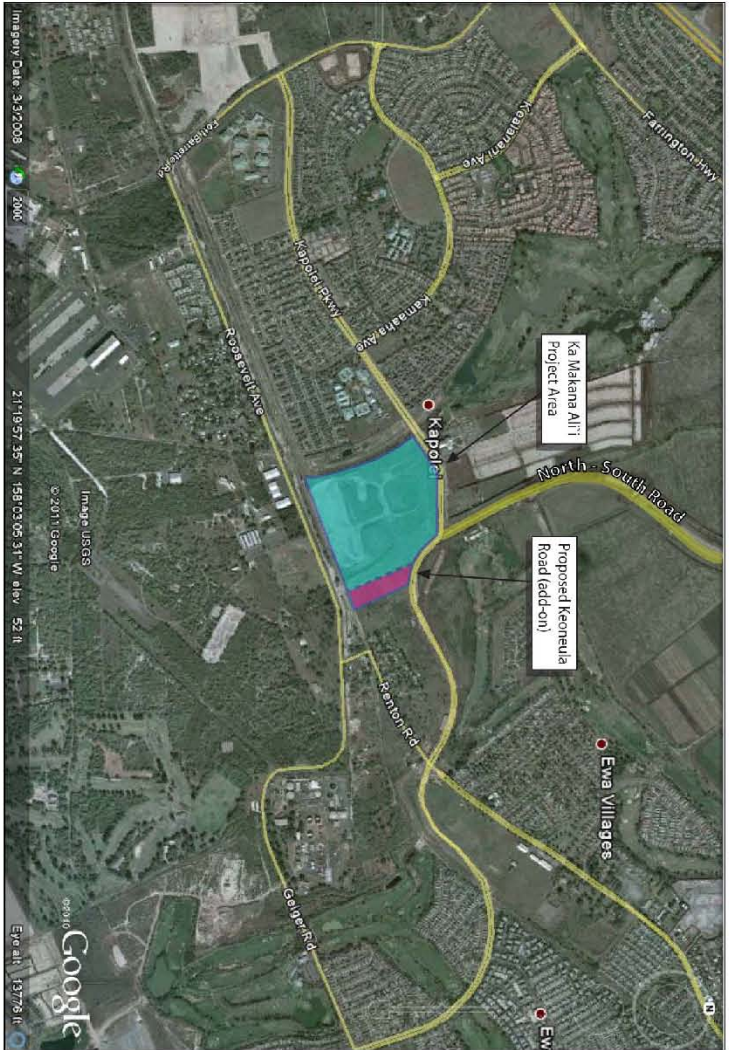


Figure 2. Location of project area (courtesy of Google Earth).

1.1 PURPOSE

Essentially, a CIA is designed to promote and protect cultural beliefs, practices, and resources of native Hawaiians, other ethnic groups, as well as other collective groups associated with the subject area. In the State of Hawai'i, under Chapter 343 HRS, and Act 50, SLH 2000, a CIA is required as part of the EIS process, and has the stated purpose to:

- 1) require that environmental impact statements include the disclosure of the effects of a proposed action on the cultural practices of the community and State; and
- 2) amend the definition of "significant effect" to include adverse effects on cultural practices.

According to the OEQC guidelines, types of cultural practices and beliefs may include those relating to subsistence, commercial, residential, agricultural, access-related, recreational, as well as religion and spirituality. Further, the CIA was designed to promote and protect cultural beliefs, practices, and resources of native Hawaiians, other ethnic groups, as well as other collective groups (OEQC 2011: 3-4). To determine the effects of the proposed development on cultural practices and beliefs, the following tasks are undertaken:

- 1) identify and consult with individuals and organizations knowledgeable about cultural practices that may have taken place in the area;
- 2) conduct archival research about traditional practices that may have been conducted in the area;
- 3) describe the cultural practices that took place within the potentially affected area;
- 4) assess the impact of the proposed development on the cultural practices that may have taken place within the potentially affected area; and;
- 5) prepare a report on the findings resulting from the above investigations.

1.2 METHODS

According to the Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts (OEQC 2011), it is recommended that preparers of CIA implement the following protocol:

1. identify and consult with individuals and organizations with expertise concerning the types of cultural resources, practices and beliefs found within the broad geographical area, e.g., district or *ahupua'a*;
2. identify and consult with individuals and organizations with knowledge of the area potentially affected by the proposed action;

3. receive information from or conduct ethnographic interviews and oral histories with persons having knowledge of the potentially affected area;
4. conduct ethnographic, historical, anthropological, sociological, and other culturally related documentary research;
5. identify and describe the cultural resources, practices and beliefs located within the potentially affected area; and
6. assess the impact of the proposed action, alternatives to the proposed action, and mitigation measures, on the cultural resources, practices and beliefs identified.

Archival documents as well as archaeological reports and CIAs focusing on the general locality of the 'Ewa Plain were consulted to supplement the interviews. Research for background information as well as finding ethnographic interviewees was performed at the following repositories:

- State of Hawai'i Historic Preservation Office (SHPD)
- State of Hawai'i Office of Environmental Quality Control (OEQC)
- State of Hawai'i Public Library

A list of *kūpuna*, cultural practitioners, and cultural informants viewed as potential interviewees was developed by contacting elected officials, members of civic clubs, and local *hula halau* as well as visiting nearby Varona Village to find willing informants. In addition, the Cultural Assessment Provider List available in the OEQC website (<http://video.doh.hawaii.gov>) and CIAs on file for the area were referred to. A full list of potential cultural informants and communication log for the preparation of this assessment is provided in Appendix B and the Ethnographic Interview Questionnaire used as a framework for the interview is provided in Appendix C. Informal interviews were conducted between 7 July and 14 August 2011. A total of seven individuals representing a variety of cultural practices and resources were interviewed for this CIA. Transcripts of interviews were not attempted in this assessment; however, audio recordings of four of the interviews were obtained and are kept on file at Pacific Legacy office in Kailua, Hawai'i. Audio recordings of the other three interviews were not attempted due to background noises. In all but two cases, due to time constraints, summaries of the interviews were sent to the informant for review and feedback. When the informant was satisfied with the summary, written permission to the information was given by signing an Oral History Study Personal Release of Interview Records form. Copies of release forms completed by interviewees are provided in Appendix D.

2.0 PROJECT AREA DESCRIPTIONS

2.1 ENVIRONMENTAL SETTING

A number of reports have been written on the geological formations and environmental conditions of the 'Ewa Plain (Allen 1990; Cline 1955; Foote et al. 1972; MacDonald & Abbott 1970; Stearns 1946, 1978; Stearns & Vaksvik 1935; Zeigler 2002), which address broad characteristics of the 'Ewa Plain.

2.1.1 Geology, Hydrology, and Sediments

Based on terrain and availability of water, the 'Ewa Plain can be separated into three main geographical regions that are described by Tuggle & Tomonari-Tuggle (1997:9) as: "lowland limestone exposure, the upland alluvial terrain, and a locale of floodplain and alluvial fans." Fresh water on the barren coral plain has often been reported as being insufficient to support a permanent or substantial Hawaiian settlement during pre-contact years. However, Tuggle and Tomonari-Tuggle (1997:18-21) summarize various research projects on the availability of water in 'Ewa Plain asserting that there may have been permanent Hawaiian settlements in a number of locales, if not generally across the entire area. Water sources were identified in several locations on the plain, including: sink holes that reach the water-table, wetlands, sheet runoff, spring and creek water from gulches, natural limestone water traps, Honouliuli Stream, and other water features in Honouliuli Ahupua'a (Malden 1825). The proposed Ka Makana Ali'i project area is located on the lowland limestone just southwest of Kalo'i Gulch at roughly 50-60 ft above mean sea level (AMSL).

Generally, the 'Ewa Plain is an expansive limestone shelf that begins 3-5 miles (5 to 8 km) south of the Waianae Mountain range to the southern coast of O'ahu, stretching from the western coast of Ko'Olina east to Pearl Harbor. This elevated coralline reef was formed during an interglacial period approximately from 120,000 to 38,000 years ago, when sea levels in Hawai'i were some 6-8m above the present sea level, which has been termed the Waimānalo Sea Stand. During this period, coral reefs developed upwards with the gradually rising sea levels. During the next period of glaciation, sea levels dropped leaving exposed coral reefs that were then eroded by marine level fluctuation, wave/sediment abrasion, as well as weathering by rain, run-off, and wind after sea levels dropped to their present level. Further, rain water naturally absorbs carbon dioxide in the air to form a weak carbonic acid, which dissolves portions of the limestone with prolonged exposure, subsequently forming karst topography. Hallmark features of karst topography are caverns and sinkholes, which are formed as acids build up and dissolve soluble portions and natural voids in the limestone. Several miles east of the project area is an escarpment approximately 15 meters high, often referred to as "fossil cliffs" and/or "fossil bluffs," where the alluvial clay layer has been eroded away, exposing Pleistocene limestone that is laden with fossils.

Sinkholes of the 'Ewa Plain are typically bell-shaped in cross-section with openings commonly 3.28 feet (1 m) in diameter with base diameters increasing to 6.56 to 9.84 feet (2 - 3 m) (MacDonald & Abbott 1970; Stearns 1946, 1978; Stearns & Vaksvik 1935; Zeigler 2002:96-97).

These sinkholes became important resources for avian populations prior to human settlement in Hawai'i. Later, sinkholes became significant resource locales, temporary shelters, agricultural features, as well as burial locations for early Hawaiian populations on the 'Ewa Plain (Barrera 1975; Davis 1995; Lewis 1970; Miller 1993; Sinoto 1976, 1978a, 1978b, 1979). Sinkholes containing archaeological and/or paleontological remains encapsulated under alluvial soils or construction fills can be encountered anywhere within the 'Ewa Plain.

The 'Ewa Plain gently slopes *mauka* or towards the mountains, due to the deposition of alluvial clays and silts that are derived from weathered basalt from upslope. The alluvial substrate forms a wedge that lies atop the limestone bench, itself positioned above the basalt foundation (Geolabs-Hawaii 1987; Stearns & Vaksvik 1935). This limestone shelf contains artesian basal aquifers that are the source of potable water found in springs and wells in several locations across the plains; two of the most prominent locations, Honouliuli Gulch "Watering Place" and Waihuna in Kalo'i Gulch, are within two miles of the project area (Malden 1825; Sterling & Summers 1978; Mooney & Cleghorn 2008c).

Soils in the project area are currently described as Honouliuli clay with 0-2% slopes (HxA) and Mamala stony silty clay loam with 0 to 12 percent slopes (MnC) according to the Department of Agriculture Natural Resources Conservation Service (USDA/NRCS 2011; Figure 3; Table 1). The soil types roughly bisect the project area (*mauka-makai*), where the *mauka* portion is Honouliuli clay and the *makai* portion is Mamala stony silty clay. This is greatly due to agricultural practices of the early 1800's, where natural forests of the Waianae Range were extensively harvested, causing severe erosion of the mountain sides. Erosion was further advanced unintentionally by the over-grazing of livestock in the uplands and then intentionally by the intensive plowing of these soils to encourage fertile sediment deposition onto the lower plains for farming (Lewis 1970; Tuggle & Tomonari-Tuggle 1997; Wolforth & Wulzen 1998). Hence, the deposition of sediments onto the 'Ewa Plain was unnaturally increased from the early 1800's to the present time.

Also worthy of note, are the three volcanic cones lying on the northern margin of the 'Ewa Plain: Pu'u Pālailai, Pu'u Kapolei, & Pu'u Makakilo. Pu'u Pālailai, which lies ca. 2.5 miles (4 km) west of the project area, is one of only three known volcanic glass quarries on O'ahu (Manhoff & Uyehara 1976:46; Wolforth & Wulzen 1998). As volcanic glass was a choice material for stone tool manufacture, Pu'u Pālailai would have been an important locality in pre-contact times.

2.1.2 Climate

Honouliuli, the largest *ahupua'a* of O'ahu, is situated on the leeward side of O'ahu. 'Ewa Plain covers the lower half of the *ahupua'a*. This is one of the driest regions of O'ahu, having an average of 18 inches of annual rainfall (Juvik & Juvik 1998). The proposed Ka Makana Ali'i Center is situated on the northern border of Kalaeloa (former NAS Barbers Point), whose temperatures range between 72°F (40°C) in January to 78.5°F (43°C) in August, with a variance of 13°F (7°C) throughout the day (Orr 2008:3-1). The hottest days of the year typically fall between August and September (Armstrong 1973).

2.1.3 Vegetation

Generally, the most common types of plants in the 'Ewa Plain are xeric and hardy exotics, with the exception of relatively undisturbed coastal marshlands. Previous to human settlement in the area, Cuddihy and Stone (1990) claim that the region would have been more like a savannah: a plain of grasses with sparse groves trees and shrubs. Pre-contact plant species would have included, but not limited to: *wiliwili* (*Erythrina sandwicensis*), *lama* (*Diospyros ferrea*), *pili* grass (*Heteropogon contortus*), 'a'ali'i (*Dodonea ericarpa*), scrub 'ōhi'a (*Metrosideros collina*), and possibly sandalwood or 'ili'ahi (*Santalum* sp.). Ground cover may have included cayenne vervain (*Stachytarpheta urticaefolia*), 'ilima ku kula (*Sida cordifolia*), morning glory (*Ipomoea indica*), *ko'oko'olau* (*Bidens pilosa*) according to Moore and Kennedy (2002:3).

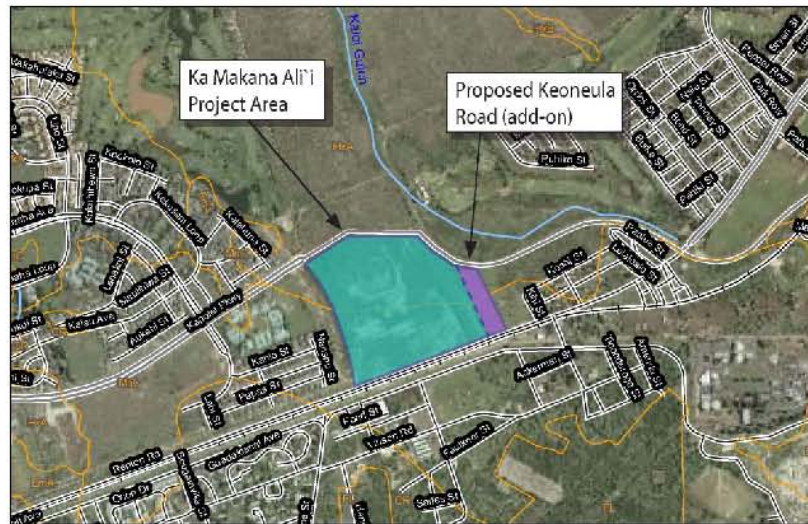


Figure 3. Ka Makana Ali'i Soil Map (courtesy of NRCS/USDA Soil Survey 2011).

Table 1. Ka Makana Ali'i Project Area- Custom Soil Report (USDA/NRCS Soil Survey 2011)

Map Unit Symbol	Map Unit Name	Acres in Project Area	Percent of Project Area
HxA	Honouliuli clay, 0 to 2 percent slopes	38	56.8%
MnC	Mamala stony silty clay loam, 0 to 12 percent slopes	29	43.2%
Totals for Area of Interest		67	100.0%

2.2 CURRENT STATE OF PROJECT AREA

An archaeological survey and backhoe testing was performed by Kimberly M. Mooney, B.A., under the general guidance of Paul L. Cleghorn, Ph.D., from 11 July to 22 July 2011 on the 70-plus acres of land slated for the Ka Makana Ali'i mixed-use complex and the proposed Keoneula Road (Mooney and Cleghorn 2011a). The pedestrian survey yielded no new archaeological sites visible on the ground surface. Rather, the project area appeared to have evidence of multiple ground disturbing activities from the time of sugarcane cultivation until recent years. Ground disturbing activities include extremely deep and vast excavations resulting in a ca. 1345 foot by 390 foot borrow pit at the south end of the property. Further, a number of soil stockpiles cover much of the interior of the lot (Figure 4). The remaining areas have evidence of recent construction and rubbish dumping, major modifications for unofficial off-road vehicle riding (i.e. built up berms, jumps, and trails), as well as dense feral growth of grasses, weeds, shrubs, and trees. However, during a site visit 7 July 2001 with Kupuna Eaton and Makua Kalani to reintroduce them to the project area, both informants were able to spot 'ilima, 'uha loa, and mauna loa, which are used in traditional medicine and crafts.



Figure 4. Current state of Ka Makana Ali'i Project Area and proposed Keoneula Road corridor (courtesy of Google Earth).

3.0 TRADITIONAL & MYTHOLOGICAL ACCOUNTS

A number of oral traditions have been recorded that help describe the physical, mystical, and cultural landscapes of Honouliuli Ahupua‘a. Although Ka Makana Ali‘i is located in an area that has diminutive mythological significance, it is situated amidst several areas within Honouliuli Ahupua‘a that are well known in Hawaiian legends and history.

3.1 THE NAMING OF ‘EWA & HONOULIULI

Honouliuli is the westernmost *ahupua‘a* of ‘Ewa District, or *moku*, which stretches from Red Hill on the west edge of Kona District to Pili O Kahe just north of Ko‘Olina and Waimanalo (Figure 5). Sterling and Summers (1978) state that the Gods Kane and Kaneloa gave ‘Ewa District its name, which translates as, “the stone that strayed,” since the stone used to determine district boundaries had landed a great distance away from where it was thrown (Sterling & Summers 1978: 1). Pukui et al. (1974:28) maintain that ‘Ewa literally translates as ‘crooked’ and comes from the same story of Kane and Kaneloa determining ‘Ewa’s *moku* boundaries at the landing place of their divinely thrown stone.

The name, Honouliuli, applies to the entire *ahupua‘a* as well as a village within the *ahupua‘a*, which is located less than two miles northeast of Ka Makana Ali‘i. Noted as the largest *ahupua‘a* on the island of O‘ahu, Honouliuli stretches from the West Loch of Pearl Harbor to what is now called Ko‘Olina to the west and north all the way to Wahiawa. Honouliuli is literally translated as ‘dark bay’ by Pukui et al. (1974:50). Yet, Thrum (1923) and Westervelt (1963) offer a different origin for the name Honouliuli, which comes from the “Legend of Lepeamoa.” According to this legend, Honouliuli is the name of Lepeamoa’s grandfather and Chiefess Kapalama’s husband who gave his name “to a land district west of Honolulu” (Thrum 1923: 170).

3.2 MYTHOLOGICAL TALES OF ‘EWA & HONOULIULI

Honouliuli Ahupua‘a is the setting for a number of legendary accounts concerning the activities of Gods, Goddesses, demi-gods, and head O‘ahu chiefs or *mō‘ī*, as well as supernatural beings such as *mo‘o*, mystical creatures, and wandering spirits. Compilations of Honouliuli’s mythology have been created by Sterling and Summers (1978), Hammatt and Folk (1981), Kelly (1991), Charvet-Pond and Davis (1992), Maly (1992), Tuggle and Tomonori-Tuggle (1997), Mitchell and Hammatt (2004), and O‘Hare et al. (2006).

Some tales paint the plains of ‘Ewa as a mystical and somewhat foreboding place, where gods and goddesses frequent. For example, Sterling and Summers (1978) report a story from a January 13, 1900 *Ka Loea Kālai‘āina* newspaper article, “The Old Women Who Turned to Stone” which reads:

If a traveler should go by the government road to Waianae, after leaving the village of gold, Honouliuli, he will first come to the plain of Puu-ainako and when that is passed, Ke-one-ae. Then there is a straight climb up to Puu-o-

Kapolei and there look seaward from the government road to a small hill. That is Puu-o-Kapolei...You go down some small inclines, then to a plain. This plain is Pukaua and on the mauka side of the road, you will see a large rock standing on the plain. This stone has a legend that made this plain noted...There were two supernatural old women or rather peculiar women with strange powers and Puukaua belonged to them. While they were down fishing at Kualakai in the evening, they caught these things[:] aama crabs, pipipi shell fish and whatever they could get with their hands. As they were returning home to the plain from the shore and thinking of getting home while it was yet dark, they failed for they met a one-eyed person. It became light as they came near to the plain, so that passing people were distinguishable. They were still below the road and became frightened lest they be seen by men. They began to run, running, leaping, falling[,] sprawling, rising up and running on, without a thought to the aama crabs and seaweeds that dropped on the way, so long as they would reach the upper side of the road. They did not go far for by then it was broad daylight. One woman said to the other, “Let us hide lest people see us,” and so they hid. Their bodies turned to stone and that is one of the famous things on this plain to this day, the stone body. This is the end of these strange women...(Ka Loea Kālai‘āina, 13 January 1900 as cited in Sterling & Summers 1978: 39).

Another version of this tale is offered in an article found in the *Ka Hōkū o Hawai‘i*, February 15, 1927 (translated by Maly 1997: 19), where the women were *mo‘o* and changed into lizard form as they crossed the goddess Hi‘iaka on her journey to the ‘Ewa coast, for they feared she would kill them. The *mo‘o* hid near the trail and Hi‘iaka greeted them and passed without harm (Maly 1997 as cited by O‘Hare et al. 2006: 20). This story not only illustrates the enchantment of ‘Ewa Plain in lore, but also the wealth (in one form or another) of nearby Honouliuli Village, deemed the “village of gold,” which is upheld by early maps of the region where it is depicted as the largest permanent settlement of the ‘Ewa District in pre-plantation times. Additionally, it accounts significant foot traffic from Honouliuli Village to Waianae in pre-Contact times.

The legend of Namakaokapaoo originates in Honouliuli Village area. This is a story of a young 2 ½ foot tall boy, named Namakaokapaoo, who killed his stepfather and threw his head five miles away before conquering O‘ahu’s king and his warriors, and subsequently replaced the king with his mother as ruler (Beckwith 1970). Honouliuli Village is also the place that Ka ihu o Pala‘ai, the sister of mythological figure, Maikoha, fell in love and settled (Sterling & Summers 1978:53).

Pearl Harbor, just east of Honouliuli Village, is the source of many legends. Sterling and Summers (1978) offer several stories about the shark goddess, Ka‘ahupahau (translated as Cloak-well-cared-for), her origin having several interpretations. In one interpretation, Ka‘ahupahau was thought to have been a miscarriage by her mother and left in the waters of Pearl Harbor, but still alive, she transformed into a shark. In another version, Ka‘ahupahau and her brother were born as human, but were later transformed into sharks by a shark god. The two remained in Pearl Harbor, where they were fed ‘*awa* by their human relatives. In return, Ka‘ahupahau protected her human kin from other sharks. Another major figure in Pearl Harbor mythology is Papio, the beautiful surfing chiefess, who had several conflicts with the shark goddess, Ka‘ahupahau, and is often said to have eventually been devoured by her

Figure 5. Ahupua'a of 'Ewa District (from Sterling & Summers 1978).



(Sterling & Summers 1978: 54-56). Kapakule is the tennis racket shaped fishpond located at the entrance to Pearl Harbor, which is the setting of many tales. One of which is of the *menehune*, or little people, building the fishpond in one night at the command of the gods, Kane and Kanaloa (Sterling & Summers 1978: 42-43).

Located approximately 1.8 miles (1.9 km) west of Ka Makana Ali'i, Pu'u Kapolei, was subject of numerous local ancient myths and chronicles. Sterling and Summers (1978) mention Pu'u Kapolei as being one of the most famous hills in the olden days and a major point of reference for travelers going east or west through Honouliuli. Additionally, Pu'u Kapolei was the landmark (juxtaposed to the setting sun) used to mark the end of Makali'i, or the Kau season, and the beginning of the Ho'oilu season, when young sprouts emerged from the ground (Kamakau as cited in Sterling and Summers 1978).

The very name Kapolei translates as "beloved Kapo," who was the sister of the Goddess Pele (Pukui et al. 1974:89). Colorful tales further link the *pu'u* to Hawai'i's pantheon of gods and goddesses, including dramatic conflicts between them. One such tale involves Kamapua'a, the Goddess Pele, and her sister Kapo, where the amorous pig-god Kamapua'a assaults Pele at Pu'u Kapolei and is subsequently lured away from her as he pursues Kapo's detached "flying vagina" (*kohe tele*) that she placed on Pu'u Kuua (Pukui et al. 1974:200; Beckwith 1970). Additionally, the deity Kamaunuanoho was supplanted at Pu'u Kapolei by her grandson, Kamapua'a, to exact tribute from the commoners of the area (Nukuina as cited by Sterling and Summers 1978). Sterling and Summers (1978) list several accounts of a dwelling or heiau in Pu'u Kapolei belonging to the grandmother of Kamapua'a. As nearby Pu'u Kapolei has been home to deities, the setting for legends, as well as the landmark for the seasons, the nearby lands have likely been significant to Hawaiians in pre-Contact times.

Further to the west and south are a number of additional myths. Kamakau described western 'Ewa as the "rough country (*wiliwili*) of Kaupē'a" and "the home of wandering spirits with no holdings, who ate spiders and moths for sustenance" (Kamakau 1964:83). Kamakau adds that the wandering souls of Kaupē'a are often helped by 'aumakua to escape from this domain (Kamakau 1991: 49). The description of west 'Ewa as being the "realm of wandering spirits" is supported by Pukui's chant on the subject (Pukui 1983: #1666 as cited by O'Hare et al. 2006) and Fornander's lament for Kahahana (Fornander 1919, Vol. 6, Part 2: 297 as cited by O'Hare et al. 2006).

3.3 CHRONICLES AND CONFLICTS IN HONOLIULI AHUPUA'A

Some tales portray Honouliuli Ahupua'a as being a place of "firsts," such as the origin of humans on O'ahu and breadfruit in Hawai'i. The *ahupua'a* of Honouliuli was also noted for being the origin, home, refuge, and vacationing place for some of Oahu's earlier *mō'ī*, or ruling chiefs (Kamakau 1961, 1991; Lewis 1970). Yet, *kauwā* (slaves) lived in the 'Ewa District's as well. In addition, the *ahupua'a* was the location of key battles and treaties in O'ahu's pre-Contact annals.

Some tales suggest that the first Hawaiians had settled in Honouliuli. In the legend, Ka-Lua-Ōlohe, Pearl Harbor was said to be the place where human beings first came to O'ahu. This

area is said to have many caves, which belong to the *ōlohe*, who were “born in the day” (Beckwith 1970).

The first planting of breadfruit in Hawai‘i is said to have occurred at Pu‘uloa, located about 4 miles (6.4 km) southeast of Ka Makana Ali‘i. According to tradition, Kahai, son of Moikeha, transported the species from Upolu, an island in Samoa, on his return trip home from Tahiti (Thrum 1907; McAllister 1933). Fornander (1919, Vol IV, Part I: 392) and Kamakau (1964) confirms that Pu‘uloa is the location of Hawai‘i’s first breadfruit.

The story of Mā‘ili-kūkahi, one of the chiefs who was celebrated for leading Oahu out of chaos and into a period of prosperity, confirms Honouliuli Ahupua‘a as being the homeland of some O‘ahu *mō‘i*. Kamakau refers to Mā‘ili-kūkahi as a ‘kind’ chief and not culpable for abandoning Hawaiian taboos although he is said to have “relinquished [his] position as ruling chief and gave it to the commoners; and took the firstborn children of the commoners to rear and care for” (Kamakau 1961: 223). Mā‘ili-kūkahi’s sovereign realm was eventually challenged by chiefs from Maui and Hawai‘i Island, one of which was named Hilo. The O‘ahu chief came out victorious after a bloody battle and placed the heads of his foes for all to see at a major trail junction just outside of Honouliuli Village, which was thereafter called Po‘o-hilo (head of Hilo), after the decapitated chief from the island of Hawai‘i (Kamakau 1991: 56).

According to the 1883 Dictionary of Hawaiian Localities, ‘Ewa was a “...favorite residence of Oahu kings of olden times...” (Sterling & Summers 1978:1). Kamakau mentions that ‘Ewa, from Pu‘u Kuua to Maunauna at the northern extreme of the *ahupua‘a*, was quite populous where O‘ahu *mō‘i* reigned before they ruled from Waikiki (Kamakau 1991: 54). Fornander tells the story of Keaunui, “the head of the powerful and celebrated Ewa chiefs” who is credited with cutting a navigable channel into the estuary of Pearl River near the Pu‘uloa saltworks (Fornander 1880: 48 as cited in Sterling & Summers 1978:46).

Coastal Honouliuli was sought as a refuge and vacation area on O‘ahu, as is clear in several texts. For instance, the beach area now called Ko‘Olina, was noted as the favored vacationing place of Chief Kakuhihewa, a *mō‘i* of ancient times (Fornander as quoted by Lewis 1970). In addition, when Kahekili conquered O‘ahu, Kahahana, his wife, and ‘friend’ fled together to various locations in ‘Ewa. One location was Po‘o-hilo in Honouliuli where they went into hiding before giving themselves up to the commoners, as they were “weary with life in the forest” (Sterling & Summers 1978: 6).

However, some traditional accounts paint a rather disparaging picture of central Honouliuli *ahupua‘a* inhabitants. According to an 1899 newspaper, “the very dirty ones” lived in the large hollow above Pu‘u Kuua, which is approximately 4.6 miles (7.4 km) northwest of Ka Makana Ali‘i (“*Na Wahi Pana o Ewa*” 1899 as cited by Sterling and Summers 1978: 32). Another tradition explains the origin of stigmas placed on the peoples of Pu‘u Kuua:

The Chiefs of old, who lived at that time, were of divine descent. The two gods looked down on the hollow and saw how thickly populated it was. The mode of living here was so that the chiefs and commoners mixed freely and they were so

like the lowest of people (*Kauwā*). That was what these gods said and that was the time when the term *kauwā* [an outcast or slave] was first used, and was used for many years afterwards.

After the first generations of chiefs had passed away and their descendants succeeded them, a chiefess became the ruler. It was customary for the chiefs of Oahu to visit this place to see the local chiefs. They did this always. When the time came in which a new chiefess ruled, an armless chiefess, she ran away to hide when other chiefs came to visit as usual because she was ashamed of the lack of an arm. Because she was always running away because of being ashamed the chiefs that visited called her the low-born (*kauwā*). Thus the term remained in the thoughts down to this enlightened period. She was not truly a *kauwa* but was called that because she behaved like one. This was how they were made to be *kauwas*. When the ruling chief wished to go to Waikiki for sea bathing he asked the chief just below him in rank, “how are my planting places at Puu-Kuua, have they not produced young suckers?” The chief next to him answered, “There are some suckers,” and sent someone for them. When the men, women and children least expected it, the messenger came to get some of the children. The father stood up and took his sons to Waikiki. Then when the ruling chief went sea bathing, he sent an attendant to get the boys and take them to a shallow place where the ruling chief would come. Then the ruler placed a hand on each of the boys, holding them by the necks. The words he uttered were, “My height has not been reached (by the sea)! My height has not been reached!” (*Aole i pau kuu loa, aole pau kuu loa*). He advanced and held on to the boys until the sea was up to his chest. The boys floated on the water face down. The father on shore called out, “Lie still in the sea of your Lord,” and so on.

The sea of Waikiki is said to have been used to kill men in and the other place is Kualoa. The inhabitants of Puu-Kuua were so mixed, like taro beside an imu. There were two important things concerning this place. (1) This place is entirely deserted and left uninhabited and it seems that this happened before the coming of righteousness to Hawaii Nei. Not an inhabitant is left. (2) The descendants of the people of this place were so mixed that they were all of one class. Here the gods became tired of working and returned to Kahiki. (“*Na Wahi Pana o Ewa*” 1899 as cited by Sterling and Summers 1978:32-33).

The peoples of Pu‘u Kuua became viewed as pariahs for not abiding by social codes, and as a result, they were persecuted to near extinction. This story also suggests that the pre-Contact population of central upland Honouliuli Ahupua‘a may have thrived previous to this campaign of extermination.

Warfare was another constant theme in the ‘Ewa District. Fornander (1919, Vol IV, part II: 364) wrote about the “battle” of Keahumoa Plain, which was supposed to be the final battle of celebrated chief, Kualī‘i. In this account, two warrior brothers sought higher positions in life, so they arranged for 12,000 of Kualī‘i’s men to meet with 1,200 Ko‘olau warriors to battle at Keahumoa, ‘Ewa. However, they did not plan to fight, but to unite both sides. The youngest brother, Kamakaaulani, presented a *mele*, or chant, to Kualī‘i while the older brother, Kapaahulani, led the opposing side to the battleground. When the two sides met, the *mele* was successful and the battle was prevented. After the treaty, the island of O‘ahu was united.

