Appendix A
Determination and Delineation of Wetlands and Other Waters of the US. For the Kapaa Stream Bridge Project, March 2015

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Determination and Delineation of Wetlands and Other Waters of the U.S. for the Kapa‘a Stream Bridge Project

Kapa‘a, Kaua‘i Island, Hawai‘i

Prepared for

CH2M HILL

Prepared by

SWCA Environmental Consultants

March 2015

DETERMINATION AND DELINEATION OF WETLANDS AND OTHER WATERS OF THE U.S. FOR THE KAPAʻA STREAM BRIDGE PROJECT

KAPAʻA, KAUAʻI ISLAND, HAWAIʻI

Prepared for

CH2M HILL
1132 Bishop Street, Suite 1100
Honolulu, Hawaiʻi 96813
(808) 943-1133

Prepared by

SWCA Environmental Consultants
Bishop Square ASB Tower
1001 Bishop Street, Suite 2800
Honolulu, Hawaiʻi
(808) 548-7899
www.swca.com

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WATERS OF THE U.S. DETERMINATION/DELINEATION SUMMARY

PROJECT NAME: Kapaʻa Stream Bridge

SITE LOCATION: Kapaʻa, Kauaʻi Island, Hawaiʻi
22°5'38.38"N, 159°18'26.14"W

OWNER: Hawaiʻi Department of Transportation

SURVEY DATES: September 29, 2014

PROJECT STAFF: Brian Nicholson, Wetland Specialist
Tiffany Bovino Agostini, Botanist/Project Manager
Bryson Luke, Field Technician

SUMMARY

SWCA Environmental Consultants (SWCA) was tasked by CH2M HILL to conduct a determination and delineation of wetlands and other potential Waters of the U.S. governed by the Clean Water Act and the Rivers and Harbors Act at nine bridge projects throughout the state of Hawaiʻi. This report summarizes the findings of the potential Waters of the U.S. delineation conducted at the Kapaʻa Stream site located in Kapaʻa, Kauaʻi on September 29, 2014.

The proposed project is to address the existing Kapaʻa Stream Bridge to amend structurally deficient conditions, narrow roadway widths, limited load capacity, substandard bridge railings, and adverse effects from hydraulic scour. Although the current assumption is to replace the entire bridge, further investigation will take place to determine if the existing bridge can be rehabilitated and widened to accommodate the wider road design and the current bridge design standards. The existing foundations, consisting of timber piles, will be replaced with deep foundations. Construction of the new bridge pier will be within the stream. It is unknown if the project will require a water diversion (e.g., cofferdam, pumping) to complete construction. The project also proposes to improve the intersection at Kūhiō Highway and Mailihuna Road, which includes roadway widening, lighting, signing, pavement markings, drainage, traffic signal installation, and other improvements. A temporary replacement bridge will be required for the maintenance of traffic. The current assumption is to use a two-way detour route with a temporary bridge located downstream of the existing bridge. The delineation of Waters of the U.S. was conducted in support of the environmental compliance efforts for the project.

The survey area encompasses approximately 8.2 acres (3.3 hectares). Elevations at the site range from sea level to roughly 30 feet (9.1 meters) above mean sea level. The National Wetlands Inventory (NWI) program identifies three wetland and water types within the survey area. These comprise Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded (R2UBH); Palustrine, Emergent, Persistent, Seasonally Flooded (PEM1C); and Palustrine, Emergent, Persistent, Seasonal-Tidal (PEM1R). A marine water—Marine, Intertidal, Unconsolidated Shore, Irregularly Flooded (M2USP)—is identified immediately east of the survey area. Geospatial data from the State of Hawaiʻi and the U.S. Geological Survey identify that the perennial Kapaʻa Stream flows through the survey area.

Ten wetland sampling points were evaluated within the survey area to determine whether wetlands or other Waters of the U.S. occur. A detailed field-based determination indicates that three of the ten sampling points meet the three-criterion test for wetlands (i.e., hydrophytic vegetation, hydric soils, and wetland hydrology) pursuant the 1987 *Corps of Engineers Wetland Delineation Manual* and the 2012 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Hawai‘i and Pacific Islands Region*. SWCA delineated approximately 1.98 acres (0.80 hectare) of tidal, non-wetland Waters of the U.S. below the high tide line, and 0.31 acre (0.12 hectare) of tidal wetlands. The Kapa‘a Stream appears to carry a relatively permanent flow of water to the Pacific Ocean. This conclusion is subject to confirmation by the U.S. Army Corps of Engineers.

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ABBREVIATIONS

CFR	Code of Federal Regulations
CWA	Clean Water Act
CWB	Clean Water Branch
CWRM	Commission on Water Resource Management
FAC	Facultative
FACW	Facultative Wetland
ha	hectare(s)
m	meter(s)
MHW	Mean High Water
MHHW	Mean Higher High Water
mm	millimeter(s)
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
NWP	Nationwide Permit
OBL	Obligate
SCAP	Stream Channel Alteration Permit
SWCA	SWCA Environmental Consultants
USACE	U.S. Army Corps of Engineers
WoUS	Waters of the U.S.

1.0 INTRODUCTION

The U.S. Army Corps of Engineers (USACE) derives its regulatory authority over wetlands and other Waters of the U.S. (WoUS) from two federal laws: 1) Section 10 of the Rivers and Harbors Act of 1899 and 2) Section 404 of the Clean Water Act (CWA) of 1972. The Rivers and Harbors Act of 1899 prevents unauthorized obstruction or alteration of navigable WoUS. Navigable waters are defined as "subject to the ebb and flow of the tide and/or presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce" (33 Code of Federal Regulations [CFR] 325.5(c)(2)). A Section 10 permit is required for non-fill discharging activities proposed within, over, or under WoUS. The limits of jurisdiction for tidally influenced navigable waters extend to the mean high water (MHW) line or high tide line. A more conservative approach than the MHW, the mean higher high water (MHHW) line, is often used.

Under Section 404 of the CWA, dredged and fill material may not be discharged into jurisdictional WoUS (including wetlands) without a permit. According to 40 CFR 230.3, WoUS subject to agency jurisdiction under Section 404 include navigable waters and their tributaries, interstate waters and their tributaries, wetlands adjacent to these waters, and impoundments of these waters. In addition, waters are protected by the CWA if determined to have a "significant nexus" with a traditional navigable water or interstate water (Environmental Protection Agency and USACE 2011). The U.S. Supreme Court's decision in the consolidated cases *Rapanos* v. *United States* and *Carabell* v. *United States* (126 S. Ct. 2208) provides further information regarding whether a wetland or tributary is a WoUS. A Section 404 permit is required for all fill or discharge activities below (seaward or makai) of the MHW/MHHW line or high tide line in tidal waters or ordinary high water mark (OHWM) for non-tidal, non-wetland waters.

The USACE (33 CFR 230.3) and U.S. Environmental Protection Agency (40 CFR 230.3) define *wetlands* as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (40 CFR 232.3). The 1987 *Corps of Engineers Wetlands Delineation Manual* (USACE 1987 Manual; USACE 1987), as amended, outlines the technical guidelines and methods for identifying and delineating wetlands potentially subject to Section 404. This manual is supplemented by the 2012 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Hawaiʻi and Pacific Islands Region* (Hawaiʻi and Pacific Island Regional Supplement; USACE 2012).

CH2M HILL is reviewing the proposed Kapaʻa Stream Bridge project (hereafter *project*) pursuant to Section 10 of the Rivers and Harbors Act and Section 404 of the CWA. The project involves alterations to the existing Kapaʻa Stream Bridge to amend structurally deficient conditions, narrow roadway widths, limited load capacity, substandard bridge railings, and adverse effects from hydraulic scour. Although the current assumption is to replace the entire bridge, further investigation will take place to determine if the existing bridge can be rehabilitated and widened to accommodate the wider road design and current bridge design standards. The existing foundations, consisting of timber piles, shall be replaced with deep foundations. Construction of the new bridge pier will be within the stream. It is unknown if the project will require a water diversion (e.g., cofferdam, pumping) to complete construction. The project also proposes to improve the intersection at Kūhiō Highway and Mailihuna Road, which includes roadway widening, lighting, signing, pavement markings, drainage, traffic signal installation, and other improvements. A temporary replacement bridge will be required for the maintenance of traffic. The current assumption is to use a two-way detour route with a temporary bridge located downstream of the existing bridge. The delineation of WoUS was conducted in support of the environmental compliance efforts for the project.

2.0 DESCRIPTION OF THE SURVEY AREA

2.1 Location and Vicinity

The Kapaʻa Bridge site and survey area are located in the Kapaʻa area on the Island of Kauaʻi along Kūhiō Hwy (Route 56) (Figure 1). The survey area covers approximately 8.2 acres (3.3 hectares [ha]), stretching south of Mailihuna Road and north of mile post 10 near the gravel beach park parking lot. The existing Kapaʻa Bridge is approximately 150 feet (45.7 meters [m]) long and 38.5 feet (11.7 m) wide. The survey area encompasses the former cane haul road bridge, located immediately makai (seaward) of the Kapaʻa Bridge, which is part of the Kauaʻi bike and pedestrian path. A small ramp is present, adjacent to the cane haul road bridge; this may have formerly been used to launch small watercraft.

2.2 Topography and Soils

Elevations in the survey area range from sea level to roughly 30 feet (9.1 m) above sea level. The Natural Resources Conservation Service (NRCS) identifies the following five soil types in the survey area: Mokuleia fine sandy loam (Mr); Mokuleia clay loam, poorly drained variant (Mta); Lihue silty clay, 25%–40% slopes (LhE2); Beaches (BS); and Water > 40 acres (W) (Foote et al. 1972; NRCS 2013) (Figure 2). The Mokuleia clay loam, poorly drained variant (Mta) soil type is listed as a hydric soil (NRCS 2012).

2.3 Hydrology

Mean annual rainfall for this area is approximately 40.7 inches (1,034 millimeters [mm]). Rainfall is typically highest in November and lowest in June–July (Giambelluca et al. 2013). The closest rainfall gage to the site (Anahola) experienced above-average rainfall for 2014 through the end of September (National Oceanic and Atmospheric Administration/National Weather Service, Weather Forecast Office Honolulu 2014).

The National Wetlands Inventory (NWI) program identifies three wetland and water types within the survey area (Figure 3). These comprise Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded (R2UBH); Palustrine, Emergent, Persistent, Seasonally Flooded (PEM1C); and Palustrine, Emergent, Persistent, Seasonal-Tidal (PEM1R). A marine water (Marine, Intertidal, Unconsolidated Shore, Irregularly Flooded - M2USP) is identified immediately east of the survey area.

The State of Hawaiʻi and the U.S. Geological Survey identify Kapaʻa Stream transversing the survey area (Figure 1). The total length of this perennial stream is approximately 59.2 miles (95.3 kilometers) according to the *Atlas of Hawaiian Watersheds & Their Aquatic Resources* (Parham et al. 2008). Kapaʻa Stream is listed as a 303(d) Impaired Waterbody. Turbidity is listed as the cause of impairment (Hawaiʻi State Department of Health 2014).

2.4 Flora and Fauna

Flora and fauna surveys of the survey area were conducted by SWCA on the same date as the WoUS survey. Vegetation types identified during that survey include stand vegetation, ruderal weedy vegetation, and emergent wetland vegetation. The site is dominated by non-native plants, and no state or federally listed plant species were seen during the survey (SWCA 2014).

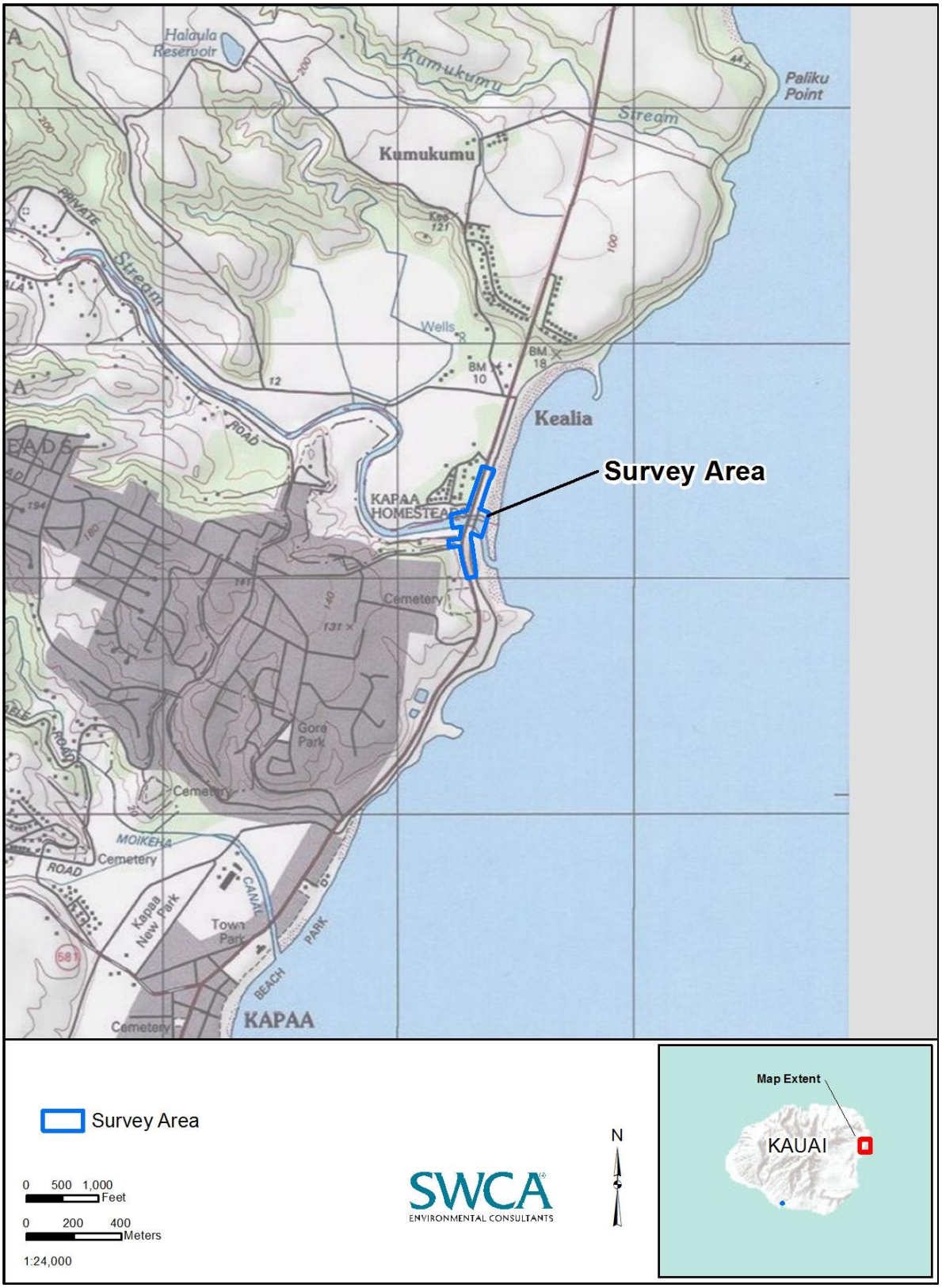

Figure 1. Location of survey area.

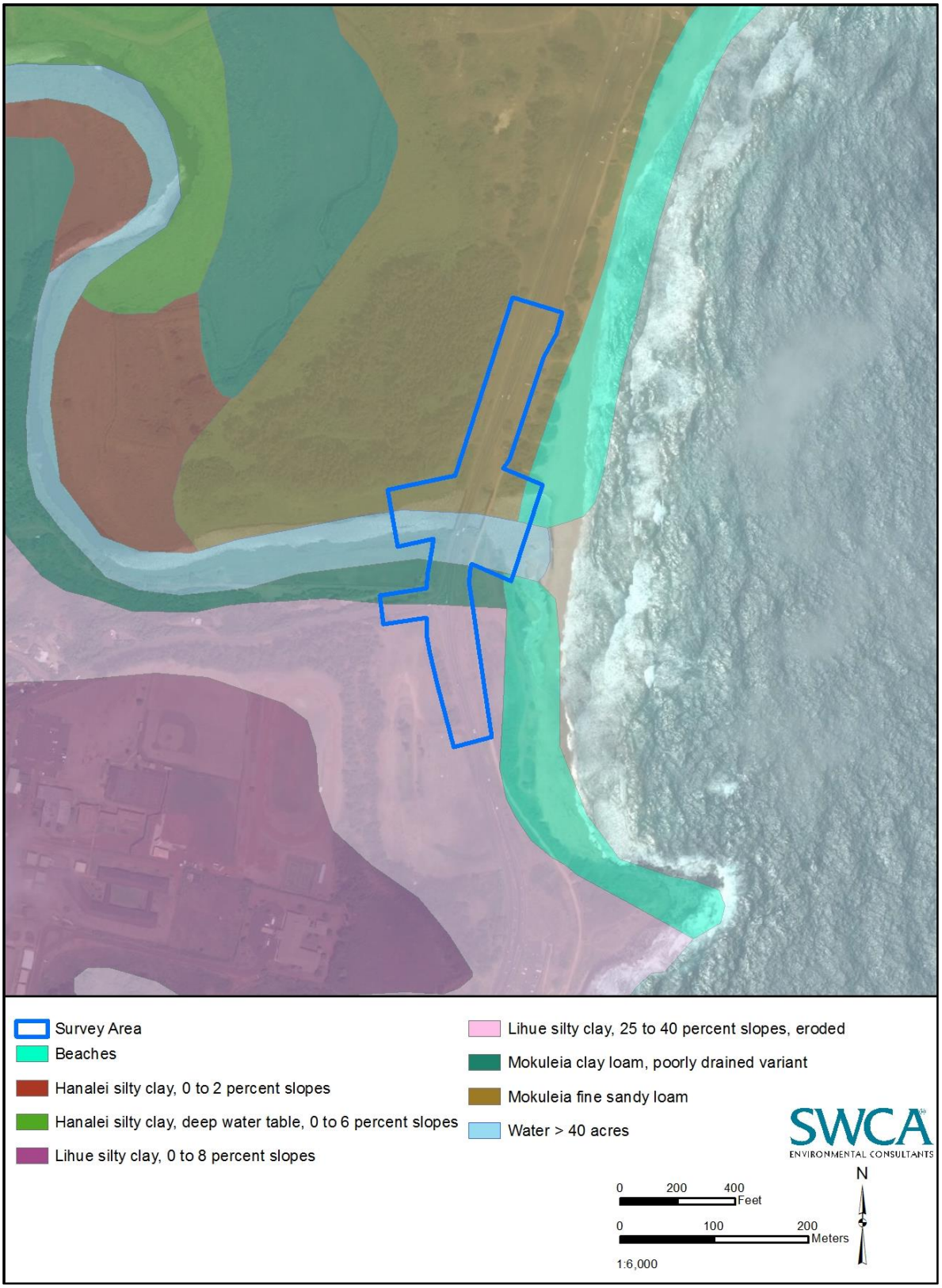

Figure 2. Soil types within the survey area.

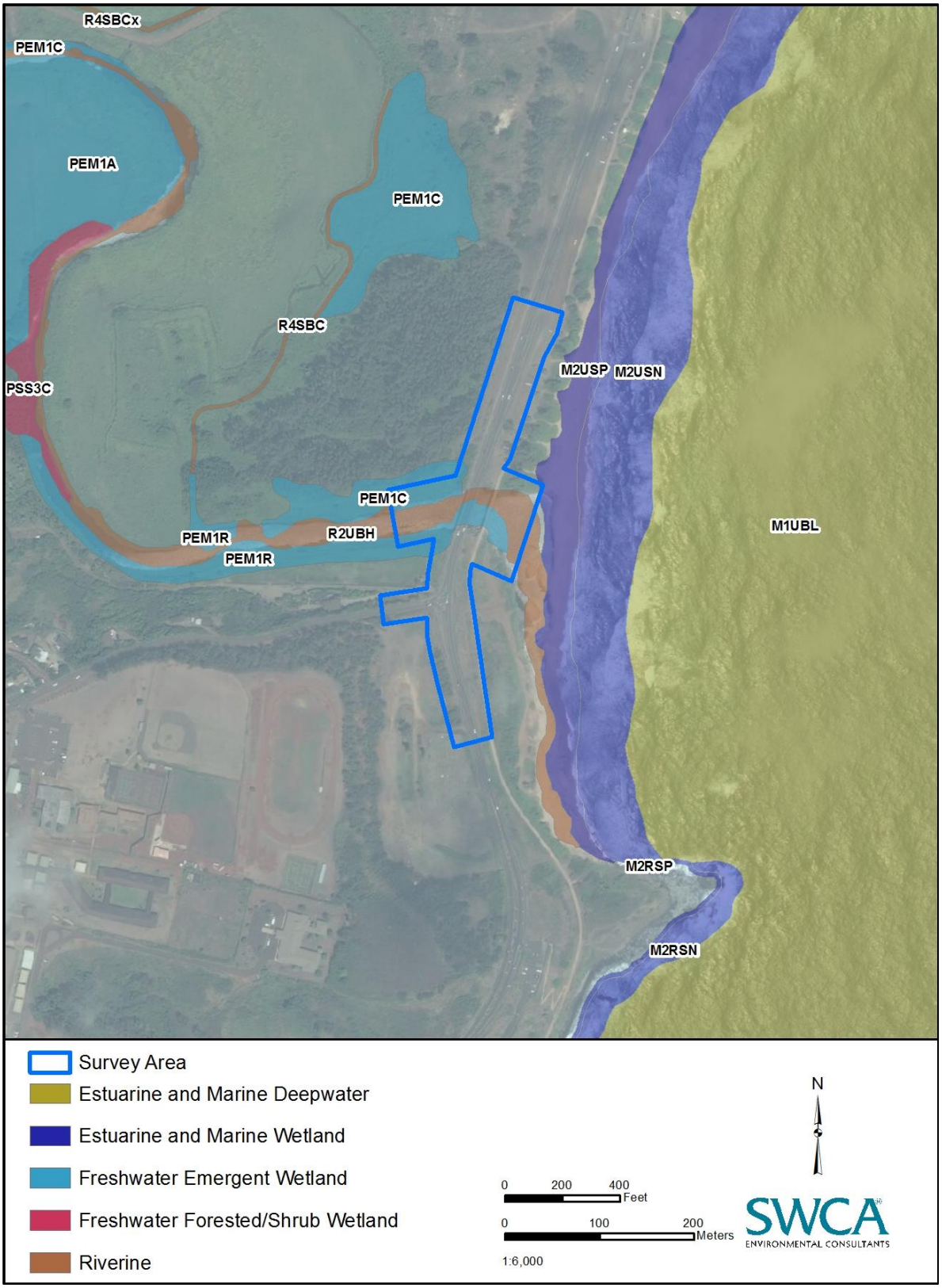

Figure 3. National Wetland Inventory classifications near the survey area.

The endangered Hawaiian gallinule or ʻalae ʻula (*Gallinula galeata sandvicensis*) was observed during the biological survey of Kapaʻa bridge. The Hawaiian gallinule, and three other species of endangered waterbirds—Hawaiian duck or koloa maoli (*Anas wyvilliana*), Hawaiian coot or ʻalae keʻokeʻo (*Fulica alai*), and Hawaiian stilt or aeʻo (*Himantopus mexicanus*)—could be present within the survey area at any time. It is possible that breeding habitat of these endangered species may occur in or near the survey area. Nēnē (*Branta sandvicensis*) may also be present on occasion and could fly over the survey area. Seabirds, particularly the endangered Hawaiian petrel (*Pterodroma sandwichensis*) and the threatened Newell's shearwater (*Puffinus auricularis newelli*), may fly over the survey area at night while travelling to and from their upland nesting sites to the ocean. Finally, the endangered Hawaiian hoary bat or ʻōpeʻapeʻa (*Lasiurus cinereus semotus*) may pass through the site or forage or roost within the survey area (SWCA 2014).

No endangered Hawaiian monk seals (*Monachus schauinslandi*) or threatened green sea turtles (*Chelonia mydas*) were observed during the survey; however, these animals may haul out or bask on the beach or be found in the marine waters nearby (SWCA 2014).

3.0 METHODOLOGY

Before visiting the survey area, aerial photographs and topographic maps were examined to identify potential wetlands or other WoUS in or near the survey area. Information was also gleaned from the NWI program, NRCS hydric soil data, as well as previous water resource reports and environmental assessments/environmental impact statements.

SWCA biologists conducted WoUS determination and delineation fieldwork on September 29, 2014. The biologists employed methods for determining the presence of wetlands as prescribed by the USACE 1987 Manual (USACE 1987) and the Hawaiʻi and Pacific Island Regional Supplement (USACE 2012). Based on these documents, jurisdictional wetlands are identified using the following three criteria: hydrophytic vegetation, hydric soils, and wetland hydrology. All three criteria must be present for an area to be considered a wetland, unless the site is disturbed. An explanation of the three wetland criteria is provided below. Wetland determination data forms prepared during the survey are included in Appendix A.

As stated above, the jurisdiction of tidal, non-wetland WoUS extends to the high tide line or MHW line. The High Tide Line is defined as the intersection of the land with the water's surface at the maximum height reached by a rising tide (33 CFR Part 328). MHW is defined as the average of the higher high water height of each tidal day observed over the National Tidal Datum Epoch. The USACE Honolulu District often suggests using the more conservative MHHW line. Contours were mapped by ControlPoint Surveying, provided to SWCA as CAD files and subsequently projected in ArcGIS. The high tide line is determined by physical characteristics or indicators.

The geographic coordinates of sampling points and non-wetland features were collected in the field with Trimble GeoXT 6000 Series global positioning system (GPS) unit and data were post-processed in ArcGIS using GPS Correct to sub-meter accuracy. The linear length and acreage of these features were calculated by projecting these point and line data files in a geographic information system.

3.1 Vegetation

The USACE defines *hydrophytic vegetation* as "the community of macrophytes that occurs in areas where inundation or soil saturation is either permanent or of sufficient frequency and duration to influence plant occurrence" (USACE 2012). *The National Wetland Plant List* (Lichvar 2012; USACE 2014) designates wetland indicator statuses for plants in the Hawaiian Islands. The use of plant indicators helps estimate the probability of a species occurring in wetlands versus uplands. Plants are considered hydrophytes if they are

classified as Obligate (OBL), Facultative Wetland (FACW), or Facultative (FAC). Descriptions of the plant indictor statuses are provided in Table 1.

Each sampling point represents a different vegetation community or NWI-designated water. At each sampling point, the absolute percentage cover was estimated for each plant species within each vegetation strata (i.e., tree, shrub, herb, woody vine). Species that individually or collectively exceeded 50% of the total cover and those with 20% of the total cover in the stratum were considered dominant (USACE 2012). These species were then compared with *The Hawaii 2014 State Wetland Plant List* (USACE 2014). Taxonomy and nomenclature follow Wagner et al. (1999, 2012) and Wagner and Herbst (2003).

Table 1. Wetland Plant Indicators

Plant Indicator	Code	Description
Obligate Wetland species	OBL	Almost always is a hydrophyte, rarely in uplands.
Facultative Wetland species	FACW	Usually is a hydrophyte, but occasionally found in uplands.
Facultative species	FAC	Commonly occurs as either a hydrophyte or non-hydrophyte.
Facultative Upland species	FACU	Occasionally is a hydrophyte, but usually occurs in uplands.
Upland species	UPL	Rarely is a hydrophyte, almost always in uplands.

Source: Lichvar et al. (2012).

3.2 Soils

A *hydric soil* is "formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part" (NRCS 2010). The NRCS National List of Hydric Soils (NRCS 2012) for Kaua'i Island includes 12 hydric soils for the island. SWCA compared the NRCS National List of Hydric Soils with soils mapped in the study area by the NRCS.

This generalized soil survey does not always capture the true hydric condition of the soils on individual sites; therefore, on-site soil evaluations of wetlands by specialists are also necessary. Soil characteristics were determined in the field by digging pits using a spade. Bedrock substrate often prevented excavation to the recommended depth. SWCA biologists identified soil samples in the field with standardized color chips (i.e., Munsell Soil Color Charts; Kollmorgen Instruments Corporation 1998) of hue, value, and chroma, and by texture (sand, silt, clay, loam, muck, and peat). Anaerobic soil conditions and the presence of gleyed soils were of particular interest (USACE 1987).

3.3 Hydrology

Wetland hydrology examines the behavior of water in wetlands. Indicators of wetland hydrology are classified as primary or secondary. Examples of primary hydrologic indicators in Hawai'i include soil saturation, high water table, surface water, hydrogen sulfide odor, sediment and drift deposits, algal mats, iron deposits, and the presence of tilapia (*Oreochromis* sp./*Sarotherodon* sp.) redds or aquatic fauna (USACE 2012). Secondary regional hydrologic indicators include surface soil cracks and geomorphic position. One primary indictor or any two secondary indicators must be present to conclude that wetland hydrology is present (USACE 2012). SWCA evaluated both primary and secondary hydrology indicators at each sampling point.

3.4 Boundaries of Non-Wetland Waters

SWCA field personnel delineated the boundaries of tidal non-wetland waters by recording the location of the high tide line. The MHHW contour line (approximately 1 foot) provided by ControlPoint Surveying is also shown for reference.

4.0 FINDINGS

In all, approximately 1.98 acres (0.80 ha) of tidal, non-wetland WoUS (Riverine, Tidal [R1]) and 0.31 acre (0.12 ha) of tidal, wetlands (Palustrine Emergent Marsh [PEM], Tidal) were delineated within the survey area (Figure 4). The types and acreage of WoUS delineated by SWCA are summarized in Table 2.

Table 2. Potential Waters of the U.S. Delineated by SWCA in the Survey Area

WOUS ID	Type	Size (acres)
1	Riverine, Tidal (R1)	1.98
2	Palustrine Emergent Marsh [PEM], Tidal	0.28
3	Palustrine Emergent Marsh [PEM], Tidal	0.02
4	Palustrine Emergent Marsh [PEM], Tidal	0.01
	R1 subtotal	1.98
	PEM subtotal	0.31
	Total	**2.29**

4.1 Non-Wetland Waters

A single perennial non-wetland water (Kapa'a Stream) was identified in the survey area (Figure 4). This segment of Kapa'a Stream was determined to be tidally influenced due to the close proximity to the ocean and the presence of marine/estuarine biota (e.g., Hawaiian flagtail [*Kuhlia* spp.]) observed during SWCA's field work (SWCA 2014) and from previous surveys (AECOS 2002, Parham et al. 2008). The high tide line was determined using several factors. Near the Kapa'a Bridge and the former Cane Haul Road Bridge, where the banks of the drainage are cemented, SWCA determined that the high tide line at the top of the vertical concrete wall (Figure 5). In the remainder of the survey area the high tide line was determined at the line of debris and shells deposited along the shore, as well as the vegetation line (Figure 6). The MHHW, located at 1.017 feet (0.31 m) above mean sea level (National Oceanic and Atmospheric Administration 2014), is also shown in Figure 4.

The mouth of Kapa'a Stream is shaped by a variety of natural conditions, and likely shifts throughout the year. Natural conditions influencing elevation and physical features near the mouth include stream flow, sediment deposition, ocean tide, and wave action.

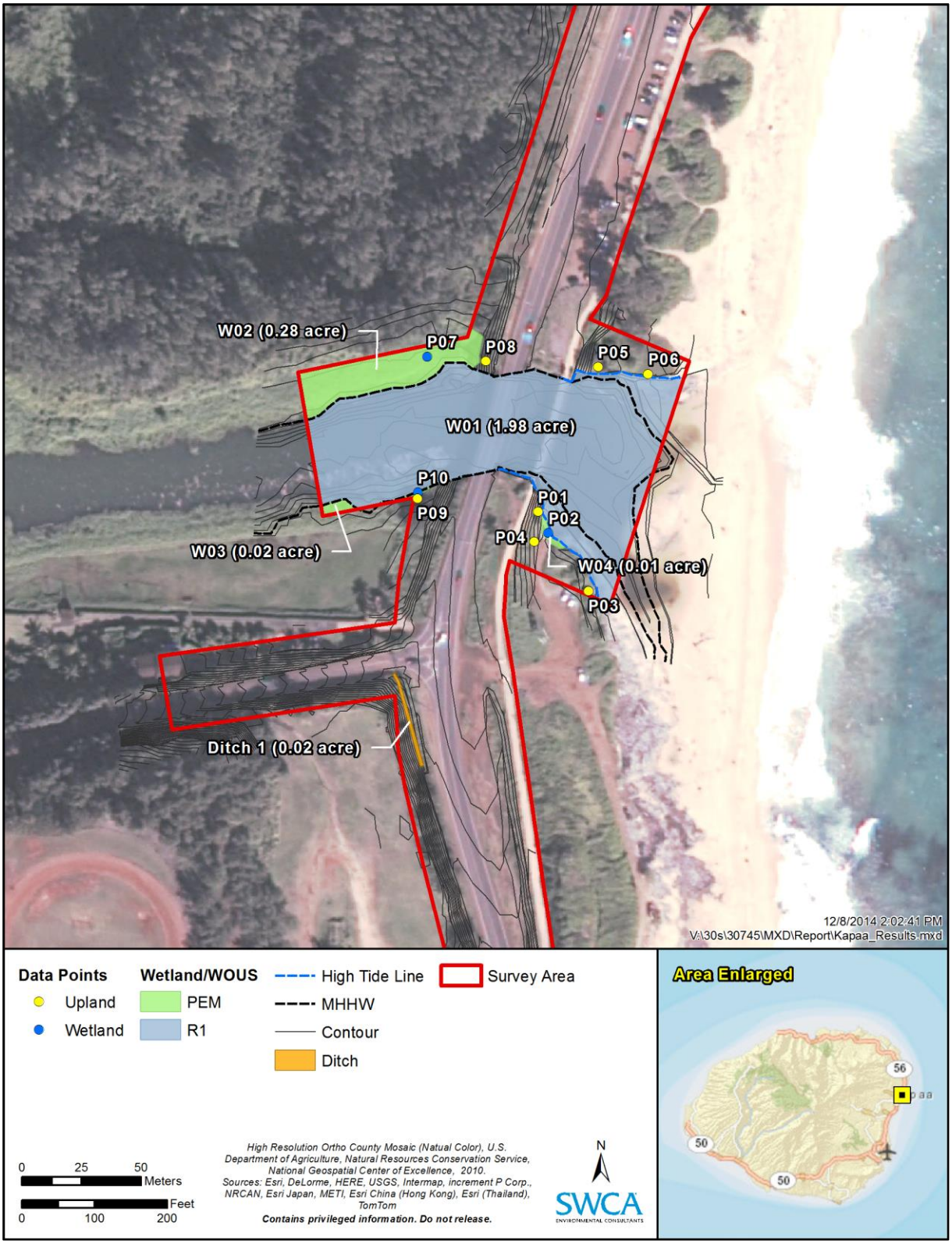

Figure 4. Survey results and delineated Waters of the U.S.

Figure 5. Cane Haul Road Bridge and Kapa‘a Stream bridge showing modifications on the left bank.

Figure 6. Looking upstream toward Kapa‘a Bridge. Note: high tide line is shown by yellow lines.

4.2 Wetlands

As shown in Table 3, three of the ten points evaluated by SWCA at the survey area met the three-criterion test indicative of wetland conditions pursuant to the USACE 1987 Manual and the Hawai'i and Pacific Island Regional Supplement (Figures 7–9). Upland, non-wetland points analogous to wetland points were identified where necessary, and boundary lines were delineated following changes in topography, substrate, vegetation communities, and/or soil indicators. The wetland determination data forms for the sampling points are included in Appendix A.

Table 3. Determination of Sampling Points

Sampling Point	Hydrophytic Vegetation Present?	Hydric Soil Present?	Wetland Hydrology Present?	Is the Sampling Point a Wetland?
1	N	N	N	N
2	Y	Y	Y	Y
3	N	N	N	N
4	Y	N	N	N
5	N	N	N	N
6	Y	N	N	N
7	Y	Y	Y	Y
8	N	N	N	N
9	Y	N	N	N
10	Y	Y	Y	Y

Note: Wetland sample points are highlighted in gray.

4.2.1 Vegetation

Six of the ten sampling points had hydrophytic vegetation present. The dominant plants observed at the three wetland sampling points are California grass (*Urochloa mutica*) (FACW), coconut (*Cocos nucifera*) (FACU), and tropical almond (*Terminalia catappa*) (FAC). Complete vegetation data collected at all sampling points are provided in Appendix A.

4.2.2 Soils

Hydric soils were identified in three of the ten sampling points. Of the three wetland sampling points, the NRCS soil map places Sampling Points 2 and 10 in a Water (W) feature, although they occur near the boundary of Mokuleia clay loam, a poorly drained variant (Mta) listed by the NRCS as a hydric soil (NRCS 2012). Redox Dark Surface was recorded at sampling point 7 and Muck was present at sampling point 10. Problematic hydric soils (fluvial sediments within floodplains) were observed at sample point 2; although the amount of redox in the soil pit was high, a hydric soil indicator was not met due to deposition of new material along the stream channel edge (see Appendix A). No hydric soils were identified at any other sampling points within the survey area.

4.2.3 Hydrology

Wetland hydrology indicators were observed at three of the ten sampling points. Saturation (A3) was present at all three sampling points, and a High Water Table (A2) was observed at sampling points 2 and 7. Depth of the High Water Table ranged from 8 to 12 inches (203 to 305 mm) at these sites. Sample Point 10 was covered in Surface Water (A1) at a depth of 3 inches (76 mm). A complete listing of hydrology data collected at all sampling points is provided in Appendix A.

Figure 7. View of wetland sampling point 2 on the stream side of the small ramp.

Figure 8. View of wetland sampling point 7, showing dense mat of California grass (*Urochloa mutica*).

Figure 9. View of wetland sampling point 10 along the western edge of Kapa'a Stream, showing dense mat of California grass (*Urochloa mutica*) and *Schoenoplectus* sp.

5.0 CONCLUSIONS

SWCA sampled conditions at 10 sampling points within the survey area to determine whether wetlands or other WoUS exist and to delineate the boundaries between these resources and uplands. In SWCA's opinion, three of the points satisfy the criteria to be a wetland pursuant to the USACE 1987 Manual, or the recent Hawai‘i and Pacific Island Regional Supplement. In addition, a tidal, non-wetland WoUS (known as Kapa‘a Stream) occurs within the survey area. SWCA delineated approximately 0.31 acre of palustrine emergent wetlands, 1.98 acres of tidal non-wetland waters, and 0.02 acre of a man-made ditch. The wetlands and stream are potential WoUS due to their connection to the Pacific Ocean. It is unknown whether the ditch has a "significant nexus" with a Traditional Navigable Water.

Because the project involves non-fill discharging activities over a WoUS, a Section 10 permit will likely be required. If the proposed project intends to place dredged or fill material within the delineated feature (e.g., bridge foundations or pillars), it could be subject to either a Section 10 or Section 404 Permit. These conclusions are subject to confirmation by the USACE Honolulu District.

The general rule regarding the State Section 401 water quality certification is, if the USACE identifies that a permit (NWP/LOP/SIP) under Section 404 is required, the applicant will likely need a Section 401 water quality certification from the State Department of Health Clean Water Branch (CWB). Often a 401 water quality certification is not required for Section 10 permits. If the CWB responds and requires a 401 water quality certification, it can take several months to a year to process. In addition, a Stream Channel Alteration Permit (SCAP) may be required from the Commission on Water Resource Management (CWRM), depending on the activities proposed. SWCA recommends submitting a Request for Determination (RFD) from CWRM. If a SCAP is required, the permit timeframe is 90 days.

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Appendix A

Data Forms

WETLAND DETERMINATION DATA FORM – Hawai'i and Pacific Islands Region

Project/Site: Kapaa Stream Bridge City: Kapaa Sampling Date: 9.29.2014 Time: 08:30

Applicant/Owner: HDOT State/Terr/Comlth.: HI Island: Kauai Sampling Point: P1

Investigator(s): B Nicholson / B Luke / T Agostini TMK/Parcel: 4-6-014-999-0000

Landform (hillslope, coastal plain, etc.): River bank/slope Local relief (concave, convex, none): none

Lat: 22.09360144640 N Long: -159.30706842700 W Datum: NAD UTM 4N Slope (%): 0

Soil Map Unit Name: Water (W) NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes _____ No X	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. Tournefortia argentea	70	Y	FACU
2.			
3.			
4.			
5.			
	70 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. Scaevola sericea	20	Y	FACU
2.			
3.			
4.			
5.			
	20 = Total Cover		
Herb Stratum (Plot size: 15')			
1. Sphagneticola trilobata	70	Y	FAC
2. Canavalia cathartica	5	N	FACU
3. Asystasia gangetica	5	N	FACU
4. Urochloa mutica	3	N	FACW
5.			
6.			
7.			
8.			
	83 = Total Cover		
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain in Remarks or in the delineation report)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

SOIL

Sampling Point: P1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5 YR 3/3	100					Clay Loam	Charcoal pieces, 10 YR 2/1
6-8	10 YR 5/3	100					Clay Loam	
8-24	5 YR 4/6	100					Sandy Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Muck Presence (A8)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Dark Surface (S7)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Stratified Layers (A5)
- ___ Sandy Mucky Mineral (S1)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ **No** X

Remarks:

Soil has some amount of mixing and/or deposition. Found charcoal, plastic garbage, coral

HYDROLOGY

Wetland Hydrology Indicators: (Explain observations in Remarks, if needed.)

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Tilapia Nests (B17)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Fiddler Crab Burrows (C10) (Guam, CNMI, and American Samoa)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches):

Water Table Present? Yes _____ No X Depth (inches):

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches):

Wetland Hydrology Present? Yes _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Some evidence of depositional processes. Buried garbage in pit but site is above OHWM and HTL.

WETLAND DETERMINATION DATA FORM – Hawai'i and Pacific Islands Region

Project/Site: Kapaa Stream Bridge City: Kapaa Sampling Date: 9.29.2014 Time: 8:50

Applicant/Owner: HDOT State/Terr/Comlth.: HI Island: Kauai Sampling Point: P2

Investigator(s): B Nicholson / B Luke / T Agostini TMK/Parcel: 4-6-014-999-0000

Landform (hillslope, coastal plain, etc.): River bank/slope Local relief (concave, convex, none): none

Lat: 22.09352080680 N Long: -159.30702593200 W Datum: NAD UTM 4N Slope (%): 0-1

Soil Map Unit Name: Water (W) NWI classification: UPL

Are climatic /hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. Cocos nucifera	10	Y	FACU
2.			
3.			
4.			
5.			
	10 = Total Cover		
Herb Stratum (Plot size: 15')			
1. Urochloa mutica	80	Y	FACW
2. Sphagneticola trilobata	15	N	FAC
3. Megathyrsus maximus	10	N	FAC
4.			
5.			
6.			
7.			
8.			
	105 = Total Cover		
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species 80	x 2 =	160
FAC species 25	x 3 =	75
FACU species 10	x 4 =	40
UPL species	x 5 =	
Column Totals: 115 (A)		275 (B)

Prevalence Index = B/A = 2.39

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

☒ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain in Remarks or in the delineation report)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

Prevalence test conducted due to high cover of herbaceous species compared to single tree.

SOIL

Sampling Point: P2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10 YR 3/1	100					Clay Loam	Lots of organic mat.
10-24	10 YR 5/3	60	7.5 YR 4/6	40	C	M	Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Muck Presence (A8)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Dark Surface (S7)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Stratified Layers (A5)
- ___ Sandy Mucky Mineral (S1)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Soil is considered a problematic hydric soil due to fluvial sediments within floodplains. The point is on a vegetated bar on the edge of the stream channel and likely does not show soil indicators (e.g., sandy redox) due to deposition of new material or low organic matter content. However, given the amount of redox (40%), some anaerobic conditions are present.

HYDROLOGY

Wetland Hydrology Indicators: (Explain observations in Remarks, if needed.)

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- [X] High Water Table (A2)
- [X] Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Tilapia Nests (B17)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Fiddler Crab Burrows (C10) (Guam, CNMI, and American Samoa)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches):

Water Table Present? Yes X No ___ Depth (inches): 8

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 8

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Hawai'i and Pacific Islands Region

Project/Site: Kapaa Stream Bridge City: Kapaa Sampling Date: 9.29.2014 Time: 9:10

Applicant/Owner: HDOT State/Terr/Comlth.: HI Island: Kauai Sampling Point: P3

Investigator(s): B Nicholson / B Luke / T Agostini TMK/Parcel: 4-6-014-999-0000

Landform (hillslope, coastal plain, etc.): River bank/slope Local relief (concave, convex, none): slope

Lat: 22.09330074760 N Long: -159.30686234500 W Datum: NAD UTM 4N Slope (%): 12

Soil Map Unit Name: Mokuleia clay loam, poorly drained variant (Mta) NWI classification: UPL

Are climatic /hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes _____ No X	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. Tournefortia argentea	70	Y	FACU
2.			
3.			
4.			
5.			
	70 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. Scaevola sericea	20	Y	FACU
2.			
3.			
4.			
5.			
	20 = Total Cover		
Herb Stratum (Plot size: 15')			
1. Sphagneticola trilobata	70	Y	FAC
2. Canavalia cathartica	5	N	FACU
3. Asystasia gangetica	5	N	FACU
4. Urochloa mutica	3	N	FACW
5.			
6.			
7.			
8.			
	83 = Total Cover		
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
	N/A = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	_____	x 1 =	_____
FACW species	3	x 2 =	6
FAC species	70	x 3 =	210
FACU species	100	x 4 =	400
UPL species	_____	x 5 =	_____
Column Totals:	173 (A)		616 (B)

Prevalence Index = B/A = 3.56

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain in Remarks or in the delineation report)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

Same vegetation community as P1

SOIL

Sampling Point: P3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20	5 YR 4/4	100					Sandy Loam	Some charcoal pieces, 10 YR 2/1

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Muck Presence (A8)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Dark Surface (S7)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Stratified Layers (A5)
___ Sandy Mucky Mineral (S1)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

Lots of ants in soil

HYDROLOGY

Wetland Hydrology Indicators: (Explain observations in Remarks, if needed.)

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ Tilapia Nests (B17)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Fiddler Crab Burrows (C10) (Guam, CNMI, and American Samoa)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Salt Deposits (C5)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches):

Water Table Present? Yes _____ No X Depth (inches):

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches):

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Edge of OHWM/HTL

WETLAND DETERMINATION DATA FORM – Hawai'i and Pacific Islands Region

Project/Site: Kapaa Stream Bridge City: Kapaa Sampling Date: 9.29.2014 Time: 9:35

Applicant/Owner: HDOT State/Terr/Comlth.: HI Island: Kauai Sampling Point: P4

Investigator(s): B Nicholson / B Luke / T Agostini TMK/Parcel: 4-6-014-999-0000

Landform (hillslope, coastal plain, etc.): Slope Local relief (concave, convex, none): None

Lat: 22.09348790410 N Long: -159.30708295200 W Datum: NAD UTM 4N Slope (%): 8

Soil Map Unit Name: Water (W) NWI classification: UPL

Are climatic /hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

Soil at sampling point 4 is composed of road-based fill material composing a slope up to road.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 15')			
1. Urochloa mutica	100	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	0 = Total Cover		
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species 100	x 2 =	200
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = 2

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☒ 3 - Prevalence Index is ≤3.0[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain in Remarks or in the delineation report)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: P4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-20	5 YR 3/4	100						Road-fill base

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Muck Presence (A8)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Dark Surface (S7)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Stratified Layers (A5)
___ Sandy Mucky Mineral (S1)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

Fill

HYDROLOGY

Wetland Hydrology Indicators: (Explain observations in Remarks, if needed.)

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ Tilapia Nests (B17)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Fiddler Crab Burrows (C10) (Guam, CNMI, and American Samoa)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Salt Deposits (C5)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches):

Water Table Present? Yes _____ No X Depth (inches):

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches):

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Hawai'i and Pacific Islands Region

Project/Site: Kapaa Stream Bridge City: Kapaa Sampling Date: 9.29.2014 Time: 9:50

Applicant/Owner: HDOT State/Terr/Comlth.: HI Island: Kauai Sampling Point: P5

Investigator(s): B Nicholson / B Luke / T Agostini TMK/Parcel: 4-6-014-999-0000

Landform (hillslope, coastal plain, etc.): Terrace Local relief (concave, convex, none): None

Lat: 22.09415066550 N Long: -159.30682556500 W Datum: NAD UTM 4N Slope (%): 0

Soil Map Unit Name: Mokuleia fine sandy loam (Mr) NWI classification: UPL

Are climatic /hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes _____ No X	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. Cocos nucifera	20	Y	FACU
2. Casuarina equisetifolia	60	Y	FACU
3.			
4.			
5.			
	80	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. Scaevola sericea	15	Y	FACU
2.			
3.			
4.			
5.			
	15	= Total Cover	
Herb Stratum (Plot size: 15')			
1. Urochloa mutica	20	Y	FACW
2. Sphagneticola trilobata	5	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	25	= Total Cover	
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	20	x 2 =	40
FAC species	5	x 3 =	15
FACU species	95	x 4 =	380
UPL species		x 5 =	
Column Totals:	120 (A)		435 (B)

Prevalence Index = B/A = 3.62

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain in Remarks or in the delineation report)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

Cyperacea in river.

SOIL

Sampling Point: P5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10 YR 4/4	100					Sand	
4-24	10 YR 6/4	100					Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Muck Presence (A8)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Dark Surface (S7)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Stratified Layers (A5)
___ Sandy Mucky Mineral (S1)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:
No Redox

HYDROLOGY

Wetland Hydrology Indicators: (Explain observations in Remarks, if needed.)

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ Tilapia Nests (B17)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Fiddler Crab Burrows (C10) (Guam, CNMI, and American Samoa)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Salt Deposits (C5)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches):
Water Table Present? Yes _____ No X Depth (inches):
Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches):

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No groundwater

WETLAND DETERMINATION DATA FORM – Hawai'i and Pacific Islands Region

Project/Site: Kapaa Stream Bridge City: Kapaa Sampling Date: 9.29.2014 Time: 10:30

Applicant/Owner: HDOT State/Terr/Comlth.: HI Island: Kauai Sampling Point: P6

Investigator(s): B Nicholson / B Luke / T Agostini TMK/Parcel: 4-6-014-999-0000

Landform (hillslope, coastal plain, etc.): River Terrace Local relief (concave, convex, none): None

Lat: 22.09412454330 N Long: -159.30662103900 W Datum: NAD UTM 4N Slope (%): 0

Soil Map Unit Name: Mokuleia fine sandy loam (Mr) NWI classification: UPL

Are climatic /hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes _____ No X	

Remarks:

Terraced sand bar above HTL/OHWM

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 15')			
1. Scaevola sericea	50	Y	FACU
2. Sphagneticola trilobata	40	Y	FAC
3. Ipomoea pes-caprae	30	Y	FAC
4. Canavalia sp	2	N	FACU
5.			
6.			
7.			
8.			
	122 = Total Cover		
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species	70	x 3 =	210
FACU species	52	x 4 =	208
UPL species		x 5 =	
Column Totals:	122 (A)		418 (B)

Prevalence Index = B/A = 3.42

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain in Remarks or in the delineation report)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: P6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10 YR 4/4	100					Sand	
3-18	10 YR 6/4	100					Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Muck Presence (A8)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Dark Surface (S7)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Stratified Layers (A5)
___ Sandy Mucky Mineral (S1)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:
No Redox

HYDROLOGY

Wetland Hydrology Indicators: (Explain observations in Remarks, if needed.)

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ Tilapia Nests (B17)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Fiddler Crab Burrows (C10) (Guam, CNMI, and American Samoa)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Salt Deposits (C5)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches):
Water Table Present? Yes _____ No X Depth (inches):
Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches):

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No indicators

WETLAND DETERMINATION DATA FORM – Hawai'i and Pacific Islands Region

Project/Site: Kapaa Stream Bridge City: Kapaa Sampling Date: 9.29.2014 Time: 10:45

Applicant/Owner: HDOT State/Terr/Comlth.: HI Island: Kauai Sampling Point: P7

Investigator(s): B Nicholson / B Luke / T Agostini TMK/Parcel:

Landform (hillslope, coastal plain, etc.): floodplain Local relief (concave, convex, none): None

Lat: 22.09418880530 N Long: -159.30752055200 W Datum: NAD UTM 4N Slope (%): 0

Soil Map Unit Name: Mokuleia fine sandy loam (Mr) NWI classification: PEM1C

Are climatic /hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

Near edge of tidal stream along OHWM, veg type change.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 15')			
1. Urochloa mutica	100	Y	FACW
2. Macroptilium atropurpureum	20	N	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	120 = Total Cover		
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	100	x 2 =	200
FAC species	20	x 3 =	60
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	120 (A)		260 (B)

Prevalence Index = B/A = 2.17

Hydrophytic Vegetation Indicators:

- ☒ 1 - Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☒ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain in Remarks or in the delineation report)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

Vine grows on top of California grass (Urochloa mutica)

SOIL

Sampling Point: P7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	2.5 YR 3/2	90	2.5 YR 4/8	10	C	PL	Clay Loam	Redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Muck Presence (A8)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Dark Surface (S7)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
X Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Stratified Layers (A5)
___ Sandy Mucky Mineral (S1)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X **No** ____

Remarks:

Redox Features

HYDROLOGY

Wetland Hydrology Indicators: (Explain observations in Remarks, if needed.)

Primary Indicators (minimum of one required; check all that apply)

☒ Surface Water (A1)
☒ High Water Table (A2)
☒ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ Tilapia Nests (B17)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Fiddler Crab Burrows (C10) (Guam, CNMI, and American Samoa)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Salt Deposits (C5)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ____ Depth (inches):

Water Table Present? Yes X No ____ Depth (inches): 12"

Saturation Present? (includes capillary fringe) Yes X No ____ Depth (inches):

Wetland Hydrology Present? Yes X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Oxidized Rhizospheres on roots (C3)

WETLAND DETERMINATION DATA FORM – Hawai'i and Pacific Islands Region

Project/Site: Kapaa Stream Bridge City: Kapaa Sampling Date: 9.29.2014 Time: 11:10

Applicant/Owner: HDOT State/Terr/Comlth.: HI Island: Kauai Sampling Point: P8

Investigator(s): B Nicholson / B Luke / T Agostini TMK/Parcel: 4-6-014-999-0000

Landform (hillslope, coastal plain, etc.): Flood plain Local relief (concave, convex, none): none

Lat: 22.09417175440 N Long: -159.30728294600 W Datum: NAD UTM 4N Slope (%): 0

Soil Map Unit Name: Mokuleia fine sandy loam (Mr) NWI classification: UPL

Are climatic /hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes _____ No X	

Remarks:

Road fill slope with no hydric indicators, Soil is Road-Fill

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. Leucaena leucocephala	60	Y	UPL
2. Ricinus communis	40	Y	FACU
3.			
4.			
5.			
	100	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 15')			
1. Megathyrsus maximus	40	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	40	= Total Cover	
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
	N/A	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain in Remarks or in the delineation report)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

SOIL

Sampling Point: P8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	5YR 3/4	100						Road Fill

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Muck Presence (A8)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Dark Surface (S7)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Stratified Layers (A5)
___ Sandy Mucky Mineral (S1)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

Road fill on slope

HYDROLOGY

Wetland Hydrology Indicators: (Explain observations in Remarks, if needed.)

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ Tilapia Nests (B17)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Fiddler Crab Burrows (C10) (Guam, CNMI, and American Samoa)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Salt Deposits (C5)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches):

Water Table Present? Yes _____ No X Depth (inches):

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches):

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Hawai'i and Pacific Islands Region

Project/Site: Kapaa Stream Bridge City: Kapaa Sampling Date: 9.29.2014 Time: 11:30

Applicant/Owner: HDOT State/Terr/Comlth.: HI Island: Kauai Sampling Point: P9

Investigator(s): B Nicholson / B Luke / T Agostini TMK/Parcel: 4-6-014-999-0000

Landform (hillslope, coastal plain, etc.): River bank/slope Local relief (concave, convex, none): slope

Lat: 22.09365041550 N Long: -159.30755950000 W Datum: NAD UTM 4N Slope (%): 5

Soil Map Unit Name: Water (W) NWI classification: PEM1R

Are climatic /hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. Terminalia catappa	100	Y	FAC
2.			
3.			
4.			
5.			
	100	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 15')			
1. Megathyrsus maximus	30	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	30	= Total Cover	
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
	N/A	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	_____	x 1 =	_____
FACW species	_____	x 2 =	_____
FAC species	130	x 3 =	390
FACU species	_____	x 4 =	_____
UPL species	_____	x 5 =	_____
Column Totals:	130 (A)		390 (B)

Prevalence Index = B/A = 3.0

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☒ 3 - Prevalence Index is ≤3.0[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain in Remarks or in the delineation report)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: P9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	5 YR 4/4	100					Clay Loam	
3-5	5 YR 4/4	90	2.5 YR 4/6	10			Clay Loam	Redox
5-20	5 YR 4/4	100					Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Muck Presence (A8)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Dark Surface (S7)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Stratified Layers (A5)
___ Sandy Mucky Mineral (S1)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators: (Explain observations in Remarks, if needed.)

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ Tilapia Nests (B17)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Fiddler Crab Burrows (C10) (Guam, CNMI, and American Samoa)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Salt Deposits (C5)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches):

Water Table Present? Yes _____ No X Depth (inches):

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches):

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydric indicators.

WETLAND DETERMINATION DATA FORM – Hawai'i and Pacific Islands Region

Project/Site: Kapaa Stream Bridge City: Kapaa Sampling Date: 9.29.2014 Time: 12:00

Applicant/Owner: HDOT State/Terr/Comlth.: HI Island: Kauai Sampling Point: P10

Investigator(s): B Nicholson / B Luke / T Agostini TMK/Parcel: 4-6-014-999-0000

Landform (hillslope, coastal plain, etc.): Floodplain Local relief (concave, convex, none): None

Lat: 22.09367348130 N Long: -159.30755697900 W Datum: NAD UTM 4N Slope (%): 1

Soil Map Unit Name: Water (W) NWI classification: PEM1R

Are climatic /hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. Terminalia catappa	10	Y	FAC
2.			
3.			
4.			
5.			
	10 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 15')			
1. Urochloa mutica	80	Y	FACW
2. Megathyrsus maximus	15	N	FAC
3. Schoenoplectus sp	15	N	OBL
4.			
5.			
6.			
7.			
8.			
	110 = Total Cover		
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	80	x 2 =	160
FAC species	35	x 3 =	105
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	130 (A)		280 (B)

Prevalence Index = B/A = 2.15

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☒ 3 - Prevalence Index is ≤3.0[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain in Remarks or in the delineation report)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

Schoenoplectus is either S. californicus or S. tabernaemontani. Species was not flowering or fruiting.

SOIL

Sampling Point: P10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
5	black	99						Muck

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- X Muck Presence (A8)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Dark Surface (S7)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Stratified Layers (A5)
- ___ Sandy Mucky Mineral (S1)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X **No** ____

Remarks:

Muck (A8), lots of roots. Surface water

HYDROLOGY

Wetland Hydrology Indicators: (Explain observations in Remarks, if needed.)

Primary Indicators (minimum of one required; check all that apply)

- ☒ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Tilapia Nests (B17)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Fiddler Crab Burrows (C10) (Guam, CNMI, and American Samoa)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ____ Depth (inches): 3

Water Table Present? Yes X No ____ Depth (inches):

Saturation Present? (includes capillary fringe) Yes X No ____ Depth (inches):

Wetland Hydrology Present? Yes X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

5 feet to OHWM toward river
1 foot to upland way from river

Appendix B
Summary of EDR Radius Map Report™ with GeoCheck®, May 13, 2015

Kapaa Bridge
Kuhio Hwy/Mailihuna Road
Kapaa, HI 96746

Inquiry Number: 4293170.2s
May 13, 2015

The EDR Radius Map™ Report with GeoCheck®

Environmental Data Resources Inc

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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Physical Setting Source Records Searched	PSGR-1

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

KUHIO HWY/MAILIHUNA ROAD
KAPAA, HI 96746

COORDINATES

Latitude (North):	22.0939000 - 22° 5' 38.04''
Longitude (West):	159.3073000 - 159° 18' 26.28''
Universal Tranverse Mercator:	Zone 4
UTM X (Meters):	468300.5
UTM Y (Meters):	2443109.5
Elevation:	0 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	22159-A3 KAPAA, HI
Most Recent Revision:	Not reported

MAPPED SITES SUMMARY

Target Property Address:
KUHIO HWY/MAILIHUNA ROAD
KAPAA, HI 96746

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
1	4-1532 KUHIO HWY, SI	4-1532 KUHIO HWY	SHWS	Higher	1648, 0.312, NNE

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

CERCLIS ---------- Comprehensive Environmental Response, Compensation, and Liability Information System
FEDERAL FACILITY ---------- Federal Facility Site Information listing

Federal CERCLIS NFRAP site List

CERC-NFRAP ---------- CERCLIS No Further Remedial Action Planned

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

US ENG CONTROLS ---------- Engineering Controls Sites List
US INST CONTROL ---------- Sites with Institutional Controls

LUCIS ---------- Land Use Control Information System

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ---------- Permitted Landfills in the State of Hawaii

State and tribal leaking storage tank lists

LUST ---------- Leaking Underground Storage Tank Database
INDIAN LUST ---------- Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

UST ---------- Underground Storage Tank Database
INDIAN UST ---------- Underground Storage Tanks on Indian Land
FEMA UST ---------- Underground Storage Tank Listing

State and tribal institutional control / engineering control registries

ENG CONTROLS ---------- Engineering Control Sites
INST CONTROL ---------- Sites with Institutional Controls

State and tribal voluntary cleanup sites

INDIAN VCP ---------- Voluntary Cleanup Priority Listing
VCP ---------- Voluntary Response Program Sites

State and tribal Brownfields sites

BROWNFIELDS ---------- Brownfields Sites

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ---------- A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

DEBRIS REGION 9 ---------- Torres Martinez Reservation Illegal Dump Site Locations
ODI ---------- Open Dump Inventory
INDIAN ODI ---------- Report on the Status of Open Dumps on Indian Lands

Local Lists of Hazardous waste / Contaminated Sites

US CDL ---------- Clandestine Drug Labs
CDL ---------- Clandestine Drug Lab Listing
US HIST CDL ---------- National Clandestine Laboratory Register

Local Land Records

LIENS 2 ---------- CERCLA Lien Information

EXECUTIVE SUMMARY

Records of Emergency Release Reports

HMIRS	Hazardous Materials Information Reporting System
SPILLS	Release Notifications
SPILLS 90	SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR	RCRA - Non Generators / No Longer Regulated
DOT OPS	Incident and Accident Data
DOD	Department of Defense Sites
FUDS	Formerly Used Defense Sites
CONSENT	Superfund (CERCLA) Consent Decrees
ROD	Records Of Decision
UMTRA	Uranium Mill Tailings Sites
US MINES	Mines Master Index File
TRIS	Toxic Chemical Release Inventory System
TSCA	Toxic Substances Control Act
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
SSTS	Section 7 Tracking Systems
ICIS	Integrated Compliance Information System
PADS	PCB Activity Database System
MLTS	Material Licensing Tracking System
RADINFO	Radiation Information Database
FINDS	Facility Index System/Facility Registry System
RAATS	RCRA Administrative Action Tracking System
RMP	Risk Management Plans
UIC	Underground Injection Wells Listing
DRYCLEANERS	Permitted Drycleaner Facility Listing
AIRS	List of Permitted Facilities
INDIAN RESERV	Indian Reservations
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
LEAD SMELTERS	Lead Smelter Sites
PRP	Potentially Responsible Parties
2020 COR ACTION	2020 Corrective Action Program List
COAL ASH DOE	Steam-Electric Plant Operation Data
PCB TRANSFORMER	PCB Transformer Registration Database
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
US AIRS	Aerometric Information Retrieval System Facility Subsystem
Financial Assurance	Financial Assurance Information Listing
US FIN ASSUR	Financial Assurance Information
EPA WATCH LIST	EPA WATCH LIST

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP	EDR Proprietary Manufactured Gas Plants
EDR US Hist Auto Stat	EDR Exclusive Historic Gas Stations
EDR US Hist Cleaners	EDR Exclusive Historic Dry Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF	Recovered Government Archive Solid Waste Facilities List

EXECUTIVE SUMMARY

RGA LUST ---------- Recovered Government Archive Leaking Underground Storage Tank
RGA HWS ---------- Recovered Government Archive State Hazardous Waste Facilities List

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

State- and tribal - equivalent CERCLIS

SHWS: The State Hazardous Waste Sites records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. The data come from the Department of Health.

A review of the SHWS list, as provided by EDR, and dated 12/02/2014 has revealed that there is 1 SHWS site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
4-1532 KUHIO HWY, SI	4-1532 KUHIO HWY	NNE 1/4 - 1/2 (0.312 mi.)	1	7

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 11 records.

Site Name	Database(s)
KAPAA CHEVRON	RCRA-CESQG, FINDS
KAPAA SHELL	RCRA-CESQG
LONGS DRUGS KAPAA	FINDS
KAPAA SHELL	FINDS
KAPAA CHEVRON	FINDS
KAUAI ELECTRIC, TRANSFORMER KAPAA	SPILLS
KAPAA SUPER SERVICE	RGA LUST
LEONARD'S KAPAA CHEVRON	RGA LUST
LEONARD'S KAPAA CHEVRON	RGA LUST
KAPAA SUPER SERVICE	RGA LUST
KAPAA CHEVRON	RGA LUST

OVERVIEW MAP - 4293170.2S

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites

0 1/4 1/2 1 Miles

- Indian Reservations BIA
- County Boundary
- Oil & Gas pipelines from USGS
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory

N

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Kapaa Bridge	CLIENT:	CH2M Hill Corporation
ADDRESS:	Kuhio Hwy/Mailihuna Road Kapaa HI 96746	CONTACT:	Lyna Black
		INQUIRY #:	4293170.2s
LAT/LONG:	22.0939 / 159.3073	DATE:	May 13, 2015 5:20 pm

DETAIL MAP - 4293170.2S

0 1/16 1/8 1/4 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- County Boundary
- Oil & Gas pipelines from USGS
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Kapaa Bridge	CLIENT:	CH2M Hill Corporation
ADDRESS:	Kuhio Hwy/Mailihuna Road Kapaa HI 96746	CONTACT:	Lyna Black
LAT/LONG:	22.0939 / 159.3073	INQUIRY #:	4293170.2s
		DATE:	May 13, 2015 5:22 pm

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
CERCLIS	0.500		0	0	0	NR	NR	0
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site List								
CERC-NFRAP	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
LUCIS	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent CERCLIS								
SHWS	1.000		0	0	1	0	NR	1
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	0	0	NR	NR	0
INDIAN LUST	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
UST	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN UST	0.250		0	0	NR	NR	NR	0
FEMA UST	0.250		0	0	NR	NR	NR	0
State and tribal institutional control / engineering control registries								
ENG CONTROLS	0.500		0	0	0	NR	NR	0
INST CONTROL	0.500		0	0	0	NR	NR	0
State and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US CDL	TP		NR	NR	NR	NR	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
US HIST CDL	TP		NR	NR	NR	NR	NR	0
Local Land Records								
LIENS 2	TP		NR	NR	NR	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0
SPILLS	TP		NR	NR	NR	NR	NR	0
SPILLS 90	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
DOD	1.000		0	0	0	0	NR	0
FUDS	1.000		0	0	0	0	NR	0
CONSENT	1.000		0	0	0	0	NR	0
ROD	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
TSCA	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
AIRS	TP		NR	NR	NR	NR	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR US Hist Auto Stat	0.250		0	0	NR	NR	NR	0
EDR US Hist Cleaners	0.250		0	0	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	TP		NR	NR	NR	NR	NR	0
RGA LUST	TP		NR	NR	NR	NR	NR	0
RGA HWS	TP		NR	NR	NR	NR	NR	0
- Totals --		0	0	0	1	0	0	1

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

1
NNE
1/4-1/2
0.312 mi.
1648 ft.

4-1532 KUHIO HWY, SITE ASSESSMENT DETERMINATION
4-1532 KUHIO HWY
KAPAA, HI 96746

SHWS **1006820389**
N/A

Relative:
Higher

Actual:
0 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Kauai
Environmental Interest:	4-1532 Kuhio Hwy. Site Assessment
HID Number:	Not reported
Facility Registry Identifier:	110013783405
Lead Agency:	HEER
Program:	State
Project Manager:	Unassigned
Hazard Priority:	NFA
Potential Hazards And Controls:	No Hazard
Organization:	Not reported
Island:	Kauai
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	4-1532 Kuhio Hwy. Site Assessment
HID Number:	Not reported
Facility Registry Identifier:	110013783405
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	No Hazard
Priority:	NFA
Assessment:	Response Necessary
Response:	Response Complete
Nature of Contamination:	Not reported
Nature of Residual Contamination:	benzo[a]pyrene in groundwater
Use Restrictions:	No Hazard Present For Unrestricted Residential Use
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	No Further Action Letter - Unrestricted Residential Use
Document Date:	11/10/1999
Document Number:	1999-509-BH
Document Subject:	SA Determination for 4-1532 Kuhio Hwy
Project Manager:	Unassigned
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

Count: 11 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
KAPAA	1016709230	LONGS DRUGS KAPAA	SOUTH CORNER OF KUHIO HIGHWAY	96746	FINDS
KAPAA	1015915582	KAPAA SHELL	1125 KUHIO HWY	96746	FINDS
KAPAA	S116402362	KAPAA SUPER SERVICE	1125 KUHIO HIGHWAY		RGA LUST
KAPAA	1016675624	KAPAA CHEVRON	994 KUHIO HWY	96746	RCRA-CESQG, FINDS
KAPAA	1006819267	KAUAI ELECTRIC, TRANSFORMER KAPAA	1065 KUHIO HWY		SPILLS
KAPAA	1015857629	KAPAA CHEVRON	4 KUHIO HIGHWAY	96746	FINDS
KAPAA	S116402636	LEONARD'S KAPAA CHEVRON	994 KUHIO HWY		RGA LUST
KAPAA	S116402634	LEONARD'S KAPAA CHEVRON	994 KUHIO HWY.		RGA LUST
KAPAA	S116402363	KAPAA SUPER SERVICE	1125 KUHIO HWY		RGA LUST
KAPAA	S116402361	KAPAA CHEVRON	4-994 KUHIO HWY		RGA LUST
KAPAA	1009398540	KAPAA SHELL	1125 KUHIO HWY	96746	RCRA-CESQG

Appendix C
Endangered Species Act Section 7 Consultation Documentation

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
Suite 380
Lakewood, CO 80228
Office: 720-963-3647
Fax: 720-963-3596
Michael.Will@dot.gov

July 8, 2016

In Reply Refer To:
HFPM-16

Mary Abrams, Field Supervisor
U.S. Fish and Wildlife Service
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Honolulu, HI 96850

Re: Section 7 Consultation for Proposed Kapaa Bridge Replacement and Mailihuna Intersection Improvements, Kuhio Highway (Route 56), Kauai Island, Hawaii

Dear Ms. Abrams:

The Central Federal Lands Highway Division (CFLHD) of the Federal Highway Administration (FHWA), in cooperation with the State of Hawaii Department of Transportation (HDOT) is proposing to replace the Kapaa Stream Bridge along Kuhio Highway and reconfigure the Mailihuna Road Intersection, in the Kawaihau District on Kauai, Hawaii. The purpose of the project is to improve the Kapaa Stream crossing and Mailihuna Road intersection which are required to maintain a safe and functional regional transportation system for highway users.

The enclosed biological assessment (BA) addresses potential project impacts on federally listed threatened and endangered species, including three seabirds (the endangered Hawaiian petrel [*Pterodroma sandwichensis*], the threatened Newell's shearwater [*Puffinus auricularis newelli*], and the proposed endangered band-rumped storm petrel [*Oceanodroma castro*]), four waterbirds (the endangered Hawaiian coot [*Fulica alai*], the endangered Hawaiian gallinule [*Gallinula chloropus sandvicensis*], the endangered Hawaiian stilt [*Himantopus mexicanus knudseni*], and the endangered Hawaiian duck [*Anas wyvilliana*]), the endangered Hawaiian goose (*Branta sandvicensis*), the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), the endangered Hawaiian monk seal (*Neomonachus schauinslandi*), and two sea turtles (the threatened Green sea turtle [*Chelonia mydas*] and endangered Hawksbill sea turtle [*Eretmochelys imbricata*]). The BA concludes the following:

- The Hawaiian petrel, Newell's shearwater and band-rumped storm-petrel are unlikely to occur in the action area because suitable habitat does not exist; however, these seabirds may be attracted to construction lights as they fly over the action area. The proposed project *would not likely adversely impact* the Hawaiian petrel and Newell's shearwater. And it is *not likely to jeopardize the continued existence* of the Band-rumped storm petrel.
- The Hawaiian coot, Hawaiian gallinule, Hawaiian stilt, and Hawaiian duck may occur in the action area, as there is suitable habitat in and around the action area. The possibility of adversely affecting water birds as a result of the proposed project is likely small and the effect determination for these species is *may affect, but is not likely to adversely affect*.

- The Hawaiian goose may occur in the action area, as there is suitable foraging habitat. However, impacts would be discountable, such that the project *may affect, but is not likely to adversely affect* the Hawaiian goose.
- The action area contains habitat that could support roosting and foraging for the Hawaiian hoary bat. However, the timing of construction and minimal construction footprint will preclude any major or long-term effects, such that the project *may affect, but is not likely to adversely affect* the Hawaiian hoary bat.
- The shoreline area near the project could provide suitable foraging habitat for the Hawaiian monk seal. Because conservation measures would be taken, direct and indirect impacts would be insignificant and the proposed project *may affect, but is not likely to adversely affect*, individuals or populations of the species. Recently designated monk seal terrestrial critical habitat occurs within the action area, with surrounding waters designated as marine critical habitat. All impacts on the Hawaiian monk seal critical habitat would be discountable or insignificant, therefore the proposed action is *not likely to destroy or adversely modify* critical habitat of the species.
- Sea turtle species could use marine and riverine habitats in the action area for foraging and hauling-out to rest or bask. Because impacts to the Green sea turtle and Hawksbill sea turtle would be discountable or insignificant, the proposed action *may affect, but is not likely to adversely affect*, individuals or populations of the species.

To comply with Section 7(a) of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.)(ESA), FHWA is requesting informal consultation with the U.S. Fish and Wildlife Service on the Hawaiian petrel, Newell's shearwater, Hawaiian coot, Hawaiian gallinule, Hawaiian stilt, Hawaiian duck, Hawaiian goose, Hawaiian hoary bat, Hawaiian monk seal, Green sea turtle, and Hawksbill sea turtle, as well as the proposed endangered band-rumped storm petrel.

In parallel, FHWA is also requesting consultation with the National Marine Fisheries Service for the marine listed species.

If you require further information or have questions, please contact Thomas Parker, Environmental Protection Specialist, by email at thomas.w.parker@dot.gov or by phone at (720) 963-3688. We appreciate your assistance with this project.

Sincerely,

Michael Will
Project Manager

Enclosure:
Biological Assessment for the Proposed Kapaa Bridge Project, Kauai, Hawaii

cc:
Michael Tosatto, National Marine Fisheries Service
David Smith, Hawaii Division of Forestry and Wildlife
Bruce Anderson, Hawaii Divison of Aquatic Resources
Christine Yamasaki, Hawaii Department of Transportation

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
Suite 380
Lakewood, CO 80228
Office: 720-963-3647
Fax: 720-963-3596
Michael.Will@dot.gov

July 8, 2016

In Reply Refer To:
HFPM-16

Michael Tosatto, Administrator
National Marine Fisheries Service
1845 Wasp Boulevard, Building 176
Honolulu, HI 96818

Re: Section 7 Consultation for Proposed Kapaa Bridge Replacement and Mailihuna Intersection Improvements, Kuhio Highway (Route 56), Kauai Island, Hawaii

Dear Mr. Tosatto:

The Central Federal Lands Highway Division (CFLHD) of the Federal Highway Administration (FHWA), in cooperation with the State of Hawaii Department of Transportation (HDOT) is proposing to replace the Kapaa Stream Bridge along Kuhio Highway and the regonfiguration of Mailihuna Road Intersection, in the Kawaihau District on Kauai, Hawaii. The purpose of the project is to improve the Kapaa Stream crossing and Mailihuna Road intersection which are required to maintain a safe and functional regional transportation system for highway users.

The enclosed biological assessment (BA) addresses potential project impacts on federally listed threatened and endangered species, including the endangered Hawaiian monk seal (*Neomonachus schauinslandi*), the threatened Green sea turtle (*Chelonia mydas*), and the endangered Hawksbill sea turtle (*Eretmochelys imbricata*).
The BA concludes the following:

- The shoreline area near the project could provide suitable foraging habitat for the Hawaiian monk seal. Because conservation measures would be taken, direct and indirect impacts would be insignificant and the proposed project *may affect, but is not likely to adversely affect*, individuals or populations of the species. Recently designated monk seal terrestrial critical habitat occurs within the action area, with surrounding waters designated as marine critical habitat. All impacts on the Hawaiian monk seal critical habitat would be discountable or insignificant, therefore the proposed action is *not likely to destroy or adversely modify* critical habitat of the species.
- Sea turtle species could use marine and riverine habitats in the action area for foraging and hauling-out to rest or bask. Because impacts to the Green sea turtle and Hawksbill sea turtle would be discountable or insignificant, the proposed action *may affect, but is not likely to adversely affect,* individuals or populations of the species.

To comply with Section 7(a) of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.) (ESA), FHWA is requesting informal consultation with National Marine Fisheries Service on the Hawaiian monk seal, the Green sea turtle, and the Hawksbill sea turtle.

In parallel, FHWA is also requesting consultation with U.S. Fish and Wildlife Service for these and several non-marine listed species. As detailed in the BA, these include three seabirds (the

endangered Hawaiian petrel [*Pterodroma sandwichensis*], the threatened Newell's shearwater [*Puffinus auricularis newelli*], and the proposed endangered band-rumped storm petrel [*Oceanodroma castro*]), four waterbirds (the endangered Hawaiian coot [*Fulica alai*], the endangered Hawaiian gallinule [*Gallinula chloropus sandvicensis*], the endangered Hawaiian stilt [*Himantopus mexicanus knudseni*], and the endangered Hawaiian duck [*Anas wyvilliana*]), the endangered Hawaiian goose (*Branta sandvicensis*), and the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*).

If you require further information or have questions, please contact Thomas Parker, Environmental Protection Specialist, by email at thomas.w.parker@dot.gov or by phone at (720) 963-3688. We appreciate your assistance with this project.

Sincerely,

Michael Will
Project Manager

Enclosure:
Biological Assessment for the Proposed Hanapepe Bridge Project, Kauai, Hawaii

cc:
Mary Abrams, U.S. Fish and Wildlife Service
David Smith, Hawaii Division of Forestry and Wildlife
Bruce Anderson, Hawaii Divison of Aquatic Resources
Christine Yamasaki, Hawaii Department of Transportation

SWCA ENVIRONMENTAL CONSULTANTS
Sound Science. Creative Solutions.®

Biological Assessment for the Proposed Kapa‘a Bridge and Mailihuna Intersection Project, Kūhiō Highway, Route 56, Kapa‘a, Kaua‘i Island, Hawai‘i

Prepared for

Federal Highway Administration,
Central Federal Lands Highway Administration

and

CH2M HILL

Prepared by

SWCA Environmental Consultants

July 2016

BIOLOGICAL ASSESSMENT FOR THE PROPOSED KAPAʻA BRIDGE AND MAILIHUNA INTERSECTION PROJECT, KŪHIŌ HIGHWAY, ROUTE 56, KAPAʻA, KAUAʻI ISLAND, HAWAIʻI

Prepared for

Federal Highway Administration, Central Federal Lands Highway Division
12300 West Dakota Avenue, Suite 280
Lakewood, Colorado 80228
(720) 963-3689

and

CH2M HILL
1132 Bishop Street, Suite 1100
Honolulu, Hawaiʻi 96813
(808) 943-1133

Prepared by

SWCA Environmental Consultants
Bishop Square ASB Tower
1001 Bishop Street, Suite 2800
Honolulu, Hawaiʻi 96813
(808) 548-7922
www.swca.com

SWCA Project No. 27166

July 7, 2016

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1. INTRODUCTION

The Federal Highway Administration (FHWA), Central Federal Lands Highway Division (CFLHD), in partnership with the Hawaiʻi Department of Transportation (HDOT) is proposing to 1) replace Kapaʻa Stream Bridge (project) to meet current design standards for roadway width, load capacity, bridge railing and transitions, and bridge approaches and 2) improve the intersection at Kūhiō Highway and Mailihuna Road. Two alternatives are described below. CH2M HILL contracted SWCA Environmental Consultants (SWCA) on behalf of FHWA to complete a biological assessment (BA) for the proposed action. The purpose of this BA is to evaluate the proposed action in sufficient detail to determine its potential effects on federally listed threatened and endangered species, candidate and proposed species for listing, and critical habitat.

The Kapaʻa Stream Bridge is in the Kapaʻa area on the east side of the Island of Kauaʻi along Kūhiō Highway (Route 56) at approximately milepost 9.8 (Figure 1). Kūhiō Highway serves as the primary route between Lihue and the Kauaʻi's East and North Shore communities, and is the main corridor for local circulation in the town of Kapaʻa. From Lihue to the Kapaʻa Stream Bridge, the roadway is classified as an urban principal arterial. Kapaʻa Stream Bridge and the highway are under the jurisdiction of HDOT, whereas Mailihuna Road is under the jurisdiction of the County of Kauaʻi.

Mailihuna Road extends mauka from Kūhiō Highway at milepost 9.84. It is a narrow, two-lane, undivided collector with narrow shoulders and vegetation on both sides. The intersection of Kūhiō Highway and Mailihuna Road is three-legged, with stop controls only on Mailihuna Road.

Section 7(a)(1) of the Endangered Species Act (ESA) of 1973 (as amended) directs all federal agencies to participate in the conservation and recovery of threatened and endangered species. Section 7(a)(2) of the ESA states that each federal agency shall consult with the U.S. Fish and Wildlife Service (USFWS) to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. The proposed action would be federally funded, and FHWA is the lead agency for the Section 7 consultation. Because this BA includes impacts for terrestrial and marine species, it will be submitted to the USFWS and the National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS).

1.1. Consultation to Date

Michael Will, Project Manager from the U.S. Department of Transportation, FHWA-CFLHD sent a letter to the USFWS on November 21, 2014, requesting a list of federally threatened and endangered species, candidate species, plants and animals of special concern, and critical habitats near the proposed action. USFWS replied to the letter on December 22, 2014, listing the species that may occur on Kauaʻi along with recommended measures that USFWS believes will reduce impacts on each species (USFWS 2014a). Conservation measures that will be incorporated into the proposed project are listed in section 2.6.

On March 13, 2015, CH2M HILL hosted a meeting in their Honolulu Office to discuss the program with the FHWA-Central Federal Lands Highway Division, USFWS, CH2M HILL, State of Hawaiʻi Division of Aquatic Resources, NOAA, Environmental Protection Agency, and SWCA. On December 11, 2014, CH2M HILL and SWCA also met with the U.S. Army Corps of Engineers at their Honolulu District Office to discuss the Hawaiʻi Bridges Program. The purpose of these meetings was to introduce the project locations, and generally discuss potential biological and regulatory issues associated with the Hawaiʻi Bridges Program.

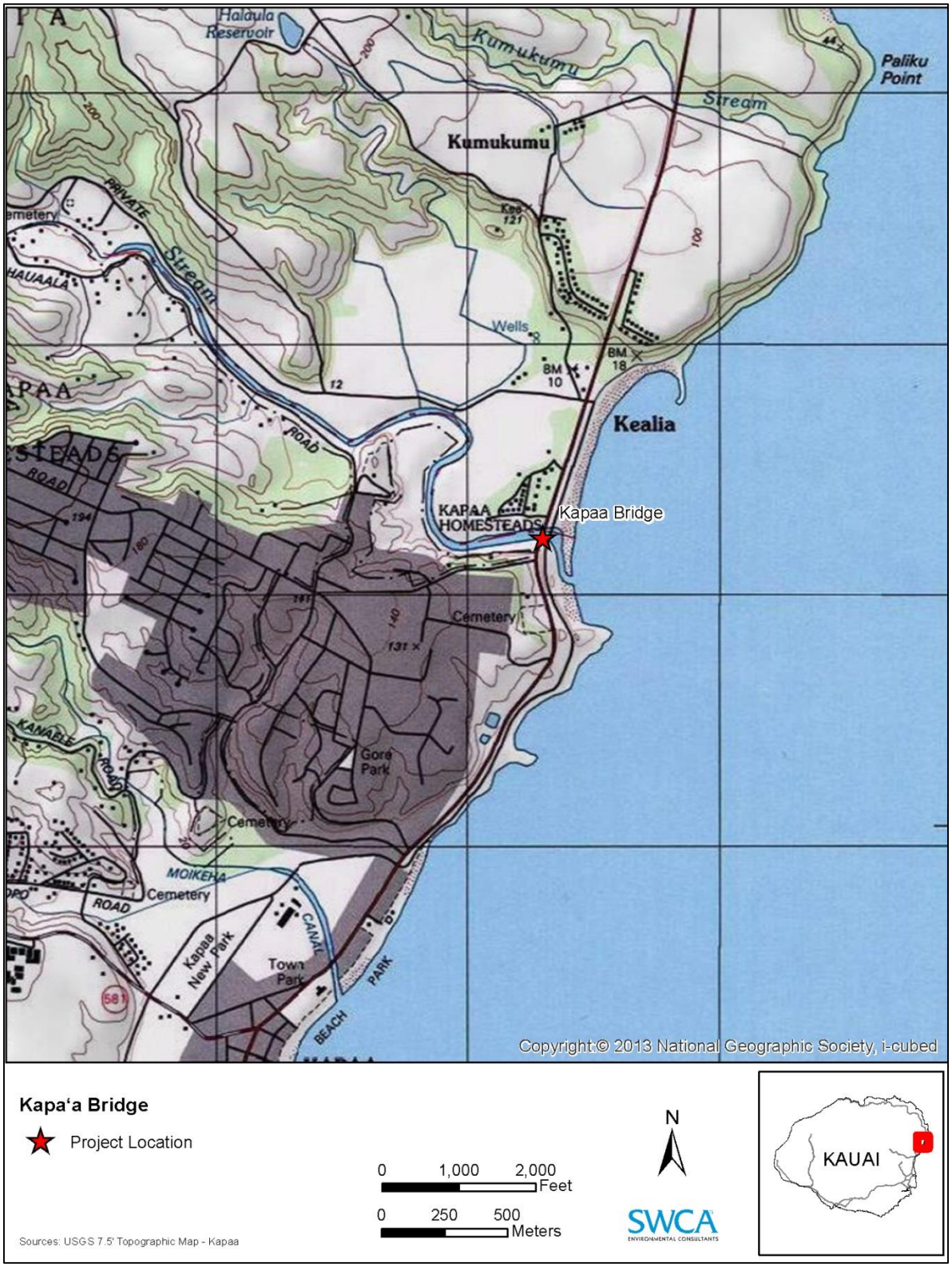

Figure 1. Proposed project location.

2. PROPOSED ACTION AND PROJECT DESCRIPTION

The proposed action consists of improving the Kūhiō Highway and Mailihuna Road intersection through the addition of full traffic and pedestrian signals and crosswalks with either new turn lanes or a roundabout, and replacing the existing Kapa‘a Stream Bridge with a single-span bridge. The highway section at the bridge would be closed during the construction period, and a two-way bypass route and temporary crossing would be provided makai of the highway. The project encompasses a total area of 4.9 acres (2.0 hectares [ha]), comprising 2.8 acres (1.1 ha) of a permanent impact area and 2.1 acres (0.9 ha) of a temporary impact area (Figure 2). Components of the proposed action; construction considerations; descriptions of the project area, survey area, and action area; and conservation measures to be incorporated into the project are described below.

2.1. Intersection Improvements

The proposed project would reconfigure the Kūhiō Highway and Mailihuna Road Intersection to improve safety. Two alternative designs are being considered and are described in detail below. As part of the intersection improvements, a private driveway would be relocated approximately 110 feet farther mauka on Mailihuna Road.

All of these intersection improvements would take place inside the project area as defined by this document and shown in Figure 2.

2.1.1. Signalized Intersection Alternative

Under this alternative, the intersection at Mailihuna Road and Kūhiō Highway would be reconfigured by adding full traffic and pedestrian signals and crosswalks. A left-turn pocket would be added to the northbound side of Kūhiō Highway before Mailihuna Road, providing approximately 180 feet of storage for vehicles waiting to turn. In addition, a right-turn pocket, approximately 150 feet in length, would be added to the southbound side of the highway. The right-turn lane would allow greater separation between vehicles that are traveling at different speeds as vehicles decelerate before making the right turn.

Marked crosswalks and pedestrian push buttons would be provided on all approaches, and improved signage and street lighting would be installed, addressing the need to improve the safety and mobility for non-motorized modes of crossing Kūhiō Highway.

The installation of drainage infrastructure, such as catch basins, grated drain inlets, drain manholes, pipe culverts, and an outlet, at the southwest corner of the intersection would prevent flooding and would control runoff during heavy rains, thereby improving traffic operations and safety.

2.1.2. Single-Lane Roundabout Alternative

Under this alternative, a single-lane roundabout would be constructed in the location of the existing Mailihuna Road intersection. The single circulating lane would be 18 feet wide, and the inscribed circle diameter would be at least 130 feet. The roundabout would include splitter islands and marked crosswalks on each approach.

The roundabout would seek to alleviate congestion and reduce delays on the eastbound, stop-controlled approach by providing yield-control on all legs. Its design would eliminate conflicting left-turn movements from northbound Kūhiō Highway and from eastbound Mailihuna Road, because only right turns are made into and out of the roundabout.

The roundabout alternative would require reconstruction of Mailihuna Road for the approach to tie in vertically at an 8% maximum profile grade, for a small distance away from the intersection. Retaining walls would be required along Mailihuna Road, and these would measure approximately 350 feet long with an average height of 10 feet.

The installation of drainage infrastructure, such as catch basins, grated drain inlets, drain manholes, pipe culverts, and an outlet, at the southwest corner of the intersection would prevent flooding and would control runoff during heavy rains, thereby improving traffic operations and safety.

2.2. Bridge Replacement

The existing two-lane two-span structure was built in 1953 and is approximately 150 feet (45.72 meters [m]) long and 38.50 feet (11.73 m) wide. The structure currently accommodates two, 12-foot-wide (3.65-m-wide) travel lanes with a 2.5-foot (0.76-m) shoulder on both sides. Concrete piers and abutments on timber piles support the concrete deck, with an asphaltic concrete driving surface. The concrete bridge rail transitions to a metal guardrail on both sides of the roadway. The posted speed on the bridge is 40 miles per hour (64.37 kilometers per hour [kph]) and would remain so under the proposed action.

The existing Kapa'a Stream Bridge would be demolished and replaced with a single-span bridge. The new bridge would be approximately 190 feet (57.91 m) long, with a deck width of 44 feet (13.41 m), and a superstructure depth of 6 feet (1.82 m). It would carry two 12-foot-wide (3.65-m-wide) travel lanes, two 8 foot-wide (2.40-m-wide) shoulders, and 2-foot-thick (0.60-m-thick) guardrails on each side. The proposed design would comply with roadway width and bridge standards, live load and seismic requirements, and applicable crash test requirements for bridge railings. Permanent bridge widening would occur within the existing 100-foot (30.48-m) right-of-way (ROW).