When chiefs of other islands found out about the unity, they joined forces to unite under Kuali'i. Sterling and Summers (1978: 38) list several versions of this battle. Another battle referred to as "Battle of Kipapa" was part of the story of Ma'ili-kukahi, where Big Island's chief, Hilo, attempted to take over O'ahu unsuccessfully in a particularly bloody battle. His head was placed at a crossroads just above Honouliuli Village, which was since called Po'ohilo (Kamakau 1991: 56). A later conflict was the Battle of 'Ewa, which took place in several places within 'Ewa in the mid-1790's. In this battle, Ka-'eo and Kalani-ka-pule fought, and with the aid of European weaponry, Kalani-ku-pule overcame Ka-'eo (Kamakau 1961; as cited in Sterling & Summers 1978: 12).

3.4 TRADITIONAL ACCOUNTS OF NATURAL RESOURCES IN 'EWA PLAINS

Although historic accounts of water in west 'Ewa are rare, fresh water is documented at the spring Hoaka lei at Kualaka'i on the 'Ewa coastline, in the oral history chant, He Mo'olelo Ka'ao No Hi'iaka I Ka Poli O Pele, translated by Pukui et al. (1974:119) and by Kepā Maly (1999:31).

According to ancient myths, the 'Ewa Plain was home to a variety of wild plants and birds. The legend, He Mo'olelo Ka'ao No Hi'iaka I Ka Poli O Pele, is the goddess Hi'iaka's account of her journey across 'Ewa. In this legend, first published in Hawaiian in the newspaper *Ka Hoku o Hawai'i* (September 18, 1924 -July 17, 1928), important geographical locales as well as many trees, plants, and flowers were mentioned. Flora mentioned in the tale included: *nene* grasses, *kupukupu* ferns, *noni* trees, *ma'o*, varieties of *lehua*, *koai'a*, *'ilima*, *'ohai*, *kukui*, *kauno'a*, *'uala*, *pilipili-'ula*, *wiliwili*, and *noho*. Emerson (1978:167) translated parts of this legend, and more recently Kepā Maly (1999:31) translated parts relating to 'Ewa. Maly (1999) paraphrases a portion of his translations of the Hi'iaka legend chant:

Descending to the flat lands of Honouliuli, Hi'iaka then turned and looked at Pu'uokapolei and Nawahineokama'oma'o who dwell there in the shelter of the growth of the 'ohai (*Sesbania tomentosa*), upon the hill...When Hi'iaka finished her chant, Pu'uokapolei said...So it is that you pass by without visiting the two of us. Lo, we have no food with which to host you. Indeed, the eyes roll dizzily with hunger. So you do not visit us two elderly women who have cultivated the barren and desolate plain. We have planted the 'uwala (sweet potato) shoots, that have sprouted and grown, and have been dedicated to you, our lord. Thus as you travel by, pull the potatoes and make a fire in the *imu*, so there will be relief from the hunger. For we have no food, we have no fish and no blanket to keep us warm. We have but one Kapa (covering)...in the time when the grasses dry, and none is left on the plain, we two are left to live without clothing. (Maly 1999:35)

Traditional *mele*, or chants, refer to and other localities on lands stretching from Pu'u o Kapolei to Kalaehoa as well. The nature of these lands in ancient times is suggested through these *mele*. Kamakau, in the mid- to late-1800's wrote articles in newspapers titled, *Ku'oko'a* and *Ke Au 'Oka'a*, which shed light on ancient Hawaiian life, customs, and oral traditions. These articles were translated into English and compiled in several manuscripts in the 1960's then reprinted several times. For instance, Samuel Mānaiakalani Kamakau published numerous *mele* in

Nupepa Kuokoa during the late 19th Century. One of which describes the people, terrain, vegetation, and climates of various locations within the 'Ewa Plain:

Me he kanaka la ka ohai o Kaupea,
People are like the *ohai* blossoms of Kaupe'a

Ka wiliwili hae kaune i ka la,
The *wiliwili* appear to stagger in the sun

Kulolia i ke kaha i Kanehili,
Stricken on the plain of Kanehili

I ke kaha kahakai o Kaolina – e,
At the shore of Ka'olina (Ko'olina),

He wahi olina na ka la i Puuloa...
There is a place of joy from the sun at Pu'uloa

(Kamakau, in *Nupepa Kuokoa*, August 10, 1867:3; Translated by Maly, in Belt Collins 2006:2-15)

Kamakau also published several proverbs about the area in the Hawaiian newspaper, two of which are translated as:

A o kona oliliko ana e ulili haamalule ana i Puuokapolei,
And Pu'uokapolei which shimmers in the daylight;

A ua kolilii koliliko kona wailiula i ke kaha o Kanehili ka hele o ka wiliwili me ka lau o ka maomao
It is on the arid flat lands, of Kanehili, with the mirage forming waters, that the *wiliwili* and *maomao* grow, with their leaves scattered in the wind

(Kamakau, in *Nupepa Kuokoa*, August 10, 1867:3; Translated by Maly, in Belt Collins 2006:2-14)

Another *mele* published in *Nupepa Ka Oiaio* in 1895 by Moses Manu, helps to reveal the lands of Kaupe'a as the ancient Hawaiians viewed it. The *mele* is as follows:

O-u o lea ka manu o Kaupea,
The 'Ō'ū is the joyful bird of Kaupe'a,

Ka O-o manu leo lea o Puuloa,
The joyful voiced 'Ō'ō is of Pu'uloa,

E hoonaele ana i ka pua o ka Wiliwili,
Softening the blossoms of the Wiliwili,

Inu iaola i ke koena wai lau noni
Drinking the drops of nectar from the noni,

Inu ka manu ano kunewa...
The birds drink and pass time...

(M. Manu in *Nupepa Ka Oiaio*, May 10, 1895:1; Translated by Maly, in Belt Collins 2006:2-15)

Marine resources were also plentiful along the coasts of the 'Ewa Plain. Kamakau (1991) in *Ku Po'e Kahiko: The People of Old*, speaks of one 'Ewa guardian ancestor deity, Kanekua'ana, also interpreted as a *mo'o*, or guardian water lizard, who was revered for providing her faithful descendants and *kama'aina* with an abundance of *i'a* or marine resources from Halawa to Honouliuli. Further, Mary Kawena Pukui (1943), states that Kanekua'ana was responsible for bringing the *pipi*, or pearl oyster, from Tahiti in ancient times (Pukui 1943 as cited in Sterling & Summers 1978:49-51). During times of scarcity, her devotees erected *waihau* and *heiau* to Kanekua'ana where pigs, bananas, and coconuts were sacrificed, rather than people. Kamakau (1991) reports on the outcome of one such sacrifice:

What blessings did they obtain? *I'a*. What kinds of *i'a*? The *pipi* (pearl oyster) - strong along from Namakaohalawa to the cliffs of Honouliuli, from the *kuapā* [walled] fishponds of inland 'Ewa clear out to Kapakule. That was the oyster that came in from the deep water to the mussel beds near shore, from the channel entrance of Pu'uloa to the rocks along the edges of the fishponds. They grew right on the *nahawe*le mussels, and thus was this *i'a* obtained...the *pipi* were found in abundance - enough for all 'Ewa - and fat with flesh. Within the oyster was a jewel (*daimana*) called a pearl (*moni*)...They were great bargaining value (*he waiwai kumuku'ai nui*) in the ancient days, but were just "rubbish" (*opala*) in 'Ewa (Kamakau 1991: 83)

Though the project area is located beyond the margins of the areas touted as abundant in natural resources, it appears central and nearly equidistant to these important areas. Thus, pre-Contact cultural activities may have taken place in this area, such as travelling to and from Honouliuli Village to other locales in the *ahupua'a*, with the possibility of trails, trail markers, temporary encampments, or other activity areas. Conversely, this area was comparatively void of resources, yet abundant in sinkholes, making it ideal for human interments.

4.0 HISTORIC ACCOUNTS

Since the time of European Contact, 'Ewa District has had an intriguing history and has been the backdrop for several significant milestones of the island's history.

4.1 'EWA DISTRICT AND HONOULIULI AHUPUA'A AT CONTACT

The written account of 'Ewa begins with the arrival of Captain George Vancouver in 1793. Apparently, the lands of 'Ewa garnered little comment in early written history, save for those of derogatory nature. According to Vancouver (1798), the conditions of the area between Waianae and Ko'olau Mountains were not pleasant, stating:

This tract of land was of some extent but did not seem to be populous, nor to possess any great degree of natural fertility; although we were told that a little distance from the sea, the soil is rich, and all necessities of life are abundantly produced (Vancouver 1798 as cited by Sterling and Summers 1978: 31).

Vancouver's crewmen commented further on the condition of the few canoes that came out to greet them from west 'Ewa, calling them "small and indifferent" and "furnished with little for barter" (Vancouver 1798 as cited by Lewis 1970: 6). Later, Vancouver wrote of the relatively dismal condition of west Honouliuli coast, stating:

From these shores we were visited by some of the natives, in the most wretched canoes I had ever yet seen amongst the South-sea islanders; they corresponded however with the appearance of the country, which from the commencement of the high land to the westward of Opooroah (Puuloa), was composed of one barren rocky waste, nearly destitute of verdure, cultivation or inhabitants, with little variation all the way to the west point of the island (Vancouver 1798 as cited by Lewis 1970: 6).

The political center of 'Ewa during the Contact period is still disputed. McAllister (1933: 106) describes a place named Lepau, which sits on the Waipi'o Peninsula, less than 4 miles (6.35 km) east of Ka Makana Ali'i, as a "dwelling place of the alii." Silva (1987) suggests that a place called Halaulani on the same peninsula was home to chiefs. Conversely, some argue that the political center was much further north at Lihue between Pu'u Kuuu and Maunauna (Cordy 1996).

The Battle of 'Ewa is stated by Kamakau (1961) to have occurred in 1794, shortly after European Contact. This battle is said to have several phases, taking place in 'Ewa District and utilizing European weaponry. It is said that Kalanikupule, high chief of O'ahu, overcame Kaeokulani, who ruled Kauai and Maui at the time.

4.2 HONOULIULI AHUPUA'A IN THE EARLY TO MID-1800'S

The 'Ewa Plain was described as a near uninhabitable place in early accounts, however, Honouliuli Village was viewed more as an oasis with a sizable population, aquatic abundance,

and burgeoning agricultural system. As seen in the Land Commission Award's Native Testimonies and early maps of Honouliuli, land adjacent to West Loch was intensively farmed with a variety of traditional agricultural methods from early Contact times into the late 1800's (Dicks et al. 1987, Appendix A; Malden 1825; Monsarrat 1878; Figures 6 & 7). The coastal areas were also famous for their marine resources and inland fishponds, as evident in oral and written history. Connecting Honouliuli Village and the trail leading from Honolulu to Waianae was a trail, often referred to as Kualaka'i Trail, which appears in the Malden 1825 map of the south coast of O'ahu to pass through or adjacent to the Ka Makana Ali'i project area (Figure 6). The ancient trail leads from Honouliuli Village to Keoneula (Hau Bush) with a leg leading to Kualaka'i (Figures 6, 10, & 12).

Edwin Hall, Hawaiian Minister of Finance, described west 'Ewa as a "barren, desolate plain" in the early 1800s after traversing much of the island of O'ahu (Hall 1839 as quoted in Lewis 1970: 8). Yet, according to maps of the early to late 1800s (Malden 1825; Monsarrat 1878; Figures 6 & 7), Honouliuli was labeled as the "Watering Place" and depicted as a relatively large agricultural community.

Honouliuli Village, which is located approximately 2.4 miles (3.9 km) northeast of Ka Makana Ali'i, had an abundance of natural resources, such as rich soil, marine life, and fresh water since pre-Contact times as depicted by early maps (Malden 1825; Monsarrat 1878; Figures 6 & 7) and written accounts (A. Campbell 1819; Chamberlain Ms.; Kamakau 1991). These vital elements permitted the development of an extensive system of irrigated taro patches or *lo'i* as well as landlocked and shoreline fishponds previous to the drilling of the first artesian well commissioned by James Campbell in 1879. Captain George Vancouver described the 'Ewa plain as deficient in people and fertility, but said he was informed "...a little distance from the sea, the soil is rich, and all necessaries of life are abundantly produced..." (Vancouver 1798, Vol 3: 361-363). Archibald Campbell later writes of his experience travelling through 'Ewa in his 1809 essay, "Voyage Round the World," by stating:

We passed by foot-paths winding through an extensive and fertile plain, the whole of which is in the highest state of cultivation. Every stream was carefully embanked to supply water for the taro beds. Where there was no water, the land was under crops of yams and sweet potatoes. The roads and the sides of the mountains were covered with wood to a great height. We halted two or three times, and were treated by the natives with the utmost hospitality (A. Campbell 1819: 145).

Maps from early to mid-1800's depict Honouliuli as having extensive agricultural fields and fishponds (Malden 1825, Monsarrat 1878; Figures 6 & 7). Additionally, Native Testimony given at the time of the Mahele 'Aina in 1848, list scores of taro patches (*lo'i kalo*), vegetable plots (*māla*), fishponds (*loko i'a*), pig pens (*pā pua'a*), pastures (*kula*), hala groves (*ulu hala*), and house sites within Honouliuli Valley (Dicks et al. 1987: Appendix A&B), attesting to intensive agricultural activities and habitation density in the area. Furthermore, several well-known varieties of taro are associated with the area, one being the *kaikoi* taro that comes from the "land of the silent fish," which is another name for Pearl Harbor (Sterling & Summers 1978: 8).

However, after the arrival of Europeans, areas of natural abundance were severely impacted by exotic species and agricultural practices. S.E. Bishop wrote in 1836 that *mauka* areas were of denuded of vegetation due to intensive cattle ranching to the extent that "vast quantities of earth" were washed down into the lagoons, filling them with sediment, causing a near extinction of oysters and clams (Bishop 1901: 87 as cited in Sterling & Summers 1978). The reduction of marine resources and choking of wetland agriculture with upland sediments may have hastened the exodus of surviving Honouliuli villagers to seek employment and western comforts of the 'Ewa Plantation and villages.

Additionally, Honouliuli Ahupua'a was host to one of the earliest Roman Catholic Churches in Hawai'i (Figure 8), which helped indoctrinate Honouliuli inhabitants into a western lifestyle and values. By the mid-1800s, Honouliuli Village's population experienced a serious decline in Native Hawaiians, primarily due to disease. Following the development of 'Ewa Plantation in the late 1800's, parishioners of Honouliuli's Catholic Church moved their homes and subsequently their house of worship closer to the mill, which became 'Ewa Villages - the center of Honouliuli Ahupua'a's economy and its densest population center until the modern era.

Honouliuli Ahupua'a experienced a severe population decline in the early 1800s, despite the fecundity of the land. Levi Chamberlain, who circled O'ahu in 1828 to inspect missions and schools, held a small assembly for scholars in Waimanalo, west 'Ewa. The assembly took place in the house of a "head man" and was attended by people who lived in the area (Lewis 1970:7). Thus, during the early 1800's 'Ewa still had a modest population of Native Hawaiians who were receptive to Christianity and European-style schools.

In 1832, missionaries carried out a census in Honouliuli, recording 1,026 people with 25% of 'Ewa living in Honouliuli. L. Smith wrote of Honouliuli Village's population in 1830's, stating that within the village was a "populous neighborhood" (Smith 1835: 4). Kamakau (1961) stated that east 'Ewa experienced a spike in Native Hawaiian population growth in the mid 1800's, followed by a severe drop, to near extinction, as a result of European diseases. Further, Kamakau stated "Honouliuli had over ten school houses with their teachers" and after the acute population decrease, "whole villages have vanished, leaving not a man" (Kamakau 1961: 424-425). L. Smith, who was the first missionary to build a house and church in 'Ewa, said in the 1830's that, "the people of Ewa are a dying people" and for each birth were at least eight to ten deaths (Smith 1835: 8 as quoted by Lewis 1970: 8). Artemis Bishop, Smith's successor, listed small-pox, cholera, and measles as responsible for decimating Native Hawaiians of 'Ewa.

Additionally, Bishop stated that after several years of population decline, about half of Honouliuli's remaining population died within a few months in 1854 despite his attempt to vaccinate them (Bishop 1835: 1). Unfortunately, the people of Honouliuli, like other Hawaiians, had little chance of survival from these foreign diseases.

L. Smith, also noted in 1835 that the people of 'Ewa were generally of ill health and over-taxed by O'ahu's chiefs (Smith 1835 as cited by Lewis 1970). Smith expanded, by saying that the people of Honouliuli were "almost constantly employed for the chiefs - making salt - getting timber-wood & money for their annual tax" (Smith 1835:1).

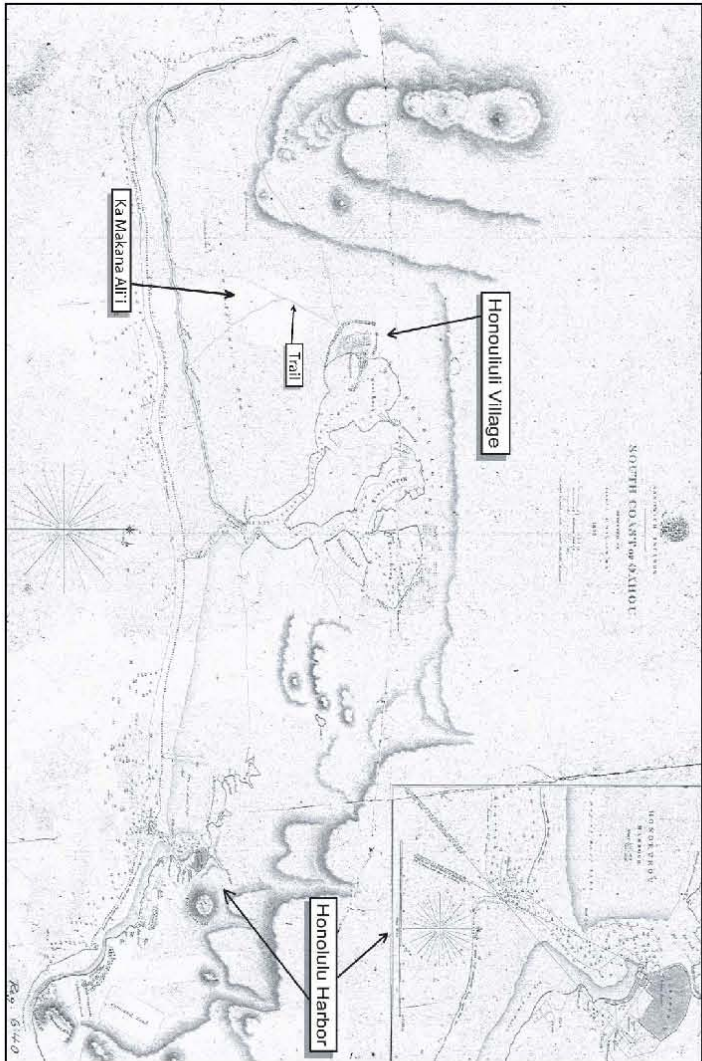


Figure 6. Malden (1825) map, South Coast of Oahu with Honouliuli & Honouliuli depicted as well as the approximate location of Ka Makana Ali'i project area.

Christianity was met with mixed reception by Native Hawaiians of Honouliuli in the early 1800's. However, some of the earliest detailed accounts of 'Ewa are from mission station reports. These reports doubled as a commentary on Honouliuli's demographics and as a progress report of conversions. Smith mentioned the presence of a school and provided a count of students tested in 'Ewa District in his "Oahu Station Reports - 'Ewa to Waianae, from 1835-1863," stating:

There have been but two other Schools at Ewa during the year [besides those taught at the station.

Two young men residing at Honouliuli have taught one School of children & one of adults. These Schools have made considerable improvement. Samuel has been reading book[s] of the adults. They had also an exercise in the Almanac; & it appeared at our examination or "hoike" recently held, that they could answer almost any question that could be asked from that book.

We have had but one hoike during the year, & that took place on the 20th of May, & was composed of persons who had attended School & no others. Others would have gladly joined us as Scholars on that occasion, but I told them they had no part nor lot in the matter except as Spectators.

The following is a list of the Scholars as they were examined.

No. of children from Honouliuli	31
*Do of adults	19
Total	50
No. of adult females at the Station	51
*Do of males	73
*Do of children	54
Choir of Singers	122
Total taught at the Station	300
Total taught at Ewa	50
	350
	(Smith 1835:6)

*Do is a form of short-hand used by L. Smith that appears to imply number of types of individuals in Honouliuli.

Yet, while walking in 'Ewa's hinterland during the same year, Smith happened upon a mound of stones with a "heathen god" atop, described as a "small stone dressed in tapa" (Smith 1835:2 as quoted by Lewis 1970:8). Thus, it is likely that some Native Hawaiians still revered old gods in the early 1800's.

The conversion to Christianity proved to have some positive outcomes according to missionaries as seen in a later report from Artemis Bishop from the mid 1800's:

Four protracted meetings have been held during the year, within the bounds of my field of labor, to wit, at Halawa, Waiawa, Honouliuli, and Waianae. They

were all, with the exception of the one at Halawa, well attended, and solemn, and were followed by decidedly beneficial effects. The frequent repetition of these meetings however in the same place, does not appear to me to be attended with very striking effects, unless it be in a time of special seriousness among the people. Such meetings however continue to be popular, and prove beneficial or not in proportion to the spirit with which they are conducted. (Bishop 1841:1)

Another station report for 'Ewa was submitted in 1846 by Bishop, revealing the mixed reception of Christianity in Honouliuli during the mid-1800's. Bishop writes:

The state of religious apathy continued as heretofore for several years past, down to the middle of last year, without anything remarkable to disturb the false security that pervaded the community. About the first of July last, I was visited by several inquirers from Honouliuli a settlement on the western part of the district, who appeared to be anxious about their salvation. This was the first indication of anything special among my people. Soon afterwards I was invited to spend a day at the place and meet the people in religious meetings. I went accordingly and we had a full house and attentive listeners. Several who attended from neighboring villages, requested that I would likewise spend a day in religious meetings with them. As I was desirous that the people should generally come out, I required that the invitation should come from them, and special effort be previously made to obtain their presence. As I had been so long discouraged with the slender attention paid to social religious meetings which I had appointed in the neighboring villages, I feared that without a special effort on the part of the *kamaainas*, the appointment might prove a failure. But as I was happily seconded by my elders and other *lunas*, my appointments were well attended, and the preaching was listened to with seriousness and solemnity. My first efforts were mainly directed to the slumbering [church] members. These however gradually began to awake to prayer and effort to arouse others. Daily prayer meetings were after a time established in every village in the district, and where suitable houses for meetings were not to be found, new ones were in the time of a few months erected, and two days meetings were appointed at their dedication. These houses that exist in all the principal villages are distinct from the school houses, and are consecrated exclusively to religious meetings. About the close of the year a general seriousness pervaded the minds of the people throughout the district, the church was filled on the sabbath, and religious were thronged. Many backsliding professors were awakened, and many apostates had publicly confessed their sins, and sought to be restored to the bosom of the church. The no. of inquiries from the ranks of the world now amounted to upwards of 200. But as there appeared so little excitement, and everything went on so still, I had not dared to call it a revival. Nor have I yet ventured to give it that name; or scarcely to write much about it to my brethren, lest it should prove in the end a false illusion to the greater part of the young converts. I have all along preached to them the terms of the law, as well as the invitations and hopes of the Gospel - to lead them to a sense of sinfulness as well as to faith in the blood of Jesus, but I fear that a great multitude of them, do not feel as deeply as they mouth their utter unworthiness, notwithstanding their full and ample confessions with the lips. But it is not easy for this people to feel without animal excitement, which I have from the first falling away for now nearly a year, my hopes are more confirmed that their repentance and faith are sincere. Still I

would hope with trembling, knowing as I do the fickle character of this people (Bishop 1846:1).

Bishop's struggle with the Native Hawaiian conversion to Christianity was endured in vain, however, as the majority of Honouliuli peoples would be wiped out by disease.

4.3 HONOULIULI FROM THE MID- TO LATE 1800'S

Despite the severe population decline, Christianity and European ways persisted in Honouliuli Ahupua'a, as they did all over Hawai'i. Agriculture, however, would not only persist in the area - it would dominate in the form of sugarcane.

According to Tuggle and Tomonori-Tuggle (1997), tax records from 1855 to 1888 reveal that the principal communities of the *ahupua'a* were in or flanking Honouliuli Gulch, as well as Lihue, Pu'u'loa, Kualaka'i, and Waimānalo. Only a total of 44 individuals were taxed between these years, although this number likely represents head-of-households. Taxable assets included, but were not limited to, "fishnets, boats, and houses" (Tuggle and Tomonori-Tuggle 1997: 38). Hence, at this time, small pockets of Native Hawaiian communities persevered in Honouliuli.

Although Catholic missionaries under Father Alexis Bachelot arrived in Honolulu in 1827, Catholic missionaries did not find Hawai'i receptive until the Edict of Toleration was issued by King Kamehameha III in 1839, which allowed Catholics to set up their own church to convert Hawaiians (Schoofs 1978). Schoofs (1978) commented on the little known Roman Catholic Church of Honouliuli, which is also depicted on M.D Monsarrat (1878; Figure 8) and W.D. Alexander (1873) Honouliuli maps. According to Schoofs (1978), the Roman Catholic Church of Honouliuli was overseen by Father Raymond Delalande and the location where baptismal records of leeward O'ahu were kept. O'Hare et al. (2006) refers to this church as "Kapalani Catholic Church," which is taken from the description of LCA No. 1720 by the claimant, Hilinae in the late 1840's (Dicks et al. 1987, Appendix A: 9; O'Hare et al. 2006: 38). Although no other sources were found referring to the church as "Kapalani," this is the earliest record of a church in this area. In addition to Hilinae's native testimony, another is given by Kaohai (LCA No. 5670B), stating that his house site adjoins "the Catholic Chapel yard" (Dicks et al. 1987, Appendix A: 10) further upholding the existence of Honouliuli's Roman Catholic Church.

O'Hare et al. (2006), in a very thorough report about a nearby property, mentions the relationship of the church to Kepelino (Zepherino) Keauokalani, which translates as 'to-be-the-chief-of-the-nine-districts', who was a descendant of Kamehameha I and the historian Namiki (on his mother's side). O'Hare et al. (2006) found that Kepolono was a Catholic School teacher in various areas and had acquired a bad reputation as a prankster. As a result of his reputation as a bad administrator and accusations of "dancing and thieving" during his tenure as a Honouliuli school teacher in 1851, Kepolono was given a letter by the Minister of Public Education and Catholic Priests of Honouliuli denying further teaching positions, which were published in Catholic newspapers (O'Hare et al. 2006: 39). Kepolono's colorful story further verifies the establishment of a Catholic Church as well as Catholic school house in the village of Honouliuli located less than 2.25 miles (3.62 km) east of the project area in the mid-1800s.



Figure 7. 1878 Monsarrat map of Honouliuli Taro Lands.

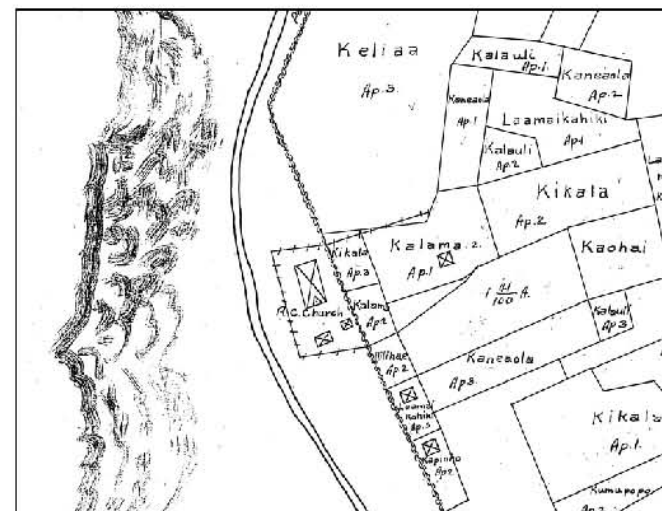


Figure 8. Portion of Monsarrat (1878) map showing old Roman Catholic Church.

‘Ewa Plain’s growth, stemming from the development of sugar cane plantations, and the decline of Honouliuli’s Native Hawaiian population due to disease were key factors in the abandonment of Honouliuli’s Roman Catholic Church. According to Schoofs (1978), “there was no point in having a chapel in both places...” and further states:

The Honouliuli Church, located close to Pearl Harbor, had by the 1880’s outlived its usefulness and become dilapidated. It was therefore abandoned and replaced by a simple structure erected close, too close, to the mill [‘Ewa Plantation]. The location was unfortunate, but the little church had to accommodate the Catholic people of Ewa for 30 years.

In the late 1920’s, when the patchwork on the church had become impossible, plans were made for a new church in a better location. Fortunately the Catholic mission still owned the former church property in Honouliuli, and Bishop Alencastre was able to exchange it for a piece of land owned by the Campbell Estate and situated right in Ewa town, on the Renton Road, close to the Ewa public school (Schoofs 1978: 111-112).

Hence, the Roman Catholic Church of Honouliuli was not maintained and subsequently abandoned due to the exodus of Honouliuli Villagers, who survived European disease, into plantation centers such as ‘Ewa Villages. Yet, Schoofs (1978) states that during the late 1800’s, a Catholic cemetery existed in Honouliuli. Schoofs reported, “While most of the communities along the west coast of O’ahu disappeared in the course of time, Honouliuli remained on the

map until in its turn it was replaced by the growing plantation villages of ‘Ewa. But, in 1891 Honouliuli was still important enough to acquire its own Catholic cemetery” (Schoofs 1978: 110). The location of the cemetery is still unknown.

As the drama of Honouliuli’s Roman Catholic Church unfolded, another major event was occurring - the Great Mahele. The Land Commission granted approximately 43,250 acres of unclaimed lands in Honouliuli to chiefess Miriam Ke’ahikuni Kekau’ōnohi in 1848. However, nearly 150 acres of Honouliuli Ahupua’a were designated as *kuleana* awards for commoners. Tuggle and Tomonori-Tuggle (1997) maintain that 72 awards were made, all of which appear to have been in or adjacent to Honouliuli Gulch (Tuggle & Tomonori-Tuggle 1997). Kekau’ōnohi’s death in 1851 transferred her lands to her husband, Levi Haalelea. Most of Honouliuli was then sold to J.H. Coney for cattle ranching after Haalelea’s death, who in turn sold 42,000 acres for \$95,000 to James Campbell in 1877, an Irish born entrepreneur (Lewis 1970; Kelly 1991).

While the ‘Ewa Plain had a sizeable cattle population by the mid-1800s, James Campbell consolidated great portions of Honouliuli for ranching, running over thirty-two thousand head of cattle. Honouliuli Village area became the nucleus of Campbell’s prosperous ranch (Figure 7). In the summer of 1879, Campbell commissioned James Ashley to drill Hawai’i’s first artesian well using a hand-operated rig near Campbell’s ranch house in Honouliuli (Kuykendall 1967). The true location of the original well is disputed, but undoubtedly lies close to the intersection of Old Fort Weaver Road and Fort Weaver Road, which lies ca. 2.3 miles (3.7 km) northeast of the project area. In 1889, Campbell leased his lands, from Pearl Harbor to Waimanalo, to Mr. B.F. Dillingham of the O’ahu Railway and Land Company for the next 50 years, who extended the railway from Pearl Harbor to Waianae (Lewis 1970; Figure 11). Dillingham then started the 11,000 acre ‘Ewa Plantation Company in 1890 roughly to the west of West Loch and the O’ahu Plantation in 1894 to the north of West Loch, initially planting sugarcane at Honouliuli and ‘Ewa by irrigating with underground water (S. Campbell 1994; Figure 7). During that period, cattle were still ranched in the margins of the cane fields.

The rise of sugar plantations such as the ‘Ewa and O’ahu Plantations came with the increased demand for sugar in the United States, which was a result of the California gold rush in 1848 and the Civil War of 1861 as well as the 1875 Reciprocity Treaty that allowed Hawai’i sugar export rights to the U.S. (Hawaii’s Plantation Village n.d.). The plantations were also, in part, the outcome of James Campbell and B. F. Dillingham’s “Great Land Colonization Scheme” failure of 1886, where the entrepreneurs originally set out to sell Honouliuli land to homesteaders, but opted instead for large-scale cultivation after drilling the first artesian well (O’Hare et al. 2006). These visionaries successfully transformed vast portions of the coral plains into fertile agricultural land by grubbing and deeply plowing upland areas and directing run-off sediments onto the plains. This feat allowed for both lucrative plantations, and subsequent merger of the two, to operate for nearly a century (S. Campbell 1994).

Part of the plantations’ success came from the importation of cheap foreign labor to compensate for the severe Native Hawaiian population deficit due to European disease. At first, the Chinese were brought in to work the fields and mills for the length of their contracts. However, U.S. sugar demand mandated a rise in production, so the plantations began to recruit from Portugal, Japan, Puerto Rico, Okinawa, Korea, and the Philippines. The plantations were

initially all-inclusive, providing housing, food, medical and meager wages to all employees and their families. A 1927/1928 US Geological Survey Map shows segregated villages for different ethnic groups represented at ‘Ewa Plantation, which was incorporated into a map of Historic features located in Honouliuli Ahupua’a by Tuggle & Tomonori-Tuggle (1997; Figure 10). A full size copy of this map as well as key is provided in Appendix F.

4.4 ‘EWA PLAINS IN THE EARLY 1900’S

By the turn-of-the-century, large-scale agriculture, primarily sugarcane and sisal, dominated the ‘Ewa Plain, leaving only small pockets of traditional agriculture and family farms, primarily in Honouliuli Village area. As a result, plantation villages spread throughout the eastern ‘Ewa Plain, including nearby Varona Village. Plantation sugar mills became the hub of activity and plantation life, attracting commerce and more settlers. By 1902, was able to produce over ten tons of sugar for every acre, outweighing its Hawaiian competitors by 6 tons an acre and Cuban competitors by 7.5 tons an acre. Another development would forever change the face of west ‘Ewa – the leasing of land by the United States for military purposes (Lewis 1970; Kelly 1991; Tuggle & Tomonori-Tuggle 1997; Figures 9, 10, 12-14).

Agriculture was still the main focus of land use in Honouliuli Ahupua’a after the turn-of-the-century. Handy (1940) writes of agricultural terraces or vestigial agricultural structures being visible on the 1917 U.S. Geological Survey Map of O’ahu, stating, “Large terrace areas are shown...bordering West Loch of Pearl Harbor, the indication being that these are still under cultivation. I am told that taro is still grown here. This is evidently what is referred to as “Ewa taro lands.”” (Handy 1940 as cited by Sterling & Summers 1978: 31). Of course, sugar cane dominated most of the ‘Ewa Plain, yet sisal proved to be a lucrative crop for Honouliuli in the early 1900s. Sisal had gone from being an experimental crop in mid-1890 to being farmed on over 2000 acres, producing up to 445 tons of fiber a year (Kelly 1991; Figure 9 & 10). In addition, there are several testimonies from local Kūpuna and longtime residents of the area that an area once existed just 0.6 miles northeast of Ka Makana Ali’i where plants for *lā’au lapa’au*, Traditional Hawaiian herbal healing, were maintained, harvested, and administered (Mooney and Cleghorn 2008e).

By this time, Honouliuli Village, once considered the ‘village of gold,’ was no longer a destination, but a stopping point for those travelling on Old Ft. Weaver Road from Farrington Highway to Pu’uloa and plantation villages, and southeast ‘Ewa Plain, now considered ‘Ewa Beach. A handful of general and feed stores, a barber shop, a gas station, and mechanic shop had been erected sometime in the early 1900s to take advantage of this traffic. These were the western-most stores of the ‘Ewa Plain. However, traffic along the old thoroughfare would sharply decline in later years with the coming of a new Ft. Weaver Road. As a result, Honouliuli Village would fall deeper into obscurity.

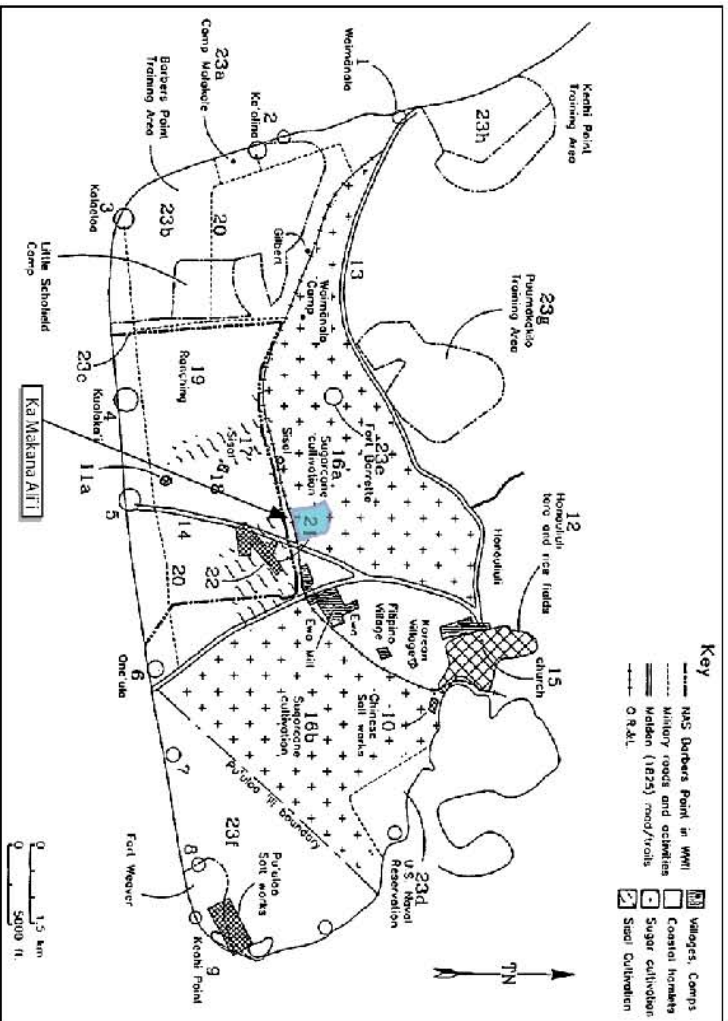


Figure 10. Historic features of Honouliuli (from Tuggle & Tomonori-Tuggle 1997, Figure 5; key provided in Appendix F of this report).

Ka Makana Ahi'i Cultural Impact Assessment
 East Kapolei, Honouliuli, Ahupua'a
 Ewa District, Island of O'ahu
 August 2011

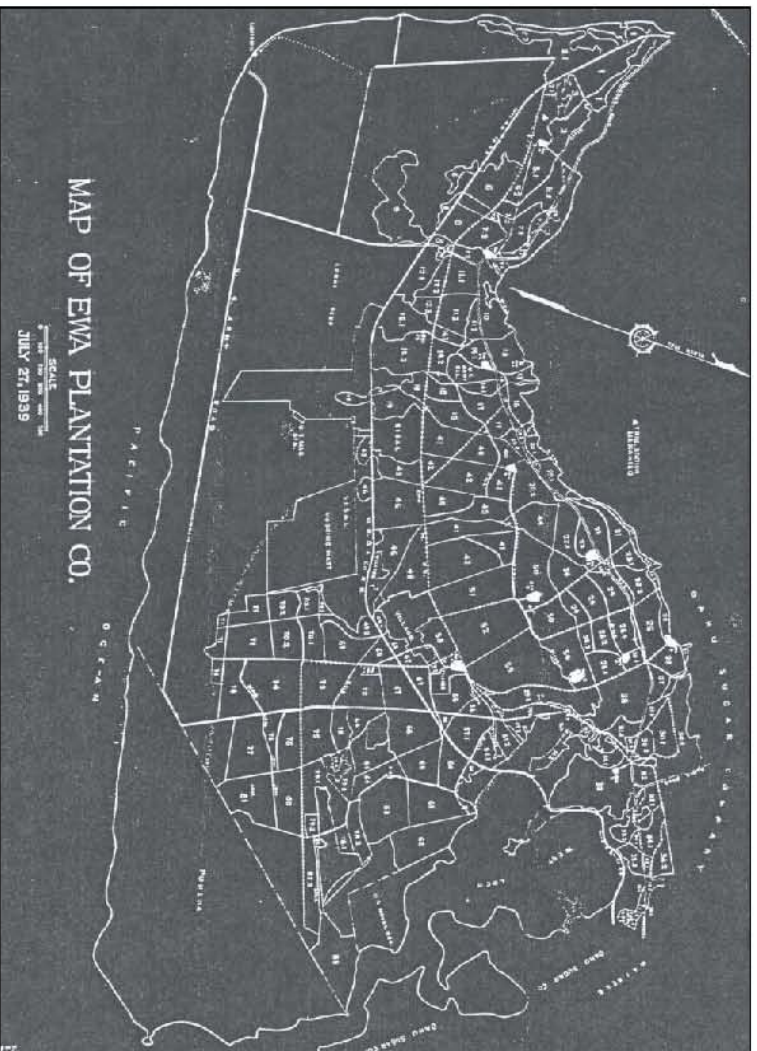


Figure 9. 1939 Ewa Plantation Map.

Ka Makana Ahi'i Cultural Impact Assessment
 East Kapolei, Honouliuli, Ahupua'a
 Ewa District, Island of O'ahu
 August 2011



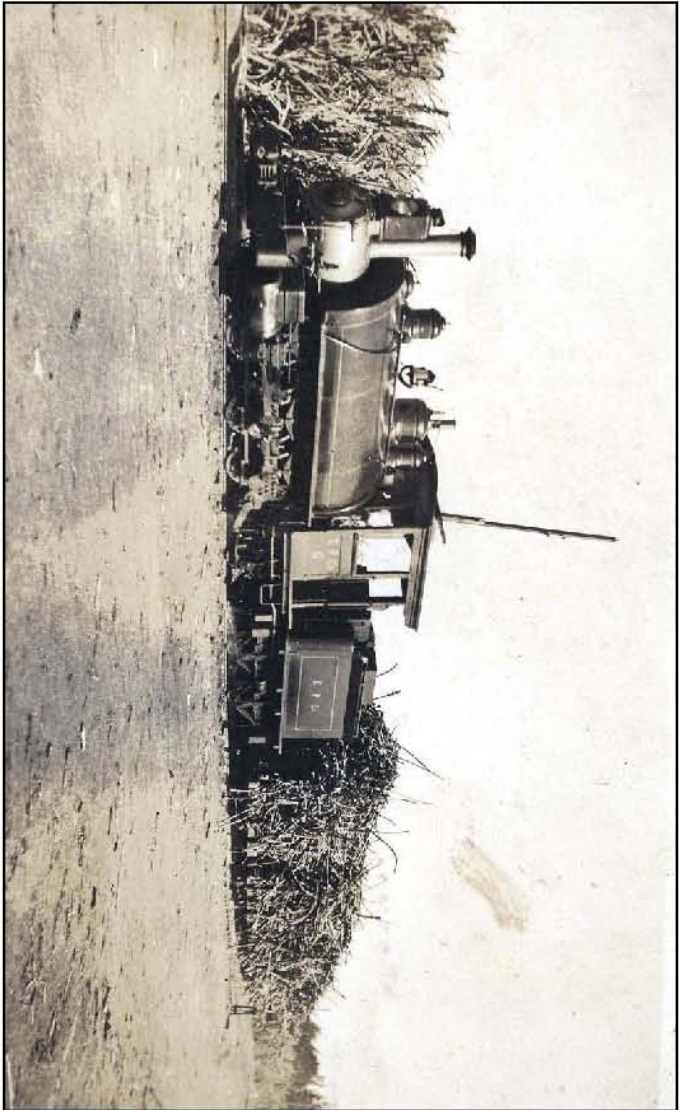


Figure 11. Ewa Plantation Locomotive #6, 1926 (courtesy of the Hawaiian Aviation website Accessed 2011, State of Hawaii Department of Transportation, Airports Division).

Ka Makana Ali'i Cultural Impact Assessment
 East Kapolei, Honouliuli Ahupua'a
 Ewa District, Island of O'ahu
 August 2011

The United States would show increased interest in this area after the annexation of the islands to the U.S. in 1899. In 1901, dredging began to deepen and widen Pearl Harbor and repeated in 1908 and in the 1920s. During this time, the U.S. Navy built support and dry dock facilities in the Pearl Harbor area. In the early 1930's, the Navy constructed an ammunition depot on a 213 acre parcel at West Loch that was leased from the Campbell estate (O'Hare et al. 2006: 52). A Magnetic Observatory was built in Honouliuli near the U.S. Coast Guard Air Station Barber's Point in 1902 by the U.S. Coast and Geodetic Survey. This facility was designed to measure movements of the earth and its magnetic field. (Kelly 1991; Tuggle & Tomonori-Tuggle 1997).

In the 1925, the U.S. Navy leased a 3,000 square foot piece of land from the Campbell estate to build a mooring mast for the dirigible *Akron* (Figures 9 & 10; Appendix F). However, records dispute the description of the property, suggesting that the 'Ewa mooring mast was approximately 206 acres of grassy area that was used to land blimps. During this time, the Navy laid approximately 18 miles of roadway and built several camps and installations (O'Hare et al 2006: 52). By 1940, the U.S. Navy leased an additional 3,500 acres from Campbell estates to build the Marine Corps Air Station at 'Ewa, which subsequently became NAS Barber's Point (Kelly 1991: 166; Welch 1987).

In early 1941, the U.S. Marine Corps completed the airstrip, known as 'Ewa Field, for peacetime training and began an expansion of Naval Aviation facilities at Barber's Point. In October of the same year, construction of runways began at Barber's Point, using excavated local coral for paving (Kelly 1991: 166; Welch 1987). 'Ewa Field, now defunct, was constructed near to the old Mooring Mast and located across the train tracks and Roosevelt Road - less than 800 feet (300 meters) south of the project area (Figures 9, 10, 12; Appendix F). However, the Pearl Harbor attack on December 7, 1941, devastated much of the airstrip as well as its aircraft. As World War II commenced, the airstrip was swiftly completed by April 1942 - used as an active airstrip throughout its construction process. Upon completion, the main runway was over 8,000 feet long and 1,000 feet wide and the crossing runway 8,400 feet long and 750 feet wide.

The Marine and Naval Air Stations had some 12,000 enlisted personnel at its peak, but by 1947, the number went down to 1,645 (Kelly 1991: 168). To accommodate the military personnel, housing construction began for the men and their families at Barber's Point in 1951. In 1956, plans for a second military housing complex were initiated.

During World War II, accommodations of a different sort were prepared approximately 3.5 miles (5.6 km) north of the project area. The Honouliuli Internment Camp was built on March 1, 1943, on 160 acres of land in Honouliuli Gulch just north of what is now the H-1 Freeway, west of Kunia Road (Figure 13). The camp, which was comprised mostly of crude wooden barracks and tents within barbed wire fences, was designed to hold up to 3,000 people, although its occupancy never exceeded 320 people. Most internees were non-combatant local males of Japanese ancestry. Yet, German, Italian, and Japanese prisoners of war were also held at the internment camp (Gabbard 2007; Wilson 2008).



Figure 13. Honouliuli Internment Camp 1940's (courtesy of Honolulu Advertiser, 17 December 2008).



Figure 12. Ewa Field Auxiliary Base, July 29, 1941 (courtesy of the Hawaiian Aviation website Accessed 2011, State of Hawaii Department of Transportation, Airports Division).

5.0 PREVIOUS ARCHAEOLOGY

One of the earliest documentations of archaeological sites are the Boundary Commission survey records (1862-1935), which established boundaries and descriptions of features in properties slated for personal ownership according to new legislation under the Mahele 'Aina of 1848. A list of noteworthy archaeological studies in the 'Ewa Plains of Honouliuli Ahupua'a is presented in Table 2. Initially, most research took place in west Honouliuli Ahupua'a, but in the early 1980's, the focus was turned to the east side of the *ahupua'a* as a result of increased residential and commercial development.

Table 2. Significant archaeological investigations of the 'Ewa Plains, Honouliuli Ahupua'a.

Author and Date	Investigation Type	Focus/Findings	Location
Thrum, T. G. 1906, 1917	Survey, <i>heiau</i> study	108 <i>heiau</i> on O'ahu; 1 <i>heiau</i> in Pu'u Kapolei	All O'ahu; Pu'u Kapolei
Stokes, J.F.G. 1909	Inventory Survey	Walled fish traps	Pearl Harbor
Emory, Kenneth 1933	Inventory Survey	House site, possible <i>heiau</i>	Pu'u Kapolei
McAllister, J. Gilbert 1933	Inventory Survey	General archaeology; 8+ sites in Honouliuli Ahupua'a	All O'ahu; Honouliuli Ahupua'a
Kikuchi, William 1959	Site Letter Report	12-16 Burial removals from limestone sinkhole	Campbell Industrial
Soehren, Lloyd 1962, 1966	Site Letter Report	Burial removal from sinkhole, recording of house site, fishing shrine, & modified sinkhole	NAS Barber's Point; west 'Ewa Plain
Lewis, Ernest 1970	Summary of Historical Data, Reconnaissance Survey	Historical background of Honouliuli; west 'Ewa Plain: house sites and house compounds, cairns, mounds, <i>ahu</i> , modified sinkholes (n=17)	Campbell Industrial Park, Barber's Point Deep Draft Harbor, Kalaeloa
McCoy, Patrick 1972	Survey	Stone structures within <i>'ili</i>	Pu'u loa
Barrera, William 1975	Reconnaissance Survey	24 sites related to temporary habitation or fishing, Midden, artifacts, possible horticultural features	Campbell Industrial Park, Barber's Point
Sinoto, Aki 1976, 1978a	Survey, testing	44 new sites (B6-58 through 137); re-recorded Lewis 1970 & Barrera 1975 sites; extinct avifaunal analysis	Campbell Industrial Park, Barber's Point
Sinoto, Aki 1978b	Reconnaissance Survey	10 burials, some historic burials found in sinkhole	NAV MAG - West Loch
Jourdane, E. 1979	Reconnaissance Survey	8 sites	'Ewa Marina, One'ula Beach
Davis, B. D. 1979	Survey	107 features	One'ula
Ahlo & Hommon 1983, 1984	Reconnaissance Survey, testing	No sites found	Honouliuli Solid Waste Processing & Recovery Facility

Author and Date	Investigation Type	Focus/Findings	Location
Rosendahl, Paul 1987	Reconnaissance Survey	4 sites (no. 3314-3317) midden, cemetery complex, occupation site, artifact collection area	West Loch Estates - Residential Increments I and II
Dicks et al. 1987	Reconnaissance Survey	7 sites (habitation site 3321 has dates from 6 th -9 th century w/ later occupations in 1300-1600AD, and 1700-1800's AD); other sites: fishponds, pondfields, and cemetery.	West Loch Estates (Golf Course and Parks)
Welch, David J. 1987	Archaeological Reconnaissance	2 sites (50-80-12-3721 is a complex of 5 traditional structures and 50-80-12-3722 is likely a historic wall used to separate cattle from the sisal plantation	Former 'Ewa Marine Corps Air Station, sites are located ca. 0.5 miles southwest of Ka Makana Ali'i
Davis, Bert 1988	Subsurface Survey	No sites Found	'Ewa Gentry
Kennedy, Joseph 1988	Letter Report	No sites Found	'Ewa Gentry
Bath, Joyce 1989	Site Letter Report	Burial removal	Hó'ae'ae Point
Hammatt et al. 1990	Archaeological Reconnaissance	No prehistoric sites found; no pre-'Ewa Plantation historic sites found; Recordation of existing & demolished features in the 'Ewa Villages Complex	'Ewa Villages Complex, from Fernandez Village to Varona Village and from Tenney Village to "C" Village area
National Park Service 1990	NRHP Registration (NPS Form 10-900)	'Ewa Plantation Historic District defined and evaluated for significance; typical house structures described	'Ewa Plantation Co. Mill complex & villages
Haun, Allen 1991	Survey	42 sites with 385 features (indigenous: habitation, agriculture, burial, religious, storage, collection of water, boundary marking; non-indigenous: cattle ranch & military)	NAS Barber's Point
Hammatt & Shideler 1991	Inventory Survey	No sites found	St. Francis Medical Center West, 'Ewa
Goodman and Cleghorn 1991	Testing	No sites found	Laulani Fairways Housing project at Pu'u loa
Kennedy et al. 1991	Inventory Survey & Testing	25 sites (ranching, military, and mining)	NAV MAG - West Loch
Landrum et al. 1993	Survey	Reviewed 197 previously identified sites; re-recorded 400 reported features	USN facilities on O'ahu; NAVMAG West Loch
Moy, Tonia 1995	National Register of Historic Places - Registration Form	Historic American Buildings Survey (HABS) Forms for many Tenney Village homes and several Renton Village homes, but no HABS forms for Varona Village homes	'Ewa Sugar Plantation Villages

Author and Date	Investigation Type	Focus/Findings	Location
Jensen & Head 1995	Reconnaissance Survey	On base: 8 isolated feature sites (historic and military); off base: 254 sites (historic, military, & Native Hawaiian)	West Loch Branch
Tuggle & Tomonori-Tuggle 1997	Synthesis of Archaeological Studies	General history, mythology, and archaeology	Entirety of 'Ewa Plain
Hammatt & Chiogioji 1997	Archaeological Reconnaissance Survey	Plantation era infrastructural remains; area previously disturbed	Road Corridor for Proposed North-South Road, linking Kapolei to 'Ewa Beach, adjacent to Ka Makana Ali'i (to east))
Wolforth & Wulzen 1998	Data Recovery (controlled excavation, backhoe trenching, & monitoring)	Agricultural pondfields: chronology & use	West Loch Estates - Residential Increment I and Golf Course and Shoreline Park
McIntosh & Cleghorn 2003	Archaeological Survey	No sites found	'Ewa Gentry Makai
Collins & Jourdane 2005	Site letter report	Burial removal	Old Ft. Weaver Rd., Honouliuli
O'Hare et al. 2006	Inventory survey	5 sites: taro lands, Kapalani Church, Pipeline Village, Drivers/Stable Village	Ho'opili Project, 546 acres between Honouliuli Town and Kapolei
O'Hare et al. 2007	Archaeological Assessment	No sites found	'Ewa Industrial Park, 48.18 acres
Mooney & Cleghorn 2007a, 2007b	Archaeological Assessment & CIA	No sites found	Campbell Industrial; near Barbers Point Deep Draft Harbor; ca. 3.5 miles W of Ka Makana Ali'i
Mooney & Cleghorn 2008c, 2008d	Archaeological Assessment, Backhoe Testing, & CIA	No sites found; area previously disturbed; project area in Honouliuli Village/Taro lands vicinity	23 acres N-NW of Old Ft. Weaver & Ft. Weaver Road, ca. 2.2 miles N-NE of Ka Makana Ali'i
Mooney & Cleghorn 2008a, 2008b	Archaeological Assessment & CIA	No sites found; area developed for the Makakilo Golf Course, now defunct	34 acre Makakilo Quarry Expansion & associated 360 acres, ca. 2 miles NW of Ka Makana Ali'i
Mooney & Cleghorn 2008f/Pacific Legacy, Inc.	Archaeological Monitoring Report	Three potential sinkholes, historic military structural remains, historic rubbish	Ke Kama Pono Facility At York Town Road, Kalaehoa (Former NAS Barber's Point), ca. 1.5 miles southwest of Ka Makana Ali'i
Fung Associates, Inc. 2009	Inventory and Condition Assessment of Historic Structures	Inventoried Homes in Tenney and Renton Village; no Varona Village homes were inventoried	'Ewa Plantation Villages
Mooney & Cleghorn 2011b (report submitted to SHPD)	Archaeological Inventory Survey	Five Historic Sites: 4 associated with plantation homes, one Historic streetlamp	Varona Village

5.1 EARLY ARCHAEOLOGICAL INVESTIGATIONS OF HONOUILIULI AHUPUA'A

During his extensive survey of O'ahu in the early 1930's, McAllister (1933) recorded 14 sites in Honouliuli and Pu'uloa Ahupua'a including the remnants of Pu'u Kapolei's *heiau*. While Sites 133-137 are in the upland region of the *ahupua'a*, sites 138 and 146 are located in the 'Ewa Plains and sites 139-145 are positioned on the shore of West Loch - all under 5 miles from Ka Makana Ali'i. Table 3 lists descriptions of sites 133-146 and Figure 14 maps their locations.

Table 3. McAllister's (1933:107-108) sites located within Honouliuli & Pu'uloa Ahupua'a.

Site No.	Description	Location
133	Small enclosure 25'X30', faced walls 2'-5' tall filled w/smaller stones, purported <i>heiau</i>	Foot of Pu'u Kanehoa
134	Pu'u Kuina Heiau, destroyed, only a terrace remains	Foot of Mauna Kapu
135	Number of enclosures w/low faced walls, largest enclosure is 85'X100', all on level terrain, possible kuleana sites	Kukuilua's land
136	Small platform, destroyed, 4'-6'sq. made of coral & basalt	Near Mauna Kapu
137	Pu'u Kuaa Heiau, destroyed	Waianae Mtns. 1,800' AMSL
138	Pu'u Kapolei Heiau, destroyed	Kapolei, ca. 100' from sea
139	Kalanamaihiki Fishing Shrine (<i>ko'a</i>), 2 lrg. rough stones 2.5' in size, 6 or 7 stones avg. 1' in size piled next to lrg. stones	Kapapahui, (point of land where Honouliuli Gulch meets West Loch)
140	Fishpond adjoining Laulau-nui Island to Kapapahui, 4-5 acres, 900' L X 7' W X 3.5' H outer wall, no outlet gates	Between Laulau-nui Island and Kapapahui
141	Kaihuopalaai, entire West Loch, starting point of the mullet run to La'ie	Pearl Harbor, west
142	Kapamuku or Pamoku fishpond, 3 acres, 660'L X 6' W X 3.5'H, no outlet gates, loosely piled stones	Pu'uloa/Waipi'o Peninsula
143	Okiokilepe fishpond, 6 acres, 1000'L X 6.5'W X 4'H outer wall (made of coral), no outlet gates	Pu'uloa, across from Waipi'o Peninsula
144	Fish traps & fishing shrine, destroyed	Pearl Harbor Inlet
145	Pu'uloa, place of first breadfruit planting	Southeast end of the 'Ewa Plains
146	Ewa Coral Plains, area of many sites (e.g. Pu'uloa Salt Works, extent of old stone walls, and modified pits)	Entire 'Ewa Plains

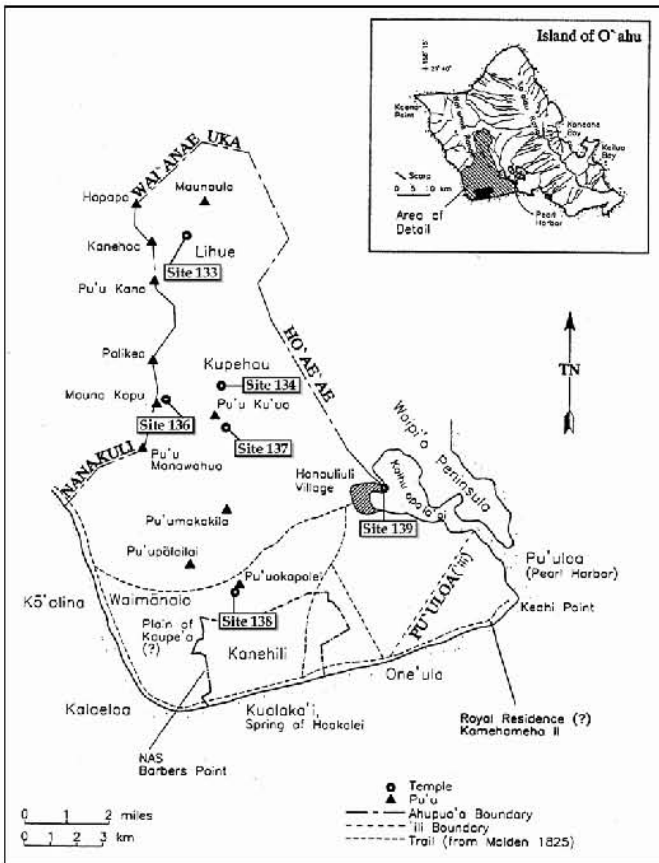


Figure 14. Points of Interest in Honouliuli Ahupua'a, see Table 3 for site descriptions (map adapted from Tuggle & Tomonori-Tuggle 1997: Figure 4).

5.2 RECENT ARCHAEOLOGICAL INVESTIGATIONS BY HONOLIULI AHUPUA'A LOCALITY

'EWA VILLAGES, 'EWA GENTRY & 'EWA GENTRY MAKAI

Davis (1988) conducted archaeological testing for Bishop Museum in Ewa Gentry, located ca. 0.95 miles east of Ka Makana Ali'i, in an area previously utilized for sugar cane cultivation. No archaeological sites were identified during testing. Previously, Kennedy (1988) conducted a surface survey in the same area that failed to detect archaeological sites.

A series of evaluations have been conducted in the 'Ewa Plantation Mill Complex and Village area from the mid-1980's to the present day (Pagliaro 1987; National Park Service 1990; Hammatt et al. 1990; Moy 1995; Fung Associates, Inc. 2009) to determine the Historic significance, restoration potential, and monitor the condition of the Historic District. Pagliaro (1987) states that 'Ewa Plantation manager, George F. Renton, Jr., decided to invest five million dollars in 1920 on infrastructure and housing upgrades, nearby Varona Village being one of the last housing improvements to the plantation under this fund. According to the NHRP Registration form (National Park Service 1990), Varona Village was initially built in 1939 under the name of "B" Village. Another moniker given to Varona Village was "Filipino Camp" (Moy 1995). Locals also called the village "Brooklyn," because this village was separated from the other villages by a bridge crossing Kalo'i Gulch, which they nick-named the "Brooklyn Bridge" (National Park Service 1990). The homes were described as mostly "Varona Village Types A and B," which were "small, simple rectangular homes 20 feet wide by 38 feet deep, with corrugated metal roof, small eaves, board-n-batten single wall construction, pine floors and canec ceilings" (Moy 1995: 9). However, there were a few houses brought in from Pu'u'oloa in 1943, which are similar to those of Renton Village (Moy 1995). Additionally, Varona Village sported a large, board-and-batten community hall that was constructed in 1934 for the Filipino Community Association, which is now demolished (Moy 1995). Cultural Surveys Hawaii completed an archaeological reconnaissance of 616 acres of 'Ewa Villages, which included: various sites associated with 'Ewa Plantation infrastructure (e.g. depot, reservoir, etc.), Plantation Cemetery, Buddhist Temple, Japanese School, Renton, Tenney, and Varona Villages as well as former "C", Mill, and Middle Villages (Hammatt et al. 1990). In this study, a sum of 9 sites were recorded, including a historic cemetery, reservoir, a communal bathhouse, OR&L tracks, village store with saimin stand, and a roundhouse. However, no prehistoric sites were detected.

In 1997, Hammatt and Chiogioji performed an archaeological survey of approximately 2.8 mile (4.5 km) long corridor for the proposed North-South Road in Honouliuli Ahupua'a. A segment of this corridor borders the subject property's northern edge. In this study, Hammatt and Chiogioji found that, "virtually the entire corridor has been extensively graded repeatedly over the past century by the 'Ewa Plantation Company...in association with sugar cultivation and the construction of plantation infrastructure" (Hammatt & Chiogioji 1997: i). The 'Ewa Plantation Villages Historic District and O'ahu Railway and Land Co. Right-of-Way, which had previously been placed on the National Register of Historic Places, were encountered in this survey. Yet, no prehistoric sites were detected.

McIntosh and Cleghorn (2003) conducted an archaeological survey for the 'Ewa Gentry Makai residential housing, commercial and industrial mixed uses, community facilities and open spaces development at a 283-acre parcel in 'Ewa (TMK 9-1-10:7 and 9-1-69:5). The project area was, at the time, agricultural land formerly used for sugar cane production and limited grazing activities. No sites were found.

PU'U KAPOLEI

The first investigation was in the early 1900's, where T. G. Thrum documented a *heiau* at Pu'u Kapolei (Thrum 1906:46), which is located in south-central Honouliuli. Thrum revisited the site in his second monograph on *heiau*, misnaming it Palole'i (Thrum 1917). Later, Emory (1933) took pictures and mapped a well-preserved house site and possible *heiau* near Pu'u Kapolei before the remnants were dismantled. McAllister arrived at Pu'u Kapolei shortly after and noted that the site, which he numbered 138, was ruined as its stones were removed and crushed to provide material for new construction (McAllister 1933: 108). He registered that on the side of Pu'u Kapolei was a large rock shelter, rumored to be the dwelling of legendary Kamapua'a and his grandmother, as well as a *heiau* that was later destroyed.

HONOULIULI VILLAGE AREA

The earliest recording of a site in this area was done by McAllister (1933), which was a *ko'a* named Kalanamaihi (site 139). This fishing shrine is still perched on a hill within West Loch's Shoreline Park on a spit of land called Hō'ae'ae Point across from Lualau-nui Island. This site is located 2.65 miles east of the project area (Figure 14; Table 2).