The foundation would consist of 4-foot-diameter (1.21-m-diameter) drilled shafts. The new drilled shafts would be offset approximately 4 feet (1.21 m) behind the existing abutment footing. The top portion of the existing abutment would be removed to allow the new girders to extend between the new abutments. The remainder of the existing abutments would be left in place to serve as a retaining/channel wall, a secondary role that they are currently performing. New bridge abutments would be designed for the estimated total scour depths. The existing center pier would be abandoned in place to reduce obstruction to streamflow and to improve hydraulics. Unlike the existing bridge, the replacement bridge would be designed as a clear span with no instream pier.

Bridge railings would consist of a concrete beam and post with metal rail. Both the bridge railings and transitions would meet a minimum crash test level TL-3, which meets all the safety requirements and closely resembles the existing bridge rail. Conventional concrete retaining walls would need to be installed on the mauka side of the bridge at both approaches due to a grade difference between the roadway elevation and surrounding natural flood area.

2.2.1. Mauka Walkway

The existing Kapa'a Stream Bridge has a 4-foot-wide sidewalk on each side of the bridge structure in the space between the concrete bridge railings and guardrails. A walkway is being considered on the *mauka* side of the replacement bridge, continuing along Kūhiō Highway to the Mailihuna Road intersection. The walkway would tie into an existing concrete sidewalk on the north side of the bridge that extends to the Kealia Road intersection. The design of the walkway would comply with the Americans with Disabilities Act. There would be no walkway on the makai side of the replacement bridge. Pedestrians traveling on the makai side of Kūhiō Highway would be able to use Ke Ala Hele Makalae, the parallel, shared-use

path. The walkway would be built inside the project area as defined by this document and shown in Figure 2.

2.3. Construction Activities

A potential staging area is located in a grassy area along the northern approach to the bridge, mauka of the highway. This potential staging area is approximately 25 feet (7.62 m) wide and 450 feet (137.16 m) long. Demolition debris would require disposal at an approved landfill. Disposal of any dredged material and water from dewatering would be conducted in accordance with the appropriate regulatory agency approvals.

The intersection and bridge approaches are on generally flat terrain, but some fill is anticipated on the approaches. Reinforced-concrete or concrete rubble masonry retaining walls are not anticipated for this project because of the culvert's vertical concrete walls.

The highway would remain in its present alignment. However, the roadway approach at the bridge would include 12-foot-wide (3.65-m-wide) lanes and 8-foot-wide (2.43-m-wide) shoulders and would need to transition to tie into the existing lanes and shoulders before and after the bridge. Minor adjustments may be needed to accommodate the new wider bridge within the existing 60-foot (18.28-m) ROW.

Utility relocations (temporary or permanent) may be required for this project and would be confirmed during final design. Activities may include relocating a utility pole and associated overhead electrical lines, telephone lines, and fiber optic lines on the mauka side of the highway.

Construction would occur both during normal work hours and on weekends. To minimize impacts to the surrounding residential areas, night work is not anticipated.

A temporary bypass bridge is proposed to maintain traffic while constructing the new bridge. It would be located immediately makai of the Kapa'a Stream Bridge and mauka of Ke Ala Hele Makalae, the shared use path. It would provide 10-foot-wide (3.04-m-wide) lanes in each direction, a 2-foot-wide (0.60-m-wide) shoulder, and barriers as needed. The posted speed of the temporary bypass road would be 25 mph (40.23 kph). The function of Ke Ala Hele Makalae to provide access for foot and bicycle traffic would not be impacted. The temporary bypass would extend outside the existing ROW, necessitating a construction parcel or easement.

Normal construction dewatering would be needed to build the abutments. No center pier would be required, therefore work in the channel is limited to removing the existing pier.

Figure 2. Kapa'a Bridge project area, survey area, and action area, showing permanent and temporary impact areas.

2.4. Project Area and Survey Area

The Kapaʻa Bridge is in the Kapaʻa area on the Island of Kauaʻi along Kūhiō Highway (Route 56). The survey area was originally based on the expected project footprint in September 2014; however, the project area, defined as all areas where **direct impacts** (permanent and temporary) are proposed to occur, changed slightly after the field survey. A small portion of the project area was not surveyed, as shown in Figure 2.

The project area encompass a total area of 4.9 acres (2.0 ha), comprising 2.8 acres (1.1 ha) of a permanent impact area and 2.1 acres (0.9 ha) of a temporary impact area (see Figure 2). The project area stretches approximately 1,600 feet (487.68 m) along Kūhiō Highway. Along Mailihuna Road, the length of the project area would be just over 300 feet (91.44 m) up the steep grade mauka of the intersection, whereas the width would extend beyond the County of Kauaʻi's ROW. Where Kapaʻa Stream crosses beneath the bridge, the project area would extend approximately 60–80 feet (18.28–24.38 m) mauka and makai of the bridge, to include considerations for construction and hydraulics. Kapaʻa Stream Bridge is at an elevation of approximately 18 feet (5.48 m) above mean sea level (amsl).

The survey area covers approximately 8.2 acres (3.3 ha), stretching south of Mailihuna Road and north of milepost 10 near the gravel beach park parking lot (see Figure 2).

The Kauaʻi bike and pedestrian path passes through the project area. The center of Kapaʻa town is approximately 1.5 miles (2.4 km) south of Kapaʻa Bridge. Kapaʻa High School and Mahelona Medical Center are just southwest of the survey area.

2.5. Action Area

The ESA defines an *action area* as the area within which all of the **direct and indirect impacts** of the project would occur (50 Code of Federal Regulations 402.02). In other words, it is the geographic area that would be affected by construction and maintenance of the project. The Kapaʻa Bridge action area was determined based on potential for in-air construction noise to travel through the surrounding areas. This is because noise would be the most far-reaching impact resulting from the proposed action. The Kapaʻa Bridge action area (see Figure 2) extends a minimum of 1,000 feet (305 m) from the project area, covering a total of 162.3 acres (65.7 ha). The 1,000-foot (305-m) buffer defines the action area based on the distance a 100-A-weighted-decibel (dBA) noise (such as a rock drill, paver, or impact pile driver) would attenuate to background levels (approximately 50 dBA) over flat terrain with little to no vegetation. This area is conservatively defined and likely encompasses an area larger than the area within which all impacts would occur. The actual distance that noise effects would occur is likely smaller than the action area because quieter equipment would be used and local topography and vegetation would shield the produced noise.

The use of an additional action area based on underwater noise impacts was considered but rejected. Underwater sound travels in a straight line and is absorbed by land. Construction noise occurring in the river is not expected to travel past the upstream northward river bend. It is also not expected to extend to the ocean when the Kealia Beach sand bar is present. This sand bar is most likely to be present during the dry summer period between May 1 and October 31, although it could be breached temporarily by a heavy rain event. During the winter, the sand bar could be breached for an extended period, or it could rebuild quickly. The size and depth of the breach depends on the intensity of the rainfall event. The breach can form a deep gouge that stretches the width of the river mouth, or it can form a small outlet (personal communication, Don Heacock, Aquatic Resources Biologist, Department of Lands and Natural Resources, June 14 and 16, 2016). The outlet most often makes a sharp southward bend and runs parallel

to the coastline before contacting the ocean, but occasionally it pushes eastward through the sand bar and directly into the ocean. For these reasons, the area within which underwater noise impacts could occur is captured within the action area as defined above. Conservation measures described for monk seals and sea turtles (section 2.6) will also ensure underwater noise impacts are contained within the action area.

2.6. Conservation Measures

Implementation of the proposed action would include a variety of conservation measures to reduce or eliminate project-related impacts and avoid adverse effects to listed species. Conservation measures for the proposed action include the following:

Waterbirds

- In areas where vegetated streambanks would be disturbed, waterbird nest searches will be conducted by a qualified biologist before any work is conducted and after any subsequent delay in work of 3 or more days (during which birds may attempt nesting). The results of the pre-construction survey will be submitted to the USFWS.
- If a waterbird nest with eggs or chicks/ducklings is discovered in the construction limits, work will not begin until the chicks/ducklings have fledged.
- Waterbird nests, chicks, or broods found in the survey area before or during construction will be reported to the USFWS within 48 hours.
- A biological monitor will be present on the project site during all construction activities to ensure that Hawaiian waterbirds and nests are not adversely impacted.
- If an endangered Hawaiian waterbird is present or flies into the area during ongoing activities, all activities within 100 feet (30 m) of the bird will cease, and the bird will also not be approached. Work may continue after the bird leaves the area of its own accord.

Nēnē or Hawaiian Goose (*Branta sandvicensis***)**

- All regular on-site staff will be trained to identify nēnē and will know the appropriate steps to take if nēnē are present on-site.
- If a nēnē is found in the area during ongoing activities, all activities within 100 feet (30 m) of the bird will cease, and the bird will not be approached. If a nest is discovered, USFWS will be contacted. If a nest is not discovered, work may continue after the bird leaves the area of its own accord.

Seabirds

- To avoid the use of nighttime lighting that could attract seabirds, construction activity will be restricted to daylight hours as much as practicable during the seabird peak fallout period (September 15–December 15). Dark sky procedures will be used outside the peak fallout period if night work is required.
- All outdoor lights will be shielded to prevent upward radiation. This has been shown to reduce the potential for seabird attraction (Reed et al. 1985; Telfer et al. 1987). A selection of acceptable seabird-friendly lights can be found online at the Kaua'i Seabird Habitat Conservation website (2013).
- Outside lights that are not needed for security and safety will be turned off from dusk through dawn during the peak fledgling fallout period (September 15–December 15).

Hawaiian Hoary Bat (*Lasiurus cinereus semotus*)

- Any fences that are erected as part of the project will have barbless top-strand wire to prevent entanglements of the Hawaiian hoary bat on barbed wire. No fences in the survey area were

observed with barbed wire during the survey; however, if fences are present, the top strand of barbed wire will be removed or replaced with barbless wire.

- No trees taller than 15 feet (4.6 m) will be trimmed or removed as a result of this project between June 1 and September 15, when juvenile bats that are not yet capable of flying may be roosting in the trees.

Hawaiian Monk Seal (*Neomonachus schauinslandi*) and Sea Turtles

- To ensure underwater noise does not extend to the marine environment, work within the wetted channel will only be conducted when the Kealia Beach sand bar is in place and parallel to the coastline such that it will absorb the sound waves.
- If the Kealia Beach sand bar is breached such that the sound waves will reach the marine environment, all work conducted within the wetted channel to remove the existing mid-channel pier will be isolated by a dewatering structure such as a cofferdam. All work conducted below the ordinary high water mark and above the mean higher high water will occur in the dry, further reducing the potential for underwater noise as a result of project construction to enter marine waters. Cofferdams will be removed following in-water or in-channel work.
- Construction activities will not take place if a Hawaiian monk seal or sea turtle is in the construction area or within 150 feet (46 m) of the construction area. Construction can only begin after the animal voluntarily leaves the area. If a monk seal/pup pair is present, a minimum 300-foot (91-m) buffer will be observed.
- Any construction-related debris that may pose an entanglement threat to Hawaiian monk seals and sea turtles will be removed from the construction area at the end of each day and at the conclusion of the construction project.
- Workers will not attempt to feed, touch, ride, or otherwise intentionally interact with any listed species.
- Shielded lighting will be considered to reduce direct and ambient light to potential nearby beach habitat.

The following conservation measures to protect marine water quality are recommended by the NMFS Protected Resources Division (NOAA NMFS 2015a). The applicability of these conservation measures to the proposed project will depend on the site-specific construction means and methods chosen.

- A contingency plan to control toxic materials will be developed.
- Appropriate materials to contain and clean potential spills will be stored at the work site and be readily available.
- All project-related materials and equipment placed in the water will be free of pollutants.
- The project manager and heavy equipment operators will perform daily pre-work equipment inspections for cleanliness and leaks. All heavy equipment operations will be postponed or halted should a leak be detected, and they will not proceed until the leak is repaired and the equipment is cleaned.
- Fueling of land-based vehicles and equipment will take place at least 50 feet (15.24 m) away from the water, preferably over an impervious surface. Fueling of vessels will be done at approved fueling facilities.
- Turbidity and siltation from project-related work will be minimized and contained through the appropriate use of erosion control practices, effective silt containment devices, and the curtailment of work during adverse weather and tidal/flow conditions.
- A plan will be developed to prevent debris and other wastes from entering or remaining in the marine environment during the project.

3. METHODOLOGY AND SPECIES COVERED IN THE EVALUATION OF POTENTIAL IMPACTS

The USFWS maintains lists of endangered, threatened, proposed, and candidate species known or thought to occur in Hawai'i. The USFWS also designates critical habitat in the state for some listed species. Endangered and threatened species are protected under the ESA (16 United States Code [USC] 1531 et seq.). The ESA specifically prohibits *take*, which is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to engage in any such conduct" of a listed species. *Harm* includes "significant habitat modification or degradation that kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering."

All information on the vegetation and wildlife in the action area was derived from biological surveys conducted by SWCA in September 2014. In addition to recording wildlife and plants during the surveys, SWCA evaluated habitat for the possible occurrence of federally listed species. As part of that habitat evaluation effort, the presence of any water, wetlands, and special soils was documented.

The species evaluated in this report consist solely of federally protected (endangered and threatened) species and candidates for federal listing.

The determination of potential for local species occurrence was based on 1) existing information on distribution and 2) qualitative comparisons of the habitat requirements of each species with vegetation communities, landscape features, and/or water quality conditions in the survey area. Possible impacts to these species were evaluated based on reasonably foreseeable project-related activities and the local loss of habitat.

Federally listed species were evaluated for potential to occur in the action area using the following categories:

- *Known to occur:* The species was documented in the action area either during or before the field surveys by a reliable observer.
- *May occur:* The action area is within the species' currently known range, and vegetation communities, soils, water quality conditions, etc., resemble those known to be used by the species.
- *Unlikely to occur:* The action area is within the species' currently known range, but vegetation communities, soils, water quality conditions, etc., do not resemble those known to be used by the species, or the survey area is clearly outside the species' currently known range.

Species with the potential to occur in the action area were then further evaluated for possible impacts from the proposed action. However, effect determination categories are defined differently based on the exact legal status of a species and the mandates and responsibilities of the agency tasked to manage or protect that species. Federally protected (i.e., threatened or endangered) species were assigned to one of three categories of possible effect, following USFWS guidelines.

- *No effect:* A determination of no effect means there are absolutely no effects to the species and its critical habitat, either positive or negative. It does not include small effects or effects that are unlikely to occur.
- *May affect, is not likely to adversely affect:* Under this effect determination, all effects to the species and its critical habitat are beneficial, insignificant, or discountable. Beneficial effects have contemporaneous positive effects without adverse effects to the species (for example, there cannot be "balancing," so that the benefits of the action will outweigh the adverse effects). Insignificant effects relate to the magnitude of the impact and should not reach the scale where take occurs. Discountable effects are considered extremely unlikely to occur. Based on best

judgment, a person will not 1) be able to meaningfully measure, detect, or evaluate insignificant effects or 2) expect discountable effects to occur. Determinations of "not likely to adversely affect, due to beneficial, insignificant, or discountable effects" require written concurrence from the USFWS.

- *May affect, is likely to adversely affect:* This effect determination means that the proposed action will have an adverse effect on the species or its critical habitat. Any action that will result in "take" of an endangered or threatened species is considered an adverse effect. A combination of beneficial and adverse effects is still considered "likely to adversely affect," even if the net effect is neutral or positive. The effect on the species and/or critical habitat must be extremely small to qualify as a discountable effect. Likewise, an effect that can be detected in any way or that can be meaningfully articulated in a discussion of the results of the analysis is not discountable; it is an adverse effect.

As directed by the USFWS, critical habitat and species proposed or that are candidates for listing are evaluated using the following effect determination categories listed below. *Jeopardy* is defined under the ESA as occurring when "an action is reasonably expected, directly or indirectly, to diminish a species' numbers, reproduction, or distribution so that the likelihood of survival and recovery in the wild is appreciably reduced."

- No effect.
- Not likely to jeopardize the continued existence of the species or result in the destruction or adverse modification of proposed critical habitat.
- Likely to jeopardize the continued existence of the species or result in the destruction or adverse modification of proposed critical habitat.

Once a species becomes federally listed as endangered or threatened, it becomes listed under the same classification (endangered or threatened) in the State of Hawai'i (Hawai'i Revised Statutes 195D-4).

4. AFFECTED ENVIRONMENT

The description of the affected environment is based on literature review and a field reconnaissance of the survey area. A field reconnaissance was conducted by SWCA biologists on September 17, 2014, and September 29, 2014. Representative portions of the area were driven or walked to describe vegetation types, fauna, and wetlands or streams, as well as known or suspected threatened, endangered, or candidate wildlife or plant species and habitat.

SWCA also reviewed available scientific and technical literature regarding natural resources in and near the survey area and action area. This literature review encompassed a thorough search of refereed scientific journals, technical journals and reports, environmental assessments and environmental impact statements, relevant government documents, and unpublished data that provide insight into the natural history and ecology of the area. SWCA also reviewed available geospatial data, aerial photographs, and topographic maps of the survey area and action area.

4.1. Soils and Hydrology

The action area is underlain by alluvium, beach deposits, and Kōloa Volcanics, which erupted 0.15–3.85 million years ago (Sherrod et al. 2007). The Natural Resources Conservation Service identifies the following five soil types in the project area: Mokuleia fine sandy loam (Mr); Mokuleia clay loam, poorly drained variant (Mta); Lihue silty clay, 25%–40% slopes (LhE2); Beaches (BS); and Water > 40 acres (W) (Foote et al. 1972).

Mean annual rainfall for the Kapaʻa Bridge area is approximately 40.7 inches (1,034 millimeters [mm]). Rainfall is typically highest in November and lowest in June and July (Giambelluca et al. 2013). The closest rainfall gage to the site (Anahola) experienced above-average rainfall for 2014 through the end of September (NOAA/National Weather Service, Weather Forecast Office Honolulu 2014).

The Kapaʻa Bridge action area is in the Kapaʻa Watershed, which encompasses roughly 16.5 square miles (42.7 km^2) (Parham et al. 2008). The total length of Kapaʻa Stream is approximately 59.2 miles (95.3 km), and it is identified as perennial by the State of Hawaiʻi and the U.S. Geological Survey. The Hawaiʻi Division of Aquatic Resources (DAR) Watershed Atlas (Parham et al. 2008) indicates that the estuary extends roughly 1.5 miles (2.4 km) upstream from the survey area. Kapaʻa Stream is diverted in the upper reaches. Seaward of the bridge, the stream flows southwest and passes through a beach berm before emptying into the Pacific Ocean.

The National Wetlands Inventory program identifies several wetland and water types in the area (Figure 3). These include Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded (R2UBH); Palustrine, Emergent, Persistent, Seasonally Flooded (PEM1C); and Palustrine, Emergent, Persistent, Seasonal-Tidal (PEM1R). A marine water (Marine, Intertidal, Unconsolidated Shore, Irregularly Flooded - M2USP) is identified immediately east of the survey area. Kapaʻa Stream is listed as a 303(d) Impaired Waterbody. Turbidity is listed as the cause of impairment (Hawaiʻi State Department of Health 2014).

During SWCA's wetlands and Waters of the U.S. (WoUS) survey (SWCA 2015), approximately 1.98 acres (0.80 ha) of tidal, non-wetland WoUS (Riverine, Tidal [R1]) and 0.31 acre (0.12 ha) of tidal, wetlands (Palustrine Emergent Marsh [PEM], Tidal) were delineated in the survey area (Figure 4). This segment of Kapaʻa Stream was determined to be tidally influenced due to the close proximity to the ocean and the presence of marine/estuarine biota (e.g., Hawaiian flagtail [*Kuhlia* spp.]) observed during SWCA's field work (SWCA 2014) and from previous surveys (AECOS 2002; Parham et al. 2008).

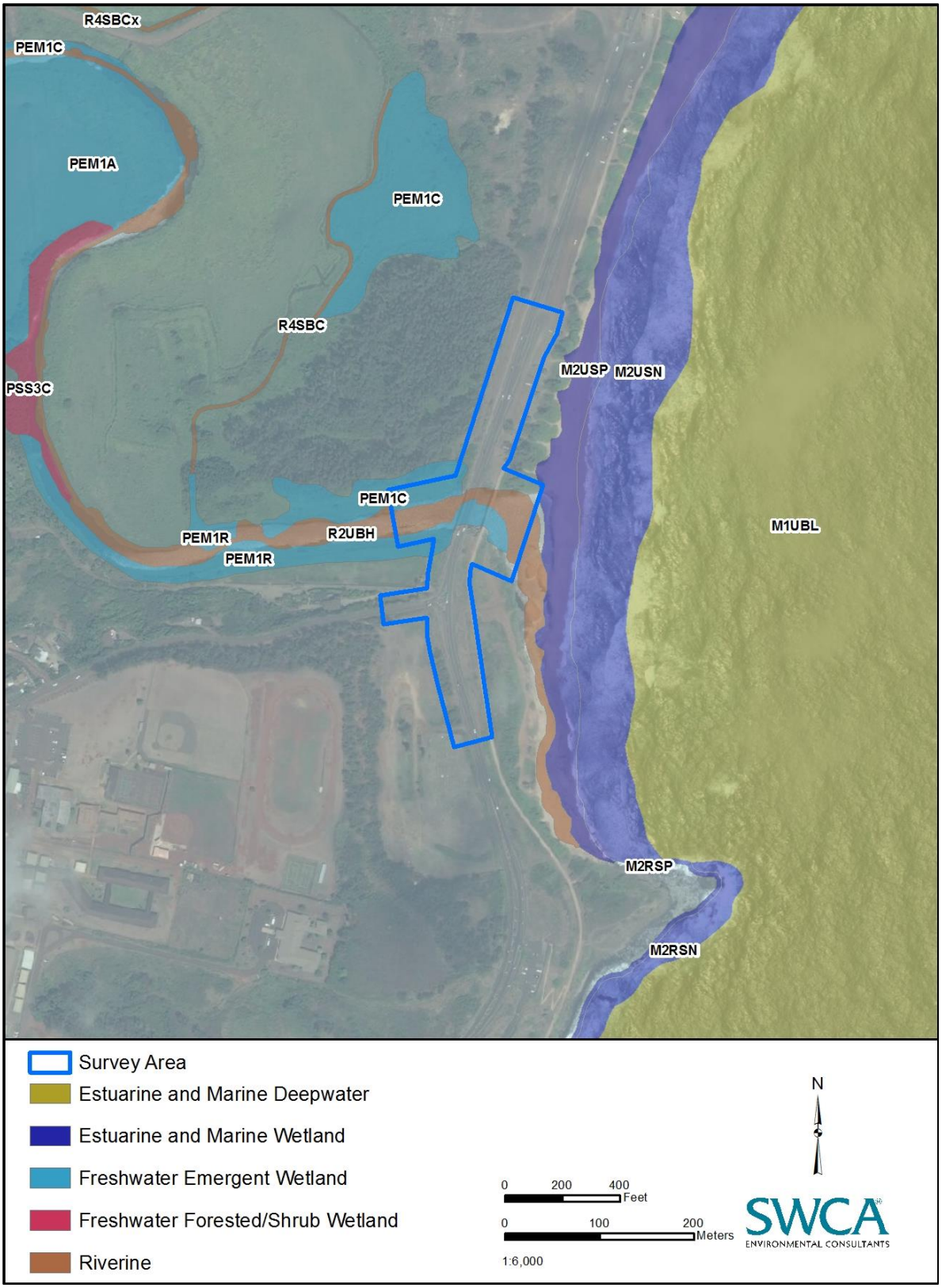

Figure 3. Kapa'a Stream and National Wetlands Inventory classification in and near the survey area.

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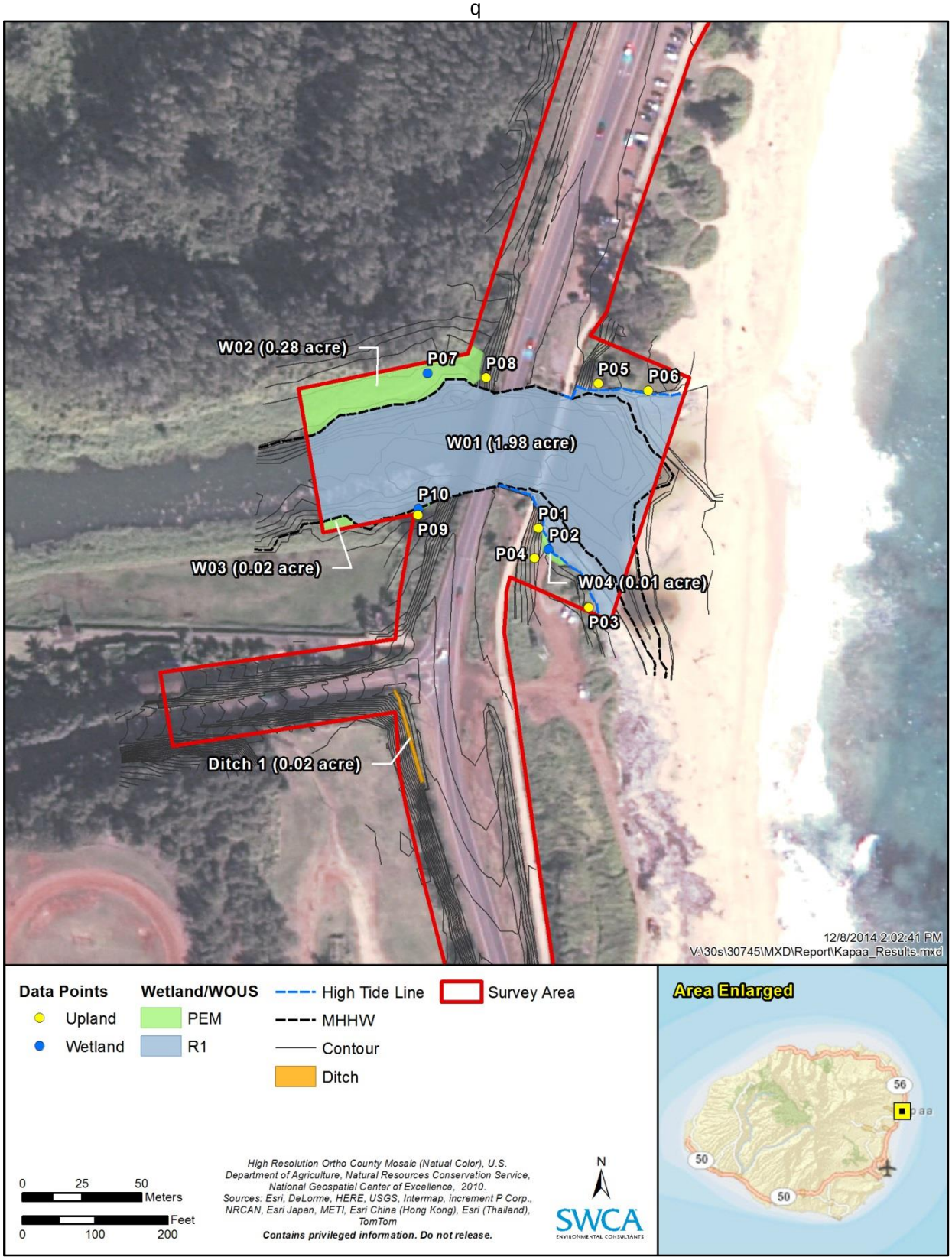

Figure 4. Survey results and delineated Waters of the U.S.

4.2. Vegetation

No state or federally listed threatened, endangered, or candidate plant species were recorded in the survey area. Three native Hawaiian plants—kīpūkai (*Heliotropium curassavicum*), naupaka (*Scaevola taccada*), and pōhuehue (*Ipomoea pes-caprae* ssp. *brasiliensis*) —were seen during the survey. These species are indigenous, or found in Hawaiʻi and elsewhere. None of these species are considered rare (Wagner et al. 1999).

The vegetation in the survey area is composed of three main vegetation types: Strand, Ruderal, and Emergent Wetland. Native plants are common in the Strand vegetation type. The other two types largely comprise non-native plants.

Strand Vegetation: This vegetation type occurs near the shoreline in the makai portion of the survey area, which is strongly influenced by salt spray, saline soil, strong winds, low moisture, high rates of evaporation, and other shoreline processes. Pōhuehue is the most abundant plant in the northeast portion of the survey area, forming low-growing mats along the sand dunes (Appendix A, Figure A1). To the south of Kapaʻa Stream, non-native California grass (*Urochloa mutica*) is dominant, forming dense mats (Appendix A, Figure A2). Naupaka and wedelia (*Sphagneticola trilobata*) are also common throughout the Strand vegetation. Tree heliotrope (*Tournefortia argentea*) and coconut (*Cocos nucifera*) are widely scattered along the south side of the stream, and a small ironwood (*Casuarina equisetifolia*) grove is on the north side, adjacent to the bridge.

Ruderal Vegetation: This vegetation type occurs in and along the highway ROW and adjacent to parking areas. It is dominated by a mix of non-native plants. Abundant and common herbaceous species found in the Ruderal vegetation type are Guinea grass (*Urochloa maxima*), swollen fingergrass (*Chloris barbata*), wire grass (*Eleusine indica*), Bermuda grass (*Cynodon dactylon*), *Macroptilium atropurpureum*, khaki weed (*Alternanthera pungens*), Dallis grass (*Paspalum dilatatum*), and *Ipomoea obscura*. These weedy areas are likely mowed occasionally. On the mauka (inland) side of the survey area, trees and shrubs are more common, including small stands of koa haole (*Leucaena leucocephala*) and ironwood, as well as scattered castor bean (*Ricinus communis*) and *Pluchea* spp.

Emergent Wetland: This vegetation type is dominated by a dense mat of the non-native California grass (Appendix A, Figure A3). It occurs on the mauka side of the bridge immediately adjacent to Kapaʻa Stream. On the south side of the stream, California grass is interspersed with bulrush (*Schoenoplectus* sp.). It appears to be the non-native kaluhā or California bulrush (*Schoenoplectus californicus*), which looks very similar to the indigenous ʻakaʻakai (*Schoenoplectus tabernaemontani*).

4.3. Wildlife

Fauna surveys consisted of a pedestrian survey on September 17 and 29, 2014, *before* 11 am or *after* 4 pm when wildlife are most likely active. Field observations of birds were conducted using 8 × 42–mm binoculars. Visual and auditory observations were included in the survey results. All observed birds, mammals, reptiles, amphibians, fish, and invertebrate species were noted during the surveys.

Acoustic surveys for the endangered Hawaiian hoary bat or ʻōpeʻapeʻa (*Lasiurus cinereus semotus*) were not conducted; however, areas of suitable habitat for foraging and roosting were noted when present.

The following section describes common wildlife observed during the September 2014 field surveys.

4.3.1. Birds

The bird species observed in and near the survey area are species typically found in disturbed lowland areas. In all, 10 bird species were documented (Table 1). Seven species are introduced to the Hawaiian Islands. Two species of migrant shorebirds, the Pacific golden-plover (*Pluvialis fulva*) and sanderling (*Calidris alba*), were observed foraging on the sand downstream of the bridge. One species of endangered waterbird, the Hawaiian gallinule was observed foraging along the vegetated streambank upstream of the bridge.

Table 1. Birds Observed by SWCA in and near the Survey Area

Common Name	Scientific Name	Status*
Cattle egret	*Bubulcus ibis*	NN
Chestnut munia	*Lonchura malacca*	NN
Common myna	*Acridotheres tristis*	NN
Domestic chicken	*Gallus*	NN
Hawaiian gallinule	*Gallinula galeata sandvicensis*	E
Japanese white-eye	*Zosterops japonicus*	NN
Pacific golden-plover	*Pluvialis fulva*	M
Sanderling	*Calidris alba*	M
Spotted dove	*Streptopelia chinensis*	NN
Zebra dove	*Geopelia striata*	NN
Total		**10**

* Status: E = Endangered, NN = non-native established species, M = migrant

4.3.2. Mammals

Dogs (*Canis familiaris*) were seen in the survey area during the survey. Cats (*Felis catus*), although not observed, are also likely to enter the area. Other mammals that can be expected on-site include mouse (*Mus musculus*) and rat (*Rattus* spp.).

4.3.3. Reptiles and Amphibians

No reptiles or amphibians were seen during the survey. None of the terrestrial reptiles or amphibians in Hawai'i are native to the islands.

4.3.4. Terrestrial Invertebrates

Two species of introduced bees were noted during the survey: the Sonoran carpenter bee (*Xylocopa sonorina*) and the honey bee (*Apis mellifera*). The non-native garden spider (*Argiope appensa*) was also present.

4.3.5. Fish and Aquatic Invertebrates

Table 2 lists the aquatic species observed by SWCA during the survey, species recorded for the Kapa'a estuary in the Hawai'i DAR Watershed Atlas (Parham et al. 2008), and species recorded during a previous stream survey by AECOS (2002) in the lower and estuarine reaches. The table does not list all species recorded throughout the entire stream system.

Table 2. Aquatic Species Observed by SWCA during the Survey, and Species Reported by Parham et al. (2008) and AECOS (2002) in the Kapa'a Estuary

Common Name	Scientific Name	Status	Source
Mollusks			
Asiatic flume clam	*Corbicula fluminea*	NN	AECOS
Hapawai	*Neritina vespertina*	E	AECOS
Melanid snail	*Melanoides tuberculata*	NN	AECOS
Crustaceans			
Crayfish	*Procambarus clarkii*	NN	DAR
'Ōpae kala'ole	*Atyoida bisulcata*	E	DAR
'Ōpae 'oeha'a	*Macrobrachium grandimanus*	I	DAR
Tahitian prawn	*Macrobrachium lar*	NN	AECOS
Insects			
Asian dragonfly	*Crocothemis servilia*	NN	AECOS
Fish			
Āholehole, Hawaiian flagtail	*Kuhlia* spp.	E/I	SWCA; AECOS
'Ama'ama, mullet	Mugilidae	?	AECOS
Goby	Gobiid sp.	?	DAR; SWCA
Guppy	*Poecilia reticulata*	NN	AECOS
Kaku, great barracuda	*Sphyraena barracuda*	I	AECOS
Mexican molly	*Poecilia mexicana*	NN	AECOS
Mosquito fish	*Gambusia affinis*	NN	AECOS
'O'opu naniha	*Stenogobius hawaiiensis*	E	AECOS
'O'opu nākea	*Awaous stamineus*	E	AECOS
Papio	*Caranx melampygus*	I	AECOS
Swordtail	*Xiphophorus helleri*	NN	DAR
Tilapia	*Oreochromis* sp./ *Sarotherodon* sp.	NN	SWCA; AECOS
Amphibia			
Tadpoles	–	NN	SWCA; AECOS

Notes: E = Endemic, I = Indigenous, NN = non-native.

In the entire Kapaʻa Stream, Parham et al. (2008) documented five native crustaceans (including both ʻōpae kalaʻole [*A. bisulcata*] and ʻōpae ʻoehaʻa [*M. grandimanus*]), that were seen in the estuary. Eighteen species of fish, including all five native amphidromous gobioid species, were listed by Parham et al. (2008) as occurring in Kapaʻa Stream. In addition, two endemic *Neritina* mollusks have been recorded (Parham et al. 2008). All these native animals are amphidromous, and so must pass through the estuarine part of the stream twice in their life cycles.

5. SPECIES AND CRITICAL HABITAT CONSIDERED

The species evaluated in this report consist of all federally protected (i.e., endangered and threatened) and proposed or candidate species with potential to occur around Kapaʻa, Kauaʻi (USFWS 2014a). Critical habitat for the Hawaiian monk seal occurs in the Kapaʻa Bridge action area.

5.1. Species

The USFWS and NOAA list 12 species that may occur in the Kapaʻa Bridge action area: nine endangered species, two threatened species, and one proposed endangered species (Table 3). Based on current distribution and habitat requirements, nine of these species—the Hawaiian coot, Hawaiian gallinule, Hawaiian stilt, Hawaiian duck, nēnē, Hawaiian hoary bat, Hawaiian monk seal, green sea turtle and hawksbill sea turtle —have the potential to use the habitat of the action area. The Hawaiian petrel (*Pterodroma sandwichensis*), Newell's shearwater (*Puffinus auricularis newelli*) and band-rumped storm petrel (*Oceanodroma castro*) are unlikely to occur in the action area because suitable habitat does not exist; however, these seabirds may be attracted to construction lights as they fly over the action area. These species are discussed in further detail in section 6.1.6.

Table 3. Species Federally Listed as Endangered, Threatened, Proposed, or Candidate with Potential to Occur near Kapaʻa, Kauaʻi

Common Name (scientific name)	Status*	Range or Habitat Requirements†	Potential for Occurrence in Action Area	Determination of Effect
Birds				
Hawaiian coot (*Fulica alai*)	Endangered	Found in freshwater and brackish-water marshes and ponds. This species is associated with emergent marsh habitat in lowland valleys, reservoirs, and occasionally in high-elevation plunge pools. Nests are built on floating vegetation.	Known to occur; suitable nesting and foraging habitat occurs in the Emergent Wetland vegetation type in the action area.	May affect, but is not likely to adversely affect.
Hawaiian gallinule (*Gallinula chloropus sandvicensis*)	Endangered	Found in freshwater marshes, taro patches, irrigation ditches, reservoirs, and wet pastures. This species favors dense emergent vegetation near open water, floating or barely emergent mats of vegetation, and water depths of less than 3 feet. It prefers freshwater over saline or brackish water. Nesting occurs throughout the year.	Known to occur; suitable nesting and foraging habitat occurs in the Emergent Wetland vegetation type in the action area.	May affect, but is not likely to adversely affect.

Table 3. Species Federally Listed as Endangered, Threatened, Proposed, or Candidate with Potential to Occur near Kapa'a, Kaua'i

Common Name (scientific name)	Status*	Range or Habitat Requirements†	Potential for Occurrence in Action Area	Determination of Effect
Hawaiian stilt (*Himantopus mexicanus knudseni*)	Endangered	Prefers a variety of aquatic habitats but is limited by water depth and vegetation cover. This species likes to loaf in open mudflats, sparsely vegetated pickleweed mats, and open pasturelands. Specific water depths of 5 inches are required for optimal foraging. Nest sites are frequently separated from feeding sites, and stilts move between these areas daily. Nesting sites are adjacent to or on low islands within bodies of fresh, brackish, or salt water.	May occur; suitable nesting and foraging habitat occurs in the Emergent Wetland vegetation type in the action area.	May affect, but is not likely to adversely affect.
Hawaiian duck (*Anas wyvilliana*)	Endangered	Found in lowland wetlands, river valleys, and mountain streams. Nesting occurs on the ground near water (USFWS 2011a).	May occur; suitable nesting habitat occurs in the Strand vegetation type and foraging habitat occurs in the Ruderal and Emergent Wetland vegetation types in the action area.	May affect, but is not likely to adversely affect.
Nēnē (*Branta* sandvicensis)	Endangered	Frequents scrubland, grassland, golf courses, sparsely vegetated slopes, and open lowland country. They do not require standing or flowing water for successful breeding but will use it when available. Nest sites include various habitat types ranging from beach strand, shrubland, and grassland to lava rock, and elevations ranging from coastal lowlands to alpine areas (Banko 1988; Banko et al. 1999).Their current distribution has been highly influenced by captive-bred releases into the wild.	May occur; suitable foraging and nesting habitat occurs in the Ruderal and Strand vegetation types in the action area.	May affect, but is not likely to adversely affect.
Hawaiian petrel *(Pterodroma sandwichensis)*	Endangered	Breeding season is from March to October, during which time this species nests in some of the main Hawaiian Islands, notably on Maui, Lāna'i, and Kaua'i. They nest in burrows, primarily in remote montane locations, along large rock outcrops, under cinder cones, under old lichen-covered lava, or in soil beneath dense vegetation. This species was once abundant on all main Hawaiian islands except Ni'ihau. Today, the largest known breeding colonies are found at Haleakala Crater on Maui and on the summit of Lāna'i. Other colonies are on Kaua'i, the Island of Hawai'i, and possibly Moloka'i.	Unlikely to occur in the action area. Hawaiian petrels may fly over the action area at night while transiting between nest sites and the ocean, but they are not likely to land or use habitat because nesting habitat does not occur in the action area.	May affect, but is not likely to adversely affect.

Table 3. Species Federally Listed as Endangered, Threatened, Proposed, or Candidate with Potential to Occur near Kapa'a, Kaua'i

Common Name (scientific name)	Status*	Range or Habitat Requirements†	Potential for Occurrence in Action Area	Determination of Effect
Newell's shearwater (*Puffinus auricularis newelli*)	Threatened	During their 9-month breeding season from April through November, this species nests in burrows under ferns on forested mountain slopes and needs an open downhill flight path through which it can become airborne. These burrows are used year after year and usually by the same pair of birds. The Newell's shearwater was once abundant on all main Hawaiian islands. Today, Newell's shearwater breed on Kaua'i, the Island of Hawai'i, Moloka'i, and Lehua.	Unlikely to occur in the action area. Newell's shearwater may fly over the action area at night while transiting between nest sites and the ocean, but are not likely to land or use habitat because nesting habitat does not exist in the action area.	May affect, but is not likely to adversely affect.
Band-rumped Storm Petrel (*Oceanodroma castro*)	Proposed endangered	This species is found in several areas of the subtropical Pacific and Atlantic Oceans. In Hawai'i, it is known to nest on Kaua'i, Lehua Islet, and the Island of Hawai'i. It likely nests in remote cliff locations. Only three inactive nests have ever been found in the Hawaiian Islands; all were located in small caves or crevices. Adults visit the nest site after dark. When not at nest locations, it forages on the open ocean.	Unlikely to occur in the action area. Band-rumped storm petrel may fly over the action area at night while transiting between nest sites and the ocean, but are not likely to land or use habitat because nesting habitat does not exist in the action area.	Not likely to jeopardize the continued existence.
Mammals				
Hawaiian monk seal (*Neomonachus schauinslandi*)	Endangered	Endemic to the Hawaiian archipelago and found mostly in the Northwestern Hawaiian Islands. Increasing sightings reported from the Main Hawaiian Islands. Hawaiian monk seals spend most of their time in the ocean but rest on sandy beaches, and sometimes use beach vegetation as shelter from wind and rain.	Known to occur in the action area. The action area does contain habitat that could support Hawaiian monk seal pupping, nursing, and haul-out.	May affect, but is not likely to adversely affect.
Hawaiian hoary bat (*Lasiurus cinereus semotus)*	Endangered	This species is found primarily from sea level to 7,500 feet, although it has also been observed above 13,000 feet. Most of the available documentation suggests that this elusive bat roosts among trees in forested areas. It has been observed on the Islands of Hawai'i, Maui, Moloka'i, O'ahu, and Kaua'i.	May occur in the action area. Bat roosting could occur in the Strand vegetation type of the action area, and foraging could occur over the Ruderal and emergent vegetation habitats and the Kapa'a Stream.	May affect, but is not likely to adversely affect.

Table 3. Species Federally Listed as Endangered, Threatened, Proposed, or Candidate with Potential to Occur near Kapa'a, Kaua'i

Common Name (scientific name)	Status*	Range or Habitat Requirements†	Potential for Occurrence in Action Area	Determination of Effect
Reptiles				
Green sea turtle (*Chelonia mydas*)	Threatened	The green sea turtle is found worldwide in warm seas. They occupy three habitat types: open beaches, open sea, and feeding grounds in shallow, protected waters. In Hawai'i, nesting occurs throughout the Hawaiian archipelago.	Known to occur in the shallow, protected waters of the action area. The action area contains beach habitat that could support nesting and shallow water habitat that supports green turtle foraging.	May affect, but is not likely to adversely affect.
Hawksbill sea turtle (*Eretmochelys imbricata*)	Endangered	The hawksbill sea turtle is found in warm tropical waters worldwide. The hawksbill turtle is a shy tropical reef–dwelling species that feeds on jellyfish, sea urchins, and sea sponges. It may also eat algae that grows on the reef. In Hawai'i, nesting occurs on the Islands of Hawai'i, Maui, Moloka'i, and O'ahu.	May occur in the shallow, protected waters of the action area. The action area contains beach habitat that could support nesting and shallow water habitat that supports hawksbill sea turtle foraging.	May affect, but is not likely to adversely affect.

*** Federal (USFWS) status definitions:**

Endangered: Any species considered by the USFWS as being in danger of extinction throughout all or a significant portion of its range. The ESA specifically prohibits the take of a species listed as endangered. *Take* is defined by the ESA as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to engage in any such conduct.

Threatened: Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The ESA specifically prohibits the take (see definition above) of a species listed as threatened.

Proposed: Any species of fish, wildlife, or plant that is proposed in the *Federal Register* to be listed under Section 4 of the ESA.

† Unless otherwise noted, data are from USFWS (2014b).

5.2. Critical Habitat

Critical habitat for the Hawaiian monk seal occurs in the action area (Figure 5). Critical habitat was first designated for the Hawaiian monk seal in 1986, and expanded in 1988. In 2008, NMFS received a petition to further expand the existing critical habitat designation in the Main Hawaiian Islands (MHI) and the Northwestern Hawaiian Islands (NWHI), and a revised critical habitat area became effective in September 2015 (NOAA 2015).

The current configuration of monk seal designated critical habitat comprises 16 specific areas of terrestrial and marine habitats within the Hawaiian Archipelago. In the NWHI, 10 specific areas are around Kure Atoll, Midway Islands, Pearl and Hermes Reef, Lisianski Island, Laysan Island, Maro Reef, Gardner Pinnacles, French Frigate Shoals, Necker Island, and Nihoa Island. In the MHI, there are six specific areas; these include marine habitat from the 656-foot (200-m) depth contour line (including the seafloor and all subsurface waters and marine habitat within 32 feet [10 m] of the seafloor) through the water's edge, and the terrestrial environment to 15 feet (5 m) inland from the shoreline between identified boundary points on the Islands of Ka'ula, Ni'ihau, Kaua'i, O'ahu, Kaho'olawe, Lāna'i, Maui, Moloka'i, and Hawai'i (NOAA 2015). *Shoreline* is defined by the USFWS as "upper reaches of the wash of waves, other than storm or seismic waves, at high tide during the season in which the highest wash of the wave occurs, usually evidenced by the edge of vegetation growth or the upper limit of debris" (USFWS 2011b).

Each of the 16 areas contains one or a combination of physical or biological features essential to conservation of the species, and that may require special management consideration or protections. Two terrestrial and one marine essential feature have been identified for the Hawaiian monk seal critical habitat. These essential features are as follows:

- Terrestrial areas and the adjacent shallow sheltered aquatic areas with characteristics preferred by Hawaiian monk seals for pupping and nursing.
- Marine areas from 0 to 656 feet (0 to 200 m) deep that support adequate prey quality and quantity for juvenile and adult Hawaiian monk seal foraging.
- Significant areas used by Hawaiian monk seals for hauling-out, resting, or molting.

Kaua'i provides approximately 28 miles (45 km) of coastline that support preferred pupping and nursing areas and significant haul-out areas, as well as 215 square miles (557 km^2) of marine foraging habitat essential to Hawaiian monk seal conservation (NOAA 2015). The critical habitat in the action area consists of the entirety of Kealia Beach, which is approximately 212 feet (64.62 m) from the project.

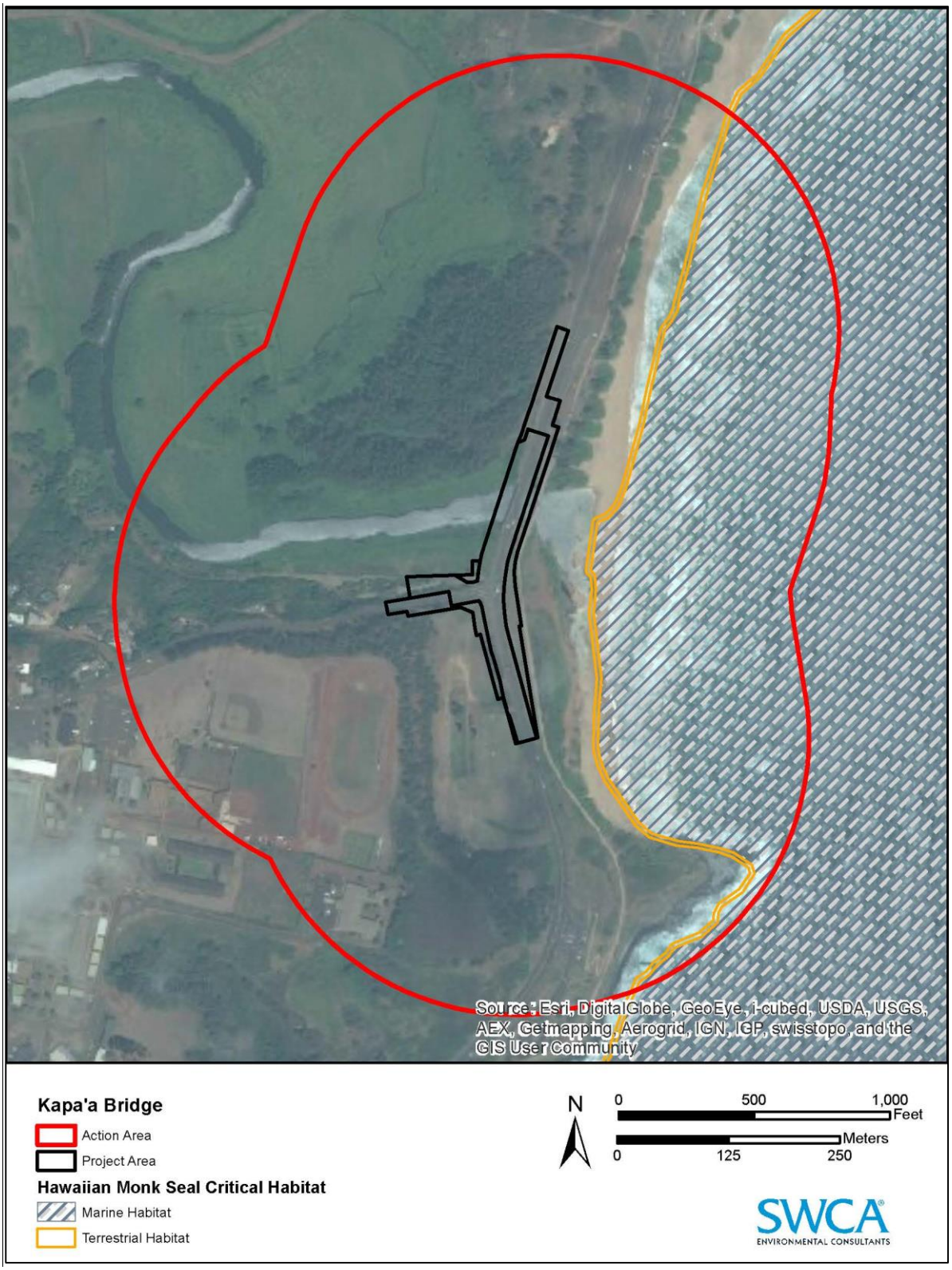

Figure 5. Monk seal critical habitat in the Kapa'a Bridge action area.

6. EFFECTS ANALYSIS

Federally protected species that may be affected by the proposed action are discussed in detail in this section[1]. These species are Hawaiian coot, Hawaiian gallinule, Hawaiian stilt, and Hawaiian duck (collectively referred to as waterbirds); nēnē; Hawaiian petrel, Newell's shearwater, and band-rumped storm petrel (collectively referred to as seabirds); Hawaiian hoary bat; Hawaiian monk seal; and green sea turtle and hawksbill sea turtle (collectively referred to as sea turtles).

6.1.1. Waterbirds

The Hawaiian coot, Hawaiian gallinule, Hawaiian stilt, and Hawaiian duck constitute the waterbird group. Because these species share similar habitat needs and biological characteristics, they can be discussed as a single group. These waterbirds were listed as endangered species in 1967 under the federal ESA and are also listed on the State of Hawaiʻi's Endangered Species List. The Hawaiian coot, Hawaiian gallinule, and Hawaiian duck nest throughout the year. The breeding season for the Hawaiian stilt is between February and August (Robinson et al. 1999).

Hawaiian waterbirds are most likely to be found in areas associated with wetlands and waterways, such as the Strand and Emergent Wetland vegetation types, and Kapaʻa Stream habitats. These waterbirds are found in a variety of wetland habitats such as freshwater marshes and ponds, coastal estuaries and ponds, artificial reservoirs, kalo or taro (*Colocasia esculenta*) loʻi or patches, irrigation ditches, sewage treatment ponds, and in the case of the Hawaiian duck, montane streams and marshlands (USFWS 2011a).

The Hawaiian coot occurs on all the main Hawaiian Islands except Kahoʻolawe, with an estimated population of 1,000–2,000 individuals. On Kauaʻi, the Hawaiian coot is usually found in lowland valleys (USFWS 2014b). The population has been increasing over the past 30 years (Reed et al. 2011; USFWS 2011a). This species is associated with emergent freshwater and brackish water marsh habitat in lowland valleys, reservoirs, and occasionally in high-elevation plunge pools (USFWS 2011). Hawaiian coots forage in mud, sand, on the water surface; can dive in water up to 4 feet (1.21 m) deep; and may graze at grassy sites adjacent to wetlands (USFWS 2011a). Nests are typically built on floating aquatic vegetation or in clumps or wetland vegetation, although nests have been documented on shorelines and rocky islets (USFWS 2011a).

The Hawaiian gallinule is only found on Oʻahu and Kauaʻi. The Kauaʻi population is found in lowland wetlands and valleys. A sizable population is found at the Hanalei National Wildlife Refuge (USFWS 2014b). The overall population is thought to be increasing or stable (Reed et al. 2011; USFWS 2011a). This species favors dense emergent vegetation near open water, floating or barely emergent mats of vegetation, and water depths of less than 3 feet (0.91 m). It prefers freshwater over saline or brackish water. Nest are typically constructed in areas with standing freshwater less than 2 feet (0.60 m) deep by folding emergent vegetation over into a platform. In areas where emergent vegetation is lacking, nests can be made on the ground if tall vegetative cover is nearby (USFWS 2011a).

Hawaiian stilt abundance varied between 1,100 and 1,783 individuals between 1997 and 2007, with fewer than 500 occurring on Kauaʻi (USFWS 2014b, 2011a). The statewide population has been increasing over the past 30 years (Reed et al. 2011; USFWS 2011a). Hawaiian stilts use a variety of aquatic habitats, but they prefer to loaf in open mudflats, sparsely vegetated pickleweed mats, and open pasture lands. Specific water depths of 5 inches (12.7 centimeters [cm]) are required for optimal

[1] Species that become federally listed as endangered or threatened also become listed under the same classification (endangered or threatened) in the State of Hawaiʻi (Hawaii Revised Statutes 195D-4).

foraging. Nest sites are frequently separated from feeding sites, and they are adjacent to or on low islands within bodies of fresh, brackish, or salt water.

The Hawaiian duck population was estimated at 2,525 individuals in 2002, with approximately 2,000 occurring on Kauaʻi and Niʻihau (USFWS 2014b). The Hawaiian duck may use a variety of wetland habitats for nesting and foraging, including freshwater marshes, flooded grasslands, coastal ponds, streams, montane pools, and forest swamplands at elevations ranging from sea level to 9,900 feet (3,000 m) (USFWS 2011a). Nests occur on the ground near water, but little else is known of specific nesting habits (USFWS 2011a).

The most significant causes of decline for all four waterbird species are loss and degradation of wetland habitat and predation by introduced animals (e.g., rat, dog, cat, American bullfrog [*Rana catesbeiana*], fish, and mongoose [*Herpestes javanicus*]). Other factors that have contributed to waterbird population declines include modification of hydrology, alteration of habitat structure and vegetation composition by invasive non-native plants, loss of riparian vegetation and water quality degradation due to grazing, disease, and environmental contaminants (USFWS 2011a).

6.1.1.1. EFFECTS ANALYSIS

The Hawaiian gallinule was the only waterbird observed in the survey area during the 2014 surveys. The Hawaiian coot is known to occur in the area, and the Hawaiian stilt and Hawaiian duck may occur in the Kapaʻa Bridge action area. The vegetated streambanks along the Kapaʻa Stream provide Strand and Emergent Wetland vegetation types that are suitable for foraging and nesting for all four waterbirds.

Permanent removal of foraging and nesting habitat would constitute a long-term *direct* impact. Approximately 3.1 acres (1.26 ha) of upland vegetation would be removed under the proposed action, a portion of which constitutes foraging habitat for waterbirds. Approximately 0.15 acre (0.061 ha) of emergent marsh wetland would also be removed, an area that could serve as nesting habitat for the Hawaiian coot, Hawaiian gallinule, and Hawaiian duck. Of this vegetation removal, 1.8 acre (0.7 ha), or 55%, would be temporary because the area (e.g., staging area and access roads) would be reclaimed following construction. This impact would be discountable due to the small area of impact and availability of adjacent foraging and nesting habitat for displaced waterbirds to use.

Short-term direct impacts to waterbirds could occur if human activity, noise, and removal of vegetation disrupt nesting adults, causing temporary or permanent abandonment of nest, ducklings, and/or chicks, which could in turn increase the likelihood of nest failure, predation, exposure, or trauma. Disturbance to duckling- and/or chick-rearing areas can result in separation of young from adults, which often results in duckling/chick mortality due to predation, exposure, and/or trauma. However, short-term direct impacts are unlikely to occur because of the conservation measures listed for waterbirds in section 2.6.

Human noise and disturbance associated with construction activities could cause a short-term indirect impact by the temporarily displacement of waterbirds and could reduce the amount of nest, roost, and/or forage habitats available. This displacement could alter an individual's typical nesting, foraging, and roosting patterns. This impact would be insignificant because the displacement would only occur while construction activities last.

Because all impacts on the Hawaiian coot, Hawaiian gallinule, Hawaiian stilt, and Hawaiian duck would be discountable or insignificant, the proposed action *may affect, but is not likely to adversely affect*, individuals or populations of these species.

6.1.2. Nēnē

The nēnē is adapted to a terrestrial and largely non-migratory lifestyle in the Hawaiian Islands, with negligible dependence on freshwater habitat. The nēnē is capable of both inter-island and high-altitude flight (Banko et al. 1999; Miller 1937). After nearly becoming extinct in the 1940s and 1950s, the nēnē population has been slowly rebuilt through captive-breeding programs. Wild populations of nēnē occur on Hawai'i, Maui, and Kaua'i, and have recently been documented on O'ahu. The nēnē was listed as an endangered species in 1967 under the ESA and is listed on the State of Hawai'i's Endangered Species List. The population of nēnē was estimated in 2010 at 1,888–1,978 individuals, with the largest population on Kaua'i (USFWS 2011c). Approximately 400 birds were slated to be moved from Kaua'i to Maui, Moloka'i, and Hawai'i under an emergency declaration by then-governor Abercrombie. A significant portion of these birds has been moved to Hawai'i Island.

The nēnē has an extended breeding season, with eggs observed in all months except May, June, and July, although most nest during the rainy season between October and March (Banko et al. 1999; Kear and Berger 1980). Nēnē nest on the ground in a shallow scrape in the dense shade of a shrub or other vegetation. During molt, adults are flightless for a period of 4–6 weeks. Molt occurs after egg hatching, such that the adults generally attain their flight feathers at about the same time as their offspring. When flightless, goslings and adults are extremely vulnerable to predators such as dogs, cats, and mongoose. From June to September, family groups join others in post-breeding flocks, often far from nesting areas.

Nēnē occupy various habitat types including beach strand, shrubland, grassland, and lava rock at elevations ranging from coastal lowlands to alpine areas (Banko 1988; Banko et al. 1999). The geese eat plant material, and the composition of their diet depends largely on the vegetative composition of their surrounding habitats. Most nēnē food items are leaves and seeds of grasses and sedges, leaves and flowers of various herbaceous composites, and fruits of several species of shrubs (Banko et al. 1999; Black et al. 1994). They appear to be opportunistic in their choice of food plants as long as the plants meet their nutritional demands (Banko et al. 1999; Woog and Black 2001).

The main factor limiting the recovery of nēnē populations is predation by introduced mammals, most notably cats, rats, and mongoose (USFWS 2004). Additional threats include limited access or availability to nutritional resources during breeding, and anthropomorphic disturbances, including car strikes, disturbance of nesting and feeding, and fatalities at golf courses. Breeding habitat, particularly at low elevations, may be limited (USFWS 2004).

6.1.2.1. EFFECTS ANALYSIS AND DETERMINATION

Although nēnē were not observed during the field surveys, suitable nesting and foraging habitat is present in the Strand and Ruderal vegetation types along the river banks (see Appendix A, Figure A1).

Permanent removal of foraging and nesting habitat would constitute a long-term *direct* impact. Approximately 3.1 acres (1.26 ha) of upland vegetation would be removed under the proposed action, only a portion of which is currently suitable for nēnē. Of this vegetation removal, roughly 1.8 acre (0.7 ha), or 55%, would be temporary because the areas (e.g., staging area and access roads) would be reclaimed following construction. This impact would be discountable due to the small area of impact and availability of adjacent foraging and nesting habitat for displaced nēnē to use.

In the short term, the human noise and disturbance associated with construction activities could temporarily displace nēnē from foraging habitat. Displacement from available forage could impact the health of these individuals; however, because a small amount of foraging habitat would be removed, it

would not likely affect nest success or population growth. Furthermore, abundant foraging habitat is available adjacent to the project area along the Kapa‘a Stream, into which the nēnē could move.

Implementation of the proposed action would not increase the potential for vehicle strike. This is because the replacement bridge would not increase the width of the current bridge (two 12-foot-wide [3.65-m-wide] travel lanes); therefore, the distance at which the birds would be susceptible to vehicle strike while crossing the bridge would not change. Wildlife is more susceptible to vehicle strike on roads with higher speeds (Forman et al. 2002). The posted speed on the bridge is 40 miles per hour (64.37 kph) and would remain so under the proposed action; therefore, the potential for vehicle strikes would remain the same.

Because all impacts on the nēnē would be discountable, the proposed action *may affect, but is not likely to adversely affect*, individuals or populations of the species.

6.1.3. Seabirds

The endangered Hawaiian petrel, threatened Newell’s shearwater, and proposed endangered band-rumped storm-petrel constitute the seabirds group. Because these species share similar habitat needs and biological characteristics, they are discussed as a single group.

The Hawaiian petrel was listed as an endangered species on March 11, 1967 and is listed on the State of Hawai‘i's Endangered Species List. The Hawaiian petrel was once abundant on all main Hawaiian Islands except Ni‘ihau (Mitchell et al. 2005). The population was most recently estimated to consist of approximately 20,000 individuals, with 4,000–5,000 breeding pairs (Spear et al. 1995).

The Newell’s shearwater was listed as a threatened species by the USFWS in 1975 and is listed as threatened by the State of Hawai‘i. The largest breeding population of Newell’s shearwater occurs on Kaua‘i (Ainley et al. 1995, 1997; Day et al. 2003; Telfer et al. 1987). This species has also been documented on Hawai‘i (Reynolds et al. 1997), Moloka‘i (Day and Cooper 2002), and O‘ahu (Day and Cooper 2008).

The band-rumped storm petrel is a proposed for listing as endangered and is on the State of Hawai‘i's Endangered Species List. Listing of the band-rumped storm petrel under the ESA is anticipated to occur in 2016. Band-rumped storm petrels are considered the rarest breeding seabird in Hawai‘i (Banko et al. 1991; Slotterback 2002). In the Pacific Ocean, breeding colonies have been documented only in the Galapagos Islands, Japan, the Hawaiian Islands, and possibly Cocos Island near Costa Rica (Pyle and Pyle 2009; USFWS 2012).

The types of habitat used for seabird nesting are diverse and range from xeric environments with little or no vegetation, such as at Haleakalā National Park on Maui, to wet forests dominated by ‘ōhi‘a (*Metrosideros polymorpha*) with uluhe (*Dicranopteris linearis*) understory, such as those found on Kaua‘i (Mitchell et al. 2005). Nests are located in various naturally occurring features such as lava tubes, cracks in tumuli (fractured hills on the surface of pāhoehoe flows), spaces created by uplift of pāhoehoe slabs, and other miscellaneous natural features (Hu et al. 2001; Mitchell et al. 2005; Pyle and Pyle 2009).

The main factors contributing to population declines of these ground-nesting seabirds are habitat degradation; the loss of nesting habitat; predation of eggs, hatchlings, and adults at nesting sites by introduced mammals (e.g., dog, mongoose, cat, rat, and pig [*Sus scrofa*]); and urban lighting associated with disorientation and fall-out of juvenile birds (Ainley et al. 1997; Banko et al. 1991; Hays and Conant 2007; Mitchell et al. 2005).

6.1.3.1. EFFECTS ANALYSIS AND DETERMINATION

The action area does not provide suitable nesting or foraging habitat for these seabirds. However, breeding individuals may fly over the action area at night while travelling between upland nesting and ocean foraging sites. Disorientation and fall-out as a result of light attraction could occur to individuals attracted to nighttime construction lighting. The conservation measures regarding nighttime lighting, as listed in section 2.6, would avoid and minimize the potential for light-attraction impacts to these species. Conservation measures include working during daylight hours, turning off unnecessary lights during the peak seabird fallout period, and shielding night time lighting to prevent upward radiation. Implementation of these measures would reduce the potential for adverse impacts to unlikely and discountable.

Because all impacts on the Hawaiian petrel and Newell's shearwater would be discountable, the proposed action *may affect, but is not likely to adversely affect*, individuals or populations of these species.

Because all impacts on the band-rumped storm petrel would be discountable, the proposed action is *not likely to jeopardize the continued existence* of individuals or populations of the species.

6.1.4. Hawaiian Hoary Bat

The Hawaiian hoary bat was listed as an endangered species on October 13, 1970, under the ESA and is listed on the State of Hawai'i's Endangered Species List. The Hawaiian hoary bat is found on Hawai'i, Maui, Moloka'i, O'ahu, and Kaua'i, and has been observed from sea level to approximately 13,000 feet (3,963 m) (USFWS 2014b).

The Hawaiian hoary bat is the only native terrestrial mammal that is still extant within the Hawaiian Islands (USFWS 1998). Hawaiian hoary bats use both closed habitats near vegetation such as tunneled roadways, and open habitats adjacent to forests, above tree canopies, and over open oceans (Jacobs 1996). Hawaiian hoary bats are insectivores and are regularly observed foraging over streams, reservoirs, and wetlands up to 300 feet (100 m) offshore (U.S. Department of Agriculture 2009). Hawaiian hoary bats forage in open, wooded, and linear habitats within a wide range of vegetation types (USFWS 2014b). The bat typically roosts in dense canopy foliage or in the subcanopy when canopy is sparse, with open access for launching into flight (U.S. Department of Agriculture 2009).

Hawaiian hoary bats are believed to be threatened by habitat loss, pesticides, predation, and roost disturbance. Reduction of tree cover and indirect impacts from the use of pesticides may be the primary causes of recent declines (USFWS 2014b).

6.1.4.1. EFFECTS ANALYSIS AND DETERMINATION

Acoustic surveys for Hawaiian hoary bats were not conducted, but areas of suitable habitat for roosting and foraging were noted during the biological survey. The Kapaʻa Stream corridor and the Ruderal and Emergent Wetland vegetation types in the action area are suitable for bat foraging. The Hawaiian hoary bat has been observed roosting in coconut trees and therefore could roost in the Strand vegetation habitat (see Appendix A, Figure A1) type in the action area.

Direct impacts on bats could occur during vegetation removal if a juvenile bat that is too small to fly but too large to be carried by a parent is present in a tree or branch that is cut down. However, because of the conservation measure that trees would not be cut during the breeding season (June 1 through September 15), direct impacts are unlikely to occur. The potential for direct impacts would also be reduced by ensuring the top wire strand of surrounding fences (if present) is barbless, as listed in the conservation measures.

In the short term, the human noise and disturbance associated with construction activities could temporarily displace bats from roosting and/or foraging habitats. This displacement could alter an individual's typical foraging and roosting patterns, forcing it to expend energy to search for new foraging and roosting locations. Displacement from roosting habitat could lead to increased predation on individual bats, especially if a bat is forced to leave its roost during daylight hours, making it more visible to potential predators. The potential for these impacts is low considering the project would occur on and immediately adjacent to a heavily traveled roadway, and therefore the bats present would already be accustomed to high levels of background noise. Furthermore, high-quality roosting and foraging areas occur in the action area, into which bats could be displaced.

Because all impacts on the Hawaiian hoary bat would be discountable or insignificant, the proposed action *may affect, but is not likely to adversely affect*, individuals or populations of the species.

6.1.5. Hawaiian Monk Seal

The Hawaiian monk seal is one of the rarest marine mammals on earth. The Hawaiian monk seal is listed as endangered under the ESA and is listed on the State of Hawai'i's Endangered Species List. It is also protected by the Marine Mammal Protection Act of 1972.

Hawaiian monk seals spend most of their lives at sea, but also rely on land habitat for resting, molting, pupping, nursing, and avoiding marine predators. Monk seals can often be seen hauling-out on sand, corals, and volcanic rock to rest during the day and to give birth, preferring protected beaches surrounded by shallow waters when pupping (NOAA NMFS 2015b). Pupping has been observed in a variety of terrestrial coastal habitats mostly consisting of sandy, protected beaches adjacent to shallow sheltered aquatic areas (NOAA 2015).

Hawaiian monk seals are considered foraging generalists, and the characteristics of their foraging habitat are variable. They generally hunt outside of the immediate shoreline in waters 60–300 feet (18–90 m) deep, but have been known to forage at depths of up to 1,000 feet (330 m) (NOAA NMFS 2015b). There are also accounts of seals traveling up rivers and streams, particularly on Hawai'i Island and Kaua'i, to feed and rest (personal communication, C. Littnan, NMFS, September 3, 2015).

The best current population estimate provided for the Hawaiian monk seal is 1,209 individuals (Carretta et al. 2013). The population is often discussed and managed as two subpopulations, even though they are not genetically distinct. One subpopulation occurs in the NWHI and one occurs in the MHI. Seals from the MHI subpopulation may occur in the action area.

Approximately 85% of the Hawaiian monk seal population occurs in the NWHI. The MHI subpopulation was estimated at 150–200 individuals in 2011 (personal communication, C. Littnan, NMFS, August 18, 2015). Seal abundance in the NWHI subpopulation remains in decline. The MHI subpopulation is experiencing increasing abundance and reproductive success, which is thought to be a result of a lower overall seal density and the lack of large predators that compete for food and kill pups (NOAA NMFS 2007). Trends in abundance may also be linked to changes in ocean productivity that are determined by various climate patterns (NOAA 2015).

Threats to Hawaiian monk seals differ in each subpopulation. In the MHI subpopulation, human threats in the form of interactions with fishing gear, boat strikes, disturbances of mothers and their pups on beaches, and exposure to disease are threats. Other threats include loss of haul-out and pupping beaches due to erosion, male aggression toward females, and low genetic diversity (Antonelis et al. 2006; Johanos et al. 2010; NOAA NMFS 2015b). Shark predation, food limitation, competition, and entanglement in marine

debris are threats to the NWHI subpopulation. The subpopulation in the low-lying NWHI is particularly susceptible to the habitat loss as a result of climate change.

6.1.5.1. EFFECTS ANALYSIS AND DETERMINATION

Monk seals may occur in the action area. Between 2005 and 2014, there were 184 reported sightings of monk seals at Kealia Beach. Of these sightings, 112 reports consisted of 26 uniquely identifiable seals (Mercer 2015). During aerial surveys in 2000, 2001, and 2008, no Hawaiian monk seals were sighted in the action area, and they were not incidentally observed during SWCA's field surveys. Suitable foraging habitat is present in the nearshore marine waters and riverine habitat of the action area (see Figure 5). Suitable haul-out and pupping habitat is present on Kealia Beach, which is a sandy and protected beach adjacent to a shallow and sheltered aquatic area. Although suitable pupping habitat is present, no monk seal pups are known to have been born in the action area.

Monk seals could also be temporarily displaced from nearshore marine and riverine foraging areas during construction. Sound waves generated by percussive pile driving can affect marine mammals in several ways such as altered behavior, physical injury, or even mortality. However, evidence suggests that Hawaiian monk seals have less sensitive hearing in water than do other pinnipeds (Muñoz et al. 2011); therefore, the magnitude of noise impacts may be less for monk seals foraging in the water. Conservation measures regarding the Kealia Beach sand bar would ensure monk seals would not be displaced from the nearshore marine environment due to underwater noise (section 2.6), although they could still be displaced due to noise occurring above the water. If monk seals are displaced from nearshore marine habitats, they would flee to deeper waters or to other foraging locations along the shoreline. Displacement from riverine foraging habitat would not have a significant impact on monk seals, because foraging individuals could find similar resources upstream or downstream from the construction site or return to marine habitats. Furthermore, if construction in the wetted channel were to take place when the Kealia Beach sand bar was breached in such a way that underwater noise could reach the marine environment, conservation measures would be followed regarding the use of cofferdams so that all work would be conducted where it is dry. This would eliminate underwater noise disturbances in both the riverine and marine environments.

Female monk seals could be discouraged from pupping on Kealia Beach due to the noise and human activity associated with construction. These females would be displaced into other pupping areas north or south of the action area. However, because pupping has never been observed on that beach, this effect is discountable and unlikely. The female and pup would be afforded a 300-foot (91.44-m) buffer (section 2.6), ensuring that no direct effects to the mother and pup would occur.

In the short term, activities associated with construction (noise, movement of equipment, light) could temporarily displace monk seals from preferred haul-out areas that occur within the Kapa'a Bridge action area. Evidence from observations of individuals from the MHI subpopulation suggests that basking Hawaiian monk seals are surprisingly tolerant of human activity (NOAA NMFS 2015c). When disturbed, the response is usually for the seal to return to the water. Temporary displacement from haul-out sites could alter an individual's typical energetic expenditure, forcing it to seek out other haul-out sites.

Disturbance from harassment by construction workers would not occur because workers would be informed not to feed, touch, ride, or otherwise intentionally interact with any listed species, including the monk seal. Construction activities would not occur if a monk seal is in the construction area or within 150 feet (46 m) of the construction area. Construction would only begin after the animal voluntarily leaves the area.

Because monk seal conservation measures (shielded nighttime lighting, buffers from individuals and pups, preventing human interaction, and reducing underwater noise) would be taken, direct impacts would

be insignificant. The primary threats to monk seals in the MHI (entanglement in fishing gear, impact from boats, and predation by fishermen) are not expected to increase as a result of the proposed action.

Indirect harm from the accidental introduction of contaminants or construction-related debris into Kapa'a Stream has the potential to reduce water quality in the bay. However, these impacts would be unlikely and discountable because conservation measures, such as those described in section 2.6, would be in place to minimize the potential for spills and contamination. These conservation measures include fueling equipment away from the water, inspecting and cleaning all equipment before daily operations, training personnel for emergency spill prevention, and cleaning all potential contaminants from the site.

Because all impacts on the Hawaiian monk seal would be discountable or insignificant, the proposed action *may affect, but is not likely to adversely affect*, individuals or populations of the species.

6.1.5.2. CRITICAL HABITAT EFFECTS ANALYSIS AND DETERMINATION

There is no monk seal designated critical habitat in the project area; therefore, no direct effects would occur on designated critical habitat. However, recently designated monk seal terrestrial critical habitat occurs within the action area, with surrounding waters designated as marine critical habitat for the Hawaiian monk seal (see Figure 5). The essential critical habitat features for this species are 1) terrestrial areas and adjacent shallow, sheltered aquatic areas with characteristics preferred for pupping and nursing; 2) marine areas from 0 to 656 feet (0 to 200 m) deep that support adequate prey quality and quantity for juvenile and adult monk seal foraging; and 3) significant areas used by monk seals for hauling out, resting, or molting.

Indirect effects on these three features consist of temporary construction impacts to water quality (turbidity, siltation, pollutants, and debris) and noise and light disturbances. Impacts on water quality would be discountable due to implementation of best management practices (BMPs) that would maintain water quality. Low levels of light and noise from the construction activities could impact critical habitat; however, the conservation measures regarding nighttime lighting, as listed in section 2.6, would minimize the impact of lighting, reducing it to an unlikely and discountable impact. In-air noise levels elevated to the point at which Hawaiian monk seal behavior is disrupted would be unlikely due to the distance of the critical habitat from construction activities (approximately 262 feet [80 m] at a minimum) coupled with vegetation shielding. Underwater noise impacts in the marine environment would not occur due to the conservation measures regarding the Kealia Beach sand bar (section 2.6). Noise and light effects would occur in the short term, and would cease after construction is completed.

Because all impacts on the Hawaiian monk seal critical habitat would be discountable or insignificant, the proposed action *is not likely to destroy or adversely modify* critical habitat of the species.

6.1.6. Sea Turtles

The green and hawksbill sea turtles constitute the sea turtle group. Because these species share similar habitat requirements and biological characteristics, as well as potential project impacts and conservation measures, they can be discussed as a single group. No sea turtle critical habitat has been designated in the waters of Hawai'i.

The green sea turtle is widely distributed throughout the world and found primarily in tropical and subtropical waters. They are the most common sea turtle found in the Hawaiian archipelago. Green turtles in Hawai'i are genetically distinct from other green sea turtle populations (Bowen et al. 1992). In 1978, the species was listed as threatened throughout most of its range, except for the breeding populations in

Florida and Mexican Pacific Coasts, which were listed as endangered (USFWS and NOAA 2015). The green turtle is also listed as threatened by the State of Hawai'i. Green sea turtles are generally common along all coastlines of the MHI from the shore out to at least the 100-foot (30.48-m) bathymetry contour, and they are expected to use the coastal waters and shoreline within the action area and have been have been observed transiting Hawai'i rivers up to 2 miles (3 km) inland (Clarke et al. 2012).

The hawksbill sea turtle was listed as an endangered species in 1970 and is listed on the State of Hawai'i's Endangered Species List. The hawksbill sea turtle is found circumtropically in waters of the Atlantic, Pacific, and Indian Oceans. Current global estimates are between 60,000 and 78,000 nesting adult female hawksbills. One hundred adult females were tagged on the Island of Hawai'i between 1991 and 2009 (Sietz et al. 2012). Hawksbill sea turtle hatchlings are believed to inhabit the pelagic environment, taking shelter in floating algal mats and drift lines of flotsam and jetsam. After a few years, small juveniles recruit to coastal foraging grounds (NOAA NMFS 2014). Coral reef ledges and caves provide shelter for resting hawksbill sea turtle both during the day and at night. Hawksbill sea turtles are known to exhibit high site fidelity, returning to the same resting spot night after night. They can also be found near rocky outcrops and high energy shoals, which are optimum sites for sponge growth, a preferred species of forage (NOAA NMFS 2014).

In Hawai'i, disease and habitat loss (i.e., coral reef communities) are the primary threats to the green and hawksbill sea turtle, respectively. Other threats include marine debris (e.g., ingestion and entanglement), boat strikes, water contamination (e.g., runoff, dredging and noise), harvesting (e.g., eggs, consumption, and commercial product), loss or degradation of nesting habitat (e.g., artificial lighting and encroaching non-native vegetation), and nest and hatchling predation (NOAA NMFS 2015d).

6.1.6.1. EFFECTS ANALYSIS AND DETERMINATION

No sea turtles were incidentally observed during SWCA's field survey, but suitable habitat for basking, nesting, foraging, and predator avoidance was noted. Kealia Beach provides suitable beach habitat for basking and nesting, the surrounding marine waters provide suitable foraging and resting habitat, and the Kapa'a Stream provides foraging and predator avoidance habitat.

Construction activities (e.g., noise and light) could impact sea turtles by displacing individuals from the beach, marine, and riverine habitats in the Kapa'a action area. This displacement could alter an individual's typical energy expenditure by forcing it to search for new foraging and basking locations. If they are disturbed, the likely response would be to return to the shallow water's edge and swim away.

Noise and light from construction may also temporarily discourage turtles from using the area as a nesting location. With regard to noise, the main concern would be loud, low-frequency sounds during the nesting period. Conservation measures regarding the Kealia Beach sand bar would ensure sea turtles would not be displaced from the nearshore marine environment by underwater noise (section 2.6), although they could still be displaced due to noise occurring above the water. If sea turtles are displaced from nearshore marine habitats, they would flee to deeper waters or to other foraging locations along the shoreline. Displacement from riverine foraging habitat would not have a significant impact on sea turtles, because foraging individuals could find similar resources upstream or downstream from the construction site or return to marine habitats. Furthermore, if construction in the wetted channel were to take place when the Kealia Beach sand bar was breached in such a way that underwater noise could reach the marine environment, conservation measures would be followed regarding the use of cofferdams so that all work would be conducted where it is dry. This would eliminate underwater noise disturbances both in the riverine and marine environments.

Increased lighting during the breeding season evening hours is likely to dissuade turtles from emerging to lay eggs on afflicted beaches. Artificial lighting is known to disorient hatchlings, which orient toward brighter lights after emerging from their nest. The conservation measures regarding nighttime lighting, such as restricting construction work to daylight hours and using shielded lights (see section 2.6), would minimize the impact of lighting, reducing it to an unlikely and discountable impact.

Human-related disturbance (e.g., harassment) and mortality (e.g., impact from boat propellers, gill net entanglement, and fishing activities) are not likely to increase as a result of the proposed action. The implementation of the conservation measures in section 2.6 regarding nighttime lighting (e.g., not working within 150 feet [46 m] of sea turtles, removing construction-related entanglement threats and potential for human interaction, and using shielded lighting) would reduce construction activities to an unlikely and discountable impact.

Indirect harm from the accidental introduction of contaminants or construction-related debris into Kapa'a Stream has the potential to reduce water quality in the bay. However, the potential for these impacts would also be unlikely and discountable by ensuring appropriate BMPs are in place, as described in the conservation measures. These include fueling equipment away from the water, inspecting and cleaning all equipment before daily operations, training personnel for emergency spill prevention, and cleaning up. To avoid exacerbating the incidences of disease such as fibropapillomatosis in green sea turtles as a result of the proposed action, BMPs would be implemented to ensure that the proposed action does not increase nitrogen or other nutrient loads to nearshore waters. These contaminants are known to promote algae growth into the surrounding waters (Smith et al. 2010).

Because all impacts on sea turtles would be discountable or insignificant with BMPs, the proposed action *may affect, but is not likely to adversely affect*, individuals or populations of the species.

7. CONCLUSION

In conclusion, the proposed project *may affect, but is not likely to adversely affect*, the federally listed Hawaiian petrel, Newell's shearwater, Hawaiian stilt, Hawaiian coot, Hawaiian gallinule, Hawaiian duck, nēnē, green sea turtle, hawksbill sea turtle, Hawaiian hoary bat, and Hawaiian monk seal. The proposed project is *not likely to jeopardize the continued existence* of the band-rumped storm petrel, which is proposed for listing. The proposed project *is not likely to destroy or adversely modify* critical habitat of the Hawaiian monk seal.

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Appendix A

Photographs of the Survey Area

Figure A1. Native pōhuehue with the Strand vegetation type makai of Kapa‘a Bridge.

Figure A2. Dense mat of non-native California grass makai of Kapa‘a Stream.

Figure A3. Emergent Wetland vegetation type on the mauka (inland) side of the bridge dominated by California grass.

Appendix D
Draft Archaeological Inventory Survey Report for the Kapaa Stream Bridge Replacement Project, Kapaa and Kealia Ahupuaa, Kawaihau District, Kauai, June 2016

Draft

Archaeological Inventory Survey Report for the Kapa‘a Stream Bridge Replacement Project, Kapa‘a and Keālia Ahupua‘a, Kawaihau District, Kaua‘i, Federal Highway Administration/ Central Federal Lands Highway Division (FHWA/CFLHD) contract DTFH68-13-R-00027

TMKs: [4] 4-6-014:024 por., 033 por., 090 por., 092 por. Kūhiō Highway and Mailihuna Road Rights-of-Way, 4-7-003:001 por., and 4-7-008:042 por. Kūhiō Highway Right-of-Way

Prepared for
CH2M HILL
and on behalf of the
Federal Highway Administration (FHWA)
Central Federal Lands Highway Division (CFLHD)

Prepared by
Scott A. Belluomini, B.A.,
Trevor M. Yucha, B.S.,
and
Hallett H. Hammatt, Ph.D.

Cultural Surveys Hawai‘i, Inc.
Kailua, Hawai‘i
(Job Code: KAPAA 14

March 2016

O‘ahu Office
P.O. Box 1114
Kailua, Hawai‘i 96734
Ph.: (808) 262-9972
Fax: (808) 262-4950

www.culturalsurveys.com

Maui Office
1860 Main St.
Wailuku, Hawai‘i 96793
Ph.: (808) 242-9882
Fax: (808) 244-1994

Management Summary

Reference	Archaeological Inventory Survey Report for the Kapa‘a Stream Bridge Replacement Project, Kapa‘a and Keālia Ahupua‘a, Kawaihau District, Kaua‘i, Federal Highway Administration/Central Federal Lands Highway Division (FHWA/CFLHD) contract DTFH68-13-R-00027, TMKs: [4] 4-6-014:024 por., 033 por., 090 por., 092 por. Kūhiō Highway and Mailihuna Road Rights-of-Way, 4-7-003:001 por., and 4-7-008:042 por. Kūhiō Highway Right-of-Way (Belluomini et al. 2015)
Date	March 2016
Project Number(s)	• FHWA/CFLHD contract code: DTFH68-13-R-00027 • CH2MHILL Project Task ID: 499068.11.SU.CS • Cultural Surveys Hawai‘i, Inc. (CSH) Job Code: KAPAA 14
Investigation Permit Number	CSH completed the archaeological inventory survey (AIS) fieldwork under archaeological permit number 15-03, issued by the Hawai‘i State Historic Preservation Division (SHPD) per Hawai‘i Administrative Rules (HAR) §13-13-282.
Agencies	FHWA/CFLHD, SHPD
Land Jurisdiction	State of Hawai‘i; State Department of Transportation (HDOT); State Department of Education (DOE); County of Kaua‘i; and Roman Catholic Church
Project Funding	FHWA/CFLHD
Project Location	The project area is located near mile post 10 on Route 56 (Kūhiō Highway) at the Kapa‘a Stream crossing. The project area is depicted on a portion of the 1996 Kapaa U.S. Geological Survey (USGS) topographic quadrangle.
Project Description	The proposed project would reconfigure the intersection of HI-56 and Mailihuna Road to improve traffic operations, safety, and local access and would replace the existing Kapa‘a Bridge to maintain the Kapa‘a Stream crossing on HI-56 as a safe and functional component of the regional transportation system for highway users. The intersection of HI-56 and Mailihuna Road would be reconfigured to improve traffic operations and pedestrian safety. Two alternatives are being considered: the first is a traffic signalized intersection and the second is a roundabout intersection. The traffic signalized intersection would provide a 170-foot northbound left turn lane and a 145-foot southbound right turn lane to Malihuna Road from HI-56. The roundabout would be a single lane circle providing access to HI-156 and Malihuna Road. Marked crosswalks and devices would be provided on all approaches, and improved signage and street lighting would be installed to improve safety and mobility for non-motorized modes

	crossing HI-56. Drainage improvements would also be installed to prevent flooding at the intersection. The existing Kapa‘a Bridge does not meet the current roadway standards for width and bridge standards for live loading and seismic requirements, and the existing bridge railings and approach railings do not meet current crash test requirements. Therefore, the bridge will be demolished and replaced with a single-span 190-foot long bridge. The new structure would be approximately 4 feet wider, accommodating two 12-foot travel lanes, two 8-foot shoulders, and guardrails on both sides. The bridge is a typical post-World War II bridge and is not considered eligible for listing on the National Register of Historic Places (NRHP). During construction, Kapa‘a Bridge would be closed to traffic, and a temporary bypass road and bridge would be constructed *makai* of the existing bridge, between the existing bridge and the adjacent pedestrian trail, to maintain traffic over Kapa‘a Stream. The adjacent pedestrian bridge would not be impacted. The proposed improvements at the HI-56 and Mailihuna Road intersection would occur within HDOT right-of-way and adjacent private property. The Kapa‘a Bridge replacement would occur entirely within HDOT right-of-way. Construction parcels (temporary easements) would be needed for the temporary bypass road, construction zone, and staging areas.
Project Acreage	The project area includes approximately 4.9 acres (2.0 hectares)
Area of Potential Effect (APE)	The APE for the current project is defined as the entire 4.9-acre (2.0-hectare) project area.
Historic Preservation Regulatory Context	This AIS investigation was designed to comply with both Federal and Hawai‘i State environmental and historic preservation review legislation. Due to federal funding, this project is a federal undertaking, requiring compliance with Section 106 of the National Historic Preservation Act, the National Environmental Policy Act, and Section 4(f) of the Department of Transportation Act. The proposed project is also subject to Hawai‘i State environmental and historic preservation review legislation (Hawai‘i Revised Statutes [HRS] §343 and HRS §6E-8/ HAR §13-275, respectively). In consultation with the SHPD, this AIS investigation fulfills the requirements of HAR §13-13-276 and the *Secretary of the Interior’s Standards for Archaeology and Historic Preservation*. It was conducted to identify, document, and make National Register and Hawai‘i Register of Historic Places (Hawai‘i Register) eligibility recommendations[1] for any cultural resources/historic properties[2]. This report is also intended to support any project-related historic preservation consultation with

	stakeholders such as State and County agencies and interested Native Hawaiian Organizations (NHOs) and community groups, if applicable. Portions of the current project area have been subject to previous archaeological studies. The northern portion of the project area was included within a large archaeological reconnaissance survey of Keālia Ahupua'a (Hammatt and Chiogioji 1998). No cultural resources were reported within or near the current project area. The western (*mauka*; toward the mountains) portion of the project area along Kūhiō Highway was subject to archaeological monitoring during the installation of the Kaua‘i Rural Fiber-optic Duct Lines (Dega and Powell 2003). No cultural resources were reported within the current project area.
Fieldwork Effort	The fieldwork component of this AIS consists of a 100% pedestrian survey and subsurface testing. Fieldwork was conducted on 13 June 2015 by CSH archaeologists Missy Kamai, B.A., Tom Martel, B.A., and Richard Stark, Ph.D. under the general supervision of principal investigator Hallett H. Hammatt, Ph.D. This work required approximately 4 person-days to complete.
Consultation	The Kapa‘a Stream Bridge Replacement project is a HDOT and FHWA/CFLHD partnership project, which includes numerous proposed bridge improvement and replacement projects in the State of Hawai‘i. Presently, National Historic Preservation Act Section 106 consultation with community, agency, and Native Hawaiian Organizations has been initiated and is on-going. Cultural consultation is also being conducted by CSH for a cultural impact assessment (CIA) for Kapa‘a Stream Bridge (Liborio and Hammatt 2015). No cultural resources have been assessed as having traditional cultural significance to an ethnic group (Criterion "e") within the project area.
Cultural Resources Identified	The AIS identified two cultural resources and relocated two previously documented cultural resources. In consultation with the SHPD architecture branch, it was determined that the Kapa‘a Stream Bridge (SIHP # 50-30-08-2278) is not eligible to the National and/or Hawai‘i Registers pursuant to 36 CFR 60.4 and HAR §13-198-8 and not significant pursuant to HAR §13-275-6. At the request of the SHPD, architectural recordation was not conducted. SIHP # -2279, a possibly historic water control complex, is evaluated for significance under §13-275-6 Criterion "d" (have yielded, or is likely to yield, information important for research on prehistory or history), and recommended eligible to both the Hawai‘i and National Registers under Criterion D. The cultural resource possesses integrity of location, design, and materials. The AIS has sufficiently documented the information content of SIHP # -2279 within the APE.