In 1987, Paul Rosendahl, Ph.D., Inc. (PHRI) performed an archaeological survey of the 232 acre West Loch Estates Residential Increment I, Golf Course, and Shoreline Park development. This project, which divides the area into upper valley, lower valley, coastal margin, and Hō'ae'ae Point, covered a small section of the current project area's east side and spanned east to the shores of West Loch. The survey revealed four new sites (No. 3314-3317) despite the fact that most of the project area was modified by historic period agriculture. Sites 3315 through 3317 were of historic age, with 3316 being a small cemetery complex located less than 200 meters from the southern tip of the project area and the other two sites being surface artifact scatters. Site 3314 was a disputed midden layer (Wolforth & Wulzen 1998: I-28). Later in the year, PHRI (Jensen et al. 1988) conducted a field survey and subsurface testing in the same area, which yielded seven additional sites (No. 3318-3324). These sites consisted of pre- and post-Contact era habitation and burial sites. This study also suggested that traditional agricultural use of Honouliuli Gulch may have been ongoing for nearly one thousand years. Wolforth and Wulzen (1998) performed data recovery, which peered deeper into the intensity of habitation and agriculture as well as the chronology of these activities in the Honouliuli Stream Floodplain. Further, Wolforth and Wulzen (1998) surmised that the lower valley eventually filled with sediment from upland erosion, which caused the lowland marsh and pond-field system to dry out. As a result, the region became a collage of wet and dry fields with some houses, pastures, and gardens.

Perhaps the most thorough of recent archival investigations performed in the area was O'Hare et al. (2006), which was conducted on several parcels encompassing nearly 1,630 acres, one of which is located less than 1.7 miles east-northeast of Ka Makana Ali'i. Backhoe testing was

performed in areas that were identified by Hammatt and Shideler (1991) as historic habitation and/or agriculture. The findings were four additional features related to sugar cane cultivation, which were attributed to previously recorded Site 50-80-12-4344 that is located approximately 2.5 kilometers south of the current project area. While O'Hare et al. (2006) were not successful in finding physical remains of Honouliuli Taro Lands, "Kapalani" Catholic Church, Drivers and Stable Village, nor Pipeline Village, their report functions as a well-researched and comprehensive synthesis of these areas within Honouliuli.

More recently, Mooney and Cleghorn (2008c & 2008d) performed a CIA as well as archaeological survey and backhoe test excavations in two parcels at the corner of Old Fort Weaver and new Fort Weaver Roads. The archaeological testing yielded no new archaeological sites. However, results indicated a 3 to 5 feet (0.9 to 1.5 m) deep layer of construction fill with a significant amount of illegal dumping that lies over nearly all of the original ground surface.

PU'U MAKAKILO AREA

Pu'u Makakilo is located approximately 2.1 miles (3.4 km) north of the proposed Ka Makana Ali'i. In 1988, a letter report was written by Aki Sinoto for the Makakilo Golf Course survey. On the southeastern flank of Pu'u Makakilo, Sinoto states:

As anticipated, large portions of the project area have been and still undergo severe erosion. Barren areas of exposed substrate is interspersed with areas dominated by dry grasses and small kiawe. Steep erosional gullies with vertical walled heads, bare areas of sheet wash, and pedestaled rocks attest to the severe and continuing erosion (Sinoto 1988:1).

While no significant archaeological sites were located in the survey, Sinoto did discover a deteriorated wall segment inside of Pu'u Makakilo that may have served as erosion control in historic times. However, due to its deteriorated state the site did not warrant further archaeological investigation nor preservation (1988:1).

In more recent times, four archaeological investigations have been performed within a mile radius of Pu'u Makakilo with modest finds (Hammatt et al. 1991, Nakamura et al. 1993, and Rasmussen 2006). However, several other investigations have been conducted in nearby Waimanalo, Kalo'i, and Makaiwa Gulches, recording abundant archaeological sites (Bath 1989, Bordner 1977, Hammatt et al. 1991).

Mooney and Cleghorn completed archaeological and cultural impact assessments for the 34 acre expansion of the Makakilo Quarry and associated 360 acre visual impact modifications (Mooney and Cleghorn 2008a & 2008b). Review of previous archaeological investigations indicated that most the project area was part of a larger area surveyed previously. Further, most of the project area was found to be heavily bulldozed and reshaped for the now defunct Makakilo Golf Course during the January 2008 surface survey. No new sites were found.

ONE'ULA

Elaine Jourdan (1979) performed a reconnaissance survey at One'ula, located about 2.15 miles (3.5 km) south of the project area, where she recorded eight pre-contact sites outside of the cane

fields (as cited in Wolforth & Wulzen 1998). Davis (1979) returned to the area later that year and found 107 pre-contact features. Shortly after, the area was revisited by Hommon and Ahlo (1983) who performed subsurface testing without any findings. Hammatt (1984) returned to the same area to evaluate the previous surface findings and relocated 33 of the features found by Davis (1979), which he attributed to 8 new sites. Hammatt (1984) suggested further investigations be performed on the features that would be impacted.

KALAELOA/BARBER'S POINT & CAMPBELL INDUSTRIAL

Little archaeological investigation was performed in Honouliuli Ahupua'a during the 1940's-50's, however, investigations picked up just prior to 1960. In 1959, William Kikuchi was the first to investigate the area when he was called to remove 12-16 inadvertently discovered burials at the Standard Oil Refinery at Barber's Point (Kikuchi 1959). Soon after, Lloyd Soehren (1962) recorded and removed a burial before excavating and recording a fishing shrine in NAS Barbers Point (Soehren 1966). This shrine was reported to be destroyed by Barrera (1975:1) and re-examined by Davis in 1982, where he performed supplementary excavations (Davis 1995).

By 1970, archaeological methods had evolved to standards with a more scientific and thorough approach. Lewis' 1970 investigation of Barber's Point and Campbell Industrial area was the first to address the 'Ewa Plain in this manner. In this study, Lewis (1970) recorded an array of house structures and habitation complexes, cairns and mounds (*ahu*), as well as modified sinkholes. Equally important, Lewis (1970) compiled a wealth of Historic documents and traditional chronicles on the 'Ewa Plains as a background for his report. With more innovative methods, Lewis (1970) was able to make some viable postulations about lifeways and the decline of early 'Ewa Plain populations.

In 1975, Barrera revisited the Campbell Industrial Park/Barber's Point area, studied by Lewis in 1970, and located twenty-four sites related to temporary habitation or fishing as well as midden, artifacts, and possible horticultural features (Barrera 1975). Just a year later, Aki Sinoto (1976) performed mapping and test excavations in the same area that would further enlighten archaeologists about the dynamics of early 'Ewa Plain populations and their environment. During his investigations, Sinoto (1976, 1978a) discovered many well-preserved habitation sites, including: C-shapes, enclosures, and modified sinkholes. Additionally, Sinoto (1976, 1978a) found a wealth of *in situ* cultural deposits and extinct avifaunal remains within the sinkholes.

An extensive archaeological and paleontological study was carried out on 89 acres for the Barber's Point Deep Draft Harbor in the early 1980's by the Bishop Museum (Davis 1990). In this investigation, 79 sites were identified, including modified sinkholes and habitation sites.

Haun (1991) performed an archaeological survey of NAS Barber's Point, where he identified 385 features within 42 sites that he claimed were "some of the best preserved and most extensive prehistoric remains known for the 'Ewa Plain" (Haun 1991:1).

Tuggle and Tomonori-Tuggle (1997) authored a synthesis of archaeological and historical investigations performed on the 'Ewa Plain. This comprehensive manuscript examines the prehistory, history, previous archaeology, and the natural resources found on 'Ewa Plain. In 2008, Mooney and Cleghorn (2008f) performed archaeological monitoring for the

construction of the Ke Kama Pono Project located on York Town Road within the former Naval Air Station (NAS) Barber's Point. Three potential sinkholes were encountered; one after the site was cleared of vegetation and two during excavations. While foundation remnants from a late historic military structure (demolished in the late 1980's) were encountered and one historic bottle was found, no significant cultural remains were identified during excavations.

WEST LOCH, PEARL HARBOR

On the eastern edge of Honouliuli Ahupua'a, John F. Stokes (1909) composed a detailed study on the fish traps, ponds, and shrines that were located in and around Pearl Harbor. Later, McAllister (1933:28-32) mapped and recorded several fish ponds and traps of Pearl Harbor (sites 140, 142-3), revisiting one (site 144) previously recorded by Stokes in 1909. Additionally, McAllister (1933) gave West Loch itself the site number 141.

Situated under 4.5 miles (7.15 km) to the east is National Register site 9992, which is the Pearl Harbor Naval Base. This site is comprised of all three lochs of Pearl Harbor and associated U.S. Naval facilities as well as several islands and islets within.

PU'ULOLO

Pu'uloa, which lies approximately 3-4 miles (4.8 - 6.4 km) southeast of Ka Makana Ali'i, has been the focus of several investigations. The first report was written by Patrick McCoy (1972), who documented several stone structures when surveying 'ili in the proposed Pu'uloa Elementary site. Kennedy et al. (1991) conducted an archaeological inventory survey for the then proposed Pu'uloa Golf Course, now named the New Ewa Beach Golf Club. This survey yielded 72 prehistoric, historic and modern sites. Sinkholes containing cultural material, C-shapes, enclosures and mounds dominated the site types. Later, Kennedy and Denham (1992) performed data recovery at sites scheduled for impact during golf course construction, which concluded that the earliest occupation of the area occurred between A.D. 1020-1480.

5.3 'EWA PLAIN SETTLEMENT PATTERNS

In the first and foremost synthesis of archaeological investigations conducted in the 'Ewa Plain, Tuggle and Tomonori-Tuggle (1997) proposed a pre-Contact Hawaiian settlement model. In this model, eight major zones of settlement were suggested for the period representing the height of Hawaiian occupation in the area. According to the 'Ewa Settlement Model map (Tuggle & Tomonari-Tuggle 1997:Figure 22), the project area is located on the southern edge of zone 2 (Figure 13). All settlement zone descriptions are provided in Appendix E. Zone 2 is described by Tuggle & Tomonari-Tuggle (1997:117) as follows:

2. Permanent agriculture settlements developed along the upper 'Ewa Plain, associated with the alluvial fans and soil of the upper Plain. Most of the cultivation was dryland, but included some runoff cultivation and some irrigation in a few of the spring-fed gully mouths.

This is based on the environmental conditions of the area and archival data regarding water potential. It is probably not testable, except for the possibility of site discovery in small undeveloped gulches.

- 2a. This area was the first area of agricultural expansion outside the Honouliuli floodplain region, and probably consisted of small settlements at the mouths of gullies.

This proposition is based on the agricultural potential, but may not be testable because of site destruction.

Hence, according to this settlement model, the Ka Makana Ali'i project area and Keoneula Road corridor could have been an area utilized for permanent habitation and agriculture in pre-Contact times. It is possible that cultural deposits lie encapsulated under plantation era soils.

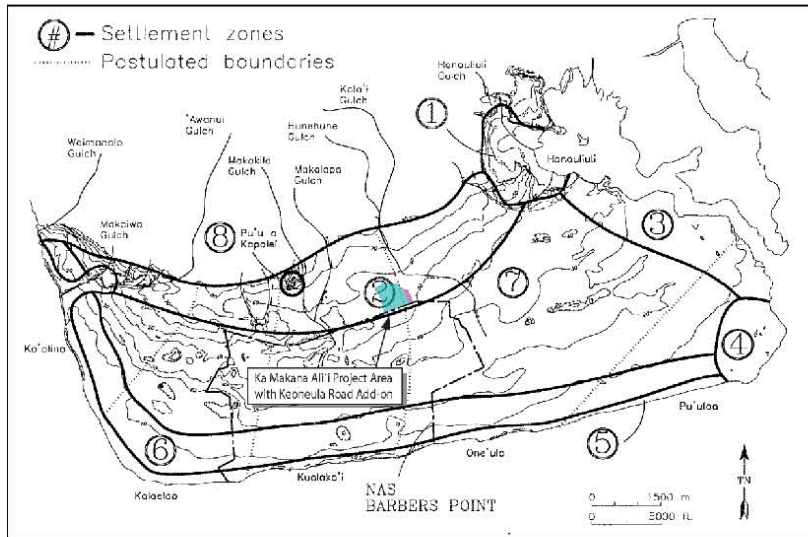


Figure 15. 'Ewa Settlement Model with Ka Makana Ali'i project area and Keoneula Road Corridor distinguished (adapted from Tuggle & Tomonari-Tuggle 1997:Figure 22).

Another major feature of 'Ewa Plain is the Kualaka'i Trail. While the exact location is unknown and physical evidence of the trail has not been identified, there is a high probability that archaeological deposits relating to the trail may still exist under plantation era soils. Archaeological deposits that may be encountered subsurface could include features of the trail itself, such as curbing and/or features related to temporary camp sites as well as isolated artifacts left behind by travelers.

6.0 COMMUNITY CONSULTATIONS

Between 28 June and 11 August 2011, a total of thirty-six potential cultural informants were contacted to participate in the proposed Ka Makana Ali'i project CIA, out of which eight informants consented to share information. Table 4 provides a list of interviewed and consulted cultural informants, whose testimonies are included in this report. Appendix B provides a list of individuals and organizations requested to participate in this CIA. The cultural informants included a highly revered Hawaiian *kupuna* hailing from 'Ewa Beach/Pu'uolo, two local Hawaiian cultural practitioners, and a local Hawaiian cultural historian as well as three Filipino elders/cultural practitioners from nearby Varona Village, the Hawaiian Railway Society President, and the Historian for the Hawaiian Railway Society.

Table 4. List of participating cultural informants

Name	Title	Form of Consultation
Ms. Arline Eaton	Kupuna; Cultural Practitioner; Hawaiian Studies Teacher, Iroquois Point Elementary (Ret.)	Interview, no audio
Mr. Kalani Apana	Cultural Practitioner; Hawaiian Studies Teacher, Iroquois Point Elementary	Interview, no audio
Mr. Shad Kane	Cultural Historian; OEQC Cultural Assessment Provider for 'Ewa/Honouliuli	Email update
Mr. Kauila Clark	Cultural Practitioner; OEQC Cultural Assessment Provider	Phone interview
Mr. Rosalino Respicio	Varona Village Elder; Cultural Practitioner; former 'Ewa Plantation worker	Interview; audio recorded
Mrs. Avelina Corpuz	Varona Village Elder; Cultural Practitioner	Interview; audio recorded
Mr. Robert Yatchmenoff	President of Hawaiian Railway Society	Interview; audio recorded
Mr. Jeff Livingston	Historian of Hawaiian Railway Society	Interview; audio recorded

6.1 MRS. ARLINE EATON & MR. KALANI APANA

Kupuna Arline Eaton has participated in several ethnographic interviews conducted by Kimberly Mooney, B.A., of Pacific Legacy, Inc. between the years 2007 and 2008 for various projects within the *ahupua'a* of Honouliuli. For the current CIA Kupuna Arline Eaton and Makua Kalani Apana were taken to the future site of Ka Makana Ali'i by Kimberly Mooney of Pacific Legacy, Inc., at 11 a.m. on Wednesday, July 6, 2011, to refamiliarize themselves with the project area. Our tour of the grounds was limited to the northwest portion of the property for ease of access and its easygoing terrain. During our tour, Kupuna Eaton explained the terrain, flora, and fauna as she remembered it, prior to the cultivation of sugarcane. The joint interview was later continued over lunch at "Zippy's" restaurant in 'Ewa Beach off of Ft. Weaver Road.

Kupuna Arline Wainaha Pu'ulei Brede Eaton knows the 'Ewa Plain of Honouliuli Ahupua'a intimately. Ms. Eaton was born in 1927 to one of the oldest families of Pu'uloa, formerly referred to as Iroquois Point. She was raised by her grandparents, Malia and Kaniela Kealoha. Her father, Papa Brede, informed her that during the reign of Kamehameha II or III the Dowsett family purchased the lands of Pu'uloa from the king. Soon afterwards, her family established a home in Kupaka: the area within present day Iroquois Point to Campbell High School and from 'Ewa Beach almost to Oneula Beach. Kupuna Eaton recalls her original Pu'uloa home being a "little grass shack" that predated nearly all others in the area. When she was of school age, Ms. Eaton spent her weekends in Pu'uloa and Barber's Point area. Her weekdays were spent in Kapalama, where she attended Kamehameha School, which she reached by being paddled from Pu'uloa by canoe up through Mamala Bay. Kupuna Eaton states that many areas of southeast Honouliuli were marshy and people traveled to and fro in small boats.

Kupuna Eaton has recently retired from her position as the Hawaiian studies teacher for Iroquois Point Elementary after 25 years of service. Preceding her employment as a Hawaiian Studies teacher, Kupuna Eaton worked for Hawaiian Tel Com for 40 years. Currently, Ms. Eaton serves as President on the board of directors for the Hoakalei Cultural Foundation, which was established in 2006 to promote good stewardship of the 'āina (land) and *ho'oilina* (heritage) of the 'Ewa Plain for its future generations. Ms. Eaton continues to play a dynamic role in the community and is a member of numerous civic, cultural, professional, and business organizations.

Makua Kalani Apana, nephew to Kupuna Eaton, was born to the Kauhane family of Papakōlea, Honolulu in 1958. Although he has recently taken over for Kupuna Eaton as the Hawaiian Studies teacher at Iroquois Point Elementary, he has been mentored by Kupuna Eaton for much of his life and been a cultural practitioner in the 'Ewa Beach area for nearly five years. He teaches Hawaiian crafts, language, *mo'o lelo, mele, and hula* to the *keiki* of Iroquois Point Elementary. Mr. Apana also plays a key role in promoting the Hoakalei Cultural Foundation and maintaining the foundation's website.

During our site visit of the Ka Makana Ali'i project area, Ms. Eaton expressed that before the project area was planted in sugarcane, the terrain was much different as was its usage. Sinkholes in the *karst* were utilized by Hawaiians for growing dry-land *kalo* (taro, *kai* variety), storage, and refuge depending on the size and depth of the sinkhole. To her best recollection, the *wai puka* (sinkholes utilized as planting containers) were likely filled with soil brought in from other areas and irrigated by the ground water within the sinkholes and/or from nearby sinkholes that contained springs or were natural wells. These natural planters were organized into short rows of *kalo*, at times using rows of coral cobbles to divide them. Some of the sinkhole planters were outlined with small coral boulders. Some sinkholes were utilized as storage. She recalls the temperature being cool in storage sinkholes and the sides of these sinkholes would typically be recessed to help shade the items from direct sun. These makeshift storage features would be used for short and long periods of time. Items kept in these sinkholes included, but were not limited to: salt; daily rations of food; water; gardening implements; fishing implements; harvested *kalo*; collected materials used for medicine, tool-making, crafts, or ceremony; collected varieties of shellfish, *limu*, and fish; as well as clothing and personal items. Many of these items were stored in an *ipu* or calabash (typically gourd) or in *kōkō pū'alu* (netted

bags). Kupuna Eaton recalls taking refuge in the larger sinkholes to escape the heat of the sun, sometimes to eat lunch or rest. Some of the sinkholes were particularly coveted for their windward facing position. To her knowledge, Ms. Eaton does not recall any human burials located in any of these sinkholes.

Kupuna Eaton recalls as a young child a relative abundance of culturally significant plant resources that once grew in the project area. Edible resources available prior to sugarcane cultivation in the area were 'ulu (breadfruit), *liliko'i* (passion fruit), *niu* (coconut), and *mai'a* (banana). She holds that both feral food plants and crops maintained by nearby Hawaiian families were located in this area. Kupuna Eaton remembers the feral *liliko'i* to be a very tasty variety and that it grew in abundance. In addition, she maintains that there were at least two varieties of *mai'a* (banana) in the area – one for cooking and one for eating raw. Some medicinal plants that thrived there in the past have returned after sugarcane cultivation had been abandoned. Of these plants, she noted 'uha loa (*Waltheria indica*), which her *Tutu mama* (grandmother) used to treat her chronic childhood asthma by pounding the stem, leaves, and flowers into a pulp and wrapping the pulp in a *ti* leaf, then squeezing the juice into her mouth. This plant was also used to treat congestion, cough, and colds. Another medicinal plant currently thriving in the area is a yellow flowered 'ilima (*Sida fallax*), which had many uses and methods of administration. The roots of 'ilima were either pounded raw, using juice used to heal bruises, or the roots were boiled to make a tea for headaches. Flowers of the 'ilima were also made into a tea as a cure for cramps. While Kupuna Eaton pointed out the ostensible health of the plants and their abundance, she suggested that these plants were potentially too toxic for medicinal use, as they are located close to roadways that get sprayed and other sources for contamination. Another culturally significant plant that has repopulated the area is the *maunaloa'ula'ula* (*Canavalia cathartica*), specifically a variety with small, dark maroon flowers used to make leis. Makua Kalani added that the flower makes a particularly attractive lei, which is particularly time consuming to make.

Furthermore, Ms. Eaton remembers from early childhood her *Tutu mama* trapping birds in or near to the project area. Her *Tutu mama* trapped the birds for their feathers, carefully plucking only two feathers from each bird before releasing them, using cages made by her *Tutu papa* (grandfather) with sticks of the *kou* tree tied together with cordage made of *olona* (*Touchardia latifolia*) fiber. Bait would be put inside of the cage and a small door would close after the bird was inside. The feathers were used for making a variety of feather leis, including *hulu, poepoe, and wili wili* styles. Kupuna Eaton stated that it would take many years to complete one feather lei. Feathers were collected from the *ae'o* or Hawaiian Stilt (*Himantopus mexicanus knudseni*) and three varieties of Hawaiian honey creeper: the *i'iwi* (*Vestiaria coccinea*) a variety with scarlet body, black wings, black tail, and long curving beak; the *apapane* (*Himatione sanguinea*) that has a crimson body, black wings and tail, and short beak; and the *mamo* (*Drepanis pacifica*), which is primarily black with some yellow patches on its tail, wings, and abdomen, and a long curving beak. These birds are now extremely rare to find in this entire region due to the increasing urban sprawl.

Kupuna Eaton also calls to mind the existence of two nearby *ahu* (shrines), one dedicated to agriculture and one dedicated to fishing. The *ahu* dedicated to fishing and other marine activities was much closer to the coast; however, the farming *ahu* was located somewhere near

or inside of the project area. These *ahu* were explained as being constructed similarly, but of different materials. The *ahu kai* was made of stacked coral cobbles and boulders up to five feet tall and wide and was circular in plan view. The *ahu 'aina* was similar in size and shape, but constructed out of stacked waterworn basalt boulders, likely collected from a nearby stream bed. On these *ahu*, local land users, including Ms. Eaton, would leave offerings to show appreciation for these natural resources and respect for the divine. Both *ahu* were destroyed long ago. The *ahu 'aina* was destroyed in the initial preparation of the land for sugarcane cultivation and the *ahu kai* was destroyed sometime during the construction of the military base.

On the proposed project, Kupuna Eaton and Makua Kalani agree that there is a need to try new things, such as Ka Makana Ali'i, so that the community can progress and allow for the progression of future generations. Thus, they are not against development so long as it benefits the community and is done in a responsible manner.

6.2 MR. SHAD KANE

Mr. Kane was interviewed by Kimberly Mooney of Pacific Legacy, Inc., on several occasions between the years 2007 and 2008 for various projects within the *ahupua'a* of Honouliuli. Uncle Shad was interviewed for the CIA of a development near the Barber's Point Deep Draft Harbor in January 2007 (Mooney & Cleghorn 2007b). He then participated in an interview on January of 2008 for the Makakilo Quarry expansion CIA (Mooney & Cleghorn 2008b). Additionally, Mr. Kane was interviewed in a joint interview with Robert Alaka'i on May 2008 for the assessment of a development near Honouliuli Village (Mooney & Cleghorn 2008d). Mr. Kane was also consulted for the Salvation Army Ray & Joan Kroc Corps Community Center CIA, which is less than a mile north of the project area (Mooney & Cleghorn 2008e). For the subject CIA, Uncle Shad was unable to interview. However, he sent an email with supplementary information regarding the project area and made the suggestion that content from previous interviews would be applicable to this project and granted me permission to use statements pertaining to the region's general cultural history.

Born to Hattie and Tazoni Kane in Honolulu on February 23, 1945, Uncle Shad grew up in Wahiawa and later moved to Kalihi where he resided for most of his teenage years. After attending Kamehameha schools, he graduated from the University of Hawai'i to join the Honolulu Police Department, and is now a retired Lieutenant. Mr. Kane has served as president of Ahahui Siwila Hawaii O Kapolei Hawaiian Civic Club and Chair of the Makakilo-Kapolei Neighborhood Board as well as a member of the State Environmental Council, the Hawaii Energy Policy Forum, the Kapolei Outdoor Circle, the Friends of Honouliuli, Ka Papa O Kakuhihewa and the Makakilo-Kapolei Lions Club.

Uncle Shad is a longtime resident of Makakilo, which is located approximately 2.75 miles (4.43 km) northwest of the proposed Ka Makana Ali'i property. He is acclaimed as the resident historian for the *ahupua'a* of Honouliuli and has done a great deal of archival research on the subject in addition to being a recipient of oral histories from local *kupuna* on the cultural history of the 'Ewa District. As with other localities of Honouliuli *Ahupua'a*, Mr. Kane has an impressive knowledge of traditional chronicles and myths associated with the project area. He

identifies the general area within Kalo'i Gulch at the intersection of Farrington Highway and the proposed North-south road as Keoneae, which was the backdrop of several ancient legends.

In the most recent email communication from Uncle Shad, he suggests that the project area may be located on or near to the pre-Contact Kualaka'i Trail. Regarding this trail, Mr. Kane wrote:

...The property of your proposed project is if not right on it could be very close to the Kualaka'i Trail. The ancient trail known historically as the Kualaka'i Trail originated along the shoreline in area between where we today refer to as White Plains Beach and Nimitz Beach. It passed directly through a 77 acre parcel identified by the Barbers Point Redevelopment Commission as the Kalaeloa Heritage Park. An example of what that trail looked like can be seen today in the Kalaeloa Heritage Park. It continued mauka then made a turn just mauka of the present day fenceline that separated the Barbers Point NAS from the Oahu Sugar lands and connected with a trail from Keoneula (Hau Bush) taking travelers to the flood plains of Honouliuli adjacent Kaiuopala'ai (West Loch). It provided the fishermen of the ancient communities of Kanehili and Kualaka'i with the Lo'i Kalo of Kaihuopala'ai. Today your project does not adversely impact the cultural practice of gathering kalo but it does provide a historical context to your project...(Kane email 2011).

While the ancient trail no longer exists, Mr. Kane has implied in previous interviews that it is highly possible that there are subsurface archaeological features, in this case trail related, that need to be avoided.

With insight from his knowledge of Honouliuli terrain, oral history, written history, as well as traditional mythology, he recites stories in a way that one can visualize how these events unfolded in the actual landscape. During the May 2008 interview, Mr. Kane retold the invasion of Honouliuli, O'ahu by the chief Hilo from the Big Island of Hawai'i:

...One of the names to come out of that invasion was Po'o-hilo. Hilo was one of the chiefs that came in that invasion. From my understanding, there were two to three thousand canoes that came by the way of...West Loch. And they would have landed where Laulau-nui is; that little harbor...where the fish pond sort of was. They could not go any further *mauka*, because there's a big step...I don't know if you've ever been there, but there's a sheer kind of cliff right there that actually separates West Loch from Waipahu Industrial Park. A lot of people don't realize that there's a big wall right there that they cannot scale - that wall. So they just landed there prior to that, which would be the area where Laulau-nui is today. What they wanted was the resources of the island of O'ahu. Of course, most of the resources [were] right there. The *lo'i kalo*, the fishponds, and that whole region by Pu'uloa. They went on by way of the trail by Kukaniloko which would be today...probably parallel to where Kunia Road is today. Apparently, according to tradition, they found Ma'ili-kukahi's army on the first skirmish up at Waikakalau *puka*. You're probably familiar with that. That was their first battle. And so it was a battle of run, chase each other, fight, run, chase - it was that kind of stuff. It was a series of battles and I think it ended...I think...somewhere in Waimano. I think that was the last name that was mentioned, at least in the stories that I'm familiar with. So I think the last skirmish took place in the area of Waimano - Pearl City. And it was at that point, one of the chiefs...Hilo, was killed. They decapitated him. They took his head and they placed

it, according to the story, on a stand in an area right about where we're talking about – West Loch Golf Course. And they named that area Po'o-hilo – "the head of Hilo". The whole reason for that is historically, I think, other island chiefs assaulted the island of O'ahu by way of Ka-ihu-o-Pala'ai. So, in an effort to discourage any more invasions by way of Ka-ihu-o-Pala'ai they did this. Po'o-hilo. And that name appears in one of the other maps that I had – and its *kuleana* land. Right in there is the name Po'o-hilo. What they actually did, was they placed it...they way it was explained was they...the motivation of placing the head of Hilo, they actually placed it at the intersection of two trails. So, one trail was...our best guess was actually Farrington Hwy. – probably would have been that foot trail. The other trail would have been to go up to Kukaniloko – our best guess today, probably would have paralleled Kunia Road. So, the area would have been the intersection of Farrington Hwy. and Kunia Rd. that the approximate location would have been for Po'o-hilo. So, even in the map that I took a look at where they had Po'o-hilo. It may not have been totally accurate. It may not be consistent with the story. It would have been closer to where the intersection would have taken place – not that the intersection today is in the exact location. It may have been different. They ended up making a straight line out of them and now it's more *mauka*. But, the name Po'o-hilo is associated with the intersection of the two trails (Mooney & Cleghorn 2008d).

Mr. Kane's interpretation puts this legend into a context that is more tangible and easier to visualize the settings in which these events occurred. He also stressed that the nearby Honouliuli Village area, according to legend and archaeological record was the bread basket of O'ahu; a place chiefs would vie to control. According to Malden's 1825 map of O'ahu (Figure 6), the proposed Ka Makana Ali'i is located approximately two miles southwest of Po'o-hilo. Regarding Honouliuli's population decline, Mr. Kane adds that just prior to the introduction of European diseases, two major invasions of O'ahu occurred: Kahekili's invasion and Hilo's invasion, both of which noted as being great massacres.

6.3 MR. KAUILA CLARK

On 26 November 2008, Kauila Clark was interviewed by Kimberly M. Mooney of Pacific CIA for the Salvation Army Ray & Joan Kroc Corps Community Center CIA. For the subject CIA, an over-the-phone interview was conducted on 26 July 2011 to supplement the 2008 interview.

Respected as a certified cultural practitioner or *kahuna* in *lā'au lapa'au* (herbal healing), *lā'au kahea* (spiritual healing), *pule* (prayer and chanting), and *ho'oponopono* (making things correct) in Hawai'i and abroad, Kauila Clark has gained a worldwide reputation as one of Hawai'i's foremost living ambassadors of aloha. Although he has a Master's Degree in Fine Arts and has achieved the title of "Shihan" (Living Example) from the Academy of Zen and the Arts in Kalih Valley – among many other honors and certifications, Kauila is accredited by the Hawai'i State Legislature as the first traditional Native Hawaiian healer in 200 years to be certified by an Elders Council. Kauila primarily focuses his wisdom and energy on the youth and underprivileged of his native soil, the island of O'ahu. Yet, Kauila travels the world to spread the message of aloha and brings back to Hawai'i teachings and views from these distant places. Mr. Clark has also been an outspoken advocate for affordable healthcare in West O'ahu for over 20 years. Further, Kauila has worked with Congressman Daniel Akaka on Native Hawaiian Issues and has decades of professorial and lecturing experience in this subject as well as the arts,

spiritual healing, and community health. He currently holds the position of 2nd Vice President on the Waianae Coast Comprehensive Health Center Board of Directors.

Although his ancestors, descendants of the Pili and Pao dynasty, hail from Waiau in 'Ewa District, Mr. Clark was born to Mr. and Mrs. Dewey Clark in Waialua on August 24, 1945 and raised in Wahiawa, O'ahu. After graduating from Leilehua High School in 1963, he attended university in Iowa, obtaining a B.A. in the Arts and later acquiring a Master's Degree in Fine Art at the University of Puget Sound in Tacoma, Washington in 1972. Mr. Clark returned to Hawai'i, as he promised his elders, to help younger generations and share his natural gift of spiritual healing using in a mix of traditional Hawaiian and holistic methods from around the world, which he has successfully fulfilled for nearly 30 years.