	SIHP # -0789A, Sub-Feature 1 consists of the remnant portions of the original Keālia Stream Bridge Crossing initially documented by Perzinski et al. (2000) and further documented by Bushnell et al. (2003). Perzinski et al. (2000) and Bushnell et al. (2003) assessed the bridge crossing remnants (SIHP # -789A, Feature 1) as significant under Criterion “d” (have yielded, or is likely to yield, information important for research on prehistory or history) of the State of Hawai‘i significance criteria; however, the bridge crossing remnants lacking integrity of design, materials, workmanship, feeling and association, the bridge crossing remnants (SIHP # -789A, Feature 1) is evaluated as not a significant cultural resource as it is not eligible to the National Register and Hawai‘i Register pursuant to 36 CFR 60.4 and HAR §13-198-8. SIHP # -2075 consists of the remnant abutments of the former Kaua‘i Belt Road, Keālia Bridge initially documented by Bushnell et al. (2003). Bushnell et al. 2003 assessed SIHP # -2075 as significant under Criterion “d” (have yielded, or is likely to yield, information important for research on prehistory or history) of the State of Hawai‘i significance criteria; however, due to the bridge remnants lacking integrity of design, materials, workmanship, feeling and association, the old belt highway bridge remnants (SIHP # -2075) is evaluated as not eligible for listing on the National Register and Hawai‘i Register pursuant to 36 CFR 60.4 and HAR §13-198-8.
Effect Recommendation	In accordance with Federal regulations (36 CFR 800.5), CSH’s project-specific effect recommendation is “adverse effect.” Under Hawai‘i State historic preservation review legislation, the project’s effect recommendation is “effect, with agreed upon mitigation commitments” (in accordance with HAR §13-13-275-7).
Mitigation Recommendations	Archaeological recordation (a form of archaeological data recovery) is recommended for SIHP #s -2278, -2279, 0789A Sub-Feature 1, and -2075. This archaeological recordation has been completed during the course of AIS fieldwork and is included in this report. No further archaeological work is recommended for the proposed project.

[1]Cultural resource significance is evaluated and expressed as eligibility for listing on the National and/or Hawai‘i Registers. To be considered eligible for listing on the National and/or Hawai‘i Registers a cultural resource should possess integrity of location, design, setting, materials, workmanship, feeling, and/or association and meet one or more of the following broad cultural/historic significance criteria: “A” reflects major trends or events in the history of the state or nation; “B” is associated with the lives of persons significant in our past; “C” is an excellent example of a site type/work of a master; and “D” has yielded or may be likely to yield information important in prehistory or history.

[2]In historic preservation parlance, cultural resources are the physical remains and/or geographic locations that reflect the activity, heritage, and/or beliefs of ethnic groups, local communities, states, and/or nations. Generally, they are at least 50 years old (although there are exceptions) and include buildings and structures; groupings of buildings or

structures (historic districts); certain objects; archaeological artifacts, features, sites, and/or deposits; groupings of archaeological sites (archaeological districts); and, in some instances, natural landscape features and/or geographic locations of cultural significance.

Historic properties, as defined under Federal historic preservation legislation (36 CFR 800.16), are any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization that meet the National Register criteria. Determinations of eligibility are generally made by a federal agency official in consultation with the SHPD. Under Federal legislation, a project's (undertaking's) potential effect on historic properties must be evaluated and potentially mitigated. Under Hawai‘i State historic preservation legislation, historic properties are defined as any cultural resources that are 50 years old, regardless of their historic/cultural significance under State law, and a project's effect and potential mitigation measures are evaluated based on the project's potential impact to "significant" historic properties (those historic properties assessed as significant under the five broad State of Hawai‘i significance criteria).

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Section 1 Introduction

1.1 Project Background

At the request of CH2M HILL and on behalf of the Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD), Cultural Surveys Hawai‘i, Inc. (CSH) completed this archaeological inventory survey report for the Kapa‘a Stream Bridge Replacement project, Kapa‘a and Keālia Ahupua‘a, Kawaihau District, Kaua‘i, FHWA/CFLHD contract DTFH68-13-R-00027 TMKs: [4] 4-6-014:024 por., 033 por., 090 por., 092 por. Kūhiō Highway and Mailihuna Road Rights-of-Way, 4-7-003:001 por., and 4-7-008:042 por. Kūhiō Highway Right-of-Way. The project area is located near mile post 10 on Route 56 (Kūhiō Highway) at the Kapa‘a Stream crossing. The project area is depicted on a portion of the 1996 Kapaa U.S. Geological Survey (USGS) topographic quadrangle (Figure 1), tax map plats (Figure 2 and Figure 3), and an aerial photograph (Figure 5).

The proposed project would reconfigure the intersection of HI-56 and Mailihuna Road to improve traffic operations, safety, and local access and would replace the existing Kapa‘a Bridge to maintain the Kapa‘a Stream crossing on HI-56 as a safe and functional component of the regional transportation system for highway users.

The intersection of HI-56 and Mailihuna Road would be reconfigured to improve traffic operations and pedestrian safety. Two alternatives are being considered: the first is a traffic signalized intersection and the second is a roundabout intersection. The traffic signalized intersection would provide a 170-foot northbound left turn lane and a 145-foot southbound right turn lane to Malihuna Road from HI-56. The roundabout would be a single lane circle providing access to HI-156 and Malihuna Road. Marked crosswalks and devices would be provided on all approaches, and improved signage and street lighting would be installed to improve safety and mobility for non-motorized modes crossing HI-56. Drainage improvements would also be installed to prevent flooding at the intersection.

The existing Kapa‘a Bridge does not meet the current roadway standards for width and bridge standards for live loading and seismic requirements, and the existing bridge railings and approach railings do not meet current crash test requirements. Therefore, the bridge will be demolished and replaced with a single-span 190-foot long bridge. The new structure would be approximately 4 feet wider, accommodating two 12-foot travel lanes, two 8-foot shoulders, and guardrails on both sides. The bridge is a typical post-World War II bridge and is not considered eligible for listing on the National Register of Historic Places (NRHP).

During construction, Kapa‘a Bridge would be closed to traffic, and a temporary bypass road and bridge would be constructed *makai* of the existing bridge, between the existing bridge and the adjacent pedestrian trail, to maintain traffic over Kapa‘a Stream. The adjacent pedestrian bridge would not be impacted.

The proposed improvements at the HI-56 and Mailihuna Road intersection would occur within HDOT right-of-way and adjacent private property. The Kapa‘a Bridge replacement would occur entirely within HDOT right-of-way. Construction parcels (temporary easements) would be needed for the temporary bypass road, construction zone, and staging areas.

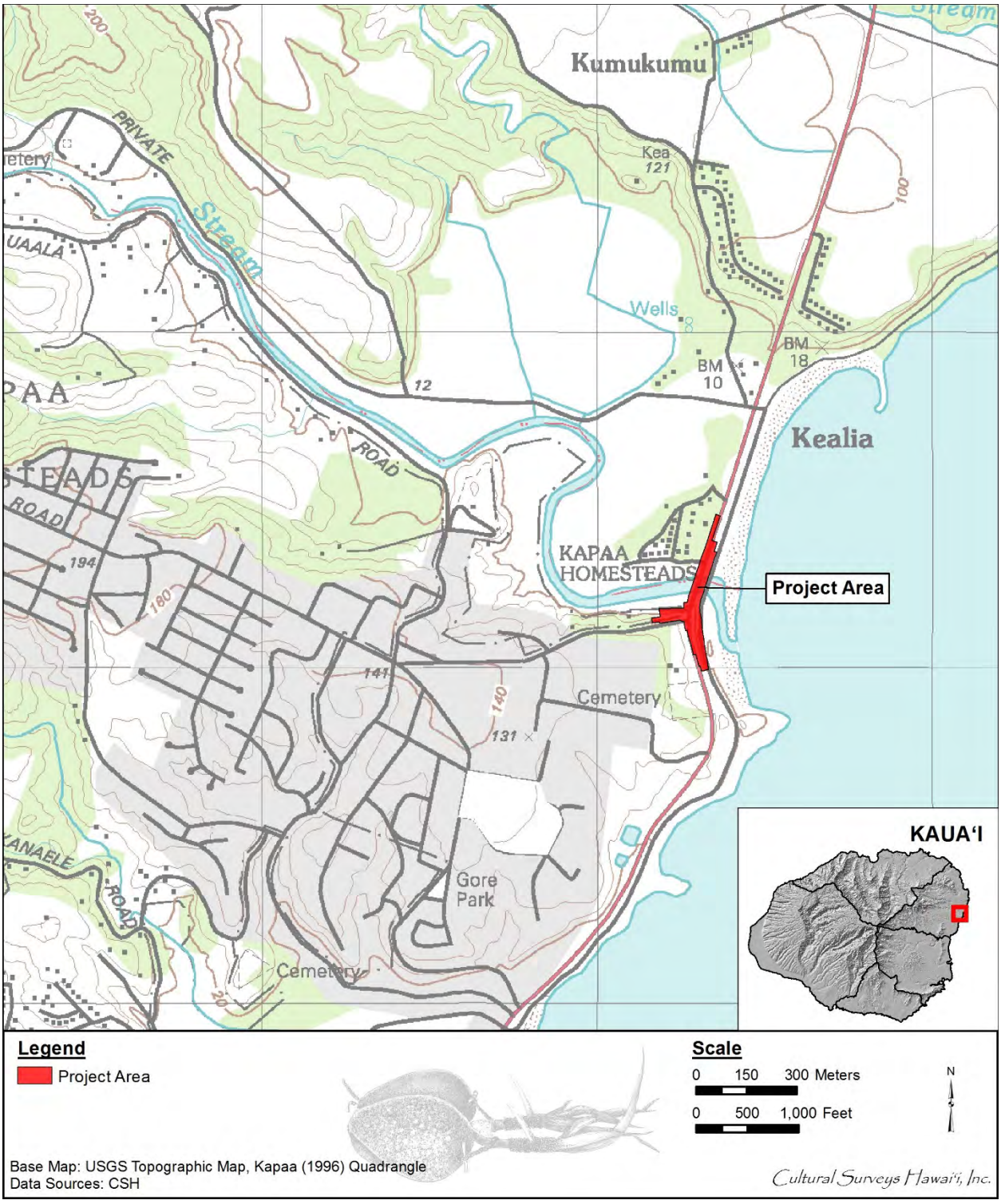


Figure 1. Portion of the 1996 Kapaa USGS 7.5-minute topographic quadrangle showing the location of the project area

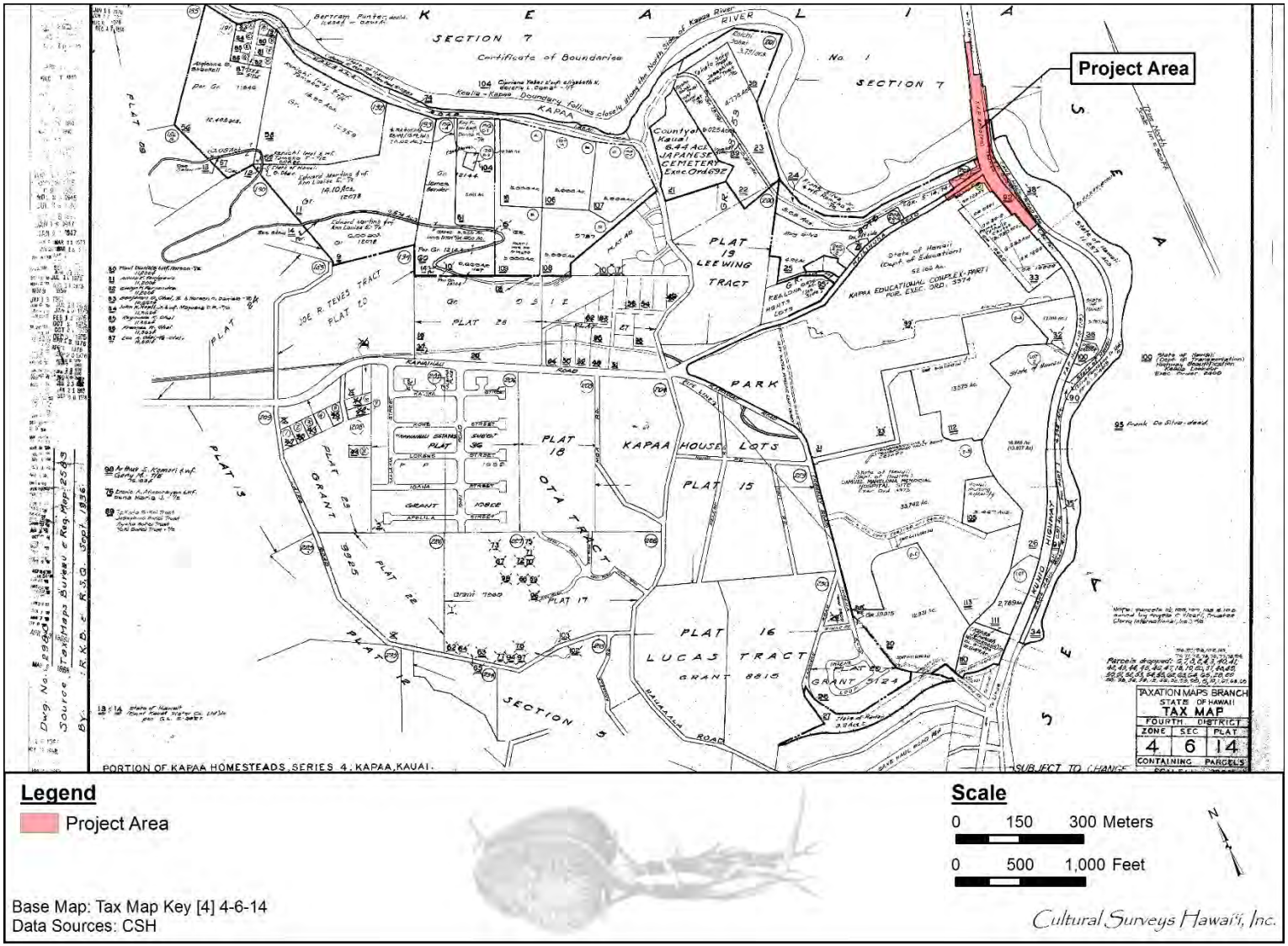


Figure 2. Tax Map Key (TMK) [4] 4-6-14, showing the location of the project area (Hawai‘i TMK Service)

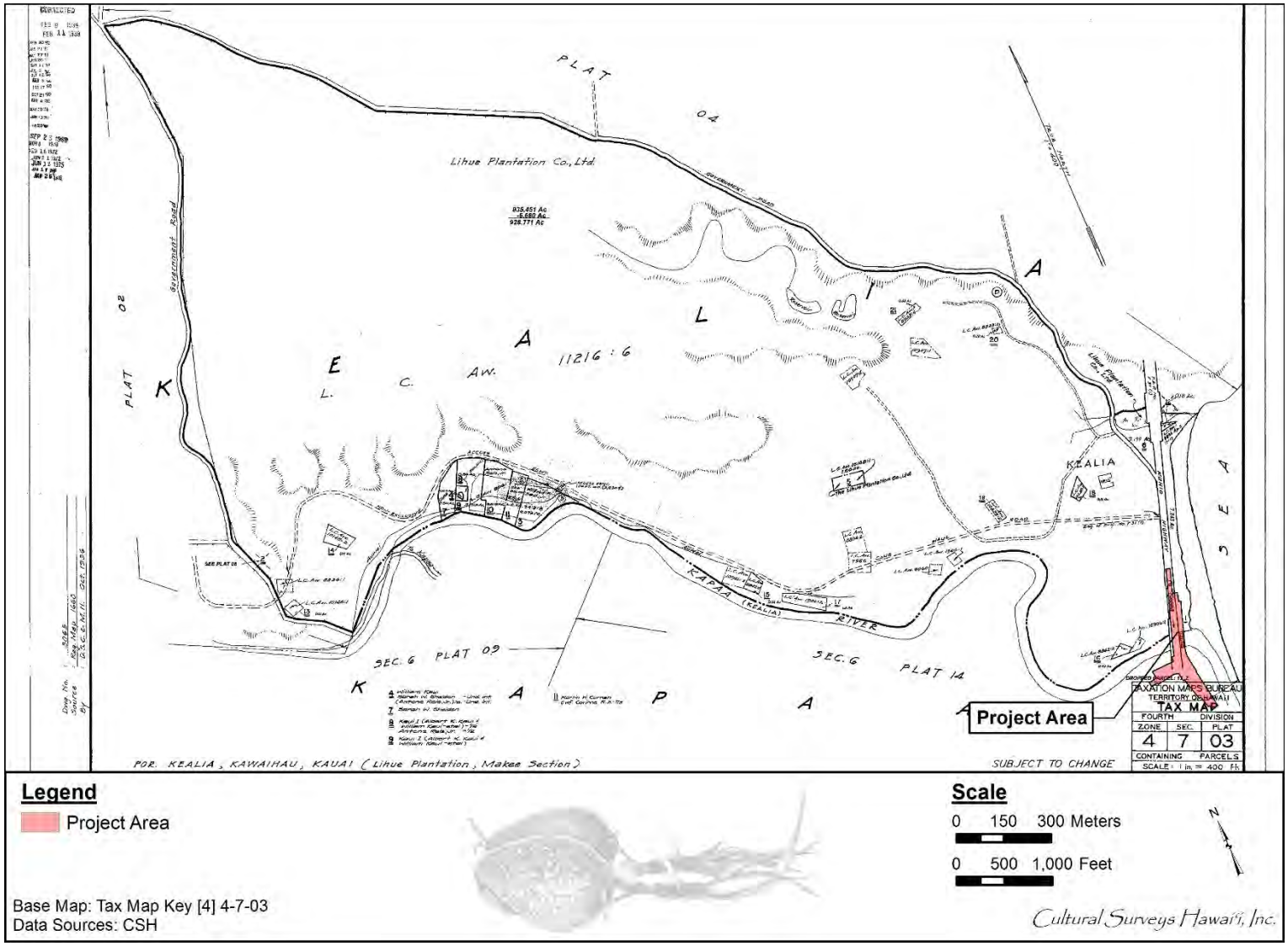
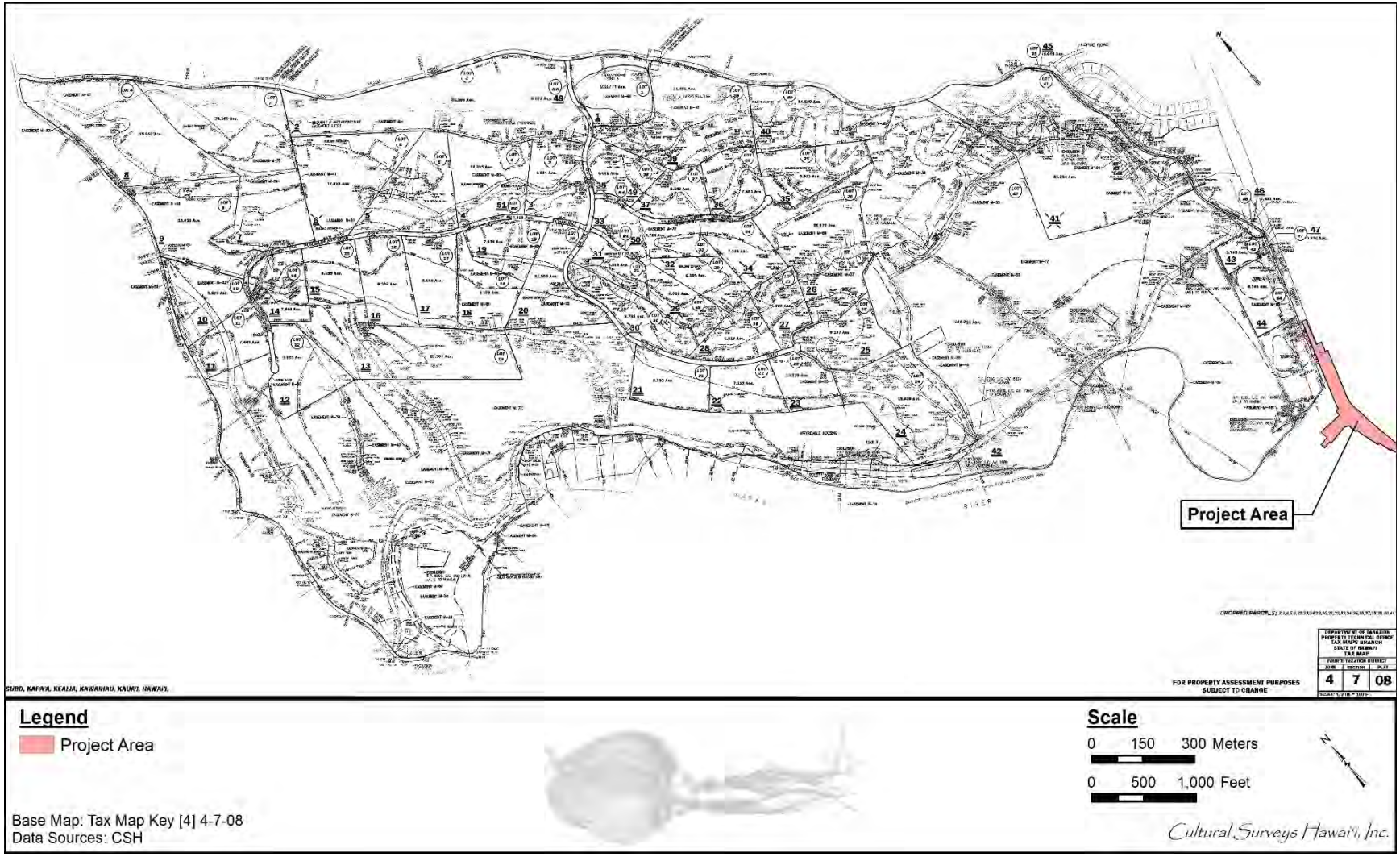


Figure 3. TMK: [4] 4-7-03, showing the location of the project area (Hawai‘i TMK Service)



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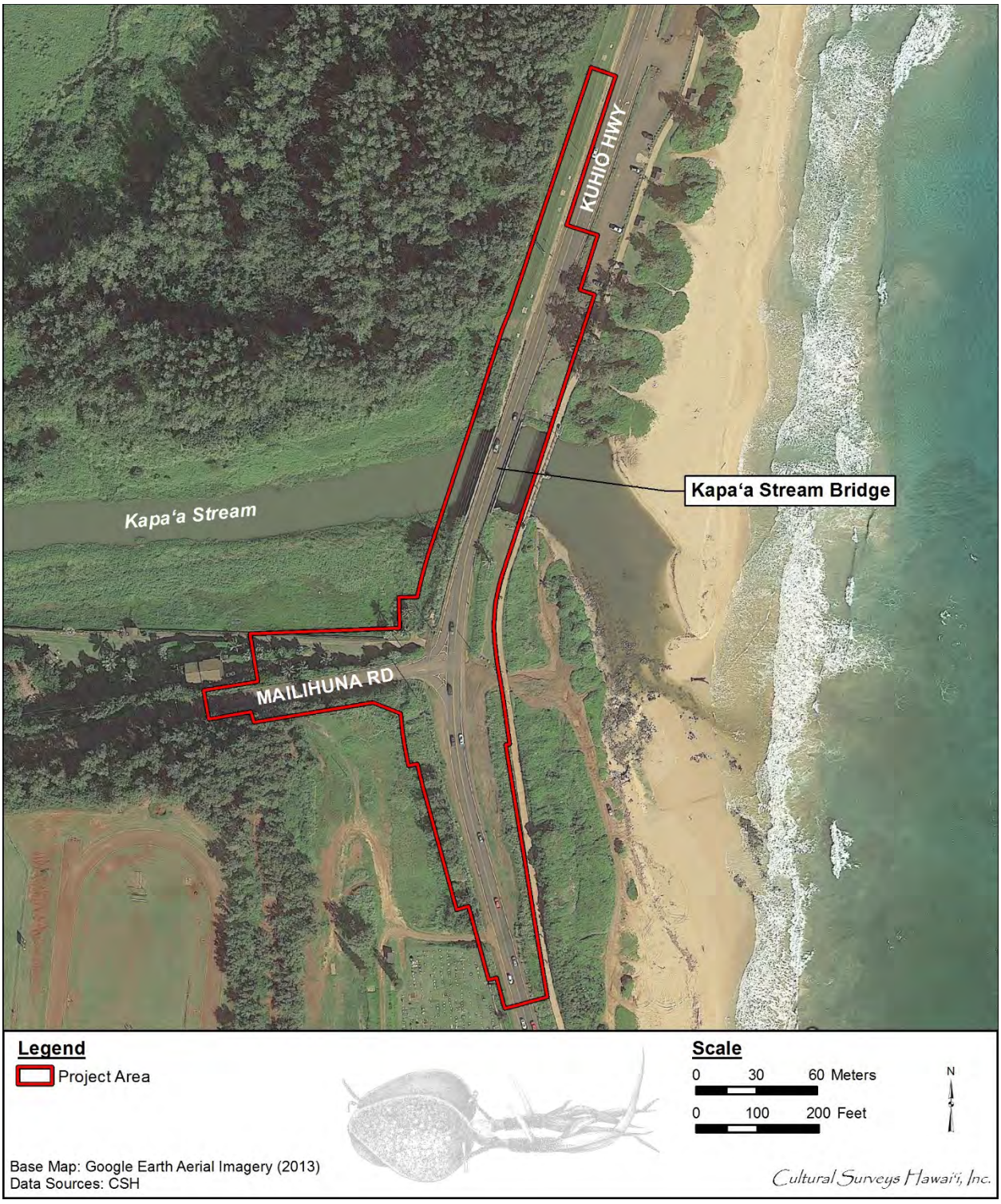

Figure 5. 2013 aerial photograph showing the location of the project area (Google Earth 2013)

The project area includes approximately 4.9 acres (2.0 hectares). The area of potential effect (APE) for the current project is defined as the entire 4.9-acre (2.0-hectare) project area.

1.2 Historic Preservation Regulatory Context

This AIS investigation was designed to be compliant with both Federal and Hawai‘i State environmental and historic preservation review legislation. Due to federal funding, this project is a federal undertaking, requiring compliance with Section 106 of the National Historic Preservation Act, the National Environmental Policy Act, and Section 4(f) of the Department of Transportation Act. The proposed project is also subject to Hawai‘i State environmental and historic preservation review legislation (Hawai‘i Revised Statutes [HRS] §343 and HRS §6E-8/Hawai‘i Administrative Rules [HAR] §13-275, respectively).

In consultation with the SHPD, this AIS investigation fulfills the requirements of HAR §13-13-276 and the *Secretary of the Interior's Standards for Archaeology and Historic Preservation*. It was conducted to identify, document, and make National Register and Hawai‘i Register of Historic Places (Hawai‘i Register) eligibility recommendations for any cultural resources/historic properties. This report is also intended to support any project-related historic preservation consultation with stakeholders such as State and County agencies and interested Native Hawaiian Organizations (NHOs) and community groups, if applicable.

Portions of the current project area have been subject to previous archaeological studies. The northern portion of the project area was included within a large archaeological reconnaissance survey of Keālia Ahupua'a (Hammatt and Chiogioji 1998). No cultural resources were reported within or near the current project area. The western (*mauka*; toward the mountians) portion of the project area along Kūhiō Highway was subject to archaeological monitoring during the installation of the Kaua‘i Rural Fiber-optic Duct Lines (Dega and Powell 2003). No cultural resources were reported within the current project area.

1.2.1 Definitions of Cultural Resources and Historic Properties

As discussed in the following paragraphs, there are important distinctions between the Federal and Hawai‘i State definitions of historic properties. To eliminate any confusion these different definitions might cause, CSH has opted in this document to use the more generic term "cultural resources" as defined below in its discussion of the cultural remains within the current project area.

In historic preservation parlance, cultural resources are the physical remains and/or geographic locations that reflect the activity, heritage, and/or beliefs of ethnic groups, local communities, states, and/or nations. Generally, they are at least 50 years old (although there are exceptions) and include buildings and structures; groupings of buildings or structures (historic districts); certain objects; archaeological artifacts, features, sites, and/or deposits; groupings of archaeological sites (archaeological districts); and in some instances, natural landscape features and/or geographic locations of cultural significance.

Historic properties, as defined under Federal historic preservation legislation (36 CFR 800.16), are any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or

Native Hawaiian organization that meet the National Register criteria. Determinations of eligibility are generally made by a federal agency official in consultation with the SHPD. Under Federal legislation, a project's (undertaking's) potential effect on historic properties must be evaluated and potentially mitigated. Under Hawai‘i State historic preservation legislation, historic properties are defined as any cultural resources that are 50 years old, regardless of their historic/cultural significance under State law, and a project's effect and potential mitigation measures are evaluated based on the project's potential impact to "significant" historic properties (those historic properties assessed as significant under the five broad State of Hawai‘i significance criteria).

1.3 Environmental Setting

1.3.1 Natural Environment

The project area, within Kapa‘a and Keālia Ahupua‘a, is located on the windward side of Kaua‘i and is exposed to the prevailing tradewinds and their associated weather patterns. Rainfall on the coastal plains and plateaus of Kapa‘a and Keālia averages approximately 40 inches per (Juvik and Juvik, 1998:56). Kapa‘a can be characterized as fairly flat, with irregularly shaped gulches and small valleys in the uplands, through which small tributary streams run including Kapahi, Makaleha, and Moalepe. While some of these streams combine with other tributaries in neighboring Keālia to form Kapa‘a Stream (often referred to as Keālia River), which empties into the ocean at the northern border of the *ahupua‘a* (land division), others flow directly into the lowlands of Kapa‘a creating a large (approximately 170-acre) swamp area that has been mostly filled in modern times (Handy and Handy 1972:394, 423). Two canals have been constructed to drain the marshy areas behind Kapa‘a Town, Waika‘ea Canal (known to most local people as Waiakea Canal) and Moikeha Canal. Kapa‘a Town is built upon a sand berm which forms the *makai* buffer to the inland swamp. To the north of Kapa‘a, Keālia Ahupua‘a shows more characteristics of a typical stream valley with a good sized alluvial plain dissected by a major stream, the Kapa‘a Stream (Keālia River) in addition to a plateau land dissected by a few small drainages including Kumukumu and Hōmaikawa‘a Streams.

According to the U.S. Department of Agriculture (USDA) Soil Survey Geographic (SSURGO) database (2001) and soil survey data gathered by Foote et al. (1972), soils within the project area include Mokuleia fine sandy loam (Mr), Mokuleia clay loam (Mta), and Lihue silty clay (LhE2) (Figure 6).

Soils of the Mokuleia Series are described as follows:

> This series consists of well-drained soils along the coastal plains on the islands of Oahu and Kauai. These soils formed in recent alluvium deposited over coral sand. They are shallow and nearly level. Elevations range from nearly sea level to 100 feet. The annual rainfall amounts to 15 to 40 inches on Oahu and 50 to 100 inches on Kauai. The mean annual soil temperature is 74° F. Mokuleia soils are geographically associated with Hanalei, Jaucas, and Keaau soils.
>
> The soils are used for sugarcane, truck crops, and pasture. The natural vegetation consists of kiawe, klu, koa haole, and bermudagrass in the drier areas and napiergrass, guava, and joee in the wetter areas. [Foote et al. 1972:95]

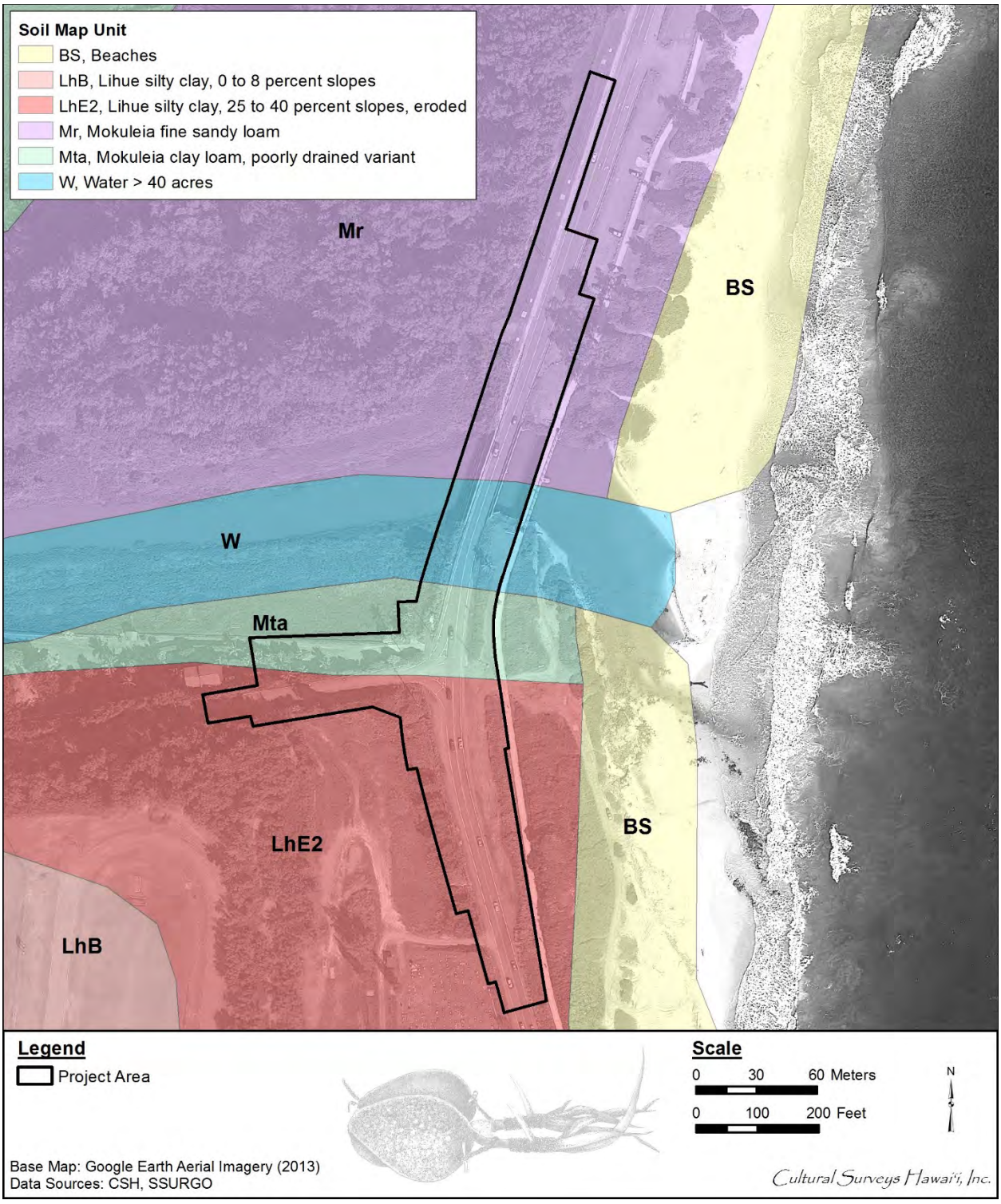

Figure 6. Aerial photograph (Google Earth 2013), showing project area along Kūhiō Highway crossing Kapa‘a Stream, with overlay of soil series (soil boundaries from Foote et al. 1972)

Soils of the Lihue Series are described as follows:

> This series consists of well-drained soils on uplands on the island of Kauai. These soils developed in material weathered from basic igneous rock. They are gently sloping to steep. Elevations range from nearly sea level to 800 feet. The annual rainfall amount to 40 to 60 inches. The mean annual soil temperature is 73° F. Lihue soils are geographically associated with Ioleau and Puhi soils.
>
> These soils are used for irrigated sugarcane, pineapple, pasture, truck crops, orchards, wildlife habitat, woodland, and homesites. The natural vegetation consists of lantana, guava, koa haole, joee, kikuyugrass, molassesgrass, guineagrass, bermudagrass, and Java plum. [Foote et al. 1972:82]

1.3.2 Built Environment

The project area's built environment includes a portion of Route 56 (Kūhiō Highway) including the intersection of Mailihuna Road and Kapa‘a Stream Bridge. Portions of the Kapa‘a to Keālia bike path and the entry to St. Catherine's Cemetery are also located within the project area. The land surrounding the project area is not significantly developed. The largest establishment near the bridge site is Kapa‘a High School soccer field, track, and baseball diamond, which are located approximately 300 m (984.3 ft) to the southwest. To the north and northwest of the project area the land is primarily utilized for agricultural and residential purposes.

Section 2 Methods

2.1 Field Methods

CSH completed the fieldwork component of this AIS under archaeological permit number 15-03 (for 2015), issued by the SHPD pursuant to HAR §13-13-282. Fieldwork was conducted on 13 June 2015 by CSH archaeologists Missy Kamai, B.A., Tom Martel, B.A., and Richard Stark, Ph.D. under the general supervision of principal investigator Hallett H. Hammatt, Ph.D. This work required approximately 4 person-days to complete.

In general, fieldwork included 100% pedestrian inspection of the project area, GPS data collection and subsurface testing.

2.1.1 Pedestrian Survey

A 100%-coverage pedestrian inspection of the project area was undertaken for the purpose of cultural resource identification and documentation. The pedestrian survey was accomplished through systematic sweeps spaced 5 m apart.

2.1.1 GPS Data Collection

Cultural resources were located using a Trimble Pro XH mapping grade GPS unit with a real-time differential correction. This unit provided sub-meter horizontal accuracy in the field. GPS field data was post-processed, yielding horizontal accuracy between 0.5 and 0.3 m. GPS location information was converted into GIS shape files using Trimble's Pathfinder Office software, version 2.80, and graphically displayed using ESRI's ArcGIS 9.1.

2.1.2 Subsurface Testing

The subsurface testing program was backhoe assisted and involved two test excavations. In general, linear trenches measuring approximately 9 to 7 m (29.5 to 23 ft) long and 0.6 m (2 ft) wide were excavated within the project area. The test excavations were distributed on the east side of the bridge along the shoulder of the highway. The sampling strategy was detailed in a map and text to the SHPD in advance of the fieldwork (Yucha to Naone email of 4 June 2015).

A stratigraphic profile of each test excavation was drawn and photographed. The observed sediments were described using standard USDA soil description observations/terminology. Sediment descriptions included Munsell color; texture; consistence; structure; plasticity; cementation; origin of sediments; descriptions of any inclusions such as cultural material and/or roots; lower boundary distinctiveness and topography; and other general observations. Where stratigraphic anomalies or potential cultural deposits were exposed, these were carefully represented on test excavation profile maps.

2.2 Laboratory Methods

Materials collected during AIS fieldwork were identified and catalogued at CSH's laboratory facilities on O‘ahu. Analysis of collected materials was undertaken using standard archaeological laboratory techniques. Materials were washed, sorted, measured, weighed, described, and/or photographed.

2.2.1 Artifact Analysis

In general, artifact analysis focused on establishing, to the greatest extent possible, material type, function, cultural affiliation, and age of manufacture. As applicable, artifacts were washed, sorted, measured, weighed, described, photographed, and catalogued. Diagnostic (dateable or identifiable) attributes of artifacts were researched.

Traditional Hawaiian artifactual material was identified, and forms and functions determined, using standard reference materials (e.g., Barrera and Kirch 1973; Brigham 1974; Buck 2003; Emory et al. 1968; and Graves and McElroy 2004). Historic artifacts were identified using standard reference materials (e.g., Elliott and Gould 1988; Fike 1987; Godden 1964; Kovel and Kovel 1986; Lehner 1988; Lindsey 2014; Millar 1988; Munsey 1970; Toulouse 1971; Whitten 2009; and Zumwalt 1980) , as well as resources available on the internet. Analyzed materials were tabulated and are presented in Section 5: Results of Laboratory Analysis.

2.2.2 Disposition of Materials

Materials collected during the current archaeological inventory survey will remain temporarily curated at the CSH storage facility in O‘ahu, Hawai‘i. CSH will make arrangements with the landowner regarding the disposition of this material. Should the landowner request archiving of material, an archive location will be determined in consultation with SHPD. All data generated during the course of the AIS are stored at the CSH offices.

2.3 Research Methods

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

This research provided the environmental, cultural, historic, and archaeological background for the project area. The sources studied were used to formulate a predictive model regarding the expected types and locations of cultural resources in the project area.

2.4 Consultation Methods

The Kapa‘a Stream Bridge Replacement project is a HDOT and FHWA/CFLHD partnership project, which includes numerous proposed bridge improvement and replacement projects in the State of Hawai‘i. Presently, National Historic Preservation Act Section 106 consultation with community, agency, and Native Hawaiian Organizations has been initiated and is on-going. Cultural consultation is also being conducted by CSH for a cultural impact assessment (CIA) for Kapa‘a Stream Bridge (Liborio and Hammatt 2015). No cultural resources have been assessed as having traditional cultural significance to an ethnic group (Criterion “e”) within the project area.

Section 3 Background Research

3.1 Traditional and Historical Background

The project area extends across the traditional *ahupua‘a* of Kapa‘a and Kēalia in the ancient district of Puna, one of five ancient districts on Kaua‘i (King 1935:228). For taxation, educational and judicial reasons, new districts were created in the 1840s. The Puna District became the Lihue District (same boundaries), named for an important town in that district. In 1878, by act of King Kalākaua securing a future and name for the new Hui Kawaihau, the new district of Kawaihau was created. This new district encompassed the *ahupua‘a* ranging from Olohena on the south to Kīlauea on the north. Subsequent alterations to district boundaries in the 1920s left Kawaihau District with Olohena as its southernmost boundary and Moloa‘a as its northernmost boundary (King 1935:222).

3.1.1 Traditional and Legendary Accounts of Kapa‘a

3.1.1.1 Palila and Ka‘ea

High in the *mauka* (toward the mountains) region of Kapa‘a in the Makaleha mountains at a place called Ka‘ea, is reported to be the supernatural banana grove of the Kaua‘i *kupua* or demigod Palila, grandson of Hina (Handy and Handy 1972:424). Joseph Akina, writing for *Kuokoa* newspaper in 1913, describes Palila’s banana grove:

> The stalk could hardly be surrounded by two men, and was about 35 feet high from the soil to the lowest petiole. The length of the cluster from stem to lowest end of the bunch of bananas was about 1 3/4 fathoms long (one anana and one muku). There were only two bananas on each about 4 inches around the middle. There were just two bananas, one on the east side and one on the west, each about a foot or more in length. The one on the east side was tartish, like a waiawi (Spanish guava) in taste and the one on the west was practically tasteless. The diameter of the end of the fruit stem of this banana seemed to be about 1 feet. This kind of banana plant and its fruit seemed almost supenatural. [Akina 1913]

3.1.1.2 Ka Lulu O Mō‘īkeha

Kapa‘a was the home of the legendary *ali‘i* (chief), Mō‘īkeha. Born at Waipi‘o on the island of Hawai‘i, Mō‘īkeha sailed to Kahiki (Tahiti), the home of his grandfather Maweke, after a disastrous flood. On his return to Hawai‘i, he settled at Kapa‘a, Kaua‘i. Kila, Mō‘īkeha’s favorite of three sons by the Kaua‘i chiefess Ho‘oipoikamalani, was born at Kapa‘a and was said to be the most handsome man on the island. It was Kila who was sent by his father back to Kahiki to slay his old enemies and retrieve a foster son, the high chief La‘amaikahiki (Beckwith 1970:352-358; Fornander 1916:160; Handy and Handy 1972:424; Kalākaua 1888:130-135). Mō‘īkeha’s love for Kapa‘a is recalled in the *‘ōlelo no‘eau* (proverb): “Ka lulu o Moikeha i ka laulā o Kapa‘a. *The calm of Moikeha in the breadth of Kapa‘a*” (Pukui 1983:157).

“Lulu-o-Moikeha” is described as being situated “near the landing and the school of Waimahanalua” (Akina 1913:5). The landing in Kapa‘a was known as the Makee Landing and was probably constructed in the late 1870s, along with the Makee Sugar Mill. Today, in place of the old Makee Landing is part of a breakwater located on the north side of Moikeha Canal near the present day Coral Reef Hotel.

Akina (1913) tells the story of how Mō‘īkeha’s son Kila stocks the islands with the *akule*, *kawakawa* (mackerel tuna), and *‘ōpelu* (mackerel scad) fish. When Kila travels to Kahiki, he seeks out his grandfather Maweke and explains that he is the child of Mō‘īkeha. When Maweke asks Kila if Mō‘īkeha is enjoying himself, Kila answers with the following chant of Puna:

My father enjoys the billowing clouds	I walea no ku‘u makuakāne i ke ao
over Pōhaku-pili,	ho‘okanunu, iluna o Pōhakupili
The sticky and delicious poi,	I ka poi uouo ono ae no a,
With the fish brought from Puna,	Me ka i‘a i na mai o ka Puna,
The broad-backed shrimp of Kapalua,	Ka opae hoainahanaha o Kapalua;
The dark-backed shrimp of Pōhakuhapai,	Na opae kua hauli o Pohakuhapai,
The potent awa root of Maiaki‘i,	Na puawa ona mai no o Maiakii,
The breadfruit laid in the embers at Makialo	Me ka ulu moelehu mai no o Makialo,
The large heavy taros of Keah’āpana	Me na kalo pehi hua o Keahapana,
The crooked surf of Makāiwa too	A i kekee nalu ae no hoi o Makaiwa,
The bending hither and thither of the reed and rush blossoms,	A i ke kahuli aku kahuli mai o ka pua uku me ka pua neki,
The swaying of the kalukalu grasses of Puna	A i ka nu‘a ae no o ke kalukalu o Puna,
The large, plump, private parts of my mothers,	A i na mea nui nepunepu no a ku‘u mau makuahine.
Of Ho‘oipoikamalanai and Hinau-u,	O Hoioipo ikamalanai me Hinau-u,
The sun that rises and sets,	A i ka la hiki ae no a napoo aku,
He enjoys himself on Kaua‘i,	Walea ai no ka nohona ia Kaua‘i
All of Kaua‘i is Mō‘īkeha’s	Ua puna a puni Kaua‘i ia Mō‘īkeha
[Akina 1913:6]	

Maweke was delighted and when the boy is questioned as to his purpose, Kila tells his grandfather he is seeking fish for his family. Maweke tells Kiwa to lead the fish back to his homeland. This is how Kila led the *akule*, *kawakawa*, and *‘ōpelu* to Hawai‘i.

3.1.1.3 Pāka‘a and the Wind Gourd of La‘amaomao (Keahiahi)

Kapa‘a also figures prominently in the famous story of Pāka‘a and the wind gourd of La‘amaomao. Pāka‘a was the son of Kūanu‘uanu, a high-ranking retainer of the Big Island ruling chief Keawenuia‘umi (the son and heir to the legendary chief ‘Umi), and La‘amaomao, the most beautiful girl of Kapa‘a and member of a family of high status *kahuna* (priests). Kūanu‘uanu left the island of Hawai‘i, traveled throughout the other islands and finally settled on Kaua‘i at Kapa‘a.

It was there that he met and married La‘amaomao, although he never revealed his background or high rank to her until the day a messenger arrived, calling Kūanu‘uanu back to the court of Keawenuia‘umi. By that time, La‘amaomao was with child but Kūanu‘uanu could not take her with him. He instructed her to name the child Pāka‘a if it turned out to be a boy. Pāka‘a was raised on the beach at Kapa‘a by La‘amaomao and her brother Ma‘ilou, a bird snarer. He grew to be an intelligent young man and it is said he was the first to adapt the use of a sail to small fishing canoes. Although Pāka‘a was told by his mother from a very young age that his father was Ma‘ilou, he suspected otherwise and after constant questioning, La‘amaomao told her son the truth about Kūanu‘uanu.

Intent on seeking out his real father and making himself known to him, Pāka‘a prepared for the journey to the Big Island. His mother presented to him a tightly covered gourd containing the bones of her grandmother, also named La‘amaomao, the goddess of the winds. With the gourd and chants taught to him by his mother, Pāka‘a could command the forces of all the winds in Hawai‘i. While this story continues on at length about Pāka‘a and his exploits on the Big Island and later on Moloka‘i, it will not be dwelt upon further here. It is important to note that several versions of this story do include the chants which give the traditional names of all of the winds at all the districts on all the islands, preserving them for this and future generations (Beckwith 1970:86–87; Fornander 1918-1919:5:78–128; Nakuina 1990; Rice 1923:69–89; Thrum 1923:53–67).

Frederick Wichman (1998:84) writes that Pāka‘a grew up on a headland named Keahiahi, which the bike path traverses. Here, Pāka‘a learned to catch *mālolo*, his favorite fish. After studying the ocean and devising his plan to fabricate a sail, Pāka‘a wove a sail in the shape of a crab claw and tried it out on his uncle’s canoe. One day, after going out to catch *mālolo*, he challenged the other fishermen to race to shore. He convinced them to fill his canoe with fish, suggesting it was the only way he could truly claim the prize if he won:

> The fishermen began paddling toward shore. They watched as Pāka‘a paddled farther out to sea and began to fumble with a pole that had a mat tied to it. It looked so funny that they began to laugh, and soon they lost the rhythm of their own paddling. Suddenly Pāka‘a’s mast was up and the sail filled with wind. Pāka‘a turned toward shore and shot past the astonished fishermen, landing on the beach far ahead of them. That night, Pāka‘a, his mother, and his uncle had all the *mālolo* they could eat. [Wichman 1998:85]

3.1.1.4 Kaweloleimākua

Kapa‘a is also mentioned in traditions concerning Kawelo (Kaweloleimākua), Ka‘ililauokekoa (Mō‘īkeha’s daughter, or granddaughter, dependent on differing versions of the tale), the *mo‘o* Kalamainu‘u and the origins of the *hīna‘i hīnālea* or the fish trap used to catch the *hīnālea* fish, and the story of Lonoikamakahiki (Fornander 1917:4(2):318, 4(3):704–705; Kamakau 1976:80; Rice 1923:106–108; Thrum 1923:123–135).

3.1.1.5 Kalukalu grass of Kapa‘a

“*Kūmoena kalukalu Kapa‘a,*” or “Kapa‘a is like the *kalukalu* mats,” is a line from a chant recited by Lonoikamakahiki. *Kalukalu* is a sedge grass, apparently used for weaving mats (Fornander 1917:4(2):318–319). Pukui (1983:187) associates the *kalukalu* with lovers in “Ke kalukalu moe ipo o Kapa‘a: *The* kalukalu *of Kapa‘a that sleeps with the lover*.” According to Wichman (1998:84), “a *kalukalu* mat was laid on the ground under a tree, covered with a thick pile of grass, and a second mat was thrown over that for a comfortable bed,” thus the association with lovers. Kaua‘i was famous for this particular grass, and it probably grew around the marshlands of Kapa‘a. It is thought to be extinct now, but an old-time resident of the area recalled that it had edible roots, “somewhat like peanuts.” Perhaps it was a famine food source (Kapa‘a Elementary School 1933:vi).

3.1.2 Traditional and Legendary Accounts of Keālia

3.1.2.1 Hi‘iaka and Wahine‘ōma‘o in Keālia

The area also features in the epic poem that recounts the adventures of Pele’s sister, Hi‘iakaikapoliopele. On their way to Hā‘ena, Hi‘iaka and her companion Wahine‘ōma‘o stopped

near Keālia to help a man cook his *luau* (taro leaves) to eat with his *poi.* Noticing an ailing woman in the man's house, Hi‘iaka said a prayer that brought the woman back to health. All the *kahuna* (priest, healer) in the region had been unable to help the woman previously (Rice 1974:14).

3.1.2.2 Kaweloleimākua and Kauahoa in Waipahe‘e

In the *mauka* areas of Keālia is a place called Waipahe‘e, a slippery slide used for recreation up until recent times. This *wahi pana* (storied place) is associated with Kaweloleimākua and Kauahoa, who one day traveled to this place with their companion ‘Aikanaka (Wichman 1998:86). Here the two boys engaged in a contest of who could make the best *lei* for their chief. Kauahoa won this contest by making his *lei* of *liko lehua* while Kaweloleimākua made his of fern. The boys then held a contest *na‘ina‘i mimi* to see who could urinate the longest, but because Kauahoa was much bigger than Kawelo, he also won this contest. Later, when the two were men engaged in war, Kawelo reminded Kauahoa of this boyhood excursion in an attempt to avoid bloodshed between them, however, he was unsuccessful.

3.1.3 *Heiau* of Kapa‘a and Keālia

During their expeditions around Hawai‘i in the 1880s collecting stories from *ka po‘e kahiko* (elders), Lahainaluna students stopped in Kapa‘a and Keālia and gathered information regarding *heiau* (temples, non-Christian places of worship) of the region (Hawaiian Ethnological Notes 1885). Fourteen *heiau* were named, suggesting the two *ahupua‘a* were probably more politically significant in ancient times. Table 1 lists the names of the *heiau,* their location if known, their type, associated chief and priest, any comments, and the reference. The exact locations of these *heiau* are unknown. The general locations of two of the *heiau* correlate with *wahi pana* of Kuahiahi and Kaluluomoikeha. Kuahiahi (also spelled Kaahiahi and Keahiahi) is the rocky headland at the north end of Kapa‘a where the first Kapa‘a School was once located. Kaluluomoikeha is thought to be the general area near the Moikeha Canal and the present day Coral Reef Hotel.

3.1.4 The Māhele and the Kuleana Act

In the mid-1800s (1845 and 1846), through the Organic Act, Kamehameha III decreed a division of lands called the Māhele that introduced private property into Hawaiian society (Chinen 1958). In 1848, lands were divided into three portions: crown lands, government lands, and lands set aside for the chiefs. Individual plots, called *kuleana* (Native Hawaiian land rights) awards, were granted within these divided lands to native inhabitants who lived on and farmed these plots and came forward to claim them. Researching the claims and testimonies that were given in the mid-1800s can sometimes assist in forming a settlement pattern for the region at that time and possibly earlier. Thus, it is through records for Land Commission Awards (LCAs) generated during the Māhele that specific documentation of traditional life in Kapa‘a and Keālia Ahupua‘a comes to light.

During the Māhele, Kapa‘a was designated as Crown Lands (Commissioner of Public Lands 1929). The *‘ili* of Paikahawai and Ulakiu in Kapa‘a Ahupua‘a were retained as Government Lands. The land claims during this period show that only five individuals were awarded land parcels in the relatively large *ahupua‘a* of Kapa‘a. None of these land claims are located within the vicinity of the project area. Interestingly, the residential "village" of Kapa‘a did not exist as a single entity, but was a series of probably small settlements or compounds, perhaps even individual house lots which stretched along the shoreline of the *ahupua‘a* and included (south to north) Kupanihi (Makahaikupanihi), Kalolo (Kaulolo), Puhi, and Ulukiu.

Table 1. List of *Heiau* in Kapa‘a and Keālia (source: Bushnell et al. 2003)

Name	**Location**	**Type**	**Associated Chief/Priest**
Mailehuna	Kapa‘a (Mailehuna is the area of the present day Kapa‘a School)	Unknown	Kiha, Kaumuali‘i/ Lukahakona
Pueo	Kapa‘a	Unknown	Kiha, Kaumuali‘i/ Lukahakona
Pahua	Kapa‘a/Keālia	Unknown	Kiha/ Lukahakona
Kumalae	Kapa‘a/Keālia	Unknown	Kiha/ Lukahakona
Waiehumalama	Kapa‘a/Keālia	Unknown	Kiha/ Lukahakona
Napuupaakai	Kapa‘a/Keālia	Unknown	Kiha/ Lukahakona
Noemakalii	Kapa‘a/Keālia	“Heiau for birth of Kauai Chiefs, like Holoholokū”	Unknown
Puukoa	Kapa‘a/Keālia	“Unu” (*heiau* for fishermen or an agricultural *heiau*)	Unknown
Piouka	Kapa‘a/Keālia	“Unu-type heiau”	Unknown
Una	Kapa‘a/Keālia	Unknown	Kiha/ Lukahakona
Mano	Kapa‘a/Keālia	Unknown	Kiha/ Lukahakona
Kuahiahi	Kapa‘a (where government school stands now)	Unknown	Kiha/ Lukahakona
Makanalimu	Upland of Kawaihau	Unknown	Kaumuali‘i
Kaluluomoikeha	Kapa‘a	Unknown	Mō‘īkeha

Keālia was granted to the *ali‘i* Miriam Ke‘ahikuni Kekau‘onohi (LCA 11216; Royal Patent 6071). Kekau‘onohi was a granddaughter of Kamehameha, one of Liholiho’s wives and served as Kaua‘i governor from 1842 to 1844. Seventeen land claims were made in Keālia and 15 were awarded. A total of six claims were awarded within the vicinity of the project area (Figure 7 and Table 2).

Sixty-seven cultivated *lo‘i* (terraced fields) are claimed in the *kuleana,* with reference to numerous uncultivated *lo‘i* and boundaries of other cultivated *lo‘i* that were not claimed. In the Māhele documents, there are ten instances in which the individual *lo‘i* are referred to with their personal names. Two ditches or *‘auwai* are recorded, Kaauwaelalo (LCA # 01980) and Kahaukua (LCA # 10148). Keālia River and Keahapuna (Keahapana) River were also named as boundaries, although they may refer to the same river. This information suggests taro farming continued to be central to Keālia. In addition, four *kō‘ele* (land cultivated by tenant for local chief) are named in the Keālia Māhele documents. This suggests the *konohiki* of Keālia maintained a fair amount of power and played an active role in land and water distribution even as population was declining and foreign powers were beginning to trickle in.

Another noteworthy resource in Keālia were ponds or *loko.* Four ponds were mentioned, though no reference to location is given for two. Akiana Pond (LCA # 8060) is thought to be located in the *‘ili* of Akiana and Loko Waipunaula (LCA # 8833) is thought to be in Waipunaula ‘Ili. In addition to the fishponds providing fresh fish, the Keālia records indicate freshwater fish were also caught in the rivers and streams.

3.1.5 Early Historic Accounts of Kapa‘a and Keālia

The earliest written documentation of life in the *ahupua‘a* appears in the 1830s when missionary censuses recorded a total population of 283, comprising 265 adults and 18 children within Keālia (Schmitt 1973:25). Other Protestant missionary records focused more specifically on areas where mission stations were established. An 1847 census of 23 land divisions in the Hanalei and Kawaihau Districts gives population figures for Keālia (Schmitt 1969). Most notable is the decline in population in Keālia, from 283 in the 1830s to 143, a reduction of almost half (Schmitt 1969:229). Accounting for the high death toll caused by the introduction of foreign disease, this still seems like an extremely high death rate. Kapa‘a’s population during this time period is unknown. A population distribution map by Coulter (1931) (Figure 8) indicates the population of Kaua‘i ca. 1853 “was concentrated chiefly on the lower flood plains and delta plains of rivers where wet land taro was raised on the rich alluvial soil” (Coulter 1971:14).

Although most of the historic documents for Kaua‘i in this period revolve around missionary activities and the missions themselves, there was indication that the Kapa‘a area was being considered for new sugar cane experiments, similar to those occurring in Kōloa. In a historic move, Ladd and Company received a 50-year lease on land in Kōloa from Kamehameha III and Kaua‘i Governor Kaikio‘ewa of Kaua‘i. The terms of the lease allowed the new sugar company “the right of someone other than a chief to control land” and had profound effects on “traditional notions of land tenure dominated by the chiefly hierarchy” (Donohugh 2001:88). In 1837, a very similar lease with similar terms was granted to Wilama Ferani, a merchant and U.S. citizen based in Honolulu (Hawai‘i State Archives, Interior Dept., Letters, August 1837). The lease was granted by Kauikeaouli (Kamehameha III) for the lands of Kapa‘a, Keālia, and Waipouli for 20 years for the following purpose:

Figure 7. Aerial photograph showing Land Commission Awards in the Keālia Ahupua‘a within the vicinity of the project area (Google Earth 2013)

Table 2. Land Commission Awards within the Vicinity of the Project Area

LCA #	Claimant	*‘Ili*	Claim/Land Use	Award
10906	Umiumi	Kaukuolono	Two *lo‘i*, *kula*, and house lot	Two parcels
08833	Kiapia	Waipunaula, Kiohale	Five *lo‘i*, *kula*, and house lot	Two parcels
10628	Puhi	Kaunakakai, Kuaiula	House lot, one *lo‘i*	Two parcels
08842	Kaawapupuole	Kauaha, Makapono	House lot, four *lo‘i*, *kula*	Two parcels
08060	Hulialo	Haulei, Kalohipa	House lot, two *lo‘i, kula*	One parcel
01980	Puali	Haulei, Kaeleele	House lot, four *lo‘i, kula*	One parcel

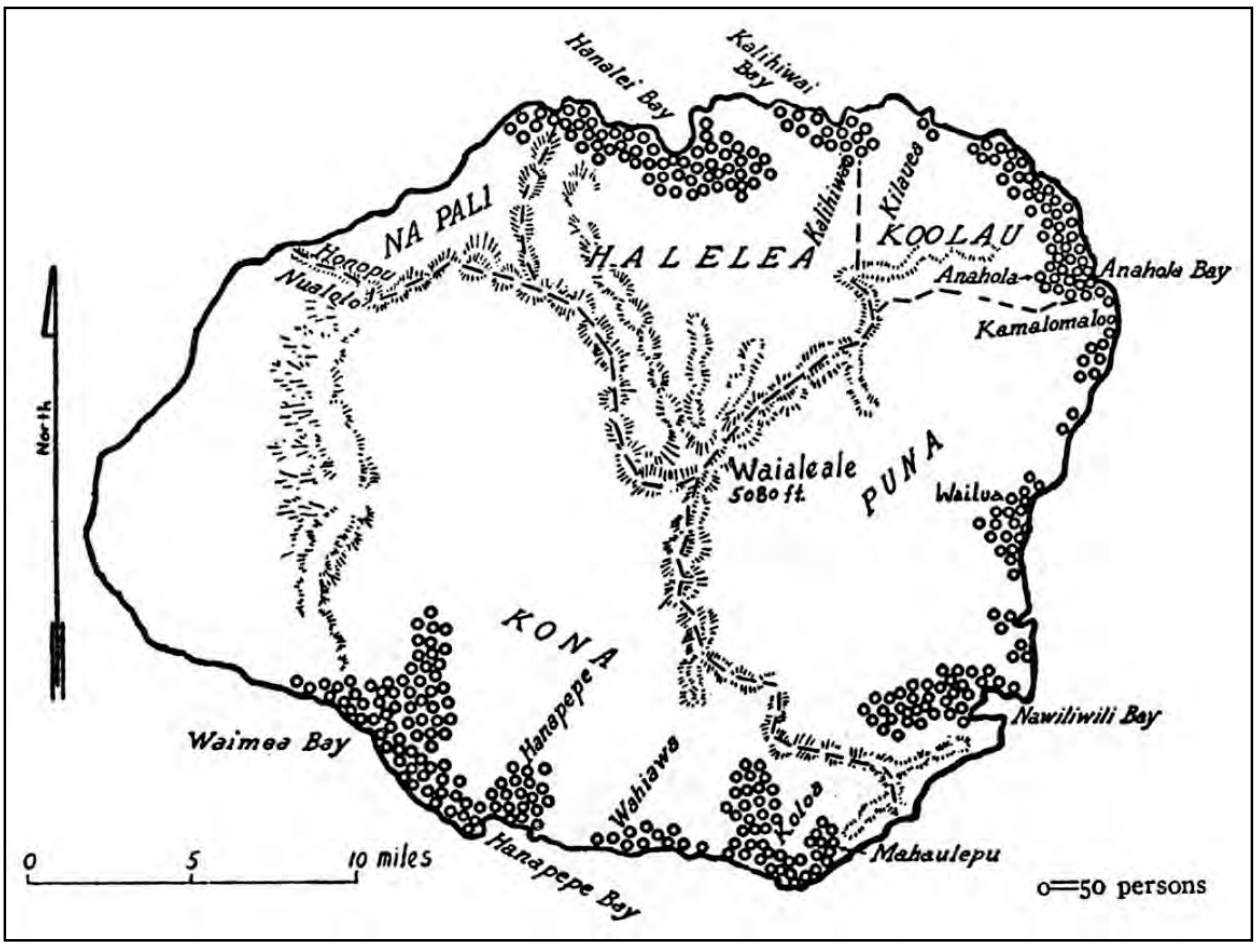

Figure 8. Map showing population estimate for Kaua‘i in 1853 (Coulter 1931:16)

> [F]or the cultivation of sugar cane and anything else that may grow on said land, with all of the right for some place to graze animals, and the forest land above to the top of the mountains and the people who are living on said lands, it is to them whether they stay or not, and if they stay, it shall be as follows: They may cultivate the land according to the instructions of Wilama Ferani and his heirs and those he may designate under him. [Hawai‘i State Archives, Interior Dept., Letters, August 1837]

Unlike Ladd & Company, which eventually became the Koloa Sugar Company, there is no further reference to Wilama Ferani and his lease for lands in Kapa‘a, Keālia, and Waipouli. In a brief search for information on Honolulu merchant Wilama Ferani, nothing was found. It is thought that perhaps Wilama Ferani may be another name for William French, a well-known Honolulu merchant who is documented as having experimented with grinding sugar cane in Waimea, Kaua‘i at about the same time the 1837 lease for lands in Kapa‘a, Keālia, and Waipouli was signed (Joesting 1984:152).

In 1849, William P. Alexander, son of a Wai‘oli missionary, recorded a trip he took around Kaua‘i. Although, he focuses on the larger mission settlements like Kōloa and Hanalei, he does mention Kapa‘a and Keālia.

> A few miles from Wailua, near Kapaa we passed the wreck of a schooner on the beach, which once belonged to Capt. Bernard. It was driven in a gale over the reef, and up on the beach, where it now lies. A few miles further we arrived at Keālia. We had some difficulty crossing the river at this place, owing to the restiveness of our horses. The country here near the shore was rather uninviting, except the valley which always contained streams of water. [Alexander 1991:123]

In later years, the notorious Kapa‘a reef was to become the location of many shipwrecks once a landing was built there in the 1880s.

One of the first people to succeed in business in the Keālia area was a German by the name of Ernest Krull. In 1854, a government survey was prepared for Kumukumu, Kaua‘i (Hawai‘i State Survey, RM 141). In handwritten notes of the map, it is indicated that Mr. Krull desired to buy government interest to the land for $200.00. Apparently Mr. Krull was successful in obtaining Kumukumu because by the early 1860s, he was running a thriving business supplying whaling ships with beef and dairy products (Joesting 1984:171). Mr. Krull’s ranch and dairy were located in the Waipahe‘e area of Kumukumu in a place called Kalualihilihi (Kapa‘a School 1983:4). His residence also served as a rest stop for travelers during the 1860s (Lydgate 1991:142). Mr. Krull continued to lease a portion of the tablelands above Keālia until 1876 when he sold his ranch to Colonel Z.S. Spalding and Captain James Makee (Hawai‘i State Archives, Interior Dept., Letters, 1879; Kapa‘a School 1983:4).

The first large-scale agricultural enterprise in the Kapa‘a/Keālia area was begun in 1877 in Kapa‘a by the Makee Sugar Plantation and the Hui Kawaihau (Dole 1916:8). The Hui Kawaihau was originally a choral society begun in Honolulu whose membership consisted of many prominent names, both Hawaiian and *haole* (Caucasian). It was Kalākaua’s thought that the Hui members could join forces with Makee, who had previous sugar plantation experience on Maui, to establish a successful sugar corporation on the east side of Kaua‘i. Captain Makee was given land in Kapa‘a to build a mill and he agreed to grind cane grown by Hui members. Kalākaua

declared the land between Wailua and Moloa‘a a fifth district called Kawaihau and for four years the Hui attempted to grow sugar cane at Kapahi, on the plateau lands above Kapa‘a. After a fire destroyed almost one half of the Hui’s second crop of cane and the untimely death of Captain James Makee, one of their principal advocates, the Hui began to disperse and property and leasehold rights passed on to Makee’s son-in-law and the new Makee Plantation owner, Colonel Z.S. Spalding (Dole 1916:14).

As part of the infrastructure of the new plantation, a sugar mill was erected and the Makee Landing was built in Kapa‘a (Figure 9). Following Captain Makee’s death, Colonel Spalding took control of the plantation and in 1885 moved the mill to Keālia (Cook 1999:51). The deteriorating stone smokestack and landing were still there well into the 1900s (Damon, 1931:359; see Figure 9). Condé and Best (1973:180) suggest railroad construction for the Makee Plantation started just prior to the mid-1890s. There is one reference to a railroad line leading from the Kapa‘a landing to Keālia in 1891. During Queen Lili‘uokalani’s visit to Kaua‘i in the summer of 1891, the royal party was treated to music by a band, probably shipped in from O‘ahu. “The band came by ship to Kapa‘a and then by train to Keālia” (Joesting 1984:252). This line is depicted on a 1910 USGS map that shows it heading south from Keālia Mill and splitting near the present Coral Reef Hotel, one finger going to the old Kapaa Landing (Makee Landing) and another line heading *mauka*, crossing the present Moikeha Canal, traveling southwest up Lehua Street and through what is now goat pasture, along a plateau and into the *mauka* area behind Kapa‘a swamp lands (Figure 10). This railroad line was part of a 20-mile network of plantation railroad with some portable track and included a portion of Keālia Valley and the *mauka* regions of the plateau lands north of Keālia (Condé and Best 1973:180).

By the late 1800s, Makee Plantation was a thriving business employing more than 1,000 workers (Cook 1999:51). Hundreds of Portuguese and Japanese immigrants found work on Makee Plantation and the new influx of immigrants required more infrastructure. In 1883, a lease for a school lot was signed between Makee Sugar Company and the Board of Education (Kapa‘a School 1983:9). Stipulations found in the Portuguese immigrant contracts with Makee Sugar Company stated that “children shall be properly instructed in the public schools” (Garden Island 1983). The original Kapa‘a School was constructed in 1883 on a rocky point adjacent to the Makee Sugar Company railroad (Figure 11). Traditionally, this point was known as Kaahiahi (Kapa‘a School 1983:10). In 1908, Kapa‘a School was moved to its present site directly *mauka* on Mailihune Hill (Figure 12).

As in much of the rest of Hawai‘i, the Chinese rice farmers began cultivating the lowlands of Kapa‘a with increasing success in the latter half of the 1800s. Several Hawaiian *kuleana* owners leased or sold their parcels *mauka* of the swamp land to Chinese rice cultivators. Other Chinese rice cultivators appealed to the government for swamp lands, first leasing and later buying. As a result of the growing rice and sugar industries, the economic activity displaced the house lot *kuleana* on the *makai* side of the marsh for increasing commercial and residential development (Lai 1985:148–161).

Narrow wagon roads gave way to macadamized roads in the early part of the twentieth century. This new road was called the Kaua‘i Belt Road and parts of it are thought to have followed the “Old Government Road” (Cook 1999). In Kapa‘a, the present day Kūhiō Highway probably follows the same route as the original Government Road and subsequent Kaua‘i Belt Road. The

Figure 9. “Kapaa Wharf Remains, Kapaa, Kauai, Hawaii” (ca. 1934) also known as the Old Makee Landing (top photo); today a breakwater is associated with the Moikeha Canal in the general location (bottom photo) (Bushnell et al. 2002)

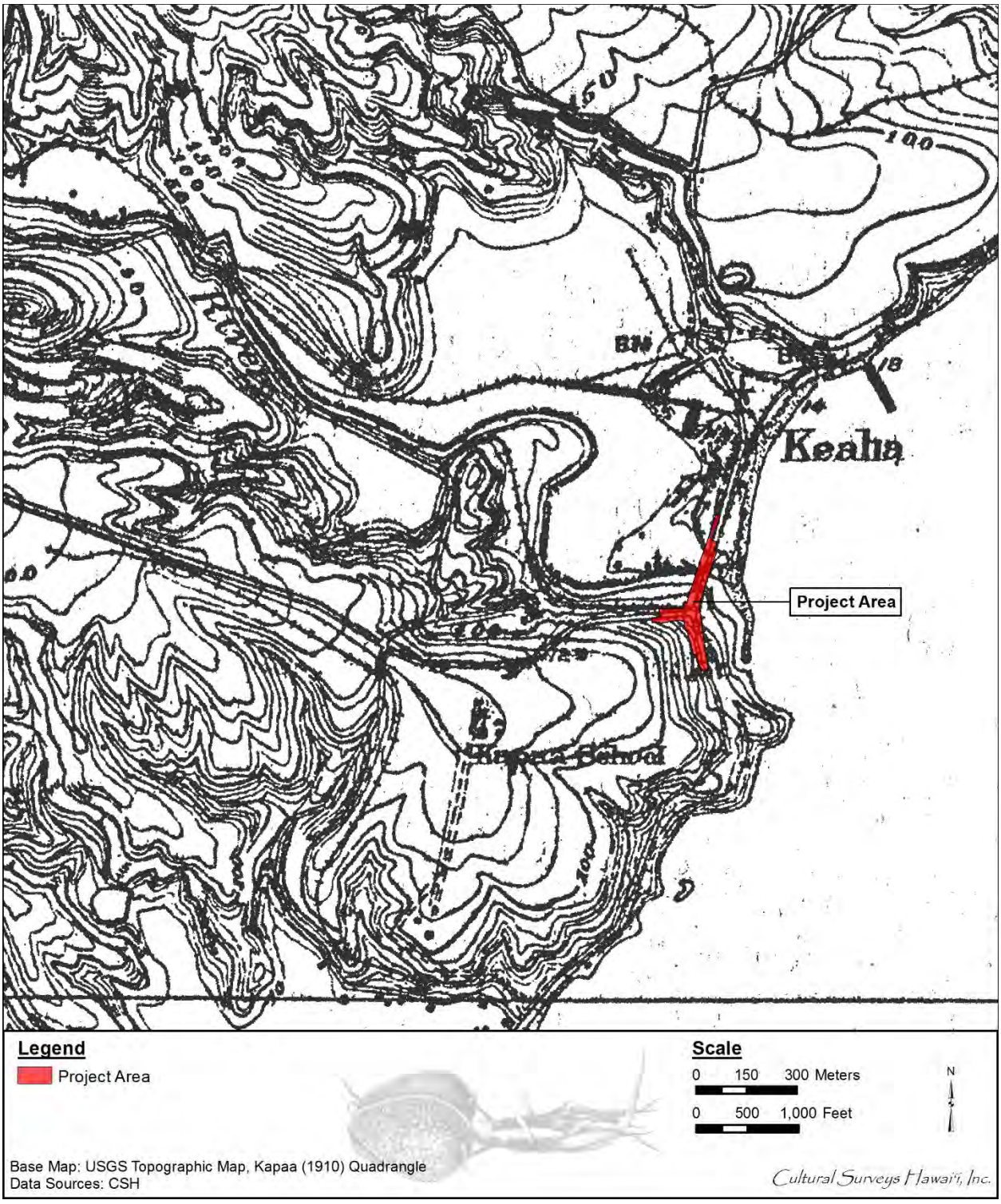

Figure 10. Portion of the 1910 Kapaa USGS topographic map depicting historic road and railroad alignment within and in the vicinity of the current project area

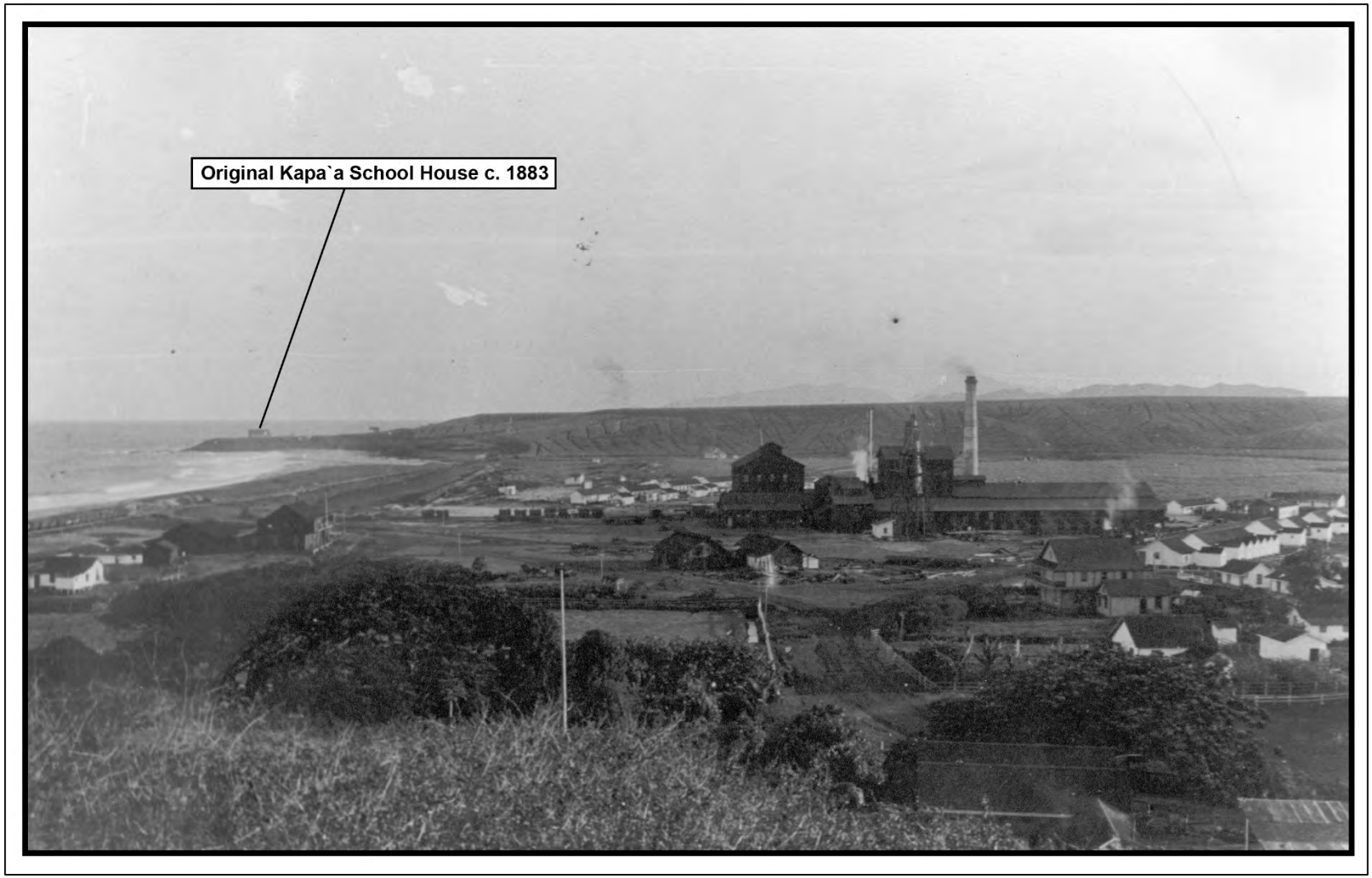

Figure 11. Historic photograph of Keālia Mill and town (courtesy of the Kaua‘i Historical Society)

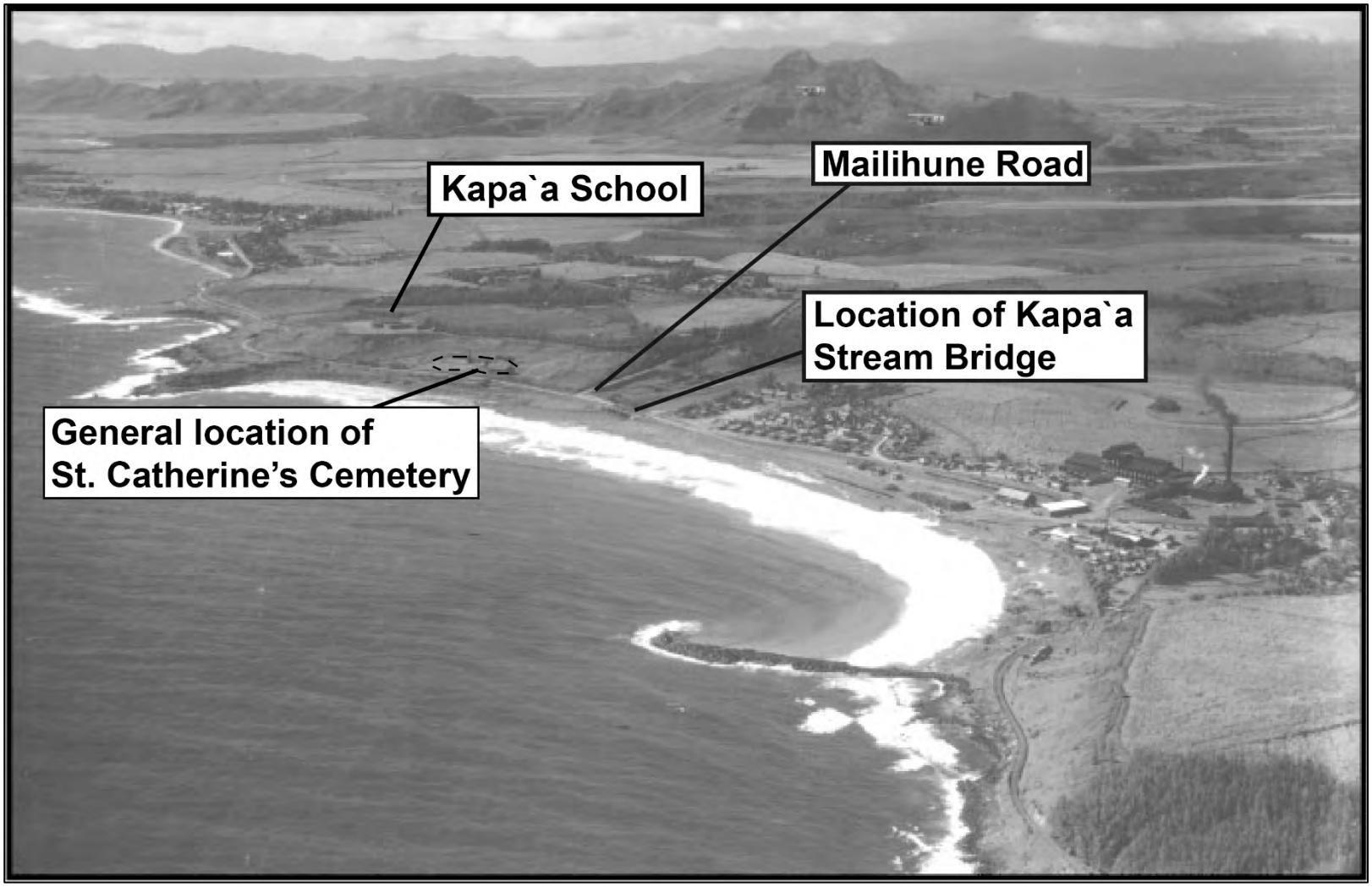

Figure 12. “Aerial View of Kealia, Kauai, Hawaii, Looking Landward” ca. 1933 (Bushnell et. al 2002); note Mailihuna Road is misspelled

location of the *kuleana* awards in Kapa‘a indicates the majority of the house lots were situated along the Government Road. LCA 3243 names a “road” as one of its boundaries.

In Keālia, however, there is evidence that numerous traditional trails led to Anahola with possibly two principal routes, a *makai* route and a *mauka* route. In 1881, Z.S. Spalding, proprietor of the Makee Sugar Plantation, appealed to the Department of the Interior with a formal petition to have the *makai* road (in Keālia) officially closed, stating that the natives were breaking through his fences to take shortcuts between Keālia and Anahola (Hawai‘i State Archives, Letter: Z.S. Spalding, 16 May 1881). The exact location of the *makai* road is unknown although it is thought to have been on the plateau lands, somewhat removed from the coastline, in areas fit for sugar cane production. The route of the Old Government Road, also known as the “Mauka road” is described as, “crossing the Kealia River above the Rice Plantation and passing over the hill near Mr. Spalding’s residence” (Hawai‘i State Archives, Letter: Z.S. Spalding, 21 April 1882). When the Kaua‘i Belt Road was constructed in the first two decades of the twentieth century, a portion of the old Government Road route was abandoned. The new route crossed the river at the *makai* end of Keālia Stream, paralleled the ocean and the railroad track, and then turned *mauka* passing through Keālia town and went up the hill to meet up with the “Old government Road.” The Keālia Bridge built for the Kaua‘i Belt Road is thought to date to ca. 1912. A traveler writing about their travels in 1913, mentions the bridge: “In the twinkling of an eye we passed on the steel bridge of Kealia. This new bridge is beautiful” (Akina 1913) (Figure 13).

3.1.6 Twentieth Century History of Kapa‘a and Keālia (1900–Present)

In the early 1900s, government lands were auctioned off as town lots in Kapa‘a to help with the burgeoning plantation population. An oral account mentioned that in the 1930s and 1940s, the area north of Moikeha Canal in Kapa‘a was mostly settled by Portuguese families (Bushnell et al. 2002). Another oral account mentioned that the Japanese were very prominent in the 1920s and 1930s, largely replacing the Chinese merchants of the tum of the century in the Kapa‘a business sector (Bushnell et al. 2002). Several territorial government structures were once situated adjacent to the coastal areas of Kapa‘a. The Board of Health, Territory of Hawaii ran a dispensary in Kapa‘a starting in 1926. This was located at the *makai* edge of Niu Street near the Kapa‘a Beach Park parking lot. A fire station was once located in the area now occupied by the Coral Reef Hotel and a courthouse and jail cell once stood at the location of the present Kapa‘a Neighborhood Center. It is not known when these structures were removed or abandoned.

3.1.6.1 Ahukini Terminal & Railway Company

The Ahukini Terminal & Railway Company (AT&R) was formed in 1920 to establish a railroad to connect Anahola, Keālia, and Kapa‘a to Ahukini Landing and “provide relatively cheap freight rates for the carriage of plantation sugar to a terminal outlet” (Condé and Best 1973:185). The company was responsible for extending the railroad line from Makee Landing, which was no longer in use, to Ahukini Landing, and for constructing the original Waika‘ea Railroad Bridge and the Mō‘īkeha Makai Railroad Bridge (Figure 14 through Figure 17).

In 1934, the Lihue Plantation Company absorbed the AT&R and Makee Sugar Company (Condé and Best 1973:167). The railway and rolling stock formerly owned by Makee Sugar Company became the Makee Division of the Lihue Plantation. At this time, in addition to hauling sugar cane, the railroad was also used to haul plantation freight, including “fertilizer, etc. . . . canned pineapple from Hawaiian Canneries to Ahukini and Nawiliwili, pineapple refuse from Hawaiian Canneries to a dump near Anahola and fuel oil from Ahukini to Hawaiian Canneries Co., Ltd.” (Hawaiian Territorial Planning

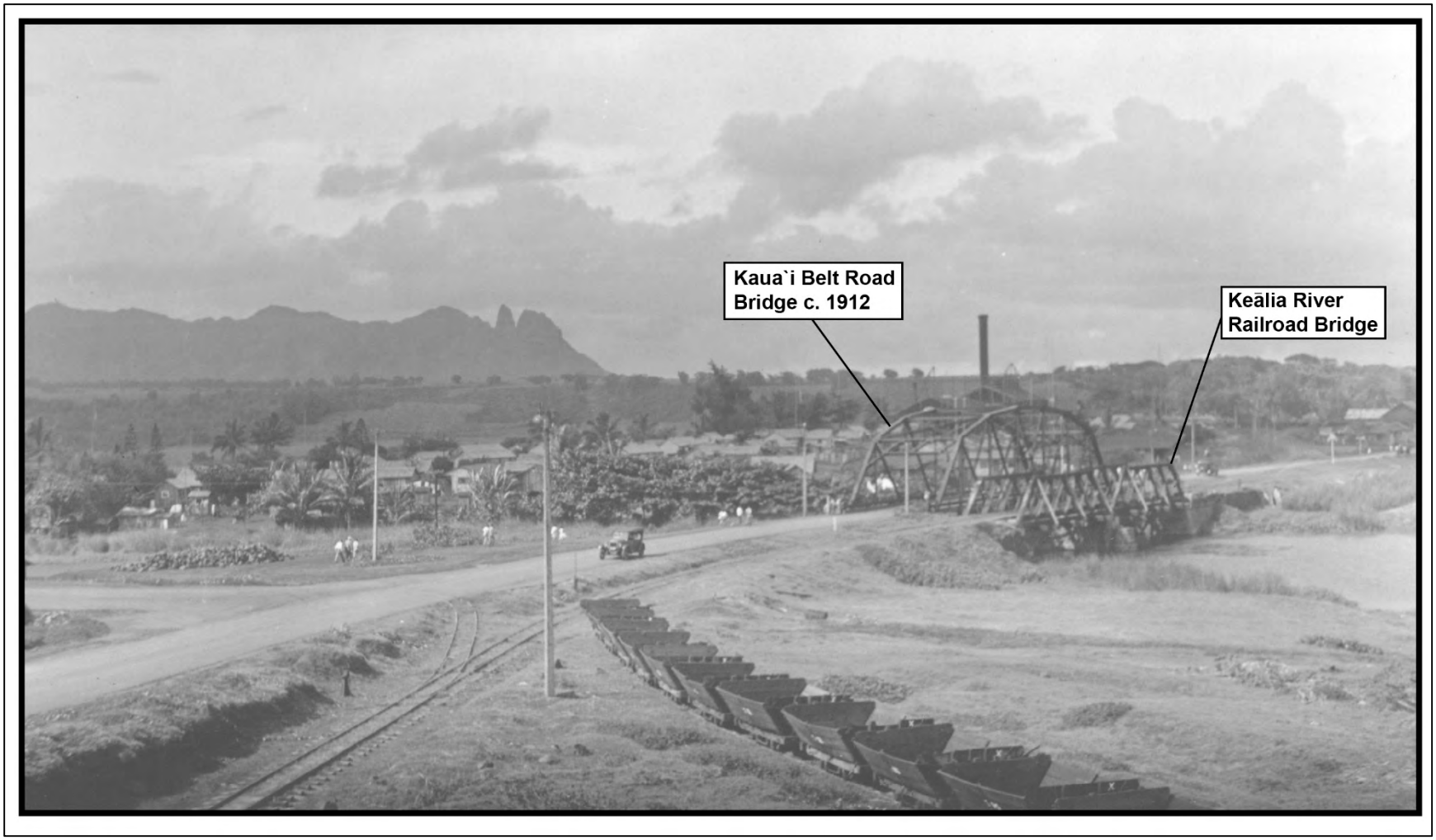

Figure 13. “Kealia in Background, Kealia, Kauai, Hawaii” ca. 1934, photograph by Funk (Bushnell et al. 2002)

Figure 14. Waika‘ea Bridge, pedestrian bridge built over railroad bridge, view to southwest (2002 CSH photo)

Figure 15. Close up of Waika‘ea Bridge, pedestrian bridge built over railroad bridge, view to northeast (2002 CSH photo)

Figure 16. Mō‘īkeha Makai Railroad Bridge, view to northeast (2002 CSH photo)

Figure 17. Railroad remnant built by the Ahukini Terminal & Railway Company located in Kapa‘a just north of the Kapa‘a Public Library, view to northeast (Railway Modelling 2014)

Board 1940:11). Former plantation workers and *kama‘āina* growing up in Kapa‘a remember when the cannery sent their waste to the pineapple dump, a concrete pier just north of Kumukumu Stream by railroad. The structure is built over the water where the rail cars would dump the pineapple waste. The current carried the waste to Kapa‘a, where the waste attracted fish and sharks (Bushnell et al. 2002).

Lihue Plantation was the last plantation in Hawai‘i to convert from railroad transport to trucking. “By 1957 the company was salvaging a part of their plantation railroad, which was being supplanted by roads laid out for the most part on or close to the old rail bed” (Condé and Best 1973:167). By 1959, the plantation had completely converted to trucking.

3.1.6.2 Hawaiian Canneries Company, Ltd.

In 1913, Hawaiian Canneries Company, Ltd. opened in Kapa‘a at the site now occupied by Pono Kai Resort, just north of Waika‘ea Canal (Cook 1999:56). A resident of Kapa‘a described how the town “came alive” after the cannery opened (Fernandez 2009:48). Following the completion of their plantation contracts, the Japanese plantation workers moved into town and “opened mom and pop grocery stores” (Fernandez 2009:48):

> Portuguese opened dairy farms in the hinterland or repair shops in Kapa‘a. Former plantation laborers became farmers, raising pineapple and other crops for sale. Service businesses started: the slop-gatherer who came to homes to take the garbage as feed for his pigs, the fish monger selling fish on their street, the cattle rancher who slaughtered cows and provided fresh meat to the market, the traveling wagon man hawking fresh fruits and vegetables. [Fernandez 2009:48]

Kapa‘a became “an integrated multi-racial town, containing an extraordinary mix of people living and working together in harmony” all due to the new cannery (Fernandez 2009:48). In 1923, Hawaiian Canneries Company, Ltd. purchased the approximately 8.75 acres of land they were leasing through the Hawaiian Organic Act (Hawai‘i Bureau of Conveyances, Grant 8248). At that time the cannery only contained four structures but by 1956, 1.5 million cases of pineapple were being packed. By 1960, 3,400 acres were in pineapple and the cannery employed 250 full-time and 1,000 seasonal workers (*Honolulu Advertiser*, 20 March 1960) (Figure 18 and Figure 19). In 1962, Hawaiian Canneries went out of business due to competition from canneries in other countries.

Severe floods in Kapa‘a in 1940 led to the dredging and construction of the Waika‘ea and Mō‘īkeha Canals sometime in the 1940s (Hawaiian Territorial Planning Board 1940:7). The construction of Waika‘ea Canal, approximately 275 m (902.2 ft) south of the project area, had been proposed as early as 1923 (Bureau of Land Conveyances, Grant 8248). A 1940 Master Plan for Kapa‘a requested that the Territorial Legislature set aside funds for the completion of a drainage canal and for filling *makai* and *mauka* of the canal (Hawaiian Territorial Planning Board 1940:7). In 1955, a report was published on proposed coral dredging for the reef fronting Kapa‘a Beach Park (*Garden Island Newspaper*, 21 September 1955). The coral was to be used for building plantation roads. This dredging was later blamed for accelerated erosion along Kapa‘a Beach (*Garden Island*, 30 October 1963). Today, there are several sea walls to check erosion along the Kapa‘a Beach Park. Old time residents claim the sandy beach in Kapa‘a was once much more extensive than it is now (Bushnell et al. 2002).

Residents of Keālia Town slowly dispersed after the incorporation of Makee Sugar Company into Lihue Plantation in the 1930s. Many of the plantation workers bought property of their own

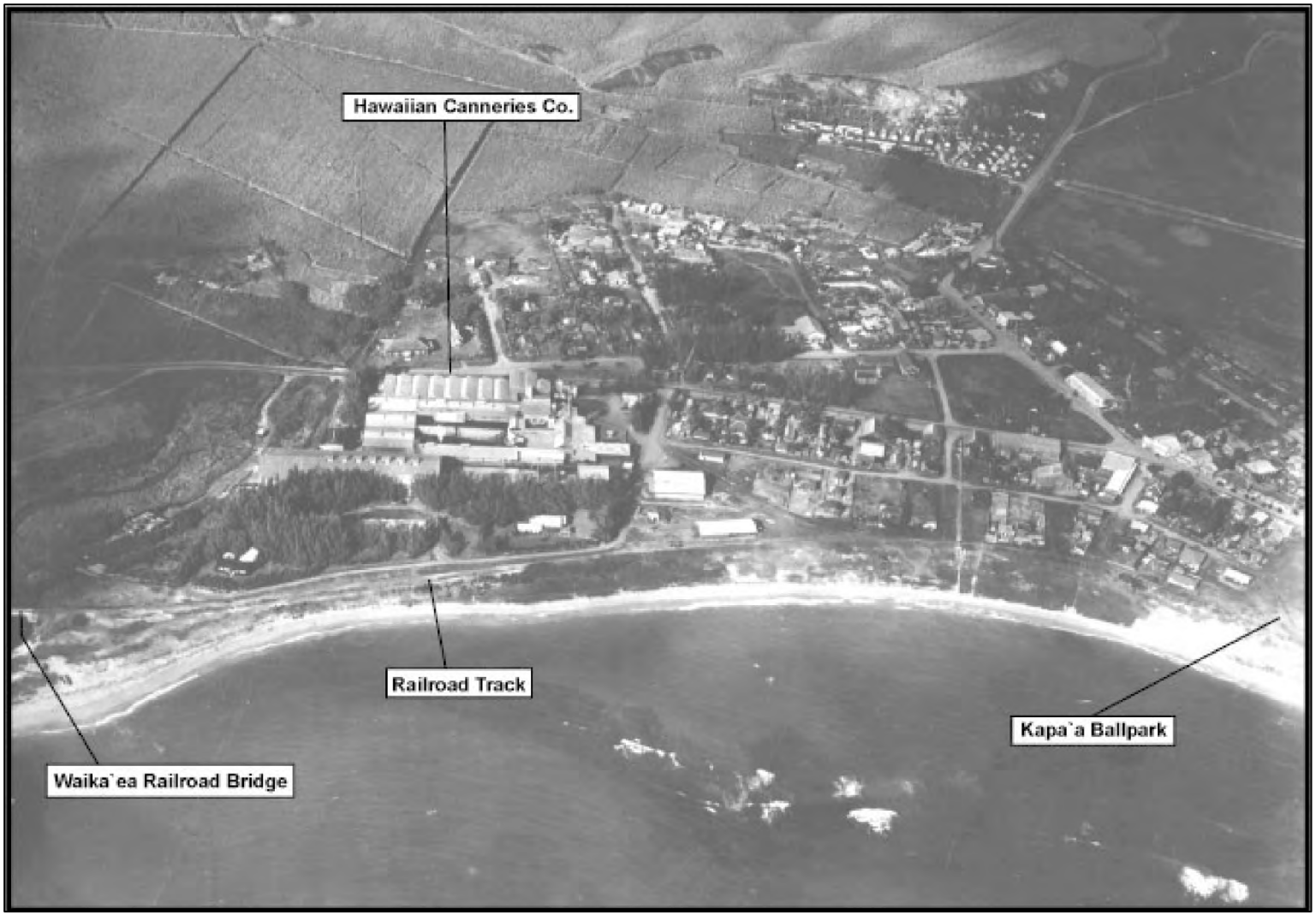

Figure 18. “Aerial View of Kapaa, Kauai, Hawaii, Looking Landward” ca. 1933 (figure from Bushnell et al. 2002)

Figure 19. Kaua‘i women working in the pineapple fields of Kapa‘a (date known) (*Garden Island* 1 December 2010)

and moved out of plantation camps. The plantation camps that bordered Kūhiō Highway were finally disbanded in the 1980s. The Lihue Plantation began to phase out in the last part of the twentieth century. Kapa‘a Town suffered after the closing of the Kapa‘a Cannery, however, the growing tourist industry helped to ease the economic effects of the cannery’s closing.

3.1.7 Contemporary Land Use

The project area includes a portion of Route 56 (Kūhiō Highway) including the intersection of Mailihuna Road and Kapa‘a Stream Bridge. Portions of the Kapa‘a to Keālia bike path and the entry to St. Catherine’s Cemetery are also located within the project area. The land surrounding the project area is not significantly developed. The largest establishment near the bridge site is Kapa‘a High School soccer field, track, and baseball diamond, located approximately 300 m (984.3 ft) to the southeast. To the north and northwest of the project area the land is primarily utilized for agricultural and residential purposes. Contemporary land use within the project area is depicted in historic aerial photographs of the Kapa‘a Coast (Figure 20 and Figure 21).

3.2 Previous Archaeological Research

The locations of previous archaeological studies conducted within a 0.8-km (0.5-mile) radius of the project area are shown in Figure 22 and listed in Table 3. Previously documented historic properties within a 0.8-km (0.5 -mile) radius of the project area are shown in Figure 23 and listed in Table 4. These studies and findings are discussed in the following paragraphs.

The first systematic archaeological survey of Kaua‘i was conducted by Bennett (1931), in which he discussed the terracing and irrigation ditches located along the Kapa‘a Stream. It should be noted that Bennett’s work was conducted after commercial sugar cane cultivation and other historic activities had destroyed or damaged many cultural resources. Also, most of the cultural resources documented by Bennett were relatively easy to access, conspicuous and obvious. Bennett discussed the irrigation ditches near Kapa‘a Stream as fairly large-sized banked structures with earthen walls. One ditch near Keālia homesteads was observed as being a deep cut (approximately 10 ft deep) into a low ridge to transport water across the ridge. Bennett also discusses the taro terraces within the small valleys in the foothills of Kapa‘a (Bennett 1931).

In 1972, Handy and Handy conducted a study of native planters within the entire Hawaiian archipelago. The study states that Keālia is dry with small streams and limited areas suitable for *lo‘i*. Terracing was observed at the intersection of Kapa‘a and Keālia streams and many terraced areas were observed *makai* of the confluence.

In 1991, CSH conducted a field inspection, surface collection, and assessment at the Keālia Sand Quarry site. Human remains were exposed due to the quarrying activities and designated SIHP # 50-30-08-1851. All human remains observed were fragmented and disarticulated. During background research into the area where bones were observed, it was noted that two LCAs were located in the vicinity. It was concluded that the bones were most likely associated with the LCAs (Folk and Hammatt 1991). It was also documented that traditional Hawaiian midden and historic artifacts were observed in the vicinity of the burials.

In 1992, Kikuchi and Remoaldo (1992) completed Volume I of a survey of the cemeteries of Kaua‘i. A total of two cemeteries are located within the vicinity of the project area. An historic

Figure 20. 1950 Kapaa Coast aerial photograph (UH SOEST) depicting the project area surrounded by residential and agricultural land

Figure 21. 1975 Kapaa Coast aerial photograph (UH SOEST) depicting the project area surrounded by residential and agricultural land

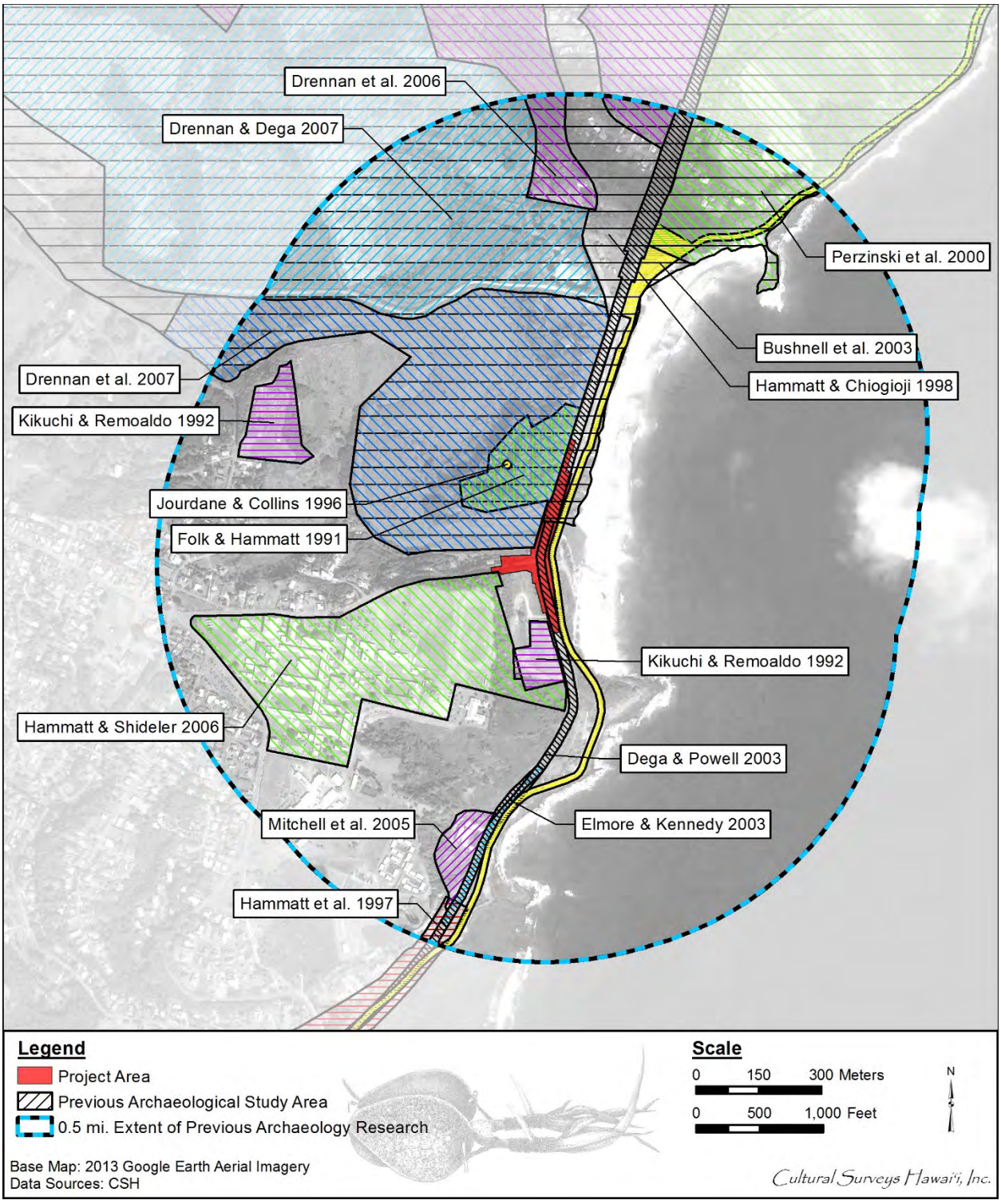

Figure 22. Aerial photograph showing previous archaeological studies within a 0.8-km (0.5-mile) radius of the project area (Google Earth 2013)

Table 3. Previous Archaeological Studies within a 0.8-km (0.5-mile) Radius of the Project Area

Reference	Type of Study	Location	Results (SIHP # 50-30-08 ****)
Bennett 1931	Archaeology of Kaua‘i	Island-wide	Discusses terracing and irrigation ditches located along Kapa‘a Stream
Handy and Handy 1972	Native planters study	Archipelago-wide	Emphasizes agricultural production was rather clumped along Keālia side of Kapa‘a Stream seaward of its confluence with Keālia Stream
Folk and Hammatt 1991	Archaeological assessment	Bend of Kapa‘a River, just inland of Kūhiō Hwy	Burial finds (SIHP # -1851); noted presence of historic artifacts and traditional Hawaiian midden in vicinity; also noted extensive disturbance from sand mining
Kikuchi and Remoaldo 1992	Historic cemetery survey	Island-wide	Identified historic cemetery (-B001) and St. Catherine’s Cemetery (-B002) within vicinity of project area
Jourdane and Collins 1996	Burial report	Bend of Kapa‘a River	Identified additional disarticulated human remains associated with SIHP # -1851
Hammatt et al. 1997	Archaeological inventory survey	Kūhiō Hwy in Wailua, South Olohena, North Olohena, Waipouli, and Kapa‘a Ahupua‘a	Further documented St. Catherine’s Cemetery (SIHP # -B002)
Hammatt and Chiogioji 1998	Archeological reconnaissance survey and assessment	6,690.9 acres within Keālia Ahupua‘a	No cultural resources identified within vicinity of project area
Perzinski et al. 2000	Archaeological inventory survey	300-acre *makai* parcel at Keālia, TMK: [4] 4-7-004:006	Identified SIHP # -0789 within vicinity of project area including Cane Haul Rd (SIHP # -0789: Feature A), Keālia Landing (SIHP # -0789: Feature B), and a dynamite storage bunker (SIHP # -0789: Feature C)

Reference	Type of Study	Location	Results (SIHP # 50-30-08 ****)
Bushnell et al. 2003	Archaeological inventory survey	Proposed Kapa‘a–Keālia bike path, Kapa‘a and Keālia Ahupua‘a	Identified three new cultural resources within vicinity of project area including a buried cultural layer with an associated human burial (SIHP # -2074), Old Kaua‘i Belt Hwy bridge foundation (SIHP # -2075), and a possibly modern petroglyph (SIHP # -2076); identified a new sub-feature of SIHP # -0789: Feature A, Kapa‘a Stream Cane Haul Rd Bridge (SIHP # -0789: Feature A, Sub-Feature 1)
Dega and Powell 2003	Archaeological monitoring	Kūhiō Hwy from Moloa‘a through Hanamā‘ulu	No cultural resources identified within vicinity of project area
Elmore and Kennedy 2003	Archaeological monitoring	Kapa‘a and Anaholoa	No cultural resources identified within vicinity of project area
O’Hare et al. 2003	Burial treatment plan	Keālia Ahupua‘a, TMK: [4] 4-7-004:001	Burial treatment plan for SIHP # -2074 (not included on Fig. 22)
Mitchell et al. 2005	Literature review, field inspection, and cultural evaluation	3.1-acre parcel in Kapa‘a Ahupua‘a, TMK: [4] 4-6-014:026	No cultural resources identified within vicinity of survey area
Drennan et al. 2006	Archaeological inventory survey, Phase I	Portion of 2,008-acre property in Keālia Ahupua‘a, TMKs: [4] 4-7-003:002 (por.) and 004:001 (por.), part of Keālananai Development project	No cultural resources identified within vicinity of project area
Hammatt and Shideler 2006	Field inspection	Kapa‘a High School	No cultural resources identified within vicinity of project area

Reference	Type of Study	Location	Results (SIHP # 50-30-08 ****)
Drennan and Dega 2007	Archaeological inventory survey, Phase II	Portion of 2,008-acre property in Keālia Ahupua‘a, TMKs: [4] 4-7-003:002 (por.) and 004:001 (por.), part of Keālananai Development project	Six new plantation-era historic properties identified within vicinity of project area including railroad rails and foundations (SIHP # -7015), sugar cane plantation infrastructure including a metal tank, structural supports, cart tracks, and foundations (SIHP # -7017), irrigation ditches, sluice gates, and a bridge (SIHP # -7018), a bridge, foundations, and irrigation pipes (SIHP # -7019), concrete foundations and a culvert (SIHP # -7020), and bridge/ transportation infrastructure, a culvert and drainage pipes (SIHP # -7021)
Drennan et al. 2007	Archaeological inventory survey, Phase III	386 acres in Keālia Ahupua‘a, TMKs: [4] 4-7-003:002 (por.) and 004:001 (por.), part of Keālananai Development project	Six historic properties identified within vicinity of project area including plantation era concrete staircase (SIHP # 7034), plantation era staircase (SIHP # -7035), plantation era concrete foundation, and brick and mortar structure (SIHP # -7037), human burials, burial pit outline and fire pit (SIHP # -7040), plantation era red brick and concrete wall/foundation (SIHP # -7041), and Keālia Historic Town Complex (SIHP # -7042)

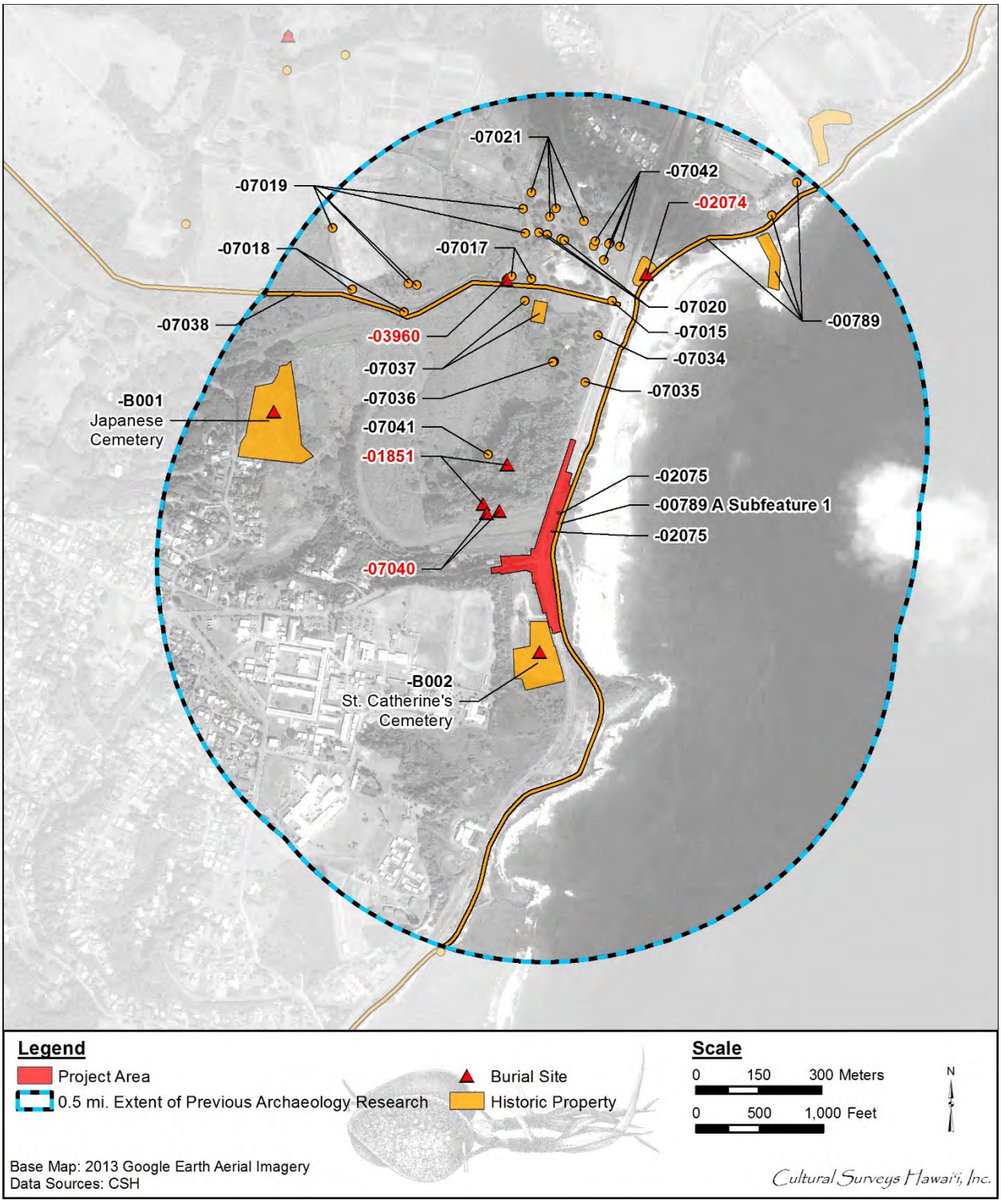

Figure 23. Aerial photograph showing previously identified archaeological sites within a 0.8-km (0.5-mile) radius of the project area (Google Earth 2013)

Table 4. Previously Identified Archaeological Sites within a 0.8-km (0.5-mile) Radius of the Project Area

SIHP # 50-30-08****	Site Type/Name	Reference
-B001	Historic cemetery	Kikuchi and Remoaldo 1992
-B002	St. Catherine’s Cemetery	Kikuchi and Remoaldo 1992
-0789a	Cane Haul Rd	Perzinski et al. 2000
-0789b	Keālia Landing	Perzinski et al. 2000
-0884	Pre-Contact human remains	SHPD communication
-1851	Dune site with human burials, historic artifacts and pre-Contact midden deposit	Jourdane and Collins 1996; Folk and Hammatt 1991
-2074	Buried cultural layer and associated human burial	Bushnell et al. 2003
-2075	Old Kaua‘i Belt Hwy bridge foundation	Bushnell et al. 2003
-7015	Railroad rails and foundation	Drennan and Dega 2007
-7017	Sugar cane plantation infrastructure including a metal tank, structural supports, cart tracks, and foundations	Drennan and Dega 2007
-7018	Irrigation ditches and sluice gates, and a plantation era bridge	Drennan and Dega 2007
-7019	Plantation era bridge, foundations, and irrigation pipes	Drennan and Dega 2007
-7020	Concrete foundations and culvert	Drennan and Dega 2007
-7021	Bridge/transportation infrastructure, a culvert, and drainage pipes	Drennan and Dega 2007
-7034	Concrete staircase	Drennan et al. 2007
-7035	Staircase	Drennan et al. 2007
-7036	Plantation era concrete block and basalt, mortar and brick structure	Drennan et al. 2007
-7037	Concrete foundation, and brick and mortar structure	Drennan et al. 2007
-7040	Human burials, a burial pit outline, and a fire pit	Drennan et al. 2007
-7041	Red brick and concrete wall/foundation	Drennan et al. 2007
-7042	Keālia historic town complex	Drennan et al. 2007

cemetery (SIHP # -B001) is located west of the project area. A portion of St. Catherine's Cemetery (SIHP # -B002) is located within the southwest portion of the project area.

In 1996, SHPD staff conducted a field inspection of an inadvertent burial reported at Keālia. The remains were lying in recently disturbed sand deposits and associated with the previously identified SIHP # -1851 (Jourdane and Collins 1996).

In 1997, CSH completed an archaeological inventory survey for the Kūhiō Highway widening and bypass options project. This project consisted of areas in the Wailua, South Olohena, North Olohena, Waipouli, and Kapa‘a Ahupua‘a. Although outside the project area, SIHP # -B002 was mentioned but not further documented in the report (Hammatt et al. 1997:103–104).

In 1998, CSH completed an archaeological reconnaissance survey and assessment for a 6,690.6-acre portion of Keālia Ahupua'a. The survey found that areas located within floodplains of Kapa‘a and Keālia streams were previously inhabited by traditional Hawaiians. Much of the area surveyed was former plantation land considered to be of little archaeological concern. The study also suggests the area known as Keālia Beach is likely void of archaeological sites associated with traditional Hawaiian activities due to sugar cane being planted up to the shoreline and the shoreline being modified for a cane haul road (Hammatt and Chiogioji 1998).

In 2000, CSH completed an archaeological inventory survey and subsurface testing of the approximately 300-acre Keālia *makai* parcel. A total of three cultural resources were identified: SIHP # -0789, plantation era infrastructure and structures; SIHP # -0790, World War II structure and remnants; and SIHP # -1899, burials. Only SIHP # -0789 is located within the vicinity of the project area. The two features of SIHP # -0789 located within the vicinity of the project area consist of the Cane Haul Road (SIHP # -0789: Feature A), which extends along the coast near the project area, and the Keālia Landing (SIHP # -0789: Feature B) (Perzinski et al. 2000).

In 2003, CSH conducted an archaeological inventory survey for the Kapa‘a–Keālia bike and pedestrian path. A portion of the study is located within the current project area since parts of the bike and pedestrian path are in the project area. A total of five newly identified sites (SIHP #s -2074 through -2078) and a new sub-feature of SIHP # -0789 (Feature A, Sub-Feature 1) were documented (Bushnell et al. 2003). Two historic properties identified in the 2003 project were identified within the current project area. SIHP # -0789: Feature A, Sub-Feature 1 is identified as the *makai* Kapa‘a Stream Bridge for the Cane Haul Road. The second site consists of SIHP # -2075, the highway bridge foundation for the *mauka* Kapa‘a Stream Bridge. One additional historic property was identified within the vicinity of the project area. This consists of a buried cultural layer and associated human burial (SIHP # -2074). Subsurface testing was conducted just north of the current project area. CSH completed a burial treatment plan for SIHP # -2074. The remains were discovered during the subsurface testing along the coast where restroom facilities were to be built and a burial treatment plan was recommended for SIHP # -2074 (O'Hare et al. 2003).

In 2003, Scientific Consultant Services (SCS) completed archaeological monitoring during Phase I of the Kaua‘i Rural Fiber-optic Duct Lines project. A portion of the study is located within the current project area (Segment 16) extending along the western shoulder of Kūhiō Highway (Figure 24). Segment 16's trenching ran parallel to the coast and across the flood plain. Within this segment, only a single location yielded historic subsurface cultural materials, which consisted of an old railroad gravel bed (Dega and Powell 2003:71-73). It is unclear exactly where the profile

Figure 24. Excavation of trench for fiber-optic cable running along west shoulder of Kūhiō Highway near the current project area (Dega and Powell 2003:27)

showing the old railroad gravel bed was drawn. No significant historic properties were identified within the vicinity of the project area.

In 2003, SCS conducted archaeological monitoring for the Kūhiō Highway drainage improvements for 250 m (820.2 ft) in Kapa‘a and at a single location in Anaholoa. No cultural resources were identified within the vicinity of the project area (Elmore and Kennedy 2003).

In 2005, CSH conducted a literature review, field inspection, and cultural evaluation in a 3.1-acre parcel in Kapa‘a Ahupua‘a. The study documented two filled lagoons and found the subsurface sediments were heavily disturbed by construction activities. No cultural resources were identified within the vicinity of the project area (Mitchell et al. 2005).

In 2006, CSH conducted a brief field inspection at Kapa‘a High School for the installation of new water lines. The study found there was low potential for cultural resources within the Kapa‘a High School property due to the extensive grading. The study also observed a baseball field, large track, and undeveloped area serving as a large buffer between the St. Catherine’s Cemetery (SIHP # -B002) and the high school’s structures (Hammatt and Shideler 2006).

In 2007, SCS conducted four phases of an archaeological inventory survey in the Keālia Ahupua‘a. Phase II (Dennan and Dega 2007) and Phase III (Dennan et al. 2007) extend within the vicinity of the project area. During Phase II, six new plantation era historic properties were identified near the project area. These consist of railroad rails and foundations (SIHP # -7015), sugar cane plantation infrastructure including a metal tank, structural supports, cart tracks, and foundations (SIHP # -7017), irrigation ditches, sluice gates, and a bridge (SIHP # -7018), a bridge, foundations, and irrigation pipes (SIHP # -7019), concrete foundations and a culvert (SIHP # -7020), and bridge infrastructure, a culvert, and drainage pipes (SIHP # -7021) (Dennan and Dega 2007). During Phase III, six historic properties identified within the vicinity of the project area included a plantation era concrete staircase (SIHP # -7034), a plantation era staircase (SIHP # -7035), a plantation era concrete block and basalt, mortar and brick structure (SIHP # -7036), a plantation era foundation, and brick and mortar structure (SIHP # -7037), human burials, a burial pit outline and a fire pit (SIHP # -7040), a plantation era red brick and concrete wall/foundation (SIHP # -7041), and the Keālia Historic Town Complex (SIHP # -7042) (Dennan et al. 2007).

3.3 Background Summary and Predictive Model

The Kapa‘a Stream Bridge project stretches through the *ahupua‘a* of Kapa‘a and Keālia, part of the ancient Puna District. Legends, traditional accounts and *wahi pana* point to an area rich in pre-Contact history, although it seems much of this history has been lost. Accounts name several *kupua* and known *akua* in reference to places in Kapa‘a and Keālia such as Palila, Hi‘iaka and Wahine‘ōma‘o. In addition, several persons of high status appear in references to *wahi pana,* and legends associated with Kapa‘a and Keālia. These include Mō‘īkeha, Kaweloleimakua, Kawelomahahai‘a, and Paka‘a. Although the extent of Ka Lulu O Mō‘īkeha is not known, recorded accounts state that it encompassed the area near the old Makee Landing, near the present day Coral Reef Hotel. Paka‘a, son of notable parents and guardian of the wind gourd, is thought to have grown up at Keahiahi, the rocky headland between Kapa‘a and Keālia.

Historic records list a number of *heiau* situated in Kapa‘a and Keālia suggesting the region was at one time much more significant than is portrayed by the *kuleana* records of the late 1840s and early 1850s. The specific locations of most of the *heiau* are unknown, however, there are a few

that carry the same names as *wahi pana* known to be located near the project area. These *heiau* include Kuahiahi (Keahiahi, Kaahiahi) at the rocky headland at the north end of Kapa‘a and Kaluluomoikeha in Kapa‘a.

Historic accounts suggest a fairly sparse population in Kapa‘a with Hawaiians living in a series of small settlements, probably along the *alanui aupuni* (the Kūhiō Highway) that traversed a narrow sand berm. This sand berm created the *makai* boundary of an inland swamp. Most of the *lo‘i* claimed were situated on the *mauka* side of the Kapa‘a swamp in shallow gulches or valleys. The more ample river valley of Keālia hosted a larger population with *kuleana* claims mostly dispersed along the Keālia River (the current Kapa‘a Stream). There is one Land Commission Award on the northern end of Keālia Beach, approximately 100 m (328.1 ft) north of the project area; subsurface testing in this locale has yielded evidence of human occupation ranging from pre-Contact times to the plantation era. According to historic documents, the plateau areas north of Keālia Valley were sparsely inhabited with areas bordering Kumukumu and Homaikawa‘a streams hosting the largest settlements.

The earliest successful economic enterprise by a westerner in these *ahupua‘a* was the Krull Ranch and Dairy, which operated in the Kumukumu area in the 1860s. The Krull Dairy was situated near Waipahe‘e, north of the project area. In 1877, the Makee Sugar Plantation was established in conjunction with members of the Hui Kawaihau, several of whom were retainers in Kalākaua’s court. The Makee Plantation built a mill and landing at Kapa‘a as part of the plantation infrastructure. Makee Landing, also known as the Kapa‘a Wharf, once extended out from what is now a breakwater for the Moikeha Canal, near the present Coral Reef Motel. Following the move of the Kapa‘a mill to Keālia in 1885, a railroad was built from Makee Landing to Keālia with another railroad arm leading across the Moikeha drainage up Lehua Street and into the *mauka* regions of Kapa‘a. The *mauka* Moikeha Railroad Bridge (SIHP # -2078, Feature D) and the Old Kealia Railroad Bridge/Cane Haul Road (SIHP # -789A, Sub-Feature I) represent a part of the first railroad system constructed ca. 1891 to transport sugar cane.

The Makee Sugar Plantation, operating out of Keālia, attracted hundreds of immigrant workers, first the Portuguese and Japanese and later, Filipinos. Kapa‘a and Keālia towns sprung up around these immigrant groups. In addition, there were several plantation camps in Keālia as well as homesteads in the Kapa‘a. Many of the residential lots in the Kapa‘a area were auctioned off as Kapa‘a Town Lots in the first part of the twentieth century.

The pineapple industry made its debut in Kapa‘a in 1913, with the opening of Hawaiian Cannery Companies, Ltd. A cannery was constructed on land north of Waika‘ea Canal. This cannery was in business for almost 50 years and made use of the railroad track that fronted it to transport pineapple to Ahukini Landing for shipment and also to send pineapple waste to the “pineapple dump” north of Keālia. In 1920, Ahukini Terminal & Railway Company extended the railroad from the Moikeha Canal area in Kapa‘a to the Ahukini Landing in Hanamā‘ulu which became the new central terminal for shipping of agricultural goods. Lihue Plantation took over the Ahukini Terminal & Railway Company and the Makee Plantation in 1934.

By the late 1950s, the railroad gave way to truck roads. The local newspaper reports dredging coral from the Kapa‘a reef to be used for building plantation roads. A good portion of the railroad alignment in Kapa‘a was abandoned, however, a cane haul road was constructed near the intersection of Haua‘ala Road and Kūhiō Highway. The Lihue Plantation finally went out of

business at the end of the twentieth century and the cane haul road was abandoned. As an economic force, tourism has taken the place of agriculture in the last several decades. The old railroad alignment in the Kapa‘a Town area was converted into a bike path in the 1980s, extending from the Waika‘ea Canal to the Smokey Louie Swimming Pool.

Based on the background information, it is anticipated that pre-Contact and historic cultural layers associated with occupation, habitation, and agriculture will most likely be encountered during any subsurface activities in the project area. Pre-Contact human remains (SIHP # -0884) were documented just outside the project area to the west of the south corner of the current project area. An historic cemetery (SIHP # -B002) extends within the project area and a sand dune deposit with disarticulated human remains (SIHP # -1851) is located adjacent to the project area. Therefore, human burials and associated cultural layers will likely be encountered during subsurface activities for the project. The plantation era infrastructure still extant within the vicinity of the project area suggests a possibility of encountering significant plantation era cultural resources.

Section 4 Results of Fieldwork

Fieldwork conducted for the AIS included a 100% pedestrian inspection and subsurface testing. The pedestrian inspection included the identification and documentation of cultural resources within the project area and a description of the overall project area including ground visibility, modern use or disturbance, and vegetation. Subsurface testing consisted of two backhoe-assisted test trenches (T-1 and T-2). Fieldwork was conducted on 13 June 2015 by CSH archaeologists Missy Kamai, B.A., Tom Martel, B.A., and Richard Stark, Ph.D. under the general supervision of principal investigator Hallett H. Hammatt, Ph.D. This work required approximately 4 person-days to complete.

4.1 Pedestrian Inspection Results

The cultural resources identified within the project area included two newly identified cultural resources (SIHP # -2278, and SIHP # -2279), as well as two previously documented cultural resources (SIHP #s -0789A Sub-Feature 1, and -2075). The two newly identified cultural resources consist of the Kapa‘a Stream Bridge, built in 1953, which spans Kapa‘a Stream (SIHP # -2278) and a plantation era water control complex (SIHP # -2279). The water control complex consists of an earthen ditch remnant and a concrete culvert remnant. Complete descriptions of these cultural resources are provided in Section 6.

Ground visibility during the pedestrian inspection was good. The project area is generally developed and mowed with some areas of unmaintained vegetation growth. Vegetation in undeveloped areas within the project area included tall invasive grasses (Megathyrus and Urochloa) and dense *naupaka* (Scaevola). The remaining areas of the project include mowed grass, wedelia, and ironwood (Casuarina).

4.2 Subsurface Testing Results

Two backhoe assisted test excavations (T-1 and T-2) were excavated along the shoulder of Kūhiō Highway (Figure 25). T-1 measured 9.5 m in length, 0.6 m in width, and extended 3.0 m below surface. T-2 measured 7.8 m in length, 0.6 m in width, and extended 2.0 m below surface. Stratigraphy observed consists of a modern A horizon (Stratum Ia) overlying multiple fill layers (Strata Ib–Id). Natural sediments were not observed. Two traditional Hawaiian artifacts and one historic artifact were observed in a mixed fill layer (Stratum Ib) of T-2 and designated Accession (Acc.) #s 1–3.

4.2.1 Test Excavation 1 (T-1)

T-1 is located south of the bridge, east of the highway in the central portion of the project area (see Figure 25). T-1 measured 9.5 m long by 0.6 m wide. The base of excavation was determined to be approximately 3.0 m. The water table was not observed. The stratigraphy of T-1 consists of a sandy clay loam A horizon (Stratum Ia), overlying various layers of fill consisting of a sandy clay loam fill (Stratum Ib), and clay fill (Stratum Ic and Id) (Figure 26, Figure 27, and Table 5). No traditional Hawaiian or historic cultural material was observed.

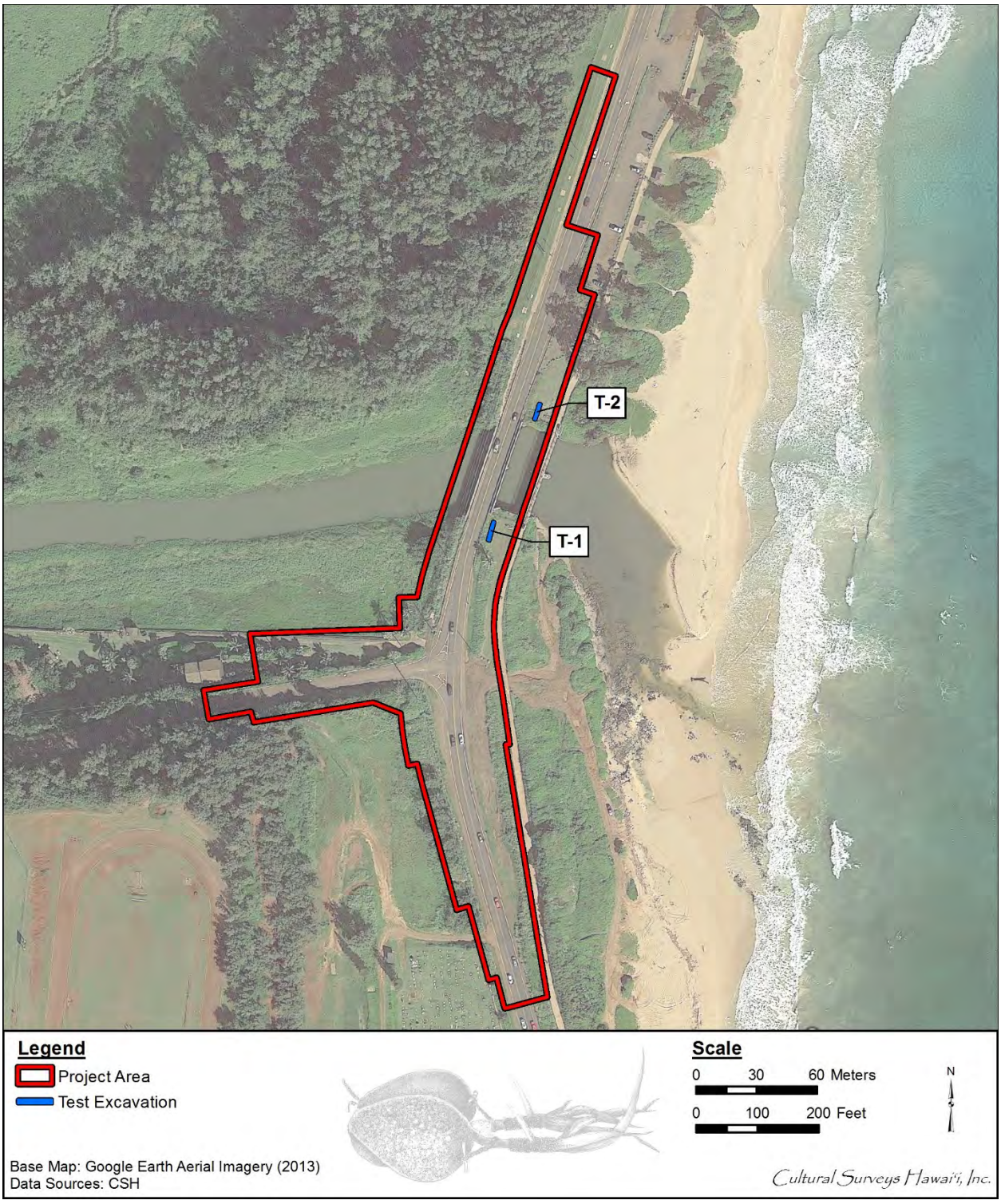

Figure 25. 2013 aerial photograph showing locations of T-1 and T-2 within the project area (Google Earth)

Figure 26. T-1, south wall, view to southeast

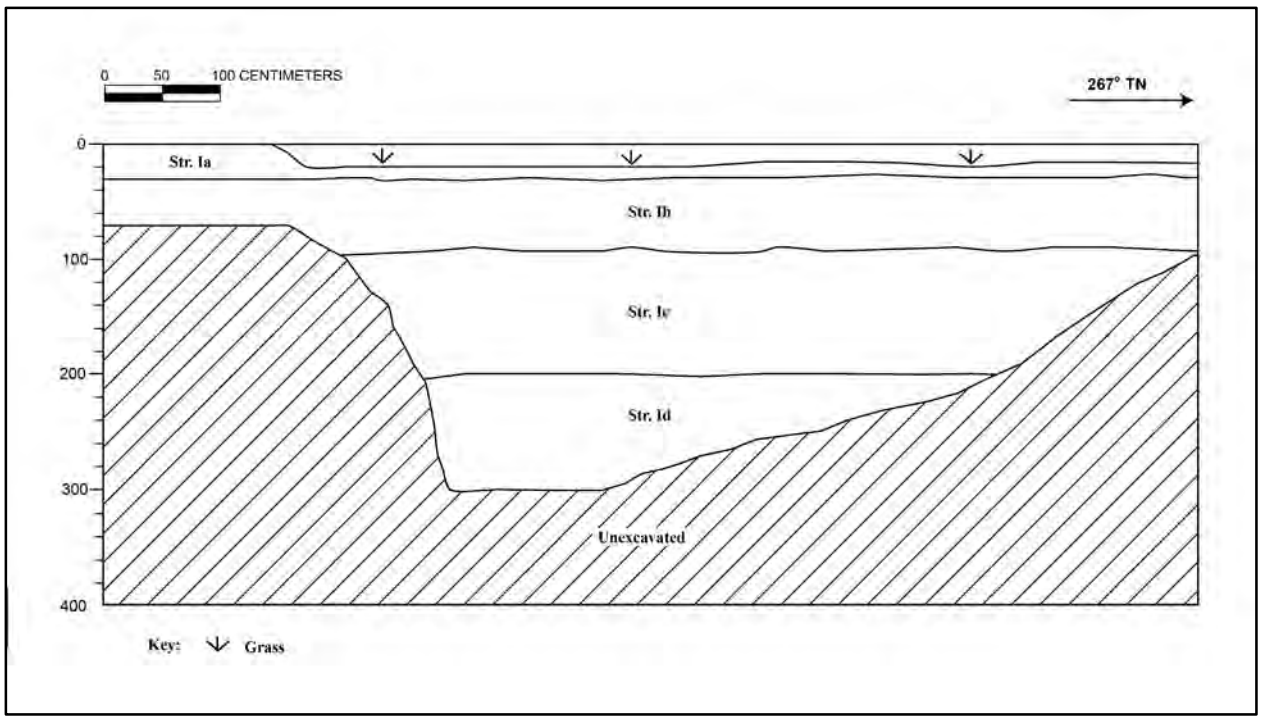

Figure 27. T-1, south wall profile

Table 5. Stratigraphic Description of T-1 South Wall

Stratum	Depth (cmbs)	Description of Sediment
Ia	0–30	A horizon; 2.5 YR 3/4, dusky red; sandy clay loam; weak, medium, crumb structure; moist, very friable consistence; no cementation; slightly plastic; mixed origin; abrupt, smooth lower boundary; many fine to coarse roots observed; current land surface
Ib	30–95	Fill; 2.5 YR 4/6, red; sandy clay loam; moderate, coarse, blocky structure; moist, firm consistence; weak cementation; plastic; mixed origin; abrupt, smooth lower boundary; few medium roots observed; 15% small basalt cobbles and large angular basalt boulders
Ic	95–200	Fill; 10R 4/3, weak red; clay; moderate, fine, crumb structure; moist, firm consistence; weak cementation; very plastic; terrigenous origin; abrupt, smooth lower boundary; few fine roots observed; 15% basalt angular cobbles
Id	200–300 (BOE)	Fill; 10R 4/6, red; clay; moderate, fine, crumb structure; moist, firm consistence; weak cementation; very plastic; terrigenous origin; lower boundary not visible; no roots observed; 10% basalt angular cobbles

4.2.2 Test Excavation 2 (T-2)

T-2 is located north of the bridge on the east side of the highway in the central portion of the project area (see Figure 25). T-2 measured 7.8 m long by 0.6 m wide. The base of excavation was determined to be approximately 200 cm. The water table was not observed. The stratigraphy of T-2 consists of a clay loam A horizon (Stratum Ia) overlying sand fill (Stratum Ib), overlying a clay loam fill (Stratum Ic), overlying a clay fill (Stratum Id) (Figure 28, Figure 29, and Table 6).

Traditional Hawaiian cultural material observed and collected consists of a polished basalt flake (Acc. # 1) and a coral *‘ulu maika* (Acc. # 2). Both of the traditional Hawaiian artifacts were found in a disturbed fill layer (Stratum Ib). Although these artifacts are associated with traditional Hawaiian activities, based on the artifacts’ context within a disturbed fill layer, the age of manufacture/use is unknown.

One historic artifact (Acc. # 3) was observed and collected within the same disturbed fill layer as Acc. #s 1 and 2. Acc. # 3 consists of a porcelain tableware base fragment with a Japanese dashed line transfer print. This artifact was likely manufactured between 1870 and 1920. For complete descriptions and analysis of Acc. #s 1–3, refer to Section 5: Results of Laboratory Analysis.

Figure 28. T-2, north wall, view to northeast

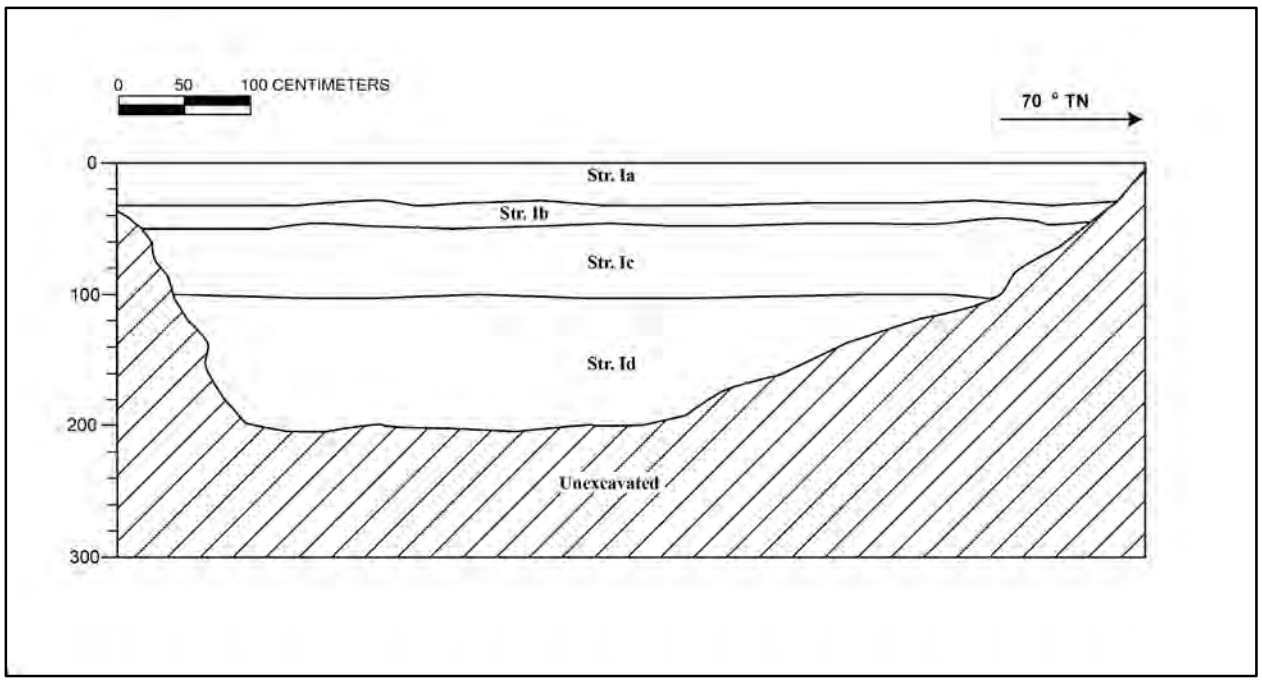

Figure 29. T-2, north wall profile

Table 6. Stratigraphic Description of T-2 North Wall

Stratum	Depth (cmbs)	Description of Sediment
Ia	0–30	A horizon; 10 YR 4/6, dark yellowish brown; clay loam; weak, fine, blocky structure; dry, hard consistence; no cementation; plastic; mixed origin; clear, smooth lower boundary; many fine to coarse roots observed; compact layer; 30% angular basalt pebbles
Ib	30–45	Fill; 10YR 7/1, light gray; medium sand; structureless (single-grain); dry, hard consistence; no cementation; non-plastic; marine origin; very abrupt, smooth lower boundary; common, fine to medium roots observed; *‘ulu maika* and polished flake observed and collected; fine coral pebbles; construction layer fill of concrete and mortar (demolition material)
Ic	45–100	Fill; 2.5 YR 4/4, reddish brown; clay loam; moderate, fine, crumb structure; dry, weakly coherent consistence; no cementation; plastic; terrigenous origin; abrupt, smooth lower boundary; few fine to medium roots observed; 40% angular basalt pebbles and cobbles
Id	100–200 (BOE)	Fill; 10R 3/6, dark red; clay; strong, medium, blocky structure; dry, hard consistence; weak cementation; plastic; terrigenous origin; lower boundary not visible; no roots observed; 10% basalt angular

Section 5 Results of Laboratory Analysis

Three artifacts were recovered from T-2 (Table 7). Two traditional artifacts were recovered, one basalt adze rejuvenation flake (Figure 30) and one coral *‘ulu maika* (stone disk) (Figure 31). Acc # 1 is a flake removed from a polished adze, with a prepared platform (either faceted or complex but difficult to tell without magnification), and hinged termination. Based on the nature of removal and prepared platform, the flake was likely removed during tool curation, specifically adze rejuvenation. Acc. # 2 is a coral *‘ulu maika* stone. The circular disk has flat sides with a flattened, but slightly convex axis, and measures 6.4 cm in diameter with a thickness of 3.1 cm. *‘Ulu maika* is a gaming stone used in the traditional *maika* (ancient Hawaiian game suggesting bowling) game played during the *makahiki* (commencement of the year) festival period. The *maika* game involved throwing or rolling an *‘ulu maika* down a prepared *kahua* (course) toward two sticks stuck in the ground only a few inches apart. The goal of the game was to throw or roll the stone disk between the sticks without striking either; or sometimes to see who could roll it the farthest (Ellis 1984:198; Buck 1964:372).

Acc. # 3 is a porcelain tableware fragment. This type of Japanese ceramic of the Meiji Period (1868–1912) is usually called “Dashed Lines,” as dashed lines outline major design elements made with patterned dots (Costello and Maniery 1988:25 Figure 32). These transfer print patterns were made with paper stencils, a decoration-making method used until the end of the eighteenth century and then revived in the 1870s. This type of decoration technique went out of style in Japan by approximately 1920 (Ross 2012:5, 7).

Table 7. Artifacts Recovered from Project Area

Acc. #	Test Exc. #	Str.	Depth	Material	Type	Description	Count	Weight (g)	Age
0001	T-2	Ib	30-45	Stone	Flake	Polished basalt flake, adze rejuvenation flake	1	1.6	
0002	T-2	Ib	30-45	Coral	*‘Ulu maika*	Coral *‘ulu maika* stone, slightly convex axis	1	158.8	
0003	T-2	Ib	30-45	Ceramic	Tableware	Porcelain base fragment, Japanese dashed line transfer print on interior, unglazed interior footring on exterior	1	12.2	1870-1920

Figure 30. Acc. # 1, basalt adze rejuvenation flake

Figure 31. Acc. # 2, coral *‘ulu maika* stone

Figure 32. Acc. # 3, porcelain tableware fragment with Japanese dashed-line transfer print

Section 6 Cultural Resource Descriptions

Four cultural resources were identified within the current project area during this AIS. Two are newly identified and two were previously documented. They are summarized in Table 8 and their distributions are depicted on Figure 33 and Figure 34.

Table 8. Sites Identified within the Current Project Area

SIHP # 50-30-08	Formal Type	Function
-2278	Bridge (Kapa‘a Stream Bridge)	Transportation
-2279	Complex	Water Control
-0789A Sub-Feature 1	Bridge (Keālia Stream Bridge)	Transportation
-2075	Historic Bridge Foundation (Kaua‘i Belt Road, Keālia Bridge)	Transportation

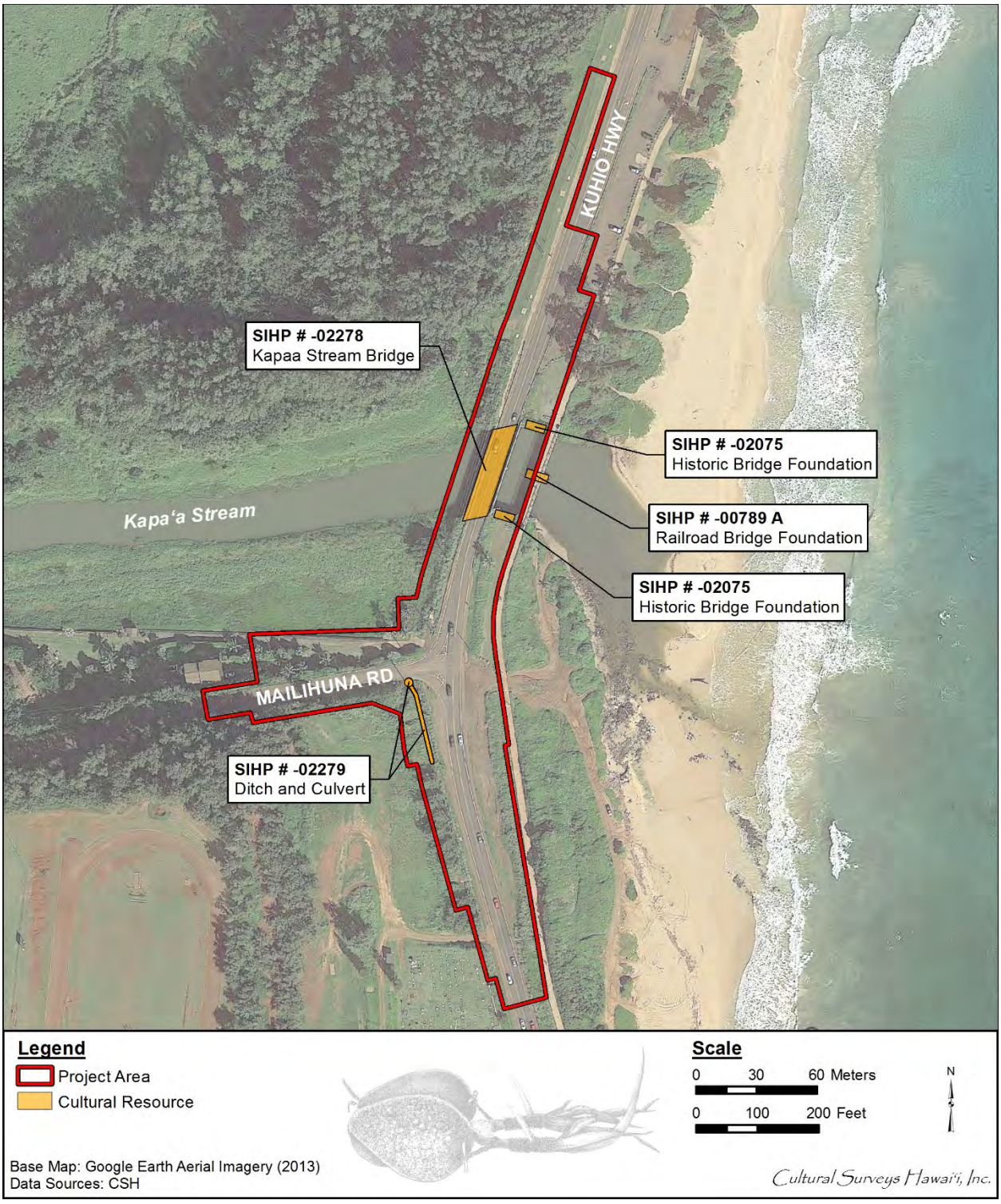

Figure 33. 2013 aerial photograph showing the locations of cultural resources within the project area (Google Earth 2013)

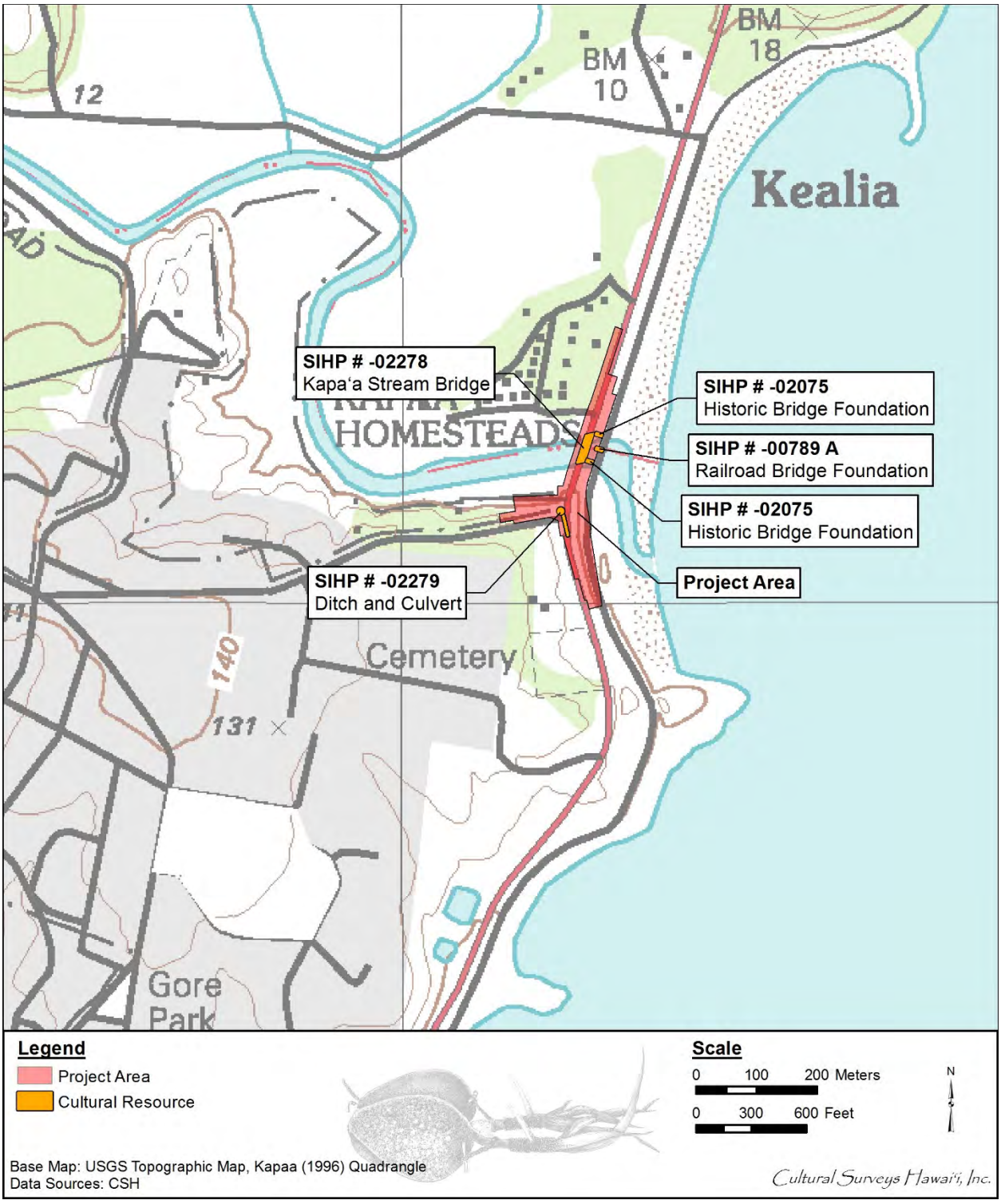

Figure 34. Portion of 1996 Kapaa USGS topographic quadrangle showing the locations of cultural resources within the project area

6.1 SIHP # 50-30-08-2278

FORMAL TYPE:	Bridge (Kapa‘a Stream Bridge)
FUNCTION:	Transportation
NUMBER OF FEATURES:	1
AGE:	Historic (1953)
TEST EXCAVATIONS:	None
TAX MAP KEY:	[4] 4-7-003 Kūhiō Highway Right-of-Way
LAND JURISDICTION:	HDOT
PREVIOUS DOCUMENTATION:	MKE Associates LLC/Fung Associates, Inc. 2013

SIHP # -2278 is Kapa‘a Stream Bridge, located near mile post 10 along Route 56 (Kūhiō Highway) (see Figure 33 and Figure 34) and entirely within the project area (Figure 35 through Figure 38). The existing Kapa‘a Stream Bridge structure was built in 1953 and spans Kapa‘a Stream. Kapa‘a Stream Bridge is identified as a concrete T-beam bridge. The bridge is approximately 46 m (150 ft) long and 12.0 m (39 ft) from out to out.

The State Historic Bridge Inventory Evaluation (MKE Associates LLC/Fung Associates, Inc. 2013:3-6) describes Kapa‘a Stream Bridge as “a typical post-war bridge and falls under program comments.” The status of “program comments” refers to common post-war bridges built after 1945 covered by the Advisory Council program comments. Hawai‘i has not yet coordinated the inventory results with their Federal Preservation Office, so is currently not operating under the Program Comments exceptions.

In consultation with the SHPD architecture branch, it was determined that the Kapa‘a Stream Bridge (SIHP # -2278) is not eligible to the National and/or Hawai‘i Registers pursuant to 36 CFR 60.4 and HAR §13-198-8 and not significant pursuant to HAR §13-275-6. At the request of the SHPD, architectural recordation was not conducted.

Figure 35. SIHP # -2278, Kapa‘a Stream Bridge deck and railings, view to south

Figure 36. SIHP # -2278, Kapa‘a Stream Bridge deck and railings, view to north

Figure 37. Overview of SIHP # -2278, Kapa‘a Stream Bridge, view to northwest

Figure 38. Overview of SIHP # -2278, Kapa‘a Stream Bridge, view to southwest

6.2 SIHP # 50-30-08-2279

FORMAL TYPE:	Complex
FUNCTION:	Water control
NUMBER OF FEATURES:	2
AGE:	Historic
TEST EXCAVATIONS:	None
TAX MAP KEY:	[4] 4-7-003 Kūhiō Highway Right-of-Way
LAND JURISDICTION:	HDOT
PREVIOUS DOCUMENTATION:	None

SIHP # -2279 is a complex consisting of two features (Features A and B) located on the west side of Mailihuna Road and north side of Kūhiō Highway within the project area (see Figure 33 and Figure 34).

Feature A is an earthen ditch remnant that extends north to south along the western shoulder of Kūhiō Highway to the edge of Mailihuna Road entirely within the project area. The ditch measures approximately 45.0 m (147.6 ft) long and 2.25 m (7.4 ft) wide with an average depth of 0.4 m (1.3 ft) (Figure 39 and Figure 40). Immediately west of, and parallel to, the earthen ditch is an approximately 6-m high earthen berm. Feature A bends slightly to the northwest as it reaches Mailihuna Road and perpendicularly intersects Feature B at the Mailihuna Road and Kūhiō Highway juncture as a means to drain rainwater runoff underneath Kūhiō Highway (Figure 41).

Feature B is a culvert remnant located on the southern corner of Mailihuna Road and Kūhiō Highway and entirely within the project area. The culvert is constructed of concrete. The exposed portion of the culvert measures approximately 0.7 m (2.3 ft) long by 0.5 m (1.6 ft) wide (Figure 42 through Figure 44). No similar culvert structure was identified on the opposite (north) side of the road during the field inspection.

The exact age of SIHP # -2279 is unclear, however, it was possibly built during the construction of Kūhiō Highway in 1953. It also could be a more modern feature, installed after the construction of Kūhiō Highway.

SIHP # -2279 is interpreted as a possibly historic water control infrastructure.

Figure 39. SIHP # -2279 Feature A, an earthen ditch remnant, view to northwest

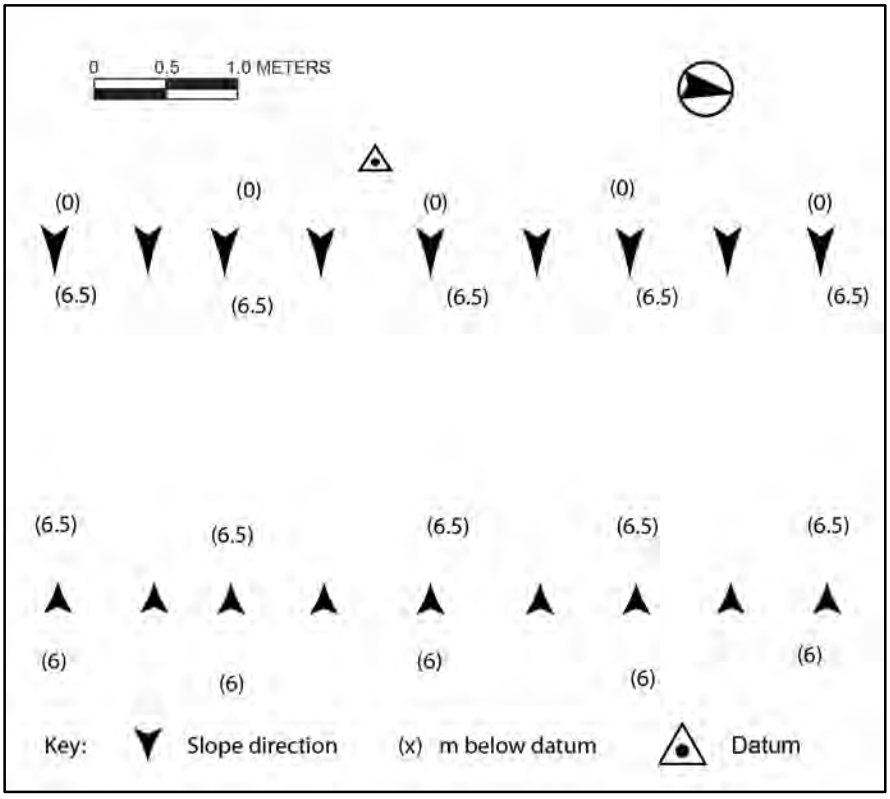

Figure 40. Plan view of a portion of the earthen ditch (SIHP # -2279, Feature A)

Figure 41. Junction of SIHP # -2279 Features A and B near intersection of Mailihuna Road and Kūhiō Highway, view to east

Figure 42. SIHP # -2279 Feature B, a concrete culvert, view to west

Figure 43. Close-up of concrete culvert (SIHP # -2279 Feature B), view to northwest

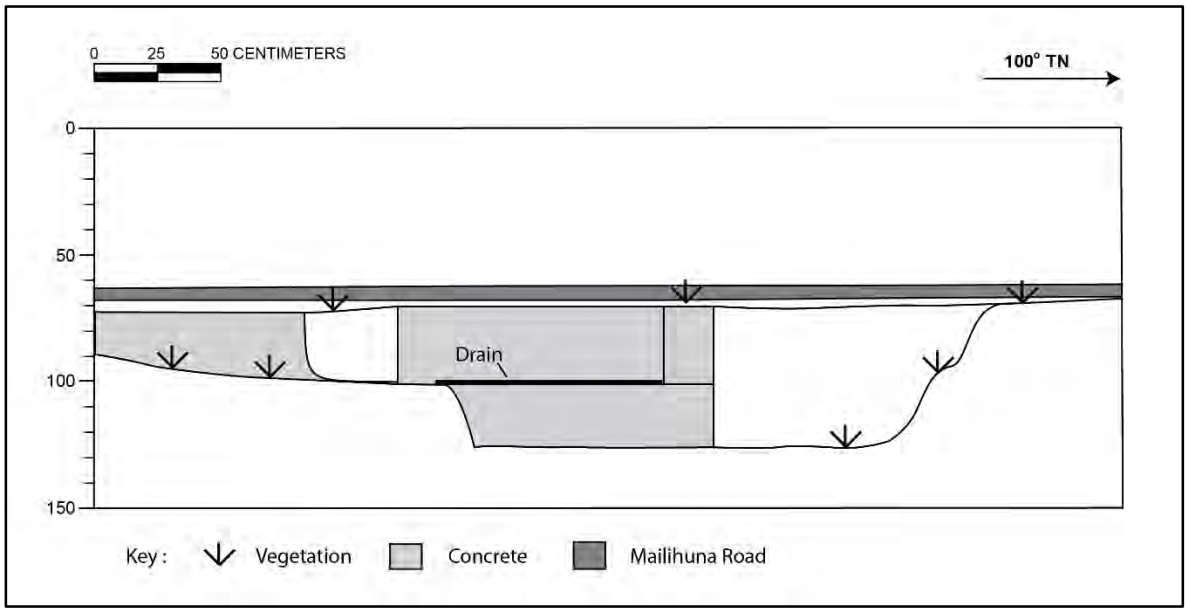

Figure 44. Profile of SIHP # -2279, Feature B, showing culvert box and drain

6.3 SIHP # 50-30-08-0789A Sub-Feature 1

FORMAL TYPE:	Bridge
FUNCTION:	Transportation
NUMBER OF FEATURES:	1
AGE:	Historic
TEST EXCAVATIONS:	None
TAX MAP KEY:	[4] 4-6-014:090
LAND JURISDICTION:	State of Hawai‘i, HDOT
PREVIOUS DOCUMENTATION:	Bushnell et al. 2003

SIHP # -0789A Sub-Feature 1 includes remnant portions of the original Keālia Stream Bridge Crossing (see Figure 33 and Figure 34), previously documented by Bushnell et al. (2003:80–83) as follows:

> Substantial portions of the original Kealia Stream Bridge Crossing were documented approximately 25-feet east of Kuhio Highway. The Kealia Stream Bridge Crossing measures approximately 42 m. in overall length, 6 m. in width, and 2.5 m. in height. Sixteen overhead bridge beams are present every 3.5 meters on either side of the bridge. These overhead bridge beams are approximately 1.80 cm in height and are in fairly poor condition. Between several of the overhead bridge beams, original cable cords strung horizontally, and are also in very poor condition. Supporting the bridge are two concrete foundations, which appear to have been constructed and re-constructed in several different phases. The original concrete foundation is partially collapsing, and a second brick foundation was constructed directly above the concrete foundation. Remnants of the original horizontal rails still exist, however in more recent years asphalt has been placed over the rails in order to accommodate the existing pedestrian right-of-way. The rails are rusty and in very poor condition. During low tide, the bridge remains at approximately 4.5 m. above stream level. [Bushnell et al. 2003:80–83]

As part of the work associated with the Kapa‘a-Keālia Bike and Pedestrian Path project in recent years, the steel superstructure of SIHP # -0789A Sub-Feature 1 was removed and replaced with new pre-cast pre-stressed concrete girders and slab spanning between the abutments and the existing center pier. The only remaining portion of the bridge observed within the project area included the partially collapsed, mortared basalt and concrete pier located within Kapa‘a Stream beneath the modern bridge span (Figure 45 through Figure 48). The remnant bridge pier is approximately 6.0 m (19.7 ft) long by 3.0 m (9.8 ft) wide with a maximum exposed height of 4.5 m (14.8 ft).

SIHP # -0789A is assessed as significant under Criterion “d” (have yielded, or is likely to yield, information important for research on prehistory or history) of the State of Hawai‘i significance criteria.

Figure 45. SIHP # -789A Sub-Feature 1 beneath modern pedestrian bridge span, view to northwest

Figure 46. SIHP # -789A Sub-Feature 1, close-up of bridge pier, view to east

Figure 47. SIHP # -789A Sub-Feature 1, overview of the east side of the bridge pier, view to east

Figure 48. SIHP # -789A Sub-Feature 1, overview of the west side of the bridge pier, view to west

6.4 SIHP # 50-30-08-2075

FORMAL TYPE:	Historic bridge foundation
FUNCTION:	Transportation
NUMBER OF FEATURES:	1
AGE:	Historic
TEST EXCAVATIONS:	None
TAX MAP KEY:	[4] 4-6-014:090 and 4-7-003 Kūhiō Highway Right-of-Way
LAND JURISDICTION:	State of Hawai‘i; HDOT
PREVIOUS DOCUMENTATION:	Bushnell et al. 2003

SIHP # -2075 consists of the remnant abutments of the former Kaua‘i Belt Road, Keālia Bridge located between SIHP # -2278 (Kapa‘a Stream Bridge) (see Figure 33 and Figure 34) and SIHP # -789A Sub-Feature 1 (Keālia Stream Bridge Crossing) (Figure 49 and Figure 50).

SIHP # -2075 was previously described by Bushnell et al. (2003:83) as follows:

> Supportive concrete foundations of the old Kauai Belt Road, Keālia Bridge, were documented at the south and north end of Keālia Stream. The foundation was observed between the new Kūhiō Highway Bridge and the old Keālia Stream railroad bridge (State Site 50-30-08-789 Feature A, Sub-feature 1).
>
> At the north end, the concrete foundation is approximately 10 m. in length, 5.24 m. in width, and 8.95 m. in overall height. Two railroad support beams measuring 89 cm in length, by 78 cm in width, and 95 cm in height were further documented.
>
> The support beams are approximately 7.5 m. apart from one another. The ledge by which the support beams are sitting is approximately 1.75 m. above surface, and approximately 8.5 m in width. The concrete foundation at the north end is in moderate to poor condition, and exhibits substantial graffiti markings. At the south end, the bridge foundation maintains the same dimensions as the north end. Substantial weather damage and deterioration was observed upon the south end. [Bushnell et al. 2003:83]

The date of “April 29, 1932” was observed inscribed into the concrete on the eastern side of the southern bridge abutment of SIHP # -2075 and the initials “JK” were inscribed on the western side of the southern bridge abutment (Figure 51 and Figure 52).

SIHP # -2075 is assessed as significant under Criterion “d” (have yielded, or is likely to yield, information important for research on prehistory or history) of the State of Hawai‘i significance criteria.

Figure 49. SIHP # -2075, northern bridge abutment, view to northeast

Figure 50. SIHP # -2075 southern bridge abutment, view to west

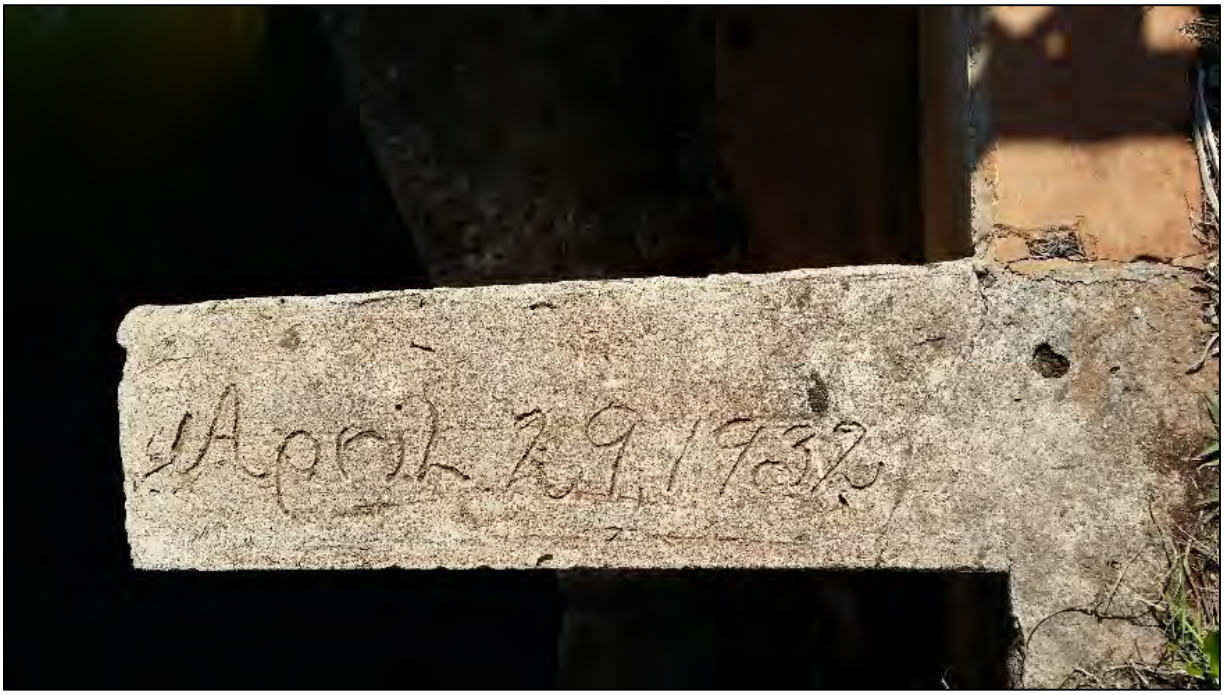

Figure 51. SIHP # -2075, showing the inscription of “April 29, 1932” on the eastern side of the southern abutment, view to east

Figure 52. SIHP # -2075, showing the inscription of “JK” on the western side of the southern abutment, view to northeast

Section 7 Summary and Interpretation

At the request of CH2M HILL and on behalf of the FHWA CFLHD, CSH completed this archaeological inventory survey report for the Kapa‘a Stream Bridge Replacement project, Kapa‘a and Keālia Ahupua‘a, Kawaihau District, Kaua‘i, FHWA/CFLHD contract DTFH68-13-R-00027 TMKs: [4] 4-6-014:024 por., 033 por., 090 por., 092 por. Kūhiō Highway and Mailihuna Road Rights-of-Way, 4-7-003:001 por., and 4-7-008:042 por. Kūhiō Highway Right-of-Way.

Background research included various mythological and traditional accounts as well as historical information from the Kapa‘a and Keālia Ahupua‘a. Research indicates this area was rich in pre-Contact history, with references to several persons of high status and gods. Several *heiau* have been recorded in this area, however, locations of many of the *heiau* are unknown. This suggests the area was more significantly inhabited and/or utilized than is seen in the historic period.

Historically, the population of Kapa‘a has been documented as fairly sparse with some small settlements near the shore and *lo‘i* in the inland swamps. Keālia, on the other hand, boasted a relatively larger population, likely due to the Keālia River Valley, now known as Kapa’a Stream. There is one Land Commission Award on the northern end of Keālia Beach, approximately 100 m (328.1 ft) north of the project area; subsurface testing in this locale has yielded evidence of human occupation ranging from pre-Contact times to the plantation era.

In the mid-1800s, plantation-style agriculture took root in the area. The earliest successful economic enterprise by a westerner in these *ahupua‘a* was the Krull Ranch and Dairy, which operated in the Kumukumu area in the 1860s. In 1877, the Makee Sugar Plantation was established in conjunction with members of the Hui Kawaihau, several of whom were retainers in Kalākaua’s court. The Makee Plantation built a mill and landing at Kapa‘a as part of the plantation infrastructure, known today as Makee Landing or the Kapa‘a Wharf. Following the move of the Kapa‘a mill to Keālia in 1885, a railroad was built from Makee Landing to Keālia with another railroad arm leading across the Moikeha drainage up Lehua Street and into the *mauka* regions of Kapa‘a. The *mauka* Moikeha Railroad Bridge (SIHP # -2078, Feature D) and the Old Kealia Railroad Bridge/Cane Haul Road (SIHP # -789A, Sub-Feature I) represent a part of the first railroad system constructed ca. 1891 to transport sugar cane.

In 1913, the pineapple industry started operations in Kapa‘a, with the opening of Hawaiian Cannery Companies, Ltd. A cannery was constructed on land north of Waika‘ea Canal. This cannery was in business for almost 50 years and made use of the railroad track that fronted it to transport pineapple to Ahukini Landing for shipment and also to send pineapple waste to the “pineapple dump” north of Keālia. As an economic force, tourism has taken the place of agriculture in the last several decades. The old railroad alignment in the Kapa‘a Town area was converted into a bike path in the 1980s.

Portions of the current project area have been subject to previous archaeological studies. The northern portion of the project area was included within a large archaeological reconnaissance survey of Keālia Ahupua’a (Hammatt and Chiogioji 1998). No cultural resources were reported within or near the current project area. The western (*mauka*) portion of the project area along Kūhiō Highway was subject to archaeological monitoring during the installation of the Kaua‘i Rural Fiber-optic Duct Lines (Dega and Powell 2003). No cultural resources were identified. Bushnell et al. (2003) conducted an AIS for the Kapa‘a/Keālia Bike and Pedestrian Path. Two cultural

resources were identified within the project area including the Old Kaua‘i Belt Highway bridge foundation (SIHP # -2075) and a new sub-feature of SIHP # -0789: Feature A, Kapa‘a Stream Cane Haul Road Bridge (SIHP # -0789: Feature A, Sub-Feature 1).

During the current AIS, two newly identified cultural resources were documented within the project area. The two cultural resources included SIHP # -2278, the Kapa‘a Stream Bridge, and SIHP # -2279, a possibly historic water control complex.

SIHP # -2278, Kapa‘a Stream Bridge was constructed in 1953 and is a typical post-war bridge constructed of concrete. The bridge spans Kapa‘a Stream (formerly Keālia River). SIHP # -2279, a possible historic water control complex was observed extending along the shoulder of Kūhiō Highway (Route 56) and terminating at the intersection of the highway and Mailihuna Road. The water control complex consisted of two features consisting of an earthen ditch (Feature A) that terminates at a concrete culvert (Feature B). The termination of the concrete culvert could not be located.

Section 8 Significance Assessments

As discussed in Section 1.2, cultural resources are generally at least 50 years old (although there are exceptions) and include buildings and structures; groupings of buildings or structures (historic districts); certain objects; archaeological artifacts, features, sites, and/or deposits; groupings of archaeological sites (archaeological districts); and, in some instances, natural landscape features and/or geographic locations of cultural significance. The current investigation was tasked with the identification of archaeological cultural resources.

For a cultural resource to be significant under HAR §13-275-6, the cultural resource should possess integrity of location, design, setting, materials, workmanship, feeling, and/or association, and meet one or more of the following criterion:

"a" Be associated with events that have made an important contribution to the broad patterns of our history;

"b" Be associated with the lives of persons important in our past;

"c" Embody the distinctive characteristics of a type, period, or method of construction, represent the work of a master, or possess high artistic value;

"d" Have yielded, or is likely to yield, information important for research on prehistory or history; or

"e" Have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group's history and cultural identity.

Cultural resource significance is evaluated and expressed as eligibility for listing on the National Register (pursuant to 36 CFR 60.4) and/or the Hawai‘i Register (pursuant to HAR §13-198-8). To be considered eligible for listing on the National and/or Hawai‘i Register, a cultural resource should possess integrity of location, design, setting, materials, workmanship, feeling, and/or association, and meet one or more of the following broad significance criteria:

"A" that are associated with events that have made a significant contribution to the broad patterns of our history;

"B" that are associated with the lives of persons significant in our past;

"C" that embody the distinctive characteristics of a type, period, or method of construction, or that represent that work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction;

"D" that have yielded, or may be likely to yield, information important in prehistory or history;

In consultation with the SHPD architecture branch, it was determined that the Kapa‘a Stream Bridge (SIHP # -2278) is not eligible to the National and/or Hawai‘i Registers pursuant to 36 CFR 60.4 and HAR §13-198-8 and not significant pursuant to HAR §13-275-6. At the request of the SHPD, architectural recordation was not conducted.

SIHP # -2279, a possibly historic water control complex, is evaluated for significance under §13-275-6 Criterion “d” (have yielded, or is likely to yield, information important for research on prehistory or history), and recommended eligible to both the Hawai‘i and National Registers under Criterion D. The cultural resource possesses integrity of location, design, and materials. The AIS has sufficiently documented the information content of SIHP # -2279 within the APE.

SIHP # -0789A, Sub-Feature 1 consists of the remnant portions of the original Keālia Stream Bridge Crossing initially documented by Perzinski et al. (2000) and further documented by Bushnell et al. (2003). Perzinski et al. (2000) and Bushnell et al. (2003) assessed the bridge crossing remnants (SIHP # -789A, Feature 1) as significant under Criterion “d” (have yielded, or is likely to yield, information important for research on prehistory or history) of the State of Hawai‘i significance criteria; however, the bridge crossing remnants lacking integrity of design, materials, workmanship, feeling and association, the bridge crossing remnants (SIHP # -789A, Feature 1) is evaluated as not a significant cultural resource as it is not eligible to the National Register and Hawai‘i Register pursuant to 36 CFR 60.4 and HAR §13-198-8.

SIHP # -2075 consists of the remnant abutments of the former Kaua‘i Belt Road, Keālia Bridge initially documented by Bushnell et al. (2003). Bushnell et al. 2003 assessed SIHP # -2075 as significant under Criterion “d” (have yielded, or is likely to yield, information important for research on prehistory or history) of the State of Hawai‘i significance criteria; however, due to the bridge remnants lacking integrity of design, materials, workmanship, feeling and association, the old belt highway bridge remnants (SIHP # -2075) is evaluated as not eligible for listing on the National Register and Hawai‘i Register pursuant to 36 CFR 60.4 and HAR §13-198-8.

Section 9 Project Effect and Mitigation Recommendations

9.1 Project Effect

In accordance with Federal regulations (36 CFR 800.5), CSH's project-specific effect recommendation is "no adverse effect." Under Hawai‘i State historic preservation review legislation, the project's effect recommendation is "no historic properties affected" (in accordance with HAR §13-13-275-7). This is based on the lack of significant cultural resources within the project area and APE, based on the eligibility criteria to the National and/or Hawai‘i Registers (36 CFR 60.4 and HAR §13-198-8, respectively).

9.2 Mitigation Recommendations

Archaeological recordation (a form of archaeological data recovery) is recommended for SIHP #s -2278, -2279, 0789A Sub-Feature 1, and -2075. This archaeological recordation has been completed during the course of AIS fieldwork and is included in this report. No further archaeological work is recommended for the proposed project.

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Appendix E
Historic Resource Inventory Form (Reconnaissance Level) for Kapaa Stream Bridge

HAWAII STATE HISTORIC PRESERVATION DIVISION
HISTORIC RESOURCE INVENTORY FORM – Reconnaissance Level

FOR SHPD USE ONLY: **Site #** Click here to enter text. **TMK #** Click here to enter text.

GENERAL INFORMATION

Common / Present Name: Kapaa Stream Bridge
Historic Name: Kapaa Bridge

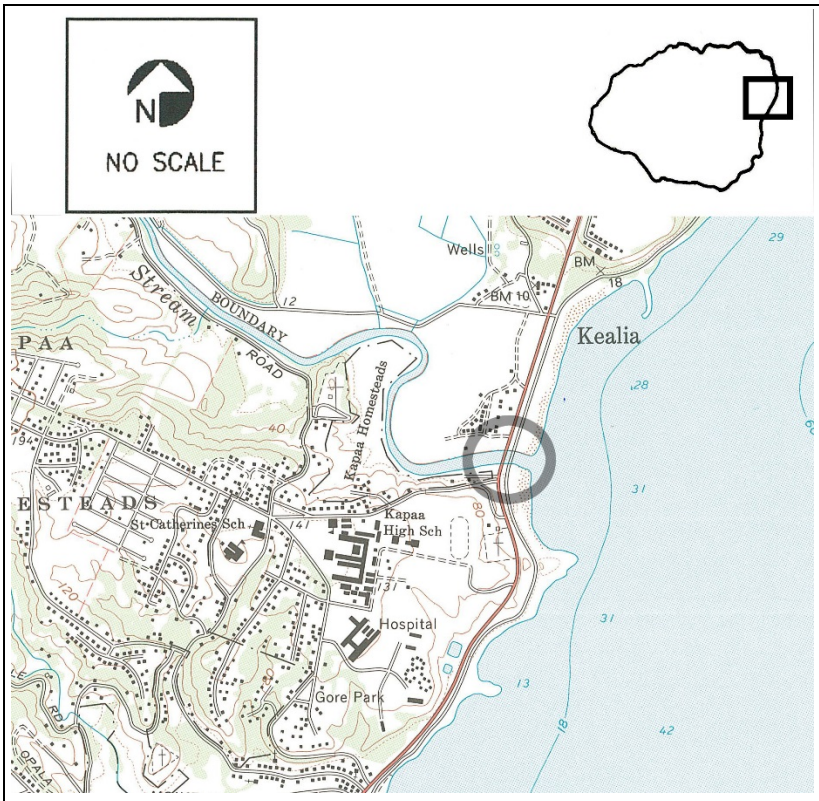
Address: Kuhio Highway (Rt. 56) at Kapaa Stream
City/ Town/ Location: Kealia
County: Kauai
TMK [(X)-X-X-XXX:XXX)]: (4)-4-7-003 Kuhio Highway right of way
Subdivision/Neighborhood: n/a
Latitude: 22d-05m-38.30s N
Longitude: 159d-18m-26.20s W

Original Use: Vehicular bridge
Current Use: Vehicular bridge

Architect/ Builder (if known): William R. Bartels, engineer.
J. M Tanaka, contractor.
Date of Construction (if known): 1953


Kapaa Stream Bridge, view facing north

LOCATION MAP



FOR SHPD USE ONLY: **Site #** Click here to enter text. **TMK #** Click here to enter text.