As a long-time resident of Kapolei, Mr. Clark has grown familiar with its flora, especially those used in traditional Hawaiian healing practices. While Kauila mentioned during the November 2008 interview that he collects medicinal plants from the general area between Kapolei and 'Ewa Beach away from insecticidal and herbicidal spray zones, he was able to positively identify the Ka Makana Ali'i property as one of the locations that he gathers from. To his knowledge, he and his two *lā'au lapa'au* students are the only practitioners of *lā'au lapa'au* who are currently collecting plants for healing in the future Ka Makana Ali'i project area. From the project area specifically, Kauila states that it is a viable source for the roots, flowers, and leaves of *'uha loa* (*Waltheria indica*), which make a tea for respiratory problems. This property is held by Mr. Clark to be one of the last strongholds of *'uha loa*, as the plant relies on aridity and good drainage to thrive, which are conditions that the 'Ewa Plain is renowned for. Additionally, the area once contained *kauna'oa* (*Cuscuta sandwichiana*) or dodder, which is an orange, lacy parasitic plant that grows on trees near to the ocean, is collected for its medicinal properties and made into a tea.

Some non-plant cultural resources can be found in the project area as well. Kauila says that *'alae*, which is the red clay used for coloring salt, for medicine, for dye, and spiritual purification, would have been mined in areas near Old Fort Weaver Road. He states that *'alae* can be collected from areas that past excavations have exposed veins or layers of the clay.

While not necessarily collected on the property, water is another resource that Mr. Clark is concerned about with the development of the project. As the area increases in population density and commercial land use, the existing aquifer becomes compromised by decreasing levels of fresh water being replaced by salt water in the water table. This influx of salt water makes the ground water brackish and will eventually affect the soil and flora among other things.

Another concern of Mr. Clark are human burials and cultural resources such as archaeological deposits that may exist underground in the broad Kapolei/'Ewa Beach area. Mr. Clark advises that developers be wary of sinkholes in the natural karst that may contain these types of deposits.

Additionally, the 'Ewa Plain has many regions within it that have spiritual and mythological associations, attests Kauila. To the ancient Hawaiians, the land between Pu'u'uloa and Nanakuli

was the land of the “Wandering Spirits.” Few travelers would linger in this area for fear of unsettled spirits such as these in olden days. He mentioned that Pu‘u Kapolei, located about a mile west-northwest of Ka Makana Ali‘i, was also important as a spiritual landmark. He stated that if you project an azimuth from Pu‘u Kapolei to Mount Ka‘ala, that line is the path of the “Night Marchers,” said to be spirits of ancient warriors who march through the night as if to battle – to this day. He listed Kapolei High, Middle, and Elementary schools as well as Makakilo and Mauka Lani elementary schools to have requested his assistance with “clearing” lingering spirits, yet, he designated Holomua Elementary in ‘Ewa Gentry as being one of the most haunted areas of ‘Ewa Plain. Public buildings are not alone in these hauntings, Mr. Clark has been called to “clear” unwanted spirits from private residences and businesses in this area as well. Hence, many new developments in this broad vicinity could have the potential to interfere or be interfered with by the unsettled spirits.

Ultimately, Mr. Clark expressed that this proposed building site for Ka Makana Ali‘i is a location that several traditional cultural resources are gathered currently by cultural practitioners – *‘uha loa* and *‘alae*. Efforts should be made to foster the *‘uha loa* near to its current location. If the project is granted permission to proceed, he suggests that the landscaping be comprised primarily of native plant species that are drought tolerant. Efforts such as this, he asserts, are crucial to conserve scarce native plant species as well as water for local consumption, agriculture, and aquaculture as well as reducing the need for water to be brought in from other areas.

6.4 MR. ROSALINO RESPICIO & MRS. AVELINA CORPUZ

Aunty Avelina and Uncle Rosalino were interviewed by Kimberly Mooney of Pacific Legacy, Inc., on Friday afternoon, 29 July 2011, at the Corpuz Residence.

Avelina Dumlao Corpuz has lived in Varona Village for 44 years and actively tends a vegetable garden located approximately 1200 feet east of the project area. Ms. Corpuz was born in Ilocos Norte, Philippines, to the Dumlao family in 1934 and married the late Segundino Corpuz Sr. in 1952, who was born and raised on the ‘Ewa Plantation and raised in Varona Village. In 1967, Aunty Avelina moved to Varona Village to ensure better opportunities for their children. She worked for 21 years as a landscaper at Barber’s Point Naval Air Station and continues to work the land as a retiree, tending a large garden with mostly local and Filipino fruits and vegetables, just under 1,200 feet (ca. 360 meters) east of the project area.

Rosalino Respicio, also of Filipino heritage and Aunty Avelina’s brother-in-law, was born in the ‘Ewa Plantation Hospital in 1932 and raised in Varona Village. Mr. Respicio worked for many years in numerous positions on the ‘Ewa Plantation and later served as a cook for the U.S. military in Hawai‘i and overseas. Although he moved to neighboring Fernandez Village in 1987, Uncle Rosalino has kept his bond strong with Varona Village until this day. He is also now retired and attends daily to the same vegetable garden that Aunty Avelina tends, located across the street from the Corpuz Residence.

During our interview, Ms. Corpuz and Mr. Respicio recalled that the project area was largely planted in sugarcane and referred to as Field 46. From his earliest memory, Uncle Rosalino

holds that the project area always had a large borrow pit on its south side, perhaps a bit smaller than what it is today, and that the ‘Ewa Plantation used the coral for various construction projects on their land. Mr. Respicio and Ms. Avelina agreed that there was once a plantation era gravel road parallel to the power and telephone lines leading *mauka* from Roosevelt Road to “old” Waimanalo Road, now defunct. This old plantation road, though overgrown with vegetation, can still be driven on to this day. Both Aunty Avelina and Uncle Rosalino recall that along the old plantation road, wild bitter-melon once grew and was gathered regularly by locals.

Adjacent to the project area, Uncle Rosalino recalls that the trains once led onto the NAS Barbers Point near the east gate, where the military would transport materials on and off base. He also recalls fondly from his childhood that train rides into town would only cost a quarter. The train allowed him and his friends to go to drive-in theaters and other attractions that did not exist near ‘Ewa Villages.

In regards to the current use of the land, neither Ms. Corpuz nor Mr. Respicio knew of any traditional activities occurring. On the proposed project, Aunty Avelina and Uncle Rosalino agree that there is a need to create jobs for the community and see that Ka Makana Ali‘i is one way to do so. Furthermore, both look forward to shopping at the mall and having such amenities within walking distance. However, they fear, as does the rest of Varona Village, that the general development of the area may displace the current residents.

6.5 MR. ROBERT YATCHMENOFF

Mr. Yatchmenoff was interviewed on 6 August 2011 at the Hawaiian Railway Society Museum by Kimberly Mooney of Pacific Legacy, Inc.

Robert was born in 1952 to Marion and Alexander Yatchmenoff in Berkeley, California. His father relocated the family to take a position at a shipyard in Pearl Harbor in 1963. Robert has remained on O‘ahu up to the present and currently resides in Makiki. Mr. Yatchmenoff joined the Hawaiian Railway Society in 1975 and has been the society’s President for over 15 years.

From Robert’s earliest recollection, the proposed project area was covered with sugarcane and features related to sugarcane cultivation, such as haul and access roads. He recalls that during the last term of Governor Ben Cayetano (late 1990s), the southern portion of the property was extensively excavated for a Major League baseball training facility to attract big league teams. The project did not get past the ground-breaking phase, leaving the vast pit as well as the stockpiled soil untouched by developers for over a decade.

Located immediately south of the project area is a segment of the Historic Oahu Railway and Land Company (OR&L) railroad tracks that once was the main artery for transportation used to carry freight, mainly for the sugar plantations and military, around the entire island. Further, the railway was a major mode of transportation for the general public to commute, purchase goods and services from town, and visit remote areas of the island for recreation. According to Mr. Yatchmenoff, the main railway once led from Honolulu all the way around Ka‘ena Point,

the western most point of the island, and then east through Waialua up to Kahuku and then back down through Wahiawa to Waipahu.

Mr. Yatchmenoff states that the proposed mixed-use complex area for Ka Makana Ali'i project and *mauka* end of the proposed Keoneula Road, which provides an eastern access to the mall, will not significantly affect the Historic railway. However, he asserts that if the *makai* end of Keoneula Road and two other roads planned for linking the south side of the project area to Roosevelt Avenue are constructed according to the current plans, which illustrate these future roadways as cross-cutting the railway, the train rides and regular train maintenance will be severely compromised. Mr. Yatchmenoff states that the future site for the Keoneula Road - Roosevelt Avenue intersection is slated too close to a major railway switching yard and if the train operations are to continue, the traffic will be held up for at least 15 minutes at a time, which would be undesirable for local drivers and the railway society. He further holds that Roosevelt Avenue in its current state will not be able to accommodate the increased level of traffic that will occur when North-South road is linked to Roosevelt Avenue.

6.6 MR. JEFF LIVINGSTON

On 6 August 2011, Mr. Livingston was interviewed by Kimberly M. Mooney of Pacific Legacy, Inc. at the Hawaiian Railway Society Museum.

Hawaiian Railway Society Historian, Jeff Livingston, was born in Norwalk, Ohio, on 14 March 1949. Twenty-one years ago, Mr. Livingston was stationed at U.S. Naval Base Pearl Harbor and made the decision to retire on O'ahu after 27 years in the Navy. He currently resides in Kaneohe and continues to sort through, organize, review, and report on Historic documents pertaining to Hawaii's trains and railways at the Hawaiian Railway Society and Bishop Museum archives. To this day, Mr. Livingston comes across significant Historic information relating to the railway that had been filed away into obscurity.

Mr. Livingston has a firm understanding of the railroad's history as well as its ties to the sugar plantations and U.S. military operations in the area. The railway played a major role for the entire island and its people, beginning with the segment between Honolulu and Aiea that opened in November 1889. The railway then added the stint leading from Waipahu to 'Ewa Mill in 1890 and the stint leading from 'Ewa Mill to Waianae was added in 1891. The latter route was designed primarily as a corridor to get raw sugar and sugar cultivation materials in and out of Waianae. Its secondary purpose was to provide rapid transportation for O'ahu's residents. Prior to the railway service, it would take a day and a half to get from Waianae to Honolulu. There was also the added opportunity of escaping the hustle and bustle of Town to vacation in Waianae, previously too far for people to travel for recreation. It was not long after the railway would come to these isolated havens, that along would come tourism and hotels. However, of greatest significance from a cultural standpoint, the railway opened up new avenues to people in terms of exposure to the western way of life and modernity as well as being able to further education and increase employment opportunities. Military use of the railway was mixed. There was a railway spur near to the Ka Makana Ali'i project area that led south into the military base, then 'Ewa Field, to move military goods to and from the base. There was also use of the train system for military operations, one of which was the 41st Coast

Artillery, which was a rail road battalion that used 12" mortars mounted on specialized cars and firing points, or modified spurs with four tracks leading off of the main railway, in numerous locations on the island. This was a short-lived enterprise and the battalions never had the opportunity to fire a single shot during the war. Thus, this remaining stretch of working railway represents a huge swath of O'ahu's socio-economic history as well as U.S. military history.

As far as the project area is concerned, the railway "did little more than pass by," according to Livingston. To his earliest recollection, the project area was fully planted in sugarcane. He has found the Historic record to indicate that sisal, grown sometime around 1910, was only grown on the *makai* side of the railway. In terms of impacts from the proposed project, Mr. Livingston feels as though the mixed-use complex itself poses little harm, but the future roadways, particularly the North-South connector road, also known as Keoneula Road, will cause tremendous problems if it cross-cuts the train tracks. For that matter, any roadways cross-cutting the railway will be problematic.

7.0 SUMMARY AND DISCUSSION

Guidelines provided by the Office of Environmental Quality Control (OEQC; Appendix A) outline acceptable methods to identify the types of cultural practices and beliefs that are subject to a Cultural Impact Assessment (CIA). To carry out the Ka Makana Ali'i and mauka Keoneula Road CIA, archival research was conducted followed by community consultations to identify cultural practices, cultural resources, and beliefs associated with the area. Cultural practices are typically customs relating to subsistence, commerce, residency, agriculture, recreation, religion, spirituality, and collection of cultural resources, which may be carried out by Hawaiian practitioners or practitioners from other ethnic groups. Further, cultural resources, such as natural features, archaeological sites, and collectable materials associated with these types of customs, as well as traditional cultural properties and historic sites are also subject to this CIA.

Archival research has revealed that, in general, the 'Ewa Plain in which the proposed mixed-use complex and road are to be built on has a long and interesting history. From the archaeological record, traditional stories and myths, and Historic documents attributed to the vast area, it is evident that these lands have been the stage of many significant acts in the long drama of O'ahu's pre- and post Contact history. However, no archaeological research has been conducted on the project area. Oral traditions and Historical references to the specific area do not exist prior to its use as cane field, when it is shown on a 1939 'Ewa Plantation Map as Field No. 46 (Figure 9). It is possible, that a major feature of pre-Contact and early Contact Honouliuli, the Kualaka'i Trail, cut across or passed near to the project area according to the Malden (1825) map featuring the south coast of O'ahu (Figure 6). This prominent trail once connected Honouliuli Village to the coastal settlements of Oneula and Kualaka'i, and would have been crucial to life on the 'Ewa Plain and its coast. It is likely that the probability of encountering subsurface archaeological deposits increases with proximity to where ancient trail was located.

Furthermore, the project area borders the historic OR&L Railroad to the north. This historic railway, in operations from 1889 to 1947, was placed in the National Register of Historic Places in 1975. The railway no longer serves as the backbone of O'ahu's economy, nor instrumental in U.S. military operations on O'ahu, nor the main mode of transportation for O'ahu's citizens to seek services, work, shop, and play far from home. Nevertheless, today it is a vital and tangible means to experience the period in which Hawai'i transitioned from an autonomous island nation to an island brimming with an eclectic group of immigrants and entrepreneurs; to an island under U.S. territorial rule and subsequently a major economic and U.S. military hub for the entire Pacific region. Thus, the OR&L railway is itself a cultural resource for those who identify themselves with or have connections to bygone plantation and military cultures as well as those who seek to experience such an important period in the region's history.

No archaeological features were positively identified within the project area during this assessment or in the Archaeological Inventory Survey and Backhoe Testing prepared in concordance with this CIA. Evidence of cultural activities occurring in the project area prior to sugarcane cultivation (before ca. 1939) are now either obliterated by past agricultural and/or

construction activities or encapsulated under plantation era soils. However, features including human burials, habitation remnants, hearths, storage features, activity areas, and ceremonial features as well as paleontological remains, such as extinct avifauna, may also exist in sinkholes that are concealed by plantation era soils. Archaeological features such as these would also be considered cultural resources.

Ethnographical evidence supports the possibility of cultural practices occurring on the property prior to the large scale cultivation of sugar cane. According to Kupuna Arline Eaton, some portions of the project area were used by Hawaiians for a variety of activities. For example, sinkholes in the larger general area were utilized as natural planters for *kalo* (taro, dry-land variety), temporary shelters, storage features, and sources of water. The lands were also planted in 'ulu (breadfruit), *liliko'i* (passion fruit), *niu* (coconut), and two types of *mai'a* (banana). Additionally, birds were trapped for feathers in or near to the project area, including the *ae'o* (*Himantopus mexicanus knudseni*), *i'iwi* (*Vestiaria coccinea*), *apapane* (*Himatione sanguine*), and the *mamo* (*Drepanis pacifica*). Kupuna Eaton also recalls the existence of at least one *ahu* (shrine) in the area, which was dedicated to agriculture. This *ahu 'aina* was made of stacked waterworn basalt boulders and cobbles, likely collected from a nearby stream bed, that stood up to five feet tall and possibly as wide as it was tall with a circular plan view. On these *ahu*, devotees, including Ms. Eaton, would leave offerings to show appreciation for these natural resources and respect for the divine. The *ahu 'aina* was destroyed sometime during the initial preparation of the land for sugarcane cultivation.

It has not been demonstrated that any cultural practices have been ongoing from the pre-Contact era or Historic era to the present. As the majority of the project area has been heavily disturbed by agricultural and construction activities prior to this CIA, contemporary cultural practices taking place in the project area were limited to the gathering of 'uha loa (*Waltheria indica*) for traditional Hawaiian medicine and 'alae (red clay) for coloring salt, medicine, dye, and spiritual purification. A total of three cultural practitioners were documented as gatherers of these cultural resources: Mr. Kauila Clark and his two *lā'au lapa'au* students. Although these resources exist in localities outside of this project area, the location is desired for its easy access, abundance of the resources, and the lack of pesticide sprays in its interior. The proposed development will undoubtedly impact these activities.

Additionally, three of the four interviewees, Kauila Clark, Kupuna Arline Eaton, and Kalani Apana, state that the general area of central 'Ewa Plains is the land of the "Wandering Spirits" and "Night Marchers." Mr. Clark claims that these restless spirits become a problem for many recent developments in the area and has performed many "clearings" to rid public buildings, businesses, and residences of unwanted spirits.

8.0 RECOMMENDATIONS

In total, two Native Hawaiian cultural resources have been identified as being potentially impacted by the proposed Ka Makana Ali'i and Keoneula Road *mauka* segment: 'uha loa (*Waltheria indica*) for traditional Hawaiian medicine and 'alae (red clay) for coloring salt, medicine, dye, and spiritual purification. Mr. Kauila Clark and his two *lā'au lapa'au* students were the only cultural practitioners to be currently collecting these resources from the area. Obviously, the subject development and cultural resources, such as 'uha loa and 'alae, will not likely be able to occupy the same space at the same time. Fortunately, these resources are not endangered and can be found in other, albeit less convenient, locations.

Another concern is about the growing scarcity of fresh water in the general area. This is a growing concern for the entire *ahupua'a* of Honouliuli with the rapidly escalation of new homes and businesses. Mr. Kauila Clark suggests that the new development use native, drought-tolerant plants in its landscaping to ensure that local agriculture and aquaculture projects aimed at increasing our independence from outside commodities will be successful.

Furthermore, there is the concern about unsettled spirits that remain in the area causing unwanted paranormal activities to plague the new development or, conversely, surrounding localities being haunted by the displaced spirits. Some informants fear that archaeological sites and burials, also cultural resources, possibly contained in sinkholes and concealed by plantation era soils may be damaged or lost during ground disturbing activities related to the project's construction. It is a common belief that the disturbance of archaeological sites and burials can also upset spirits or cause bad fortune to befall those who have caused the disturbance. To address this, efforts should be made to bless the groundbreaking at Ka Makana Ali'i formally as well as the ground opening of the mixed-use complex.

In regards to concerns about potential archaeological sites and burials, an archaeological monitoring plan should be prepared prior to the commencement of construction. Further, if archaeological sites are encountered during the construction of Ka Makana Ali'i or Keoneula Road, a cultural interpretive display is recommended using artifacts (to the extent possible), archival photos, artistic renderings, and traditional accounts to educate its patrons of 'Ewa Plain's colorful past.

Other informants, specifically those currently living in nearby Varona Village, fear that the new development may be further cause to displace them from their plantation era homes. Those informants associated with the Hawaiian Railway Society have similar fears of proposed roadways conflicting with existing tracks and switching yard - ultimately displacing them from their current location. A formal "town hall" style meeting with these communities would be a good way to dispel misconceptions and begin a healthy discourse regarding the proposed project.

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APPENDIX A

Office of Environmental Quality Control (OEQC) Cultural Impact Assessment Guidelines

Guidelines for Assessing Cultural Impacts
Adopted by the Environmental Council, State of Hawaii November 19, 1997

1. INTRODUCTION

It is the policy of the State of Hawaii under Chapter 343, HRS, to alert decision makers, through the environmental assessment process, about significant environmental effects which may result from the implementation of certain actions. An environmental assessment of cultural impacts gathers information about cultural practices and cultural features that may be affected by actions subject to Chapter 343, and promotes responsible decision making.

Articles IX and XII of the State Constitution, other state laws, and the courts of the state require government agencies to promote and preserve cultural beliefs, practices, and resources of native Hawaiians and other ethnic groups. Chapter 343 also requires environmental assessment of cultural resources, in determining the significance of a proposed project.

The Environmental Council encourages preparers of environmental assessments and environmental impact statements to analyze the impact of a proposed action on cultural practices and features associated with the project area. The Council provides the following methodology and content protocol as guidance for any assessment of a project that may significantly affect cultural resources.

Background

Prior to the arrival of westerners and the ideas of private land ownership, Hawaiians freely accessed and gathered resources of the land and seas to fulfill their community responsibilities. During the Mahele of 1848, large tracts of land were divided and control was given to private individuals. When King Kamehameha the III was forced to set up this new system of land ownership, he reserved the right of access to privately owned lands for Native Hawaiian ahupua'a tenants. However, with the later emergence of the western concept of land ownership, many Hawaiians were denied access to previously available traditional resources.

In 1978, the Hawaii constitution was amended to protect and preserve traditional and customary rights of Native Hawaiians. Then in 1995 the Hawaii Supreme Court confirmed that Native Hawaiians have rights to access undeveloped and under-developed private lands. Recently, state lawmakers clarified that government agencies and private developers must assess the impacts of their development on the traditional practices of Native Hawaiians as well as the cultural resources of all people of Hawaii. These Hawaii laws, and the National Historic Preservation Act, clearly mandate federal agencies in Hawaii, including the military, to evaluate the impacts of their actions on traditional practices and cultural resources.

If you own or control undeveloped or under-developed lands in Hawaii, here are some hints as to whether traditional practices are occurring or may have occurred on your lands. If there is a trail on your property, that may be an indication of traditional practices or customary usage. Other clues include streams, caves and native plants. Another important point to remember is that, although traditional practices may have been interrupted for many years, these customary practices cannot be denied in the future.



These traditional practices of Native Hawaiians were primarily for subsistence, medicinal, religious, and cultural purposes. Examples of traditional subsistence practices include fishing, picking opihi and collecting limu or seaweed. The collection of herbs to cure the sick is an example of a traditional medicinal practice. The underlying purpose for conducting these traditional practices is to fulfill one's community responsibilities, such as feeding people or healing the sick.

As it is the responsibility of Native Hawaiians to conduct these traditional practices, government agencies and private developers also have a responsibility to follow the law and assess the impacts of their actions on traditional and cultural resources.

The State Environmental Council has prepared guidelines for assessing cultural resources and has compiled a directory of cultural consultants who can conduct such studies. The State Historic Preservation Division has drafted guidelines on how to conduct ethnographic inventory surveys. And the Office of Planning has recently completed a case study on traditional gathering rights on Kaua'i.

The most important element of preparing Cultural Impact Assessments is consulting with community groups, especially with expert and responsible cultural practitioners within the ahupua'a of the project site. Conducting the appropriate documentary research should then follow the interviews with the experts. Documentary research should include analysis of mahele and land records and review of transcripts of previous ethnographic interviews. Once all the information has been collected, and verified by the community experts, the assessment can then be used to protect and preserve these valuable traditional practices.

Native Hawaiians performed these traditional and customary practices out of a sense of responsibility: to feed their families, cure the sick, nurture the land, and honor their ancestors. As stewards of this sacred land, we too have a responsibility to preserve, protect and restore these cultural resources for future generations.

TEXT OF ACT 50, SLH 2000
A BILL FOR AN ACT RELATING TO ENVIRONMENTAL IMPACT STATEMENTS

UNOFFICIAL VERSION

HOUSE OF REPRESENTATIVES H.B. NO. 2895 H.D.1
TWENTIETH LEGISLATURE, 2000
STATE OF HAWAII

A BILL FOR AN ACT

RELATING TO ENVIRONMENTAL IMPACT STATEMENTS.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

SECTION 1. The legislature finds that there is a need to clarify that the preparation of environmental assessments or environmental impact statements should identify and address effects on Hawai'i's culture, and traditional and customary rights.



The legislature also finds that native Hawaiian culture plays a vital role in preserving and advancing the unique quality of life and the "aloha spirit" in Hawaii. Articles IX and XII of the state constitution, other state laws, and the courts of the State impose on government agencies a duty to promote and protect cultural beliefs, practices, and resources of native Hawaiians as well as other ethnic groups.

Moreover, the past failure to require native Hawaiian cultural impact assessments has resulted in the loss and destruction of many important cultural resources and has interfered with the exercise of native Hawaiian culture. The legislature further finds that due consideration of the effects of human activities on native Hawaiian culture and the exercise thereof is necessary to ensure the continued existence, development, and exercise of native Hawaiian culture.

The purpose of this Act is to: (1) Require that environmental impact statements include the disclosure of the effects of a proposed action on the cultural practices of the community and State; and (2) Amend the definition of "significant effect" to include adverse effects on cultural practices.

SECTION 2. Section 343-2, Hawai'i Revised Statutes, is amended by amending the definitions of "environmental impact statement" or "statement" and "significant effect", to read as follows:

""Environmental impact statement" or "statement" means an informational document prepared in compliance with the rules adopted under section 343-6 and which discloses the environmental effects of a proposed action, effects of a proposed action on the economic [and] welfare, social welfare, and cultural practices of the community and State, effects of the economic activities arising out of the proposed action, measures proposed to minimize adverse effects, and alternatives to the action and their environmental effects.

The initial statement filed for public review shall be referred to as the draft statement and shall be distinguished from the final statement which is the document that has incorporated the public's comments and the responses to those comments. The final statement is the document that shall be evaluated for acceptability by the respective accepting authority.

"Significant effect" means the sum of effects on the quality of the environment, including actions that irrevocably commit a natural resource, curtail the range of beneficial uses of the environment, are contrary to the State's environmental policies or long-term environmental goals as established by law, or adversely affect the economic [or] welfare, social welfare[,], or cultural practices of the community and State."

SECTION 3. Statutory material to be repealed is bracketed. New statutory material is underscored.

SECTION 4. This Act shall take effect upon its approval.

Approved by the Governor as Act 50 on April 26, 2000

2. CULTURAL IMPACT ASSESSMENT METHODOLOGY

Cultural impacts differ from other types of impacts assessed in environmental assessments or environmental impact statements. A cultural impact assessment includes information relating to the practices and beliefs of a particular cultural or ethnic group or groups.

Such information may be obtained through scoping, community meetings, ethnographic interviews and oral histories. Information provided by knowledgeable informants, including traditional cultural practitioners, can be applied to the analysis of cultural impacts in conjunction with information concerning cultural practices and features obtained through consultation and from documentary research.

In scoping the cultural portion of an environmental assessment, the geographical extent of the inquiry should, in most instances, be greater than the area over which the proposed action will take place. This is to ensure that cultural practices which may not occur within the boundaries of the project area, but which may nonetheless be affected, are included in the assessment. Thus, for example, a proposed action that may not physically alter gathering practices, but may affect access to gathering areas would be included in the assessment. An ahupua'a is usually the appropriate geographical unit to begin an assessment of cultural impacts of a proposed action, particularly if it includes all of the types of cultural practices associated with the project area. In some cases, cultural practices are likely to extend beyond the ahupua'a and the geographical extent of the study area should take into account those cultural practices.

The historical period studied in a cultural impact assessment should commence with the initial presence in the area of the particular group whose cultural practices and features are being assessed. The types of cultural practices and beliefs subject to assessment may include subsistence, commercial, residential, agricultural, access-related, recreational, and religious and spiritual customs.

The types of cultural resources subject to assessment may include traditional cultural properties or other types of historic sites, both man made and natural, including submerged cultural resources, which support such cultural practices and beliefs.

The Environmental Council recommends that preparers of assessments analyzing cultural impacts adopt the following protocol:

1. identify and consult with individuals and organizations with expertise concerning the types of cultural resources, practices and beliefs found within the broad geographical area, e.g., district or ahupua'a;
2. identify and consult with individuals and organizations with knowledge of the area potentially affected by the proposed action;
3. receive information from or conduct ethnographic interviews and oral histories with persons having knowledge of the potentially affected area;
4. conduct ethnographic, historical, anthropological, sociological, and other culturally related documentary research;

5. identify and describe the cultural resources, practices and beliefs located within the potentially affected area; and
6. assess the impact of the proposed action, alternatives to the proposed action, and mitigation measures, on the cultural resources, practices and beliefs identified.

Interviews and oral histories with knowledgeable individuals may be recorded, if consent is given, and field visits by preparers accompanied by informants are encouraged. Persons interviewed should be afforded an opportunity to review the record of the interview, and consent to publish the record should be obtained whenever possible. For example, the precise location of human burials are likely to be withheld from a cultural impact assessment, but it is important that the document identify the impact a project would have on the burials. At times an informant may provide information only on the condition that it remain in confidence. The wishes of the informant should be respected.

Primary source materials reviewed and analyzed may include, as appropriate: Mahele, land court, census and tax records, including testimonies; vital statistics records; family histories and genealogies; previously published or recorded ethnographic interviews and oral histories; community studies, old maps and photographs; and other archival documents, including correspondence, newspaper or almanac articles, and visitor journals. Secondary source materials such as historical, sociological, and anthropological texts, manuscripts, and similar materials, published and unpublished, should also be consulted. Other materials which should be examined include prior land use proposals, decisions, and rulings which pertain to the study area.

3. CULTURAL IMPACT ASSESSMENT CONTENTS

In addition to the content requirements for environmental assessments and environmental impact statements, which are set out in HAR §§ 11-200-10 and 16 through 18, the portion of the assessment concerning cultural impacts should address, but not necessarily be limited to, the following matters:

1. A discussion of the methods applied and results of consultation with individuals and organizations identified by the preparer as being familiar with cultural practices and features associated with the project area, including any constraints or limitations which might have affected the quality of the information obtained.
2. A description of methods adopted by the preparer to identify, locate, and select the persons interviewed, including a discussion of the level of effort undertaken.
3. Ethnographic and oral history interview procedures, including the circumstances under which the interviews were conducted, and any constraints or limitations which might have affected the quality of the information obtained.
4. Biographical information concerning the individuals and organizations consulted, their particular expertise, and their historical and genealogical relationship to the project area, as well as information concerning the persons submitting information or interviewed, their particular knowledge and cultural expertise, if any, and their historical and genealogical relationship to the project area.



5. A discussion concerning historical and cultural source materials consulted, the institutions and repositories searched, and the level of effort undertaken. This discussion should include, if appropriate, the particular perspective of the authors, any opposing views, and any other relevant constraints, limitations or biases.
6. A discussion concerning the cultural resources, practices and beliefs identified, and, for resources and practices, their location within the broad geographical area in which the proposed action is located, as well as their direct or indirect significance or connection to the project site.
7. A discussion concerning the nature of the cultural practices and beliefs, and the significance of the cultural resources within the project area, affected directly or indirectly by the proposed project.
8. An explanation of confidential information that has been withheld from public disclosure in the assessment.
9. A discussion concerning any conflicting information in regard to identified cultural resources, practices and beliefs.
10. An analysis of the potential effect of any proposed physical alteration on cultural resources, practices or beliefs; the potential of the proposed action to isolate cultural resources, practices or beliefs from their setting; and the potential of the proposed action to introduce elements which may alter the setting in which cultural practices take place.
11. A bibliography of references, and attached records of interviews which were allowed to be disclosed.

The inclusion of this information will help make environmental assessments and environmental impact statements complete and meet the requirements of Chapter 343, HRS. If you have any questions, please call 586-4185.