Prepared By: Dee Ruzicka Consulting Firm:
Mason Architects, Inc.
Address: 119 Merchant St. Suite 501 Honolulu, HI 96813
Telephone Number: 808-536-0556 Email:dr@masonarch.com Date:
17MAR2016

CONDITION ASSESSMENT

Category (select all that apply):

- ☐ Building(s)
  - ☐ Residential
  - ☐ Commercial
  - ☐ Educational
  - ☐ Public/Civic
  - ☐ Religious
- ☒ Structure(s)
- ☐ Object(s)
- ☐ Site(s)/Landscape(s)
- ☐ Archaeology or potential for archaeology
  - Describe: _____

Alterations (additions, etc.) if known: Ca. 2002, metal railings were added to the bridge. This consisted of horizontal bikeway railings of square metal tubing that were added atop the original concrete parapets, and in the open space between the concrete rails. Thrie beam railings were also added at the curb at the edges of the sidewalks. Ca. 2010 numerous areas of spalled concrete were repaired. This included spalls on the underside of the bridge deck, the girders, and the concrete parapets.

Original Location, if moved: _____
Reason for move (if known): _____

Condition:

- ☐ Excellent
- ☒ Good
- ☐ Fair
- ☐ Deteriorated

Condition Explanation: _____

Eligibility (select all that apply):

- ☐ National Register of Historic Places
- ☐ State Register of Historic Places
  - ☒ Not Eligible
  - ☐ Eligible
  - ☐ Listed
  - ☐ Contributing to Historic District:

Kapaa Stream Bridge, view facing northwest

Kapaa Stream Bridge, view facing west

FOR SHPD USE ONLY: **Site #**Click here to enter text. **TMK #** Click here to enter text.

Name of District:
☐Unknown


Kapaa Stream Bridge, view facing south

Criteria of Significance (select all that apply)
☐A: Associated with Events
Event:

☐B: Associated with Significant Person(s)
Person(s): _____

☐C: Distinctive characteristics of a type, period or method of construction; work of a master; possess high artistic values (Architecture, Engineering, Design)

☐D: Have yielded or may be likely to yield information important to history or prehistory. Explain: _____

DESCRIPTION

Materials (please check those materials that are visible):

Height
☐Stories: _____
☐Below Ground
☐N/A
☒Other: bridge

Exterior Walls (siding):
☐Aluminum Siding
☐Asbestos
☐Brick
☐Ceramic
☒Concrete
☐Horizontal Wood Siding
☐Log
☐Metal
☐Shingles-Asphalt
☐Shingles-Wood
☐Stone
☐Stucco
☐Vertical Wood Siding
☐Vinyl Siding
☐Engineered Siding
☐Plywood
☐OSB
☐Fiberboard
☐Fiber Cement
☐Other: _____

Roof:
☐Asphalt, shingle
☐Asphalt, roll
☐Other: _____
☐Metal
☐Slate
☐Built Up
☐Ceramic Tile
☐Wood Shingle
☒None

Foundation:
☐Brick
☐Concrete Block
☐Concrete Slab
☐None – on earth
☒Poured Concrete
☐Raised/Pile
☐Stone
☐Other:_____

Structural Support:
☐Baled Hay
☐Concrete Block
☐Concrete Framed
☒Concrete Poured
☐Frame-wood
☐Frame-metal/steel
☐Brick-load bearing
☐Stone-load bearing
☐Puddled Clay
☐Rammed Earth
☐Sod
☐Other: _____

Windows:

FOR SHPD USE ONLY:	Site #Click here to enter text.	TMK # Click here to enter text.

☐Double Hung Sash
☐Single Hung Sash
☐Casement
☐Fixed
☐Stained Glass

☐Replacement
  ☐Aluminum
  ☐Vinyl
☐Jalousie
☐Ribbon

☐Glass Block
☒None/Unknown
☐Other: _____

Lanai(s)

☐Arcade
☐Balcony
☐Porte-Cochere
☐Recessed

☐Stoop
☐Portico
☐Verandah
☐Wrap-around

☒None
☐Other: _____

Chimney

☐Brick
☐Concrete
☐Stuccoed Masonry

☐Stone
☐Stove Pipe
☐Siding

☒None
☐Other: _____

FOR SHPD USE ONLY:	Site #Click here to enter text.	TMK # Click here to enter text.

Narrative Description

Narrative Description:

The Kapaa Stream Bridge (Feature MAI A) is a reinforced concrete, two span, tee beam bridge that carries the two lanes of Kuhio Highway (Route 56) over Kapaa Stream. The overall width of the bridge is 39' and its overall length of 155' includes the two spans of 72'-6" each and 5' long end stanchions at each end of the parapets. The setting of the bridge is rural. It is located near the mouth of Kapaa Stream. The ocean shoreline and the wide sand beach of Kealia Beach Park is adjacent to the east. North of Kapaa Stream, inland of Kuhio Highway there is open land with a grove of trees. On the makai side of Kuhio Highway is Kealia Beach Park with numerous small shelters and a maintenance shed. South of Kapaa Stream there is open and partially wooded land. The St. Catherine Catholic cemetery and 2010 Kauai Fire Station #8 (Kaiakea Fire Station) are south of the bridge.

The Kapaa Stream Bridge has a 2'-6" high, reinforced concrete parapet consisting of two, 10" high horizontal concrete rails with a 10" space between them. The top rail is 1' wide and the bottom rail is 8" wide. On the top surface of the top rail two horizontal metal rails have been added to give an overall height of 3'-8". A single horizontal rail has been added in the 10" space between the rails. The concrete portion of each parapet has expansion joints spaced at 12' -1". At each joint is a pair of concrete stanchions 1' square in plan. The concrete end stanchions of the bridge are rectangular, 5' long, 1'-6" wide, and 2'-6" high. Each has two horizontal lines scribed at 10" spacing scribed into its outboard sides. On the inboard sides the northeast and southwest end stanchions have the inscription "KAPAA" and the northwest and southeast end stanchions have the inscription "1952" on their inboard sides. Inboard of each concrete parapet is a 4' wide sidewalk. Each sidewalk has an added thrie beam guardrail at the curb that is supported by vertical, 6" steel I beams bolted to the sidewalk. Each of these added guardrails extends past the ends of the bridge.

The superstructure of the bridge is a reinforced concrete deck about 7" thick that is supported by 5 longintudinal concrete beams 1'-8" wide and about 5'-10" high. This is supported by a substructure consisting of a single reinforced concrete pier at the center of the stream channel and reinforced concrete abutments at the stream banks. The pier has battered sides that taper to a 2'-6" width at the top surface. The upstream and downstream ends of the pier are chamfered to form points. The concrete abutments of the substructure have vertical front faces (facing the stream). Clearance under the bridge is typically about 7' to 9' from the water surface to the lower edges of the longitudinal beams.

Kapaa Bridge is bridge number 007000560300985 in the National Bridge Inventory database.

Integrity:

The Kapaa Bridge retains sufficient integrity to enable NRHP listing. Integrity of location is retained. Integrity of setting is not retained due to the removal of a large housing area that was located immediately northwest of the bridge up until at least 1965. The area is now open land with groves of trees. The setting is further changed by the development of adjacent Kealia Beach Park and the pedestrian path at the former railroad bridge. Integrity

of design, materials, and workmanship are somewhat compromised by the addition of metal guard rails. The bridge's major design elements, construction materials, and their evident craftsmanship are intact. Integrity aspects of feeling and association are retained, the bridge retains the physical features that, taken together, convey its historic character.

Nearby Resources:

Within the Area of Potential Effect (APE), additional resources were identified:

Feature MAI B: This two-part feature is a (1)masonry pier and (2)masonry south abutment from Makee Plantation-era railroad bridge. Location: This bridge pier is located in the center of Kapaa Stream, about 30' east (downstream) from the Kapaa Stream Bridge. Description and evauation: This approximate 32' long basalt and concrete masonry pier lies under the 2009 Kapaa-Kealia Pedestrian and Bike Path. The longitudinal beams of the bike path pass over the pier and do not touch it. The pier is constructed of rough courses of quarry faced basalt lava rock masonry with concrete mortar. It is about 6' wide at the water surface and tapers to about 4' wide at the top. This taper includes an approximate 6" wide ledge. The upstream nose of the pier is chamfered to present a pointed end to the current. The downstream end of the pier is rounded. Atop the lava rock masonry portion of the pier is a poured concrete section about 4' wide and 22' long. The downstream end of the pier has settled about 3' to 4' into the stream bed. To account for this settling at one end, a wedge-shaped concrete cap about 15' long was added on the top surface of the 22' long poured concrete section. An inscription that reads "November 28, 1941" is visible in the top surface, makai side of the wedge-shaped cap.

The masonry abutment is located at the south end of the 2009 Kapaa-Kealia Pedestrian Bike Bath bridge over Kapaa Stream. It is about 20' wide and constructed of rough-coursed lava rock and concrete mortar with horizontal concrete slabs. The bike path bridge rests on a concrete bed that was added ca. 2009 atop the masonry abutment.

The construction date of the masonry pier and abutment (MAI B) is not known. However, a plantation railroad crossing over Kapaa Stream was located here as early as ca. 1885 as part of the railway system of Makee Sugar Co. This was a bridge with either a through truss or a pony truss design that carried both the 30" gauge plantation rail line and a narrow roadway. The rail line was located on the downstream side of the bridge and the roadway on the upstream side (Conde, Sugar Trains. P 182, Hawaii State Archives photo ca. 1885).

The Makee Sugar Co. began in 1877, its mill was located in Kealia, north of the bridge. The earlist plantation rail traffic across the bridge at this site was cars pulled by draft animals. The earliest record of steam locomotives at Makee Plantation begins in 1894 (Conde, Sugar Trains. P 180 & 184). By the mid 1920s over half of the plantation's field acreage was located south of Kapaa Stream, and the railroad bridge at the site of MAI B was the only rail route that crossed the stream from those southern fields to Makee's mill in the north (Conde, Sugar Trains. P. 180-181).

By July 1926, the railroad line crossing the bridge at this site also carried other traffic, the trains of the Ahukini Terminal & Railway Co., which was a common carrier that began service ca. 1921. Ahukini Terminal & Railway Co. connected the landings at Anahola, Kealia, Kapaa, and Ahukini. During the 1920s a spur to Nawiliwili was added. In 1930 the Ahukini Terminal & Railway Co. line had 10 miles of track and two steam locomotives to move freight between neighboring plantations and the landings.

By the early 1930s the Makee Plantation had about 45 miles of permanent railroad track which served to transport cane to the mill. In June 1933 Makee Plantation Co. was bought out by Lihue Plantation Co. and the entire Makee Plantation Co. mill was moved to Lihue and installed next to the existing mill there (Dorrance, Sugar Islands. P. 32). All of Makee's railway and rolling stock were transferred to Lihue Plantation, giving it over 80 miles of permanent track. The railroad bridge at the site of MAI B then operated to facilite the transport of cane south, from the former Makee fields located north of the stream to Lihue. In 1934 Ahukini Terminal & Railway Co. was dissolved and its assets of track and rolling stock taken over by Lihue Plantation, which then became responsible for all rail traffic over the railroad bridge at the site of MAI B.

This railroad bridge was converted for use as a vehicular bridge ca. 1958 as Lihue Plantation transitioned from rail to trucks for transporting cane. This transition began in 1957 but was not completed until the end of the 1959 harvesting season on October 10, when the final load of rail-transported cane was taken to the mill. During the 1959 harvest, Lihue Plantation hauled 270,443 tons of cane by rail and 504,313 tons by truck (Conde, Sugar Trains. P. 168).

The through/ pony truss bridge formerly at this site was steel construction, vestiges of the steel members remained in 2003, before the bridge was demolished for the 2009 construction Pedistrian and Bike Path Bridge for Ke Ala Hele Makalae (Bushnell, et al, Archaeological Inventory Survey for the Proposed Kapaa/Kealia Bike and Pedestrian Path. P. 82).

The masonry pier and south abutment from Makee Plantation-era railroad bridge (MAI B) are evaluated as not eligible for the Hawaii or National Register of Historic Places. Although MAI B is component of the former bridge, which had an association with the history of plantation railways, it does not retain integrity necessary for listing. The demolition of all other of the bridge's essential physical features has removed major portions of the integrity aspects of design, materials, workmanship, feeling, and association that are necessary to represent its significance.

Feature MAI C: Concrete bridge abutments (pair). Location: each of these two abutments are located at either the north or the south bank of Kapaa Stream, adjacent to the east (downstream) of the Kapaa Stream Bridge. Description and evaluation: Each approximate 30' long abutment has a slight batter as it rises from the streambed. At the top of each abutment is a transverse ledge 5'-3" high and 3' wide that has a concrete retaining wall at its rear edge that is flush with grade. This retaining wall has wing walls at each end that define the ends of the ledge. On the upper surfaces of the wing walls at the south abutment there are inscriptions in

the concrete. The inscription "April 29, 1932" is on the wing wall at the east end, and the inscription "JK" is on the wing wall at the west end.

These bridge abutments mark the site of the former Kauai Belt Road bridge crossing over Kapaa Stream that was replaced with the construction of the 1953 Kapaa Stream Bridge. The belt road on Kauai was constructed from 1910 to 1920 (MKE Associates, Fung Associates. Hawaii State Historic Bridge Inventory, 2013. p. 8-10). A roadway crossed Kapaa Stream in this approximate location since at least ca. 1885. In the early years the roadway was carried on the same bridge as the Makee Plantation railway (see MAI B above). Ca. 1912, a separate bridge to carry the roadway was built (Bushnell, et al, Archaeological Inventory Survey for the Proposed Kapaa/Kealia Bike and Pedestrian Path. P. 30). This was an arched, steel bridge with a through truss design (Bushnell, et al, Archaeological Inventory Survey for the Proposed Kapaa/Kealia Bike and Pedestrian Path. P. 31). Paving of the belt road between main towns was accomplished during the 1920s and 1930s (Christopher Leland Cook, Kauai In History, A Guide to the Resources. P. xv).

The inscription "April 29, 1932" on the south abutment might be an indication that the ca. 1912 bridge was replaced in 1932 with another bridge, which was subsequently demolished upon completion of the adjacent 1953 (extant) bridge. A historic aerial photo at Hawaii State Archives taken December 22, 1950 shows the shadow of an arched, steel truss bridge at the site (HSA folder PPA-28-4. Photo K-2-20, December 22, 1950). Original drawings for the 1953 Kapaa Stream Bridge indicate that a steel truss bridge existed on MAI C Abutments at the time of construction (Hawaii Territorial Highway Department, Kauai Belt Road, FAP No.12(20), sheet 5564.8R, April 1952). It is also possible that the wing wall portion of abutment containing the inscription was added in 1932 to the existing abutment. With either scenario, the bridge that once existed on these abutments was gone by ca. 1958, when the former railroad bridge was converted to carry vehicular traffic for hauling cane.

The concrete bridge abutments (MAI C) are evaluated as not eligible for the Hawaii or National Register of Historic Places. Although the abutments are components of the former bridge, which had an association with the development of the Kauai Belt Road, they do not retain integrity necessary for listing. The demolition of all other of the bridge's essential physical features has removed major portions of the integrity aspects of design, materials, workmanship, feeling, and association that are necessary to represent its significance.

Feature MAI D: 2009 Pedestrian and Bike Path Bridge for Ke Ala Hele Makalae. Location: Crossing Kapaa Stream, about 30' east (downstream) from the Kapaa Stream Bridge. Description and evaluation: This is a recently-constructed, reinforced concrete pedestrian bridge. This bridge and the section of path from Lihi Park to Ahihi Point (Phase II) opened on June 26, 2009. This single-span bridge is about 140' overall length and about 12' wide with metal railings. The bridge was constructed astride the pier of the above feature MAI B and resting on the south masonry abutment of MAI B. The 2009 Pedestrian and Bike Path Bridge (MAI D) is evaluated as not eligible for the Hawaii or National Register of Historic Places. Under NR Ctiterion Consideration G, the pedestrian bridge does not meet the level of exceptional importance necessary for properties less than 50 years old.

Feature MAI E: Earth ditch. Location: About 225' south of Kapaa Stream Bridge, running alongside Kuhio Highway southwest of the intersection of Kuhio Highway and Mailihuna Road. Description and evaluation: This is an earth drainage ditch, currently dry. It is about 50' long, 4' wide and 2' deep at the deepest (north end), where it drains into a metal-grated box drain of recent construction that carries rainfall water under Mailihuna Road. The ditch is covered with vegetation. From an Architectural history perspective, the earth ditch (MAI E) is evaluated as not eligible for the National or Hawaii Register of Historic Places. It lacks engineering or architectural distinction and is not associated with an important historic person or event. Eligibility based on Criterion D has been evaluated separately by Cultural Surveys Hawaii as part of the Archaeological Inventory Survey.

Feature MAI F: Portion of St. Catherine Cemetery. Location: West side of Kuhio Highway, south of Kapaa Stream Bridge. Description and evaluation: This approximate 6.5 acre parcel is the cemetery for St. Catherine Catholic Church, Kapaa and corresponds to TMK (4)4-6-014:033. The parcel extends from Mailihuna Road about 1,600' south along Kuhio Highway. The APE touches the north and northeast edges of this parcel. The area of the parcel that is covered by the APE is vacant land, with a steep embankment about 10'' high that rises up from the road shoulders of Kuhio Highway and Mauilihuna Road. The cemetery's graves are outside the APE, at the southern end of the parcel (see Feature MAI G, below).

St. Catherine Church (now demolished) was formerly located near the center point of the 6.5 acre parcel, with the cemetery south of it. The church at this location was originally built in 1877. The land and materials for construction were donated by Z. S. Spaulding, owner of Makee Sugar Co. Parishioners working for the plantation provided the labor. The original church was wood construction, desiged by Father Emmeran Schulte. Spaulding and the St. Catherine parish also built and supported the nearby Kapaa English School (ca. 1890s, now demolished), which taught newly arrived plantation laborors (Portuguese and Filipino) and their children. The original church was altered in 1932 and 1938 with side wing additions. In 1959 St. Catherine Church moved into a newly built church at its present location about one mile west of the cemetery, at the intersection of Kawaihau and Hauaala Roads. The church building at the cemetery was demolished at an unknown date.

The portion of St Catherine Cemetery (MAI F) is evaluated as not eligible for the Hawaii or National Register of Historic Placed. This vacant land does not meet the eligibility requirements under Criteria Consideration A (Religious Properties) and Criteria Consideration D (Cemeteries). Under these Criteria Considerations the portion of the parcel has no secular engineering or architectural distinction and is not associated with an important historic person or event.

During the field inspection of Kuhio Highway for a distance of approximately ½ mile on either side of the Kapaa Stream Bridge, the following features were noted which are outside the APE:

Feature MAI G: Grave site of St. Catherine Cemetery. Location: West side of Kuhio Highway about 40' south of the APE, about 1,000' south of Kapaa Stream Bridge. Description and evaluation: Approximately 270 graves located on the treeless, sloping hillside above Kuhio Highway, in the south portion of TMK parcel (4)4-6-014:

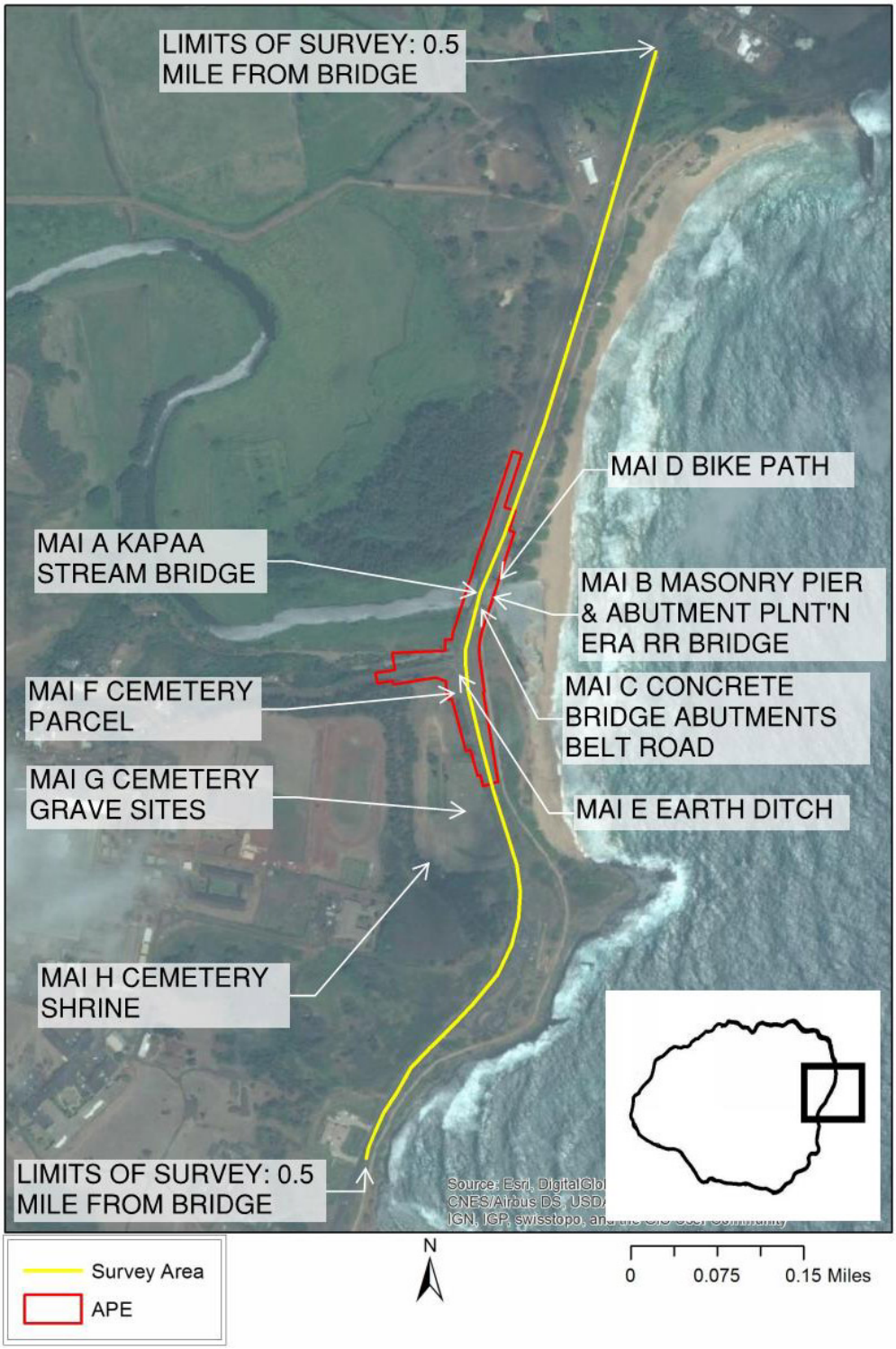
FOR SHPD USE ONLY:	Site #Click here to enter text.	TMK # Click here to enter text.

033. This cemetery was begun ca. 1890 at the southeast corner of the parcel. It served as the burial plot for the parish of St. Catherine Church, built in 1877 near the center of the parcel. A lava rock and concrete masonry wall fronts Kuhio Highway. Along this wall, are a pedestrian entry and three vehicle entries that are bordered by masonry cheek walls of lava rock and concrete mortar with painted concrete caps. The pedestrian entry has painted concrete steps leading up to the grave area. One vehicle entry has spherical concrete finials on the concrete caps of the cheek walls. The grave site of St. Catherine Cemetery (MAI G) is outside the APE and was not evaluated for eligibility for the National Register of Historic Places.

Feature MAI H: Calvalry Shrine and Resurrection Grotto. Location: The far southwest corner of the St. Catherine Cemetery parcel about 800' from the south edge of the APE, about 1,500' south of Kapaa Stream Bridge. Description and evaluation: This is a large Calvalry Shrine with a Resurrection Grotto. This feature is sited near the top of the sloping land of St Catherine Cemetery on the mauka side of Kuhio Highway. It is masonry construction with uncoursed lava rock and concrete mortar. Concrete steps on both sides of the grotto lead up to the shrine atop it. The shrine consists of a lava rock and concrete masonry base, topped by a painted concrete slab with three large painted staues of Christ crucified, Virgin Mary, and St Catherine. An engaged concrete altar is at the front of the lava rock base. The Calvalry Shrine and Resurrection Grotto were built between 1930 and 1944. They were restored in 1995. The Calvalry Shrine and Ressurection Grotto (MAI H) is outside the APE and was not evaluated for eligibility for the National Register of Historic Places.

FOR SHPD USE ONLY:	Site #Click here to enter text.	TMK # Click here to enter text.

Kapaa Bridge Survey Area



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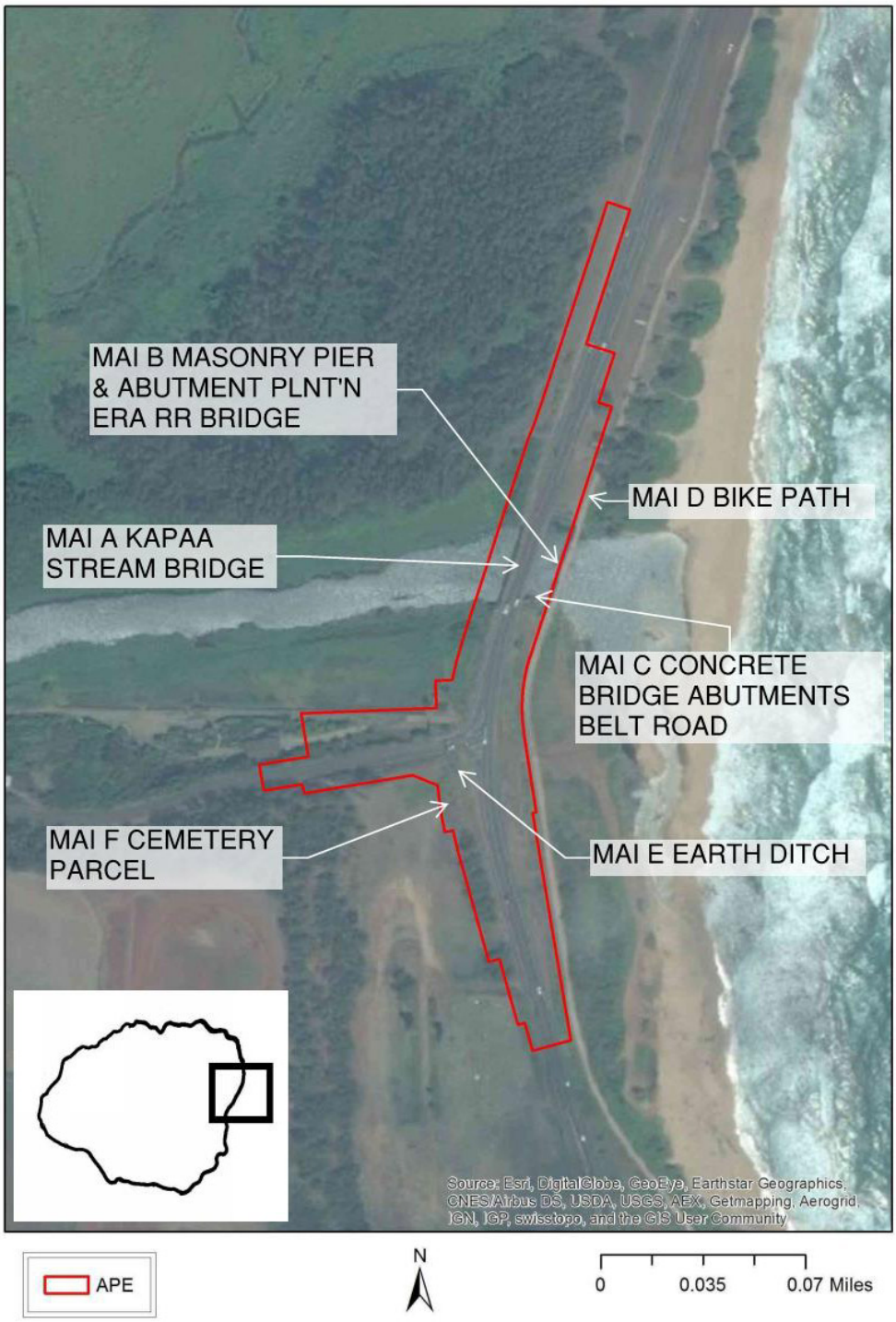
Kapaa Bridge APE
Historic Resources
within the APE



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Statement of Significance

Historical Context:

The Kapaa Stream Bridge was part of Federal Aid Highway Project (FAP) No. F12 (20) that constructed the approximate 0.43 mile section of Kuhio Highway from St Catherine Cemetery north to a point about 1,500' past Kapaa Stream. The project was begun during fiscal year of July 1, 1951 to June 30, 1952 with a contract valued at $240,462 issued to J. M. Tanaka, who was the contractor for that section of roadway and the Kapaa Stream Bridge. The project was completed on January 9, 1953 at a final total cost of $264,981 (Territory of Hawaii, Department of Public Works, Annual Report for Year ending June 30, 1953. P. 3). Note that although the official date of completion is January 9, 1953, the date inscriptions on the bridge read "1952."

Original drawings for the Kapaa Stream Bridge were prepared by the Hawaii Territorial Highway Department and are dated April 1952. These drawings indicate that the bridge design was by William Bartels. They were drawn by J. Young and checked by P. Yamashita. The cover sheet for the drawings, project FAP No. F12 (20), was signed by Robert M. Belt, Territorial Highway Engineer, and dated October 5, 1951. The cover sheet for the project drawings was countersigned on March 2, 1953 by Fred L. Schumacher, Territorial Department of Public Works District Engineer for the Island of Kauai, who certified the set as record drawings.

The type of concrete parapet railing used by the Territory of Hawaii for the Kapaa Stream Bridge, featuring two, heavy horizontal rails, was first utilized ca. 1948. This type of parapet replaced the earlier type of concrete parapet, with Greek-cross openings in the railing. One of the first applications of this new type of railing was on FAP No. F29(4) at Waimea to Makaweli Kauai that was completed on May 15, 1948 (Annual Report of the Superintendent of Public Works, Territory of Hawaii, Year ending June 30, 1948. P. 32-33). This new design with heavy horizontal rails became a common type on Kauai. It was used on many bridges built on Kauai between 1948 and the mid 1960s, including the 1953 Kapaa Stream Bridge. Numerous examples of this bridge parapet type still exist on Kauai, dating from 1948 to 1965, including the 1948 Moikeha Canal Bridge in Kapaa.

The belt road on Kauai was constructed from 1910 to 1920 (MKE Associates, Fung Associates. Hawaii State Historic Bridge Inventory, 2013. p. 8-10). A roadway crossed Kapaa Stream in this approximate location since at least ca. 1885. In the early years the roadway was carried on the same bridge as the Makee Plantation railway (see MAI B above). Ca. 1912, a separate bridge to carry the roadway was built (Bushnell, et al, Archaeological Inventory Survey for the Proposed Kapaa/Kealia Bike and Pedestrian Path. P. 30). This was an arched, steel bridge with a through truss design (Bushnell, et al, Archaeological Inventory Survey for the Proposed Kapaa/Kealia Bike and Pedestrian Path. P. 31). On Kauai, paving of the belt road between main towns was accomplished during the 1920s and 1930s (Christopher Leland Cook, Kauai In History, A Guide to the Resources. P. xv).

William R. Bartels, designer of the Kapaa Bridge, was a bridge engineer for the Hawaii Territorial Highway Department. He received his education and training in Germany and immigrated to Hawaii in 1932 when he

commenced working with the Highway Department during the latter half of that year. He continued his career there until his retirement in 1958. During that period he was a prolific designer, responsible for large and sophisticated bridge construction projects in Hawaii, including many tee-beam and rigid-frame concrete bridges.

During the 1950s the Hawaii Territorial Highway Department was under the supervision of the Superintendent of Public Works, who was also the Territorial Highway Engineer. Although each island (Maui and Molokai were combined) had its own District Civil Engineer to supervise construction, all Territorial highway projects for all islands were accomplished under the direction of the Oahu branch, which had jurisdiction over all activities of the Highway Department on all of the islands of the Territory. The engineers on Oahu handled all designs, plans, specifications, and inspection of construction of all Territorial highways and bridges. Bartels, as an engineer attached to the Oahu branch, would have had this oversight on all bridge and roadway projects throughout the Territory.

Previous to FAP No. F12 (20) the Kauai Belt Road crossed Kapaa Stream on a steel, arched thru truss bridge (probably built ca. 1912) immediatly downstream of the 1953 Kapaa Stream Bridge. This steel bridge was demolished sometime after January 1953, but its concrete abutments are extant (Feature MAI C).

Significance Statement:

The Kapaa Stream Bridge is included in the November 2013 Hawaii State Historic Bridge Inventory and Evaluation by MKE Associates, LLC, and Fung Associates, Inc as a line item in the Kauai Bridge Matrix spreadsheet (page 3-6). This describes the Kapaa Bridge as a Program Comment bridge. However, program comments were never developed for Hawaii and this bridge must be analyzed on its own merits.

The Kapaa Stream Bridge is evaluated in this report as not eligible for the Hawaii or National Register of Historic Places. This bridge is a common type with other examples on Kauai. It does not contribute significantly to an understanding of the development of the Kuhio Highway. Although it was designed by William Bartels, it is not a particularly distinctive example of a tee beam bridge; nor is it considered a significant achievement of its designer.

References

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Drawings:

Historic drawings are available at the Hawaii Department of Transportation, Highway Design Section database as electronic scans. These include:

Project F12 (20), 13 sheets. Dated 1953

Project STP-056-1(43),. 8 sheets. Dated 1999

Project 56B-01-06M, 13 sheets. Dated 2006

Photographs:

Aerial photos showing the bridge in 1960 and 1965 are available at the Hawaii State Archives. A view taken on October 15, 1960 is in Folder PPA-29-1, photo 1-4. A view taken on January 15, 1960 is in Folder PPA-30-6, photo 1CC91. An earlier aerial view dated December 22, 1950 showing the previous bridge is available in Folder PPA-28-4, photo K-2-20.

Other Sources:

Bushnell, K.W., Melanie Mann, Douglas Bothwick, Tony Bush, Todd Tulchin, Hallett H. Hammatt. "Archaeological Inventory Survey for the Proposed Kapaa/ Kealia Bike and Pedestrian Path, Kapaa and Kealia, Kawaihau District, Kauai Island, Hawaii." Hawaii: Cultural Surveys Hawaii, Inc. February 2003.

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Hungerford, John B. Hawaiian Railroads, A Memoir of the Common Carriers of the Fiftieth State. Reseda CA: Hungerford Press. 1963.

Marzen, Francis A., ed. The tree has grown: the church in Hawaii 1827-1977. Honolulu: Hawaii Catholic Church. 1977.

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Superintendent of Public Works, Territory of Hawaii. *Report to the Governor, Territory of Hawaii by the Superintendent of Public Works.* Honolulu: Advertiser Publishing Co., LTD. Various dates.

Yucha, Trevor M., Nancine "Missy" Kamai, Hallett H. Hammat. "Draft, Phase I Archaeological Survey Report for the Kapaa Stream Bridge." Hawaii: Cultural Surveys Hawaii, IOnc. Prepared for CH2MHill on behalf of the Federal Highways Administration Central Federal Lands Highway Division. December 2014.

Appendix F
Draft Cultural Impact Assessment for the Kapaa Stream Bridge Replacement Project, Kapaa and Kealia Ahupuaa, Kawaihau District, Kauai, June 2016

Draft

Cultural Impact Assessment for the Kapa‘a Stream Bridge Replacement Project, Kapa‘a and Keālia Ahupua‘a, Kawaihau District, Kaua‘i, Federal Highway Administration/ Central Federal Lands Highway Division (FHWA/CFLHD) contract DTFH68-13-R-00027

TMKs: [4] 4-6-014:024 por., 033 por., 090 por., 092 por., and 4-7-003:001 por., and 4-7-008:042 Kūhiō Highway Right-of-Way

Prepared for
CH2M HILL
and on behalf of the
Federal Highway Administration (FHWA)
Central Federal Lands Highway Division (CFLHD)

Prepared by
S. Māhealani Liborio, B.A.,
Nicole Ishihara, B.A.,
Brittany Beauchan, M.A.,
and
Hallett H. Hammatt, Ph.D.

Cultural Surveys Hawai‘i, Inc.
Kailua, Hawai‘i
(Job Code: KAPAA 15)

June 2016

O‘ahu Office
P.O. Box 1114
Kailua, Hawai‘i 96734
Ph.: (808) 262-9972
Fax: (808) 262-4950

www.culturalsurveys.com

Maui Office
1860 Main St.
Wailuku, Hawai‘i 96793
Ph.: (808) 242-9882
Fax: (808) 244-1994

Management Summary

Reference	Cultural Impact Assessment Report for the Kapa‘a Stream Bridge Kapa‘a and Keālia Ahupua‘a, Kawaihau District, Kaua‘i, Federal Highway Administration/Central Federal Lands Highway Division (FHWA/CFLHD) contract DTFH68-13-R-00027, TMKs: [4] 4-6-014:024 por., 033 por., 090 por., 092 por., and 4-7-003:001 por., and 4-7-008:042 Kūhiō Highway Right-of-Way (Liborio et al. 2016)
Date	June 2016
Project Number(s)	• FHWA/CFLHD contract code: DTFH68-13-R-00027 • CH2MHILL Project Task ID: 499068.11.SU.CS • Cultural Surveys Hawai‘i, Inc. (CSH) Job Code: KAPAA 15
Agencies	FHWA/CFLHD, SHPD
Land Jurisdiction	State Department of Transportation (HDOT)
Project Proponent	FHWA/CFLHD, HDOT
Project Funding	FHWA/CFLHD
Project Location	The study area is located near mile post 10 on Route 56 (Kūhiō Highway) at the Kapa‘a Stream crossing. The study area is depicted on a portion of the 1996 Kapaa U.S. Geological Survey (USGS) topographic quadrangle.
Project Description	The purpose of the project is to replace the existing deficient Kapa‘a Stream Bridge to meet current design standards for roadway width, load capacity, bridge railing and transitions, and bridge approaches. The project also proposes to improve the intersection at Kūhiō Highway and Mailihuna Road, which includes roadway widening, lighting, signing, pavement markings, drainage, traffic signal installation, and other improvements.
Project Acreage	The project area includes approximately 4.9 acres (2.0 hectares).
Document Purpose	This CIA was prepared to comply with the State of Hawai‘i’s environmental review process under Hawai‘i Revised Statutes (HRS) §343, which requires consideration of the proposed project’s potential effect on cultural beliefs, practices, and resources. Through document research and cultural consultation efforts, this report provides information compiled to date pertinent to the assessment of the proposed project’s potential impacts to cultural beliefs, practices, and resources (pursuant to the Office of Environmental Quality Control’s *Guidelines for Assessing Cultural Impacts*) which may include traditional cultural properties (TCPs). These TCPs may be significant historic properties under State of Hawai‘i significance criterion “e,” pursuant to Hawai‘i Administrative Rules (HAR) §13-275-6 and §13-284-6. Significance criterion “e” refers to historic properties that “have an important value to the native Hawaiian people or to another ethnic group of the state due

	to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group's history and cultural identity" (HAR §13-275-6 and §13-284-6). The document will likely also support the project's historic preservation review under HRS §6E and HAR §13-275 and §13-284. The document is intended to support the project's environmental review and may also serve to support the project's historic preservation review under HRS §6E-8 and HAR §13-284.
Results of Background Research	Background for this project yielded the following results (presented in approximate chronological order): 1. Kapa‘a literally translates to "the solid or the closing" (Pukui et al. 1974:86). Kēalia means "the salt encrustation" (Pukui et al. 1974:102). 2. *Ka‘ao* places Hi‘iaka, the beloved sister of Pele the fire goddess, in the vicinity of the project area. Hi‘iaka and her companion, Wahine‘ōma‘o view Wai‘ale‘ale, Nounou Hill, and Kapa‘a. Their canoe lands on the beach of Kapa‘a where they jump ashore and Hi‘iaka chants (Ho‘oulumāhiehie 2008:167–168). 3. The earliest foreign accounts of life in Kēalia appear in the 1830s when missionary censuses recorded a total population of 283 people. Approximately 264 adults and 18 children were accounted for in the *ahupua‘a* (land division extending from the mountain to the sea). The population in Kēalia then declined from 283 to 143; the introduction of foreign diseases account for the decline. Kapa‘a's population during this time was unknown. 4. Māhele documentation provides insight into habitation and agricultural patterns. Kapa‘a was designated as Crown Lands while Keālia was granted to the *ali‘i* (chief) Miriam Ke‘ahikuni Kekau‘onohi. Kekau‘onohi was the granddaughter of Kamehameha, one of Liholiho's wives, and served as Kaua‘i governor from 1842 to 1844. Seventeen land claims were made in Keālia and 15 were awarded. Six claims were awarded in the vicinity of the project area. Approximately 67 cultivation *lo‘i* (irrigated terrace) were claimed within the *kuleana* (land claim). *‘Auwai* (ditch), *kō‘ele* (small land unit farmed by a tenant for the chief), and *loko* (ponds) were also referenced in land claims, which exemplifies the rich agriculture within the *ahupua‘a*. 5. The first large scale enterprise in Kapa‘a and Keālia was in 1877 with the Makee Sugar Plantation and the Hui Kawaihau (Dole 1916:8). The Hui was originally a choral society that began in Honolulu with membership including both Hawaiian and *haole* (white person). It was Kalākaua's thought that Hui members could join forces with Makee. Makee was given land to build a mill in Kapa‘a and agreed to grind cane grown by Hui members.

	A fire destroyed the Hui's second crop of cane and Makee had an untimely death resulting in his lease passing onto his son-in-law. The mill was moved to Keālia and the smokestack and landing was still present into the 1900s. Railroad construction for the plantation began in the mid 1890s. The rail line was part of a 20-mile network of plantation railroad with some portable track leading into Keālia Valley. 6. The lowlands of Kapa‘a were used for rice farming, which occurred in the latter half of the 1800s. *Kuleana* owners leased or sold their parcels *mauka* (toward the mountain) of the swamp land to Chinese rice farmers. 7. Keālia Ahupua‘a had many traditional trails that led to Anahola with two principle routes: a *makai* (toward the ocean) route and a *mauka* route. The exact location of the *makai* route is unknown although it is thought to run along the plateau lands, somewhat removed from the coastline.
Results of Community Consultation	CSH attempted to contact Native Hawaiian Organizations (NHOs), agencies, and community members. Consultation was received from the following community members: 1. Valentine Ako, *Kupuna* 2. Milton Ching, *Kama‘āina* and cultural descendant 3. Beverly Muraoka, *Kupuna* 4. Kenneth Ponce, Retired fireman 5. Punanai Rogers, Leader for the Ho‘okipa Network
Impacts and Recommendations	Based on information gathered from the cultural and historic background, as well as through community consultations, the proposed project may potentially impact undetected *iwi kūpuna* (ancestral bones). CSH identifies potential impacts and makes the following preliminary recommendations. Please note that CSH is still awaiting approval of interview transcriptions and summaries conducted for this study and the impact and recommendations may change pending approval of these documents. 1. Previous archaeology indicates several burials have been found in the vicinity (0.5-mile radius or less) of the project area (SIHP #s 50-30-08-1851, -7040, and -0884). Community consultation indiciated knowledge of *iwi kūpuna* in the vicinity of the project area. Based on these findings, there is a high possibility *iwi kūpuna* may be present within the project area and that land disturbing activities during construction may uncover presently undetected burials or other cultural finds. Should burials (or other cultural finds) be encountered during ground disturbance or via construction activities, all work should cease immediately and the appropriate agencies should be notified pursuant to applicable law, HRS §6E.

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Section 1 Introduction

1.1 Project Background

At the request of CH2M HILL and on behalf of the Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD), Cultural Surveys Hawai‘i, Inc. (CSH) completed this cultural impact assessment report for the Kapa‘a Stream Bridge, Kapa‘a and Keālia Ahupua‘a, Kawaihau (Puna) Moku (District), Kaua‘i, FHWA/CFLHD contract DTFH68-13-R-00027 TMKs: [4] 4-6-014:024 por., 033 por., 090 por., 092 por., and 4-7-003:001 por., and 4-7-008:042 Kūhiō Highway Right-of-Way. The study area is located near mile post 10 on Route 56 (Kūhiō Highway) at the Kapa‘a Stream crossing. The study area is depicted on a portion of the 1996 Kapaa U.S. Geographical Survey (USGS) topographic quadrangle (Figure 1), tax map plats (Figure 2 and Figure 3), and an aerial photograph (Figure 4).

The purpose of the project is to replace the existing deficient Kapa‘a Stream Bridge to meet current design standards for roadway width, load capacity, bridge railing and transitions, and bridge approaches. The project also proposes to improve the intersection at Kūhiō Highway and Mailihuna Road, which includes roadway widening, lighting, signing, pavement markings, drainage, traffic signal installation, and other improvements. The project also proposes to improve the intersection at Kūhiō Highway and Mailihuna Road, which includes roadway widening, lighting, signing, pavement markings, drainage, traffic signal installation, and other improvements.

The study area includes approximately 8.6 acres. For the purposes of this archaeological reconnaissance, the area of potential effect (APE) was defined the entire 8.6-acre study area.

1.2 Document Purpose

The purpose of this CIA is to comply with the State of Hawai‘i’s environmental review process under Hawai‘i Revised Statutes (HRS) §343, which requires consideration of the project’s potential effect on cultural beliefs, practices, and resources. Through document research and cultural consultation efforts, this report provides information compiled to date pertinent to the assessment of the proposed project’s potential impacts on cultural beliefs, practices, and resources (pursuant to the Office of Environmental Quality Control’s *Guidelines for Assessing Cultural Impacts*), which may include traditional cultural properties (TCPs). These TCPs may be significant historic properties under State of Hawai‘i significance criterion “e,” pursuant to Hawai‘i Administrative Rules (HAR) §13-275-6 and §13-284-6. Significance criterion “e” refers to historic properties that “have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group’s history and cultural identity” (HAR §13-275-6 and §13-284-6). The document will likely also support the project’s historic preservation review under HRS §6E and HAR §13-275 and §13-284. The document is intended to support the project’s environmental review and may also serve to support the project’s historic preservation review under HRS §6E-8 and HAR §13-284.

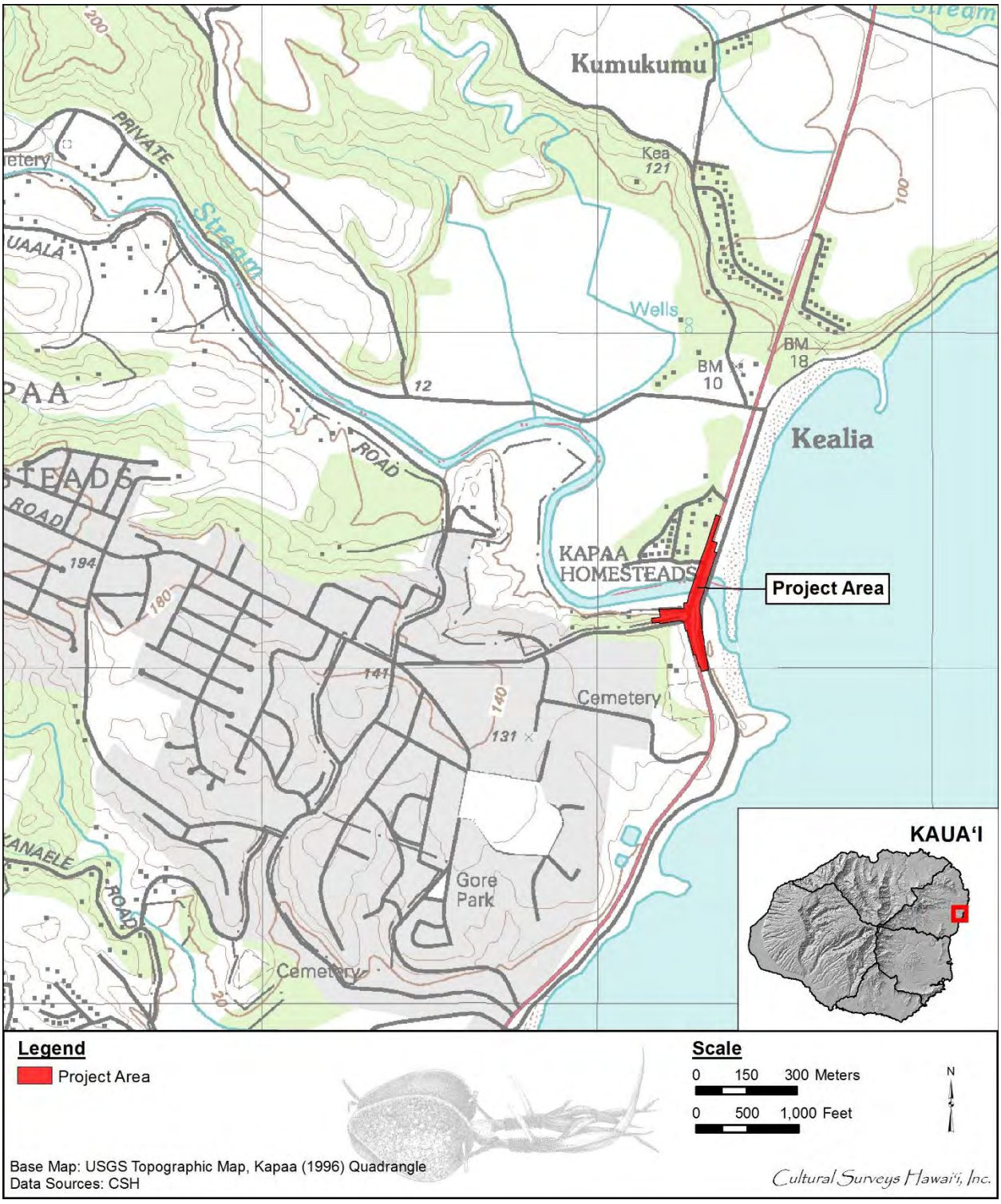


Figure 1. Portion of the 1996 Kapaa USGS 7.5-minute topographic quadrangle showing the location of the study area

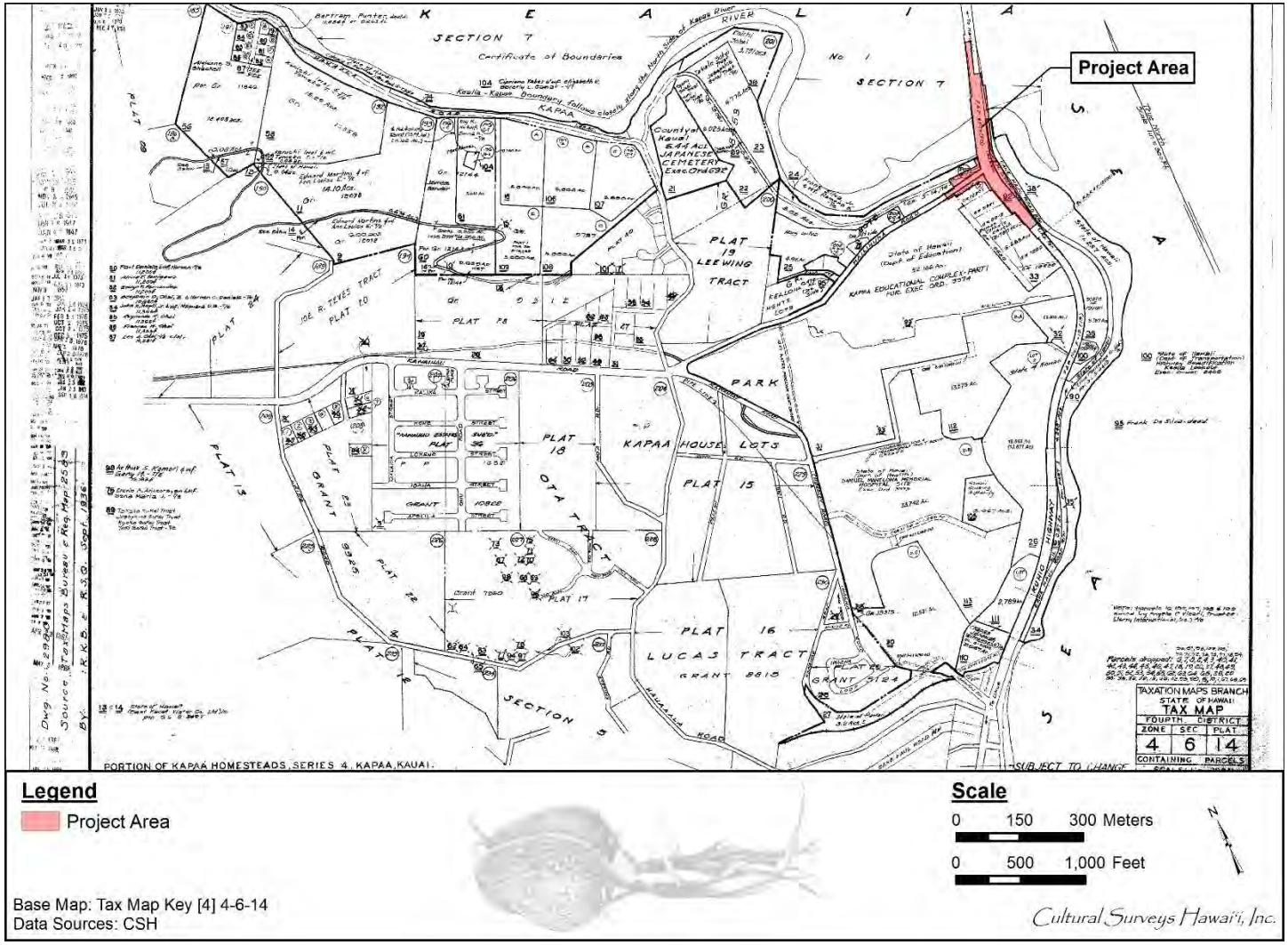


Figure 2. Tax Map Key (TMK) [4] 4-6-14, showing the location of the study area (Hawai‘i TMK Service)

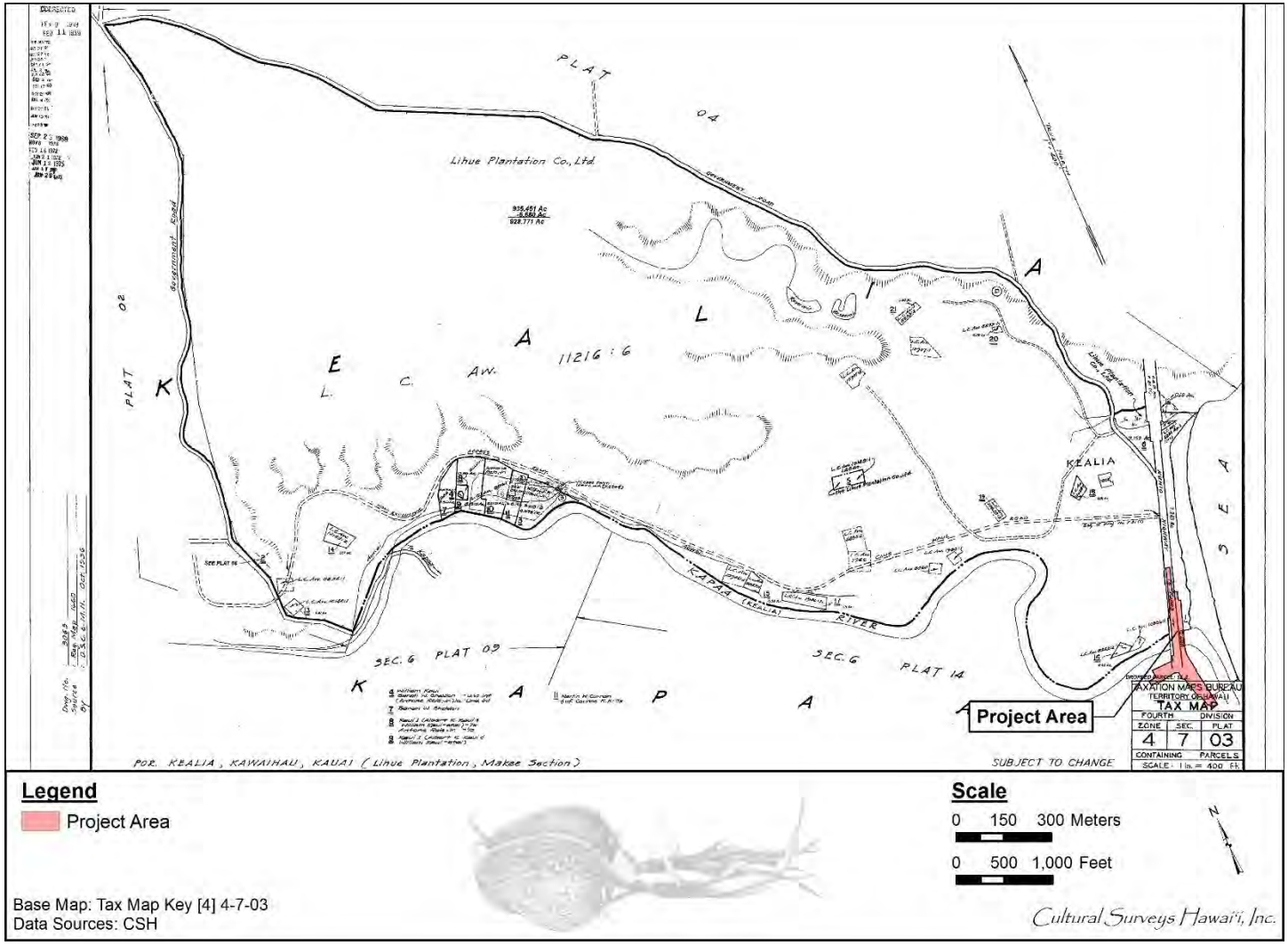


Figure 3. TMK: [4] 4-7-03, showing the location of the study area (Hawai‘i TMK Service)

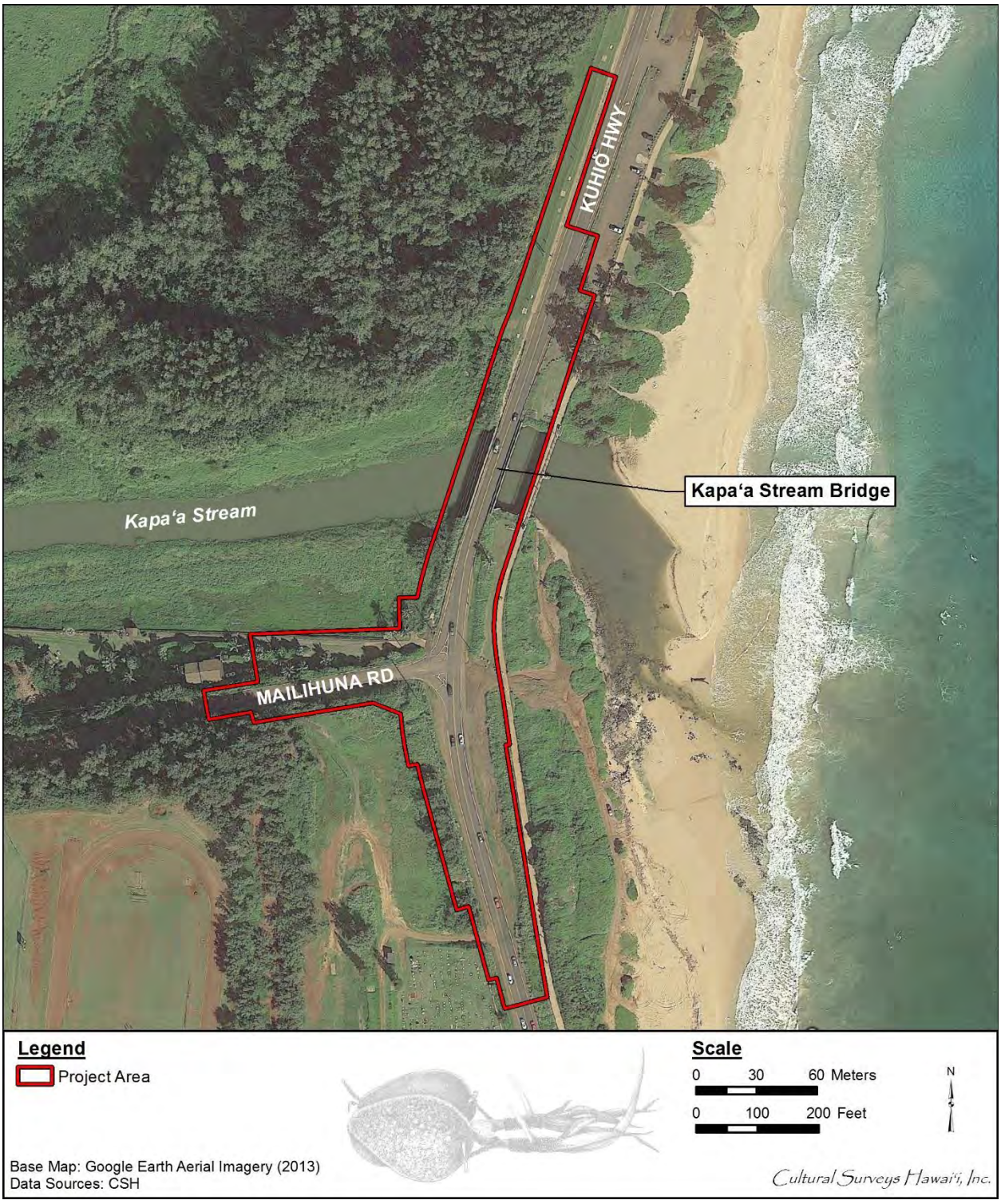


Figure 4. 2013 aerial photograph showing the location of the study area (Google Earth 2013)

Due to federal funding, this project is a federal undertaking, requiring compliance with Section 106 of the National Historic Preservation Act, the National Environmental Policy Act, and Section 4(f) of the Department of Transportation Act. The proposed project is also subject to Hawai‘i State environmental and historic preservation review legislation (HRS §343 and HRS §6E-8/ HAR §13-275, respectively).

1.3 Scope of Work

The scope of work for this CIA includes the following:

1. Examination of cultural and historical resources, including Land Commission documents, historic maps, and previous research reports with the specific purpose of identifying traditional Hawaiian activities including gathering of plant, animal, and other resources or agricultural pursuits as may be indicated in the historic record.
2. Review of previous archaeological work at and near the subject parcel that may be relevant to reconstructions of traditional land use activities; and to the identification and description of cultural resources, practices, and beliefs associated with the parcel.
3. Consultation and interviews with knowledgeable parties regarding cultural and natural resources and practices at or near the parcel; present and past uses of the parcel; and/or other practices, uses, or traditions associated with the parcel and environs.
4. Preparation of a report that summarizes the results of these research activities and provides recommendations based on findings.

1.4 Environmental Setting

1.4.1 Natural Environment

1.4.1.1 *Makani* (Prevailing Winds)

The study area, within Kapa‘a and Keālia Ahupua‘a is associated with specific wind configurations. *The Wind Gourd of La‘amaomao* records the story of how descendants of the wind goddess La‘amaomao, Pāka‘a and his son Kuāpāka‘a, control the winds of Hawai‘i through a gourd that contains the winds and could be called forth by chanting their names (Nakuina 1992). Pāka‘a’s chant traces the winds of Kaua‘i in the *moku* (district) of Kawaihau (Puna). Kēhau is the name of a gentle land breeze of Kapa‘a (Nakuina 1990:139), and in the *Epic Tale of Hiiakaikapoliopele* “the wind of Kapa‘a is a Pepe‘ekiukena” (Ho‘oulumāhiehie 2008:18). Fornander shared Malamalamaiki as a wind of Kēalia (Fornander 1918:5:96).

1.4.1.2 *Ua* (Precipitation)

Precipitation is a major component of the water cycle, responsible for depositing *wai* (fresh water) on local flora. Pre-Contact *kānaka* (Native Hawaiians) recognized two distinct annual seasons. The first, known as *kau* (period of time, especially summer) lasts typically from May to October and is a season marked by a high-sun period corresponding to warmer temperatures and steady trade winds. The second season, *ho‘oilo* (winter, rainy season) continues through the end of the year from November to April and is a much cooler period when trade winds are less frequent, and widespread storms and rainfall become more common (Giambelluca et al. 1986:17). Typically the maximum rainfall occurs in January and the minimum in June (Giambelluca et al. 1986:17). Rainfall on the coastal plains and plateaus of Kapa‘a and Keālia averages approximately 40 inches per (Juvik and Juvik 1998:56).

1.4.1.3 *Wai* (Streams, Rivers, and Estuaries)

Two canals have been constructed to drain the marshy areas behind Kapa‘a Town, Waika‘ea Canal (known to most local people as Waiakea Canal) and Moikeha Canal. Kapa‘a Town is built upon a sand berm which forms the *makai* (toward the ocean) buffer to the inland swamp. To the north of Kapa‘a, Keālia Ahupua‘a shows more characteristics of a typical stream valley with a good sized alluvial plain dissected by a major stream, the Kapa‘a Stream (Keālia River) in addition to a plateau land dissected by a few small drainages including Kumukumu and Hōmaikawa‘a streams.

Kapa‘a can be characterized as fairly flat, with irregularly shaped gulches and small valleys in the uplands, through which small tributary streams run including Kapahi, Makaleha, and Moalepe. While some of these streams combine with other tributaries in neighboring Keālia to form Kapa‘a Stream (often referred to as Keālia River) which empties into the ocean at the northern border of the *ahupua‘a* (land division usually extending from the uplands to the sea), others flow directly into the lowlands of Kapa‘a creating a large (approximately 170-acre) swamp area that has been mostly filled in modern times (Handy and Handy 1972:394, 423).

1.4.1.4 *‘Āina* (Land); Soil Surveys

According to the U.S. Department of Agriculture (USDA) Soil Survey Geographic (SSURGO) database (2001) and soil survey data gathered by Foote et al. (1972), soils within the study area include Beaches (BS), Mokuleia fine sandy loam (Mr), Mokuleia clay loam (Mta), and Lihue silty clay, 25 to 40% slopes, eroded (LhE2) (Figure 5).

Beaches (BS) are described as follows:

> Beaches (BS) occur as sandy, gravelly, or cobbly areas on all the islands . . . They are washed and rewashed by ocean waves. The beaches consist mainly of light-colored sands derived from coral and seashells. A few of the beaches, however, are dark colored because their sands are from basalt and andesite.
>
> Beaches have no value for farming. Where accessible and free of cobblestones and stones, they are highly suitable for recreational uses and resort development. [Foote et al. 1972:28]

Soils of the Mokuleia Series are described as follows:

> This series consists of well-drained soils along the coastal plains on the islands of Oahu and Kauai. These soils formed in recent alluvium deposited over coral sand. They are shallow and nearly level. Elevations range from nearly sea level to 100 feet. The annual rainfall amounts to 15 to 40 inches on Oahu and 50 to 100 inches on Kauai. The mean annual soil temperature is 74° F. Mokuleia soils are geographically associated with Hanalei, Jaucas, and Keaau soils.
>
> The soils are used for sugarcane, truck crops, and pasture. The natural vegetation consists of kiawe, klu, koa haole, and bermudagrass in the drier areas and napiergrass, guava, and joee in the wetter areas. [Foote et al. 1972:95]

The current project area is comprised of Mokuleia fine sandy loam (Mr) and Mokuleia clay loam, poorly drained variant (Mta). Mokuleia fine sandy loam occurs on the eastern and northern coastal

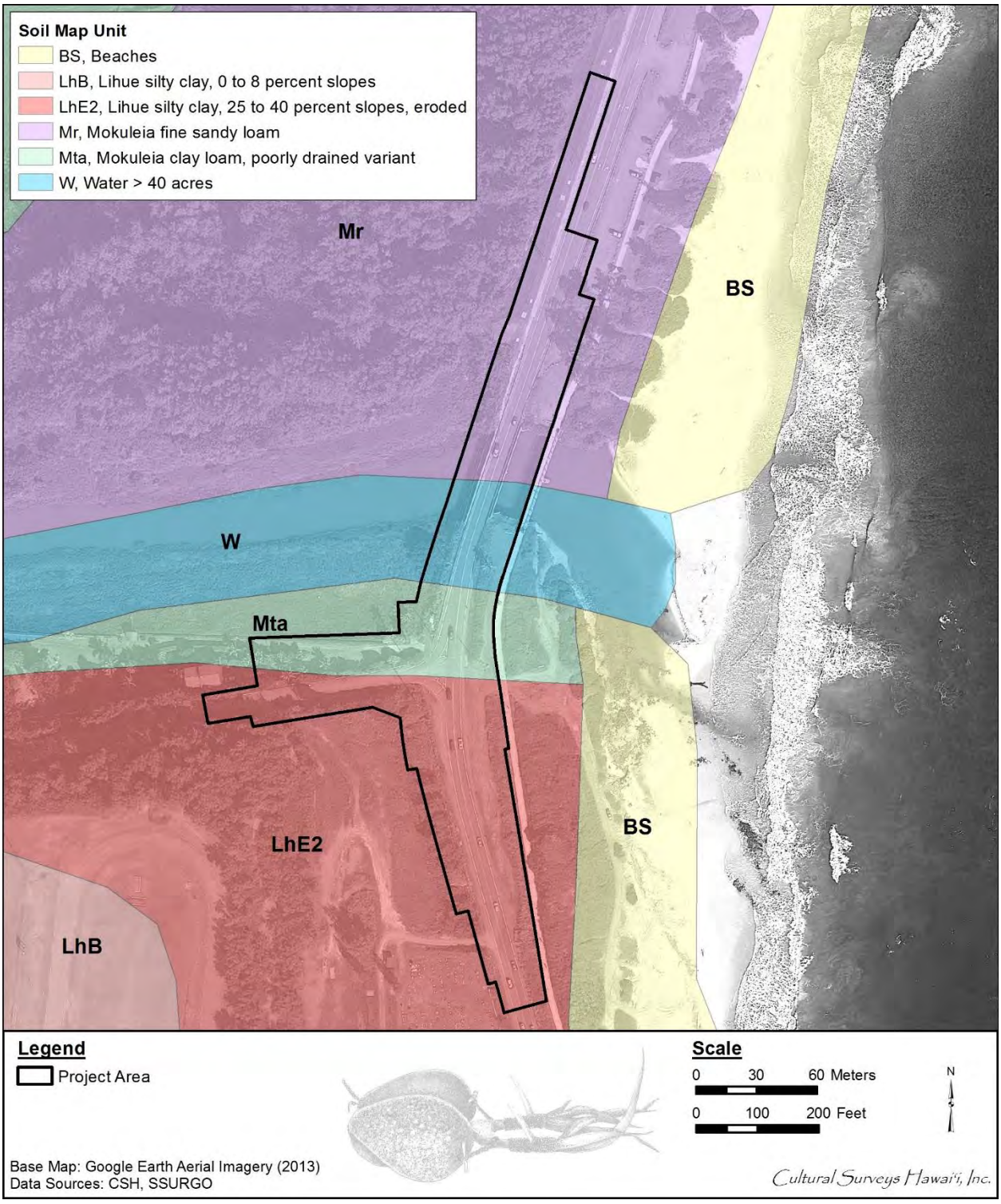


Figure 5. Aerial photograph (Google Earth 2013), showing study area along Kūhiō Highway crossing Kapa‘a Stream, with overlay of soil series (soil boundaries from Foote et al. 1972)

plains of Kaua‘i Island and is nearly level (Foote et al. 1972:95). This particular soil is used for pasture and sugarcane crops. Mokuleia clay loam, poorly drained variant only occurs on Kaua‘i, is nearly level, and poorly drained (Foote et al. 1972:96). This soil type is usually used for sugarcane, taro, and pasture.

Soils of the Lihue Series are described as follows:

> This series consists of well-drained soils on uplands on the island of Kauai. These soils developed in material weathered from basic igneous rock. They are gently sloping to steep. Elevations range from nearly sea level to 800 feet. The annual rainfall amount to 40 to 60 inches. The mean annual soil temperature is 73° F. Lihue soils are geographically associated with Ioleau and Puhi soils.
>
> These soils are used for irrigated sugarcane, pineapple, pasture, truck crops, orchards, wildlife habitat, woodland, and homesites. The natural vegetation consists of lantana, guava, koa haole, joee, kikuyugrass, molassesgrass, guineagrass, bermudagrass, and Java plum. [Foote et al. 1972:82]

Lihue silty clay, 25 to 40% slopes, eroded, is similar to Lihue silty clay, 0 to 8% slopes except the surface layer is thin. Erosion hazard for this particular soil type is severe (Foote et al. 1972:83). This soil type is also used for pasture, woodland, and wildlife habitats. Smaller areas with this soil type have the ability to grow pineapple and sugarcane.

1.4.2 Built Environment

The study area’s built environment includes a portion of Route 56 (Kūhiō Highway) including the intersection of Mailihuna Road and Kapa‘a Stream Bridge. Portions of the Kapa‘a to Keālia bike path and the entry to St. Catherine’s Cemetery are also located within the study area. The land surrounding the study area is not significantly developed. The largest establishment near the bridge site is Kapa‘a High School soccer field, track, and baseball diamond, which are located approximately 300 m (984.3 feet [ft]) to the southwest. To the north and northwest of the study area the land is primarily utilized for agricultural and residential purposes.

Section 2 Methods

2.1 Archival Research

Research centers on Hawaiian activities including *ka‘ao* (legends), traditional *mo‘olelo* (stories), *wahi pana* (storied places), *‘ōlelo no‘eau* (proverbs), *oli* (chants), *mele* (songs), traditional subsistence and gathering methods, ritual and ceremonial practices, and more. Background research focuses on land transformation, development, and population changes beginning with the early post-Contact era to the present day.

Cultural documents, primary and secondary cultural and historical sources, previous archaeological reports, historic maps and photographs were reviewed for information pertaining to the study area. Research was primarily conducted at the CSH library. Other archives and libraries including the Hawai‘i State Archives, the Bishop Museum Archives, the University of Hawai‘i at Mānoa’s Hamilton Library, Ulukau, The Hawaiian Electronic Library (Ulukau.org 2014), the State Historic Preservation Division (SHPD) library, the State of Hawai‘i Land Survey Division, the Hawaiian Historical Society, and the Hawaiian Mission Houses Historic Site and Archives are also repositories where CSH Cultural Researchers gather information. Information on Land Commission Awards (LCAs) were access via Waihona ‘Aina Corporation’s Māhele database (Waihona ‘Aina 2000), the Office of Hawaiian Affairs (OHA) Papakilo Database (Office of Hawaiian Affairs 2014), and the Ava Konohiki Ancestral Visions of ‘Āina website (Ava Konohiki 2015).

2.2 Community Consultation

2.2.1 Scoping for Participants

We begin our consultation efforts with utilizing our previous contact list to facilitate the interview process. We then review an in-house database of *kūpuna* (elders), *kama‘āina* (native born), cultural practitioners, lineal and cultural descendants, Native Hawaiian Organizations (NHOs; includes Hawaiian Civic Clubs and those listed on the Department of Interior’s NHO list), and community groups. We also contact agencies such as SHPD, OHA, and the appropriate Island Burial Council where the proposed project is located for their response to the project and to identify lineal and cultural descendants, individuals and/or NHO with cultural expertise and/or knowledge of the study area. CSH is also open to referrals and new contacts.

2.2.2 “Talk Story” Sessions

Prior to the interview, CSH cultural researchers explain the role of a CIA, how the consent process works, the project purpose, the intent of the study, and how their *‘ike* (knowledge) and *mana‘o* (thought, opinion) will be used in the report. The interviewee is given an Authorization and Release Form to read and sign.

“Talk Story” sessions range from the formal (e.g., sit down and *kūkā* [consultation, discussion] in participants choice of place over set interview questions) to the informal (e.g., hiking to cultural sites near the study area and asking questions based on findings during the field outing). In some cases, interviews are recorded and transcribed later.

CSH also conducts group interviews, which range in size. Group interviews usually begin with set, formal questions. As the group interview progresses, questions are based on interviewee's answers. Group interviews are always transcribed and notes are taken. Recorded interviews assist the cultural researcher in 1) conveying accurate information for interview summaries, 2) reducing misinterpretation, and 3) filling in missing details to *mo‘olelo*.

CSH seeks *kōkua* (assistance) and guidance in identifying past and current traditional cultural practices of the study area. Those aspects include general history of the *ahupua‘a* (land division usually extending from the uplands to the sea); past and present land use of the study area; knowledge of cultural sites (for example, *wahi pana*, archaeological sites, and burials); knowledge of traditional gathering practices (past and present) within the study area; cultural associations (*ka‘ao* and *mo‘olelo*); referrals; and any other cultural concerns the community might have related to Hawaiian cultural practices within or in the vicinity of the study area.

2.2.3 Completion of Interview

After an interview, CSH cultural researchers transcribe and create an interview summary based on information provided by the interviewee. Cultural researchers give a copy of the transcription and interview summary to the interviewee for review and ask them to make any necessary edits. Once the interviewee has made those edits, we incorporate their *‘ike* and *mana‘o* into the report. When the draft report is submitted to the client, cultural researchers then prepare a finalized packet of the participant's transcription, interview summary, and any photos that were taken during the interview. We also include a thank you card and honoraria. This is for the interviewee's records.

It is important to CSH cultural researchers to cultivate and maintain community relationships. The CIA report may be completed, but CSH researchers continuously keep in touch with the community and interviewees throughout the year—such as checking in to say hello via email or by phone, volunteering with past interviewees on community service projects, and sending holiday cards to them and their *‘ohana* (family). CSH researchers feel this is an important component to building relationships and being part of an *‘ohana* and community

"I ulu no ka lālā i ke kumu—the branches grow because of the trunk," an *‘ōlelo no‘eau* (#1261) shared by Mary Kawena Pukui with the simple explanation: "Without our ancestors we would not be here" (Pukui 1983:137). As cultural researchers, we often lose our *kūpuna* but we do not lose their wisdom and words. We routinely check obituaries and gather information from other informants if we have lost our *kūpuna*. CSH makes it a point to reach out to the *‘ohana* of our fallen *kūpuna* and pay our respects including sending all past transcriptions, interview summaries, and photos for families to have on file for genealogical and historical reference.

Section 3 *Ka‘ao* and *Mo‘olelo*

3.1 Traditional *Ka‘ao* Associated with Kapa‘a and Keālia

Storytelling is better heard than read for much becomes lost in the transfer from the spoken word to the written word. Hawaiian storytellers of old were greatly honored and provided a major source of entertainment. Their stories contained teachings while interweaving elements of Hawaiian lifestyles, genealogy, history relationships, arts, and the natural environment. *Ka‘ao* are often full of hidden and double meanings (Pukui 1995:ix).

Beckwith notes that Hawaiians use the term *ka‘ao* "for a fictional story or one in which fancy plays an important part"; *mo‘olelo* is "a narrative about a historical figure, one which is supposed to follow historical events. Stories of the gods are *mo‘olelo*." In reality, the distinction between *ka‘ao* as fiction and *mo‘olelo* as fact cannot be "pressed too closely. It is rather in the intention than in the fact" (Beckwith 1970:1). Thus a so-called *mo‘olelo*, which may be enlivened by fantastic adventures of *kupua* (supernatural beings), "nevertheless corresponds with the Hawaiian view of the relation between nature and man" (Beckwith 1970: 1). A *ka‘ao*, on the other hand, "so consciously composed to tickle the fancy rather than to inform the mind as to supposed events" (Beckwith 1970:1).

The following section presents traditional accounts of ancient Hawaiians living in the vicinity of the project area. These accounts originate before the time of the first Hawaiian and lead to an age of mythical characters whose epic adventures inadvertently lead to the Hawaiian race of *ali‘i* (chief) and *maka‘āinana* (commoner) alike. The *ka‘ao* shared below from in and around the project area are some of the oldest Hawaiian stories that have survived and they still speak to the characteristics and environment of the area and its people.

3.1.1 Hi‘iaka's Arrival in Kapa‘a

In *The Epic Tale of Hiiakaikapoliopele*, Hi‘iaka, the beloved sister of Pele, travels from Hawai‘i to Kaua‘i in order to find Lohi‘auipo, a lover of Pele. As Hi‘iaka and her companions arrived near Kaua‘i Island and came ashore in the vicinity of the project area, this is what they witnessed.

> Just then Wahine‘ōma‘o raised a cry of surprise, 'Hey! What is that thing soaring so high over the sea? Is it a cloud?'
>
> Hi‘iaka responded, 'That is no cloud you see, my friend. That is Wai‘ale‘ale, a mountain.' And then Hi‘iaka intoned this chant.
>
> Steep is the mountain in the calm
>
> Wai‘ale‘ale rises there, at Wailua
>
> Pulled up heavenward is the bridge of Anokawailani
>
> Blocked from view by Nounou Hill
>
> Kaipuha‘a disappears completely
>
> Low-lying in its expanse
>
> Shallow is the gourd, low-lying at the shore of Kapa‘a

> Shallow is the gourd, low-lying in the uplands of Kapa‘a
>
> Do not restrain the voice
>
> Leaving no beckoning call of welcome. [Ho‘oulumāhiehie 2008:166–167]

Hi‘iaka was called to from the top of the slopes of Wai‘ale‘ale, “Come ashore!!! Come land ashore!!!” (Ho‘oulumāhiehie 2008:167) The following section notes her arrival to Kapa‘a, and the chant which she recites as she reaches the shore:

> They sailed on until their canoe landed at the beach of Kapa‘a, where they jumped ashore. As they stood there on the sandy stretch, Hi‘iaka chanted this chant.
>
> O canoe-hewn koa! O koa tree made as a canoe
>
> O canoe of my brothers
>
> Those hard-hearted brothers, without compassion
>
> With no concern for me, their little sister
>
> Return now, and carry the message
>
> Hi‘iaka is at the cliffs of Kē‘ē
>
> At Honopū, at Waialoha
>
> The lovers shall offer welcome
>
> Lohi‘auipo amid the hala of Naue by the sea.
>
> When Hi‘iaka’s chant was finished, she urged her friend, saying, ‘We should go. Lehua Island has snatched away the sun.’ [Ho‘oulumāhiehie 20006: 167–168]

After coming ashore Hi‘iaka and her companions continued on their journey toward Hanalei.

3.1.2 Hi‘iaka and Wahine‘ōma‘o Journey through Keālia

The following *ka‘ao* tells of a traditional Hawaiian method of verifying a supernatural being. As in other folklore, a spirit has no weight—often interpreted as having no feet—and so when passing over a delicate leaf if the leaf did not break it could be concluded that the being is supernatural and not of this world. That is the test used on Hi‘iaka and her companion in the following tale.

On their way to Hā‘ena, Hi‘iaka and her companion Wahine‘ōma‘o came upon different *Kupua.*

> First a certain *Kupua*, the demi-god of the locality, guarding the surf, saw them coming and sent messengers to see if they walked over the *ti* leaf without breaking it, which was a sign that they were supernatural beings—*akua*. Hiiaka deceived them by sending Wahine-omao ahead as she was more human and her feet tore the leaves. The messengers returned and reported that the strangers were human beings.
>
> Next they came upon a Kupua swollen to twice his natural size, but he was unable to stop them. [Rice 1923:13–14]

Finally, the company stopped near Kēalia to help a man cook his *lū‘au* (young taro tops, especially as baked with coconut cream and chicken, or octopus) to eat with his *poi* (the Hawaiian

staff of life, made from cooked taro corms). Noticing an ailing woman in the man’s house, Hi‘iaka said a prayer which brought the woman back to health. All the *kāhuna* in the region had been unable to help the woman previously (Rice 1923:14).

Showing the method of determining whether a person was supernatural or not by leading them to pass over a leaf, in this story it is a *ti* leaf. In a story from the same island, “A Story of Pumaia,” the character Pupuilima said, “I will spread an ape [large taro-like plants; *Alocasia macrorrhizos*] leaf on the ground; and if it breaks, then they are men, but if it does not, then they area spirits” (Fornander 1919:552).

3.1.3 Palila and His Banana Grove Called Ka‘ea

High in the *mauka* (toward the mountain) region of Kapa‘a in the Makaleha Mountains at a place called Ka‘ea is reported to be the supernatural banana grove of the Kaua‘i *kupua* Palila, grandson of Hina (Handy and Handy 1972:424). Joseph Akina, writing for *Kuokoa* newspaper in 1913, describes Palila’s banana grove:

> The stalk could hardly be surrounded by two men, and was about 35 feet high from the soil to the lowest petiole. The length of the cluster from stem to lowest end of the bunch of bananas was about 1 3/4 fathoms long (one anana and one muku). There were only two bananas on each about 4 inches around the middle. There were just two bananas, one on the east side and one on the west, each about a foot or more in length. The one on the east side was tartish, like a waiawi (Spanish guava) in taste and the one on the west was practically tasteless. The diameter of the end of the fruit stem of this banana seemed to be about 1 feet. This kind of banana plant and its fruit seemed almost supernatural. [Akina 1913]

3.2 Traditional *Mo‘olelo* of Kapa‘a and Kēalia

The study area is located at the intersection of the traditional *ahupua‘a* (land division) of Kapa‘a and Kēalia in the ancient district of Kawaihau (Puna), one of five ancient districts on Kaua‘i (King 1935:228). For taxation, educational, and judicial reasons, new districts were created in the 1840s. The Kawaihau (Puna) District became the Lihue District (with the same boundaries), named for an important town in that district. In 1878, by act of King Kalākaua to secure a future and name for the new Hui Kawaihau, the new district of Kawaihau was created. This new district encompassed the *ahupua‘a* ranging from Olohena on the south to Kīlauea on the north. Subsequent alterations to district boundaries in the 1920s left Kawaihau District with Olohena as its southernmost boundary and Moloa‘a as its northernmost boundary (King 1935:222).

3.2.1.1 Ka Lulu O Mō‘īkeha

Kapa‘a was the home of the legendary *ali‘i* (chief), Mō‘īkeha. Born at Waipi‘o on the island of Hawai‘i, Mō‘īkeha sailed to Kahiki (Tahiti), the home of his grandfather Maweke, after a disastrous flood. On his return to Hawai‘i, he settled at Kapa‘a, Kaua‘i. Kila, Mō‘īkeha’s favorite of three sons by the Kaua‘i chiefess, Ho‘oipoikamalani, was born at Kapa‘a and was said to be the most handsome man on the island. It was Kila who was sent by his father back to Kahiki to slay his old enemies and retrieve a foster son, the high chief La‘amaikahiki (Beckwith 1970:352–358; Fornander 1916:160; Handy and Handy 1972:424; Kalākaua 1888:130–135). As mentioned

previously, Mō‘īkeha’s love for Kapa‘a is recalled in the *‘ōlelo no‘eau*: “Ka lulu o Moikeha i ka laulā o Kapa‘a. *The calm of Moikeha in the breadth of Kapa‘a*” (Pukui 1983:157).

“Lulu-o-Moikeha” is described as being situated “near the landing and the school of Waimahanalua” (Akina 1913:5). The landing in Kapa‘a was known as the Makee Landing and was probably constructed in the late 1870s, along with the Makee Sugar Mill. Today, in place of the old Makee Landing is part of a breakwater located on the north side of Mō‘īkeha Canal near the present day Coral Reef Hotel.

3.2.1.2 Pāka‘a and the Wind Gourd of La‘amaomao (Keahiahi)

Kapa‘a also figures prominently in the famous story of Pāka‘a and the Wind Gourd of La‘amaomao. Pāka‘a was the son of Kūanu‘uanu, a high-ranking retainer of the Big Island ruling chief Keawenuia‘umi (the son and heir to the legendary chief ‘Umi), and La‘amaomao was the most beautiful girl of Kapa‘a and member of a family of high status *kahuna* (priests). Kūanu‘uanu left the island of Hawai‘i, traveled throughout the other islands and finally settled on Kaua‘i at Kapa‘a.

It was there that he met and married La‘amaomao, although he never revealed his background or high rank to her until the day a messenger arrived, calling Kūanu‘uanu back to the court of Keawenuia‘umi. By that time, La‘amaomao was with child but Kūanu‘uanu could not take her with him. He instructed her to name the child Pāka‘a if it turned out to be a boy. Pāka‘a was raised on the beach at Kapa‘a by La‘amaomao and her brother Ma‘ilou, a bird snarer. He grew to be an intelligent young man and it is said he was the first to adapt the use of a sail to small fishing canoes. Although Pāka‘a was told by his mother from a very young age that his father was Ma‘ilou, he suspected otherwise and after constant questioning, La‘amaomao told her son the truth about Kūanu‘uanu.

Determined to seek out his real father and make himself known to him, Pāka‘a prepared for the journey to the Big Island. His mother presented to him a tightly covered gourd containing the bones of her grandmother, also named La‘amaomao, the goddess of the winds. With the gourd and chants taught to him by his mother, Pāka‘a could command the forces of all the winds in Hawai‘i. While this story continues on at length about Pāka‘a and his exploits on the Big Island and later on Moloka‘i, it will not be dwelt upon further here. It is important to note that several versions of this story do include the chants that give the traditional names of all of the winds at all the districts on all the islands, preserving them for this and future generations (Beckwith 1970:86–87; Fornander 1918-1919:5:78–128; Nakuina 1990; Rice 1923:69–89; Thrum 1923:53–67).

Frederick Wichman (1998:84) writes that Pāka‘a grew up on a headland named Keahiahi, which the bike path traverses. Here, Pāka‘a learned to catch *mālolo*, his favorite fish. After studying the ocean and devising his plan to fabricate a sail, Pāka‘a wove a sail in the shape of a crab claw and tried it out on his uncle’s canoe. One day, after going out to catch *mālolo*, he challenged the other fishermen to race to shore. He convinced them to fill his canoe with fish, suggesting it was the only way he could truly claim the prize if he won:

> The fishermen began paddling toward shore. They watched as Pāka‘a paddled farther out to sea and began to fumble with a pole that had a mat tied to it. It looked so funny that they began to laugh, and soon they lost the rhythm of their own paddling. Suddenly Pāka‘a’s mast was up and the sail filled with wind. Pāka‘a

> turned toward shore and shot past the astonished fishermen, landing on the beach far ahead of them. That night, Pāka‘a, his mother, and his uncle had all the *mālolo* they could eat. [Wichman 1998:85]

3.2.1.3 Kaweloleimākua

Kapa‘a is also mentioned in traditions concerning Kawelo (Kaweloleimākua), Ka‘ililauokekoa (Mō‘īkeha’s daughter, or granddaughter, dependent on differing versions of the tale), the *mo‘o* (lizard, water spirit) Kalamainu‘u and the origins of the *hīna‘i hīnālea* or the fish trap used to catch the *hīnālea* (small to moderate sized wrasse; *Labridae*) fish, and the story of Lonoikamakahiki (Fornander 1917:4(2):318, 4(3):704–705; Kamakau 1976:80; Rice 1923:106–108; Thrum 1923:123–135).

3.2.1.4 *Kalukalu* Grass of Kapa‘a

“*Kūmoena kalukalu Kapa‘a,*” or “Kapa‘a is like the *kalukalu* mats,” is a line from a chant recited by Lonoikamakahiki. *Kalukalu* is a sedge grass, used for weaving mats (Fornander 1917:4(2):318–19). Pukui (1983:187) associates the *kalukalu* with lovers in “Ke kalukalu moe ipo o Kapa‘a: *The* kalukalu *of Kapa‘a that sleeps with the lover*.” According to Wichman (1998:84), “a *kalukalu* mat was laid on the ground under a tree, covered with a thick pile of grass, and a second mat was thrown over that for a comfortable bed,” thus the association with lovers. Kaua‘i was famous for this particular grass, and it probably grew around the marshlands of Kapa‘a. It is thought to be extinct now, but an old-time resident of the area recalled that it had edible roots, “somewhat like peanuts.” Perhaps it was a famine food source (Kapa‘a Elementary School 1933: vi).

3.2.1.5 Kaweloleimākua and Kauahoa in Waipahe‘e

In the *mauka* areas of Keālia is a place called Waipahe‘e, a slippery slide used for recreation up until recent times. This *wahi pana* is associated with Kaweloleimākua and Kauahoa, who one day traveled to this place with their companion ‘Aikanaka (Wichman 1998:86). Here the two boys engaged in a contest of who could make the best *lei* (garland) for their chief. Kauahoa won this contest by making his *lei* of *liko lehua* (*lehua* [flower of the *‘ōhia* tree; *Metrosideros macropus*] bud) while Kaweloleimākua made his of fern. The boys then held a contest *na‘ina‘i mimi* to see who could urinate the longest, but because Kauahoa was much bigger than Kawelo, he also won this contest. Later, when the two were men engaged in war, Kawelo reminded Kauahoa of this boyhood excursion in an attempt to avoid bloodshed between them, however, he was unsuccessful.

3.3 *Wahi Pana*

Wahi pana are an integral part of Hawaiian culture. *Wahi pana*, also referred to as a place name, “physically and poetically describes an area while revealing its historical or legendary significance” (Landgraf 1994:v). Hawaiian place names convey a wide variety of information about the relationships among people, landscapes, and other natural and cultural resources.

3.3.1 Ka‘ea

Handy and Handy have recorded the words of a *kama‘āina* who wrote to the newspaper *Ku‘oko‘a* (19 May 1913); he described the waterfalls of Makaleha, billowing clouds on Pohaku-pili and a banana grove at Kaea.

> As my eyes traveled on the left of the waterfall of Makaleha, I saw a billowing cloud on Pohaku-pili but could not see Palila's banana grove, the grove spoken of in olden days,
>
> A banana grove at Kaea,
>
> [where] the bananas were fully ripe.
>
> They did not ripen in ten days
>
> But were fetched from the pit
>
> [where they were buried for ripening].
>
> [Handy and Handy 1972:424]

3.3.2 Kapa‘a

Kapa‘a is the name of a land section, town, ditch, elementary school, weir, and beach park in the Kawaihau District in Kaua‘i. Kapa‘a literally translates as "the solid or the closing" (Pukui et al. 1974:86).

3.3.3 Kahana

The name of a land (possibly) and *‘ili* (land section, a subdivision of an *ahupua‘a*) in Kapa‘a where uncultivated *lo‘i* (taro pond field) were claimed (LCA 03971). Kahana literally translates as "cutting" (Pukui et al. 1974:63).

3.3.4 Kēalia

Literally translated, Kēalia means "the salt encrustation" (Pukui et al. 1974:102).

3.3.5 Nounou

Nounou is the name given to the *mauka* section known commonly as "Sleeping Giant." Kawelo's parents taught him the "art of stone fighting (nounou) so that in the second battle (fought on the mountain called Nounou) he is victorious over ‘Aikanaka (Beckwith1970:409).

3.3.6 *Heiau* of Kapa‘a and Keālia

During their expeditions around Hawai‘i in the 1880s collecting stories from *ka po‘e kahiko* (elders), Lahainaluna students stopped in Kapa‘a and Keālia and gathered information regarding *heiau* (pre-Christian place of worship) of the region (Hawaiian Ethnological Notes 1885). Fourteen *heiau* were named, suggesting the two *ahupua‘a* were probably more politically significant in ancient times..

Table 1 lists the names of the *heiau,* their location if known, their type, associated chief and priest, any comments, and the reference. The exact locations of these *heiau* are unknown. The general locations of two of the *heiau* correlate with *wahi pana* of Kuahiahi and Kaluluomoikeha. Kuahiahi (also spelled Kaahiahi and Keahiahi) is the rocky headland at the north end of Kapa‘a where the first Kapa‘a School was once located. Kaluluomoikeha is thought to be the general area near the Moikeha Canal and the present day Coral Reef Hotel.

Table 1. List of *Heiau* in Kapa‘a and Keālia (source: Bushnell et al. 2003)

Name	Location	Type	Associated Chief/Priest
Kaluluomoikeha	Kapa‘a	Unknown	Mō‘īkeha
Kuahiahi	Kapa‘a (where government school stands now)	Unknown	Kiha/ Lukahakona
Kumalae	Kapa‘a/Keālia	Unknown	Kiha/ Lukahakona
Mailehuna	Kapa‘a (Mailehuna is the area of the present day Kapa‘a School)	Unknown	Kiha, Kaumuali‘i/ Lukahakona
Makanalimu	Upland of Kawaihau	Unknown	Kaumuali‘i
Mano	Kapa‘a/Keālia	Unknown	Kiha/ Lukahakona
Napuupaakai	Kapa‘a/Keālia	Unknown	Kiha/ Lukahakona
Noemakalii	Kapa‘a/Keālia	“Heiau for birth of Kauai Chiefs, like Holoholokū”	Unknown
Nounou	Kapa‘a	Mountain feature	Kawelo
Pahua	Kapa‘a/Keālia	Unknown	Kiha/ Lukahakona
Piouka	Kapa‘a/Keālia	“Unu-type heiau”	Unknown
Pueo	Kapa‘a	Unknown	Kiha, Kaumuali‘i/ Lukahakona
Puukoa	Kapa‘a/Keālia	“Unu” (*heiau* for fishermen or an agricultural *heiau*)	Unknown
Una	Kapa‘a/Keālia	Unknown	Kiha/ Lukahakona
Waiehumalama	Kapa‘a/Keālia	Unknown	Kiha/ Lukahakona

3.4 *‘Ōlelo No‘eau*

3.4.1 *‘Ōlelo No‘eau* #1450

This proverb describes the love Mō‘īkeha had for Kapa‘a (Pukui 1983:157).

Ka lulu o Moikeha i ka laulā o Kapa‘a.

The calm of Moikeha in the breadth of Kapa‘a.

The chief Moikeha enjoyed the peace of Kapa‘a, Kauai, the place he chose as his permanent home.

3.4.2 *‘Ōlelo No‘eau* #1736

The following proverb describes the soft bed made of the *kalukalu* plant (Pukui 1983:187).

Ke Kalukalu moe ipo o Kapa‘a.

The kalukalu of Kapa‘a that sleeps with the lover.

Lovers were said to like whiling the time in the soft *kalukalu* plants.

3.5 ***Oli***

Akina (1913) tells the story of how Mō‘īkeha’s son Kila stocks the islands with the *akule* (big-eyed or google-eyed scad; *Trachurops crumenophthalmus*), *kawakawa* (mackerel tuna; *Euthynnus yaito*), and *‘ōpelu* (mackerel scad; *Decapterus pinnulatus*) fish. When Kila travels to Kahiki, he seeks out his grandfather Maweke and explains that he is the child of Mō‘īkeha. When Maweke asks Kila if Mō‘īkeha is enjoying himself, Kila answers with the following chant of Puna:

My father enjoys the billowing clouds	I walea no ku‘u makuakāne i ke ao
over Pōhaku-pili,	ho‘okanunu, iluna o Pōhakupili
The sticky and delicious poi,	I ka poi uouo ono ae no a,
With the fish brought from Puna,	Me ka i‘a i na mai o ka Puna,
The broad-backed shrimp of Kapalua,	Ka opae hoainahanaha o Kapalua;
The dark-backed shrimp of Pōhakuhapai,	Na opae kua hauli o Pohakuhapai,
The potent awa root of Maiaki‘i,	Na puawa ona mai no o Maiakii,
The breadfruit laid in the embers at Makialo	Me ka ulu moelehu mai no o Makialo,
The large heavy taros of Keah’āpana	Me na kalo pehi hua o Keahapana,
The crooked surf of Makāiwa too	A i kekee nalu ae no hoi o Makaiwa,
The bending hither and thither of the reed and rush blossoms,	A i ke kahuli aku kahuli mai o ka pua uku me ka pua neki,
The swaying of the kalukalu grasses of Puna	A i ka nu‘a ae no o ke kalukalu o Puna,
The large, plump, private parts of my mothers,	A i na mea nui nepunepu no a ku‘u mau makuahine.
Of Ho‘oipoikamalanai and Hinau-u,	O Hoioipo ikamalanai me Hinau-u,
The sun that rises and sets,	A i ka la hiki ae no a napoo aku,
He enjoys himself on Kaua‘i,	Walea ai no ka nohona ia Kaua‘i
All of Kaua‘i is Mō‘īkeha’s	Ua puna a puni Kaua‘i ia Mō‘īkeha
[Akina 1913:6]	

Maweke is delighted and when the boy is questioned as to his purpose, Kila tells his grandfather he is seeking fish for his family. Maweke tells Kiwa to lead the fish back to his homeland. This is how Kila led the *akule*, *kawakawa*, and *‘ōpelu* to Hawai‘i.

Section 4 Traditional and Historical Accounts

4.1 Early Historic Accounts of Kapa‘a and Keālia

The earliest written documentation of life in the *ahupua‘a* appears in the 1830s when missionary censuses recorded a total population of 283, comprising 265 adults and 18 children within Keālia (Schmitt 1973:25). Other Protestant missionary records focused more specifically on areas where mission stations were established. An 1847 census of 23 land divisions in the Hanalei and Kawaihau Districts gives population figures for Keālia (Schmitt 1969). Most notable is the decline in population in Keālia, from 283 in the 1830s to 143, a reduction of almost half (Schmitt 1969:229). Accounting for the high death toll caused by the introduction of foreign disease, this still seems like an extremely high death rate. Kapa‘a’s population during this time period is unknown. A population distribution map by Coulter (1931) (Figure 6) indicates the population of Kaua‘i ca. 1853 “was concentrated chiefly on the lower flood plains and delta plains of rivers where wet land taro was raised on the rich alluvial soil” (Coulter 1971:14).

Although most of the historic documents for Kaua‘i in this period revolve around missionary activities and the missions themselves, there was indication that the Kapa‘a area was being considered for new sugarcane experiments, similar to those occurring in Kōloa. In a historic move, Ladd and Company received a 50-year lease on land in Kōloa from Kamehameha III and Kaua‘i Governor Kaikio‘ewa of Kaua‘i. The terms of the lease allowed the new sugar company “the right of someone other than a chief to control land” and had profound effects on “traditional notions of land tenure dominated by the chiefly hierarchy” (Donohugh 2001:88). In 1837, a very similar lease with similar terms was granted to Wilama Ferani, a merchant and U.S. citizen based in Honolulu (Hawai‘i State Archives 1837). The lease was granted by Kauikeaouli (Kamehameha III) for the lands of Kapa‘a, Keālia, and Waipouli for 20 years for the following purpose:

> [F]or the cultivation of sugar cane and anything else that may grow on said land, with all of the right for some place to graze animals, and the forest land above to the top of the mountains and the people who are living on said lands, it is to them whether they stay or not, and if they stay, it shall be as follows: They may cultivate the land according to the instructions of Wilama Ferani and his heirs and those he may designate under him. [Hawai‘i State Archives 1837]

Unlike Ladd and Company, which eventually became the Koloa Sugar Company, there is no further reference to Wilama Ferani and his lease for lands in Kapa‘a, Keālia, and Waipouli. In a brief search for information on Honolulu merchant Wilama Ferani, nothing was found. It is thought that perhaps Wilama Ferani may be another name for William French, a well-known Honolulu merchant who is documented as having experimented with grinding sugarcane in Waimea, Kaua‘i at about the same time the 1837 lease for lands in Kapa‘a, Keālia, and Waipouli was signed (Joesting 1984:152).

In 1849, William P. Alexander, son of a Wai‘oli missionary, recorded a trip he took around Kaua‘i. Although, he focuses on the larger mission settlements like Kōloa and Hanalei, he does mention Kapa‘a and Keālia.

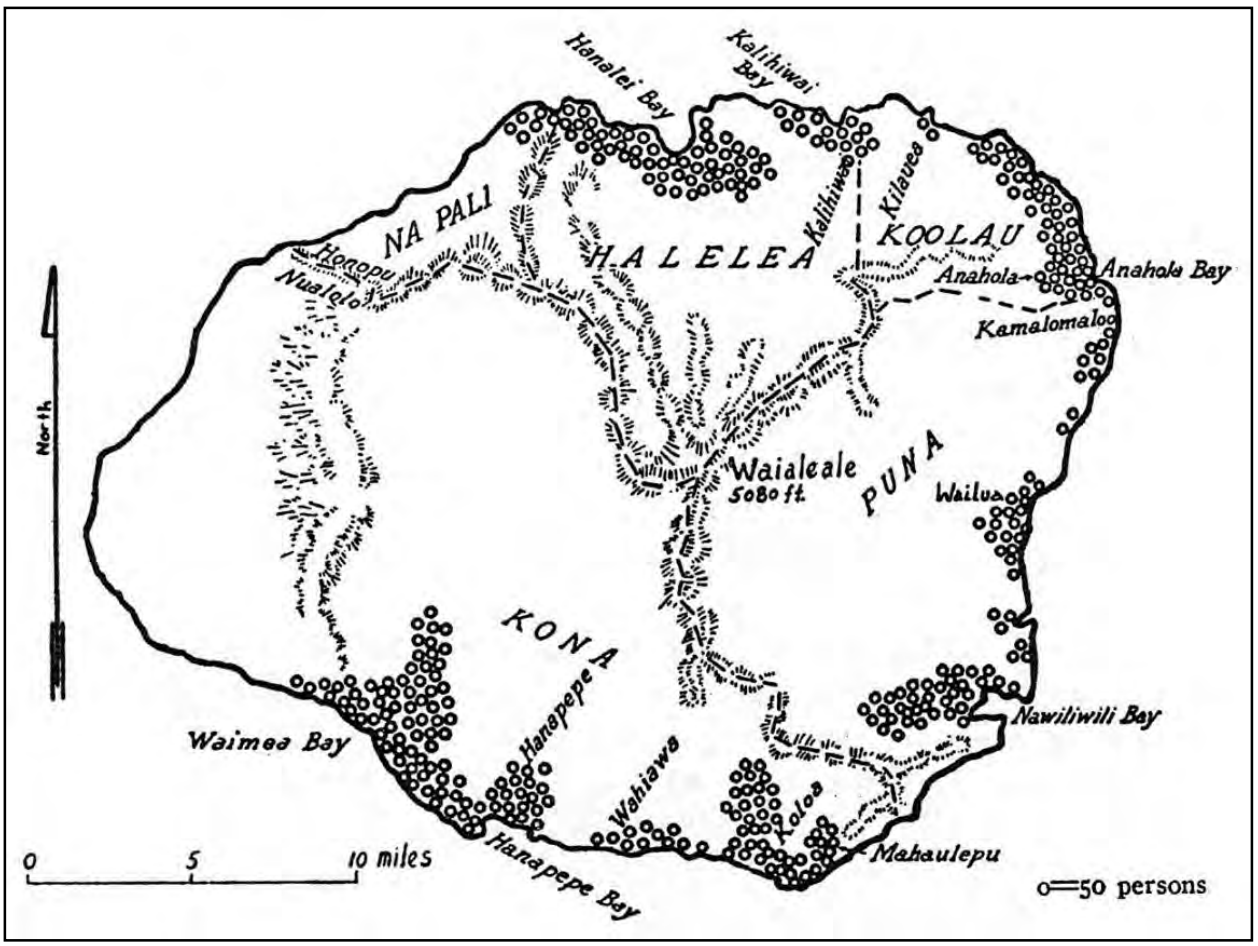


Figure 6. Map showing population estimate for Kaua‘i in 1853 (Coulter 1931:16)

> A few miles from Wailua, near Kapaa we passed the wreck of a schooner on the beach, which once belonged to Capt. Bernard. It was driven in a gale over the reef, and up on the beach, where it now lies. A few miles further we arrived at Keālia. We had some difficulty crossing the river at this place, owing to the restiveness of our horses. The country here near the shore was rather uninviting, except the valley which always contained streams of water. [Alexander 1991:123]

In later years, the notorious Kapa‘a reef was to become the location of many shipwrecks once a landing was built there in the 1880s.

One of the first people to succeed in busines in the Keālia area was a German by the name of Ernest Krull. In 1854, a government survey was prepared for Kumukumu, Kaua‘i (Hawai‘i State Survey, RM 141). In handwritten notes of the map, it is indicated that Mr. Krull desired to buy government interest to the land for $200.00. Apparently Mr. Krull was successful in obtaining Kumukumu because by the early 1860s, he was running a thriving business supplying whaling ships with beef and dairy products (Joesting 1984:171). Mr. Krull's ranch and dairy were located in the Waipahe‘e area of Kumukumu in a place called Kalualihilihi (Kapa‘a School 1983:4). His residence also served as a rest stop for travelers during the 1860s (Lydgate 1991:142). Mr. Krull continued to lease a portion of the tablelands above Keālia until 1876 when he sold his ranch to Colonel Z.S. Spalding and Captain James Makee (Hawai‘i State Archives 1879; Kapa‘a School 1983:4).

4.2 **The Māhele and the Kuleana Act**

To try to maintain sovereignty of the land, Kauikeaouli (Kamehameha III) in 1846–1848 supervised the Māhele—the division of Hawaiian lands—that transformed the land system in Hawai‘i from collective to private ownership. The Māhele was modeled after western concepts. Crown Lands were to be reserved for the *mō‘ī* (paramount chief) and the royal house, Konohiki Lands were claimed by *ali‘i* and their *konohiki* (headman of an *ahupua‘a* under the chief), and Government Lands were set aside to generate revenue and managed by the government. In 1850, these three categories of land were subject to the rights of the *maka‘āinana* and other tenants (naturalized foreigners, non-Hawaiians born in the Islands, or long-term resident foreigners), who could make claims for their habitation and agricultural plots, known as *kuleana* (Native land rights) parcels (Chinen 1958:8–15).

Under the Kuleana Act of 1850, the *maka‘āinana* were required to file their claims with the Board of Commissioners to Quiet Land Titles (Land Commission) within a specified time period in order to apply for fee-simple title to their lands. The claim could only be filed after the claimant arranged and paid for a survey, and two witnesses testified that they knew the claimant and the boundaries of the land, knew that the claimant had lived on the land since 1839, and knew that no one had challenged the claim. Then the *maka‘āinana* could present their claims to the Land Commission to receive their Land Commission Award (LCA) (Kame‘eleihiwa 1992).

Not everyone who was eligible to apply for *kuleana* lands did so and not all of those claims were awarded. Some claimants failed to follow through and come before the Land Commission, some did not produce two witnesses, and some did not get their land surveyed. In addition, some *maka‘āinana* may have been reluctant to claim *‘āina* that had been traditionally controlled by their *ali‘i*, some may not have been familiar with the concept of private land ownership, and some may

have not known about the Māhele, the process of making claims (which required a survey) or the strict deadline for making claims. Further, the Land Commission was comprised largely of foreign missionaries, so the small number of claimants and awards may reflect only those *maka‘āinana* who were in good standing with the church. Significantly, the surveying of the land was not standardized (Kame‘eleihiwa 1992:296–297).

A total of 14,195 claims were filed and 8,421 awards were approved for about 29% of the 29,220 adult Native Hawaiian males living at the time of the Māhele, averaging 3 acres each (Kame‘eleihiwa 1992:295). Out of the potential 2,500,000 acres of Crown and Government lands, 28,658 acres of land were awarded to the *maka‘āinana*, less than 1% of the total acreage of Hawai‘i (Kame‘eleihiwa 1993:295). The small number of *kuleana* awards and their small size prevented the *maka‘āinana* from maintaining their independent subsistence lifestyle, often forcing them to abandon their newly acquired property (Chinen 1958:32).

During the Māhele*,* Kapa‘a was designated as Crown Lands (Commissioner of Public Lands 1929). The *‘ili* of Paikahawai and Ulakiu in Kapa‘a Ahupua‘a were retained as Government Lands. The land claims during this period show only five individuals were awarded land parcels in the relatively large *ahupua‘a* of Kapa‘a. None of these land claims are located within the vicinity of the survey area. Interestingly, the residential “village” of Kapa‘a did not exist as a single entity, but was a series of probably small settlements or compounds, perhaps even individual house lots that stretched along the shoreline of the *ahupua‘a* and included (south to north) Kupanihi (Makahaikupanihi), Kalolo (Kaulolo), Puhi, and Ulukiu.

Keālia was granted to the *ali‘i* Miriam Ke‘ahikuni Kekau‘onohi (Land Commission Award 11216; Royal Patent 6071). Kekau‘onohi was a granddaughter of Kamehameha, one of Liholiho’s wives and served as Kaua‘i governor from 1842 to 1844. Seventeen land claims were made in Keālia and 15 were awarded. A total of six claims were awarded within the vicinity of the survey area (Figure 7 and Table 2). Appendix A consists of the Māhele Awards.

Sixty-seven cultivated *lo‘i* are claimed in the *kuleana,* with reference to numerous uncultivated *lo‘i* and boundaries of other cultivated *lo‘i* that were not claimed. In the Māhele documents, there are ten instances in which the individual *lo‘i* are referred to with their personal names. Two ditches or *‘auwai* are recorded, Kaauwaelalo (LCA 01980) and Kahaukua (LCA 10148). Keālia River and Keahapuna (Keahapana) River were also named as boundaries, although they may refer to the same river. This information suggests taro farming continued to be central to Keālia. In addition, four *kō‘ele* (land cultivated by tenant for local chief) are named in the Keālia Māhele documents. This suggests the *konohiki* of Keālia maintained a fair amount of power and played an active role in land and water distribution even as population was declining and foreign powers were beginning to trickle in.

Another noteworthy resource in Keālia were ponds or *loko.* Four ponds were mentioned, though no reference to location is given for two of them. Akiana Pond (LCA 8060) is thought to be located in the *‘ili* (land division smaller than an *ahupua‘a*) of Akiana and Loko Waipunaula (LCA 8833) is thought to be in Waipunaula ‘Ili. In addition to the fishponds providing fresh fish, the Keālia records indicate freshwater fish were also caught in the rivers and streams. Although many Hawaiians did not submit or follow through on claims for their lands, the distribution and written testimonies of LCAs can provide insight into patterns of residence and agriculture.

Figure 7. Aerial photograph showing Land Commission Awards in the Keālia Ahupua‘a within the vicinity of the survey area (Google Earth 2013)

Table 2. Land Commission Awards within the Vicinity of the Survey Area

LCA #	Claimant	*‘Ili*	Claim/Land Use	Award
01980	Puali	Haulei, Kaeleele	House lot, four *lo‘i, kula* (not available in Appendix A	One parcel
08060	Hulialo	Haulei, Kalohipa	House lot, two *lo‘i, kula* (not available in Appendix A	One parcel
08833	Kiapia	Waipunaula, Kiohale	Five *lo‘i*, *kula*, and house lot	Two parcels
08842	Kaawapupuole	Kauaha, Makapono	House lot, four *lo‘i*, *kula*	Two parcels
10628	Puhi	Kaunakakai, Kuaiula	House lot, one *lo‘i*	Two parcels
10906	Umiumi	Kaukuolono	Two *lo‘i*, *kula*, and house lot	Two parcels

4.3 **Makee Sugar Company**

The first large-scale agricultural enterprise in the Kapa‘a/Keālia area was begun in 1877 in Kapa‘a by the Makee Sugar Plantation and the Hui Kawaihau (Dole 1916:8). The Hui Kawaihau was originally a choral society begun in Honolulu whose membership consisted of many prominent names, both Hawaiian and *haole*. It was Kalākaua’s thought that the Hui members could join forces with Makee, who had previous sugar plantation experience on Maui, to establish a successful sugar corporation on the east side of Kaua‘i. Captain Makee was given land in Kapa‘a to build a mill and he agreed to grind cane grown by Hui members. Kalākaua declared the land between Wailua and Moloa‘a a fifth district called Kawaihau and for four years the Hui attempted to grow sugarcane at Kapahi, on the plateau lands above Kapa‘a. After a fire destroyed almost one half of the Hui’s second crop of cane and the untimely death of Captain James Makee, one of their principal advocates, the Hui began to disperse and property and leasehold rights passed on to Makee’s son-in-law and the new Makee Plantation owner, Colonel Z.S. Spalding (Dole 1916:14).

As part of the infrastructure of the new plantation, a sugar mill was erected and the Makee Landing was built in Kapa‘a (Figure 8). Following Captain Makee’s death, Colonel Spalding took control of the plantation and in 1885 moved the mill to Keālia (Cook 1999:51). The deteriorating stone smokestack and landing were still there well into the 1900s (Damon 1931:359; see Figure 8). Condé and Best (1973:180) suggest railroad construction for the Makee Plantation started just prior to the mid-1890s. There is one reference to a railroad line leading from the Kapa‘a landing to Keālia in 1891. During Queen Lili‘uokalani’s visit to Kaua‘i in the summer of 1891, the royal party was treated to music by a band, probably shipped in from O‘ahu. “The band came by ship to Kapa‘a and then by train to Keālia” (Joesting 1984:252). This line is depicted on a 1910 USGS map that shows it heading south from Keālia Mill and splitting near the present Coral Reef Hotel, one finger going to the old Kapa‘a Landing (Makee Landing) and another line heading *mauka*, crossing the present Moikeha Canal, traveling southwest up Lehua Street and through what is now goat pasture, along a plateau and into the *mauka* area behind Kapa‘a swamp lands (Figure 9). This railroad line was part of a 20-mile network of plantation railroad with some portable track and

Figure 8. “Kapa‘a Wharf Remains, Kapa‘a, Kauai, Hawaii” (ca. 1934) also known as the Old Makee Landing (top photo). Today there is a breakwater associated with the Moikeha Canal in the general location (bottom photo) (source: Bushnell et al. 2003)

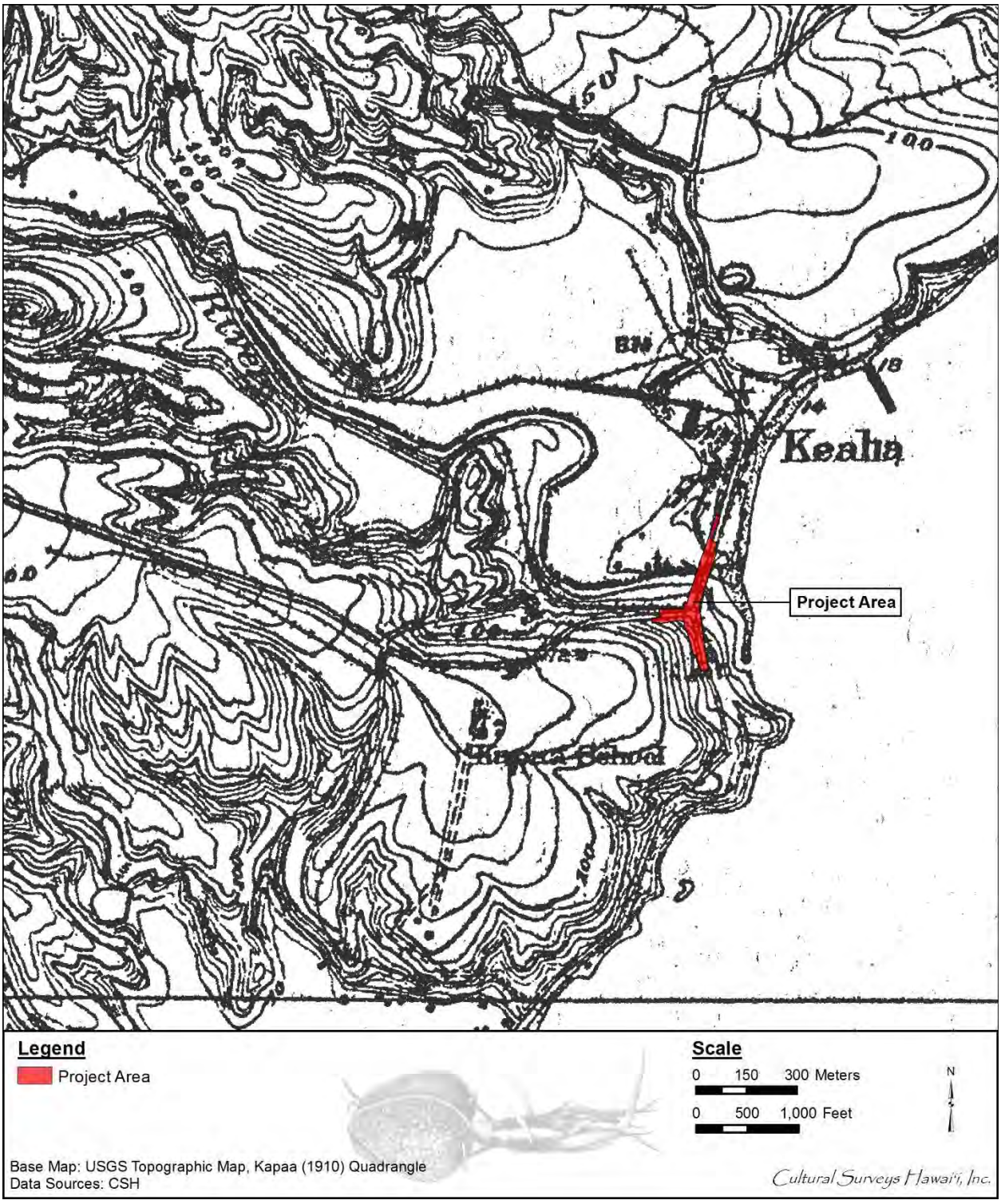


Figure 9. Portion of the 1910 Kapaa USGS topographic map depicting historic road and railroad alignment within and in the vicinity of the current study area

included a portion of Keālia Valley and the *mauka* regions of the plateau lands north of Keālia (Condé and Best 1973:180).

By the late 1800s, Makee Plantation was a thriving business with more than 1,000 workers employed (Cook 1999:51). Hundreds of Portuguese and Japanese immigrants found work on Makee Plantation and the new influx of immigrants required more infrastructure. In 1883, a lease for a school lot was signed between Makee Sugar Company and the Board of Education (Kapa‘a School 1983:9). Stipulations found in the Portuguese immigrant contracts with Makee Sugar Company stated that “children shall be properly instructed in the public schools” (Garden Island 1983). The original Kapa‘a School was constructed in 1883 on a rocky point adjacent to the Makee Sugar Company railroad (Figure 10). Traditionally, this point was known as Kaahiahi (Kapa‘a School 1983:10). In 1908, Kapa‘a School was moved to its present site directly *mauka* on Mailihune Hill (Figure 11).

As in much of the rest of Hawai‘i, Chinese rice farmers began cultivating the lowlands of Kapa‘a with increasing success in the latter half of the 1800s. Several Hawaiian *kuleana* owners leased or sold their parcels *mauka* of the swamp land to Chinese rice cultivators. Other Chinese rice cultivators appealed to the government for swamp lands, first leasing and later buying. As a result of the growing rice and sugar industries, the economic activity displaced the house lot *kuleana* on the *makai* side of the marsh for increasing commercial and residential development (Lai 1985:148–161).

Narrow wagon roads gave way to macadamized roads in the early part of the twentieth century. This new road was called the Kaua‘i Belt Road and parts of it are thought to have followed the “Old Government Road” (Cook 1999). In Kapa‘a, the present day Kūhiō Highway probably follows the same route as the original Government Road and subsequent Kaua‘i Belt Road. The locations of the *kuleana* awards in Kapa‘a indicate the majority of the house lots were situated along the Government Road. LCA 3243 names a “road” as one of its boundaries.

In Keālia, however, there is evidence that numerous traditional trails led to Anahola with possibly two principal routes, a *makai* route and a *mauka* route. In 1881, Z.S. Spalding, proprietor of the Makee Sugar Plantation, appealed to the Department of the Interior with a formal petition to have the *makai* road (in Keālia) officially closed, stating that the natives were breaking through his fences to take shortcuts between Keālia and Anahola (Hawai‘i State Archives 1881). The exact location of the *makai* road is unknown although it is thought to have been on the plateau lands, somewhat removed from the coastline, in areas fit for sugarcane production. The route of the Old Government Road, also known as the “Mauka road” is described as, “crossing the Kealia River above the Rice Plantation and passing over the hill near Mr. Spalding’s residence” (Hawai‘i State Archives 1882). When the Kaua‘i Belt Road was constructed in the first two decades of the twentieth century, a portion of the old Government Road route was abandoned. The new route crossed the river at the *makai* end of Keālia Stream, paralleled the ocean and the railroad track, and then turned *mauka* passing through Keālia town and went up the hill to meet up with the “Old government Road.” The Keālia Bridge built for the Kaua‘i Belt Road is thought to date to ca. 1912. A traveler writing about their travels in 1913 mentions the bridge: “In the twinkling of an eye we passed on the steel bridge of Kealia. This new bridge is beautiful” (Akina 1913) (Figure 12).

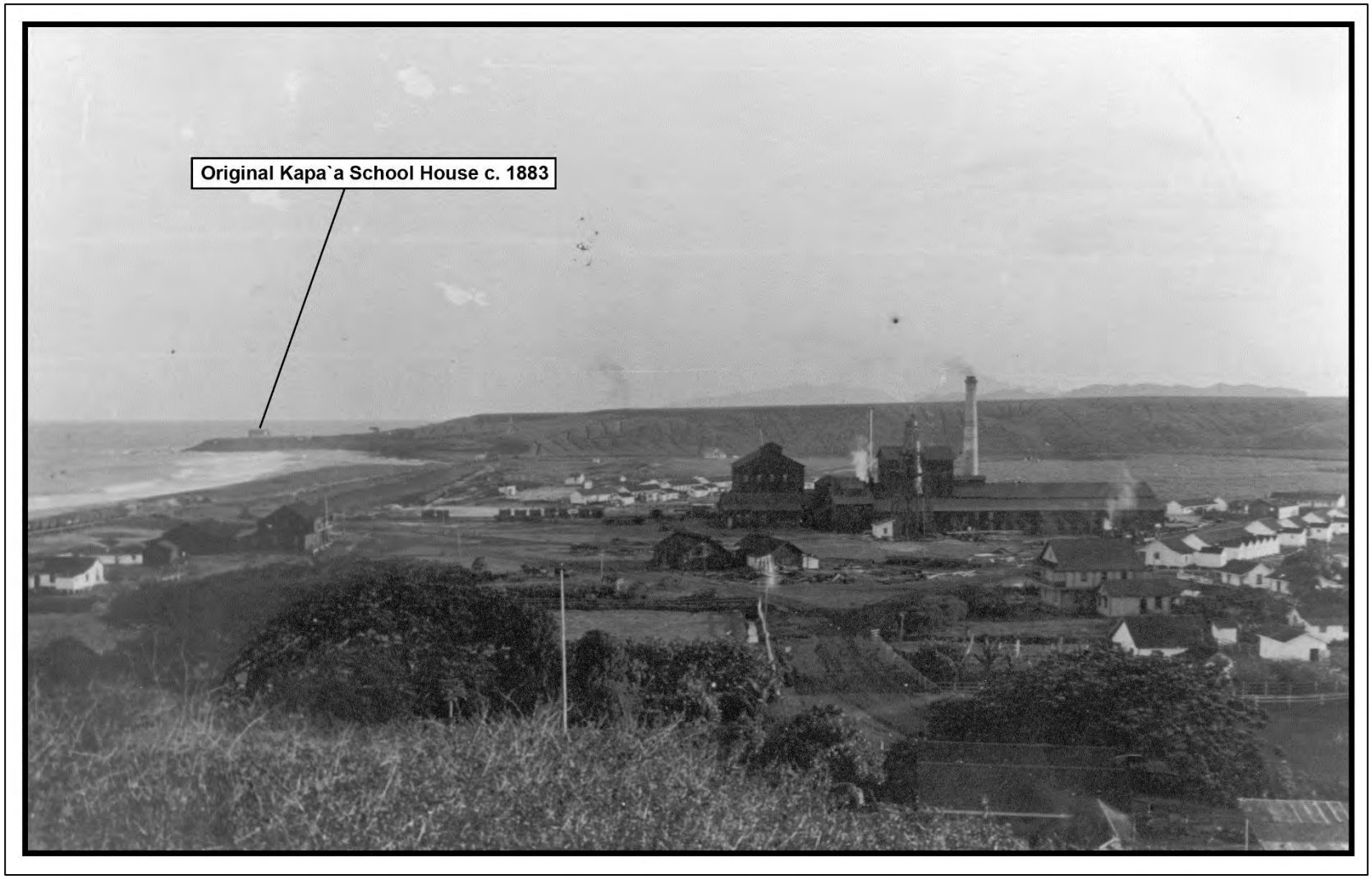


Figure 10. Historic photograph of Keālia Mill and town (courtesy of the Kaua‘i Historical Society)

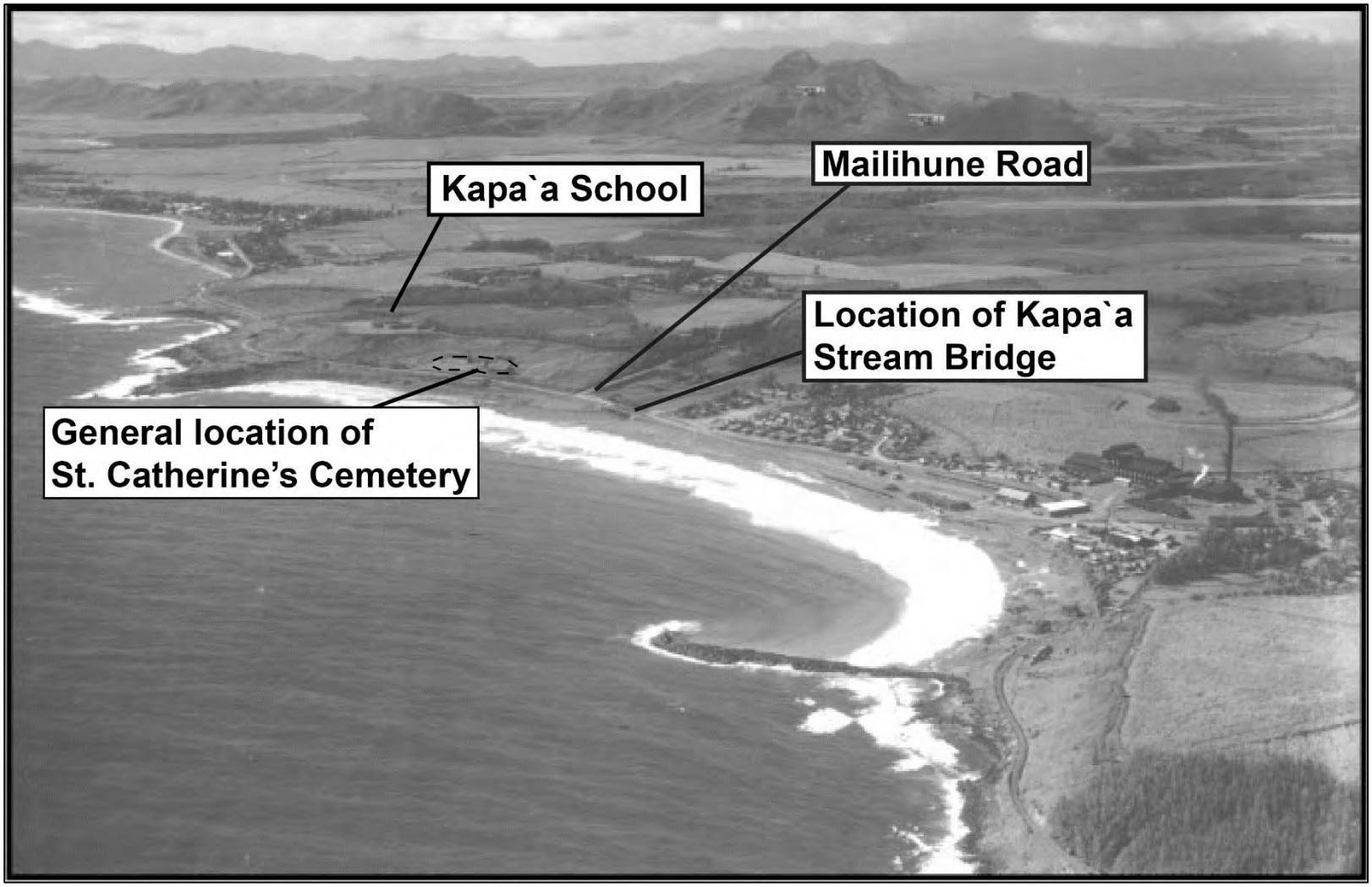


Figure 11. “Aerial View of Kealia, Kauai, Hawaii, Looking Landward” ca. 1933 (source: Bushnell et. al 2003) (note Mailihuna Road is misspelled)

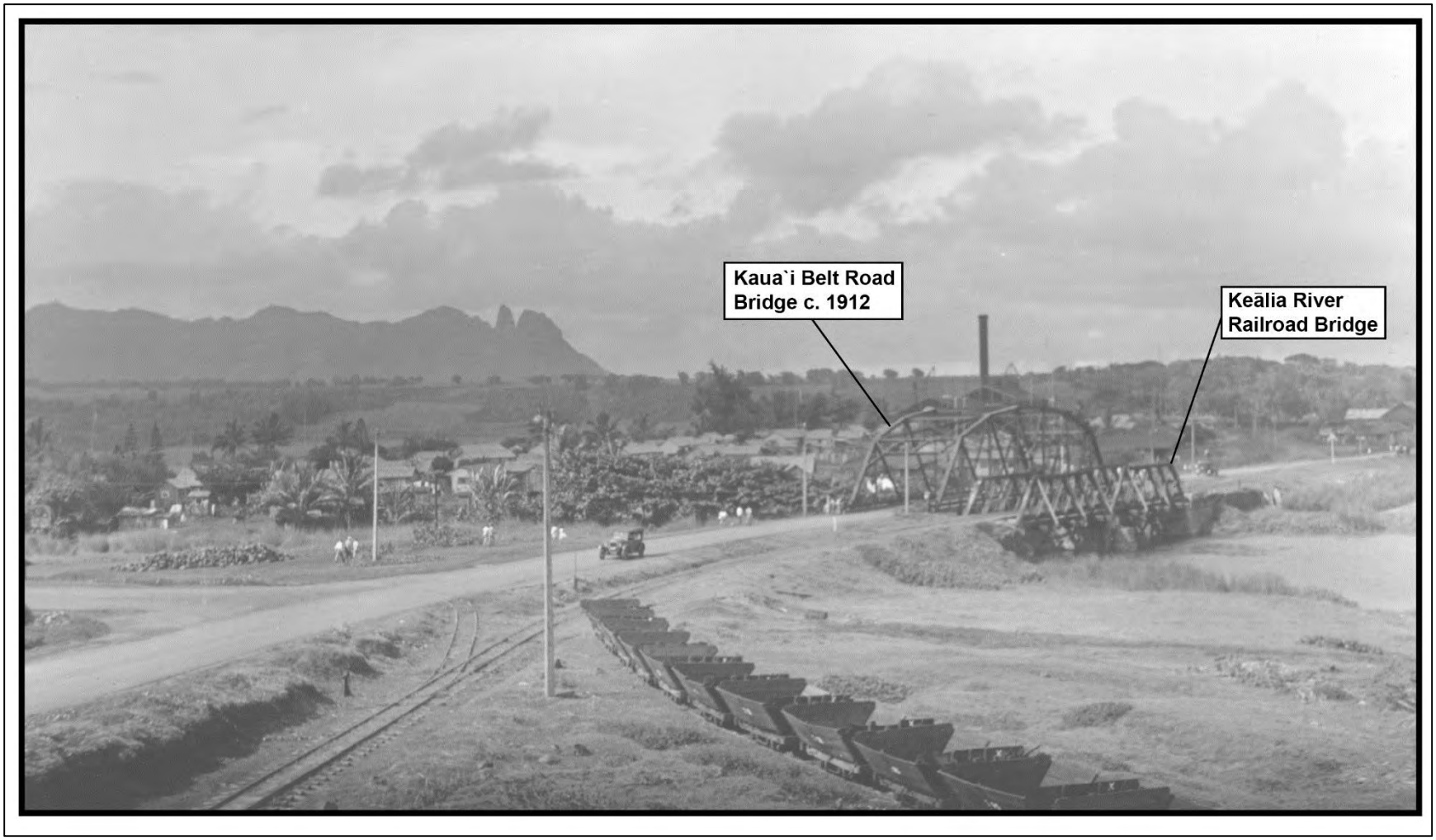


Figure 12. “Kealia in Background, Kealia, Kauai, Hawaii” ca. 1934, photograph by Funk (source: Bushnell et al. 2003)

4.4 Twentieth Century History of Kapa‘a and Keālia (1900–Present)

In the early 1900s, government lands were auctioned off as town lots in Kapa‘a to help with the burgeoning plantation population. An oral account mentioned that in the 1930s and 1940s, the area north of Moikeha Canal in Kapa‘a was mostly settled by Portuguese families (Bushnell et al. 2003). Another oral account mentioned the Japanese were very prominent in the 1920s and 1930s, largely replacing the Chinese merchants of the turm of the century in the Kapa‘a business sector (Bushnell et al. 2003). Several territorial government structures were once situated adjacent to the coastal areas of Kapa‘a. The Board of Health, Territory of Hawaii ran a dispensary in Kapa‘a starting in 1926. This was located at the *makai* edge of Niu Street near the Kapa‘a Beach Park parking lot. A fire station was once located in the area now occupied by the Coral Reef Hotel and a courthouse and jail cell once stood at the location of the present Kapa‘a Neighborhood Center. It is not known when these structures were removed or abandoned.

4.4.1.1 Ahukini Terminal & Railway Company

The Ahukini Terminal & Railway Company (AT&R) was formed in 1920 to establish a railroad to connect Anahola, Keālia, and Kapa‘a to Ahukini Landing and “provide relatively cheap freight rates for the carriage of plantation sugar to a terminal outlet” (Condé and Best 1973:185). The company was responsible for extending the railroad line from Makee Landing, which was no longer in use, to Ahukini Landing, and for constructing the original Waika‘ea Railroad Bridge and the Mō‘īkeha Makai Railroad Bridge (Figure 13 through Figure 16).

In 1934, the Lihue Plantation Company absorbed the AT&R and Makee Sugar Company (Condé and Best 1973:167). The railway and rolling stock formerly owned by Makee Sugar Company became the Makee Division of the Lihue Plantation. At this time, in addition to hauling sugarcane, the railroad was also used to haul plantation freight, including “fertilizer, etc. . . . canned pineapple from Hawaiian Canneries to Ahukini and Nawiliwili, pineapple refuse from Hawaiian Canneries to a dump near Anahola and fuel oil from Ahukini to Hawaiian Canneries Co., Ltd.” (Hawaiian Territorial Planning Board 1940:11). Former plantation workers and *kama‘āina* growing up in Kapa‘a remember when the cannery sent their waste to the pineapple dump, a concrete pier just north of Kumukumu Stream by railroad. The structure is built over the water where the rail cars would dump the pineapple waste. The current carried the waste to Kapa‘a, where the waste attracted fish and sharks (Bushnell et al. 2003).

Lihue Plantation was the last plantation in Hawai‘i to convert from railroad transport to trucking. “By 1957 the company was salvaging a part of their plantation railroad, which was being supplanted by roads laid out for the most part on or close to the old rail bed” (Condé and Best 1973:167). By 1959, the plantation had completely converted to trucking.

4.4.1.2 Hawaiian Canneries Company, Ltd.

In 1913, Hawaiian Canneries Company, Ltd. opened in Kapa‘a at the site now occupied by Pono Kai Resort, just north of Waika‘ea Canal (Cook 1999:56). A resident of Kapa‘a described how the town “came alive” after the cannery opened (Fernandez 2009:48). Following the completion of their plantation contracts, the Japanese plantation workers moved into town and “opened mom and pop grocery stores” (Fernandez 2009):

> Portuguese opened dairy farms in the hinterland or repair shops in Kapa‘a. Former plantation laborers became farmers, raising pineapple and other crops for sale. Service businesses started: the slop-gatherer who came to homes to take the garbage

Figure 13. Waika‘ea Bridge, pedestrian bridge built over railroad bridge, view to southwest (CSH 2002)

Figure 14. Close up of Waika‘ea Bridge, pedestrian bridge built over railroad bridge, view to northeast (CSH 2002)

Figure 15. Mō‘īkeha Makai Railroad Bridge, view to northeast (CSH 2002)

Figure 16. Railroad remnant built by the Ahukini Terminal & Railway Company located in Kapa‘a just north of the Kapa‘a Public Library, view to northeast (Railway Modelling 2014)

> as feed for his pigs, the fish monger selling fish on their street, the cattle rancher who slaughtered cows and provided fresh meat to the market, the traveling wagon man hawking fresh fruits and vegetables. [Fernandez 2009:48]

Kapa‘a became “an integrated multi-racial town, containing an extraordinary mix of people living and working together in harmony” all due to the new cannery (Fernandez 2009:48). In 1923, Hawaiian Canneries Company, Ltd. purchased the approximately 8.75 acres of land they were leasing through the Hawaiian Organic Act (Hawai‘i Bureau of Conveyances, Grant 8248). At that time the cannery only contained four structures but by 1956, 1.5 million cases of pineapple were being packed. By 1960, 3,400 acres were in pineapple and the cannery employed 250 full-time and 1,000 seasonal workers (*Honolulu Advertiser*, 20 March 1960) (Figure 17 and Figure 18). In 1962, Hawaiian Canneries went out of business due to competition from canneries in other countries.

Severe floods in Kapa‘a in 1940 led to the dredging and construction of the Waika‘ea and Mō‘īkeha Canals sometime in the 1940s (Hawaiian Territorial Planning Board 1940:7). The construction of Waika‘ea Canal, approximately 275 m (902.2 ft) south of the study area, had been proposed as early as 1923 (Bureau of Land Conveyances, Grant 8248). A 1940 Master Plan for Kapa‘a requested that the Territorial Legislature set aside funds for the completion of a drainage canal and for filling *makai* and *mauka* of the canal (Hawaiian Territorial Planning Board 1940:7). In 1955, a report was published on proposed coral dredging for the reef fronting Kapa‘a Beach Park (*Garden Island Newspaper* 21 September 1955). The coral was to be used for building plantation roads. This dredging was later blamed for accelerated erosion along Kapa‘a Beach (*Garden Island* 30 October 1963). Today, there are several sea walls to check erosion along the Kapa‘a Beach Park. Old time residents claim the sandy beach in Kapa‘a was once much more extensive than it is now (Bushnell et al. 2003).

Residents of Keālia Town slowly dispersed after the incorporation of Makee Sugar Company into Lihue Plantation in the 1930s. Many of the plantation workers bought property of their own and moved out of plantation camps. The plantation camps that bordered Kūhiō Highway were finally disbanded in the 1980s. The Lihue Plantation began to phase out in the last part of the twentieth century. Kapa‘a Town suffered after the closing of the Kapa‘a Cannery, however, the growing tourist industry helped to ease the economic effects of the cannery’s closing.

4.4.2 Contemporary Land Use

The study area includes a portion of Route 56 (Kūhiō Highway) including the intersection of Mailihuna Road and Kapa‘a Stream Bridge. Portions of the Kapa‘a to Keālia bike path and the entry to St. Catherine’s Cemetery are also located within the study area. The land surrounding the study area is not significantly developed. The largest establishment near the bridge site is Kapa‘a High School soccer field, track, and baseball diamond, which are located approximately 300 m (984.3 ft) to the southeast. To the north and northwest of the study area the land is primarily utilized for agricultural and residential purposes. Contemporary land use within the study area is depicted in historic aerial photographs of the Kapa‘a Coast (Figure 19 and Figure 20).

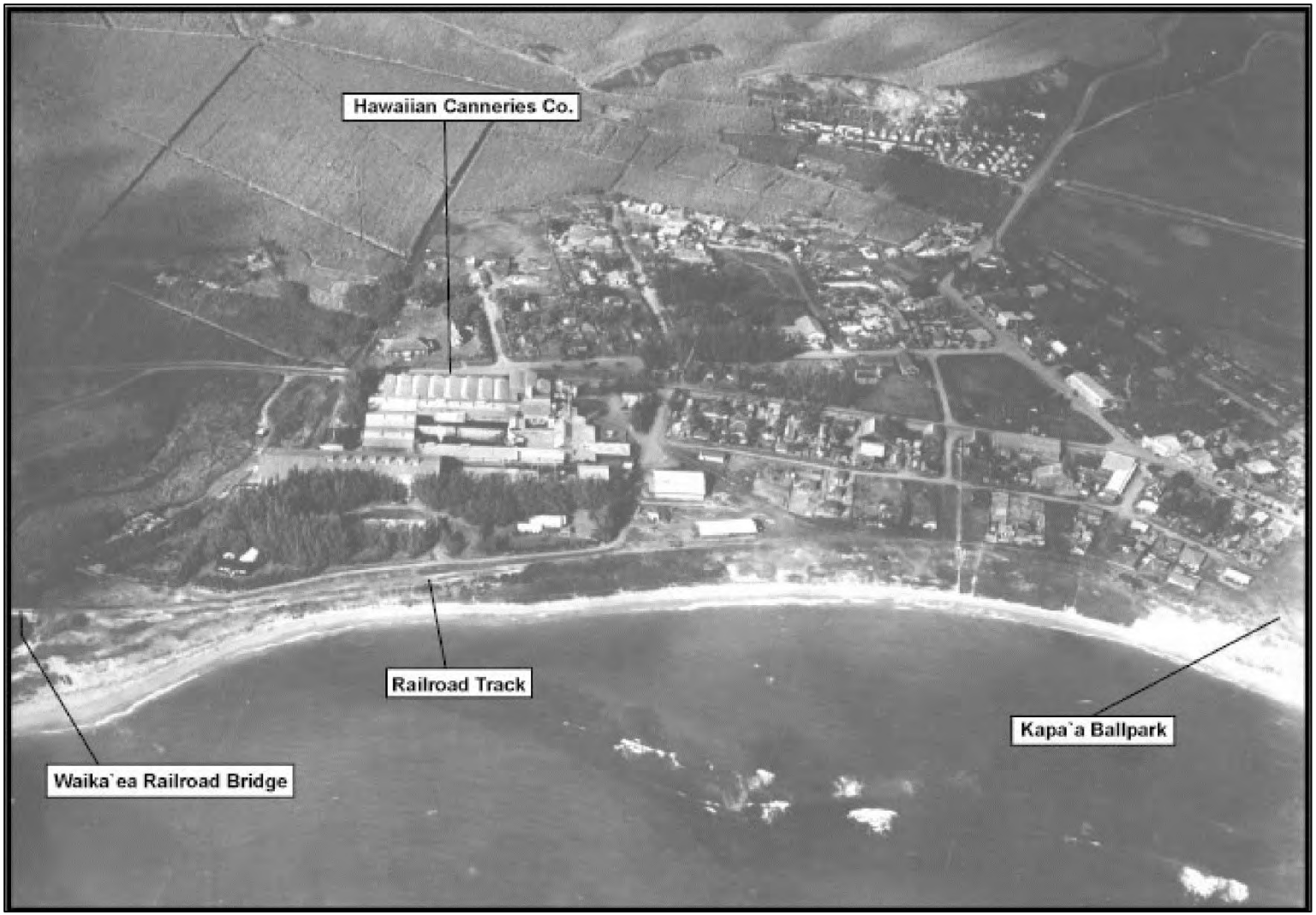


Figure 17. “Aerial View of Kapa‘a, Kauai, Hawaii, Looking Landward” ca. 1933 (figure taken from Bushnell et al. 2003)

Figure 18. Kaua‘i women working in the pineapple fields of Kapa‘a (date known) (*Garden Island* 1 December 2010)

Figure 19. 1950 Kapaa Coast aerial photograph (UH SOEST) depicting the study area surrounded by residential and agricultural land

Figure 20. 1975 Kapaa Coast aerial photograph (UH SOEST) depicting the study area surrounded by residential and agricultural land

4.5 **Previous Archaeological Research**

The locations of previous archaeological studies conducted within a 0.8-km (0.5-mile) radius of the survey area are shown in Figure 21 and listed in Table 3. Previously documented historic properties within a 0.8-km (0.5-mile) radius of the survey area are shown in Figure 22 and listed in Table 4. These studies and findings are discussed in the following paragraphs.

The first systematic archaeological survey of Kaua‘i was conducted by Bennett (1931), in which he discussed the terracing and irrigation ditches located along the Kapa‘a Stream. It should be noted that Bennett’s work was conducted after commercial sugarcane cultivation and other historic activities had destroyed or damaged many cultural resources. Also, most of the cultural resources documented by Bennett were relatively easy to access, conspicuous, and obvious.

Bennett discussed the irrigation ditches near Kapa‘a Stream as fairly large-sized banked structures with earthen walls. One ditch near Keālia homesteads was observed as being a deep cut (approximately 10 ft deep) into a low ridge to transport water across the ridge. Bennett also discusses the taro terraces within the small valleys in the foothills of Kapa‘a (Bennett 1931).

In 1991, CSH conducted a field inspection, surface collection, and assessment at the Keālia Sand Quarry site. Human remains were exposed due to the quarrying activities and designated SIHP # 50-30-08-1851. All human remains observed were fragmented and disarticulated. During background research into the area where bones were observed, it was noted that two LCAs were located in the vicinity. It was concluded that the bones were most likely associated with the LCAs (Folk and Hammatt 1991). It was also documented that traditional Hawaiian midden and historic artifacts were observed in the vicinity of the burials.

In 1992, Kikuchi and Remoaldo (1992) completed Volume I of a survey of the cemeteries of Kaua‘i. A total of two cemeteries are located within the vicinity of the survey area. An historic cemetery (SIHP # -B001) is located west of the study area. A portion of St. Catherine’s Cemetery (SIHP # -B002) is located within the southwest portion of the study area.

In 1996, SHPD staff conducted a field inspection of an inadvertent burial reported at Keālia. The remains were lying in recently disturbed sand deposits and associated with the previously identified SIHP # -1851 (Jourdane and Collins 1996).

In 1997, CSH completed an archaeological inventory survey for the Kūhiō Highway widening and bypass options project. This project consisted of areas in the Wailua, South Olohena, North Olohena, Waipouli, and Kapa‘a Ahupua‘a. Although outside of the study area, SIHP # -B002 was mentioned but not further documented in the report (Hammatt et al. 1997:103–104).

In 1998, CSH completed an archaeological reconnaissance survey and assessment for a 6,690.6-acre portion of Keālia Ahupua‘a. The survey found that areas located within floodplains of Kapa‘a and Keālia streams were previously inhabited by traditional Hawaiians. Much of the area surveyed was former plantation land considered to be of little archaeological concern. The study also suggests the area known as Keālia Beach is likely void of archaeological sites associated with traditional Hawaiian activities due to sugarcane being planted up to the shoreline and the shoreline being modified for a cane haul road (Hammatt and Chiogioji 1998).

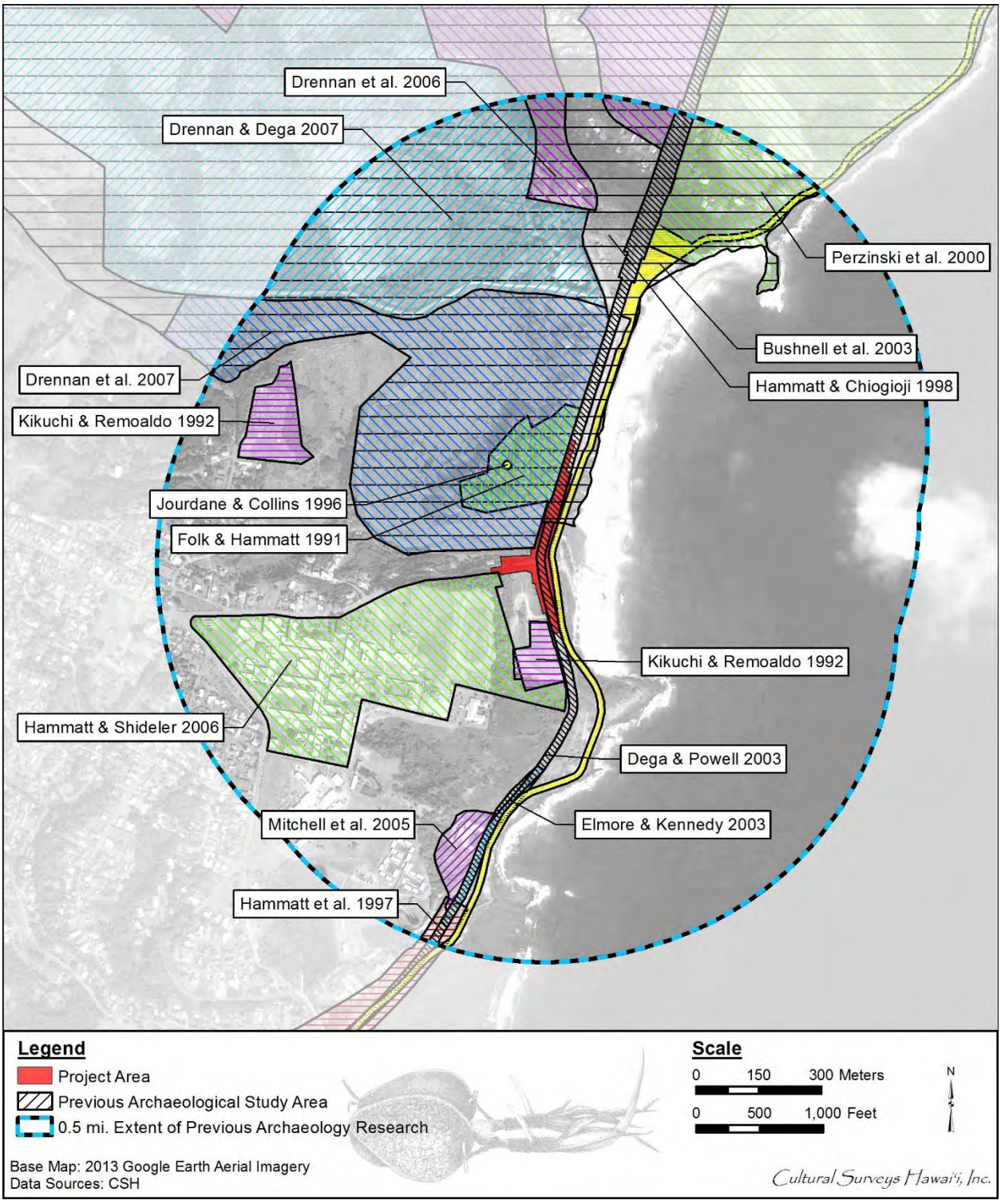


Figure 21. Aerial photograph showing previous archaeological studies within a 0.8-km (0.5-mile) radius of the survey area (Google Earth 2013)

Table 3. Previous Archaeological Studies within a 0.8-km (0.5-mile) Radius of the Survey Area

Reference	Type of Study	Location	Results (SIHP # 50-30-08 ****)
Bennett 1931	Archaeology of Kaua‘i	Island-wide	Discusses the terracing and irrigation ditches located along the Kapa‘a Stream (not pictured on figures)
Folk and Hammatt 1991	Archaeological assessment	Bend of Kapa‘a River, just inland of Kūhiō Hwy	Burial finds (SIHP # -1851); noted presence of historic artifacts and traditional Hawaiian midden in vicinity; also noted extensive disturbance from sand mining
Kikuchi and Remoaldo 1992	Historic cemetery survey	Island-wide	Identified historic cemetery (-B001) and St. Catherine’s Cemetery (-B002) within the vicinity of the survey area
Jourdane and Collins 1996	Burial report	Bend of Kapa‘a River	Identified additional disarticulated human remains associated with SIHP # -1851
Hammatt et al. 1997	Archaeological inventory survey	Kūhiō Hwy in Wailua, South Olohena, North Olohena, Waipouli, and Kapa‘a Ahupua‘a	Further documented St. Catherine’s Cemetery (SIHP # -B002)
Hammatt and Chiogioji 1998	Archeological reconnaissance survey and assessment	6,690.9 acres within Keālia Ahupua‘a	No cultural resources identified within the vicinity of the survey area
Perzinski et al. 2000	Archaeological inventory survey	300-acre *makai* parcel at Keālia, TMK: [4] 4-7-004:006	Identified SIHP # -0789 within the vicinity of the survey area including Cane Haul Road (SIHP # -0789: Feature A), Keālia Landing (SIHP # -0789: Feature B), and a dynamite storage bunker (SIHP # -0789: Feature C)
Bushnell et al. 2003	Archaeological inventory survey	Proposed Kapa‘a–Keālia bike path, Kapa‘a and Keālia Ahupua‘a	Identified three new cultural resources within the vicinity of the survey area including a buried cultural layer with an associated human burial (SIHP # -2074), Old Kaua‘i Belt Highway bridge foundation (SIHP # -2075), and a possibly modern petroglyph (SIHP # -2076); identified a new sub-feature of SIHP # -0789: Feature A, Kapa‘a Stream Cane Haul Road Bridge (SIHP # -0789: Feature A, Sub-Feature 1)

Reference	Type of Study	Location	Results (SIHP # 50-30-08 ****)
Dega and Powell 2003	Archaeological monitoring	Kūhiō Hwy from Moloa‘a through Hanamā‘ulu	No cultural resources identified within the vicinity of the survey area
Elmore and Kennedy 2003	Archaeological monitoring	In Kapa‘a and Anaholoa	No cultural resources identified within the vicinity of the survey area
O’Hare et al. 2003	Burial treatment plan	Keālia Ahupua‘a, TMK: [4] 4-7-004:001	Burial treatment plan for SIHP # -2074 (not included on Fig. 22)
Mitchell et al. 2005	Literature review, field inspection, and cultural evaluation	3.1-acre parcel in Kapa‘a Ahupua‘a, TMK: [4] 4-6-014:026	No cultural resources identified within the vicinity of the survey area
Drennan et al. 2006	Archaeological inventory survey, Phase I	Portion of 2,008-acre property in Keālia Ahupua‘a, TMKs: [4] 4-7-003:002 (por.) and 004:001 (por.), part of Keālananai Development project	No cultural resources identified within the vicinity of the survey area
Hammatt and Shideler 2006	Field inspection	Kapa‘a High School	No cultural resources identified within the vicinity of the survey area
Drennan and Dega 2007	Archaeological inventory survey, Phase II	Portion of 2,008-acre property in Keālia Ahupua‘a, TMKs: [4] 4-7-003:002 (por.) and 004:001 (por.), part of Keālananai Development project	Six new plantation era historic properties identified within the vicinity of the survey area including railroad rails and foundations (SIHP # -7015), sugarcane plantation infrastructure including a metal tank, structural supports, cart tracks, and foundations (SIHP # -7017), irrigation ditches, sluice gates, and a bridge (SIHP # -7018), a bridge, foundations, and irrigation pipes (SIHP # -7019), concrete foundations and a culvert (SIHP # -7020), and bridge/ transportation infrastructure, a culvert and drainage pipes (SIHP # -7021)

Reference	Type of Study	Location	Results (SIHP # 50-30-08 ****)
Drennan, et al. 2007	Archaeological inventory survey, Phase III	386 acres in Keālia Ahupua‘a, TMKs: [4] 4-7-003:002 (por.) and 004:001 (por.), part of Keālananai Development project	Six historic properties identified within the vicinity of the survey area including plantation era concrete staircase (SIHP # 7034), plantation era staircase (SIHP # -7035), plantation era concrete foundation, and brick and mortar structure (SIHP # -7037), human burials, burial pit outline and fire pit (SIHP # -7040), plantation era red brick and concrete wall/foundation (SIHP # -7041), and Keālia Historic Town Complex (SIHP # -7042)

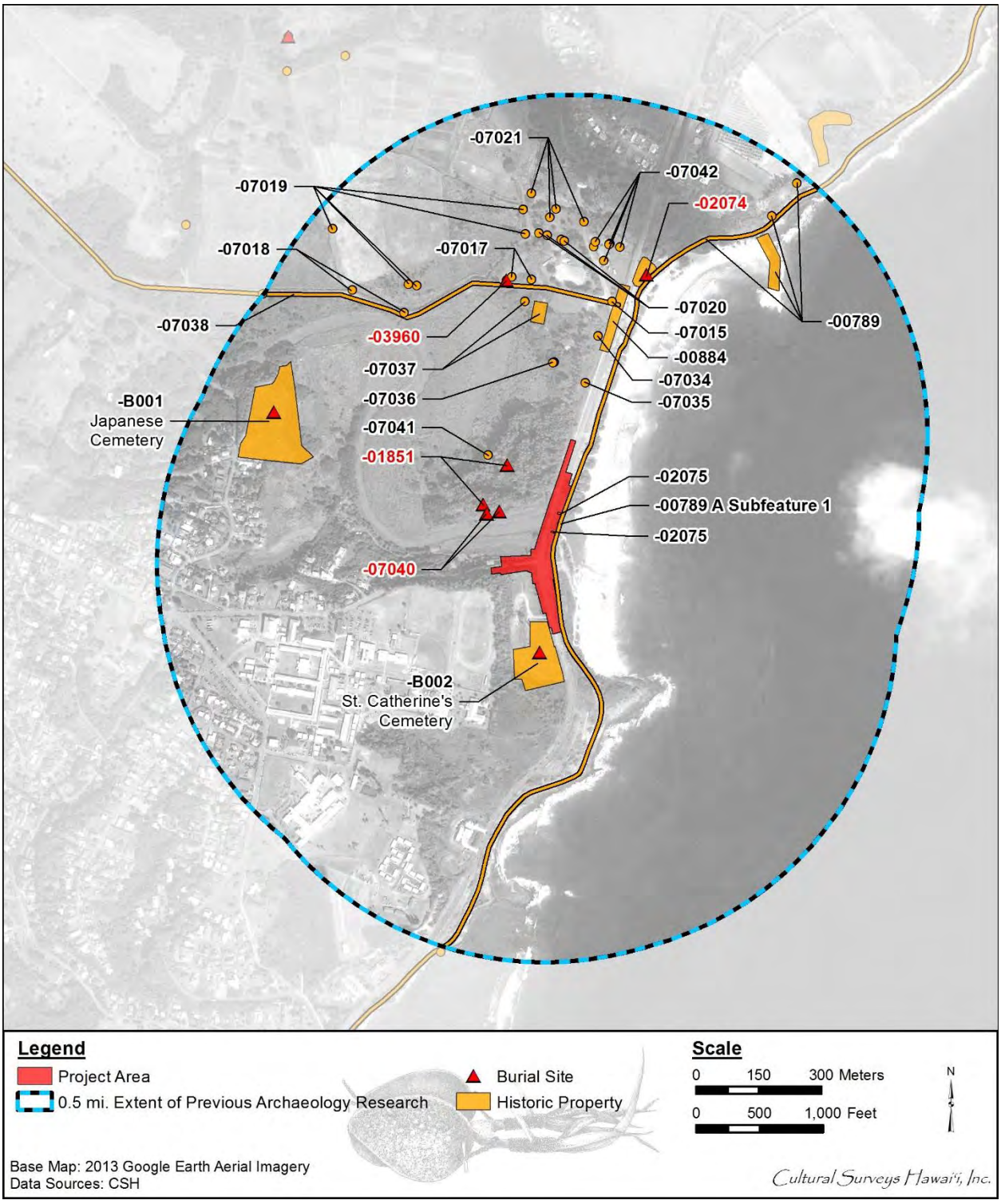


Figure 22. Aerial photograph showing previously identified archaeological sites within a 0.8-km (0.5-mile) radius of the survey area (Google Earth 2013)

Table 4. Previously Identified Archaeological Sites within a 0.8-km (0.5-mile) Radius of the Survey Area

SIHP # 50-30-08****	**Site Type/Name**	**Reference**
-B001	Historic cemetery	Kikuchi and Remoaldo 1992
-B002	St. Catherine’s Cemetery	Kikuchi and Remoaldo 1992
-0789a	Cane Haul Road	Perzinski et al. 2000
-0789b	Keālia Landing	Perzinski et al. 2000
-0884	Pre-Contact human remains	SHPD Communication
-1851	Dune site with human burials, historic artifacts and pre-Contact midden deposit	Jourdane and Collins 1996; Folk and Hammatt 1991
-2074	Buried cultural layer and associated human burial	Bushnell et al. 2003
-2075	Old Kaua‘i Belt Hwy bridge foundation	Bushnell et al. 2003
-7015	Railroad rails and foundation	Drennan and Dega 2007
-7017	Sugarcane plantation infrastructure including a metal tank, structural supports, cart tracks, and foundations	Drennan and Dega 2007
-7018	Irrigation ditches and sluice gates, and a plantation era bridge	Drennan and Dega 2007
-7019	Plantation era bridge, foundations, and irrigation pipes	Drennan and Dega 2007
-7020	Concrete foundations and culvert	Drennan and Dega 2007
-7021	Bridge/transportation infrastructure, a culvert, and drainage pipes	Drennan and Dega 2007
-7034	Concrete staircase	Drennan et al. 2007
-7035	Staircase	Drennan et al. 2007
-7036	Plantation era concrete block and basalt, mortar and brick structure	Drennan et al. 2007
-7037	Concrete foundation, and brick and mortar structure	Drennan et al. 2007
-7040	Human burials, a burial pit outline, and a fire pit	Drennan et al. 2007
-7041	Red brick and concrete wall/foundation	Drennan et al. 2007
-7042	Keālia historic town complex	Drennan et al. 2007

In 2000, CSH completed an archaeological inventory survey and subsurface testing of the approximately 300-acre Keālia *makai* parcel. A total of three cultural resources were identified: SIHP # -0789, plantation era infrastructure and structures; SIHP # -0790, World War II structure and remnants; and SIHP # -1899, burials. Only SIHP # -0789 is located within the vicinity of the survey area. The two features of SIHP # -0789 located within the vicinity of the survey area consist of the Cane Haul Road (SIHP # -0789: Feature A), which extends along the coast near the study area, and the Keālia Landing (SIHP # -0789: Feature B) (Perzinski et al. 2000).

In 2003, CSH conducted an archaeological inventory survey for the Kapa‘a–Keālia bike and pedestrian path. A portion of the study is located within the current project area since parts of the bike and pedestrian path are in the project area. A total of five newly identified sites (SIHP #s -2074 through -2078) and a new sub-feature of SIHP # -0789 (Feature A, Sub-Feature 1) were documented (Bushnell et al. 2003). Two historic properties identified in the 2003 project were identified within the current project area. SIHP # -0789: Feature A, Sub-Feature 1 is identified as the *makai* Kapa‘a Stream Bridge for the Cane Haul Road. The second site consists of SIHP # -2075, the highway bridge foundation for the *mauka* Kapa‘a Stream Bridge. One additional historic property was identified within the vicinity of the project area. This consists of a buried cultural layer and associated human burial (SIHP # -2074). Subsurface testing was conducted just north of the current project area. CSH completed a burial treatment plan for SIHP # -2074. The remains were discovered during the subsurface testing along the coast where restroom facilities were to be built and a burial treatment plan was recommended for SIHP # -2074 (O’Hare et al. 2003).

In 2003, Scientific Consultant Services (SCS) completed archaeological monitoring during Phase I of the Kaua‘i Rural Fiber-optic Duct Lines project. A portion of the study is located within the current study area (Segment 16). Segment 16’s trenching ran parallel to the coast and across the flood plain. Within this segment, only a single location yielded historic subsurface cultural materials, which consisted of an old railroad gravel bed (Dega and Powell 2003:71–73). It is unclear exactly where the profile showing the old railroad gravel bed was drawn. No significant historic properties were identified within the vicinity of the survey area.

In 2003, SCS conducted archaeological monitoring for the Kūhiō Highway drainage improvements for 250 m (820.2 ft) in Kapa‘a and at a single location in Anaholoa. No cultural resources were identified within the vicinity of the survey area (Elmore and Kennedy 2003).

In 2005, CSH conducted a literature review, field inspection, and cultural evaluation in a 3.1-acre parcel in Kapa‘a Ahupua‘a. The study documented two filled lagoons and found the subsurface sediments were heavily disturbed by construction activities. No cultural resources were identified within the vicinity of the survey area (Mitchell et al. 2005).

In 2006, CSH conducted a brief field inspection at Kapa‘a High School for the installation of new water lines. The study found low potential for cultural resources within the Kapa‘a High School property due to the extensive grading. The study also observed a baseball field, large track, and undeveloped area serving as a large buffer between the St. Catherine’s Cemetery (SIHP # -B002) and the high school’s structures (Hammatt and Shideler 2006).

In 2007, SCS conducted four phases of an archaeological inventory survey in the Keālia Ahupua‘a. Phase I (Drennan et al. 2006) yielded no cultural resources. Phase II (Drennan and Dega 2007) and Phase III (Drennan et al. 2007) extend within the vicinity of the survey area. During Phase II, six new plantation era historic properties were identified near the survey area. These

consist of railroad rails and foundations (SIHP # -7015), sugarcane plantation infrastructure including a metal tank, structural supports, cart tracks, and foundations (SIHP # -7017), irrigation ditches, sluice gates, and a bridge (SIHP # -7018), a bridge, foundations, and irrigation pipes (SIHP # -7019), concrete foundations and a culvert (SIHP # -7020), and bridge infrastructure, a culvert, and drainage pipes (SIHP # -7021) (Drennan and Dega 2007). During Phase III, six historic properties identified within the vicinity of the survey area including a plantation era concrete staircase (SIHP # -7034), a plantation era staircase (SIHP # -7035), a plantation era concrete block and basalt, mortar and brick structure (SIHP # -7036), a plantation era foundation, and brick and mortar structure (SIHP # -7037), human burials, a burial pit outline and a fire pit (SIHP # -7040), a plantation era red brick and concrete wall/foundation (SIHP # -7041), and the Keālia Historic Town Complex (SIHP # -7042) (Drennan et al. 2007).

Section 5 Community Consultation

5.1 Introduction

Throughout the course of this assessment, an effort was made to contact and consult with Native Hawaiian Organizations (NHO), agencies, and community members including descendants of the area, in order to identify individuals with cultural expertise and/or knowledge of the *ahupua‘a* of Kapa‘a and Keālia. CSH initiated its outreach effort in August 2015 through letters, email, telephone calls, and in-person contact. CSH completed the community consultation in December 2015. Approval of interview transcriptions and summaries from interviewees are still pending.

5.2 Community Contact Letter

In the majority of cases, a letter (Figure 23) along with a map and an aerial photograph of the project were mailed with the following text:

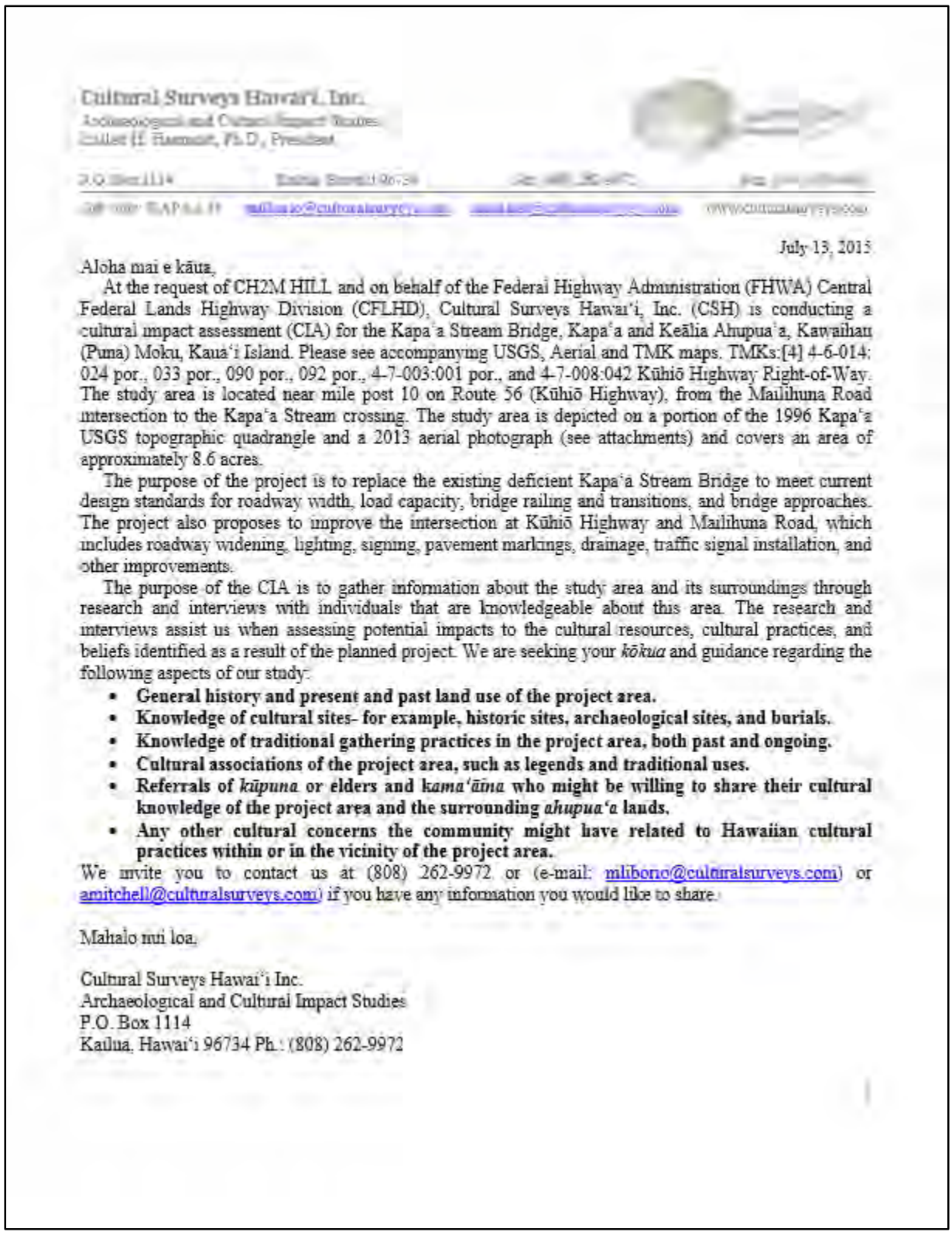
> At the request of CH2M HILL and on behalf of the Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD), Cultural Surveys Hawai‘i, Inc. (CSH) is conducting a cultural impact assessment (CIA) for the Kapa‘a Stream Bridge, Kapa‘a and Keālia Ahupua‘a, Kawaihau (Puna) Moku, Kaua‘i Island, TMKs:[4] 4-6-014: 024 por., 033 por., 090 por., 092 por., 4-7-003:001 por., and 4-7-008:042 Kūhiō Highway Right-of-Way. The project area is located near mile post 10 on Route 56 (Kūhiō Highway), from the Mailihuna Road intersection to the Kapa‘a Stream crossing. The project area is depicted on a portion of the 1996 Kapa‘a USGS topographic quadrangle and a 2013 aerial photograph (see attachments) and covers a total area of approximately 4.09 acres.
>
> The purpose of the project is to replace the existing deficient Kapa‘a Stream Bridge to meet current design standards for roadway width, load capacity, bridge railing and transitions, and bridge approaches. The project also proposes to improve the intersection at Kūhiō Highway and Mailihuna Road, which includes roadway widening, lighting, signing, pavement markings, drainage, traffic signal installation, and other improvements.
>
> The purpose of the CIA is to gather information about the project area and its surroundings through research and interviews with individuals that are knowledgeable about this area. The research and interviews assist us when assessing potential impacts to the cultural resources, cultural practices, and beliefs identified as a result of the planned project. We are seeking your *kōkua* and guidance regarding the following aspects of our study:
>
> - **General history and present and past land use of the project area.**
> - **Knowledge of cultural sites- for example, historic sites, archaeological sites, and burials.**
> - **Knowledge of traditional gathering practices in the project area, both past and ongoing.**

- **Cultural associations of the project area, such as legends and traditional uses.**
- **Referrals of *kūpuna* or elders and k*ama‘āina* who might be willing to share their cultural knowledge of the project area and the surrounding *ahupua‘a* lands.**
- **Any other cultural concerns the community might have related to Hawaiian cultural practices within or in the vicinity of the project area.**

In most cases, two or three attempts were made to contact individuals, organizations, and agencies.

In March 2016, CSH was contacted by CH2M HILL, acting on behalf of the Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD), regarding a change to the project area. The original project area included approximately 4.09 acres; the new project area, however, was enlarged to approximately 4.9 acres; this represents a total change of approximately .81 acre to the total project area. The project area remains located near mile post 10 on Route 56 (Kūhiō Highway), from the Mailihuna Road intersection to the Kapa‘a Stream crossing within Kapa‘a and Keālia Ahupua‘a, Kawaihau (Puna) Moku, Kaua‘i Island. All individuals who had participated in CSH's *Kama‘āina* Interviews (Section 5.4) were immediately contacted by phone regarding this change. Letters along with an aerial photographs and TMK maps of both the old and the new project area were mailed with the following text (Figure 24):

> In recent months, Cultural Surveys Hawai‘i (CSH) at the request of CH2M HILL, and on behalf of the Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD) has reached out to you regarding a cultural impact assessment (CIA) for the Kapa‘a Stream Bridge, Kapa‘a and Keālia Ahupua‘a, Kawaihau (Puna) Moku, Kaua‘i Island, TMKs:[4] 4-6-014: 024 por., 033 por., 090 por., 092 por., 4-7-003:001 por., and 4-7-008:042 Kūhiō Highway Right-of-Way. We would once again like to thank you for all your assistance and your valuable *mana‘o* on this project. However, in recent weeks, CSH has been notified regarding a change to the project area. This change to the project area is depicted in the attached figures (please refer to Figure 1 and Figure 2 noting "Original Project Area" and Figure 3 and Figure 4 noting "New Project Area as of May 6, 2016" to observe the changes to the project area). The original project area included approximately 4.09 acres, the new project area, however, includes approximately 4.9 acres; this represents a total change of approximately .81 acre to the total project area. We would like to inform you of these changes, and kindly ask again for your *kokua* and guidance in this matter. Please do not hesitate to contact us by telephone or email if your *mana‘o* has changed or been affected by the changes to the project area.
>
> The project area remains located near mile post 10 on Route 56 (Kūhiō Highway), from the Mailihuna Road intersection to the Kapa‘a Stream crossing. The new project area is depicted on a portion of the 1996 Kapaa U.S. Geological Survey (USGS) topographic quadrangle and a 2013 aerial photograph (see attachments labeled "New Project Area as of May 6, 2016").



Cultural Surveys Hawaiʻi, Inc.
Archaeological and Cultural Impact Studies
Hallett H. Hammatt, Ph.D., President

July 13, 2015

Aloha mai e kāua,

At the request of CH2M HILL and on behalf of the Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD), Cultural Surveys Hawaiʻi, Inc. (CSH) is conducting a cultural impact assessment (CIA) for the Kapaʻa Stream Bridge, Kapaʻa and Keālia Ahupuaʻa, Kawaihau (Puna) Moku, Kauaʻi Island. Please see accompanying USGS, Aerial and TMK maps. TMKs:[4] 4-6-014: 024 por., 033 por., 090 por., 092 por., 4-7-003:001 por., and 4-7-008:042 Kūhiō Highway Right-of-Way. The study area is located near mile post 10 on Route 56 (Kūhiō Highway), from the Mailihuna Road intersection to the Kapaʻa Stream crossing. The study area is depicted on a portion of the 1996 Kapaʻa USGS topographic quadrangle and a 2013 aerial photograph (see attachments) and covers an area of approximately 8.6 acres.

The purpose of the project is to replace the existing deficient Kapaʻa Stream Bridge to meet current design standards for roadway width, load capacity, bridge railing and transitions, and bridge approaches. The project also proposes to improve the intersection at Kūhiō Highway and Mailihuna Road, which includes roadway widening, lighting, signing, pavement markings, drainage, traffic signal installation, and other improvements.

The purpose of the CIA is to gather information about the study area and its surroundings through research and interviews with individuals that are knowledgeable about this area. The research and interviews assist us when assessing potential impacts to the cultural resources, cultural practices, and beliefs identified as a result of the planned project. We are seeking your *kōkua* and guidance regarding the following aspects of our study:

- **General history and present and past land use of the project area.**
- **Knowledge of cultural sites- for example, historic sites, archaeological sites, and burials.**
- **Knowledge of traditional gathering practices in the project area, both past and ongoing.**
- **Cultural associations of the project area, such as legends and traditional uses.**
- **Referrals of *kūpuna* or elders and *kamaʻāina* who might be willing to share their cultural knowledge of the project area and the surrounding *ahupuaʻa* lands.**
- **Any other cultural concerns the community might have related to Hawaiian cultural practices within or in the vicinity of the project area.**

We invite you to contact us at (808) 262-9972 or (e-mail: mlibono@culturalsurveys.com) or amitchell@culturalsurveys.com) if you have any information you would like to share.

Mahalo nui loa,

Cultural Surveys Hawaiʻi Inc.
Archaeological and Cultural Impact Studies
P.O. Box 1114
Kailua, Hawaiʻi 96734 Ph.: (808) 262-9972

Figure 23. Community consultation letter

Cultural Surveys Hawai'i, Inc.
Archaeological and Cultural Impact Studies
Hallett H. Hammatt, Ph.D., President

P.O. Box 1114 Kailua, Hawai'i 96734 Ph: (808) 262-9972 Fax: (808) 262-4950

Job code: KAPAA 15 nishihara@culturalsurveys.com amitchell@culturalsurveys.com www.culturalsurveys.com

May 2016

Aloha mai kāua,

In recent months, Cultural Surveys Hawai'i (CSH) at the request of CH2M HILL, and on behalf of the Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD) has reached out to you regarding a cultural impact assessment (CIA) for the Kapa'a Stream Bridge, Kapa'a and Keālia Ahupua'a, Kawaihau (Puna) Moku, Kaua'i Island, TMKs:[4] 4-6-014: 024 por., 033 por., 090 por., 092 por., 4-7-003:001 por., and 4-7-008:042 Kūhiō Highway Right-of-Way. We would once again like to thank you for all your assistance and your valuable *mana'o* on this project. However, in recent weeks, CSH has been notified regarding a change to the project area. This change to the project area is depicted in the attached figures (please refer to Figure 1 and Figure 2 noting "Original Project Area" and Figure 3 and Figure 4 noting "New Project Area as of May 6, 2016" to observe the changes to the project area). The original project area included approximately 4.09 acres, the new project area, however, includes approximately 4.9 acres; this represents a total change of approximately .81 acre to the total project area. We would like to inform you of these changes, and kindly ask again for your *kokua* and guidance in this matter. Please do not hesitate to contact us by telephone or email if your *mana'o* has changed or been affected by the changes to the project area.

The project area remains located near mile post 10 on Route 56 (Kūhiō Highway), from the Mailihuna Road intersection to the Kapa'a Stream crossing. The new project area is depicted on a portion of the 1996 Kapaa U.S. Geological Survey (USGS) topographic quadrangle and a 2013 aerial photograph (see attachments labeled "New Project Area as of May 6, 2016").

The purpose of the project is to replace the existing deficient Kapa'a Stream Bridge to meet current design standards for roadway width, load capacity, bridge railing and transitions, and bridge approaches. The project also proposes to improve the intersection at Kūhiō Highway and Mailihuna Road, which includes roadway widening, lighting, signing, pavement markings, drainage, traffic signal installation, and other improvements.