APPENDIX B

List of Organizations and Individuals Contacted and Communication Log

Ka Makana Ali'i Cultural Impact Assessment - Cultural Informants				
Name	Affiliation/Association	Contact Log	Interview	Comments
Abang, Myrna-Lyn Diaz	Ewa Community Church	Called and left a message on machine 7/6/11; Aunty Myrna called me back on 7/7/11 and gave me information on the project area vicinity		Declined interview - referred Barbietos
Alaka'i, Robert	OEQC Cultural Assessment Provider	Sent a request letter 6/23/11; called Uncle Robert 7/6/11 and spoke with him. Says his knowledge of the area is the same as that of Uncle Shad		Declined interview - says he and Uncle Shad Kane share same information regarding the area
Andrade, Maureen	Waipahu Neighborhood Board No. 22	Sent email requesting info 6/24/11		No response
Apana, Kalani	Cultural Practitioner in Ewa Beach area, nephew of Aunty Arline, new Kupuna of Iroquois Point Elem.	Spoke with Uncle Kalani on the phone and he agreed to meet for an interview; performed joint interview with Makua Kalani and Kupuna Eaton 7/7/11; sent letter with summary for review 8/3/11	YES	Informed me about lei making and Hawaiian language
Barbieto Family	Lifelong resident of Varona Village	Sent request letter 7/8/11; called 7/26/11 twice and was hung up on by a younger female of the household.		Declined interview
Bond, John	Special Assistant to City Councilmember Tom Berg (Council District One - Ewa Beach, Kapolei, Waianae Coast)	Sent email requesting participation 6/30/11; sent email to Mr. Bond 7/6/11; was put on mailing list for "SAVE DEC. 7, 1941 EWA FIELD" mailing list; tried to contact Mr. Bond for specifics, but no response		Requested information regarding his sources - no response
Chun, Cory	Waipahu Neighborhood Board No. 22	Sent email requesting info 6/24/11		No response
Clark, Melvin Kauila	OEQC Cultural Assessment Provider for Ewa/Honouliuli	Sent an email requesting participation Thu 6/23/2011 12:26 PM; called Uncle Kauila 6/28/11 and phone was disconnected, then called second number and left message on machine; Uncle Kauila called back and said he changed his email address, so he did not get the emails; he said he's interested, but wants a better idea of project and project area, so I told him that I'd resend the email to new address.	YES	Phone interview (too busy for interview)
Corpuz, Abelina Dumlao	Long-time resident of Varona Village (NW corner, since 1967); gardens in lot mauka of Varona Village	Interviewed 7/29/11	YES	Interview informative about plantation era
Cullen, Sy	Waipahu Neighborhood Board No. 22	Sent email requesting info 6/24/11		No response

Ka Makana Ali'i Cultural Impact Assessment - Cultural Informants				
Name	Affiliation/Association	Contact Log	Interview	Comments
De Gracia, Daniel II	Waipahu Neighborhood Board No. 22	Sent email requesting info 6/24/11		No response
Eaton, Aunty Arline	OEQC Cultural Assessment Provider for 'Ewa; Kupuna Iroquois Point Elementary - Kupuna, born & raised in Pu'uloa, Mo'olelo, Hale O Na'auao Society,	Sent a request letter 6/23/11; talked to Aunty Arline on the phone (Iroquois Point Elem) 6/29/11, and she agreed to an interview (joint with Kalani Apana) on June 7 th - wants to view the project area; after taking Aunty Arline to the project area, I interviewed her and her nephew Kalani at Zippy's restaurant in 'Ewa Beach and finished interview at Iroquois Point Elementary; sent letter with summary for review 8/3/11	YES	Not recorded, due to the background noise in restaurant
Fevella, Kurt	Ewa Neighborhood Board No. 23	Sent email requesting info 6/24/11		No response
Gollner, John Kane	Ewa Neighborhood Board No. 23 (Treasurer)	Sent email requesting info 6/24/11		No Response
Hawaiian Railway Society	Adjacent lands to south are OR&L; HRS Museum is adjacent to KMA project area	Called 7/6/11 and left message on machine requesting participation		Was contacted by Tom McCarthy
Kane, Shad	OEQC Cultural Assessment Provider for 'Ewa/Honuliuli - Oral Traditions, Cultural Practitioner, Nakoa, Wahipana O Ewa, Burials, Kalaikahili	Sent a request letter 6/23/11; Uncle Shad replied to my letter via email	Email Update	Declined interview, gave permission to use previous info
Kanekoa, Miki'ala M.	Kumu Hula, Halau 'O Kaululau'e	Sent request email 7/6/11		No response
Knauer, Steve Alan	Ewa Neighborhood Board No. 23	Sent email requesting info 6/24/11		No response
Lacuesta, Celeste	Ewa Neighborhood Board No. 23	Sent email requesting info 6/24/11		No Response
Livingston, Jeff	Hawaiian Railway Society, Historian		YES	Information based mainly on Railroad and Military
Matanane, Eric	OEQC Cultural Assessment Provider for 'Ewa/Honuliuli	Sent a request email Wed. 6/29/11		No Response

Ka Makana Ali'i Cultural Impact Assessment - Cultural Informants				
Name	Affiliation/Association	Contact Log	Interview	Comments
Matthews, Darwynne "Moki"	Kupuna - Cultural Practitioner in Ewa Beach area; Manager of West Loch Golf Course Maint.; Family hails from West Loch area	Called Golf Course Maint. several times 6/23/11, no answer		No Response
McCarthy, Tom	administrator at Hawaiian Railway Society	called Hawaiian Railway Society & left a message requesting info for individuals who might know the background of the project area 6/29/11; called 7/18/11 same #, but no answer or message service; 7/26/11 called and spoke with Tom on the phone, said he was not the best person to talk to about cultural significance, but is interested if it pertains to the railway; I said I'd send him a letter outlining what info the CIA requires; called Tom 8/5/11 following up on letter; said he got it and that he was trying to get a hold of Uncle Shad Kane for me (I told him that I'd already consulted with Uncle Shad) and he suggested that I contact Jeff Livingston via Email, as he's the most knowledgeable on the History of the Plantation - save for Bob Yatchmenoff, who is extremely hard to get a hold of; suggests coming in on Saturday to interview		Declined interview - referred me to Jeff Livingston and Bob Yatchmenoff
Orr, Maria Kaimipono	OEQC Cultural Assessment Provider for all Islands - has performed Arch & Cultural Assessments in Barber's Pt. area			No response
Parayno, Ilalo	Ewa Neighborhood Board No. 23	Email correspondences : shared 10 emails between 6/26 and 6/30		Declined interview - suggests John Bond
Philpotts, McDee	Cultural Practitioner in 'Ewa, descendant of J. Campbell	Called Mr. Philpotts 6/24/11 at 12pm and spoke with him about project. Says he is not familiar with area		Declined interview - suggests finding people from adjacent Ewa Villages
Rathbun, Kevin	Ewa Neighborhood Board No. 23	Sent email requesting info 6/24/11		No response
Respicio, Rosalino	Lifelong resident of Varona Village; garden's Filipino vegetable garden; was Plantation worker	Interviewed on 7/29/11	YES	Informative interview mostly about plantation
Simmons, Aloha Keko'olani	Kumu Hula in Kapolei	Called 7/4/11 & left message		No response

Ka Makana Ali'i Cultural Impact Assessment - Cultural Informants				
Name	Affiliation/Association	Contact Log	Interview	Comments
Souza, Evelyn	Member: Makakilo/ Kapolei Neighborhood Board No. 34;	Sent mass email Friday, June 24, 2011, 10:27 AM; Ms. Souza replied to my email and referred Uncle Shad		Declined interview - refers Uncle Shad Kane
Tiffany, Nettie	Kahu, lifetime resident of Kapolei	Sent letter 6/23/11; called 7/6/11 left message; called & spoke Aunty Nettie 7/11/11 and she was interested in an interview, but call back in a week; called 7/18/11 no answer left message; called 7/22/11 left message		Several Attempts made, no interview
Timson, Maeda C.	Chair: Makakilo/ Kapolei Neighborhood Board No. 34	Sent email requesting info 6/24/11		No response
Tseu, 'Iwalani E. R. Wahinekapu Walsh	Kumu Hula of 'Iwalani's School of Dance	Sent email requesting info 7/4/11; Aunty 'Iwalani called me back 7/6/11 and said that she grew up in Honouliuli Village and is very familiar with the cultural background of 'Ewa, but not aware of any cultural practices that are occurring in the project area; She remembers it being sugar cane when she was growing up; she says she will ask around and let me know if anything comes up		Declined interview, says she's not too familiar with the project area
Yamamoto, George S.	Member: Makakilo/ Kapolei Neighborhood Board No. 34	Sent email requesting info 6/24/11		No response
Yatchmenoff, Robert	President of Hawaiian Railway Society		Yes	Informative about project area during the 1990's, Railroad, & military
Zahn, Charles	Makakilo/Kapolei/Honokai Hale Neighborhood Board No. 34	Sent email requesting info 6/24/11		No response

APPENDIX C
Ethnographic Interview Questionnaire

Pacific Legacy, Inc.
 Cultural Impact Assessment (CIA)
 Ethnographic Interview Form

Job Name/#: _____ Interviewer Name: _____

Location: _____ Date/Time: _____

Permission to Record Audio (Y/N): _____

Interviewee Full Name:	Birth Name:
Birth Date:	Occupation/Title:
Current Residence:	Birth Place & Place of formative years:
Years spent in or near subject area:	Affiliation with subject area:
Parents:	Informants/Mentors:

- 1) How familiar are you with the subject area?

- 2) How would you describe the physical characteristics of the area from your earliest memory?

- 3) Are there any significant or special features (i.e. landmarks or unique topography) in this area as it relates to land use and/or its history?

- 4) How was the area used by people in the past?



Land Use Details

Activity	Types & Uses	Where/ Frequency
5) Hunting/ Fishing		
6) Gathering		
7) Agriculture/ Aquaculture		
8) Ceremonial		
9) Burial		
10) Other		



11) What stories or mythologies have you heard of this area?

12) What are your thoughts about the project proposal?

13) Additional Comments by the Interviewee:

14) Additional Comments:

Would you like to view the synopsis of the interview prior to CIA report submittal(Y/N)? _____

Time Interview Concludes: _____

Interviewee Signature: _____ Date: _____

APPENDIX D

Oral History Study – Personal Release of Interview Records



ORAL HISTORY STUDY
PERSONAL RELEASE OF INTERVIEW RECORDS

Project: Ka Makana Alii

Date of Interview: 6 July 2011

I, ARLINE EATON, have been interviewed by Kimberly Mooney of Pacific Legacy, Inc. for the above referenced project. I agree that the interview information may be used in a report that may be made public.

Arline Eaton
Interviewee Signature

August 8, 2011
Date



ORAL HISTORY STUDY
PERSONAL RELEASE OF INTERVIEW RECORDS

Project: Ka Makana Alii

Date of Interview: 6 July 2011

I, Kalani Ayana, have been interviewed by Kimberly Mooney of Pacific Legacy, Inc. for the above referenced project. I agree that the interview information may be used in a report that may be made public.

Kalani Ayana
Interviewee Signature

Aug 8, 2011
Date





ORAL HISTORY STUDY
PERSONAL RELEASE OF INTERVIEW RECORDS

Project: Ka Makana Ali'i - CIA

Date of Interview: 7-26-2011 (phone interview)

I, Kamita Clark have been interviewed by Kim Mooney of Pacific Legacy, Inc. for the above referenced project. I agree that the interview information may be used in a report that may be made public.

Kamita Clark
Interviewee Signature

08/09/11
Date



ORAL HISTORY STUDY
PERSONAL RELEASE OF INTERVIEW RECORDS

Project: Ka Makana Ali'i

Date of Interview: 29 July 2011

I, Rosaline Kapaemahu have been interviewed by Kim Mooney of Pacific Legacy, Inc. for the above referenced project. I agree that the interview information may be used in a report that may be made public.

Rosaline Kapaemahu
Interviewee Signature

8-8-11
Date





ORAL HISTORY STUDY
PERSONAL RELEASE OF INTERVIEW RECORDS

Project: Ka Makana Alii

Date of Interview: 29 July 2011

I, Avelina D. Gopez have been interviewed by Kim Mooney of Pacific Legacy, Inc. for the above referenced project. I agree that the interview information may be used in a report that may be made public.

Avelina D. Gopez
Interviewee Signature

8-8-11
Date



ORAL HISTORY STUDY
PERSONAL RELEASE OF INTERVIEW RECORDS

Project: Ka Makana Alii

Date of Interview: 8-6-11

I, Robert W. Yatchewski have been interviewed by Kim Mooney of Pacific Legacy, Inc. for the above referenced project. I agree that the interview information may be used in a report that may be made public.

Robert W. Yatchewski
Interviewee Signature

8-6-2011
Date





ORAL HISTORY STUDY
PERSONAL RELEASE OF INTERVIEW RECORDS

Project: Ka Makana Alii

Date of Interview: 8-6-11

I, L. J. A. [unclear], have been interviewed by Kim Mooney of Pacific Legacy, Inc. for the above referenced project. I agree that the interview information may be used in a report that may be made public.


Interviewer Signature

6 Aug 11
Date

APPENDIX E

'Ewa Plain: A Hawaiian Settlement Model
In *Synthesis of Cultural Resource Studies of the 'Ewa Plain*.
By David Tuggle and M.J. Tomonari-Tuggle
(1997: Section VIII, pp.115-119)



VIII. 'EWA PLAIN: A HAWAIIAN SETTLEMENT MODEL

At its maximum development during Hawaiian occupation, the main portion of the 'Ewa Plain was a dryland agricultural landscape, comparable in broad terms to leeward Kohala on the island of 'Hawai'i, the Kaunakakai region of Molokai, or upper Makaha Valley on O'ahu (although certainly with a much lower overall yield than these other regions). The distinctive characteristic of the 'Ewa Plain is that the agricultural system was developed on a karst landform. Adapted to this, the 'Ewa cultivation system emphasized mounds and sinkholes (and possibly the use of wetlands such as swamps), rather than dry terraces. Variation in 'Ewa Plain cultivation occurred on the Honouliuli floodplain and at the base of the Waianae slopes.

'Ewa Plain Settlement Model

With this perspective, the following is proposed as a general model for pre-contact 'Ewa Plain settlement: (the primary numbers in the following list refer to corresponding numbers in Figure 22).

1. The population center of the region was the irrigation complex of lower Honouliuli (or Makali'i) Stream, lying at the northeastern edge of the Plain. Although lower Honouliuli is not part of the physiographic region of the Plain, its proximity and cultural history define it as crucial to the settlement of the Plain itself.

This is based on the archival data for the area, with the assumption that similar conditions existed in pre-contact times, partly corroborated by traditions that refer to the many place names recorded for this area (e.g., Po'okilo).

Some evaluation of this proposition may be testable through archaeological research, depending on the nature and extent of buried deposits.

- 1a. Honouliuli floodplain is an area that included chiefly residential complexes. This is based on general models of Hawaiian settlement. It may not be testable because of site destruction.
- 1b. Honouliuli floodplain was one of the areas of earliest settlement of 'Ewa and one of the earliest settlements in Hawai'i.

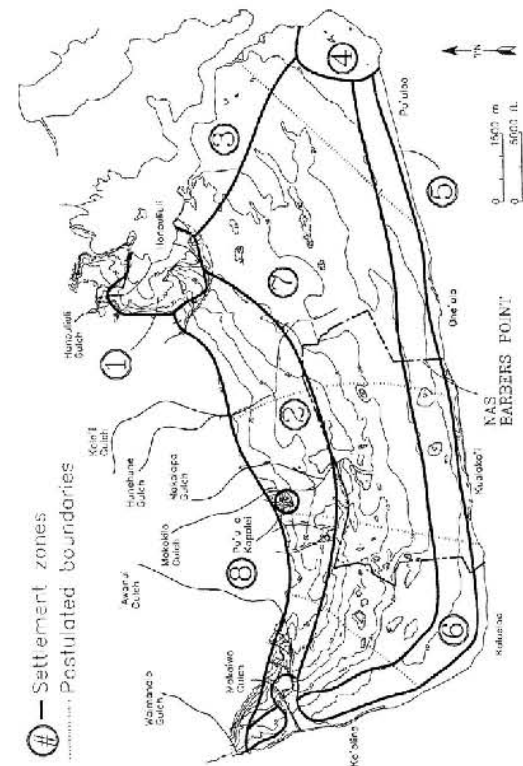


Figure 22. 'Ewa settlement model.

This is based on the richness of the resource catchment area, and is testable depending on the preservation of buried deposits.

2. Permanent agricultural settlements developed along the upper 'Ewa Plain, associated with the alluvial fans and soil of the upper Plain. Most of the cultivation was dryland, but included some runoff cultivation and some irrigation in a few of the spring-fed gully mouths.

This is based on the environmental conditions of the area and archival data regarding water potential. It is probably not testable, except for the possibility of site discovery in small undeveloped gulches.

- 2a. This area was the first area of agricultural expansion outside the Honolulu floodplain region, and probably consisted of small settlements at the mouths of the gulches.

This proposition is based on the agricultural potential, but may not be testable because of site destruction.

3. The West Loch coast of the 'Ewa Plain had fishponds and fishtraps, with an adjacent strip of dense population including elite residence. The density of population would have been greater than that along the seaward coasts.

The fishponds and traps are recorded from archival and archaeological data. The settlement argument is based on general Hawaiian models. It is probably not testable because of site destruction.

4. The area of Pu'uloa was a place of royal residence.

This proposition rests in part on the documentary evidence of the existence of a residence of Kamehameha II, and in part on a general Hawaiian settlement model of royal residence associated with rich resources areas, surfing, and canoe landing (cf. Kahala'a, Wailūki, and Kaulakakai). In the absence of traditional records noting this for royal habitation, the residence was probably a secondary one and not a royal center. The area in question has been destroyed by development, and thus the nature of this settlement can be evaluated only by means of archival research.

5. The coastline of the 'Ewa Plain was intensively occupied, primarily with temporary camps associated with resource collection. The temporary camps were tied to permanent settlements in zones 1, 3 and 6.

This rests on the archaeological data sample.

- 5a. Early settlement in this area emphasized marine exploitation and bird collection, based on temporary habitation associated with permanent habitation along the West Loch coast and the Honolulu floodplain.

- 5b. Later settlement emphasized marine exploitation, with continued temporary habitation, but in association with permanent inland settlements (see Fig. 27, zones 6 and 7).

These propositions are based in part on archaeological data and in part on general Hawaiian settlement models. They are partially testable with additional archaeological research. Some of the cultural resources of NAS Barbers Point are appropriate for this testing.

6. The zone inland of the coast line was a region of permanent habitation, based on cultivation and marine exploitation. The settlements were focused on strikeline clusters, which were a source of water and could be developed for cultivation.

Because of disturbance, there are few archaeological areas left in this region but several sites suggest a permanent and long-term occupation (e.g., complexes at 2700 and 2702). This model component is testable with the extensive remains at NAS Barbers Point in this topographic zone.

- 6a. The permanent occupation of the area was initiated in the A.D. 1200 to 1400 range and developed within the A.D. 1400 to 1850 range, and is associated with the construction of rectangular stone-walled houses.

This is based on radiocarbon dating and evidence of occupation into the post-contact period. Additional testing of this proposition is possible, and resources at NAS Barbers Point are ideal for this.

- 6b. Early occupation occurred in the form of temporary camps related primarily to resource collection (primarily bird hunting) and was not related to development of cultivation.

This is based on archaeological information combined with settlement modeling. It is argued, for example, that there is no evidence for permanent "home settlement" from which to establish temporary agricultural camps. Additional testing is possible, but dependent on site preservation.

7. The central area of the 'Ewa Plain was occupied with permanent settlements dependent on cultivation. However, unlike the settlement in zone 6, this occurred late in the pre-contact period and with the permanence based on adaptation to long-term rainfall variation.

This proposition is based on archaeological data, and is additionally testable, particularly at NAS Barbers Point.

8. Pu'uokapolei is the sacred center of the 'Ewa Plain.

This is based on traditional information. There are probably no physical remains of Hawaiian sites left on Pu'uokapolei to determine the nature of the religious activities that may have taken place there. The proposition can be evaluated through additional archival research.

9. Land division boundaries. One possible generalized land division model for the 'Ewa Plain is shown on Figure 22. If any such divisions existed, they would have been further subdivided, probably in *ʻāle* fashion, so that parcels would have been held along the coast as well as in agricultural areas inland, possibly including lots for stream irrigation in the Honouliuli lowlands.

This is based on the known local names of the 'Ewa Plain and a general Hawaiian settlement model. Testing may be possible with additional archival research, although the searches of land records have not provided any information outside the Honouliuli floodplain. Some limited testing may be possible with archaeological remains, including in areas of NAS Barbers Point.

10. (not on Figure 22). Scattered Hawaiian occupation existed on the Plain into the mid-19th century. This was a time of low population. Families occupied a number of scattered residences and use areas, including coastal fishing camps and inland houselots and walled cultivation areas.

This is based in part on archival data and in part on preliminary archaeological data. It is testable by detailed analyses of existing archaeological information and through additional archaeological research. NAS Barbers Point has resources suitable for testing this proposition.

'Ewa Plain Settlement and the Cordy O'ahu Model

In order to place the 'Ewa settlement in context, the Cordy model (1996) of the development of O'ahu (with some modifications) is summarized in graphic and schematic form (Figs 23-26). This is also shown with a model of population growth for Hawai'i as a whole (Dye and Komori 1992a) and the comparative development of 'Ewa Plain settlement based on radiocarbon dates.

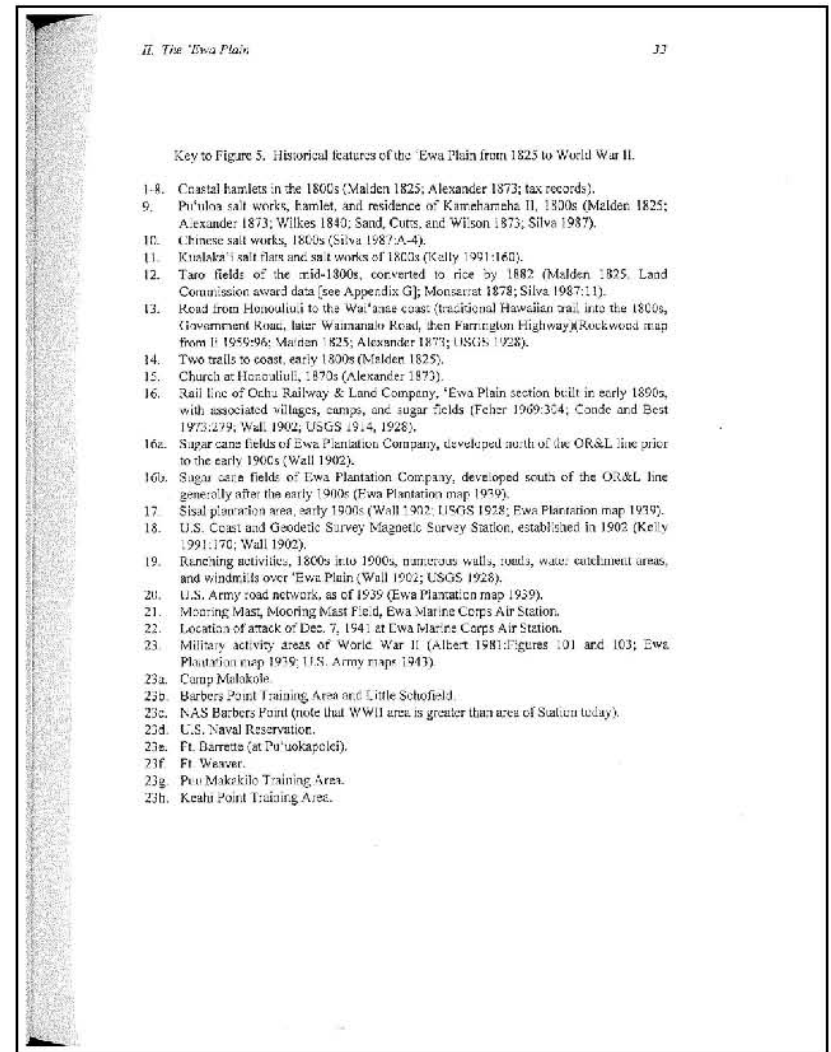
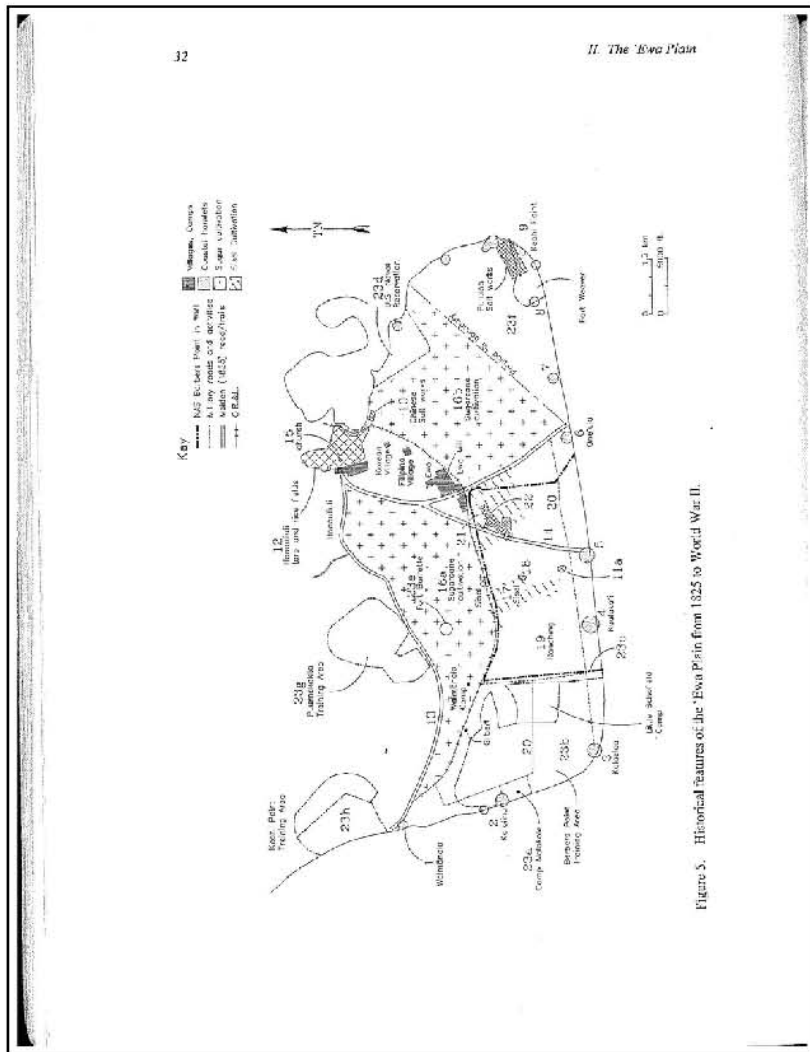
APPENDIX F

Historical Features of the 'Ewa Plain from 1825 to World War II (Figure 5, Map and Key)

In *Synthesis of Cultural Resource Studies of the 'Ewa Plain*.

By David Tuggle and M.J. Tomonari-Tuggle

(1997: Section II, pp.32-33)



Appendix J

Socio-Economic Analysis

Socio-Economic Impact Assessment:

Ka Makana Ali'i Regional Commercial Center,

O'ahu, Hawai'i

August 2011



Prepared by

Belt Collins Hawaii Ltd.

Prepared for

**Lee Sichter LLC
Hawaii DeBartolo LLC**

**Socio-Economic Impact Assessment:
Ka Makana Ali'i Regional Commercial Center, O'ahu, Hawai'i**

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ABBREVIATIONS AND ACRONYMS

DBEDT	Department of Business, Economic Development and Tourism, State of Hawaii
DHHL	Department of Hawaiian Homelands, State of Hawaii
DOE	Department of Education
DP	Development Plan
DPP	Department of Planning and Permitting, City and County of Honolulu
EIS	Environmental Impact Statement
HCDA	Hawaii Community Development Authority
HHFDC	Hawaii Housing Finance & Development Corporation
HFD	Honolulu Fire Department
HPD	Honolulu Police Department
OEQC	Office of Environmental Quality Control, Hawaii State Department of Health
sq. ft.	square feet
TMK	Tax Map Key (real property parcel identifier)
UHOWO	University of Hawai‘i West O‘ahu
ZCTA	Zip Code Tabulation Area (U.S. Census)

1 Introduction

1.1 Objectives and Approach

This report describes the Ka Makana Ali'i project in relation to its social context and identifies potential socio-economic impacts.¹ Any project of its size will have identifiable impacts, which may be beneficial, neutral or adverse in relationship to the surrounding community.

The aim of a socio-economic impact assessment is to provide information to decision makers and the public at large to help them assess a proposed project.

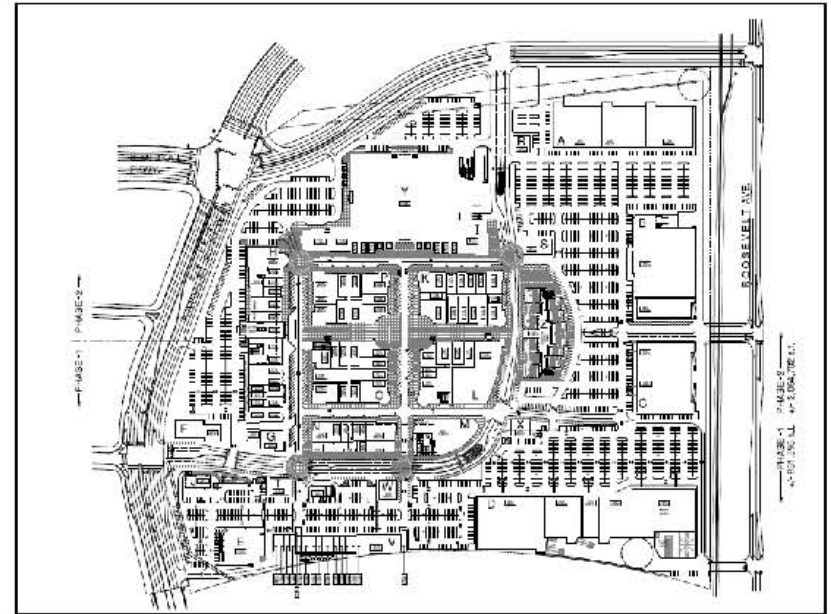
The report relies on a mix of publically available information and information compiled or gathered for the report. The Bureau of the Census's 2010 decennial census is a major data source. In addition, minutes of Neighborhood Board meetings and newspaper accounts of events in the area shed light on local concerns, and interviews with selected stakeholders dealt with community issues and specific concerns about the proposed project.

1.2 The Proposed Project

The Ka Makana Ali'i project is a mixed use regional center including retail and entertainment space, offices, and two hotels along with a large urban court or promenade and a total of approximately 4,500 parking spaces. Phase 1 consists of a neighborhood commercial center that can be reached from Kapolei Parkway or from Franklin D. Roosevelt Avenue. Phase 2 includes the larger retail area, both above grade and underground parking, the hotels, and new entries, one from an extension of Kualaka'i Parkway, and the other from Roosevelt Avenue. Figure 1-1 shows the project when built out, while Table 1-1 provides more details concerning the components of the project.

¹ In this report, Hawaiian language diacritical marks are used for words of Hawaiian origin, except for political units, organizations or agencies with official names that lack such marks. Many place names – Ewa Beach is an obvious example – became common during a period in which diacriticals were not used. Diacriticals are used for them here, if only for the sake of consistency.

Figure 1-1: The Project (Bird's Eye View)



SOURCE: Hawaii DeBartolo LLC June 2011.

Table 1-1: Components of the Project

	Phase 1	Phase 2	Combined
<i>Gross Area (square feet)</i>			
Retail	202,000	685,000	887,000
Entertainment		41,000	41,000
Hotel		220,000	220,000
Office		217,000	217,000
	202,000	1,163,000	1,365,000
Parking spaces			
Above ground	1,088	1,564	2,652
Underground		1,835	1,835

NOTE: Estimates include rounded totals based on planning documents; phasing and quantities are subject to change.

The project is located on approximately 67 acres owned by the Department of Hawaiian Home Lands (DHHL) of the State of Hawaii. It is near residential areas serving DHHL beneficiaries (Villages of Kapolei Village 8 [Kaupē'a] and Kānehili). The project has been backed by DHHL as a source of continuing revenues for DHHL's work on behalf of Native Hawaiians.

1.3 Summary of Findings

The Ka Makana Ali'i project will locate a regional commercial area at the center of 'Ewa. Major socio-economic impacts of the project consist of:

- Construction jobs and associated economic benefits throughout the island economy.
- Short-term construction impacts (traffic, dirt, fugitive dust); these can be controlled to minimize impacts on nearby homes and schools.
- Development of a neighborhood commercial center, which will serve nearby subdivisions along Kapolei Parkway and beyond, providing a convenient alternative to larger centers at some distance.
- Location of a wide range of commercial jobs in 'Ewa, increasing residents' opportunities to live and work in the same region.
- Introduction of a new visitor amenity, hotels catering to local residents and their guests.
- Synergy with new community facilities along Kualaka'i Parkway – the University of Hawai'i West O'ahu campus, the Kroc Center, and the terminus of the new rail transit line – which will help to increase demand for each of these facilities.
- A cumulative impact on the region: development of facilities for residents along the central corridor will help to bring together residents from the separate communities of eastern and western 'Ewa.
- Significant contributions to revenues for the State of Hawaii and the City and County of Honolulu.
- Lease rent paid to the Department of Hawaiian Homelands which will help that agency serve beneficiaries and add to the stock of housing for Native Hawaiians.

2 Socio-Economic Context

2.1 Region Potentially Affected

The project is located at the center of the 'Ewa plain, the southwest part of the island of O'ahu. Its nearest neighbors are the Kalaheo Community Development District – the former Naval Air Station Barbers Point – to the south, Kapolei Middle School and the Villages of Kapolei to the west, Department of Hawaiian Home Lands (DHHL) development areas to the north, and the 'Ewa Villages area to the east. The site is State land, owned by DHHL and leased to Hawaii DeBartolo LLC for development.

The 'Ewa region has been slated for urban development for decades. The City and County of Honolulu identifies 'Ewa as a Development Plan area, like the Primary Urban Center, but unlike the five regional "Sustainable Communities Plan" areas that make up the rest of the island.² Figure 2-1 shows the outlines of the region, along with its major roadways and selected communities. Figure 2-2 shows where existing and proposed commercial areas serving the region are located. While several commercial areas are located in the region, the largest ones serving 'Ewa – Pearlridge and Ala Moana – are to the east.

² The 'Ewa Development Plan (DP) area (City and County of Honolulu) includes two Neighborhood Board Areas: 'Ewa (Number 24) and Makakilo/Kapolei/Honokai Hale (No. 34). The 'Ewa Development Plan area and the 'Ewa judicial district (State of Hawaii) are distinct. The latter includes much of Central O'ahu. It will not be discussed in this report. All references to 'Ewa as a region in the remainder of this report are to the DP area.

Figure 2-1: Regional Location Map

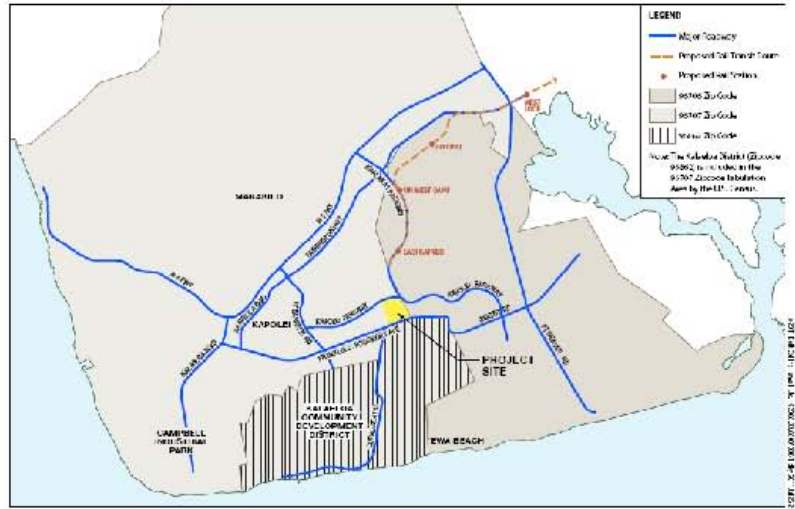


Figure 2-1
REGIONAL LOCATION MAP
© Belt Collins 2011
Scale: Ewa Beach Study

Figure 2-2: Shopping Centers Serving Leeward O'ahu Residents

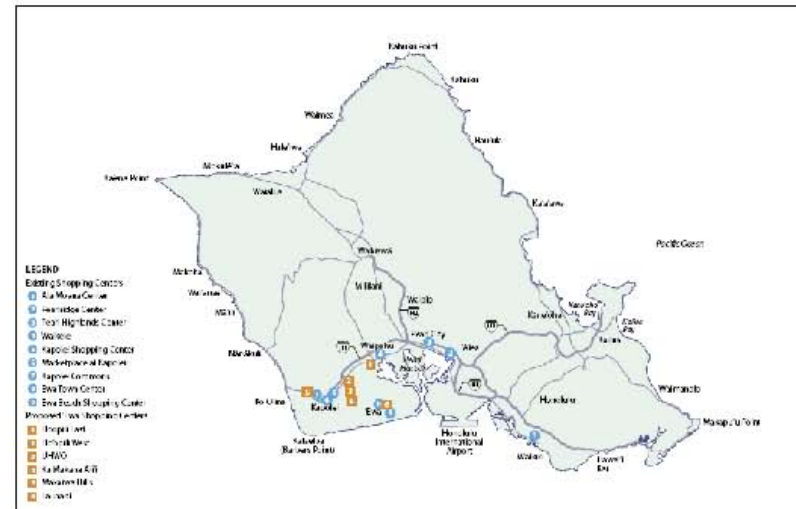


Figure 2-2
SHOPPING CENTERS SERVING LEeward O'AHU RESIDENTS
© Belt Collins 2011
Scale: Ewa Beach Study

The major facilities being developed along Kualaka'i Parkway – the new University of Hawaii West Oahu campus, the Salvation Army Ray and Joan Kroc Corps Center, and Ka Makana Ali'i – may well serve all of Leeward O'ahu, not just 'Ewa. However, the Wai'anae Coast and Central O'ahu are not discussed in detail here, since the project is not likely to have specific impacts on communities in those areas.

The region of impact can be defined by the City and County boundaries, as the 'Ewa Development Plan (DP) area, or in terms of sub-regions. The U.S. Census provides data for the 'Ewa Beach and Kapolei Zip Code Tabulation Areas (ZCTAs) – 96706 and 96707, respectively. These cover nearly all the DP area.³ Some information is also available for sub-areas named for particular communities, as defined by the Census or by the City and County.⁴

2.2 The 'Ewa Region and Major Communities

Geographically, 'Ewa consists of a plain with soil over coral rock, and of hills forming the southern end of the Wai'anae mountain range. For most of the twentieth century, the 'Ewa plain was used for sugar cultivation, and many residents were plantation workers, living in scattered villages. Also, the United States military occupied large areas from the 1940s through the end of the century. Nowadays, the military presence is reduced to a Coast Guard air station at Kalaeloa, a firing range, and a blast zone on the western shore of Pearl Harbor, an area where development is excluded because of proximity to the Navy's ammunition wharf on the Waipi'o Peninsula.

Urbanization of the area has long been planned. Development along the western side of the region began with the funding of the H-1 Interstate Highway in the 1960s. Next, Makakilo and the James Campbell Industrial Park were established. The State of Hawaii created Barbers Point Kalaeloa Harbor as a commercial harbor supplementing Honolulu harbor. As "the secondary urban growth area" on O'ahu, Kapolei was designated as a city in the 1977 General Plan, and was to include the full range of urban land uses. The Villages of Kapolei were master planned by the State housing development agency, and then built by private developers. The Estate of James Campbell and its successor companies began development of the Kapolei city center in the early 1990s, and have leased or sold large parts of the area to the west for commercial projects. Ko 'Olina is being developed as a resort area.

In the 1990s, most new development in 'Ewa was residential. Suburban growth spread down the major north-south roadways: Fort Weaver Road in the east, Fort Barrette Road in the west. New commercial development began with the Kapolei Shopping Center, which opened in 1992. Additional commercial areas have been built nearby. Commercial development along Fort Weaver Road has been slow, although residential development has continued steadily for nearly

³ While the Kalaeloa District has its own zip code (96862), it is included in the 96707 Zip Code Tabulation Area by the U.S. Census.

⁴ Several Census sub-areas were recognized in 1990 and 2000 and again in 2010, but mapping procedures have changed, so that later data cannot be compared with earlier data without careful analysis of the maps for each sub-area. Similarly, Census tract boundaries and numbering have changed.

twenty years. Even during the current recession, new housing development has continued. Most of O'ahu's new housing development is located in 'Ewa.⁵

Many of the large residential projects in 'Ewa still have large increments to be built. At the northeast and northwest corners of the region, the proposed Ho'opili and Makaiwa Hills developments have not begun construction. Similarly, residential and commercial uses on UHWO land have been proposed in concept, but have not yet been designed or permitted. Redevelopment of the Kalaeloa District, immediately south of the project site, could eventually involve some 6,500 additional residential units. Table 2-1 lists the major projects in terms of their development status in mid-2009. It shows some 21,750 housing units built, out of a potential total of nearly 60,000 units.

Table 2-1: Existing and Proposed Residential Communities in the 'Ewa DP Area

	Potential units	Share built by 2009
East (Fort Weaver Road) Side		
West Loch	1,630	100%
Ho'opili	11,750	0%
'Ewa by Gentry	8,490	79%
'Ewa Villages	1,390	57%
Ocean Pointe	4,850	57%
Iroquois Point (1)	1,440	100%
Central (Kualaka'i Parkway)		
University of Hawai'i West O'ahu (2)	4,040	0%
East Kapolei I (DHHL)	400	3%
East Kapolei II (DHHL)	2,020	0%
West (Fort Barrette Road) Side		
Makakilo	3,460	87%
West Kapolei	2,500	0%
Makaiwa Hills	4,280	0%
Ko 'Olina Resort	4,450	26%
City of Kapolei	3,200	1%
Villages of Kapolei	4,230	84%
Kapolei Knolls	430	100%
Kalaeloa Redevelopment (3)	1,180	15%

NOTES: This table is based on the City's *Development Plan Annual Report 2009* (for units built by 2009), developer input, Census 2010 data, and published plans. All unit totals have been rounded to the nearest ten. No attempt has been made to estimate when various developments would be built out.

(1) Iroquois Point is Navy property on long-term lease. No plans for redevelopment have been announced.

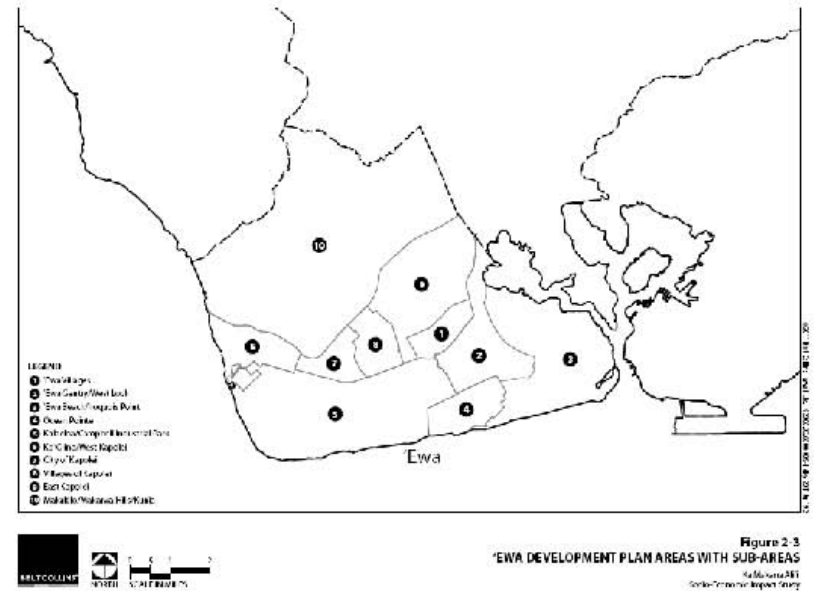
⁵ Data for 2009 and 2010 compiled for City and County of Honolulu *Development Plan Annual Report*. Personal communication, Michael Watkins, planner, DPP (July 2011).

- (2) The *UHWO Environmental Impact Statement (2006)* projected eventual development of 760 units of student housing and 3,280 additional residential units.
- (3) The 2005 *Kalaheo Community Development Plan* called for a mix of residential, industrial and commercial projects to support infrastructure investment.

Figure 2-3 shows the DP area as divided into sub-areas by the City Department of Planning and Permitting (DPP). The DPP provides population estimates and forecasts for the sub-areas (discussed in section 2-4 below).

The 'Ewa DP area has been planned to be self-sufficient, with a mix of homes and commercial, industrial and civic facilities. It includes visitor units at Ko 'Olinā and, in time, Ocean Pointe. Unique land uses, serving the whole island, include a general aviation airport and a water park. In recent years, many 'Ewa residents commuted to work in Honolulu and at Pearl Harbor. With regional growth (and continuing congestion of the H-1 Interstate Highway making long-distance commuting difficult), the number and variety of jobs in the region are expected to increase.

Figure 2-3: 'Ewa Development Plan Area and Sub-Areas



2.3 Socio-Economic Trends

2.3.1 Demographics and Housing

The region's population increased by 135% between 1990 and 2010. This growth is clear in Table 2-2, when historic DP area counts and recent ZCTA totals are compared.⁶ The population is young when compared to the islandwide population and few people live in group quarters or non-family households (as shown in Table 2-3).

Households in 'Ewa are larger, in general, than the statewide average. Homeownership is more prevalent than elsewhere in Hawai'i. Rental units are found throughout the region as well. Notably, when the Navy withdrew from the area in the mid-1990s, rental housing in both Kalaeloa and Iroquois Point – now the “Waterfront at Pu‘uloa” area – became available for rent by civilians.

Table 2-2: Recent Population Growth in 'Ewa

	'Ewa DP Area	Both ZCTAs	'Ewa Beach ZCTA 96706	Kapolei ZCTA 96707
Population				
1990	42,931			
2000	68,718	68,928	43,874	25,054
2010		101,547	62,730	38,817
Housing Units				
1990	11,722			
2000	20,804	20,838	12,961	7,877
2010		30,780	18,319	12,461

NOTES: The Development Plan (DP) Area geography is used by the City and County of Honolulu, but not the State of Hawaii. It is close to the combined Zip Code Tabulation Areas (ZCTAs) shown above. ZCTAs are Census areas, based on the Postal Service's zip code geography, but the Census is not obligated to correspond fully to that geography, or to reflect changes in zip code areas. While Barbers Point has a separate zip code, it is included in the 96707 ZCTA.

Even though 'Ewa is seen as a new development area, where subdivisions are replacing cane fields, the density of settlement is already much higher than the statewide average.

⁶ DP area demographics and projections are developed by the Department of Planning and Permitting, City and County of Honolulu. The 2010 counts are not yet posted. Because the DP areas do not overlap neatly with census tracts in the Waipahu area, the ZCTA figures seem the most useful current Census counts for the region.

Table 2-3: Demographic and Household Characteristics, 2010

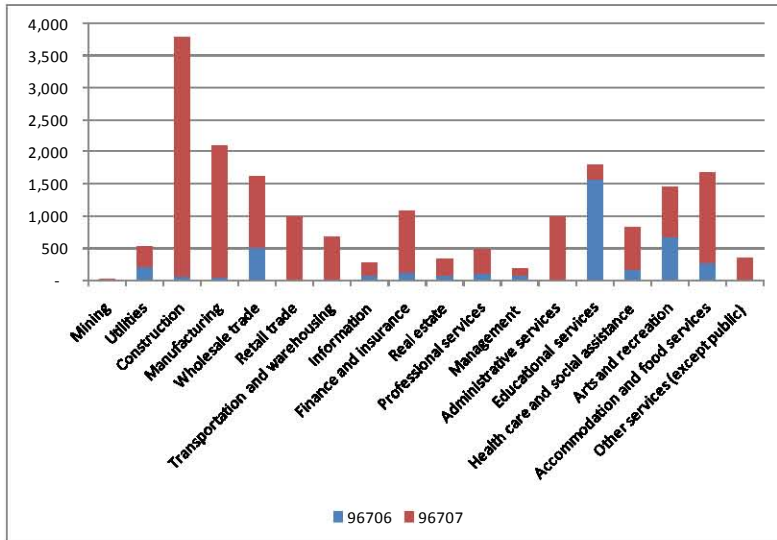
	State of Hawaii	Combined ZCTAs	'Ewa Beach ZCTA 96706	Kapolei ZCTA 96707
Population				
Total Population	1,360,301	101,547	62,730	38,817
Share under 18	22.3%	28.8%	28.8%	28.9%
Share 18 to 64	63.4%	63.0%	62.5%	63.7%
Share 65 and over	14.3%	8.2%	8.7%	7.4%
Median Age	38.6	NA	32.9	32.8
Share in				
Family Households	82.8%	91.8%	92.7%	90.3%
Non-family Households	14.1%	7.2%	6.9%	7.7%
Group Quarters	3.2%	1.0%	0.3%	2.0%
Housing				
Housing Units	519,508	30,780	18,319	12,461
Vacant Share	12.4%	7.1%	5.4%	9.7%
Occupied Units	455,338	28,584	17,331	11,253
Share of Households				
Owner-Occupied Share	57.7%	67.8%	67.9%	67.7%
Family Households	68.9%	82.3%	82.3%	82.2%
Non-family Households	31.1%	17.7%	17.7%	17.8%
Average Household Size	2.89	3.52	3.61	3.38
Owner-Occupied	3.02	3.64	3.75	3.48
Rental Units	2.72	3.25	3.3	3.18
Density of Settlement				
Persons per square mile	212	NA	3,661	895

SOURCE: U.S. Census data available on American FactFinder (www.census.gov) or through DBEDT (http://hawaii.gov/dbedt/info/census/Census_2010/SF1/DEC_10_SF1_GCT_ZIPCODE.xls).

2.3.2 Economics

With O'ahu's largest industrial area, second harbor, second resort area, and new business parks, the west side of 'Ewa has a diverse economic base. The east side has more limited employment opportunities. The largest industrial sector in the east side is education; in the west side, construction, manufacturing, and accommodation and food services each support thousands of jobs. (See Figure 2-4.)

Figure 2-4: Distribution of Jobs by Industry, 'Ewa Zip Code Tabulation Areas, 2008



Note: Employment figures for industries are approximate, estimated using the midpoints of data shown by the U.S. Census in ranges.

Source: Zip Code Business Patterns for ZCTAs 96706 and 96707 for 2008, posted at www.census.gov.

2.3.3 Community Life and Facilities

Community organizations in 'Ewa have emerged over decades. Churches and associated schools in 'Ewa Beach and 'Ewa Villages date back to the plantation years. On the west side, churches were established recently; some lack permanent facilities. In newer subdivisions, homeowners' associations are responsible for community maintenance; they may also operate recreational facilities.

Hawaiian homestead areas in Kapolei have residents' associations. The Kapolei Community Development Corporation was formed in 2008 to serve both existing and planned homestead communities. Responding to residents' input, the Department of Hawaiian Homelands (DHHL) has leased parcels for a community center and commercial development to the corporation. The commercial parcel will be developed to support building and operating the Community Center, jobs, job training, and the quality of life of the homestead community. A request for proposals has been issued for the commercial component (personal communication, Shirley Swinney, President, Kapolei Community Development Corporation, July 2011).

The City and County of Honolulu established Neighborhood Boards to assure community participation in decision-making pursuant to its 1973 revised Charter. Currently, the DP area includes two elected Neighborhood Boards ('Ewa Neighborhood Board Number 23 and Makakilo/Kapolei/Honokai Hale Neighborhood Board Number 34), covering the east and west sides of the area, respectively. The Neighborhood Boards have an advisory role, and provide an arena for expression of community concerns and views.

Active local organizations include the Hawaiian Railway Society, a group of volunteers who maintain historic railroad equipment and run a passenger train from its 'Ewa Villages station to Ko 'Olina. Youth sports leagues use local park areas; some have worked to maintain fields in the Kalaeloa district. As parts of the district have passed from Navy ownership to other hands, access, maintenance and security have been problematic. While the Hawaii Community Development Authority [HCDA] has oversight for the district, it depends on tenants to fund security patrols. The Navy continues to operate a golf course in the district, and cooperates with the City and County to patrol beach areas. A riding stable is near the golf course on Navy land, but its lease is expected to be terminated in 2012.

2.4 Anticipated Trends, 2011 to 2035

In the next few years, new institutions along Kualaka'i Parkway will provide a center for the DP area, serving both east and west:

- The Honolulu High Capacity Rail line will run from a station beside the Kroc Center to Honolulu. It is planned to be fully operational by 2019. Trains may run from its western terminus to locations such as Pearl Harbor and the Honolulu Airport before the tracks extend to Ala Moana in Honolulu. (Eventually, the line could be extended to Kalaeloa and the City of Kapolei, and to Waikiki and the University of Hawai'i at Mānoa.)
- The University of Hawai'i West O'ahu is slated to move all operations to its Kapolei campus as of the fall 2012 semester. The new campus will serve up to 7,600 students in time.
- The Kroc Center will provide recreational, meeting and worship facilities. At 200,000 square feet, it will be the largest recreational center in Hawai'i. It is to open in 2011. It is located next to the terminus of the rail line.
- A community center for Department of Hawaiian Homelands (DHHL) residents and a separate commercial facility are planned by the Kapolei Community Development Corporation. The commercial facility will be located across Kapolei Parkway from the Ka Makana Ali'i project.

With rapid population growth in 'Ewa, traffic congestion has been a serious problem. The construction of Kualaka'i Parkway, improvements to the H-1 highway interchange at Makakilo and opening of a new interchange at Kualaka'i Parkway, along with widening of Fort Weaver Road have addressed the problem. Planned improvements to Fort Barrette Road and the Kapolei

Interchange Complex will be needed to reduce congestion in the western side of the area. Rush hour traffic to and from Honolulu via H-1 remains slow and is expected to become slower.⁷

When Naval Air Station Barbers Point closed in 1996, a direct route between 'Ewa Beach and Kapolei (along Geiger Road, Franklin D. Roosevelt Avenue, and Fort Barrette Road) was opened. More recently, segments of Kapolei Parkway have been completed, making that drive possible along roads built to current standards.

In Kalaeloa, near-term initiatives include a headquarters for the Federal Bureau of Investigation, now under construction, and three different solar projects, capable of producing some 15 Megawatts of energy. Other recreational, commercial and residential areas have been planned, but are not now being developed, largely due to the high cost of infrastructure that would meet current standards. Further development within the district will depend on improvements in its roadways and utilities.

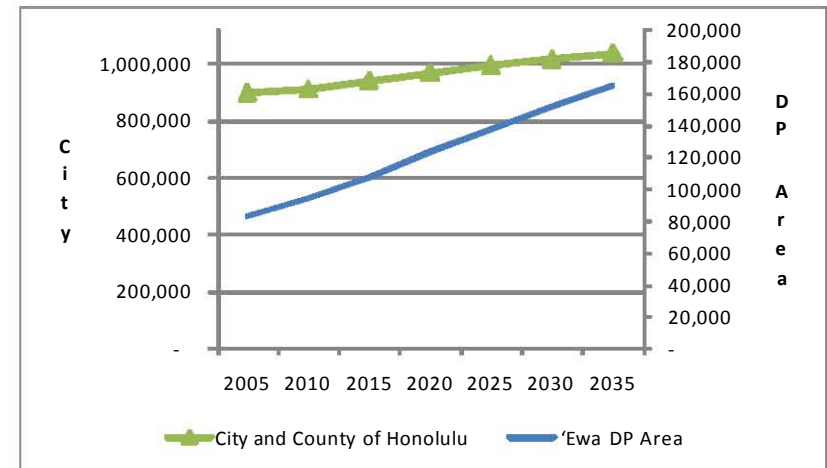
Much new housing for residents of O'ahu will be built in 'Ewa, so the DP Area population is expected to grow much faster than that of the City and County as a whole (as shown in Figure 2-5). Job growth is also projected for the region. (See Table 2-4.)

While little population growth is projected for 'Ewa Beach/Iroquois Point and the Villages of Kapolei, all other sub-areas will see significant growth in both residents and jobs. A small visitor population has been projected for Ocean Pointe, and a larger one for Ko 'Olina.

Commercial development is part of the largest projects slated for 'Ewa. Ho'opili includes a planned commercial area next to Waipahu that may include medical offices, and a second commercial area on Kualaka'i Parkway (as shown in Figure 2-2). The University of Hawai'i at West O'ahu site includes lands for commercial and residential development. These will be expected to support further expansion of the University. A new shopping center has long been planned for Fort Weaver Road. A new Safeway store is to be built soon. Near Kapolei Shopping Center, a WalMart store is now under construction. At the western end of the DP area, Kapolei Commons is still being developed and additional commercial areas are planned for Makaiwa Hills.

⁷ Oahu Metropolitan Planning Organization. *Oahu Regional Transportation Plan 2035*. Honolulu, HI, 2011. As noted in the plan, both the new rail system and job growth in 'Ewa will tend to limit, but not reverse, increased traffic congestion along the highway.

Figure 2-5: Projected Population Increase, 'Ewa Development Plan Area and City and County of Honolulu



SOURCE: DPP (www.honolulu.dpp.org).

Table 2-4: Population and Employment Projections, 2010 to 2035

	2010	2015	2020	2025	2030	2035
POPULATION						
Development Plan Subareas:						
Ewa Villages	5,650	6,227	6,403	6,550	6,677	6,834
Ewa Gentry/West Loch	26,458	27,315	27,411	27,440	27,447	27,490
Ewa Beach/Iroquois Pt	17,972	17,860	17,670	17,464	17,260	17,072
Ocean Pointe	6,652	7,981	8,783	9,235	9,657	10,117
Kalaeloa/Campbell Ind Park	1,381	1,690	3,147	5,057	7,484	10,534
Ko Olina/West Kapolei	3,942	4,766	6,750	7,697	8,344	9,040
City of Kapolei	756	3,339	4,804	6,418	7,469	8,577
Villages of Kapolei	14,012	14,422	14,462	14,466	14,465	14,471
East Kapolei	809	4,382	11,803	18,605	26,421	32,886
Makakilo/Makaiwa Hills/Kunia	16,872	19,252	21,868	24,789	26,108	27,535
'Ewa Development Plan Area	94,504	107,234	123,101	137,721	151,332	164,556
O'ahu Total	911,841	941,847	969,467	994,632	1,017,576	1,038,317
Ewa share of Island Total	10%	11%	13%	14%	15%	16%
JOBS						
Development Plan Subareas:						
Ewa Villages	1,485	1,480	1,459	1,485	1,557	1,639
Ewa Gentry/West Loch	3,591	4,007	4,020	4,235	4,501	4,758
Ewa Beach/Iroquois Pt	3,302	3,429	3,432	3,484	3,620	3,759
Ocean Pointe	1,233	2,517	2,600	2,799	3,006	3,139
Kalaeloa/Campbell Ind Park	7,951	10,714	13,430	17,124	20,303	23,296
Ko Olina/West Kapolei	2,623	4,000	4,618	4,810	5,081	5,287
City of Kapolei	13,591	16,730	18,899	20,774	22,116	23,112
Villages of Kapolei	3,138	2,843	2,731	2,794	3,024	3,301
East Kapolei	6,855	13,857	17,801	21,764	25,658	29,558
Makakilo/Makaiwa Hills/Kunia	2,407	3,087	3,984	4,825	5,225	5,585
'Ewa Development Plan Area	46,176	62,664	72,974	84,094	94,091	103,434
O'ahu Total	561,684	597,183	621,115	643,963	666,194	688,380
Ewa share of Island Total	8%	10%	12%	13%	14%	15%

SOURCE: Allocation by City and County of Honolulu Department of Planning and Permitting of County population and employment projected by DBEDT. Projections were made in mid-2009, and take into account the recession felt as of 2008. Sub-areas are shown in Figure 2-3.

2.5 Community Issues and Concerns

2.5.1 Sources

Written sources for this report include the minutes of the two regional Neighborhood Boards ('Ewa Neighborhood Board No. 23 and Makakilo/Kapolei/Honokai Hale Neighborhood Board No. 34) from January 2009 through May 2011 and newspaper accounts of local controversies. A few stakeholders were interviewed to learn of local concerns. These are listed in Table 2-5. Belt Collins Hawaii has conducted interviews with regard to various plans and projects in the 'Ewa DP area in the past, and relies on that experience as well.

Table 2-5: Stakeholders Interviewed for this Report

Interviewee	Affiliation
Major Raymond Ancheta	Commander, Kapolei Station, Honolulu Police Department
Pearline Fukuba	HCDA Kalaeloa District
Terry Hildebrand	'Ewa Villages resident, Planner
Larry Howard	Member, Board of Directors, Hawaiian Railway Society
Dana Kobashigawa	Interim Principal, Kapolei Middle School
Matthew LoPresti	Member, 'Ewa Neighborhood Board, recent candidate for City Council, District 1
Tesha Malama	HCDA Kalaeloa District; Past Chair, 'Ewa Neighborhood Board
Beth Malvestiti	HHFDC; Member of Board of Directors, Villages of Kapolei Association
Shirley Swinney	Executive Director, Kapolei Community Development Corporation
Virgil Rewick	Member, Board of Directors, Hawaiian Railway Society

2.5.2 Issues and Concerns Independent of the Project

In interviews, local stakeholders discuss traffic congestion immediately as a regional problem. The slow process of designing and building Kualaka'i Parkway (long known as the North-South Road) over two decades has fueled a widely-held sense that the area's needs are not a priority for State and County agencies. Next, the poor condition of older roadways has led to fatalities (of pedestrians as well as automobile passengers).

Many 'Ewa residents have expressed strong support for the new rail transit system. However, some residents of eastern 'Ewa have argued that the new system should be re-aligned to serve their communities as well as the west.

Local community stakeholders have long pressed for development of new schools and have greeted innovative schools warmly. However, by the time new schools are built, they typically serve a large population and soon include portable structures as well as permanent facilities. Kapolei schools are on a multitrack calendar, to allow them to serve a large student population.

Continued operation of the Waimānalo Gulch Sanitary Landfill for the City and County of Honolulu has long been contested by stakeholders from Kapolei and from the Wai'anae Coast. The landfill and trucks carrying refuse to it are identified as sourced of trash and dust affecting residential areas and the ocean. Both Mayor Hannemann and Mayor Carlisle have supported planning for an alternative site and measures to decrease waste going to the landfill, while expanding the existing landfill.

Crime and vandalism have been problems in Kalaeloa and at the western edge of 'Ewa Beach. These areas were not well patrolled for many years. Homeless campers occupied areas in Kalaeloa near the ocean. These have been evicted, but much of the district is undeveloped land covered by brush. Transitional housing for homeless veterans and families has been developed in old Navy facilities in the urbanized part of the district. These are supported by service agencies and a shuttle service.

After the closure of Naval Air Station Barbers Point, area residents have sought to keep several facilities open for community use. These include a child care center and bowling alley in the Downtown area, along with sports fields near the northern edge of the Kalaeloa District. Pride Field, across Franklin D. Roosevelt Avenue from the project site, is heavily used for baseball and softball.

2.5.3 Concerns with Regard to the Project

Both interviewees and community groups listening to presentations about Ka Makana Ali'i expressed concern that it would create or add to traffic congestion. Questions were raised concerning construction traffic during rush hour periods and about eventual growth in traffic as Ka Makana Ali'i becomes a retail and entertainment destination. Pedestrian safety was of concern, given the size and location of the project.

Some interviewees saw the project as leading to further development of the Kalaeloa District. While they welcomed investment, they had questions about a future extension of Kualaka'i Parkway. This future road would cross tracks used by the Hawaiian Railway Society and could affect traffic on Franklin D. Roosevelt Avenue and other roads within Kalaeloa.

When the project was introduced to the two regional Neighborhood Boards, questions were raised concerning the following:

- The project's location on DHHL property: some view the use of DHHL land for commercial uses when Hawaiians in the beneficiary pool do not have leases as inappropriate. (However, DHHL leases lands for commercial and industrial use to fund the homestead program.)⁸
- Whether the project would fund or support a road link between Kapolei Parkway and Roosevelt Avenue. (The State Legislature has allocated funds to build an extension of Kualaka'i Parkway to Roosevelt Avenue. The Ka Makana Ali'i project does not make that link necessary.)
- Whether water and sewer lines were in place to support the project. (They were.)
- Whether the project would increase water use. (Past plans for the site already allowed for the use of water equivalent to that needed to support approximately 34 households.)
- Whether the project would involve "green" buildings. (Plans include sustainable design for some of the buildings.)
- How the project would affect the Hawaiian Railway Society. (The State Department of Transportation and the developer were working with the society to resolve problems.)
- Whether the project would respond to the spectrum of residents' needs. (The response indicated that medical care and child care could be part of the project, as well as retail stores, if justified by demand.)

Interviewees largely viewed the project as benefitting the region. They saw a commercial center as offering new shopping opportunities. They expected that the project operators would be able to co-operate with nearby institutions.

⁸ The responses provided here mostly paraphrases of ones recorded in Neighborhood Board minutes. No response was recorded to the comment about the use of DHHL lands; the comment shown here is based on the Department's stated policies.)

3 Socio-Economic Impacts

Economic impacts are discussed first, since they can be quantified. Other social impacts are less clear-cut, and their scale depends on economic impacts. Fiscal impacts are discussed last, since these follow both from the economic estimates and from demand for public services.

3.1 Economic

Construction of the project will generate jobs, both on-site and throughout the economy. Job and wage impacts are estimated using the State’s Input-Output model. It distinguishes direct impacts – for construction, work in the firms building a project – from indirect and induced ones. Indirect impacts occur as firms directly involved in an activity purchase materials and supplies from other firms. Induced impacts occur as workers in direct and indirect jobs spend their pay in the regional economy.