Once again, if these changes have in any way changed your *mana'o*, please do not hesitate to contact Brittany Beauchan or Aulii Mitchell at (808) 262-9972 or (e-mail: bbeauchan@culturalsurveys.com) or (amitchell@culturalsurveys.com).

Mahalo nui loa,

Cultural Surveys Hawai'i Inc.
Archaeological and Cultural Impact Studies
P.O. Box 1114
Kailua, Hawai'i 96734 Ph.: (808) 262-9972

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Figure 24. Community consultation letter regarding change to project area

The purpose of the project is to replace the existing deficient Kapa‘a Stream Bridge to meet current design standards for roadway width, load capacity, bridge railing and transitions, and bridge approaches. The project also proposes to improve the intersection at Kūhiō Highway and Mailihuna Road, which includes roadway widening, lighting, signing, pavement markings, drainage, traffic signal installation, and other improvements.

5.3 **Community Contact Table**

Below Table 5 lists names, affiliations, dates of contact, and comments from NHOs, individuals, organizations, and agencies contacted for this project. Results are presented below in alphabetical order.

Table 5. Results of Community Consultation

Community Member	Affiliation	Comments
‘Aha Pūnana Leo o Kaua‘i	Hawaiian Language School	Letter and figures sent via U.S. Postal Service (USPS) 11 August 2015 Second letter and figure sent via USPS 10 September 2015 Letter and figures regarding change to project area sent via USPS 6 May 2016
Aiu, Danita	Chairperson, Kaua‘i Historic Preservation Review Commission (KHPRC)	Letters and figures sent via USPS 11 August 2015 Second letter and figure sent via USPS 10 September 2015 Letter and figures regarding change to project area sent via USPS 6 May 2016
Ako, Uncle Valentine	*Kupuna*	Letters and figures sent via USPS 11 August 2015 Mr. Valentine Ako called CSH regarding the Kapa‘a Bridge on 19 August 2015; he said, *on the north side of the bridge, you may find burials on both sides; On the south side, you may find burials on the Makai side, but should have no problems on the Mauka side.* Letter and figures regarding change to project area sent via USPS 6 May 2016 Mr. Valentine Ako called CSH regarding the change in the project area for Kapa‘a Bridge on 11 May 2016; he left a message stating, *There may be graves on the mauka and north sides of the bridge…if iwi were exhumed, do not relocate them in another ahupua‘a.*

Community Member	Affiliation	Comments
Kauai Island Hawaiian Civic Club	Association of Hawaiian Civic Clubs	Letters and figures sent via USPS 11 August 2015 Second letter and figure sent via USPS 10 September 2015 Letter and figures regarding change to project area sent via USPS 6 May 2016
Ching, Milton	*Kama‘āina*	Letters and figures sent via USPS 11 August 2015 CSH received an email from Nancy McMahon on behalf of Milton Ching on 28 August 2015; she provided the following information to CSH: *Milton Ching is a cultural descendant of the area. Mauka of the bridge on the Keaila side is where a Native Hawaiian village was. Several burials over the years have been found there. There is an extensive sand deposit next to the river there. AMFAC used to sand mind there for their roads and disturbed burials there. DLNR Aquatic Division buried a whale back there not far off the highway. Consult with Don Heacock on the exact location. I am sure the Kapaa Stream was a source of native fish at one time, but with the urban expansion, the stream might be too polluted today. There plantation railroad ran through this area too.* CSH called and spoke with Milton Ching on 25 September 2015. Milton provided his family history in and around the study area. His family members have mostly passed away so he spoke on their behalf. The transcription is provided in the following section. Letter and figures regarding change to project area sent via USPS 6 May 2016. CSH received an email from Nancy McMahon on behalf of Milton Ching on 17 May 2016; she provided the following information to CSH: *On behalf of the County of Kauai Department of Parks and Recreation, we*

Community Member	Affiliation	Comments
		have no concerns about the FHWA CFLHD project for the Kapa'a Stream Bridge, Kapa'a and Kealia Ahupua'a, Kaua'i. The area of effect is in an area of previously disturbed grounds by the construction of the bridge itself and the Highway. *Thanks you for informing us of your work in the area and look forward to seeing the CIA.*
Chong, Herman, Jr.	Descendant of P. Chong	CSH sent a letter to Mr. Chong on December 4, 2015 Letter and figures regarding change to project area sent via USPS 6 May 2016
Franklin, Carol	Descendant of Antone Arruda	CSH sent a letter to Ms. Franklin on December 4, 2015 Letter and figures regarding change to project area sent via USPS 6 May 2016
Hoomanawanui, Kauanoe M.	Burial Site Specialist, SHPD (Hawai‘i and Kaua‘i)	Letters and figures sent via USPS 11 August 2015 CSH received an email correspondence from Kauanoe Hoomanawanui 14 October 2015 relaying the following: *I believe our newly appointed Cultural Historian assisted you with the CIA. Should you need anymore assistance please dont hesitate to contact me.* *Mahalo & Ahui Hou,* *Kauanoe M Hoomanawanui* Emailed letter and figures regarding change to project area 6 May 2016 CSH received an email correspondence from Kauanoe Hoomanawanui 6 May 2016 relaying the following: *Mahalo! I will check it out*.
Kekua, Kumu Kehaulani	Kauai Heritage Center/Ka‘ie‘ie Foundation	Letters and figures sent via USPS 11 August 2015 Second letter and figure sent via USPS 10 September 2015 Letter and figures regarding change to project area sent via USPS 6 May 2016
Kano, Yoshida “Dimples”	*Kūpuna* and long-time resident	Aulii Mitchell followed up on the request of Aunty Beverly Muraoka to contact Mrs.

Community Member	Affiliation	Comments
		Kano. Mr. Mitchell spoke with Mrs. Kano on December 3, 2015. Mrs. Kano share the following: *Thank you for calling me. Yes I know who Aunty Beverly is. I am sorry I cannot help you because although I have live there for many years, I do not know the history of culture of that area. I will try to see if I know who does. I will contact you if and when I do.*
Lovell-Obatake, Auntie Cheryl	Nawiliwili Watershed Council	Letters and figures sent via USPS 11 August 2015 Second letter and figure sent via USPS 10 September 2015[BB1]
Muraoka, Auntie Beverly	*Kūpuna*	Letters and figures sent via USPS 11 August 2015 Second letter and figure sent via USPS 10 September 2015 Responded via letter dated 14 September 2015; Ms. Muraoka believes *‘iwi* might be *beneath sand layers due to battles, village wars, etc. that occurred during pre-Christian contacts. Thus should these be unearthed, discovered or the like, please ensure all protocols are followed by the Kauai Burial Council and/or committees handling the proper relocation of such sacred ‘iwi*; she refers Yoshiko “Dimples” Kano; children of old-time residents such as Carol Franklin (daughter of Antone Arruda), P. Chong (grandson of Herman Chong, Jr.), and Pedring Ponce (grandson of Kenneth Ponce, Jr.); as well as Punani Rogers and Aunty Frances Ohai See Appendix B for response letter
Oi, Tommy	Kaua‘i District Land Agent, State of Hawai‘i	Letters and figures sent via USPS 11 August 2015 Second letter and figure sent via USPS 10 September 2015 Letter and figures regarding change to project area sent via email and USPS 6 May 2016

Community Member	Affiliation	Comments
Ponce, Kenneth	Retired Fireman Development	Interviewed and authorization form signed 17 December 2015 Letter and figures regarding change to project area sent via email and USPS 6 May 2016
Rodrigues, Hinano	Cultural Historian/Acting History and Culture Branch Chief, DLNR-State Historic Preservation Division-Maui	Letters and figures sent via USPS 11 August 2015 Second letter and figure sent via USPS 10 September 2015 Emailed letter and figures regarding change to project area 6 May 2016
Rogers, Puanani	Leader, Ho‘okipa Network	Interviewed and authorization form signed 17 December 2015 Draft transcription sent to Ms. Rogers for review and edits via email 31 December 2015 Letter and figures regarding change to project area sent via email and USPS 6 May 2016. CSH attempted a third time to reach out to Ms. Rogers via telephone on 20 June 2016 regarding change to project area. Ms. Rogers informed CSH of correct email address. CSH emailed letter and figures regarding change to project area on 20 June 2016. Ms. Rogers indicated that she will review these and notify CSH should she have additional comments.
Santos, Kaliko	Community Outreach Coordinator, OHA	Letters and figures sent via USPS 11 August 2015 Letter and figures regarding change to project area sent via USPS 6 May 2016
Trugillo, William	Ka Leo o Kauai	Letters and figures sent via USPS 11 August 2015 Second letter and figure sent via USPS 10 September 2015 Letter and figures regarding change to project area sent via USPS 6 May 2016
Vidinha, Wayne Reverend	Ke Akua Mana Church	Letters and figures sent via USPS 11 August 2015 Second letter and figure sent via USPS 10 September 2015

Community Member	Affiliation	Comments
		Letter and figures regarding change to project area sent via USPS 6 May 2016
Wichman, Randy	Executive Director, Kauai Historical Society	Letters and figures sent via USPS 11 August 2015 Second letter and figure sent via USPS 10 September 2015 Letter and figures regarding change to project area sent via USPS 6 May 2016

5.4 *Kama‘āina* Interviews

The authors and researchers of this report extend our deep appreciation to everyone who took time to speak and share their *mana‘o* and *‘ike* with CSH whether in interviews or brief consultations. We request that if these interviews are used in future documents, the words of contributors are reproduced accurately and in no way altered, and that if large excerpts from interviews are used, report preparers obtain the express written consent of the interviewee/s.

5.4.1 Kenneth Ponce

Awaiting comments regarding change to project area. Approval of transcription and interview summary pending.

5.4.2 Puanani Rogers

Awaiting comments regarding change to project area. Approval of transcription and interview summary pending.

5.5 Summary of *Kama‘āina* Interviews

Approval of transcriptions and interview summaries determine the summary of kama‘āina interviews. Currently pending.

Section 6 Traditional Cultural Practices

6.1 Gathering of Plant Resources

Māhele documentation indicates 67 cultivation *lo‘i* were claimed in the *kuleana*. In addition, references to uncultivated *lo‘i* and cultivated *lo‘i* not claimed were also documented. Amongst the claims were *‘auwai*, *kō‘ele*, and four *loko*. The Keālia and Keahapuna River were used as boundaries in several claims suggesting that taro farming was central to Keālia Ahupua‘a. Records also indicate the rivers and streams were utilized to catch freshwater fish. *Kama‘āina* and cultural descendant Milton Ching recalls native fish in Kapa‘a Stream. However, due to urban expansion, the stream might be too polluted today for the native fish population to thrive.

6.2 Burials

According to previous archaeological research, CSH conducted a field inspection, surface collection, and assessment at the Keālia Sand Quarry site in 1991 (Folk and Hamatt 1991). Human remains were exposed due to quarrying activities and designated under SIHP # -1851. Human remains were fragmented and disarticulated. Background research indicated the remains were most likely associated with two LCAs located in the vicinity. Traditional Hawaiian midden and historic artifacts were also found in the vicinity of the burials.

In 1996, SHPD conducted a field inspection of an inadvertent burial reported at Keālia. The remains were found in a recently disturbed sand deposit and associated with previously identified SIHP # -1851 (Jourdane and Collins 1996).

In 2000, CSH conducted an archaeological inventory survey and subsurface testing of a 300-acre parcel in Keālia Makai (Perzinski et al. 2000). Three cultural resources were identified during the survey including SIHP # -1899, burials (outside of 0.5-mile radius of project area as illustrated in Figure 22).

CSH conducted an archaeological inventory survey for the Kapa‘a-Keālia bike and pedestrian path in 2003 (O’Hare et al. 2003). A portion of the study area for the bike and pedestrian path are in the current project area. Five sites were identified during the AIS, which included a burial cultural layer and associated human burial (SIHP # -2074).

In 2007, SCS conducted four phases of an AIS in Keālia Ahupua‘a. Phase III yielded six historic properties. Of those six properties, SIHP # -7040 consisted of human burials, a burial pit outline, and a fire pit (Drennan et al. 2007).

During the community consultation process, *kupuna* Valentine Ako mentioned a possibility of finding burials along the north, south, and *makai* sides of the bridge. He stated there should not be any issues of finding any burials on the *mauka* side of the project area. According to Mr. Milton Ching, the *mauka* side of the bridge is where a Native Hawaiian village once stood. He states that burials have been found on the *mauka* side of the bridge. In addition, a sand deposit is adjacent to the river. AMFAC would mine sand from the deposit for the construction of roads and often exposed burials. *Kupuna* Beverly Muraoka responded via letter stating that she believes *‘iwi* might be “beneath sand layers due to battles, village wars, etc. that occurred during pre-Christian contacts.” If *‘iwi* is unearthed during construction that “all protcols are followed by the Kauai Burial Council and/or committees handling the proper relocation of such sacred ‘iwi.”

6.3 **Cultural Sites**

A total of 14 *heiau* were documented during the 1880s by Lahainaluna students who stopped in Kapa‘a and Keālia. The students collected stories from *kūpuna* of the area. The exact locations of the *heiau* are unknown. Two *heiau*, Kuahiahi and Kaluluomoikeha, correlate with *wahi pana* so general locations are somewhat known. Remaining *heiau* include Kumalae, Mailehuna, Makanalimu, Mano, Napuupaakai, Noemakalii, Nounou, Pahua, Piouka, Pueo, Puukoa, Una, and Waiehumalama.

According to Handy and Handy (1972:424) there is a banana grove at Ka‘ea. In the *ka‘ao* of Palila, there is also a banana grove called Ka‘ea in the Makaleha Mountains in Kapa‘a Mauka. This banana grove is said to be supernatural. A bunch consisted of only two bananas “on each about 4 inches around the middle” and “each about a foot or more in length” (Akina 1913). One of the bananas were tart, similar to a guava, while the other banana was tasteless.

6.4 **Trails**

Keālia Ahupua‘a had many traditional trails that led to Anahola. There were two principle routes to Anahola: a *makai* route and a *mauka* route. The exact location of the *makai* route is unknown although it is thought to run along the plateau lands somewhat removed from the coastline.

Section 7 Summary and Recommendations

CSH undertook this CIA at the request of CH2M HILL and on behalf of the FHWA/CFLHD. The research broadly covered the entire *ahupua‘a* of Kapa‘a, including the current project area.

7.1 Results of Background Research

Background research for this study yielded the following results:

1. Kapa‘a literally translates to “the solid or the closing” (Pukui et al. 1974:86). Kēalia means “the salt encrustation” (Pukui et al. 1974:102).
2. *Ka‘ao* places Hi‘iaka, the beloved sister of Pele the fire goddess, in the vicinity of the project area. Hi‘iaka and her companion, Wahine‘ōma‘o view Wai‘ale‘ale, Nounou Hill, and Kapa‘a. Their canoe lands on the beach of Kapa‘a where they jump ashore and Hi‘iaka chants (Ho‘oulumāhiehie 2008:167–168).
3. The earliest foreign accounts of life in Kēalia appear in the 1830s when missionary censuses recorded a total population of 283 people. Approximately 264 adults and 18 children were accounted for in the *ahupua‘a* (land division extending from the mountain to the sea). The population in Kēalia then declined from 283 to 143; the introduction of foreign diseases account for the decline. Kapa‘a’s population during this time was unknown.
4. Māhele documentation provides insight into habitation and agricultural patterns. Kapa‘a was designated as Crown Lands while Keālia was granted to the *ali‘i* (chief) Miriam Ke‘ahikuni Kekau‘onohi. Kekau‘onohi was the granddaughter of Kamehameha, one of Liholiho’s wives, and served as Kaua‘i governor from 1842 to 1844. Seventeen land claims were made in Keālia and 15 were awarded. Six claims were awarded in the vicinity of the project area. Approximately 67 cultivation *lo‘i* (irrigated terrace) were claimed within the *kuleana* (land claim). *‘Auwai* (ditch), *kō‘ele* (small land unit farmed by a tenant for the chief), and *loko* (ponds) were also referenced in land claims, which exemplifies the rich agriculture within the *ahupua‘a*.
5. The first large scale enterprise in Kapa‘a and Keālia was in 1877 with the Makee Sugar Plantation and the Hui Kawaihau (Dole 1916:8). The Hui was originally a choral society that began in Honolulu with membership including both Hawaiian and *haole* (white person). It was Kalākaua’s thought that Hui members could join forces with Makee. Makee was given land to build a mill in Kapa‘a and agreed to grind cane grown by Hui members. A fire destroyed the Hui’s second crop of cane and Makee had an untimely death resulting in his lease passing onto his son-in-law. The mill was moved to Keālia and the smokestack and landing was still present into the 1900s. Railroad construction for the plantation began in the mid 1890s. The rail line was part of a 20-mile network of plantation railroad with some portable track leading into Keālia Valley.
6. The lowlands of Kapa‘a were used for rice farming, which occurred in the latter half of the 1800s. *Kuleana* owners leased or sold their parcels *mauka* (toward the mountain) of the swamp land to Chinese rice farmers.
7. Keālia Ahupua‘a had many traditional trails that led to Anahola with two principle routes: a *makai* (toward the ocean) route and a *mauka* route. The exact location of the *makai* route

is unknown although it is thought to run along the plateau lands, somewhat removed from the coastline.

7.2 Results of Community Consultations

CSH attempted to contact NHOs, agencies, and community members. Below is a list of individuals who shared their *mana‘o* and *‘ike* about the project area and the Kapa‘a and Keālia Ahupua‘a.

1. Valentine Ako, *Kupuna*
2. Milton Ching, *Kama‘āina* and cultural descendant
3. Beverly Muraoka, *Kupuna*
4. Kenneth Ponce, Retired fireman
5. Punanai Rogers, Leader for the Ho‘okipa Network

7.3 Impacts and Recommendations

Based on information gathered from the cultural and historic background, as well as through community consultations, the proposed project may potentially impact undetected *iwi kūpuna* (ancestral bones). CSH identifies potential impacts and makes the following preliminary recommendations. Please note that CSH is still awaiting approval of interview transcriptions and summaries conducted for this study and the impact and recommendations may change pending approval of these documents.

1. Previous archaeology indicates several burials have been found in the vicinity (0.5-mile radius or less) of the project area (SIHP #s -1851, -7040, and -0884). Community consultation indiciated knowledge of *iwi kūpuna* in the vicinity of the project area. Based on these findings, there is a high possibility *iwi kūpuna* may be present within the project area and that land disturbing activities during construction may uncover presently undetected burials or other cultural finds. Should burials (or other cultural finds) be encountered during ground disturbance or via construction activities, all work should cease immediately and the appropriate agencies should be notified pursuant to applicable law, HRS §6E.

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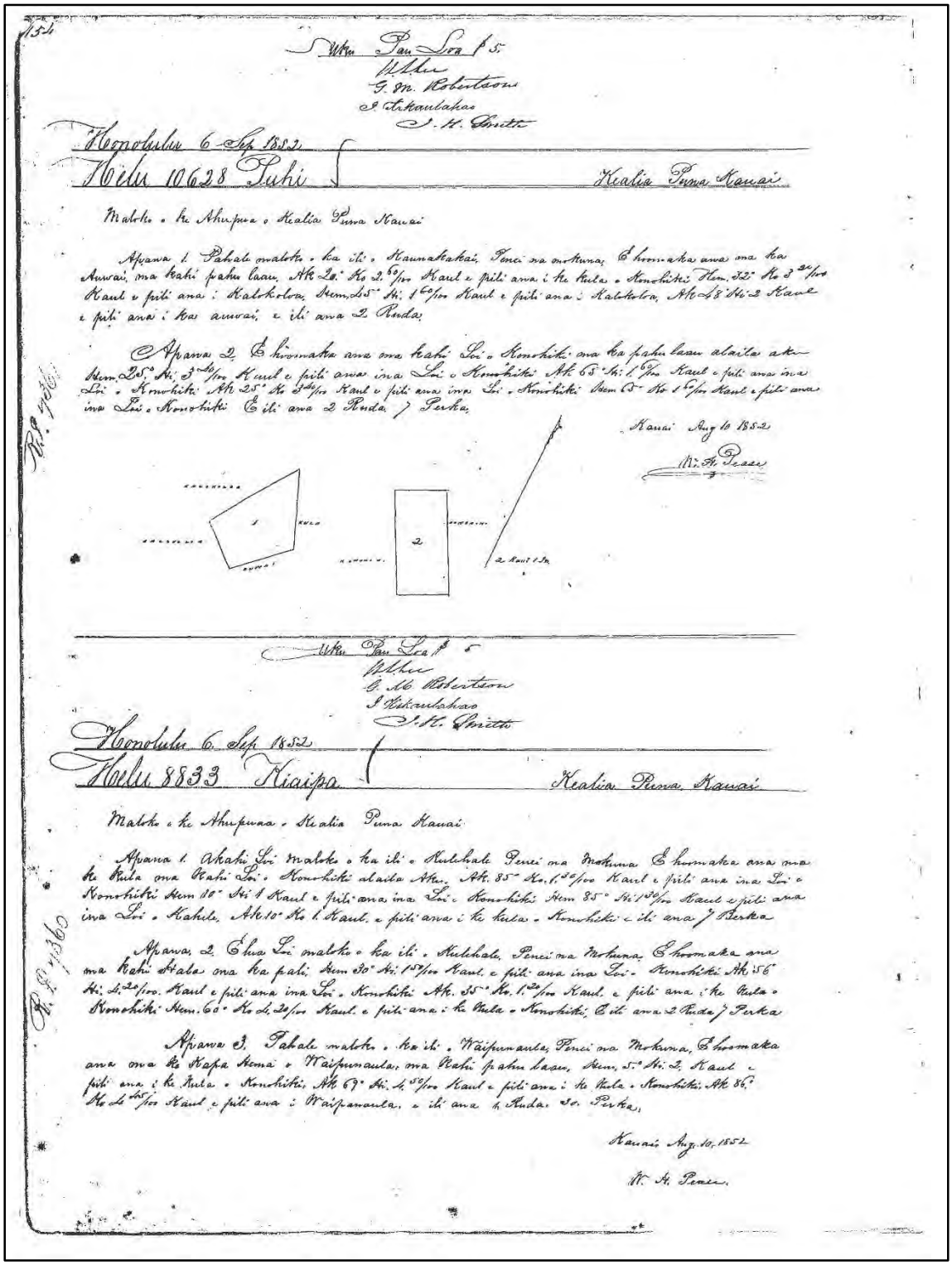
Appendix A Land Commission Awards



Aupuni Pau Loa # 5.
Wahi
G. M. Robertson
I Kekaulahao
C. K. Bonitto

Honolulu 6 Sep 1852.
Helu 10628 Puhi — Kealia Puna Kauai

Mahele o ke Aupuni o Kealia Puna Kauai

Apana 1 Pahale mahele o ka ili o Kaumakakai, Penei na mokuna, E hoomaka ana ma ka Auwai, ma kahi pahu laau, Aki 20° Ko 2.6/100 Kaul e pili ana i ke kula o Konohiki: Hem. 32° Ko 3.24/100 Kaul e pili ana: Kalokoloa, Hem. 35° Hi. 1.6/100 Kaul e pili ana: Kalokoloa, Aki 8 Hi 2 Kaul e pili ana: Ka auwai, e ili ana 2 Ruda;

Apana 2. E hoomaka ana ma kahi Loi o Konohiki ma ka pahu laau alaila aku Hem 25° Hi. 3.16/100 Kaul e pili ana ina Loi o Konohiki Aki 65° Hi. 1.0/100 Kaul e pili ana ina Loi o Konohiki Aki 25° Ko 3.24/100 Kaul e pili ana ina Loi o Konohiki Hem 5° Ko 1.6/100 Kaul e pili ana ina Loi o Konohiki E ili ana 2 Ruda / Perka.

Kauai Aug 10 1852
M. A. Pease

Aupuni Pau Loa # 5
Wahi
G. M. Robertson
I Kekaulahao
C. K. Bonitto

Honolulu 6. Sep 1852
Helu 8833 Kiaipa — Kealia Puna, Kauai

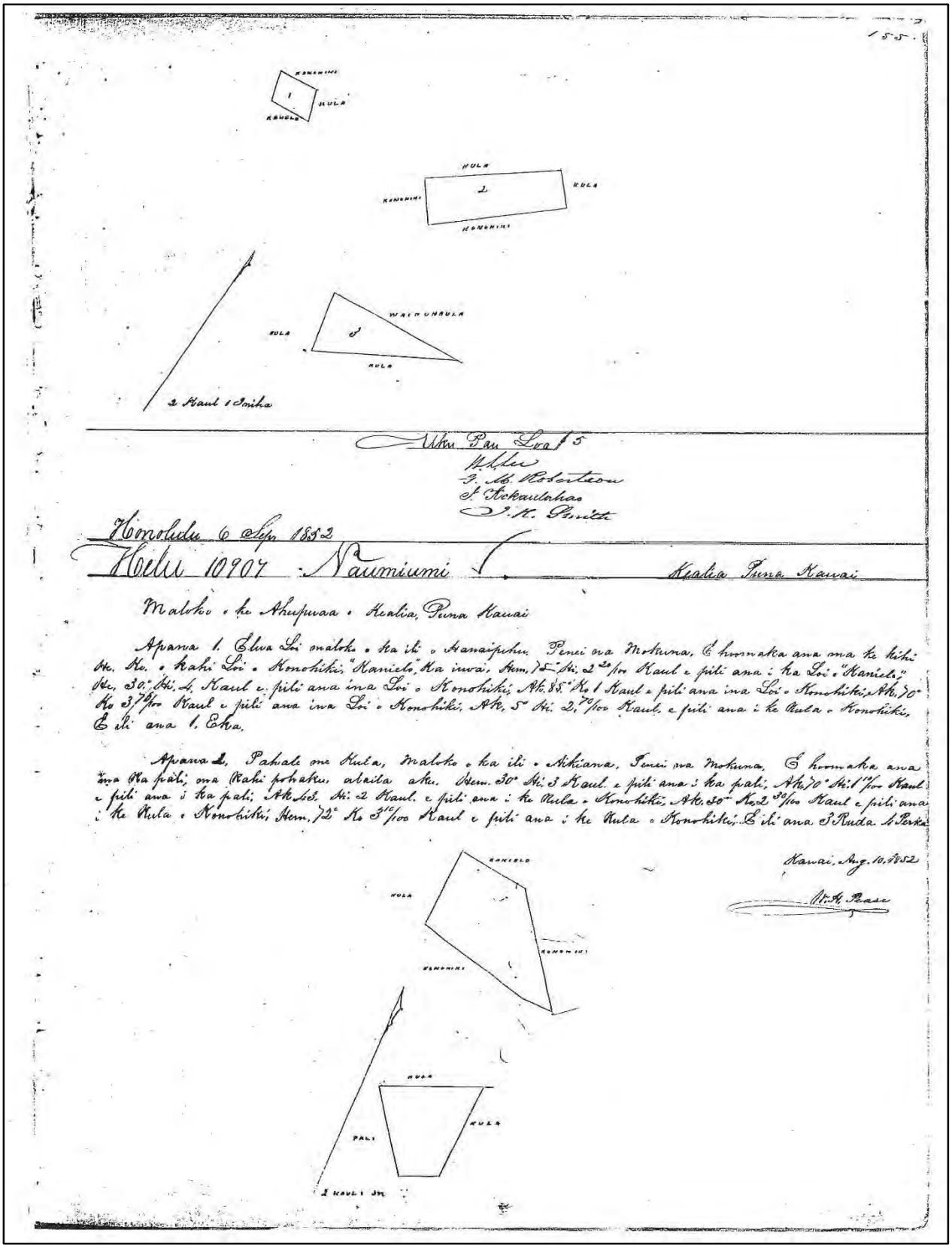
Mahele o ke Aupuna o Kealia Puna Kauai

Apana 1. Akahi Loi mahele o ka ili o Kukuhale Penei na Mokuna E hoomaka ana ma ke Kula ma Kahi Loi o Konohiki alaila Aki. Aki. 85° Ko. 1.36/100 Kaul e pili ana ina Loi o Konohiki Hem 10° Hi 1 Kaul e pili ana ina Loi o Konohiki Hem 85° Hi 1.36/100 Kaul e pili ana ina Loi o Kahule. Aki 10° Ko 1 Kaul. e pili ana i ke kula o Konohiki e ili ana / Perka

Apana 2. Elua Loi mahele o ka ili o Kukuhale, Penei na Mokuna E hoomaka ana ma Kahi Alaka ma ka pali. Hem 30° Hi. 1.16/100 Kaul. e pili ana ina Loi o Konohiki Aki 56° Hi. 1.24/100. Kaul e pili ana ina Loi o Konohiki Aki. 35° Ko. 1.24/100 Kaul. e pili ana i ke Kula o Konohiki Hem. 60° Ko 1. 24/100 Kaul. e pili ana i ke Kula o Konohiki, E ili ana 2 Ruda / Perka

Apana 3. Pahale mahele o ka ili o Waipunaula, Penei na Mokuna, E hoomaka ana ma ke Kapa kema o Waipunaula, ma Kahi pahu laau, Hem. 5° Hi. 2. Kaul e pili ana i ke Kula o Konohiki, Aki 67° Hi. 1. 56/100 Kaul e pili ana i ke Kula o Konohiki, Aki 86° Ko 1 16/100 Kaul e pili ana i Waipunaula, e ili ana 1 Ruda. Sa. Perka.

Kauai Aug. 10, 1852
M. A. Pease.


155.
KEKEAINI
1
KULA
KAUELA
HULA
2
KULA
KEKEHINI
KEKEHINI
WAIPUNAULA
3
KULA
KULA
2 Kaul 1 Smiha
Hon. Pau Loa 15
W. Alden
J. M. Robertson
S. Kekauluhaa
J. K. Smith
Honolulu 6 Sept 1852
Helu 10907 Naumiumi
Kealia Puna Kauai
Maloko o ke Aupuaa o Kealia, Puna Kauai
Apana 1. Elua Loi maloko o ka ili o Hanaipuhu. Penei ua Moku na, E hoomaka ana ma ke kihi Hk. Ke. o Kahi Loi o Konohiki. "Kaniela" Ka iwai. Hem. 75° Hi. 2 20/100 Kaul e pili ana i ka Loi o "Kaniela" Ke. 30° Hi. 4 Kaul e pili ana ina Loi o Konohiki Hk. 85° Ko 1 Kaul e pili ana ina Loi o Konohiki; Hk. 70° Ko 3 70/100 Kaul e pili ana ina Loi o Konohiki. Hk. 5° Hi. 2. 70/100 Kaul. e pili ana i ke Kula o Konohiki, E ili ana i Eha.
Apana 2. Pahale me Kula, maloko o ka ili o Nikiana. Penei ua Mokuna. E hoomaka ana ma Ka pali ma Kahi pohaku. akaila aku. Hem. 30° Hi. 3 Kaul e pili ana i ka pali; Hk. 70° Hi. 1 10/100 Kaul e pili ana i ka pali; Hk. 86. Hi. 2 Kaul. e pili ana i ke Kula o Konohiki. Hk. 80° Ko 2 30/100 Kaul e pili ana i ke Kula o Konohiki, Hem. 72° Ko 3 10/100 Kaul e pili ana i ke Kula o Konohiki. E ili ana i Kula. 1 Pahe
Kauai, Aug. 10. 1852
W. K. Kaae
KANIELO
KULA
KEKEHINI
KEKEHINI
KULA
PALI
KULA
2 KAUL 1 Ipu

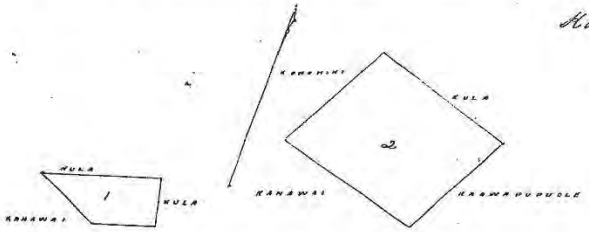
153

Helu 10906 Umiumi Kealia Kauai

Mahele o Kealia Ahupuaa Puna Kauai.

1 Pahale, punei ova mokuna. E hoomaka ana ma ke Kahawai o Kealia ma ke Kapa Akau ma Kahi pahu kaau, alaila Ak. 5° Ko 1.20/100 Kaul e pili ana i ke Kula o Konohiki Hem. 86° Ko 2.80/100 Kaul e pili ana i ke Kula o Konohiki Hem. 56° Hi 30/100 Kaul e pili ana i ke Kahawai o Kealia Ak 80° Hi. 1.50/100 Kaul e pili ana i ke Kahawai o Kealia e ili ana i Ruda

2, Aina Kalo me Kula E hoomaka ana ma ke Kahawai Kihi Hema Kom. o ma Loi o Kaawapupuole, alaila aku, Ak. 35° Hi. 3 Kaul e pili ana iwa Loi o Kaawapupuole, Ak. 62° Ko 3.60/100 Kaul e pili ana i ke Kula o Konohiki Hem 35° Ko 3.20/100 Kaul e pili ana iwa Loi o Konohiki He 65° Hi 3.60/100 Kaul e pili ana i ke Kahawai, E ili ana i Eka 15 Perka



2 Kaul 1 Jn

Kauai, Aug 10, 1852

W. H. Pease

Aku Pau Loa 16

Kihlee

G. M. Robertson

I Kekaulakoa

J. K. Elmitt

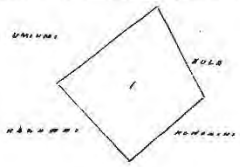
Honolulu 6 Sep 1852

Helu 8842 Kaawapupuole Kealia Puna Kauai

Mahele o Ke Ahupuaa o Kealia, Puna, Kauai.

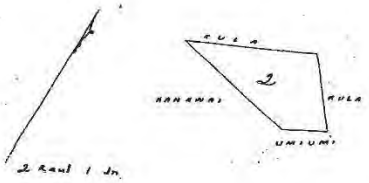
Apana 1. E lima Loi me Kula mahele o Ka ili o Makapuno. Penei ma Mokuna. E hoomaka ana ma ke Kahawai o Kealia ma ke Kapa Hikina ma Kahi Kau. Ak. 52° Hi. 2.20/100 Kaul e pili ana iwa Loi o Konohiki Ak. 40° Ko 2.50/100 Kaul e pili ana i ke Kula Konohiki Hem 35° Ki 3 Kaul e pili ana iwa Loi o Umiumi Hem. 58° Hi. 2.55/100 Kaul e pili ana i ke Kahawai, e ili ana 2, Ruda, 20 Perka,

Apana 2. Pahale mahele o Ka ili o Kauaha. Penei ova Mokuna. E hoomaka ana ma ke Kahawai ma ke Kapa Hema ma Kahi pahu Ak. 80° Hi. 1 Kaul e pili ana iwa Loi o Umiumi Ak. 20° Ko. 2 Kaul. e pili ana i ke Kula o Konohiki Hem. 80° Ko. 3.20/100 Kaul e pili ana i ke Kula o Konohiki Hem. 60 Hi. 3.20/100 Kaul e pili ana i ke Kahawai, E ili ana i Ruda 25 Perka

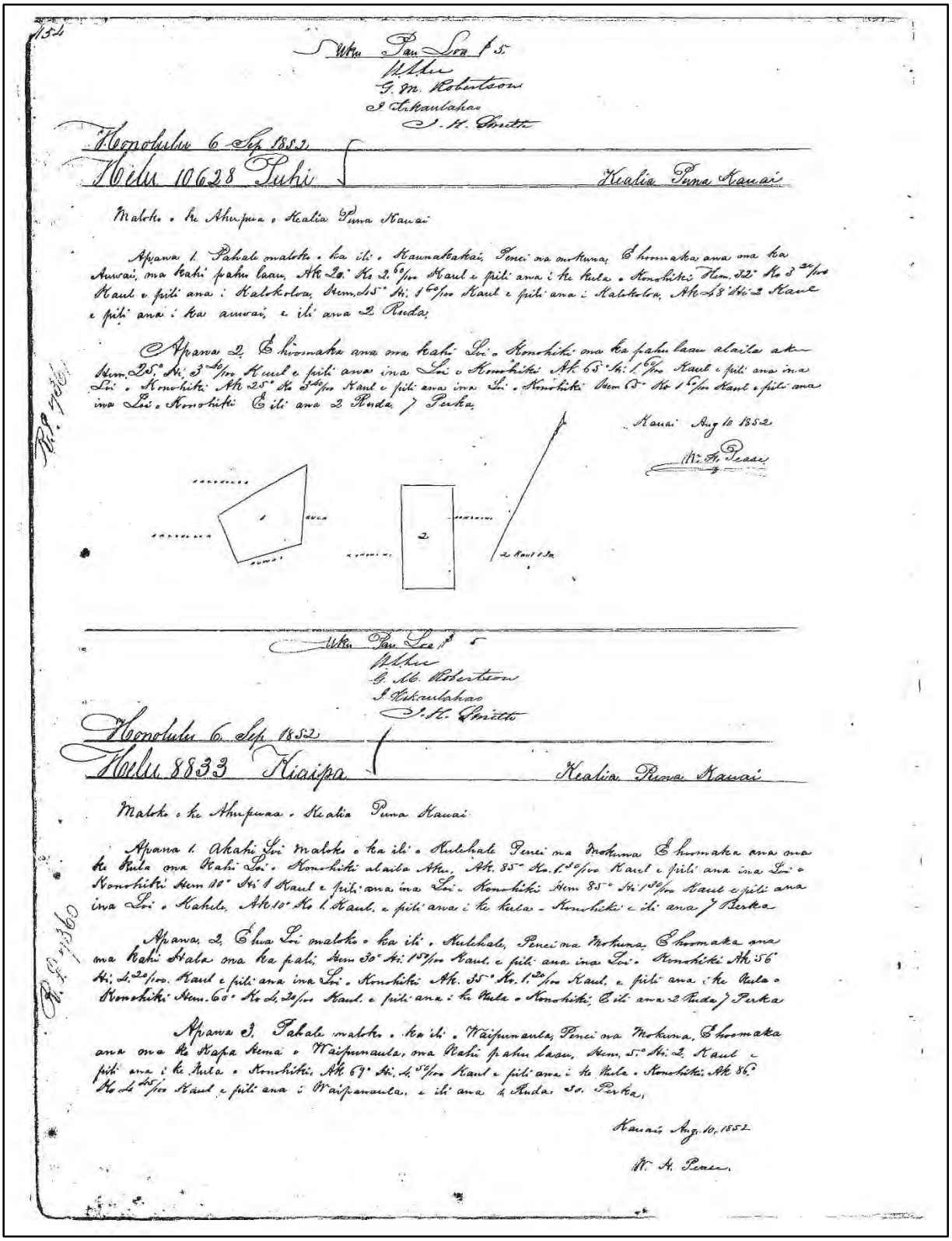


Kauai Aug 10. 1852

W. H. Pease.



2 Kaul 1 Jn



1552

Uku Pau Loa 5.
W. Hee
G. M. Robertson
J. Kekaulahao
J. H. Smith

Honolulu 6 Sep 1852

Helu 10628 Puhi — Kealia Puna Kauai

Palapala o ke Ahupuaa o Kealia Puna Kauai

Apana 1. Pahale palapala o ka ili o Kaunakakai, Penei ua mohuna, E hoomaka ana ma ka Auwai, ma kahi pahu kaua, Aki 20° Ko 2.6/100 Kaul e pili ana i ke kula o Konohiki; Hem 32° Ko 3.24/100 Kaul e pili ana i Kalokelua, Hem 55° Hi 1.6/100 Kaul e pili ana i Kalokelua, Aki 18 Hi 3 Kaul e pili ana i ka auwai, e ili ana 2 Puula;

Apana 2. E hoomaka ana ma kahi Li o Konohiki ma ka pahu kaua alaila aku Hem 25° Hi 3.40/100 Kaul e pili ana ina Li o Konohiki Aki 65° Hi 1.6/100 Kaul e pili ana ina Li o Konohiki Aki 25° Ko 3.40/100 Kaul e pili ana ina Li o Konohiki Hem 5° Ko 1.6/100 Kaul e pili ana ina Li o Konohiki E ili ana 2 Puula, 7 Perka;

Kauai Aug 10 1852

W. H. Pease

R.P. 4360

Ukn Pau Loa 5
W. Hee
G. M. Robertson
J. Kekaulahao
J. H. Smith

Honolulu 6 Sep 1852

Helu 8833 Kiaipa — Kealia Puna Kauai

Palapala o ke Ahupuaa o Kealia Puna Kauai

Apana 1. Akahi Li palapala o ka ili o Kulakalo Penei na Mohuna E hoomaka ana ma ke Kula ma Kahi Li o Konohiki alaila Aku, Aki 85° Ko 1.56/100 Kaul e pili ana ina Li o Konohiki Hem 10° Hi 1 Kaul e pili ana ina Li o Konohiki Hem 85° Hi 1.56/100 Kaul e pili ana ina Li o Kahula, Aki 10° Ko 1 Kaul. e pili ana i ke kula o Konohiki e ili ana 7 Perka

Apana 2. E hua Li palapala o ka ili o Kulakalo, Penei na Mohuna E hoomaka ana ma kahi Kala ma ka pali Hem 30° Hi 1.52/100 Kaul. e pili ana ina Li o Konohiki Aki 56° Hi 1.24/100 Kaul e pili ana ina Li o Konohiki Aki 35° Ko 1.32/100 Kaul. e pili ana i ke Kula o Konohiki Hem 60° Ko 1.24/100 Kaul. e pili ana i ke Kula o Konohiki E ili ana 2 Puula 7 Perka

R.P. 4360

Apana 3. Pahale palapala o ka ili o Waipunaula, Penei na Mohuna E hoomaka ana ma ke Kapa Kema o Waipunaula, ma Kahi pahu kaua, Hem 5° Hi 2. Kaul e pili ana i ke Kula o Konohiki Aki 69° Hi 1.56/100 Kaul e pili ana i ke Kula o Konohiki Aki 86° Ko 1.45/100 Kaul e pili ana i Waipunaula, e ili ana 4 Puula 30 Perka,

Kauai Aug 10, 1852

W. H. Pease

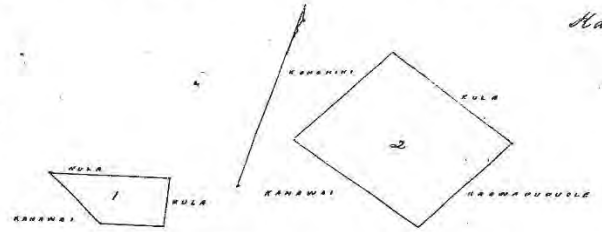
153

Helu 10906 Uniumi Kealia Kauai

Mahele o Kealia Aupuaa Puna Kauai.

1 Pahale, pinepu ma mokuna. Ehumaka ana ma ke Kahawai o Kealia ma Ke Kapa Akau ma Kahi pahu laau, alaila Ak. 5° Ki 1.20/100 Kaul e pili ana i ke Kula o Konohiki Kum. 86° Ki 2.80/100 Kaul e pili ana i ke Kula o Konohiki Kum 56° Ki 3 70/100 Kaul e pili ana i ke Kahawai o Kealia Ak 80° Ki. 1.50/100 Kaul e pili ana i ke Kahawai o Kealia e ili ana i Ruda.

2, Aina Kalo me Kula Ehumaka ana ma ke Kahawai Kihi Kema Kom. o ma Loi o Kaawapupurole, alaila aku, Ak. 35° Ki. 3 Kaul e pili ana ina Loi o Kaawapupurole, Ak. 62° Ki 3.60/100 Kaul e pili ana i ke Kula o Konohiki Kum 35° Ke 3.20/100 Kaul e pili ana ina Loi o Konohiki Ke 65° Ki 3.60/100 Kaul e pili ana i ke Kahawai, Eili ana 1 Eka 15 Perka



2 Kaul 1 In

Kauai, Aug 10, 1852

W. D. Peale

Aku Pau Loa # 6

Kahiki

G. M. Robertson

J Kekauluhao

J. K. Smith

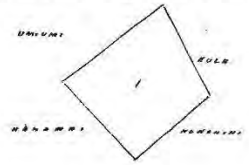
Honolulu 6 Sep 1852

Helu 8842 Kaawapupurole Kealia Puna Kauai

Mahele o Ke Aupuaa o Kealia Puna Kauai

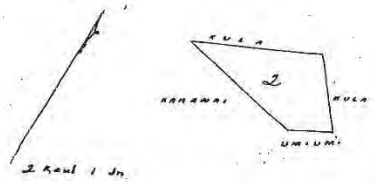
Apana 1. Elima Loi me Kula mahele o Ka ili o Makapuno. Penei ua Mokuna. Ehumaka ana ma ke Kahawai o Kealia ma ke Kapa Kikina ma Kahi Kau. Ak. 32° Ki. 2.20/100 Kaul e pili ana ina Loi o Konohiki Ak. 60° Ke 2.50/100 Kaul e pili ana i ke Kula Konohiki Kum 35° Ke 3 Kaul e pili ana ina Loi o Uniumi Kum. 58° Ki. 2.55/100 Kaul e pili ana i ke Kahawai, e ili ana 2. Ruda, 2nd Perka,

Apana 2. Pahale mahele o Ka ili o Kauaha, Penei ua Mokuna. Ehumaka ana ma ke Kahawai ma Ke Kapa Kema ma Kahi pahu Ak. 80° Ki. 1 Kaul e pili ana ina Loi o Uniumi Ak. 20° Ke. 2 Kaul. e pili ana i ke Kula o Konohiki Kum. 80° Ke. 3.20/100 Kaul e pili ana i ke Kula o Konohiki Kum. 60° Ki. 3.20/100 Kaul e pili ana i ke Kahawai, Eili ana 1 Ruda 25 Perka



Kauai Aug 10. 1852

W. D. Peale.



2 Kaul 1 In

Appendix B Letter from Beverly Muraoka

BEVERLY H. S. L. A. MURAOKA
1111 Puuopae Road
Kapaa, Kauai, Hawaii 96746

September 14, 2015

Cultural Surveys Hawaii Inc.
Archaeological and Cultural Impact Studies
P. O. Box 1114
Kailua, Hawaii 96734

Re. Job Code: KAPAA 15

Gentlemen:

I apologize for this delayed response on your letter dated August 12, 2015 since I have just returned from the Mainland for family celebrations.

While I do not have any firm commentaries as to the site in discussion, just know that I strongly believe whenever a project takes place near or proximity to the ocean, in this case I know it to be "Kealia Beach" there may be 'iwi beneath sand layers due to battles, village wars, etc. that occurred during pre-Christian contacts. Thus, should these be unearthed, discovered or the like, please ensure all protocols are followed by the Kauai Burial Council and/or committees handling the proper relocation of such sacred 'iwi.

Other than that, I may suggest that you contact a Yoshiko "Dimples" Kano who was a longtime resident in the upper Kealia area who has relocated to the Wailua Houselots Subdivision. I regret not knowing her exact relocation.

Unfortunately, the old-time residents that lived along the mauka side of Kuhio Highway of the Project Area are now deceased and their children may know more. Such names are Antone Arruda, (daughter Carol Franklin)P. Chong(grandson Herman Chong, Jr.) and Pedring Ponce(grandson Kenneth Ponce, Jr.) I cannot assist in further contacts, however, this may guide you in your quest to find them. Lastly, Puanani(Nani) Rogers, a strong activist, may give you more info as she may represent both herself and a 98-year Aunty(Frances Okai in knowledge regarding Mailihuna Rd.) Good luck!

Sincerely,

Beverly H.S.L.A. Muraoka

Beverly H. S. L. A. Muraoka
Kumu Hula, Retired
Healani's Hula Halau & Music Academy
Kapaa, Kauai, Hawaii

Appendix G
National Historic Preservation Act Section 106 and HRS Chapter 6E Consultation Documentation

AFFIDAVIT OF PUBLICATION

IN THE MATTER OF
NOTICE OF CONSULTATION-KAPAA BRIDGE

STATE OF HAWAII }
} SS.
City and County of Honolulu }

Doc. Date: AUG 2 8 2015 **# Pages:** 1

Notary Name: Patricia K. Reese First Judicial **Circuit**

Doc. Description: Affidavit of Publication

PATRICIA K. REESE NOTARY PUBLIC Comm. No. 86-467 STATE OF HAWAII

Notary Signature AUG 2 8 2015 Date

Lisa Kaukani being duly sworn, deposes and says that she is a clerk, duly authorized to execute this affidavit of Oahu Publications, Inc. publisher of The Honolulu Star-Advertiser, MidWeek, The Garden Island, West Hawaii Today, and Hawaii Tribune-Herald, that said newspapers are newspapers of general circulation in the State of Hawaii, and that the attached notice is true notice as was published in the aforementioned newspapers as follows:

Honolulu Star-Advertiser 0 times on:

MidWeek 0 times on:

The Garden Island 1 times on:
08/28/2015

Hawaii Tribune-Herald 0 times on:

West Hawaii Today 0 times on:

Other Publications: 0 times on:

And that affiant is not a party to or in any way interested in the above entitled matter.

Lisa Kaukani

Subscribed to and sworn before me this 26th day of August A.D. 2015

Patricia K. Reese, Notary Public of the First Judicial Circuit, State of Hawaii

My commission expires: Oct 07, 2018

Ad # 0000791398

PATRICIA K. REESE NOTARY PUBLIC Comm. No. 86-467 STATE OF HAWAII

SP

NOTICE OF CONSULTATION

SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT OF 1966 AS AMENDED (2006) AND CHAPTER 6E OF THE HAWAII REVISED STATUTES

MAILIHUNA INTERSECTION AND KAPAA BRIDGE REPLACEMENT PROJECT
KAWAIHAU DISTRICT, KAUAI ISLAND, KAPAA AND KEALIA AHUPUAA
FEDERAL-AID PROJECT NUMBER: HI STP SR56(1)
TAX MAP KEYS: (4)4-6-014:024, (4)4-6-14:092 KUHIO HIGHWAY RIGHT-OF-WAY, (4)4-6-14:090 KUHIO HIGHWAY RIGHT-OF-WAY, (4)4-6-014:031, (4)4-6-014:033, (4)4-6-014:999 MAILIHUNA ROAD RIGHT-OF-WAY), (4)4-7-008:042, (4)4-7-003:999 KUHIO HIGHWAY RIGHT-OF-WAY, (4)4-7-003:001

Notice is hereby given that the Federal Highway Administration, Central Federal Lands Highway Division and State of Hawaii Department of Transportation, Highways Division propose to improve the intersection of Kuhio State Highway 56 (HI-56) and Mailihuna Road and replace the Kapaa Stream Bridge north of the intersection, near Mile Post 10 in Kapaa and Kealia Ahupuaa in Kawaihau District on Kauai.

The proposed project would reconfigure the intersection of HI-56 and Mailihuna Road to improve traffic operations, safety, and local access and would replace the existing Kapaa Bridge. The existing Kapaa Bridge does not meet the current roadway standards for width as well as bridge standards for live loading and seismic requirements. The existing bridge railings and approach railings do not meet current crash test requirements. The replacement Kapaa Bridge would be a single-span 190-foot long structure and would accomodate two 12-foot travel lanes, two 8-foot shoulders, and guardrails. Two intersection alternatives are being considered: the first is a traffic signalized intersection and the second is a roundabout intersection. The potential area of disturbance, including temporary construction areas, is 4.1 acres.

Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended (2006), and Chapter 6E of the Hawaii Revised Statutes, Native Hawaiian organizations and Native Hawaiian descendants with ancestral, lineal or cultural ties to, cultural knowledge or concerns for, and cultural or religious attachment to the proposed project area are requested to contact Mr. Michael Will via email at Michael.will@dot.gov or by US Postal Service to 12300 West Dakota Avenue, Suite 380, Lakewood, CO 80228-2583.

Please respond by September 30, 2015.

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
Suite 380
Lakewood, CO 80228
Office: 720-963-3647
Fax: 720-963-3596
Michael.Will@dot.gov

August 26, 2015

In Reply Refer To:
HFPM-16

TO: D. KALIKO SANTOS
OFFICE OF HAWAIIAN AFFAIRS
4405 KUKUI GROVE STREET, SUITE 103
LIHUE, HI 96766

FROM: J. MICHAEL WILL, P.E.
PROJECT MANAGER

SUBJECT: NATIONAL HISTORIC PRESERVATION ACT, SECTION 106 AND HAWAII REVISED STATUTES, CHAPTER 6E CONSULTATION
MAILIHUNA INTERSECTION AND KAPAA BRIDGE REPLACEMENT PROJECT
KAWAIHAU DISTRICT, KAUAI ISLAND, KAPAA AND KEALIA AHUPUAA
PROJECT NO. HI STP SR56(1)
TAX MAP KEY: (4)4-6-014:024, (4)4-6-14:092 KUHIO HIGHWAY RIGHT-OF-WAY, (4)4-6-14:090 KUHIO HIGHWAY RIGHT-OF-WAY, (4)4-6-014:031, (4)4-6-014:033, (4)4-6-014:999 MAILIHUNA ROAD RIGHT-OF-WAY), (4)4-7-008:042, (4)4-7-003:999 KUHIO HIGHWAY RIGHT-OF-WAY, (4)4-7-003:001

Dear Ms. Santos:

The Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD), in partnership with the State of Hawaii Department of Transportation (HDOT), is proposing to improve the intersection of Kuhio State Highway 56 (HI-56) and Mailihuna Road and replace the Kapaa Stream Bridge north of the intersection. The project area is located near Mile Post (MP) 10 on HI-56 (see attached Area of Potential Effects USGS Map for project location). The proposed project is considered a federal action and undertaking, and will comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (2006), as well as Hawaii Revised Statutes (HRS) Chapter 6E. We would like to invite you to participate in the Section 106 consultation for the proposed project in accordance with Title 36 of the *Code of Federal Regulations*, Section 800.3, by providing information and/or by requesting to be a consulting party. This letter also initiates consultations in accordance with HRS Chapter 6E.

Overview of the Undertaking

The proposed project would reconfigure the intersection of HI-56 and Mailihuna Road to improve traffic operations, safety, and local access and would replace the existing Kapaa Bridge to maintain the Kapaa Stream crossing on HI-56 as a safe and functional component of the regional transportation system for highway users.

The intersection of HI-56 and Mailihuna Road would be reconfigured to improve traffic operations and pedestrian safety. Two alternatives are being considered: the first is a traffic signalized intersection and the second is a roundabout intersection. The traffic signalized intersection would provide a 170-foot northbound left turn lane and a 145-foot southbound right turn lane to Malihuna Road from HI-56. The roundabout would be a single lane circle providing access to HI-156 and Malihuna Road. Marked crosswalks and devices would be provided on all approaches, and improved signage and street lighting would be installed to improve safety and mobility for non-motorized modes crossing HI-56. Drainage improvements would also be installed to prevent flooding at the intersection.

The existing Kapaa Bridge does not meet the current roadway standards for width and bridge standards for live loading and seismic requirements, and the existing bridge railings and approach railings do not meet current crash test requirements. Therefore, the bridge will be demolished and replaced with a single-span 190-foot long bridge. The new structure would be approximately 4 feet wider, accommodating two 12-foot travel lanes, two 8-foot shoulders, and guardrails on both sides. The bridge is a typical post-World War II bridge and is not considered eligible for listing on the National Register of Historic Places (NRHP).

During construction, Kapaa Bridge would be closed to traffic, and a temporary bypass road and bridge would be constructed makai of the existing bridge, between the existing bridge and the adjacent pedestrian trail, to maintain traffic over Kapaa Stream. The adjacent pedestrian bridge would not be impacted.

The proposed improvements at the HI-56 and Mailihuna Road intersection would occur within HDOT right-of-way and adjacent private property. The Kapaa Bridge replacement would occur entirely within HDOT right-of-way. Construction parcels (temporary easements) would be needed for the temporary bypass road, construction zone, and staging areas.

No historic resources eligible for listing on the NRHP have been identified within the permanent improvement or temporary construction limits to date; however, an archaeological inventory survey of the project is currently being conducted.

Area of Potential Effects

The archaeological and historic architectural Area of Potential Effects (APE) is illustrated in the attached APE Aerial Imagery map, and includes both temporary and permanent impact areas.

Cultural, Archaeological, and Historical Studies

To provide you information on the cultural, archaeological, and historical settings of the project area, we are including on CD the archaeological study prepared for this project: Archaeological Reconnaissance Report for the Kapaa Stream Bridge, Kapaa and Kealia Ahupuaa, Kawaihau District, Kauai.

Please note that the study area indicated in the report is larger than the attached APE map. At the start of the project, we assumed a large study area so that field findings could inform the conceptual design process at an early stage to help avoid or minimize effects to potentially sensitive sites. An archaeological inventory survey is currently being conducted and will reflect the APE.

Consultations

Section 106 notice/advertisement will be included in The Garden Island. Native Hawaiian organizations and Native Hawaiian descendants with ancestral, lineal, or cultural ties to, cultural knowledge or concerns for, and cultural or religious attachment to the proposed project area are asked to provide a response within 30 days of notification.

Letters for this project are being sent to the following NHOs as well as other organizations with knowledge of cultural, archaeological, and historical resources:

- Office of Hawaiian Affairs
- Kauai Historic Preservation Review Commission
- Kauai-Niihau Island Burial Council
- Queen Deborah Kapule Hawaiian Civic Club
- Hookipa Network
- Historic Hawaii Foundation

We welcome any comments you have on this project's proposed improvements or APE. We are particularly interested in any information you may have on the historic and cultural sites that have been recorded in the area, or other historic or cultural sites about which you may have knowledge. In addition, if you are acquainted with any person or organization that is knowledgeable about the proposed project area, or any descendants with ancestral, lineal, or cultural ties to or cultural knowledge or concerns for, and cultural or religious attachment to the proposed project area, we would appreciate receiving their names and contact information.

If you have information and/or would like to be a Consulting Party, we would appreciate a written response within 30 days from date of receipt, by email at Michael.will@dot.gov or by US Postal Service to 12300 West Dakota Avenue, Suite 380, Lakewood, CO 80228.

Please feel free to contact Nicole Winterton, Environmental Protection Specialist, by telephone at (720) 963-3689, or email Nicole.Winterton@dot.gov, if you have any questions.

Sincerely yours,

J. Michael Will, P.E.
Project Manager

Enclosures:

- Kapaa Bridge Area of Potential Effects (USGS Map)
- Kapaa Bridge Area of Potential Effects (Aerial Imagery)
- On CD: Draft Archaeological Inventory Survey Report for the Kapaa Stream Bridge, Kapaa and Kealia Ahupuaa, Kawaihau District, Kauai

cc (with enclosures on CD):
Christine Yamasaki, HDOT
Todd Nishioka, HDOT
Jessica Puff, SHPD
Dr. Susan Lebo, SHPD
Mary Jane Naone, SHPD Kauai Lead Archaeologist

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
Suite 380
Lakewood, CO 80228
Office: 720-963-3647
Fax: 720-963-3596
Michael.Will@dot.gov

August 26, 2015

In Reply Refer To:
HFPM-16

TO: KAUAI-NIIHAU ISLAND BURIAL COUNCIL
C/O STATE HISTORIC PRESERVATION DIVISION
ATTN: KNIBC
601 KAMOKILA BLVD, ROOM 555
KAPOLEI, HI 96707

FROM: J. MICHAEL WILL, P.E.
PROJECT MANAGER

SUBJECT: NATIONAL HISTORIC PRESERVATION ACT, SECTION 106 AND HAWAII REVISED STATUTES, CHAPTER 6E CONSULTATION
MAILIHUNA INTERSECTION AND KAPAA BRIDGE REPLACEMENT PROJECT
KAWAIHAU DISTRICT, KAUAI ISLAND, KAPAA AND KEALIA AHUPUAA
PROJECT NO. HI STP SR56(1)
TAX MAP KEY: (4)4-6-014:024, (4)4-6-14:092 KUHIO HIGHWAY RIGHT-OF-WAY, (4)4-6-14:090 KUHIO HIGHWAY RIGHT-OF-WAY, (4)4-6-014:031, (4)4-6-014:033, (4)4-6-014:999 MAILIHUNA ROAD RIGHT-OF-WAY), (4)4-7-008:042, (4)4-7-003:999 KUHIO HIGHWAY RIGHT-OF-WAY, (4)4-7-003:001

To whom it may concern:

The Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD), in partnership with the State of Hawaii Department of Transportation (HDOT), is proposing to improve the intersection of Kuhio State Highway 56 (HI-56) and Mailihuna Road and replace the Kapaa Stream Bridge north of the intersection. The project area is located near Mile Post (MP) 10 on HI-56 (see attached Area of Potential Effects USGS Map for project location). The proposed project is considered a federal action and undertaking, and will comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (2006), as well as Hawaii Revised Statutes (HRS) Chapter 6E. We would like to invite you to participate in the Section 106 consultation for the proposed project in accordance with Title 36 of the *Code of Federal Regulations,* Section 800.3, by providing information and/or by requesting to be a consulting party. This letter also initiates consultations in accordance with HRS Chapter 6E.

Overview of the Undertaking

The proposed project would reconfigure the intersection of HI-56 and Mailihuna Road to improve traffic operations, safety, and local access and would replace the existing Kapaa Bridge to maintain the Kapaa Stream crossing on HI-56 as a safe and functional component of the regional transportation system for highway users.

The intersection of HI-56 and Mailihuna Road would be reconfigured to improve traffic operations and pedestrian safety. Two alternatives are being considered: the first is a traffic signalized intersection and the second is a roundabout intersection. The traffic signalized intersection would provide a 170-foot northbound left turn lane and a 145-foot southbound right turn lane to Malihuna Road from HI-56. The roundabout would be a single lane circle providing access to HI-156 and Malihuna Road. Marked crosswalks and devices would be provided on all approaches, and improved signage and street lighting would be installed to improve safety and mobility for non-motorized modes crossing HI-56. Drainage improvements would also be installed to prevent flooding at the intersection.

The existing Kapaa Bridge does not meet the current roadway standards for width and bridge standards for live loading and seismic requirements, and the existing bridge railings and approach railings do not meet current crash test requirements. Therefore, the bridge will be demolished and replaced with a single-span 190-foot long bridge. The new structure would be approximately 4 feet wider, accommodating two 12-foot travel lanes, two 8-foot shoulders, and guardrails on both sides. The bridge is a typical post-World War II bridge and is not considered eligible for listing on the National Register of Historic Places (NRHP).

During construction, Kapaa Bridge would be closed to traffic, and a temporary bypass road and bridge would be constructed makai of the existing bridge, between the existing bridge and the adjacent pedestrian trail, to maintain traffic over Kapaa Stream. The adjacent pedestrian bridge would not be impacted.

The proposed improvements at the HI-56 and Mailihuna Road intersection would occur within HDOT right-of-way and adjacent private property. The Kapaa Bridge replacement would occur entirely within HDOT right-of-way. Construction parcels (temporary easements) would be needed for the temporary bypass road, construction zone, and staging areas.

No historic resources eligible for listing on the NRHP have been identified within the permanent improvement or temporary construction limits to date; however, an archaeological inventory survey of the project is currently being conducted.

Area of Potential Effects

The archaeological and historic architectural Area of Potential Effects (APE) is illustrated in the attached APE Aerial Imagery map, and includes both temporary and permanent impact areas.

Cultural, Archaeological, and Historical Studies

To provide you information on the cultural, archaeological, and historical settings of the project area, we are including on CD the archaeological study prepared for this project: Archaeological Reconnaissance Report for the Kapaa Stream Bridge, Kapaa and Kealia Ahupuaa, Kawaihau District, Kauai.

Please note that the study area indicated in the report is larger than the attached APE map. At the start of the project, we assumed a large study area so that field findings could inform the conceptual design process at an early stage to help avoid or minimize effects to potentially sensitive sites. An archaeological inventory survey is currently being conducted and will reflect the APE.

Consultations

Section 106 notice/advertisement will be included in The Garden Island. Native Hawaiian organizations and Native Hawaiian descendants with ancestral, lineal, or cultural ties to, cultural knowledge or concerns for, and cultural or religious attachment to the proposed project area are asked to provide a response within 30 days of notification.

Letters for this project are being sent to the following NHOs as well as other organizations with knowledge of cultural, archaeological, and historical resources:

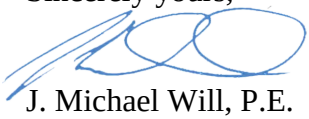
- Office of Hawaiian Affairs
- Kauai Historic Preservation Review Commission
- Kauai-Niihau Island Burial Council
- Queen Deborah Kapule Hawaiian Civic Club
- Hookipa Network
- Historic Hawaii Foundation

We welcome any comments you have on this project's proposed improvements or APE. We are particularly interested in any information you may have on the historic and cultural sites that have been recorded in the area, or other historic or cultural sites about which you may have knowledge. In addition, if you are acquainted with any person or organization that is knowledgeable about the proposed project area, or any descendants with ancestral, lineal, or cultural ties to or cultural knowledge or concerns for, and cultural or religious attachment to the proposed project area, we would appreciate receiving their names and contact information.

If you have information and/or would like to be a Consulting Party, we would appreciate a written response within 30 days from date of receipt, by email at Michael.will@dot.gov or by US Postal Service to 12300 West Dakota Avenue, Suite 380, Lakewood, CO 80228.

Please feel free to contact Nicole Winterton, Environmental Protection Specialist, by telephone at (720) 963-3689, or email Nicole.Winterton@dot.gov, if you have any questions.

Sincerely yours,



J. Michael Will, P.E.
Project Manager

Enclosures:

- Kapaa Bridge Area of Potential Effects (USGS Map)
- Kapaa Bridge Area of Potential Effects (Aerial Imagery)
- On CD: Draft Archaeological Inventory Survey Report for the Kapaa Stream Bridge, Kapaa and Kealia Ahupuaa, Kawaihau District, Kauai

cc (with enclosures on CD):
Christine Yamasaki, HDOT
Todd Nishioka, HDOT
Jessica Puff, SHPD
Dr. Susan Lebo, SHPD
Mary Jane Naone, SHPD Kauai Lead Archaeologist

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
Suite 380
Lakewood, CO 80228
Office: 720-963-3647
Fax: 720-963-3596
Michael.Will@dot.gov

August 26, 2015

In Reply Refer To:
HFPM-16

TO: KEITH YAP
KAUAI-NIIHAU ISLAND BURIAL COUNCIL
P.O. BOX 1571
KAPAA, HI 96746

FROM: J. MICHAEL WILL, P.E.
PROJECT MANAGER

SUBJECT: NATIONAL HISTORIC PRESERVATION ACT, SECTION 106 AND HAWAII REVISED STATUTES, CHAPTER 6E CONSULTATION
MAILIHUNA INTERSECTION AND KAPAA BRIDGE REPLACEMENT PROJECT
KAWAIHAU DISTRICT, KAUAI ISLAND, KAPAA AND KEALIA AHUPUAA
PROJECT NO. HI STP SR56(1)
TAX MAP KEY: (4)4-6-014:024, (4)4-6-14:092 KUHIO HIGHWAY RIGHT-OF-WAY, (4)4-6-14:090 KUHIO HIGHWAY RIGHT-OF-WAY, (4)4-6-014:031, (4)4-6-014:033, (4)4-6-014:999 MAILIHUNA ROAD RIGHT-OF-WAY), (4)4-7-008:042, (4)4-7-003:999 KUHIO HIGHWAY RIGHT-OF-WAY, (4)4-7-003:001

Dear Mr. Yap:

The Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD), in partnership with the State of Hawaii Department of Transportation (HDOT), is proposing to improve the intersection of Kuhio State Highway 56 (HI-56) and Mailihuna Road and replace the Kapaa Stream Bridge north of the intersection. The project area is located near Mile Post (MP) 10 on HI-56 (see attached Area of Potential Effects USGS Map for project location). The proposed project is considered a federal action and undertaking, and will comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (2006), as well as Hawaii Revised Statutes (HRS) Chapter 6E. We would like to invite you to participate in the Section 106 consultation for the proposed project in accordance with Title 36 of the *Code of Federal Regulations*, Section 800.3, by providing information and/or by requesting to be a consulting party. This letter also initiates consultations in accordance with HRS Chapter 6E.

Overview of the Undertaking

The proposed project would reconfigure the intersection of HI-56 and Mailihuna Road to improve traffic operations, safety, and local access and would replace the existing Kapaa Bridge to maintain the Kapaa Stream crossing on HI-56 as a safe and functional component of the regional transportation system for highway users.

The intersection of HI-56 and Mailihuna Road would be reconfigured to improve traffic operations and pedestrian safety. Two alternatives are being considered: the first is a traffic signalized intersection and the second is a roundabout intersection. The traffic signalized intersection would provide a 170-foot northbound left turn lane and a 145-foot southbound right turn lane to Malihuna Road from HI-56. The roundabout would be a single lane circle providing access to HI-156 and Malihuna Road. Marked crosswalks and devices would be provided on all approaches, and improved signage and street lighting would be installed to improve safety and mobility for non-motorized modes crossing HI-56. Drainage improvements would also be installed to prevent flooding at the intersection.

The existing Kapaa Bridge does not meet the current roadway standards for width and bridge standards for live loading and seismic requirements, and the existing bridge railings and approach railings do not meet current crash test requirements. Therefore, the bridge will be demolished and replaced with a single-span 190-foot long bridge. The new structure would be approximately 4 feet wider, accommodating two 12-foot travel lanes, two 8-foot shoulders, and guardrails on both sides. The bridge is a typical post-World War II bridge and is not considered eligible for listing on the National Register of Historic Places (NRHP).

During construction, Kapaa Bridge would be closed to traffic, and a temporary bypass road and bridge would be constructed makai of the existing bridge, between the existing bridge and the adjacent pedestrian trail, to maintain traffic over Kapaa Stream. The adjacent pedestrian bridge would not be impacted.

The proposed improvements at the HI-56 and Mailihuna Road intersection would occur within HDOT right-of-way and adjacent private property. The Kapaa Bridge replacement would occur entirely within HDOT right-of-way. Construction parcels (temporary easements) would be needed for the temporary bypass road, construction zone, and staging areas.

No historic resources eligible for listing on the NRHP have been identified within the permanent improvement or temporary construction limits to date; however, an archaeological inventory survey of the project is currently being conducted.

Area of Potential Effects

The archaeological and historic architectural Area of Potential Effects (APE) is illustrated in the attached APE Aerial Imagery map, and includes both temporary and permanent impact areas.

Cultural, Archaeological, and Historical Studies

To provide you information on the cultural, archaeological, and historical settings of the project area, we are including on CD the archaeological study prepared for this project: Archaeological Inventory Survey Report for the Kapaa Stream Bridge, Kapaa and Kealia Ahupuaa, Kawaihau District, Kauai.

Consultations

Section 106 notice/advertisement will be included in The Garden Island. Native Hawaiian organizations and Native Hawaiian descendants with ancestral, lineal, or cultural ties to, cultural knowledge or concerns for, and cultural or religious attachment to the proposed project area are asked to provide a response within 30 days of notification.

Letters for this project are being sent to the following NHOs as well as other organizations with knowledge of cultural, archaeological, and historical resources:

- Office of Hawaiian Affairs
- Kauai Historic Preservation Review Commission
- Kauai-Niihau Island Burial Council
- Queen Deborah Kapule Hawaiian Civic Club
- Hookipa Network
- Historic Hawaii Foundation

We welcome any comments you have on this project's proposed improvements or APE. We are particularly interested in any information you may have on the historic and cultural sites that have been recorded in the area, or other historic or cultural sites about which you may have knowledge. In addition, if you are acquainted with any person or organization that is knowledgeable about the proposed project area, or any descendants with ancestral, lineal, or cultural ties to or cultural knowledge or concerns for, and cultural or religious attachment to the proposed project area, we would appreciate receiving their names and contact information.

If you have information and/or would like to be a Consulting Party, we would appreciate a written response within 30 days from date of receipt, by email at Michael.will@dot.gov or by US Postal Service to 12300 West Dakota Avenue, Suite 380, Lakewood, CO 80228.

Please feel free to contact Nicole Winterton, Environmental Protection Specialist, by telephone at (720) 963-3689, or email Nicole.Winterton@dot.gov, if you have any questions.

Sincerely yours,

J. Michael Will, P.E.
Project Manager

Enclosures:

- Kapaa Bridge Area of Potential Effects (USGS Map)
- Kapaa Bridge Area of Potential Effects (Aerial Imagery)
- On CD: Archaeological Inventory Survey Report for the Kapaa Stream Bridge, Kapaa and Kealia Ahupuaa, Kawaihau District, Kauai

cc (with enclosures on CD):
Christine Yamasaki, HDOT
Todd Nishioka, HDOT
Jessica Puff, SHPD
Dr. Susan Lebo, SHPD
Mary Jane Naone, SHPD Kauai Lead Archaeologist

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
Suite 380
Lakewood, CO 80228
Office: 720-963-3647
Fax: 720-963-3596
Michael.Will@dot.gov

August 26, 2015

In Reply Refer To:
HFPM-16

TO: PAT GRIFFIN
KAUAI HISTORIC PRESERVATION REVIEW COMISSION
C/O KAUAI PLANNING DEPARTMENT
4444 RICE STREET, SUITE A473
LIHUE, HI 96766

FROM: J. MICHAEL WILL, P.E.
PROJECT MANAGER

SUBJECT: NATIONAL HISTORIC PRESERVATION ACT, SECTION 106 AND HAWAII REVISED STATUTES, CHAPTER 6E CONSULTATION
MAILIHUNA INTERSECTION AND KAPAA BRIDGE REPLACEMENT PROJECT
KAWAIHAU DISTRICT, KAUAI ISLAND, KAPAA AND KEALIA AHUPUAA
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Dear Ms. Griffin:

The Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD), in partnership with the State of Hawaii Department of Transportation (HDOT), is proposing to improve the intersection of Kuhio State Highway 56 (HI-56) and Mailihuna Road and replace the Kapaa Stream Bridge north of the intersection. The project area is located near Mile Post (MP) 10 on HI-56 (see attached Area of Potential Effects USGS Map for project location). The proposed project is considered a federal action and undertaking, and will comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (2006), as well as Hawaii Revised Statutes (HRS) Chapter 6E. We would like to invite you to participate in the Section 106 consultation for the proposed project in accordance with Title 36 of the *Code of Federal Regulations,* Section 800.3, by providing information and/or by requesting to be a consulting party. This letter also initiates consultations in accordance with HRS Chapter 6E.

Overview of the Undertaking

The proposed project would reconfigure the intersection of HI-56 and Mailihuna Road to improve traffic operations, safety, and local access and would replace the existing Kapaa Bridge to maintain the Kapaa Stream crossing on HI-56 as a safe and functional component of the regional transportation system for highway users.

The intersection of HI-56 and Mailihuna Road would be reconfigured to improve traffic operations and pedestrian safety. Two alternatives are being considered: the first is a traffic signalized intersection and the second is a roundabout intersection. The traffic signalized intersection would provide a 170-foot northbound left turn lane and a 145-foot southbound right turn lane to Malihuna Road from HI-56. The roundabout would be a single lane circle providing access to HI-156 and Malihuna Road. Marked crosswalks and devices would be provided on all approaches, and improved signage and street lighting would be installed to improve safety and mobility for non-motorized modes crossing HI-56. Drainage improvements would also be installed to prevent flooding at the intersection.

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- Queen Deborah Kapule Hawaiian Civic Club
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If you have information and/or would like to be a Consulting Party, we would appreciate a written response within 30 days from date of receipt, by email at Michael.will@dot.gov or by US Postal Service to 12300 West Dakota Avenue, Suite 380, Lakewood, CO 80228.

Please feel free to contact Nicole Winterton, Environmental Protection Specialist, by telephone at (720) 963-3689, or email Nicole.Winterton@dot.gov, if you have any questions.

Sincerely yours,

J. Michael Will, P.E.
Project Manager

Enclosures:

- Kapaa Bridge Area of Potential Effects (USGS Map)
- Kapaa Bridge Area of Potential Effects (Aerial Imagery)
- On CD: Draft Archaeological Inventory Survey Report for the Kapaa Stream Bridge, Kapaa and Kealia Ahupuaa, Kawaihau District, Kauai

cc (with enclosures on CD):
Christine Yamasaki, HDOT
Todd Nishioka, HDOT
Jessica Puff, SHPD
Dr. Susan Lebo, SHPD
Mary Jane Naone, SHPD Kauai Lead Archaeologist

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
Suite 380
Lakewood, CO 80228
Office: 720-963-3647
Fax: 720-963-3596
Michael.Will@dot.gov

August 26, 2015

In Reply Refer To:
HFPM-16

TO: KIERSTEN FAULKNER
HISTORIC HAWAII FOUNDATION
680 IWILEI ROAD, DOLE OFFICE BUILDING, SUITE 690
KAPOLEI, HI 96707

FROM: J. MICHAEL WILL, P.E.
PROJECT MANAGER

SUBJECT: NATIONAL HISTORIC PRESERVATION ACT, SECTION 106 AND HAWAII REVISED STATUTES, CHAPTER 6E CONSULTATION
MAILIHUNA INTERSECTION AND KAPAA BRIDGE REPLACEMENT PROJECT
KAWAIHAU DISTRICT, KAUAI ISLAND, KAPAA AND KEALIA AHUPUAA
PROJECT NO. HI STP SR56(1)
TAX MAP KEY: (4)4-6-014:024, (4)4-6-14:092 KUHIO HIGHWAY RIGHT-OF-WAY, (4)4-6-14:090 KUHIO HIGHWAY RIGHT-OF-WAY, (4)4-6-014:031, (4)4-6-014:033, (4)4-6-014:999 MAILIHUNA ROAD RIGHT-OF-WAY), (4)4-7-008:042, (4)4-7-003:999 KUHIO HIGHWAY RIGHT-OF-WAY, (4)4-7-003:001

Dear Ms. Faulkner:

The Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD), in partnership with the State of Hawaii Department of Transportation (HDOT), is proposing to improve the intersection of Kuhio State Highway 56 (HI-56) and Mailihuna Road and replace the Kapaa Stream Bridge north of the intersection. The project area is located near Mile Post (MP) 10 on HI-56 (see attached Area of Potential Effects USGS Map for project location). The proposed project is considered a federal action and undertaking, and will comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (2006), as well as Hawaii Revised Statutes (HRS) Chapter 6E. We would like to invite you to participate in the Section 106 consultation for the proposed project in accordance with Title 36 of the *Code of Federal Regulations*, Section 800.3, by providing information and/or by requesting to be a consulting party. This letter also initiates consultations in accordance with HRS Chapter 6E.

Overview of the Undertaking

The proposed project would reconfigure the intersection of HI-56 and Mailihuna Road to improve traffic operations, safety, and local access and would replace the existing Kapaa Bridge to maintain the Kapaa Stream crossing on HI-56 as a safe and functional component of the regional transportation system for highway users.

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The existing Kapaa Bridge does not meet the current roadway standards for width and bridge standards for live loading and seismic requirements, and the existing bridge railings and approach railings do not meet current crash test requirements. Therefore, the bridge will be demolished and replaced with a single-span 190-foot long bridge. The new structure would be approximately 4 feet wider, accommodating two 12-foot travel lanes, two 8-foot shoulders, and guardrails on both sides. The bridge is a typical post-World War II bridge and is not considered eligible for listing on the National Register of Historic Places (NRHP).

During construction, Kapaa Bridge would be closed to traffic, and a temporary bypass road and bridge would be constructed makai of the existing bridge, between the existing bridge and the adjacent pedestrian trail, to maintain traffic over Kapaa Stream. The adjacent pedestrian bridge would not be impacted.

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No historic resources eligible for listing on the NRHP have been identified within the permanent improvement or temporary construction limits to date; however, an archaeological inventory survey of the project is currently being conducted.

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The archaeological and historic architectural Area of Potential Effects (APE) is illustrated in the attached APE Aerial Imagery map, and includes both temporary and permanent impact areas.

Cultural, Archaeological, and Historical Studies

To provide you information on the cultural, archaeological, and historical settings of the project area, we are including on CD the archaeological study prepared for this project: Archaeological Reconnaissance Report for the Kapaa Stream Bridge, Kapaa and Kealia Ahupuaa, Kawaihau District, Kauai.

Please note that the study area indicated in the report is larger than the attached APE map. At the start of the project, we assumed a large study area so that field findings could inform the conceptual design process at an early stage to help avoid or minimize effects to potentially sensitive sites. An archaeological inventory survey is currently being conducted and will reflect the APE.

Consultations

Section 106 notice/advertisement will be included in The Garden Island. Native Hawaiian organizations and Native Hawaiian descendants with ancestral, lineal, or cultural ties to, cultural knowledge or concerns for, and cultural or religious attachment to the proposed project area are asked to provide a response within 30 days of notification.

Letters for this project are being sent to the following NHOs as well as other organizations with knowledge of cultural, archaeological, and historical resources:

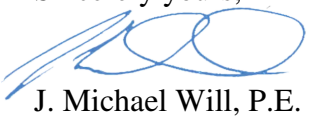
- Office of Hawaiian Affairs
- Kauai Historic Preservation Review Commission
- Kauai-Niihau Island Burial Council
- Queen Deborah Kapule Hawaiian Civic Club
- Hookipa Network
- Historic Hawaii Foundation

We welcome any comments you have on this project's proposed improvements or APE. We are particularly interested in any information you may have on the historic and cultural sites that have been recorded in the area, or other historic or cultural sites about which you may have knowledge. In addition, if you are acquainted with any person or organization that is knowledgeable about the proposed project area, or any descendants with ancestral, lineal, or cultural ties to or cultural knowledge or concerns for, and cultural or religious attachment to the proposed project area, we would appreciate receiving their names and contact information.

If you have information and/or would like to be a Consulting Party, we would appreciate a written response within 30 days from date of receipt, by email at Michael.will@dot.gov or by US Postal Service to 12300 West Dakota Avenue, Suite 380, Lakewood, CO 80228.

Please feel free to contact Nicole Winterton, Environmental Protection Specialist, by telephone at (720) 963-3689, or email Nicole.Winterton@dot.gov, if you have any questions.

Sincerely yours,



J. Michael Will, P.E.
Project Manager

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Office: 720-963-3647
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August 26, 2015

In Reply Refer To:
HFPM-16

TO: PUANANI ROGERS
HOOKIPA NETWORK
4702 MAILIHUNA ROAD
KAPAA, HI 96746

FROM: J. MICHAEL WILL, P.E.
PROJECT MANAGER

SUBJECT: NATIONAL HISTORIC PRESERVATION ACT, SECTION 106 AND HAWAII REVISED STATUTES, CHAPTER 6E CONSULTATION
MAILIHUNA INTERSECTION AND KAPAA BRIDGE REPLACEMENT PROJECT
KAWAIHAU DISTRICT, KAUAI ISLAND, KAPAA AND KEALIA AHUPUAA
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Dear Ms. Rogers:

The Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD), in partnership with the State of Hawaii Department of Transportation (HDOT), is proposing to improve the intersection of Kuhio State Highway 56 (HI-56) and Mailihuna Road and replace the Kapaa Stream Bridge north of the intersection. The project area is located near Mile Post (MP) 10 on HI-56 (see attached Area of Potential Effects USGS Map for project location). The proposed project is considered a federal action and undertaking, and will comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (2006), as well as Hawaii Revised Statutes (HRS) Chapter 6E. We would like to invite you to participate in the Section 106 consultation for the proposed project in accordance with Title 36 of the *Code of Federal Regulations*, Section 800.3, by providing information and/or by requesting to be a consulting party. This letter also initiates consultations in accordance with HRS Chapter 6E.

Overview of the Undertaking

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The existing Kapaa Bridge does not meet the current roadway standards for width and bridge standards for live loading and seismic requirements, and the existing bridge railings and approach railings do not meet current crash test requirements. Therefore, the bridge will be demolished and replaced with a single-span 190-foot long bridge. The new structure would be approximately 4 feet wider, accommodating two 12-foot travel lanes, two 8-foot shoulders, and guardrails on both sides. The bridge is a typical post-World War II bridge and is not considered eligible for listing on the National Register of Historic Places (NRHP).

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The proposed improvements at the HI-56 and Mailihuna Road intersection would occur within HDOT right-of-way and adjacent private property. The Kapaa Bridge replacement would occur entirely within HDOT right-of-way. Construction parcels (temporary easements) would be needed for the temporary bypass road, construction zone, and staging areas.

No historic resources eligible for listing on the NRHP have been identified within the permanent improvement or temporary construction limits to date; however, an archaeological inventory survey of the project is currently being conducted.

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Please note that the study area indicated in the report is larger than the attached APE map. At the start of the project, we assumed a large study area so that field findings could inform the conceptual design process at an early stage to help avoid or minimize effects to potentially sensitive sites. An archaeological inventory survey is currently being conducted and will reflect the APE.

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Sincerely yours,

J. Michael Will, P.E.
Project Manager

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Michael.Will@dot.gov

August 26, 2015

In Reply Refer To:
HFPM-16

TO: LIBERTA ALBAO
QUEEN DEBORAH KAPULE HAWAIIAN CIVIC CLUB
P.O. BOX 164
KAPAA, HI 96746

FROM: J. MICHAEL WILL, P.E.
PROJECT MANAGER

SUBJECT: NATIONAL HISTORIC PRESERVATION ACT, SECTION 106 AND HAWAII REVISED STATUTES, CHAPTER 6E CONSULTATION
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Dear Ms. Albao:

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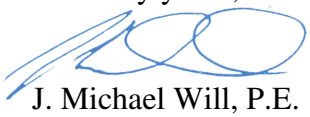

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cc (with enclosures on CD):
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Dr. Susan Lebo, SHPD
Mary Jane Naone, SHPD Kauai Lead Archaeologist

COUNTY OF KAUAI
PLANNING DEPARTMENT
4444 RICE STREET, SUITE A473
LIHUE, KAUAI, HAWAII 96766-1326

MEMORANDUM

DATE: October 28, 2015

TO: J. Michael Will, P.E.
Program Engineering Manager
Federal Highway Administration
Central Federal Lands Highways Div.
12300 West Dakota Avenue, Suite 380
Lakewood, CO 80228

FROM: FOR Kauai Historic Preservation Review Commission

SUBJECT: Letter (8/25/15) from J. Michael Will, P.E., Program Engineering Manager, US Department of Transportation, Federal Highway Administration requesting to be placed on the Kaua'i Historic Preservation Review Commission agenda to discuss and review the Wainiha Bridges No. 1, 2, 3; Bridge 7 E; Kapa'a Stream Bridge; and Hanapēpē River Bridge.

This is to inform you that the Kauai Historic Preservation Review Commission (KHPRC) met on October 1, 2015 to discuss and review the proposed bridge projects submitted in accordance with the Section 106 Consultation.

The KHPRC appreciated the opportunity to comment on the project and received the documentation on the subject bridges. The comments offered by the KHPRC are contained in the attached minutes of the KHPRC meeting of October 1. 2015.
Please feel free to contact us should you have any questions regarding this matter.

Mahalo.

cc: State Historic Preservation Division

attachment

KAUA'I COUNTY HISTORIC PRESERVATION REVIEW COMMISSION
Līhu'e Civic Center, Mo'ikeha Building, Meeting Room 2A/2B

MINUTES

A regular meeting of the Kaua'i County Historic Preservation Commission (KHPRC) was held on October 1, 2015 in the Līhu'e Civic Center, Mo'ikeha Building, Meeting Room 2A/2B.

The following Commissioners were present: Chairperson Pat Griffin, Anne Schneider, Stephen Long, Charlotte Hoomanawanui, Victoria Wichman, and Larry Chaffin Jr.

The following Commissioners were absent: Althea Arinaga, David Helder, and Kuuleialoha Santos.

The following staff members were present: Planning Department – Kaaina Hull, Shanlee Jimenez; Deputy County Attorney Jodi Higuchi-Sayegusa; Office of Boards and Commissions – Administrator Jay Furfaro, Support Clerk Darcie Agaran.

CALL TO ORDER

The meeting was called to order at 3:00 p.m.

APPROVAL OF THE AGENDA

Ms. Griffin: If there are no objections as we move to approve the agenda, I would like to place Items C.2., C.3., and C.4. at the end of the business today, rather than where they appear now. With that, may I have a motion to approve the agenda?

Ms. Schneider: I make a motion that we approve the agenda.

Mr. Chaffin Jr.: Second.

Ms. Griffin: Thank you. Ms. Schneider moved and Mr. Chaffin seconded the motion. All in favor? (Unanimous voice vote) Opposed? Hearing none, the motion carries 6:0.

APPROVAL OF THE AUGUST 6, 2015 MEETING MINUTES

Ms. Griffin: The Approval of the August 6, 2015 Meeting Minutes. Are there any corrections?

Hearing none. May I have a motion to approve?

Ms. Wichman: Move to approve.

Ms. Schneider: I second the motion.

Ms. Griffin: Ms. Wichman moved and Ms. Schneider seconded the motion. All in favor? (Unanimous voice vote) Opposed? Hearing none, we accept the minutes as written. Motion carries 6:0.

COMMUNICATIONS

Re: Letter (9/8/15) from Ronald A. Sato, AICP, Senior Associate, HHF Planners Regarding Environmental Reviews for Federally-Subsidized Public Hearing Projects (County of Kaua'i); Section 106 Consultation – No Effect Determination – Hale Hoolulu (Eld), TMK: 5-2-08:56; Hale Hoonanea (Eld), TMK: 2-1-03:17; Hale Nani Kai O'Kea (Eld), TMK: 4-6-14:105; Home Nani (Eld), TMK: 1-6-07:31; Kawailehua (Federal), TMK: 2-6-04:58; Kekaha Haaheo, TMK: 1-3-08:20 & 26.

Ms. Griffin: Item B.1., a letter from Ronald Sato regarding environmental review for Federally-Subsidized Public Housing Projects; Section 106 Consultation.

Mr. Chaffin Jr.: Where is that?

Ms. Griffin: It's at the end of the minutes, so it's…let's call it half an inch in.

Is there anyone in the public who is here to testify on the Federally-Subsidized Public Housing renovations? No. If there aren't comments at this point, may I have a motion to receive the communication?

Ms. Schneider: I make a motion that we receive the communication.

Ms. Griffin: Ms. Schneider has moved and Ms. Wichman has seconded the motion to receive the communication.

Mr. Chaffin Jr.: From HHF Planners?

Ms. Griffin: Yes. Discussion? Hearing none. All in favor? (Unanimous voice vote) Opposed? (None) The motion carries 6:0. Thank you.

UNFINISHED BUSINESS

Re: Letter (7/17/15) from Kimi Yuen, Senior Associate, PBR Hawai'i & Associates, Inc. informing the KHPRC of the Draft Environmental Impact Statement (EIS) for the Hā'ena State Park Master Plan that has been prepared pursuant to Chapter 343 of the Hawai'i Revised Statutes and Administrative Rules, Title 11, Chapter 200.

Ms. Griffin: Item C.1., Unfinished Business. The letter from Kimi Yuen, Senior Associate at PBR Hawai'i & Associates informing the KHPRC of the Draft Environmental Impact Statement for the Hā'ena State Park Master Plan. There is a memorandum in our packet, immediately after the HHF Planners letter. Kaaina, would you like to tell us about this, please?

Deputy Director Kaaina Hull: Yes, just real briefly. During the last KHPRC meeting, essentially the Hā'ena State Master Plan, the draft EIS, was being presented to you folks for your review and comment. The ultimate summary that happened at the meeting was there were some concerns, there were some statements, but overall there was a concern of having time to review the draft EIS in which the Commission wanted additional time to review it on their own and submit comments to the Department to essentially synthesize, and then get back to you folks for your review and action.