Jobs due to project operations can also be estimated, and their indirect and induced impacts can similarly be projected. The direct jobs at the project are important for the local community. They will help local residents find work near home. For the island economy and the state as a whole, the location of those jobs at Ka Makana Ali’i does not count as an impact, since nearly all the spending that supports those jobs would occur somewhere on the island of O’ahu even if the project were not built.

3.1.1 Construction Employment and Wages

Table 3-1 shows calculations of construction jobs and wages derived from estimated construction cost. Construction work on a project is not permanent, so these job impacts are counted in person-years, i.e., full-time jobs for a year.

Construction of Phase 1 would generate about 190 direct person-years of work; construction of Phase 2 would involve approximately 1,470 person-years. The total employment impact of Phase 1 construction is approximately 550 person-years, while the total impact of Phase 2 construction is nearly 4,280 person-years of work.

Direct construction jobs include on-site work and work in contractors’ yards and offices. The actual number of workers at a job site varies from day to day, depending on the type of work to be done. (If a construction project involves 60 person-years of direct work over 18 months, the average number of direct jobs would be 40 per year. However, many workers could be present in some phases, and few at others.) Indirect jobs are located at suppliers’ places of business, while induced jobs are found throughout the island, wherever workers spend their wages.

3.1.2 Operations Employment and Wages

Once Ka Makana Ali’i opens, it will offer permanent jobs in retail, eating and drinking establishments, and hotels. Office space will house a range of businesses. Project management, maintenance and security work will be needed as well. Table 3-2 provides an estimate of the number of these permanent jobs on-site, once each phase of the project is completed, along with the indirect and induced jobs associated with them. More than 3,900 direct jobs will eventually be located at Ka Makana Ali’i.

Direct operations jobs continue year after year, and so do the indirect and induced jobs associated with them. The calculations show employment with build-out and occupancy of each phase of the project. These levels will be reached over several years’ time.

Table 3-1: Construction-Related Employment and Wages

	Phase 1	Phase 2	Combined
Construction Cost (Million \$s)	\$40.0	\$310.0	\$350.0
Construction-Related Jobs (Person-Years)			
Direct	189	1,468	1,657
Indirect and Induced	363	2,812	3,175
Total	552	4,280	4,832
Construction-Related Wages (Million \$s)			
Direct	\$13.0	\$100.6	\$113.5
Indirect and Induced	\$16.3	\$126.1	\$142.3
Total	\$29.2	\$226.6	\$255.9

NOTES: Construction costs estimates supplied by Hawaii DeBartolo LLC.

Direct construction jobs estimated from ratio of excise tax base for construction to annual job count for 2009. Direct construction jobs include on-site jobs and ones at yards and headquarters needed to support firms’ work on construction. Indirect jobs are jobs in firms supplying materials and services to direct construction firms; induced jobs are jobs supported by spending of the workforce in direct and indirect jobs. The ratio of indirect and induced jobs to direct jobs is estimated from the State’s Input-Output model, as recently updated to take into account 2007 Economic Census data. All construction employment estimates are in "person-years," i.e., full-time jobs for a year. The actual number of workers on a construction site will vary depending on the phase of work.

Wages are estimated from the average wages in construction (for direct jobs) and all covered employment (for indirect and induced jobs) in the City and County of Honolulu in 2009. Average wages have been increased to mid-2011 dollars in line with increases in the Consumer Price Index for Honolulu.

SOURCES: DBEDT, *State of Hawaii Data Book, 2009*; *Hawaii State 2007 Input-Output Model*; *Quarterly Statistical and Economic Report, Second Quarter 2011*; Hawaii State Department of Labor and Industrial Relations, *Employment and Payrolls in Hawaii, 2009*.

Table 3-2: Operations-Related Employment

COMPONENT OF PROJECT	DIRECT JOBS (1)		Both Phases	INDIRECT AND INDUCED JOBS (2)	TOTAL
	Phase 1	Phase 2			
Retail	400	1,340	1,740	886	2,626
Eating and Drinking	200	640	840	361	1,201
Entertainment		50	50	28	78
Offices		870	870	901	1,771
Hotel		380	380	372	752
Project Administration, Maintenance	10	25	35	29	64
Total	610	3,305	3,915	2,578	6,493

NOTES:

- (1) Employment estimated on the basis of estimated gross square footage for various uses.
- | | | |
|---------------------|---------|--------------------------------|
| Retail | varies: | from 2 to 3.5 per 1,000 sq. ft |
| Eating and Drinking | 3.15 | per 1,000 sq. ft |
| Entertainment | 1.3 | per 1,000 sq. ft |
| Offices | 4 | per 1,000 sq. ft |
| Hotel | 0.75 | per hotel room |
- (2) Indirect and induced jobs estimated from Hawaii State Input Output tables based on a model developed and refined by DBEDT, incorporating 2007 Economic Census data. For this analysis, office jobs were assigned to the "other professional services" industrial category.
- SOURCES: DBEDT, *Hawaii State Data Book, 2009; Hawaii State Input-Output Model, 2007.*

Operations-related wages can be estimated from average salaries in different industries. (See Table 3-3.) The amounts shown are for annual wages once each phase of the project is built out. Wages will likely increase in each phase as it is developed and spaces within the commercial center are filled.

Table 3-3: Operations-Related Wages

	Industry	Annual Wages Associated with Project (Million \$)		
		Phase 1	Phase 2	Both Phases
Direct Jobs				
Retail	Retail	\$11.5	\$38.7	\$50.2
Eating and Drinking	Eating/Drinking	\$4.8	\$15.3	\$20.1
Entertainment	Arts and Entertainment		\$1.3	\$1.3
Offices	Average of Covered Employment		\$39.0	\$39.0
Hotel	Accommodation	\$0.0	\$9.1	\$9.1
Project Administration, Maintenance	Administrative, Support Services	\$0.3	\$0.8	\$1.1
Direct Jobs Total		\$16.6	\$104.1	\$120.7
Indirect and Induced Jobs	Average of Covered Employment			\$115.6

NOTES: Wages estimated from 2009 averages, adjusted to 2011 in line with the Consumer Price Index.
 SOURCE: Department of Labor and Industrial Relations, *Employment and Payrolls in Hawaii, 2009*; DBEDT, *Quarterly Statistical and Economic Report, Second Quarter, 2011.*

3.2 Population and Housing

The project will provide jobs that may appeal to local residents. Office space in the project will help island firms to locate or expand activities in 'Ewa. No direct resident population impact is anticipated, since few or no employees will need to move from outside O'ahu to fill positions at Ka Makana Ali'i.

When firms establish offices or stores in a new commercial area, many current employees must commute from other neighborhoods. Over time, the project's workforce will likely be drawn increasingly from 'Ewa, since jobs will be convenient for local residents. Also, the regional center will be an amenity for residents, offering a wide range of goods and services.

Consequently, while the project is likely to have little or no impact on resident population, it may contribute to housing demand in the 'Ewa region, and may make the region more attractive to some residents of other parts of the island.

The hotel component of the project introduces a new facility for non-residents. It will serve travelers on business or visiting family and friends in the region, and will be designed as less upscale than the major hotels in Waikiki and Ko 'Olina. One market served by these hotels will be sports teams attending tournaments or similar events at the Waipi'o Peninsula Soccer Park or Central O'ahu Regional Park. Major tournaments bring teams from other islands in Hawai'i and from the U.S. Mainland. It is reasonable to expect that hotels near the major sports venues will benefit visiting teams and their supporters, especially ones from the Neighbor Islands.

Presumably, many of the hotel guests would come to the area in any event, staying in resort hotels or with family and friends. The hotels at Ka Makana Ali'i will make it easier for some travelers to come to 'Ewa and for others to extend their stays. With some 500 rooms, the hotels can be expected to house, on average, some 700 persons.⁹ If approximately 20 percent of these are attracted to stay because of the new facilities, the impact would be an increase of the visitor population by 140 persons.¹⁰ This is small, both in comparison with the number of tourists on O'ahu (80,324 in 2009)¹¹ and with the resident population of 'Ewa (over 100,000 by 2010), and therefore does not amount to a significant impact.

3.3 Public Facilities

Public facilities considered in this report include recreation, education, medical services, and public safety.

⁹ This assumes average occupancy of 70% of available rooms, and two persons per room.

¹⁰ The 20 percent figure is a high estimate of the likely new visitor impact. It is intended to include both new visits and potentially longer visitor stays.

¹¹ Hawaii Tourism Authority, *2009 Annual Visitor Research Report*. Honolulu, HI. 2010.

3.3.1 Recreation

Existing Conditions and Future without Project:

The ‘Ewa DP area includes beach parks, neighborhood parks, community parks, and space for regional park development. The developed park acreage totaled approximately 211.6 acres as of 2003.¹² Eventually, regional, district, community, neighborhood and beach parks could cover as much as 714.2 acres.¹³ However, that estimate includes acreage in Kalaeloa that may require investment by the City and County, along with smaller parks that are more likely to be developed by private parties. Nearby, in Central O‘ahu, the City and County of Honolulu has created a regional park (Central O‘ahu Regional Park) and a soccer facility serving the entire island (Waipi‘o Peninsula Soccer Park).

Area residents note that fields for organized sports are in great demand in the region. The Kroc Center will add a gymnasium, an aquatics complex, and a sports field.

Plans for the UHWO property have included play fields and a gymnasium, but these are not included in near-term development. Similarly, while the City and County has claim to acreage in Kalaeloa for sports-related projects, no plans for their development are currently being advanced.

Future with Project:

The Ka Makana Ali‘i project will include entertainment and recreation facilities, such as a cineplex and health club. It may include play areas for children, but will probably not have facilities for outdoor sports.

3.3.2 Schools

Existing Conditions and Future without Project:

The ‘Ewa Development Plan Area includes eleven public elementary schools, three middle schools, and two high schools, as shown in Table 3-4. The school population has grown quickly. The Department of Education (DOE) has opened new schools in recent years, and has organized schedule and programs so that schools such as Kapolei Middle School can operate with high enrollments.

¹² Department of Land and Natural Resources, *Statewide Comprehensive Outdoor Recreation Plan*. Honolulu, HI, 2003.

¹³ Department of Planning and Permitting, City and County of Honolulu. *Public Review Draft, Ewa Development Plan*. Honolulu, HI: 2008, Table 3.1.

Table 3-4: Public School Enrollment, ‘Ewa Development Plan Area

School	2010-2011 Enrollment
Barbers Point Elementary	401
Ewa Beach Elementary	507
Ewa Elementary	1,003
Holomua Elementary	1,382
Iroquois Point Elementary	718
Kaimiloa Elementary	610
Kapolei Elementary	1,043
Keoneula Elementary	847
Makakilo Elementary	502
Mauka Lani Elementary	563
Pohakea Elementary	565
Ewa Makai Middle	587
Ilima Intermediate	777
Kapolei Middle	1,424
Campbell High	2,639
Kapolei High	2,107

SOURCE: Hawai‘i State Department of Education, enrollment data posted at <http://doe.k12.hi.us/reports/enrollment.htm>

The National Guard operates the Youth ChalleNGe program for at-risk youth, helping them earn high school diplomas in a structured program, at a site in the Kalaeloa redevelopment area. Nearly 200 cadets graduate each year.

Private schools in the area include Island Pacific Academy in Kapolei, Friendship Christian and Lanakila Baptist in Ewa Villages, and Messiah Lutheran and Our Lady of Perpetual Help in ‘Ewa Beach.

Additional schools are proposed for sites in the UH West O‘ahu lands, the Ho‘opili project, the DHHL East Kapolei Phase I project, and the East Kapolei Phase II project, including a new elementary school adjacent to the proposed community center. When residential development occurs in the Kalaeloa Community Development District, additional schools would be needed in that area.

University of Hawai‘i West O‘ahu enrolls some 1,306 students at its Pearl City campus (as of mid-2011). The university will move to its new site in fall 2012. The campus is designed for eventual enrollment of 7,600 students.

Future with Project:

The project will have little or no effect on the size of the resident population of the region, so it will not add to the student population for the local schools. No significant impact is expected.

3.3.3 Medical Facilities

Existing Conditions and Future without Project:

‘Ewa is served by a single hospital, Hawaii Medical Center – West, founded as St. Francis Medical Center West. It has 102 beds. It is located on Fort Weaver Road. The Kaiser and Queens health systems have clinics in Kapolei.

The Emergency Medical Services Division, City and County of Honolulu Emergency Services Department, has 19 ambulance units and two rapid response paramedic units located on O‘ahu. The project site is in the region serviced by the Makakilo ambulance unit. Honolulu Fire Department units also commonly respond to emergency calls.

With continuing residential development in the region, demand for medical services can be expected to increase.

Proposed senior residential areas (Franciscan Vistas in ‘Ewa Villages; Leihano in Kapolei) may make nursing care available to residents and some neighbors.

The proposed Ho‘opili development would include a commercial area near the Hawaii Medical Center – West hospital. Medical offices could be located there if demand warrants.

Future with Project:

The project may include medical offices or clinics. While it will increase the visitor population in ‘Ewa slightly, it is not expected to have a significant impact on demand for medical services.

3.3.4 Public Safety

Existing Conditions and Future without Project:

The Honolulu Police Department (HPD) has a district headquarters in the City of Kapolei. For O‘ahu as a whole, the department has 2.3 officers for every 1,000 residents.¹⁴ District 8 of the City and County of Honolulu Police Department covers most of the ‘Ewa Development Plan area and all of the Wai‘anae Coast. (Part of ‘Ewa near Waipahu is included in District 3).

The Kalaeloa Redevelopment District is patrolled in part by private security services. The Honolulu Police Department responds to calls from that area. (The Navy withdrew its security patrols after the closure of Barbers Point Naval Air Station in 1996. Vandalism and theft of property from unprotected buildings occurred. By 2004, as many as 100 people were living in cars and tents near Nimitz Beach until HPD and representatives of other City agencies conducted a sweep of the area.)

¹⁴ HPD statistics for 2009, posted at <http://www.honolulupd.org/download/HPD2009annualreportstats.pdf>.

A West O‘ahu Security Coalition has recently formed. It brings together private security firms and local businesses as partners with HPD to increase public safety (personal communication, Major Raymond Ancheta, HPD, July 2011).

The Honolulu Fire Department (HFD) has stations in Makakilo (No. 35) and on the west side of Kapolei (No. 40). A new station is under construction by the Kapolei Parkway/Kualaka‘i Parkway intersection. It is planned to house both an engine and ladder company, and to have space for emergency supplies and for training facilities.¹⁵

With population growth in the region, demand for public safety services is likely to rise over time. However, road improvements have reduced traffic congestion in parts of the region. Kualaka‘i Parkway provides a new central corridor, connected to new H-1 interchange and major East-West roadways (Farrington Highway and Kapolei Parkway). Traffic congestion, and hence traffic control duties for HPD, is now more likely on Fort Barrette Road and at the west end of Kapolei.

Future with Project:

Located on two major new roads, the project is not likely to create major traffic control problems for HPD. The traffic study of the project indicates that it will not cause a significant reduction in level of service on the surrounding roadways.

During construction, cement trucks will be able to reach the site from Makakilo Quarry via Kualaka‘i Parkway. As a result, project construction is likely to pose little problem for traffic control, even during peak traffic periods.

Currently the project site has no immediately adjacent neighbors, and it can be reached by Roosevelt Avenue in Kalaeloa as well as by Kapolei Parkway and Kualaka‘i Parkway. In light of the history of vandalism in Kalaeloa, it may be prudent for the developer to provide security for all construction materials stored at the site.

With a new station near the project, HFD is well situated to respond to incidents at Ka Makana Ali‘i. The project will be built to current codes, and hence will be better designed than older facilities to minimize risks of fire.

3.4 Fiscal Impacts: Government Revenues and Costs

3.4.1 Approach

Fiscal impacts consist of the revenues and costs for government agencies due to a project. Revenues can be estimated from information about construction and operations of the project, taken with current tax structures. Costs may arise if a project introduces new populations, new calls for service, or new demands for maintenance. Some of these can be quantified, e.g., the cost

¹⁵ J. Goolsby, “New Fire Station Slated for Kapolei.” *Midweek*. July 28, 2010.

of supporting a new resident or visitor population, based on recent government spending. Others are not easily estimated, both because costs are not easily associated with a single project and because it is far more difficult to break out specific operations costs than capital improvement costs.

A commercial project responds to demand from the public. It does not generate spending so much as accommodate increased spending in the economy or provide a new location for spending that would go elsewhere if the project were not built. Hence the operations of stores and firms located at Ka Makana Ali'i are not counted here as generating new public revenues. Construction of the project clearly involves new spending, and hence new tax revenues. Similarly, some hotel guests at the project arguably would not come to O'ahu if the project were not built. Both revenues and costs associated with this visitor population growth are treated as project impacts.

3.4.2 Revenues

Public revenue streams associated with the project include transportation impact fees, construction-related taxes, property taxes, and taxes on visitor spending.

The 'Ewa Transportation Impact Fee program (Revised Ordinances of Honolulu Chapter 33A) was created to help develop roadways serving the region in a period of rapid growth. Developers contribute to the program at the time that building permits are obtained, in amounts determined by the type of new development (residential, retail, office, industrial, hotel or timeshare) and the number of units or area being built. The current fee structure is under review. Since it became law, road construction costs have increased sharply. A new fee structure is being developed by the City and County, based on a model of 2020 regional transportation demand and input from developers. Table 3-5 estimates transportation impact fees according to the current program. A future program to be proposed to the City Council is likely to include higher fees and an escalator clause (so fees rise along with construction costs). Consequently, the fee estimate in Table 3-5 is likely to be much less than the fees that would be charged in the future.

Table 3-5: Estimate of Transportation Impact Fees for the Project

Project Components			
Retail / Entertainment		Gross SF	927,572
Office		Gross SF	217,000
Hotel		Units	500
Transportation Impact Fee			
Retail	per	1,000 Gross SF	\$4,053
Office	per	1,000 Gross SF	\$3,403
Hotel	per	Unit	\$1,003
Fees for Ka Makana Ali'i			
Retail			\$3,759,449
Office			\$738,451
Hotel			\$501,500
Total			\$4,999,400

Construction spending will generate revenues from excise and income taxes as estimated below in Table 3-6. The City and County of Honolulu collects a share of the excise taxes levied on O'ahu to cover the cost of the rail transit system. It is assumed here that the County surcharge would still be in force throughout the time of project construction.

Table 3-6: Construction-Related Revenues

	Phase 1	Phase 2	Combined
Construction cost (1)	\$40	\$310.0	\$350.0
Construction-related Wages (2)	\$29	\$226.6	\$255.9
Excise Taxes To State (3)			
<i>On Construction</i>	\$2	\$12.6	\$14.2
<i>On Spending by Workforce (4)</i>	\$1	\$5.7	\$6.5
Excise Taxes to City and County of Honolulu (3)			
<i>On Construction</i>	\$0	\$1.4	\$1.6
<i>On Spending by Workforce (4)</i>	\$0	\$0.6	\$0.7
Income Taxes			
<i>Corporate (5)</i>	\$0	\$0.5	\$0.6
<i>Personal (6)</i>	\$2	\$13.8	\$15.6
Total Revenues from Construction Spending			
<i>State of Hawaii</i>	\$4	\$32.6	\$36.8
<i>City and County of Honolulu</i>	\$0	\$2.0	\$2.3

NOTES:

- (1) Estimated by DeBartolo Hawaii LLC.
- (2) From Table 3-1.
- (3) The State collects General Excise Tax (4%) and, on O'ahu, an additional tax for transit (.5%). Act 247 of 2005 directs the State to retain 10% of the County surcharge for administration costs. Hence the State share of excise taxes is 4.05%, while the City and County share is 0.45%
- (4) Excise tax is calculated on disposable income, estimated as 62.6% of wages (from historical spending rates).
- (5) Corporate income tax estimated (from historical rates) as 0.17% of revenues (data from 2000).
- (6) Personal income tax estimated as 6.1% of taxable income (from 2005 data).

SOURCES: Hawaii State Department of Business, Economic Development and Tourism, 2005; Hawaii State Department of Taxation, 2001, 2008

Once the site is improved, the City and County of Honolulu will begin to collect property taxes based on the value of the land for commercial use and on the value of the improvements to the land. Table 3-7 includes calculations of the property taxes levied by the City and County on the property, once each Phase is developed and opened. It shows that taxes on Phase 1 of the project would amount to about \$700,000 annually, while taxes on the fully developed project would approach seven million dollars annually. (As DHHL land not in productive use, the land is currently not taxed, so all property taxes on the project are a net impact.)

Table 3-7: Annual Real Property Tax Revenues, Ka Makana Ali'i

	Phase 1	Phase 2	Combined
Land Area (acres)	19.78	47.45	67.23
Land Value			
Estimated value/sq. ft. \$22.00			
Value of Property (Million \$s)	\$19.0	\$45.5	\$64.4
Cost of Improvements (Million \$s) (1)	\$36.0	\$279.0	\$315.0
	\$55.0	\$324.5	\$379.4
Real Property Tax			
Commercial Rate (2) \$12.40			
Annual Tax (Million \$s)	\$0.7	\$4.0	\$4.7

NOTES:

- (1) Estimated as 90% of construction cost.
- (2) Rate per \$1,000 value of land or improvements. Currently, rates for hotel, commercial and industrial properties are all the same. Current rate is for the 2011-2012 tax year.

SOURCES: Honolulu Real Property data downloaded and analyzed by Belt Collins Hawaii from Hawaii Information Service, Inc. City and County of Honolulu, Department of Budget and Finance, Real Property Assessment Division.

Lease payments to DHHL will constitute an additional revenue source for the State. These have been set for the first 25 years of the lease. The cumulative ground rent over the first 25 years will amount to \$141,846,800 – for an annual average ground rent of \$5,673,872. For the following 40 years, the rent will be renegotiated based on an independent appraisal process prior to the commencement of the 26th, 36th, 46th and 56th years.

New visitors will provide the State and County with tax revenues, while also generating costs for the provision of public services to an additional population. Table 3-8 estimates direct tax revenues once the hotels are built and occupied.

Table 3-8: Annual Tax Revenues on Direct Visitor Spending

Persons			
New visitor population (1)			
Rooms			500
Average persons/room			2
Average occupancy (of rooms)			70%
Average number of guests at hotels			700
Share of guests who would not come to O'ahu without the project			up to 20%
High estimate of new visitors			140
Revenues (2)			
	<u>2009 \$</u>		<u>2011 \$</u>
Average daily visitor spending per person, O'ahu, 2009	\$174.20		\$182.27
Average spending on lodging per person, 2009	\$65.50		\$68.53
Annual excise tax on visitor spending, new visitors			
State of Hawaii (4.05%)			\$377,209
City and County of Honolulu (0.45%)			\$41,912
Annual Transient Accommodations Tax, new visitors (2)			
State of Hawaii (55.2%)			\$296,511
City and County of Honolulu (19.8%)			\$163,674
			\$58,581

NOTES:

- (1) Estimates of occupancy, guests per room and share of guests who are new visitors developed by Belt Collins Hawaii.
 - (2) Average visitor spending for visitors on O'ahu, 2009, from Hawaii Tourism Authority, *Annual Visitor Research Report 2009*. TAT and GET levels, and State and County share of each are calculated on the basis of current practice.
- SOURCES: DBEDT, *State of Hawaii Data Book 2009*; Hawaii Tourism Authority, *Annual Visitor Research Report 2009*

3.4.3 Costs

The cost of public services provided to new visitors can be estimated on the basis of average costs, i.e., total costs allocated to all users equally. Tables 3-9 and 3-10 show calculations for average costs per visitor (based on government spending in earlier years, adjusted to 2011 dollars). Table 3-11 applies those calculations to the new visitors associated with the project once it is fully occupied.

Table 3-9: Average Cost of Public Service Provision to Visitors, State of Hawaii

	FY 2008 spending (\$1,000s)	Spending for residents or all?	Visitor share
General expenditure, by function:			
General government	537,541	All	\$387
Education	\$3,040,223	Residents	--
Public welfare	\$1,857,473	Residents	--
Health	\$863,914	All	\$622
Highways	\$406,795	All	\$293
Public safety	\$411,152	All	\$296
Natural resources	\$103,596	All	\$75
Culture and recreation	\$110,404	All	\$75
Urban redevelopment, housing	255,783	Residents	--
Economic development and assistance	\$149,075	Residents	--
Debt service	\$478,735	All	\$345
Other and unallocable	\$5,880	All	\$4
Total	\$8,220,571	Total	\$2,098
		Adjusted to 2011	\$2,206

NOTES: Average cost calculated for resident or de facto population, depending on function. Spending is for most recent year for which expenditures reported by function in Data Book.

State of Hawaii Population, mid-2008:

Residents 1,287,481
De Facto 1,387,888

Total resident share adjusted to 2011 in line with increase in Consumer Price Index (5.17%)

SOURCE: DBEDT, *State of Hawaii Data Book 2009*; *Quarterly Statistical and Economic Report, Second Quarter, 2011*.

Table 3-10: Average Cost of Public Service Provision to Visitors, City and County of Honolulu

	FY 2003 Spending (\$1,000s)	Spending for residents or all?	Visitor share
General expenditure, by function:			
General government:	\$115,067	All	\$124
Public safety:	\$246,109	All	\$266
Highways	\$13,831	All	\$15
Mass transit	\$150,523	Residents	--
Miscellaneous	\$101,655	All	\$110
Sanitation	\$265,331	All	\$287
Health and human resources	\$52,007	All	\$56
Culture and recreation	\$62,260	All	\$67
Urban redev. and housing	\$22,275	Residents	--
Utilities and other enterprises	\$22,557	All	\$24
Capital outlay	\$193,722	All	\$209
Debt service	\$120,332	All	\$130
Total	\$1,365,669	Total	\$1,289
		Adjusted to 2011	\$1,681

NOTES: Average cost calculated for resident or de facto population, depending on function. Spending is for most recent year for which expenditures reported by function in Data Book.

City and County of Honolulu Population, mid-2003:

Residents 888,026
De Facto 925,595

Total resident share adjusted to 2011 in line with increase in Consumer Price Index (30.46%)

SOURCE: DBEDT, *State of Hawaii Data Book 2009: Quarterly Statistical and Economic Report, Second Quarter, 2011*.

Table 3-11: Annual Cost of Public Services for New Visitors Staying at the Project

Costs		
Average annual cost of public services per visitor		
State of Hawaii		\$2,206
City and County of Honolulu		\$1,681
Average annual cost, new visitors at project		
New visitors at project	140	
State of Hawaii		\$308,853
City and County of Honolulu		\$235,386

NOTES: Average cost per visitor calculated in Tables 3-9 and 3-10. Annual cost based on new visitor share estimated in Table 3-8.

Additional costs associated with new demand for public services and maintenance of public utilities may well be generated because the project adds to the urban area on the island. These are not further calculated here.

3.4.4 Net Fiscal Impact

The revenues and costs estimated above result in large net benefits for both the State of Hawaii and the City and County of Honolulu, as summarized in Tables 3-12 and 3-13. The major cash flow for the State general fund is the one-time tax revenue flow associated with construction. The City and County will also collect revenues during construction, through the transportation impact fee and excise taxes. For the City and County of Honolulu, new property tax revenues provide continuing annual revenue streams in the millions of dollars. DHHL will collect lease rent annually. For both, the State and the City and County, new costs will arise above all once the project has been largely built, and new visitors come to stay at the hotels. The net impacts shown here for annual cash flows cover the years after the project is fully built out, and visitor-related costs have stabilized.

The calculations shown here demonstrate that both the State of Hawaii and the City and County of Honolulu will gain significant benefits from the Ka Makana Ali'i project. Even though some additional costs may arise that have not been estimated here, it is clear that the net fiscal benefit associated with the project far outweighs likely costs.

Table 3-12: Net Fiscal Impact of the Project for the State of Hawaii

Costs		
Average annual cost of public services for visitors attracted by the project		
		\$308,853
Revenues		
One-time revenues:		
Associated with construction		\$36,846,764
Continuing Revenues (Annual)		
DHHL lease payments (1)		\$5,673,872
Income from visitor spending		\$540,883
Continuing Net Revenues (Revenues > Costs)		
Annual, after build out		\$5,905,902

NOTE: Annual average lease payment estimated from cumulative payments over the first 25 years of the lease. Subsequent lease payments will be renegotiated, based on independent appraisals.

Table 3-13: Net Fiscal Impact of the Project for the City and County of Honolulu

Costs	
Average annual cost of public services for visitors attracted by the project	\$235,386
Revenues	
One-time revenues:	
Associated with construction	\$2,296,054
Transportation Impact Fee	<u>\$4,999,400</u>
	<u>\$7,295,455</u>
Continuing Revenues (Annual)	
Revenues from Visitor Spending	\$100,493
Real Property Tax revenues	\$4,704,905
Continuing Net Revenues (Revenues > Costs)	
Annual, after build out	\$4,570,013

3.5 Other Potential Impacts on the Community

Construction will involve temporary impacts: dirt, fugitive dust, noise and traffic congestion due to large loads. These have been irritants for ‘Ewa residents in the past. All of these can be limited by using best practices, and are subject to State and County rules that limit impacts on neighbors. Before construction begins, the developer will work out plans to mitigate impacts on the community. For example, open areas will be watered to limit dust on a regular basis, and the general contractor will probably be expected to offer a telephone contact, to hear about and respond to neighbors’ problems quickly.

When the first phase opens, the project will offer stores and services that are convenient for the immediate neighborhood. It will provide residents of East Kapolei and areas along Kapolei Parkway an alternative to trips to more congested shopping centers. It should also benefit residents of housing areas in Kalaeloa.

As Phase Two is developed, the center will provide more stores and services. It will combine offices with retail and entertainment areas, and hence become an important employment center. It will serve the larger region, not just its immediate neighborhood.

The community institutions on Kualaka‘i Parkway will work together to bring residents to the central corridor, increasing the appeal of each of these facilities. The University of Hawai‘i West O‘ahu, the Kroc Center and Ka Makana Ali‘i are likely to increase demand for each other, simply by making it more convenient to visit any one of these. (In other words, these will have a cumulative impact, increasing and reinforcing demand for each facility.) Again, the project could

increase travel along the rail transit line to the terminus next to the Kroc Center, if a shuttle or bus service links the terminus with the regional commercial center.

In interviews, some stakeholders looked forward to partnerships between the project and surrounding institutions. Collaboration on community activities should be mutually beneficial, and seems likely to occur.

UHWO, the Kroc Center and the project will all contribute, over time, to change island and regional residents’ views of ‘Ewa as a whole. First, these all serve the region, not just a subarea. Second, they work to make ‘Ewa, not just the City of Kapolei, the “second city” of O‘ahu. Until recently, non-residential development in the region was concentrated in the west; residents of subdivisions along Fort Weaver Road had little reason to view Kapolei as serving them. Road connections between the two sides of the DP area were few and in poor repair, so access was also difficult. Nowadays, improved connections and new attractions make Kualaka‘i Parkway into a central corridor for the entire region. With its commercial and entertainment venues, Ka Makana Ali‘i can serve as a “gathering place” for people from all parts of ‘Ewa.

The project’s impacts on its neighbors to the south will emerge over time. First, any entry from Roosevelt Avenue to Ka Makana Ali‘i will cross the Hawaiian Railway Society tracks. Crossing gates or the like will be needed when trains run along the route.

Next, extension of Kualaka‘i Parkway to Roosevelt Avenue – a link for which the Hawaii State Legislature has already set aside funds – will cross tracks used for switching rail cars in the Railway Society yard; these are used more often than the tracks leading west. Ka Makana Ali‘i’s developers have not proposed this connection, as it would not be needed to develop the center or to mitigate its impacts on regional traffic. Nonetheless, the project can collaborate with the State and the Railway Society to find ways to mitigate the future roadway’s impacts. It may be possible to re-organize the Railway Society’s yard space to minimize the interaction between the yard and a potential roadway extension.

Location of a regional commercial center next to the Kalaeloa Community Development District will increase the appeal of that area for residents, both of existing and eventual neighborhoods. Again, that impact is cumulative and would depend on new roadway connections, both between Kalaeloa and the rest of the region and within Kalaeloa.

The project will generate a continuing cash flow for DHHL to support its work on behalf of Native Hawaiians. This is an important objective for the Department, which has relied in recent years on payments from the State for past land takings – payments which will cease in a few years. Development of commercial space on DHHL lands in Kapolei and elsewhere offers a long-term financial basis for the Department, and hence for Native Hawaiian communities.

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