So the comments that you have before you now are what the Department received. The Department is in agreement with these comments and would recommend passage of, or adoption of those comments to be sent to OEQC for their inclusion in these communications for the draft EIS.

Ms. Griffin: And that's Office of Environmental Quality Control.

Mr. Hull: Correct. Sorry about that.

Ms. Griffin: Thank you. There is the two-page response. Is there a motion to adopt?

Ms. Schneider: I make a motion that we adopt the comments as Kaaina has stated them.

Ms. Griffin: Second? Larry Chaffin seconded. Anne Schneider made the motion. Discussion?

Mr. Long: This is about the Hā'ena Beach Park?

Ms. Griffin: It's the State Park Plan, yes.

Mr. Long: Right. I have some comments.

Ms. Griffin: About the draft of the memo?

Mr. Long: Not about the memo; about the plan itself.

Ms. Griffin: Okay.

Mr. Long: Is now an appropriate time for that?

Ms. Griffin: The motion has been made to adopt the comments as they were sent in to the Planning Department from any of us who sent them in, and to adopt them as written. So we should deal

with whether or not to adopt these; that's the motion. And then I will ask if there are other comments.

If there are no comments, the motion has been made to adopt this memorandum as written. All in favor? (Unanimous voice vote) Opposed? Hearing none, they are adopted. Motion carries 6:0.

Along with the letter, are there other issues? Stephen?

Mr. Long: Oh, thank you. I did have some additional thoughts or questions or comments regarding the Hā'ena Beach Park Plan. Is there a representative from the consultant or the State here?

Alan Carpenter: Yes.

Ms. Griffin: Mr. Carpenter, please identify yourself as well.

Mr. Carpenter: Hi. Good afternoon, Commissioners. I'm Alan Carpenter, Division of State Parks. So not to step backward, but if I may kind of give you a brief update on things that have happened from our side since the last time we met.

We were under the understanding that you folks were going to compile your comments and get it to us by the deadline, which was September 8th. We held a public meeting on August 19th. It was very well attended in Hanalei; over three hundred (300) people. It was a little contentious, and many people at that time asked for additional time to digest the plan because it is a very intimidating document as there is a lot in there and it's very complex. Subsequently we also received a number of written comments asking for an extension. We have, in fact, granted that extension to the public and we have a new date of October 9th to accept formal public comments. However, subsequent to that, we also met again with our Master Plan Advisory Committee and the consensus after that meeting was there's enough dissention and confusion in the community about the plan that the amount of time that we had given to digest it and the amount of time we spent presenting the plan in a public forum was not adequate. We agreed collectively that was, in fact, the case and that we would rather get this done right than get it done quickly. So we have internally, we're not putting a halt to the OEQC process, but we are going to take more time to engage with the community, have additional public outreach led by the Master Plan Advisory Committee who feel…they've invested so much in the plan that it's really their responsibility to take it out, obviously with State Parks support. We envision that process is probably going to allow for another six (6) months of discourse prior to taking the plan to the DLNR Board for finalization, so there is time. I'm not saying hey, give yourselves six (6) more months and get back to us, but we will continue to accept comments, particularly from agencies because of the complexity and the length of the plan, and our own, sort of, misstep in taking it out at such a late time. There was a lot of public interaction, but it was very early on and this has been like an eight-year process, so we feel that it's only fair to the community to extend it at this time.

Ms. Griffin: Well thank you. You will be getting a memorandum from the Historic Preservation Review Commission with our comments as it stands now. There are additional questions I think that you have.

Mr. Long: Yes, thank you. At our last meeting with you, and thank you very much for being here, I also understand that our responsibility is towards historical nature of comments, so I'm going to keep myself to that subject.

Mr. Carpenter: Thank you.

Mr. Long: I had a question about the resources that were mauka of the highway. How are those going to be handled and access to those?

Mr. Carpenter: That's a complicated issue because we have identified rock fall danger immediately of the cliffs, which includes the highway and a little bit makai of the highway. To back up a little bit, we originally envisioned taking jurisdiction of the highway from DOT, turning it into an interpretive pedestrian corridor, which would highlight the caves and the other sites mauka of the highway, as well as the lo'i to the makai side. We have pretty much committed, through a collaborative process with the community, to moving people away from the rock fall hazard, which is where that boardwalk trail comes in, in the plan, right. That trail is situated so that it's beyond the 0% rock fall hazard line; that was not originally part of our intent. So there will be no directed public access along the highway, which gives you the most direct views of, in particular, the two (2) wet caves. However, those caves will be interpreted from this trail, so there will be an interpretive waypoint along the way. In fact, there are a couple of advantages to the boardwalk, and this was something proposed by the folks who are working the lo'i; not by us. They direct people and they keep people in a single, sort of, file corridor away from the hazard zone, but also you are kind of immersed…this is both a plus and a minus…you're immersed in the lo'i system. You are walking right through it, so you get the best view of that cultural landscape because you're in the middle of it. But you also get a view of Makana, which is a very important cultural peak that is over lined at the whole park with tremendous significance; a view that you don't get when you're right up against the base of the cliffs and you're walking on that road. You can't see it. So it's another thing, you get to see a little bit more of Hā'ena's cultural landscape as you move. Now, we are not going to physically barrier anybody from walking down the road, but you will have to do so at your own risk. I think due to our primary mission of keeping people safe, we're not going to invite people to those caves.

Mr. Long: There are two (2) caves, the dry and the wet cave, down on the highway.

Mr. Carpenter: They are both wet; one (1) is higher than the other.

Mr. Long: Okay. And then up above, for decades we'd take the kids and go up, and there's this cave up there where you can go into.

Mr. Carpenter: Right. Okay, yes, the dry cave is back at the County Park.

Mr. Long: About 35, 40 feet up. So that's the cave we'd take our kids to; put lifejackets on them, take them through various caverns, which was fun.

Mr. Carpenter: Yes. It is and a lot of people do it. Technically, it's not allowed, right; swimming in the waters is not allowed, and we'll probably keep it that way. Again, that is right smack dab in the middle of the rock fall hazard zone, so we are not going to invite people to go up there. You know, it's a double-edged sword. You can go back and look at what we had to do with Kaliuwa'a, Sacred Falls on O'ahu, which is a very culturally important place to a lot of people, but the danger is so great that we felt that we had a duty to literally keep people out, so nobody can go there today. I don't know if it will come to that. I don't know if the risk in this area is of that magnitude. I know the engineers who do the study; I think they do good work. I haven't read the rock fall danger report cover to cover, and some of its just probability, so I can't say how great that risk is.

I know that when I go to places, I have a very, sort of, keen awareness of hazards now when I visit places. I see things differently now that I've seen all of these hazards in our own parks. I always use, sort of, the barometer of well, would I take my kids there? And I think I would. I would probably take my kids up there. But that's not a…you can't use my measure, right, so we have to go with what the report says, and if it says there's a high risk of somebody being injured or killed, we either have to mitigate that risk or move people out of the way. And that's, you know, we are going to move them out of the way and simply not invite them in. There's not going to be people chasing you up there and telling you to get out most likely, but staffing's a whole other issue.

I see you had a concern in here that the cost involved in implementing this is an issue. I think the first one was, is this ever going to happen? Will this Master Plan ever be completed? The Master Plan will be completed. Will it be fully implemented? I doubt it will ever be 100% implemented. It will be implemented in phases as funding allows, and I think little things hopefully will help the community realize that these are small changes that are for the good. We like to think that the whole process is going to be a community-based adaptive management strategy. So the community has been driving this from the beginning, but we have to accept it and we have to accept the liability that our decisions bring. Anyway, I hope…has that answered your question at all?

Mr. Long: Yes, thank you.

Mr. Carpenter: Alright.

Mr. Long: During your last presentation to us, you mentioned something about no restrictions for traditional gathering rights. I take that to mean if somebody in the neighborhood wants to go fishing, they got their fishing pole, they can walk down the highway and go fishing. So what kind of mechanisms are going to be in place to allow that to happen?

Mr. Carpenter: My guess is…I think the easiest way for us to implement that would be to have a Special Use Permit that people could get, probably annually. You come in, you give your reasoning behind your cultural attachment, your reason to get there, and that would be your pass for that year to get in. It wouldn't cost anything.

Mr. Long: Okay. I know that you are going to have to restrict the number of people by about half. We don't have the site plan up here, so what happens when somebody drives down to the end of

the road, and at what point are they told to turn around? I mean, is there a sign like the "Closed Bridge" barrier that says "Kē'ē Beach now full for the day"?

Mr. Carpenter: I think there are a number of ways that could happen, and I don't think we have the answer. This is largely dependent...the notion of setting a visitor limit, which is really breaking new ground, not just here, but anywhere. I mean, there's no National Park that does that, currently. We don't have a model to go on. All we know is there's too many people there now; too many cars and too many people. And it's having a detrimental effect on the resource and visitor experience. There are so many things that have to come together before we can even think about implementing that. So we have to have the issue of enforcement outside of the park. A shuttle is almost mandatory to be in operation if we are going to cut down the number of cars dramatically. To answer your question, I don't know exactly how it will work. Whether it would be you have to purchase an advanced ticket for any given day, or whether it would be all manifested right there by a control point and staff in the park; probably a combination thereof. There's a lot of scenarios envisioned in that plan, and I think that's part of the reason people are very concerned about it because it looks like we're just throwing out all of these things to confuse people, but we are really throwing out all of the these things because we are not sure which one is going to work. We want to be able to implement and adapt as we go to make sure that if we mitigate all of the impacts in the park, but create a whole bunch outside, that's not a success, right? So, we don't know, but it probably will start with limited parking and no visitor limit; that will be the first step. And we may implement a visitor limit without enforcement, and see how that works. I'm guessing it won't. Actually, out-of-state visitors might comply; I don't think locals will. There's a big question of local access, and we are hearing a ton about that. If we implement a visitor limit and we don't have the ability to discriminate between local and visitor, there will be times when locals will not be able to go. They will be turned around, too. We haven't figured that out yet. Although one thing we're pretty sure we'll do is there will be a peak period during the day when this limit will apply. Very early in the morning and late in the afternoon it won't, which means those who want to go there early to fish, those who want to run down the trail, go surf at Hanakāpī'ai, those who want to come and watch the sunset at 6:45 will be able to come in, as long as there's parking place available.

But again, to get back to your question, we don't have the perfect answer yet, but it's going to take experimentation, and hopefully a solution can be reached.

Ms. Griffin: Do you have a date for the next public meeting?

Mr. Carpenter: We don't. We do not yet.

Mr. Long: My final thought...and we don't have the site plan up here...

Mr. Carpenter: Do you want one?

Mr. Long: No.

Mr. Carpenter: Okay.

Mr. Long: But my consideration is that there ought to be some kind of a turnaround in the site plan; not a hammerhead, so people get there then it's the easy (inaudible).

Mr. Carpenter: There is a turnaround. There's a turnaround before you even enter the parking lot.

Mr. Long: Okay, that's all. Thank you.

Mr. Carpenter: Okay.

Ms. Griffin: Thank you so much. As the conversation and the plan potentially evolves, I assume you'll come back and see us, and we may well generate a second memorandum to you.

Mr. Carpenter: We would be glad to. We want to keep you folks involved. A lot of people think this plan was a done deal. I mean, one of the things was just the semantics for the fact that it was called a "Final Draft", but I mean, it's still a draft. We're still very open to modifying the plan, and I think we've already made some concessions. The plan that you see, it'll change. Most likely the development will be lessened. I can almost certainly say that, but we are going to hear more from the public before we make the final decisions.

Ms. Griffin: Great. Thank you so much.

Mr. Carpenter: Okay, thank you.

NEW BUSINESS

Re: Class IV Zoning Permit Z-IV-2015-41, Use Permit U-2015-40 and Variance Permit V-2015-6 to allow installation and height variance for a 53 feet high stealth telecommunications structure and associated equipment on a parcel located in Līhu'e, situated at the Tip Top Motel/Café and Bakery site, further identified as 3173 Akahi Street, Tax Map Key 3-6-006:073, Līhu'e, Kaua'i.

Ms. Griffin: So moving into New Business. Item D.1., Class IV Zoning Permit and Use Permit and Variance Permit to allow installation and height variance for a 53-foot high stealth telecommunications structure and associated equipment on a parcel located in Līhu'e, situated at the Tip Top Motel/Café and Bakery site, further identified as 3173 Akahi Street.

Mr. Hull.

Mr. Hull: Okay. Thanks Pat. For the Commission, this is a unique review for you folks. The structure itself is a new structure where it's going onto the Tip Top Café and Motel is actually not a historic structure. It's close to it; it is forty-seven (47) years old. In a few years it will be part of our inventory, but as of currently, it is not. To give you guys some background on why it is here before you folks for your review, the application was before the Planning Commission back in August. What Verizon was proposing to do is put a telecommunication tower there with the

antennas to meet customer demands, essentially. To take a few steps even further back, over the past several years, there have been an increasingly large amount of applications concerning telecommunication facilities. The vast majority of them have come to Kaua'i and the ones that have received approval are in the Agricultural Zoning District. One of the biggest issues that generally arises concerning these sites, because they are often high…they average generally at 70 to 100 feet, some of them go up to 150/160 feet…is the ability to stealth them because the telecommunications tower can have this fairly industrial look, and it also breaches into the horizon as impacts on the view plain. Over the past decade, the telecommunication industry has gotten very used to the fact that on Kaua'i, stealthing of these sites is very important. I'd say roughly 90% of the sites have some type of stealthing capability. Because the majority of them are in the Agricultural Zoning District, they are actually turned into what make them look like pine trees, essentially. A handful has come into the urban area, and those that have generally stealth themselves by going on an existing building of the necessary height and making like a full wall around the antennas that does not interrupt the transmission of radio frequency (inaudible). As demand for these sites increase, in particular because of data and the iPhone craze now, the telecommunication companies are increasing the amount of sites that they need in the urban area. When Verizon came with this application in Tip Top, the original proposal that they came with was, and I believe Shan handed it out to you guys, it's one of the paper ones that we just handed out today.

Ms. Schneider: The monopole?

Mr. Hull: Well actually the monopole is not what they originally proposed. I actually asked them to provide that to see essentially what it would look like with a monopole at that site. Ten (10), fifteen (15) years ago I think most applications that's what the Applicant would have proposed. But the telecommunication industry, like I said, has gotten very used to the fact that on Kaua'i, you have to kind of stealth in order to get review by Planning Commission. So they automatically came in with a stealth proposal, which is the other handout you folks have, in which it kind of just is that 55-foot high tower essentially.

Ms. Schneider: Steeple?

Mr. Hull: Yes. When the Department saw that in the preliminary review with them, we had actually informed them that they can submit that application, but given the protrusion in the horizon, the impact of what the Department deemed as somewhat monolific, the Department would probably be recommending denial on that application. So in looking at other strategies that have been utilized in the urban form on the mainland, per se, is the use of either a water tank or a clock tower is a fairly common strategy to stealth telecommunication facilities. In looking at that, we kind of had asked what a clock tower would look like, and they came back with a rendering, which you guys got in the original packet that was submitted to you guys last week. With that proposal, the Department did feel that did, in fact, blend with the urban form of the Līhu'e Town Core. It also served somewhat of a functional aesthetic in the sense that the clock would be functioning. We took it to the Planning Commission with a recommendation of approval. The Planning Commission, on August 25th, approved the site for telecommunication; however, they had concerns about the design. So ultimately, the Applicant has to return to them with a design

proposal that they feel is appropriate. Aesthetics is a very tricky subject to get into. If you have seven (7) Commissioners, you are probably going to have seven (7) different opinions on what's aesthetically appropriate. The Planning Commission actually referred this application to you folks to see what your design review would be of the site within a historical context, keep in mind, but that is why, essentially, you have been handed this application. It's not officially a historic site, but the Planning Commission is requesting that you review the site and do a design evaluation and possibly if you have a recommendation on one (1) of the options that the Applicant has given. So essentially you have three (3) options that the Applicant has given to you folks, which is…technically you guys have five (5) options, actually. You've got the three (3) that were previously transmitted to you; one (1) was…

Ms. Griffin: The clock tower, the silo, and the water tank.

Mr. Hull: The water tower. And then you also have these options, which were the original proposal, as well as just straight going telecommunication tower. The Department still holds by its recommendation to the Planning Commission that the clock tower is the most aesthetically appropriate for this area. However, it's here for your review and your comment, essentially.

Ms. Griffin: Thank you very much. Are there questions of Kaaina? Is the Applicant here?

Mr. Hull: She is.

Kathy O'Connor-Phelps: Good afternoon, Madam Chair and the rest of the Commission. I'm Kathy O'Connor-Phelps. I'm a consultant for Verizon Wireless who will be the carrier at this project. We are eager to get your input. We are willing to basically do any design to get it going and get it approved. I will say that the owner's preference is the clock tower. He's not crazy about the water tank and it's not good for co-location if you want to have another carrier utilize that site as well. I think, Mr. Hull, didn't you say that it was called the Times Square? He had looked in some documents from way back when and it called it the Times Square of Līhu'e, so I think the clock tower fits in just great with that. But if you have any questions, comments, kind of guide the Commission, otherwise you are going to end up with a pineapple. (Laughter in background)

Mr. Hull: She says that jokingly, but there was a request, essentially, to entertain looking at a possible pineapple design; a 50-foot pineapple.

Ms. O'Connor-Phelps: Yes. The landlord freaked.

Mr. Hull: To the Applicant's credit, she actually had their engineers take a look and see if that was even feasible.

Ms. O'Connor-Phelps: We did. It was basically going to look like the water tank with the crown on top of it, so it would not look right.

Ms. Griffin: Thank you. Are there questions of the Applicant? Larry?

Mr. Chaffin Jr.: We have two (2) packets of drawings. Which one are you talking about?

Ms. O'Connor-Phelps: The clock tower was the one that we revised based on Planning's comments, so that they would support the project; that's what went before Planning Commission in August. Planning Commission said hey, can you try a water tank, can you try maybe like a farm silo, something like that? We said absolutely, we can adjust those, so you should have the silo, I think we have a smokestack, which is basically the silo without a top, and then the water tank. If you need copies, I have extra.

Ms. Wichman: There's just the one that's just bare, with just the antennas.

Ms. O'Connor-Phelps: Is that the…? Yes. We are just showing a comparison. That's what a monopole, like Mr. Hull said, that's you know a fifteen-year ago design, but that's what they used to look like so they've come a long way. We are spending a lot of money to stealth the tower.

Ms. Schneider: Is this the final version of the tower?

Ms. O'Connor-Phelps: The clock tower?

Ms. Schneider: Yes.

Ms. O'Connor-Phelps: Yes. I mean, unless you guys have further comments and want something added to it.

Ms. Schneider: I think a little more overhang on the roof might make it a little more aesthetic.

Ms. O'Connor-Phelps: A little more overhang?

Ms. Schneider: Yes.

Ms. O'Connor-Phelps: Okay.

Ms. Griffin: What are the dimensions? We did get some plans, but they were reduced down to 8 ½ by 11, which is always a challenge.

Ms. O'Connor-Phelps: Oh, okay. If you want a bigger one, I have one (1). I can pass it around, but I can give you dimensions.

Ms. Griffin: Thank you.

Ms. O'Connor-Phelps: It is 12 by 12. So essentially it'll be a 12 by 12. It's not going to be all the way down to the ground. It'll have the four (4) posts, so he can still put his trash…he has a trash thing underneath there, so he can still utilize that space. And then the antennas at the top, behind, basically what it is, is a fiberglass that can shoot the signal through.

Ms. Griffin: Other questions of the Applicant?

Mr. Long: I have a comment. Since I have an iPhone, I'm in favor of more (inaudible) and stealthing them. (Laughter in background) My comments, aesthetically, are I support Anne's comment on more of an overhang.

Ms. O'Connor-Phelps: Okay.

Mr. Long: I wonder if you even want to do a horizontal soffit with a split pitch.

Ms. O'Connor-Phelps: Horizontal soffit.

Mr. Long: Horizontal soffit with a split pitch.

Ms. O'Connor-Phelps: Okay.

Mr. Long: Your guts of your equipment is all at the top.

Ms. O'Connor-Phelps: Right.

Mr. Long: So you really want a flattest roof as possible. So instead of coming down like this, one could have a horizontal soffit and/or split pitch if possible within that same volume.

Ms. O'Connor-Phelps: Okay.

Mr. Long: And the second thing is, in the interest of reducing the mass, since the guts of the equipment are at the top, and there probably needs to be some circulation ladder going up the pole.

Ms. O'Connor-Phelps: Yes, between antennas, has to maintain a certain space.

Mr. Long: I believe that, design-wise, one could reduce the mass by keeping the top 12 by 12, which you need to house the equipment, but then you could reduce the base supporting that to something like 8 by 8, which has precedence in other watch towers historically. They'll come up and they'll have a little build out up at the top. So those are my comments.

Ms. O'Connor-Phelps: The only concern I have with the 8 by 8, and certainly we would do it, is that if AT&T came in later on, they may be before you again to go back out because they have to fit their antennas in, and I'm not sure what their configuration would be.

Mr. Hull: To give some background for that, so what you see with these sites, and particularly because…not just because they're costly, but because they can be unsightly, the State of Hawai'i has an official policy, as well as the County, when they are able to do so that they allow for co-location of their competitors on the same pole. So Verizon puts a pole up, they are required to make it available for their competitors to put antennas at a lower level, as opposed to every single competitor having their own sites, and therefore, reducing the amount of poles that are on Kaua'i

or throughout the State. The only issue…I don't think that…that could be part of the aesthetic concern and that's essentially what we are looking at here today. The part of the concern that the Commission may have with it is, you are no longer able to co-locate competitors on that pole. And I say that in a very neutral manner in the sense that if that's what it takes to get this 50-foot tower aesthetically sited, then that's what it takes.

Mr. Long: If that doesn't work because of leasing considerations, one can reduce the mass by additional horizontal bands or a difference in material where you had something at the base and then something above; board and batten, and then stucco. I'm not asking to do any great architecture, just…you can break up the mass with different elements.

Ms. O'Connor-Phelps: Okay.

Mr. Hull: I think one (1) way that's possible, if say this body decides to move on the clock tower and recommend it, that in going back to the design review with the Planning Commission, perhaps the Applicant can have different variations, like you are saying Commissioner, one in which you have additional horizontal lines or ones in which you actually are shrinking the mass to 8 feet where appropriate.

Ms. Griffin: Are there other questions of the Applicant? I know that there are several different types of receivers. The one presented here, is that the only one that's available for this particular placement?

Ms. O'Connor-Phelps: You mean, did we go to other owners?

Ms. Griffin: I'm sorry?

Ms. O'Connor-Phelps: Did we go to other property owners? Is that what you mean?

Ms. Griffin: No. I'm talking about what it looks like on top. There used to be different types of transmitters, different sizes, and different looks.

Ms. O'Connor-Phelps: Yeah, I mean, what's inside is typical of what it is today. They are 8-foot antennas; they are rather large.

Ms. Griffin: Okay.

Ms. O'Connor-Phelps: And then what we call "remote radio units" gives it a boost in signal, and then surge suppressors, just in case there is a power surge.

Ms. Griffin: Any other comments? Is there anyone in the public who would like to testify?

Yes, come up Palmer.

Palmer Hafdahl: If I may, I'm Palmer Hafdahl. I'm just sitting here as an interested community member at the moment. The Līhu'e Town Core Plan has in it allowances for pedestrian access from the neighborhoods on Elua Street and Akahi Street to the highway. It included options, one (1) central on Elua Street and then heads up to two (2) connectors from Akahi to the highway. In visiting the site, it was clear that this alignment through the center of Tip Top property happens to line up with the Elua pedestrian pathway suggested. Because of another interest I have, I didn't want to see the possibility of a pedestrian connection, at that point, being missed. Maybe not this Board in terms of how it looks, but in terms of placement, maybe the suggestion that we allow that it be placed so that at a term when there is a willing landowner on both sides that a connection can be accomplished there; just looking forward from the planning standpoint. I appreciate hearing that it actually is elevated above grade and it potentially allows greater access beneath them, but it's just something that I'd like to encourage you to look at when it comes to the aesthetics. Maybe not bringing it down to the ground is a good point, and the possibility of providing that connection. It turns out that it may be a real principal place to make that much needed connection. Thank you.

Ms. Griffin: Thank you. Our Commission is always cautioned to be guided by the laws and standards of historic preservation, and not our own personal taste. So I wanted to say that even though Tip Top is not quite fifty (50) years old, Akahi and Elua Street are certainly eligible to be historic districts. Our Town Core plan, which was adopted as an ordinance in 2010, I believe, talks real specifically about mass and scale. All of these structures, including the clock tower, when you talk about 12 by 12, that's probably about the…this much table, and that's really big. I have some pictures. This one you probably can't see, but this is a historic building. This is the first part of the Civic Center that became historic almost a year ago. This is a historic building, the Kaua'i Museum, and that utility pole has got to be 50 feet tall. Here's another, the light post in front. The round building won't become historic for another two (2) years. This is the post that's directly across the street from Tip Top; it's 50 feet. So I'm not convinced that the, let's be honest here's a cell tower, isn't the best approach. That it's just what it is because I think when people go down Akahi Street, they don't see these poles. They see the houses, they see the offices, and the same is true if any of you who parked up on this side with the real tall lights. The Kaua'i Museum sees this because they've always wondered why the lights go back across in front of their property and then cross the street again, but again, we tend to see the museum; we don't see the utility poles. So for me, looking at this district eligible street that seems like the least intrusive; the actual cell tower itself, rather than these very large things. Also, it is a variance from the 30-foot height limit that is listed on Akahi and Elua Street. I did not attend that Planning Commission meeting and I haven't seen the transcript of the discussion, but it does look to me like that's the least aggressive kind of approach. I don't know. Any other comments?

Mr. Long: Yes. I'm picking up on what Pat is saying. There's another option that isn't presented here, which is the cell tower with some fake metal branches; like up on Princeville, Hoku Heiau, which is what you're talking about. I mean, you're just talking about the utilitarian bare pole, but if it's really…you don't see the telephone poles because you drive kind of like right by them and you don't look out your window up 50 feet. This is a little bit more in the distance, so you are seeing more of the silhouette, which is rectangular. Maybe there is another option, which is not to hide it in a non-existing bell tower. In the city, they hide them in existing church steeples and that kind of thing, which it already exists; it's hollow, that makes sense. Here you are building a really

large object to disguise something that's really small. So in picking up on what Pat's saying, maybe if we just disguise the silhouette of it, in the distance, make it kind of like a tree, or not like a big watch tower.

Ms. Schneider: Or paint it blue like the sky. (Laughter in background)

Mr. Long: That's a thought. Personally, aesthetically I'd have to take a look at both of them, but I think they are both really valid; both are reasonable solutions.

Mr. Hull: If I could interject, too. These are discussions the Department has had with applicants for at least the past fifteen (15) years now, as the person who has been in charge of telecoms for the past several years. First and foremost, concerning the massing, I can understand the Chair's concern with the fact that the clock tower…all of the other options have far more massing than the pole as presented. What I think you guys also need to take in to consideration is the pole as presented is more than likely not what the pole will morph into once co-location happens. The reason the massing is that large is because the antenna massing is that large, so ultimately what you could have here, because of co-location is you can see the top has all of those panel antennas which are roughly going to be about 12 feet in diameter. They are going to have their walls right around those antennas. There are going to be more coming down, and it's just going to have a feel of a very large, massive antenna pole after co-location happens, so that's one (1) of our concerns. And even above and beyond, I mean, the fight that we had with telecommunication carriers in the beginning to get them to realize that they should be stealthing these sites was the sense, and we would generally make the position that there's utility poles galore all around. They are exempted from our review, but why should the utility poles be allowed to not have to stealth, and they are. Our response is, what always has been and will remain to be, those utility poles do impact the view plain. They have become, somewhat, background noise to the passenger in the car or the pedestrian, but they kind of just fold into the landscape because we've just accepted them. But when you do actually look at them individually, they do impact the view plain. And because there's one (1) say unaesthetic structure does not legitimize you having the ability to now also put something that's going to have an impact on the view plain. So that's generally where we stood with these sites.

Concerning the monopine, because that has been, I'd say, the number one strategy for telecommunication carriers on the island, and that's because the bulk of the sites are in the Agricultural District and the monopine blends in with the agricultural area. The trees help mask it and it becomes camouflage with the trees in and around it. A tree pole in an urban environment would stand out a bit like a sore thumb; they really do. I mean, do they look like trees when you're zipping by on the highway, yes, but when you actually stop and actually look at these things, they're not quite the magnificent piece of artwork that one may think is going into these because they do stand out. The only reason they don't stand out is because they've got generally fifty (50) or sixty (60) trees around them. So that's just what I'll put in as the Department's two cents on the review.

Ms. Griffin: Thank you. Okay, so we have some choices. We can choose not to comment on the aesthetics, we can make a choice with one (1) of the presented options, or we can potentially ask

for another refined option, but we are responding to the Planning Commission's inability to decide on the options that they were given.

Ms. Schneider: Kaaina, either way they're coming for a height variance?

Mr. Hull: Yes, they came in for the height variance. Essentially, the Planning Commission approved the variance and approved the site. However, they wanted further input on the actual design of the structure.

Ms. Schneider: So could we ask them to come back with some refinement of the clock version?

Mr. Hull: Given the Applicant's timeline, it'll ultimately be if you can come back, Kathy, is essentially what I think they're asking.

Ms. O'Connor-Phelps: When do you…you meet again in…what are we in…

Ms. Griffin: First Thursday of each month.

Ms. O'Connor-Phelps: So of November? I mean, if that's what it's going to take to get you guys to let us move forward, then certainly. I mean, would we like to go to Planning Commission and be done and ready to submit it to Building Permits this year? Yes, we would obviously like that option better, but…

Ms. Griffin: Well if I can have a motion then we can discuss and then come to a vote.

Ms. Schneider: I make a motion that we ask the Applicant to come back with some refinements to the clock tower version.

Ms. Griffin: Is there a second? Hearing no second, that motion dies. May I have another motion?

Mr. Chaffin Jr.: I have a question. You mentioned trees surrounding this. Are these trees that you have planted or do they just happen to be there?

Ms. O'Connor-Phelps: We've done both. We've done it where there's been trees that have been existing, and then especially on the mainland in Southern California, a lot of palm trees. We do a lot of monopalms, and we are told to plant trees around it. This property is way too small. We would never be able to fit any landscaping. We're pretty tight as it is in there, and there's no…we actually thought about a monopine knowing that Kaua'i liked monopines, and like Mr. Hull said, I think it'll stick out too much. We'd love to do that; it's cheaper. (Laughter in background) My client would be very happy if it was a monopole even, but like Mr. Hull said, the photo sim is not showing what could potentially be co-locators on that pole.

Ms. Griffin: If we cannot get a motion to go forward, then essentially we are not going to make a comment. We will defer to whatever the Planning Commission decides. Is that the choice of the Commissioners?

Mr. Long: I'll make a motion. I move that we support the owner's inclination to support the stealthing of the cell tower in a clock tower construction, and that the mitigating elements on the clock tower proposal as submitted would be to revise the roof profile, perhaps a split-pitch and/or additional overhang, as well as reducing the mass of the tower with materials and other aesthetic elements, and that the Applicant come back before us and present those revisions.

Ms. Griffin: Is there a second?

Ms. Schneider: I'll second the motion.

Ms. Griffin: Alright. It's been moved and seconded that we support the owner by accepting the stealthing of the cell tower in the clock tower, mitigating the design to revise the roof profile, perhaps with a double-pitch and longer overhang, and possibly reducing the mass on the post section itself. Thank you.

Is there further discussion? Larry.

Mr. Chaffin Jr.: I would like to propose that we not tell them exactly what to do, but come back to us with various proposals, so that they're not just limited to this one (1) discussion.

Ms. Griffin: Great, and it did say "possibly" with those suggestions. Is there other discussion?

Ms. Wichman: Yes. I'd like to mention that I think the point that Paul brought up about the walkway that's part of the Līhu'e Town Core Plan, I think that needs to be addressed so that it's not excluded since that already is part of the 2010 plan, right?

Ms. Griffin: Would you like to amend the motion?

Ms. Wichman: I'd like to amend that. That the pedestrian connection should be included within this plan.

Ms. Griffin: So Victoria is moving to amend the primary motion by incorporating the Town Core Plan's pedestrian connection in the concept.

Mr. Hull: I'll just interject real briefly on that. I think you're within the purview of the Commission to say it should be considered. However, also knowing the fact that (1) the Planning Commission has already given approval to the site for a telecommunication facility and the actual requirements say of an access way would be considered an exaction, which Jodi would have to weigh in on, as far as whether you can do that after approval has been given, and then (2) that actual corridor requires, not only the Tip Top landowner giving approval to say an easement or handing the property over to the County, but as well as the abutting property owner as well, who is not part of this application. I'm not saying that the sentiment shouldn't be in the motion, but just to caution, as far as to keep it in the consideration realm.

Ms. Wichman: Okay, so maybe I misunderstood. Was the corridor or the pedestrian connection part of the plan?

Mr. Hull: It is part of the plan, but it also requires, essentially, either the willing landowners convey that land to the County, or establish an easement, or that the County go in there and condemn the lands for that corridor. It's a recommended connection to have, but in order for that connection to be established, it takes one (1) of those three (3) scenarios.

Ms. Wichman: Okay, I understand. So it hasn't been approved?

Mr. Hull: Yes.

Ms. Griffin: Would you like to withdraw your motion? Or…

Ms. Wichman: I was under the assumption that the pedestrian corridor was already part of it, so I'd still like to see that happen. Consideration?

Ms. Griffin: Would you restate the motion, please?

Ms. Wichman: My part of the motion? I would like to see consideration of a pedestrian connection that goes through the Tip Top properties as planned in the Līhu'e Town Core Plan of 2010.

Ms. Griffin: Is there a second?

Ms. Schneider: I second the motion.

Ms. Griffin: It's seconded by Anne Schneider. So the amendment to the primary motion is that consideration be given to future possibility of the pedestrian path crossing the property as shown in the Līhu'e Town Core Urban Design Plan adopted in 2010.

Ms. Wichman: Yes, thank you.

Ms. Griffin: Further discussion on the amendment? All in favor? (Unanimous voice vote) Opposed? Hearing none. Motion carries 6:0.

Going back to the primary motion, is there further discussion? All in favor? (Unanimous voice vote) Opposed? Hearing none, that motion carries 6:0 as well.

Ms. O'Connor-Phelps: Thank you.

Ms. Griffin: Thank you so much, Ms. O'Connor-Phelps.

Re: Garden Island Service Station (Aloha Petroleum Ltd.)
TMK: 3-6-06:89, Līhu'e, Kaua'i

Zoning Permit Z-98-16 for the Proposed Demolition of the Existing Shell Service Station.

Ms. Griffin: Under New Business, Item D.2., Garden Island Service Station (Aloha Petroleum Ltd.), Zoning Permit for the proposed demolition of the existing Shell Service Station.

Staff?

Mr. Hull: Good afternoon, again, Commissioners. Concerning the demolition of the subject service station, the Department has received the demolition application for the Shell Service Station. The site is not on the National or State Historic Registry; however, it is a historic site, as well as on the County of Kaua'i inventory. The profile that we gave to you folks is actually inaccurate, and I'll hand out the accurate profile. I believe the profile we handed to you stated 1942, when in fact it's actually 1930, when the structure was constructed. It has proven through our research to be one (1) of the prime architectural features here on Kaua'i concerning the roof in particular, as well as the overall site, but the roof, in particular, has proven to have significant historical and architectural significance. Actually, it was under consideration, I know, by this body, as far as recommending movement on nominating it to the State Historic Register. Ultimately, this is an application for you folks to begin discussions on. I think at this point, more than likely the Department, at the end of those discussions, will be recommending a deferral. And that is because it is a fairly complex process, and this is a very important building in the Department's eyes. With that, I'll turn it over to Pat because I know she has definite insight to the particular structure.

Ms. Griffin: Thank you. Are there questions of Kaaina?

Ms. Schneider: Kaaina, is there any way we can induce them to keep this building? Since it is iconic.

Mr. Hull: Yes. There are two (2) options, essentially, when you're looking at regulations, right? I mean, you're either going to use the stick or the carrot. The carrot being tax incentives and encouragement from this Commission or from other bodies to encourage the landowner to realize that they essentially have a gem within a rough right here that can be utilized for an array of different things. If that doesn't work, to use the regulatory powers essentially is as to how far you can actually deny a demolition, would lead to an interesting legal and philosophical debate, let's say, but it's not that the Department is going to not necessarily go that far. The Department itself feels that it is a very significant structure and is currently in the process…I have a draft letter that we are sending to the landowner; basically to highlight the site and say what a gem this place really is. Do you realize you have this site? Its significance in Hawai'i's history, and perhaps you may have other plans for it.

Ms. Schneider: Because we were thinking of having this walking tour on an app for Līhu'e, and that would certainly be one (1) of the highlights.

Mr. Hull: Definitely.

Ms. Schneider: I mean, it's like a Route 66 element that is here on Kaua'i.

Ms. Griffin: Is the Applicant here?

Mr. Hull: There's an interesting situation going on with that. Palmer Hafdahl has been working with the Applicant, but actually isn't authorized currently. He doesn't have an actual legal authorization to give official representation to this body, or any other body, on behalf of the Applicant. I'm not sure if he might be willing to testify as a member of the public that has insight to this application; he may or may not. But officially, there is no applicant present at the meeting today.

Ms. Griffin: Okay. Well, the next item is whether or not there is anyone in the public who would like to come up and testify.

Mr. Hafdahl: Aloha. I'm Palmer Hafdahl and I just want to say I have worked with this applicant. I submitted the application for them. I'm kind of their representative here on the island, and I met with them this week and have had ongoing conversations with them. At this point, my last meeting with them is they are happy enough to defer this a bit until they can get their ducks in a row as well, but they'd certainly like to hear the impressions and concerns of the Kaua'i Historic Preservation Review Committee and I'll take those notes back to them.

Ms. Griffin: Thank you.

Mr. Halfdahl: Oh, I did submit the historic review for them as well, so I understand the history of it. On a personal note, my first trade was plastering and I always admired this building's roof as it is done with what you call a scratch coat and plaster. It's the first (inaudible) you take at a three-coat plaster job. It's a unique application. Whether it's historically significant for that, I don't know. It's significant to one plasterer's son, but that's all. (Laughter in background)

Ms. Griffin: Thank you, Palmer. You all had in your packets, and I'm sure you've read the information. There was a wealth of information about the history of the building, the exceedingly important architect, and a little bit in absence, but the ownership. Does anyone have comments?

Mr. Long: I have a question. I noted that there's a demolition permit applied for, so has there been any development plans submitted?

Mr. Hull: No. It just looks like, currently, it's just a straight demolition of the building. Our understanding is that they are essentially having some maintenance issues with the building and there isn't really any plan to necessarily replace the building, per se.

Ms. Griffin: Excuse me, but the letter from Palms Hawai'i does say that the demolished structure will be replaced by an iconic service station canopy and pumps assembly.

Mr. Hull: Yes, but as far as the canopy that is referenced in the letter, as well as the pumps, they still plan to maintain, as we understand it, still maintain the site as a fuel station; however, an actual

enclosed structure, as we understand it, has not been proposed, nor have we even seen the plans or received official plans and application for the new fueling station.

Ms. Schneider: Is there a deadline for you on the demolition permit? Or can you hold that until…?

Mr. Hull: Demolition permits are done via the Building Permit route, which do not have timeline requirements.

Ms. Griffin: Other questions/comments?

Mr. Chaffin Jr.: I'm very concerned that we don't get into trying to design a project that we are not qualified for. We don't have all of the information.

Ms. Griffin: Thank you. Other comments or questions?

Well Kaaina's right. I do have some things to say about this, and it relates to our kuleana; the history of the place and our place. The State Historic Preservation Division. Have we heard from them?

Mr. Hull: No, they haven't commented at this point. It has been referred to them, but they have not commented yet.

Ms. Griffin: Okay. As part of the Architectural Division of SHPD, they say, in Hawai'i, historic places play an important role of tangibly linking the diverse modern population with Hawai'i's unique history. They simultaneously serve as places of memory for those who have always lived here, while educating newcomers about the island's collective history. Preservation is important; not only is it a means to remember our past, but to inspire our future.

In what we do, we talk about places being historically significant. (1) If the building is historically or architecturally significant in terms of its period, style, method of building, construction, or use of indigenous materials. I'd like to suggest that this building absolutely fits that category. In the late 20's and early 30's, as the automobile age, the automobile era, was really coming into its own. Places around the Country really exhibited their own special locations by these service stations. This particular station, the owner, who was the big political boss here at the time, Senator Charles Rice, Charles Atwood Rice, Charlie Rice, and he owned that and they were looking at what we now call plantation-style, double-pitch roof, the old Dickey roof that we know. The architect, Guy Rothwell, who was one (1) of the designers of Honolulu City Hall, Honolulu Hale, and did a lot of other buildings, thousands of them in Hawai'i in his time, he said no, our heritage is Hawaiian. This roof, looking like a thatched roof, is a way to represent that, and using moss rock. At the time it was known as Kōloa moss rock. They actually dyed the roof a yellow to look like straw, and the island for the pumps, red pumps, they painted green. Some of you may remember Al Duvall, and they hired him to actually do the landscaping with native palm trees, native vines, and things. It's an architecturally significant building; there is not another one like it in the universe. (2) The building is a significant reminder of the cultural or architectural history of the City, State, or Nation. Yes. (3) The building is associated with the significant local state or national event, or

the building is associated with one (1) or more significant historic persons or events, or with the broad architectural, cultural, political, economic, or social history of the City, State, or Nation. And definitely, this service station talks about the significance that was starting to happen with transportation, which was the first thing. The automobile era is what got us out of our separate kingdoms at the different plantations. This building represented that in our own local style. (4) The building is one (1) of the few remaining examples of its period, style, or method of construction. Yep. (5) The building is identified with the person who significantly contributed to development of the City, State, or Nation. It was actually a territory then, but Senator Charles Rice was absolutely significant in taking Kaua'i and Hawai'i for all the time he was in the Senate, and his work on the Statehood Commission twice, and what he was doing, so yes. (6) The building is identified as the work of a master builder, designer, or architect whose individual work has influenced the development of the City, State, or Nation. I told you a little about Guy Rothwell, and Palmer Hafdahl has nicely included information, or SHPD, the State Historic Preservation Division. (7) The building value is recognized for the quality of its architecture and it retains sufficient elements showing its architectural significance. Yes. When we go past, there's that unsightly, yellow, 18-inch high belt around the roof that really mitigates the view of it, but it's still there. The fact that there's been malign neglect of upkeep and maintenance does not take away from that fact. (8) The building character is in a geographically definable area possessing a significant concentration or continuity buildings united in past events or aesthetically by planner physical development. That block, when you start right across here where you have the old Garden Island Motors that we call it western, but commercial vernacular in Hawai'i that faults front is there you go up with the Garden Island Newspaper that's now Kaua'i Pasta, that's from the 20's, and then the service station. Next to it, the year after, was built that Spanish mission-style exuberant Līhu'e Theater, which was, at the time, really special; 800 seats they put in in 1930. The place is really special and it is special that the choice was to represent our Hawaiian culture; not simply the dominant plantation era. The National Parks, there's a preservation brief on the preservation and reuse of historic gas stations. It says that historic features that contribute to the character of a gas station should be preserved. A gas station structural form is of central importance. The outward appearance of a historic gas station; its size, shape, massing, and scale often reflected a particular locale. It gives the historic property its identity and contributes today to a public understanding of when and why it was constructed. The roof's configuration pitch and covering are also important, and it goes on. I mention all of that because we have a very historic building in a historic neighborhood in Līhu'e, the County seat and heart of Kaua'i as we call it. We also have the Līhu'e Town Core Urban Design Plan that stresses that the architectural and building design guidelines serve to respect and reinforce the historic context of this neighborhood, and they are talking about the Kūhiō Highway neighborhood. They are intended to protect the various architectural styles and character of existing buildings; that new buildings should be designed to relate to the larger communities, streetscape, and neighborhood by striving to be contextually integrated within the community. Under "Roofs," in this section, it says, new construction or major renovation shall utilize roof shapes, materials, and colors which are compatible with the existing traditional and historic architectural character of the area. I would like to know, from you, if this building is destroyed, is it within the possible use to…because the Town Core Plan says that a Use Permit has to be granted for gas stations. So if this building is destroyed, will any new place be non-conforming with…if it's purposely demolished, will it be non-conforming with the plan and our ordinance?

Mr. Hull: Under Chapter 8, which is the previous zoning ordinance for this area, if it's voluntarily demolished, then I believe no. They would, therefore, have to obtain a Use Permit. But the Town Core Plan overrides Chapter 8 on this, so there is a possibility that actually a Use Permit would be required for any further development, or I should say, any further use of the site after it's been removed from use during that time of demolition. There is a possibility that could go through the Use Permit process; would be required I should say, but we would have to look into that further and particularly, we would have to work with Jodi to get a legal analysis of the non-conforming use being able to continue without a Use Permit. Or the flip side of that, the non-conforming use being required to therefore have to get a Use Permit after demolition.

Ms. Schneider: It wouldn't be grandfathered in?

Mr. Hull: And that's what I'm saying. We have to check on that.

Ms. Schneider: Yes, because if they rebuild it within a year, usually it would be grandfathered.

Ms. Griffin: But they're not talking about rebuilding. They're talking about doing something else.

Mr. Hull: And that one (1) provision year you're speaking to, Commissioner Schneider, is concerning acts of God, essentially. If the structure is destroyed by a storm, they have one (1) year to construct it, but if they voluntarily raze the building, under that particular Code Section, they cannot build it. But because the Town Core Plan is much more of a recent adoption, we would have to clarify that, really.

Ms. Griffin: In that case, I suggest that we do defer until next month when we will have more information; both about the possibilities for this site. Hopefully some possibilities for maintaining this tremendously historic structure and possibly the Applicant here as well. If you agree, I would entertain a motion to that effect.

Ms. Schneider: I make a motion that we defer until we hear something back from the Applicant and make some pitch to try to get them to keep the building.

Ms. Wichman: I second.

Ms. Griffin: It's been moved and seconded that we defer until we hear something back from the Applicant and can discuss with them the possibilities of keeping the building. Discussion?

Mr. Chaffin Jr.: Yes. I'm concerned that the owner…that we're putting criteria on the owner that may not be financially in his or her favor.

Ms. Griffin: Other discussion?

Ms. Schneider: Is that in our kuleana?

Ms. Griffin: No. We are here for historic preservation, not cost, but it's always important.

Mr. Chaffin Jr.: I think you have to consider that.

Ms. Griffin: Thank you. Other discussion? Hearing none.

Mr. Hull: If I could clarify for Commissioner Chaffin, too. Ultimately what goes on with review at the Historic Preservation Commission is the KHPRC serves in an advisory capacity, and would serve in an advisory capacity to either the Planning Director if we're reviewing a Class I or over-the-counter permit, or to the Planning Commission if we're reviewing a Use Permit or Class IV Zoning Permit. That analysis does get taken into place particularly with some reviews at the Planning Commission level where they do take into discretion, as long as it's not a variance that you're talking about, but as far as exactions or requirements made upon applicants and the potential over-exacting, if you will, on a particular application. So that type of review is done, but I'll also defer to what Chair Griffin pointed out is that the purview of this Commission is really to look at the historic qualities and the historical resources and whether or not things like preservation or adaptation can be utilized. So I wouldn't worry too much about the financial side of it being that there will be another review of it, be it at the Planning Commission level or be it at the Planning Director's level, that you don't necessary have to worry about at this point. Just to, somewhat, unlay that concern.

Ms. Griffin: Thank you for that explanation. Is there other discussion? Hearing none. All in favor? (Unanimous voice vote) Opposed? (None) The motion carries 6:0. Thank you, and we'll look forward to your report next month.

Re: Letter (8/25/15) from J. Michael Will, P.E., Program Engineering Manager, US Department of Transportation, Federal Highway Administration requesting to be placed on the Kaua'i Historic Preservation Review Commission agenda to discuss and review the Wainiha Bridges No. 1, 2, 3; Bridge 7 E; Kapa'a Stream Bridge; and Hanapēpē River Bridge.

Ms. Griffin: Okay. Item D.3., New Business, letter from Michael Will, P.E., Program Engineering Manager, US Department of Transportation, to discuss and review Wainiha Bridges No. 1, 2, and 3; Bridge 7 E; Kapa'a Stream Bridge; and Hanapēpē River Bridge.

Staff, is there any…?

Mr. Hull: We don't have a report on these particular ones. I think they are not actually coming for any zoning permits. This is disclosure before you for their 6E Review Process.

Ms. Griffin: Thank you. Applicants?

Nicole Winterton: Hi. I'm Nicole Winterton. I'm the Environmental Manager from Federal Highway Administration, Central Federal Lands. We planned to come before you last month, so we have had some updated project planning, so we did update some presentations for you. We figured you would appreciate the latest and greatest information, so we'll pass that out.

Ms. Griffin: Terrific.

Ms. Winterton: I'll just go ahead and get started, if that's okay, while he's handing that out.

Ms. Griffin: Please.

Ms. Winterton: Like I said, I'm with the Federal Highway Administration, Central Federal Lands. We are a division of Federal Highways that does planning, environmental compliance, design, engineering, and construction management oversight of transportation projects. We typically work in the Federal lands, within or access to Federal lands, such as National Parks and National Fish and Wildlife Service Refuges. We've developed a partnership with the Hawai'i Department of Transportation. Over several years, we've partnered up on some infrastructure jobs here in Hawai'i, and have worked closely and developed a good relationship with HDOT; I'll abbreviate. We've developed into a five-year Memorandum of Agreement to deliver a program of projects with HDOT to help them deliver some critical infrastructure jobs, and also enter in a Peer-to-Peer Partnership with both agencies learning from one another the delivery, programming of jobs, and construction management of jobs. We have several projects on several different islands, but what we are here to talk about are the projects that we have here on this island.

So the project that I thought that I'd start with, if it's okay with you all, is the Wainiha Bridges Project. As part of this partnership, we have four (4) projects on this island. We've also partnered with an A&E, Architectural and Engineering firm, to support us on delivery on a lot of the projects. The Wainiha Bridges Project is a little bit unique, so I'll primarily talk about that project. CH2M Hill is helping support the engineering and compliance for the other bridges on the island, so I'll hand it over to Kathleen Chu, with CH2M Hill, after we talk about the Wainiha Bridges. We also have representatives from Mason Architects and Cultural Surveys Hawai'i, who are providing support from the historic architecture side of things and the archaeological side of things, so if questions come up, they are here to help (inaudible) their purview.

Ms. Griffin: Before you start, just so I'll know whether we can go through or not, is there anybody that's in the public that's going to want to testify on any of these bridges?

Okay, then we'll just go through one to the other. Thank you.

Ms. Winterton: Okay, great. So I think going through the Wainiha Bridges Project, if you want to just kind of run through the slides with me, I think I pretty much covered the role of FHWA in this project. I really wanted to talk about that because I think you probably seen or heard from projects that are federally funded and worked with the division where in those roles, traditionally, HDOT is more the delivery agent for that project and FHWA acts as a Federal agency for the 106. In this project, we are doing the actual design engineering, so we are the lead agency for Federal. These are federally funded jobs, so they are subject to Federal compliance, so Section 106. They are also State projects on the State route, so they're also, you know, with compliance for the State laws as well.

A little bit of project background for the Wainiha Bridges. They have a pretty long background; these are the bridges. We've actually been on this part of the island talking about it here tonight, so Wainiha Bridges 1, 2, and 3, which are the last one-lane bridges on your way to Hā'ena on

Kūhiō Highway, the north shore section. The original Bridges 1 and 3 were constructed in 1904. The stream channel kind of carved a new path, and in 1931 we had a new bridge added. Tidal storms damaged the bridges in '46 and '47, so then we had a new period of significance with new bridges added in this timeframe between the 50's. Bridges 1 and 2 were replaced, and then we had...oh, I'm sorry, we had all of the bridges replaced, and then in '66 we had the east span of Bridge 3 replaced. So just a little bit of background. We have, kind of, two (2) periods of significance with these bridges that were in this location. In 2004, the Bridge 2...so they go in order, Bridge 1 is the eastern most bridge, and then 2 and 3 are two (2) bridges that operate essentially as one (1) single-lane bridge, so just a little bit of background on that. These bridges suffered damage from storms in 2004, and Bridge 2 was replaced. Under inspection in 2007, they were in a pretty bad state of disrepair, so there was an emergency proclamation for the Governor to replace the bridges. HABS (Historic American Buildings Survey)/HAER (Historic American Engineering Record) was done at that time, and new prefabricated modular steel structures that we refer to as Acrow bridges are in there now. That was placed as a temporary measure to secure funding for the permanent replacement, and also to get through the compliance and engineering of that.

If we go to the next slide, just a little bit of reference, this is Bridge 3. In the lower right-hand corner, that's the existing bridge that's there now; that's the Acrow Bridge that we refer to. In the upper left-hand corner, that's the 1950's structure, the historic bridge that was present before that removal in the 2000's.

Central Federal Lands came into this project and there was a lot of background on it. What we really tried to do is seek to understand. There's very strong interest in this project. We have a significant road; the north shore section of Kūhiō Highway is listed on the National Register, and also on the State Register. Also, we knew coming into this that it was important to come up with a context sensitive design, so Central Federal Lands really spent time meeting with the community on the north shore, as well as the Hanalei Roads Committee to really understand what was important, as far as the aesthetic, the natural, the cultural features, so that we could try and develop the goals for the project. Through that process, and I think in the old presentation from last month, I really kind of went through the issues that we've heard from the public. If you're interested, I'd be happy to expand. But we heard a lot of different feedback on how the bridges are operating, and developed a purpose and need for the project. The primary purpose is essentially to provide permanent replacement bridges for the temporary Acrow bridges that are out there. We also identified opportunities to improve operations, manage the maintenance requirements, and also to balance project improvements with the character of the historic roadway corridor. There are issues with sight distance and visibility crossing the bridges. We heard that the rail spacing of the steel bridges is difficult, and I've experienced it, too. It's difficult to see through and across. There are maintenance concerns with vegetation overgrowth affecting site distance. When they had to put those temporary bridges in, they also had to raise the grade of the road a little bit. So all different factors that we identified. We identified a lot of opportunities. One (1) other important thing that we also identified was the significance of the roadway, so it became a balancing act of evaluating what our project transportation goals were, with also the context of the roadway, but also just the aesthetic and natural values that are really important to the community. In kind of reviewing the historic significance and some of those project goals and improvements, we really tried to step

forward a process, and this is where we really would like the Commission's feedback, and this is what we presented. We had our most recent public meeting on September 15th. We've stepped through an alternative evaluation process, and we're preparing an environmental assessment for the project, and identified alternatives based on what we heard. We don't think that we are going to carry forward for analysis and we'd like the Commission's feedback on that. And also on the flip side, alternatives that we'd like to really move forward with analysis, so preliminary design feedback as we move forward with that process.

Moving forward, we identified a lot of opportunities for developing of the alternatives based really on the feedback that we heard and some of the engineering evaluation, which was the sight distance, traffic calming considerations. We heard interest in narrow bridges to help slow the traffic, accommodation of vehicle loads and navigation of emergency vehicles across and between the bridges; we heard feedback on that. Maintenance requirements, the aesthetics compared to historic roadway, historic alignment of the roadway, and then other design criteria and guidelines. Whenever we build new infrastructure or work on infrastructure, we have to document anything that we're doing that deviates from standards and guidelines.

Some of the opportunities, and this is through past coordination with HDOT before we were involved with the Hanalei Roads Committee, was replacement of those Acrow bridges, lowering of the roadway and bridge profiles to improve the sight distance to get it back to a little bit more like it was before, incorporating bridge rails that are shorter and more open than those on the temporary Acrow bridges to address some of that sight distance problem, and then a very minor alignment improvement between Bridges 2 and 3.

On the flip side, moving forward to the next slide, we did hear feedback on the challenges crossing those one-lane bridges, so there were recommendations on replacing the Acrow bridges with two-lane bridges so that you don't have that stop controlled traffic situation. We also looked at this because this is the standard design recommendation that if you were coming at a project today somewhere else in the world, this would be the recommended alternative for the type of roadway we have and the traffic number. However, considering the historic context and the current roadway operating and safety conditions, we're able to apply design exception to eliminate having to create two-lane bridges. Currently, that's being evaluated as an alternative to dismiss from further analysis, so we would certainly like feedback on that.

Ms. Schneider left the meeting at 4:37 p.m.

Ms. Winterton: Another option considered, which is always a consideration on a bridge project because you're crossing a stream is to replace the bridges with one-lane bridges on a new alignment. So that allows you the opportunity to build your new bridge, maintain traffic on your existing bridge, and then switch the traffic and take out the bridge. Basically, it shortens your construction period. We looked at that and it might provide some cost savings and time savings, but it didn't really outweigh some of the other disadvantages from the alignment change, and it didn't really offer design advantages. It's not like it was the ultimate improvement to make everyone see across and between the bridges. At this point, we anticipate dismissing that alternative from further evaluation.

So really where we're left is replacing the Acrow bridges with new one-lane bridges on a similar alignment, so that's closely matching the historic alignment with just a slight minor improvement on the tweak and curve between Bridges 2 and 3. As I mentioned before, we will have to have a design exception because typically one-lane bridges are usually only considered on very low-volume roads, but based on the conditions, the engineering team felt that could be justified. And as I mentioned before, lowering the profile of the road and the bridges to get it back more to the historic conditions. Then, as part of the National Environmental Policy Act process, we do need to carry forward the no action and no build alternative.

A lot of the feedback from the community was interest in width and design considerations, so we looked at a lot of different factors, such as the Design Controlling Criteria; what recommendations are for lane width, shoulder width. We considered functionality; how vehicles can get across the bridges and between the bridges. Potential maintenance considerations for whichever bridges are out there. Pedestrian and bicycle safety; we heard was important. Driver perception and expectation; how they are able to operate on the roadway. And also the historic alignment considerations. They were all kind of factors, and advantages and disadvantages of different varying widths.

Ms. Schneider returned to the meeting at 4:39 p.m.

Ms. Winterton: What you see before you, and what I provided ahead of time with some of the layouts provided for each of the three (3) bridges is, where our team is looking at, as far as reviewing of DOT and Federal standards, what some of the conditions are out there, and that is essentially a 14-foot clear width. It's a precast concrete girder bridge. On the slide, I have some of the lengths. So essentially you have, similar to the historic conditions, a single-span bridge for Bridge 1, approximately 50 feet, single-span for Bridge 2, and then three-span approximately 178 feet for Bridge 3. There are the historic piers in the water, but they are not actually functioning right now. The Acrow Bridge actually spans them, so for permanent replacement bridges, we would need piers to support that length of bridge.

Ms. Griffin: So you'd leave the old pier, but construct new ones? Is that what you're…?

Ms. Winterton: Actually, the recommendation is to…because what we need to do is match the hydraulics and the hydraulic opening with lowering the bridge, so the recommendation is to have a three-span structure with two (2) piers in the water similar to how the historic bridges were, but to put the new piers in and to remove the historic piers. So where exactly they would line up is still being evaluated because obviously they can't put it right where the old ones are.

Ms. Schneider: What is the timeline for this? When would you be doing this?

Ms. Winterton: We aim to get through the environmental compliance process winter/early spring, and then move towards completion of the design and securing the permits. It depends a lot on funding priorities with the State, but we find that as soon as we get everything done and ready to go, the money tends to appear.

Ms. Schneider: What's the duration for doing this?

Ms. Winterton: Okay, so I include that a little bit later, but I should add that...and I didn't include...our memorandum agreement with all of these projects with HDOT is essentially to do the full delivery and construction, and turn the facility back over to HDOT by 2018. So our goal is to get all of the projects that we are working with completed in 2018. The construction approach is a challenge on these projects, and I'll talk a little bit about that later, but the anticipated timeframe, to be conservative, was two (2) years.

Ms. Schneider: And you're going to improve the sight lines for entry and exit of the bridge? Because that's really the problem now.

Ms. Winterton: Yes. So that's the goal, to improve that, but I clarified to the extent possible because there are constraints in this location, and that goes to that balancing act of improvements while maintaining consistency with historic. Are there any questions on that?

On the following two (2) slides, I have a photo of the existing Bridges 2 and 3, and a rendering of what we were thinking about for Bridges 2 and 3. Some of the feedback that we've heard, and I would love the Commission's feedback as well, you know, is really the community has grown to appreciate those 1950's bridges. From an engineering perspective, when you look at the type of the rail spacing and some of the challenges with the sight distance, it actually does provide opportunities for improvements with that type of rail design. With consideration of the design standards, we always like to have crash-tested rail when we do improvements. So we have identified a crash-tested rail that sort of plays off a little bit of the historic rail. It's a structural steel tube rail, and this rail here it's called the Wisconsin Type. We went back and forth on vehicle rail only versus vehicle combo rail, and landed on a vehicle rail, which is a little bit lower and part of that is opportunities for that improvement to the sight distance. It's top-mounted, and max post spacing is 6'-6", which is that max amount that you would want to put it towards to still meet the crash-test standards. We'd probably seek to get close to that again because that visibility through the bridge is problematic.

Construction strategies. As I mentioned, the anticipated duration of construction is two (2) years, and it's depending on funding. Because these are bridges crossing the streams, it is a little bit hard, so we are talking about evaluating site conditions and how we can maintain traffic, and it's shifting the existing Acrow bridges, using them for construction, and shifting them makai to build the new bridges on alignment, and accommodating emergency access through construction. But there would have to be delays and very short-term closures for different milestones, such as moving the bridges. Another challenge for construction is leading up to these bridges, the three (3) original historic bridges crossing different streams, these are the Waioli, Waikoko, and Waipa Bridges, these are load restricted, and construction vehicles and equipment tend to be heavy. So we have evaluated this as a construction challenge, and the current recommendation is...because we do not want to affect the historic integrity of those original bridges, is to provide temporary bridges adjacent to or over so as to not touch the original bridges.

I have here, the second to last slide here, Waioli…the approach is evaluating the site conditions, utilities, right-of-way, and opportunities of where these bridges could be placed under temporary conditions would be…Waioli, mauka of the existing; Waipa, makai of the existing; and Waikoko is a very short structure right on the coastline, and there we have an opportunity to actually go up and over the existing bridge, so building behind on each side and going up and over because we really don't want to negatively impact any historic structures.

The next steps are…we really want to get feedback, continue the design process, and refine engineering through different coordination with you all, the public, we're getting feedback from the public, SHPD, and other interested parties, and prepare the analyses and the reports, and prepare an Environmental Assessment.

Any questions? Comments?

Mr. Chaffin Jr.: Yes. I would appreciate getting this package in advance. You reviewing it in front of us is difficult for me.

Ms. Winterton: Okay. I apologize for that. I did provide a presentation in advance for the last meeting; a lot of the information is similar. And we provided the drawings for each of the bridges. So we actually…in preparation for the public meeting, really took an extra step. We've done a lot of coordination with HDOT to get to a comfort level. There is a pretty big deviation from what is typically the recommended design approach, and so we were seeking to get feedback from the public as well, and I just wanted to give the latest and greatest information. Feel free to absorb this information. We'll take comments through the process, really.

Ms. Schneider: I appreciate that you've taken into consideration what those bridges looked like originally.

Ms. Griffin: Other comments? Thank you. In a general way, it's for those of us who have dealt with roads and bridges for twenty (20) years or more. Having context sensitive solutions roll right off your tongue, you know, is music. To be talking about protecting the historic bridges, rather than all of the reasons why it's too expensive, it can't be done, the people are going to fall through, you know, height limitations, materials, but hearing the "can do" aspects is really a pleasure. I must say that with the Hanalei Roads Committee that they are consulting and in agreement is a really important component to this historical review. They know about the roads up there, and bridges. Thank you.

So moving along to Hanapēpē.

Kathleen Chu: Hello. Good evening, Madam Chair and Commissioners. I'm Kathleen Chu with CH2M Hill, and if you can switch to your next presentation packet. I'm going to talk about three (3) bridges this evening; the Hanapēpē River Bridge, the Kapa'a Stream Bridge, and Bridge No. 7E. I'll stop between each one so you guys can provide your comments on it.

Ms. Griffin: Thank you.

Ms. Chu: Again, thank you for allowing us to share this information with you and getting your feedback. Moving on to Slide 2, the Hanapēpē River Bridge is located on Kaumuali'i Highway. It's State Route 50 at Mile Post 16.5 in Hanapēpē. This bridge crosses Hanapēpē River and it's located between Hanapēpē Road to the east and Puolo Road to the west.

On Slide 3, this is a map showing the areas of potential effect for this project. I believe you received this in advance as well.

Again, just to share with you some of the project background on Slide 4, the existing bridge was built in 1938, and it's a three-span reinforced concrete bridge. It measures 275 feet from the backface-to-backface of the abutments, and has an out-to-out bridge width of 38 feet. Right now it doesn't meet current roadway or bridge design standards. It does not meet any live load or seismic requirements as well. The existing bridge is classified as structurally deficient and functionally obsolete. In addition to the substandard load carrying criteria, it also has been identified as scour critical. Recently, and I guess in the past, too, there's been inspection of the existing timber piles. I'll go into more on the timber piles on Slide 5.

There's been inspection. The DOT does inspection on the bridges every two (2) years. In 2007 and 2008, the existing pier and abutment foundations were...inspection was performed by Nagamine Okawa Engineers. In this inspection, this is where they first, I believe, noticed the undermining at both of the pier foundations and one (1) of the abutment foundations. Just in those two (2) years in 2009, they really noticed that some of the scour at these foundations has increased. Also, one (1) of the remaining unseen timber piles...there's been a lot of rot or marine infestation. They are not sure of the exact cause, but the timber piles, their load carrying capacity has diminished greatly. More recently, the DOT asked KAI Hawai'i structural engineers to go out there after a heavy storm in 2012. They noticed that one (1) of the timber piles has completely been disconnected with the concrete cap, and another one of the piles, 80% of its circumference was gone. The timber piles that are below ground, the structure capacity of those cannot be accessed because they are under water and in the ground. Right now, the DOT does monitor the top of the pier elevations just to keep an eye on the bridge. Secondly, the bridge rail has deteriorated and it does not meet current bridge standards. You can see from some of the pictures that it is decaying. Okay?

So on Slide 6, I wanted to share with you some of the alternatives that are being considered; one (1) is rehabilitation. As I mentioned earlier, the bridge is structurally deficient, and is scour critical, and the timber piles are decaying, so it needs a new substructure. The bridge needs a new foundation. There is no way we can maintain the existing foundation, so it does need a new substructure. In regards to the superstructure of the bridge, it does need a new deck. The bridge needs new bridge rails. It does need to be widened and it needs to be upgraded in regards to seismic and load carrying capacity. So that's a pretty extensive rehabilitation. It's practically all new bridge parts. The replacement is also one (1) of the options. And as Nicole mentioned, no build is also a requirement, just through the NEPA process.

I'm going to expand a little bit more on the replacement option, which is on Page 7. This is the alternative that the project team is leaning towards, just based on the information I shared with you

on the rehab option. One (1) of the goals is to design with as little change as possible. With the bridge structure, we are looking at two (2) different types of, kind of, aesthetic alternatives. The new substructure would be drilled shafts. It would have new pier foundations. It would be 308 feet long and 52 feet wide, so the 52 feet width allows for two (2) 12-foot lanes, two (2) 8-foot shoulders, and the two (2) 5-foot sidewalks. We would match the existing alignment and the profile as much as possible. We are not planning any vertical changes. We are going to continue to meet the 35 mile per hour posted speed limit, and there is no change in the 100-year storm event, so hydraulically it's still good. Right now there is an existing 12-inch waterline, a 12-inch sewer line, and existing electrical and telecommunication lines on the bridge. Those would be maintained as well. The construction strategy for the new bridge would be to place a temporary bridge on the mauka side. The temporary bridge would be 28 feet wide to maintain two-way traffic. We do know this is a very important route and it's important to maintain the two-way traffic.

The next few slides show you just some visualizations and some pictures. The first on Slide 8, this is a picture of the existing bridge. Then on Slide 9, this alternative shows a bridge that most closely resembles the existing bridge. It has an arch fascia that resembles the arch on the bridge now. Then Slide 10 shows the more traditional bridge structure that's also being considered, and this is a straight girder. Okay.

We did have a public meeting on September 17th. About thirty-five (35) members from the public attended. The questions that they asked were primarily ensuring that the temporary bridge could maintain access for their loads because there is a lot of concern with access to the landfill, and also access to the Pacific Missile Range. They were in favor of a new structure that would address any load carrying concerns as well.

In regards to the bridge rails and the end post, on Slide 11, on the west side of the bridge it appears that the bridge end post has been rehabilitated in the past. The ends were altered by the installation of a flushed concrete barrier which transitions into your traditional metal guardrails. On the east side, one (1) of the end posts has also been rehabilitated, but on the south east end, the end post on the makai side, the existing post there has been maintained; existing radius cavetto molding is still there.

Slide 13 shows a rendering of our proposed bridge rail. Again, we had to look for a bridge rail that would meet Federal Highways and the DOT crash-test standards, so this one here is a Texas Balustrade. It would be 42 inches high to meet bridge rail standard height for bicyclists. It is the same bridge rail that's out there on the Līhu'e Mill Bridge. This rendering here just shows you how the end post transitions would look as well.

I'm here to answer any questions or get any of your feedback.

Ms. Griffin: Commissioners, questions?

Mr. Chaffin Jr.: On the alternate drawings you have, are there any estimated costs?

Ms. Chu: Well the arch fascia is more expensive. I don't know the exact cost. There is another handout, an 11 by 17, which shows you the Alternative 1 and the Alternative 2. Also, another 8 ½ by 11, which shows how the fascia would be put in place.

Ms. Griffin: Other questions? I have one (1) question. What is the current width of the bridge did you say?

Ms. Chu: The current width is 38 feet, so I believe its two (2) 11-foot lanes and the 5-foot sidewalks, that's existing.

Ms. Griffin: I know in Kaua'i's Land Transportation Plan there was a view to eventually expand Kaumuali'i Highway all the way out. I'm wondering if this 52 feet wide…tell me what the 16 feet of shoulders is for, and additional 10 feet of sidewalks.

Ms. Chu: Well the 5-foot sidewalk…there's an existing 5-foot sidewalk on both sides of the bridge today, so we're putting back the existing sidewalk. The shoulder, it is primarily a safety. It's for if vehicles get stuck, for vehicles to pull over. There is no intention with this project for this to become an expansion of the two (2) lanes. I don't think the extension of a four-lane highway extended that far west.

Ms. Griffin: Yet. (Laughter in background)

Ms. Chu: At least in the 20-year long range plan. (Laughter in background)

Ms. Griffin: Okay. Also, on the railings, the existing bridge has a very interesting…I don't remember seeing another with this profile on Kaua'i; it's very 30's, deco-ish. It was not possible to do anything similar to this that would still meet Federal Highway standards?

Ms. Chu: You know, we did work closely with Federal Highways to find a bridge railing that had gone through crash testing that would most closely resemble the existing bridge rail. The Texas Balustrade was the closest that we could find with an opening. I know the opening is not quite the same.

Ms. Griffin: Yes. It's an arched opening rather than this…

Ms. Chu: Right, it's kind of a cross, yes. If we were to develop a new…this project would not be able to develop a new bridge standard and have it go through all of the crash testing that's necessary. So the Texas Balustrade is the one that most closely resembles this.

Ms. Griffin: Other questions?

Mr. Long: Well I have a comment about that response. On a number of our bridge projects, we've been working with DOT. Is it Mike?

Ms. Griffin: Most likely it's Donald Smith.

Mr. Long: Yes. So we've asked them to replicate various bridge railings, and they've been able to do that. It appears to me that we have one (1) existing bridge railing and you went through some books to try to get as close as possible because you wanted to find something that has already been crash-tested; yet, wouldn't it be possible to take a look at the design so that we could get something that replicated the existing?

Ms. Chu: I believe the bridge rails that the DOT have installed in place have been crash-tested; I mean, that would be a requirement. They would not be able to install a bridge rail that had not been…well definitely none with Federal funding. It probably is one that they were able to find that is extremely similar to the existing rail.

Mr. Long: But not…sort of similar, but not really like it.

Ms. Chu: Right, I understand.

Mr. Long: So I would like to ask that DOT come back to us with a design of a railing that's identical to the existing; a replication of the historical railing within the certain guidelines, which we have been able to do in the past, rather than look in a book for a railing that has been crash-tested that sort of looks like it.

Deputy County Attorney Higuchi-Sayegusa: I think these folks are here kind of to…through the process under the Federal laws, under requirements, reviewing cultural and historic resources. I would suggest that you folks make your comments, and then I'm not sure if…requiring the return…I'm not sure how that's going to affect your folks' processes or…I mean, if that could be accommodated.

Ms. Chu: Our primary goal tonight is to receive consultation and receive feedback. Some of the next steps are…we are in the midst of doing our environmental documents. There is a goal to have the environmental documents completed by the end of the year. There has been some preliminary engineering that's been advanced; primarily just to determine what any impacts would be. We hope to have a draft EA out by the end, but we are also consulting with SHPD, so I think the process is going to…

Ms. Winterton: Yes. I mean, I can't speak to what it takes to create a totally new rail. I could bring this, this is great input, and bring it back to our structural engineers to go and revisit, but I know they went through a pretty robust exercise to evaluate crash-tested available rails. It is a unique rail, and that's why it's hard to land on that close exact match. We can, again, revisit that, and I don't know if it's an opportunity to create a brand new rail though because of the robust process to get crash testing. With the infrastructure that we're providing and the speeds, I mean, that's the goal to have something that meets the standards. So I think the exercise was pretty robust, but we could definitely take that input, take it back, evaluate, and look at that. It sounds to me like the feedback that I'm hearing is that aesthetics related to the existing rail is extremely important to the Commission.

Mr. Long: As I look at it, you're designing a whole bridge, and we're just talking about the railing; I mean, you have to design everything about that bridge. So to design a railing that passes crash-test ought to be part of your exercise in as the way I look at it.

Ms. Nicole: Yes. I mean, I think that it's more complicated than that to go through…I mean, they go through years and years and years of crash testing through the National Highway Traffic Safety Administration. So I think there are certain parameters that they can, maybe, tweak when it still meets the standards like I was talking about Wainiha and the spacing and stuff like that, so we could take that feedback and provide it to the structural engineers and see what's possible.

Mr. Long: Yes. I mean, on a design level, art deco is rectilinear and this railing has an arch in it, so you're actually taking away part of the cross section of the railing by introducing an arch. So maybe there are certain parameters of railing and steel and volume that your designers could take a look at?

Ms. Nicole: Okay, yes. That's good feedback.

Ms. Griffin: Other comments?

Okay, moving right along.

Ms. Chu: Okay. So the Kapa'a Stream Bridge on Slide 14. This one is located at Mile Post 9.8 on Kūhiō Highway, State Route 56. It's on the east side of Kaua'i. This project also includes improvements at Kūhiō Highway and Mailihuna Road intersection, which is located approximately 550 feet south of the bridge.

The next slide, Slide 15, shows the area of potential effect for this project.

On Slide 16, some of the project background. Kūhiō Highway is a two-lane undivided highway with existing lane widths of 12 feet and shoulders on either side of the bridge range between 4 to 8 feet. There is an existing deficient two-span bridge that was built in 1953. It's also classified as being functionally obsolete. This one also has substandard load carrying capacity, and it doesn't meet current seismic requirements. This bridge has also been identified as scour critical. On this bridge, the condition and the capacity of the existing timber piles is unknown because it's completely underground. This existing bridge is approximately 150 feet long and it is 38.5 feet from out-to-out. Again, it doesn't meet the current width requirements, and the bridge railings and approaches don't meet current crash test requirements. And the Kūhiō Highway and Mailihuna Road intersection is a three-legged stop control on Mailihuna Road. There is also this private driveway that accesses it to the northwest. Just a little bit more about the intersection, which is probably less of a focus for this Commission, but it does experience a lot of delay, and pedestrians currently are not accommodated. In the past, there has been seven (7) accidents within the project limits; none of them were fatal, but six (6) of them occurred directly from the people trying to make the left turn movement from Mailihuna Road onto Kūhiō Highway.

So for the bridge, on Slide 17, the three (3) primary alternatives that are being considered are the rehabilitation, the replacement, and the no build. Again, the existing deficient two-span bridge was built in 1953 starting with the substructure. The current condition and capacity of the timber piles that support the abutments and the center pier are unknown, so right now we just don't know what the adequacy of the existing foundation is. To rehab it, we would have to do a pretty extensive retrofit to the existing foundation to make this a viable option. For the superstructure, to rehabilitate the existing bridge, we would need to widen it, we would need to take down the bridge rails, and this would, again, be an extensive process to strengthen the girders and make it meet seismic requirements, as well as the load carrying requirements. Again, we discuss the no build option as it being a requirement, and then there's the replacement of the existing bridge.

Also on this bridge, with initial consultation with the State Historic Preservation Division, we had met with Architectural Historian Jessica Puff and she recommended that no survey work was needed for Kapa'a Stream Bridge. The bridge is not eligible for listing on the National or the Hawai'i Registers of Historic Places, but the final determination will be made by Federal Highways.

On Slide 18, we share with you what is being proposed. Again, the replacement is where the project team is heading. The new bridge structure would be a single-span concrete bridge, so we would remove the need of a center pier, and this would help hydraulically with flow conditions in the future. The new bridge would be 190 feet long with a deck width of 42.5 feet. This bridge...we're not putting back the sidewalk, we're putting back two (2) 12-foot lanes and two (2) 8-foot shoulders, so the bridge would be widened a total of 4 feet; that's 2 feet on each side. Basically, the bridge railing would be 2 feet, 8 inches high. It would have a 10-inch high metal railing for bike safety, so that would bring it to a total of 42 inches. This also most closely resembles the existing bridge rail. Again, the utilities would be maintained on the existing bridge. In order to construct it, we would place a temporary bridge on the makai side, so this would be between the existing bridge and the shared use path bridge.

Slide 19 is kind of the visual simulations of "Before" and "After" of what the bridge would look like. We did have a public meeting on this bridge on September 18th. As you can imagine, most of the focus was really on the intersection. We didn't have too many comments on the bridge.

Again, I'll just quickly go through the intersection. In relation to the intersection, on Slide 20, it is to improve the traffic operations by trying to help reduce delays and improve pedestrian safety at this intersection. For Mailihuna Road, the traffic does back up so it does have a level of service of F.

Alternative 1 is a roundabout alternative, which would be a single-lane roundabout with a truck apron. It would have splinter islands and marked sidewalks on each approach. The single-lane would be 18 feet wide with an inscribed circle diameter of 130 feet. This roundabout would alleviate congestion and reduce delay on Mailihuna Road, and it would also provide a yield control on all legs. It does have a much larger footprint than the existing intersection, so this alternative would require a lot more grading. It would require more retaining walls, and there would be more encroachment in the undeveloped coastal area.

The next alternative, on Slide 22, is your more traditional intersection with full traffic and pedestrian signals, and crosswalks. This alternative would provide a new northbound left-turn lane on Kūhiō Highway for those going onto Mailihuna Road, and a southbound right-turn lane as well. The northbound left-turn lane would provide 180 feet of storage, and then the southbound right-turn lane would provide 150 feet. So this alternative would include, again, the signal of the marked crosswalks and lighting to improve conditions for your non-motorized modes.

That's it for Kapa'a Stream Bridge, and the Kūhiō Highway and Mailihuna Road intersection. Do you guys have any comments? Questions?

None? Okay.

Mr. Long: I have a comment.

Ms. Chu: Oh, okay.

Mr. Long: Where the new proposed railing for Hanapēpē is similar to the existing, this one has no resemblance to the existing at all, in my opinion; it's like nobody even tried. The existing is somewhat art deco with bi-partake rectangular columns and a different rhythm in the railing, so I don't see any similarity between "Before" and "After", at all. It doesn't look like it was picked out of a book; it looks like it was just poured concrete, the new railing. So it wasn't like somebody said "oh gee, let's pick a railing that's similar to the existing", they just designed a straight pour.

Ms. Chu: Okay.

Mr. Long: So it's the same comment.

Ms. Winterton: Okay. I think that's good feedback, and I can take it back, again, to our structural engineers. I don't know if…I think with this bridge it didn't have as much…not to say that we moved more towards that with Hanapēpē, but Hanapēpē was a more historically significant structure, and I think that effort was very robust whereas I think the aesthetics were integrated into this, so I can bring that feedback back, but I don't think resembling or matching was identified as a goal, so if that's feedback that you think should be considered.

Mr. Long: I'd like to identify it as a goal.

Ms. Winterton: Okay.

Ms. Schneider: Keeping the same rhythm as the old bridge.

Mr. Long: Yes.

Ms. Schneider: As opposed to this very even spacing that you have on the new bridge.

Mr. Long: I mean, you have historical architects in your group, yes?

Ms. Winterton: Yes.

Mr. Long: So could you have that architect talk to that engineer? (Laughter in background) Because this is clearly designed by that engineer.

Ms. Winterton: Yes, I mean, well we have Barbara here who can speak, so really we have the meeting and the minds that come together.

Mr. Long: Are you the architect or the engineer?

Ms. Winterton: So I mean, I think it's that balance of when we have that historically significant structure, there's the balance of striving to maintain or play off of the aesthetics, but we are not trying to recreate history. I don't know if that was the primary goal on this job. I think it's more of a sensitivity towards the community, and the appreciation for the structure that they are seeing.

Mr. Long: Well, the structure that you see when you drive across the bridge is the railing.

Ms. Winterton: Okay.

Mr. Long: That's all you see. You don't see the girders, you don't see the…

Ms. Winterton: We didn't get a whole lot of feedback on the rail itself, except for the visibility out while you're driving.

Ms. Chu: Right, was to keep the bridge rail…to not make the bridge rail too high as to maintain some of the visual plains; the makai/mauka.

Mr. Long: Yes, I understand that. I would say that it's an architecturally significant feature on this bridge. When was this built?

Ms. Winterton: Preliminary coordination is that it is built in 1952 or '53; Barbara could chime in.

Mr. Long: Okay, so it was built in the 50's.

Ms. Winterton: It's not viewed as eligible for the State, nor the National Register.

Mr. Long: I'm not talking about that. I'm talking about it being architecturally and aesthetically significant.

Barbara Shideler: If you believe it's architecturally…

Ms. Griffin: Can you identify yourself?

Ms. Shideler: Barbara Shideler with Mason Architects. It may very well be architecturally significant to the community. In defense of the engineers and CFL, when we consulted with State

Historic Preservation Division, they said that they did not believe it was historically significant, and in fact, it was removed from our scope of work. It's a common bridge type. It was identified as not of historic consideration. I mean, that's why we've come to the local community, to consult with you and get another voice on that. We hear that and it's something to take into consideration as we go forward.

Mr. Long: Thank you.

Ms. Winterton: We can have the meeting of minds reassessed, and connect on the architecture and the safety.

Mr. Long: Yes, because SHPD has their standards, and historically significant is different than aesthetically significant. So I'm interested in the aesthetically significant aspect. Thank you.

Ms. Winterton: Okay, that's good feedback. Thank you.

Ms. Chu: Any other comments on the Kapa'a Stream Bridge?

Mr. Long left the meeting at 5:23 p.m.

Ms. Chu: So the last one is Bridge No. 7E. It's located on Kaumuali'i Highway on Route 50. This one is near Mile Post 7. The route is classified as Rural Minor Arterial, and it's the primary route from Līhu'e to the Kōloa District. This bridge is just west of Maluhia Road.

Slide 24 shows, again, the area of potential effect for this project.

On Slide 25, just some of the project background. The purpose of this project is to improve Bridge 7E to maintain Kaumuali'i Highway's crossing of an unnamed stream and to, again, continue to provide a safe and functional component of the regional transportation system. The existing bridge was built in 1933 and again, the structure doesn't meet current live load, seismic, roadway widths, railings, or other requirements. This bridge is a reinforced concrete box that has two (2) culvert cells with wing wall abutments, and again, is structurally deficient. The bridge is 22 feet long and the width is 32 feet wide. Through this bridge, the existing highway is 10 feet. There are two (2) lanes that are 10 feet with 2-foot shoulders on each side, and the posted speed limit is 50 miles per hour.

Again, the project team looked at the rehabilitation, the replacement, and the no build alternatives. Right now, the top slab of the box culvert does not meet the current live load requirements. The bridge has also been paved over in the past. This would need to be strengthened, so if they strengthen the top slab, they need to increase the slab thickness and they would have to put in increasing reinforcement on the sides of the box, which may also affect the hydraulic capacity of the box and overstress the existing piles. So again, rehabilitation can be very complex, and again, the capacity of the existing piles is unknown as well. The project team moved forward into looking at the replacement option, and then there is the no build option that also needs to be considered.

Mr. Long returned to the meeting at 5:25 p.m.

On Slide 27, the proposed bridge is 24 feet long. We are looking at a single-cell box culvert, so it'll be just a one (1) box culvert cell, versus two (2) cells. This will improve the hydraulic capacity. It will be 44 feet wide, so this would allow for your two (2) 12-foot lanes and 8-foot shoulders, and room for the bridge rails as well. We will put in crash-tested bridge rails. The intent is to match the existing profile and alignment of the roadway, so there will be no changes vertically or horizontally. We'll maintain the existing electrical and telecommunication lines.

The next slide shows you the "Before" and "After" of what it would look like. Right now, most people don't realize they are going over a bridge. There is just guardrail and the bridge has been paved over. So in the future, you will see your standard concrete barrier.

Any comments?

Ms. Griffin: Comments? I noticed on all of these the area of potential effect includes under the bridges and some land. I know we have archaeology represented here, and none of that has been discussed, but I'm wondering if there are areas in any of these bridges that we've discussed, cultural archaeological sites that would have any kind of adverse effect.

Gerald Ida: Gerald Ida, Cultural Surveys Hawai'i. Just speaking generally, no, there's nothing really. At this point, we've done work on each of these bridges and we have submitted reports to SHPD, but they haven't been totally reviewed yet; they are still in draft form. We have had a meeting with SHPD to discuss the findings. We have done subsurface testing, as well as surface surveys of the surrounding areas of the bridges. It's been my experience when you do things like these bridges, because I've done a lot of bridges including Wailua, a lot of these places are pretty messed up where there is an existing bridge. I would have not expected to find anything and indeed we found very little. What cultural material, historical, and pre-contact artifacts we found are not associated with any kind of intact cultural layer or historical layer; they are just messed up. There are some artifactual material in there, but nothing you can really do any kind of analysis on.

Ms. Wichman: So mostly backfill? Is what it looks like?

Mr. Ida: Yes, because they messed the place up big time once they put in the abutments.

Ms. Griffin: So for the purpose of this Commission, we don't need to be concerned about that aspect of the projects as they've been described.

Mr. Ida: Like I said, the ball is in SHPD's court right now. I can see where they might require us to do potentially maybe just a little bit more subsurface work, but…and there are some actual sites in these areas, but they are really kind of marginal stuff like historic culverts and stuff like that.

Ms. Griffin: Culverts may become a big discussion at some point in the not too distant future.

Mr. Ida: I know. Hopefully I will be retired by then. (Laughter in background)

Ms. Griffin: Thank you. Other questions of Gerald? I appreciate that. Thank you.

Other general questions for Kathleen or Nicole? No. We casually gave you comments as we went along, so if there are no other questions, then may I have a motion to receive this information and documentation as we have it?

Ms. Schneider: I make a motion that we receive this documentation as presented.

Mr. Chaffin Jr.: Second.

Ms. Griffin: Second, thank you. It's been moved and seconded that we receive the documentation on the bridges. Discussion? All in favor? (Unanimous voice vote) Opposed? None. The motion carries 6:0. Thank you all very much for waiting so long, for being together with the presentation.

Ms. Winterton: Thank you.

Ms. Chu: Thank you. Thank you for your time.

ANNOUNCEMENTS AND GENERAL BUSINESS MATTERS

Ms. Griffin: We skipped a couple of pieces, and they are short. The first is the Announcements and General Business Matters. There is an announcement about the SHA Conference.

Victoria, do you want to tell us about…?

Ms. Wichman: I do. I'm one (1) of the co-Chairs for the Society for Hawaiian Archaeology Annual Conference that's coming up October 9th, 10th, and 11th. We have invited the Planning Department to come free of charge, so everybody here is invited. Mr. Furfaro, you are more than welcome to come, please. Friday evening, starting at 5 o'clock, 5:00 until 8:00, we'll have the Kaua'i Museum for the first hour; we'll have it all to ourselves. We are having a stewardship award, Naki'ikeaho Stewardship Award, which will be presented to Hui Makaainana o Makana out in Hā'ena. Our keynote speaker will be Mayor Carvalho, and he'll be speaking on his preservation efforts on this island, which I thought that was very appropriate.

Ms. Griffin: So we need to listen to that.

Ms. Wichman: Please come. It's open to the public here at the Kaua'i Museum next Friday night actually, and then on Saturday and Sunday at the Wailua…at Smith's Family Tropical Paradise Luau Grounds, we'll be having our conference; it starts at 8 o'clock in the morning. We have many papers. I know Saturday is kind of a bad time for Kaua'i because it's the same day as the Queen Emmalani up in Kokee, but we do have a lot of interesting papers going on, on that day. We also have conference papers going on, on Sunday, the 11th, and I tried to put most of our Kaua'i papers on that morning, so the Kaua'i people that might've went up to the Queen Emmalani would have an opportunity to hear papers from Kaua'i. As I mentioned, it's free for the County to come;

anybody in the County is welcome to come as our complimentary guest. We anticipate about a hundred (100) archaeologists showing up for this. Very interesting papers; there are several papers on Nu'alolo Kai. There are papers on Kaua'i Nui Kuapapa, which is the ahupua'a and moku signage project here on the island; interesting papers. I could send to Shan our schedule-at-a-glance. Mary Jane Naone and I are the organizers. We are still in the process of doing the last minute T's and I's on our program, so that won't be ready until the conference, but I do have the schedule-at-a-glance which we can pass around or email.

Ms. Griffin: It's online, isn't it?

Ms. Wichman: It is online. Our site is hawaiianarchaeology.org.

Ms. Griffin: Did everybody get this 2015 conference…? So at the bottom of it, it shows the hawaiianarchaeology.org.

Ms. Wichman: Yes, it should have the website on there. So that should have all of the updated schedules as well. Food is included, so it's all good. There's a luau on Saturday night. You are all welcome to come to that as well.

Mr. Hull: Commissioner Wichman, just for clarification, do say KHPRC members that want to attend, do they just show up and they'll be comped? Or should they contact…?

Ms. Wichman: It would be nice if people would let me know, if they would RSVP because I need a headcount for the food. So it's always good for me to know, and then I can have name tags that show who your affiliation is as well. It's a really good opportunity for networking with archaeologists. These are archaeologists that are from across the State of Hawai'i, plus from New Zealand, California, Ohio, New York, and Alaska, several different states as well. We also have a workshop on Sunday afternoon on microfossils. It's kind of interesting. We have a professor from New Zealand who's coming up to give a paper, and since he came we thought we'd ask him to do one on microfossils and phytoliths, which has to do with plants, so it should be quite interesting.

Ms. Griffin: Thank you so much. And thanks to you and our SHPD archaeologist, Mary Jane Naone, they have really, from what I understand, have put this thing together and it should be a really fine conference that all of us should be able to take advantage of. Thank you.

Ms. Wichman: We're looking forward to it. Thank you. And specifically, I'd really like to invite you to the Mayor's keynote address on Friday night, and to honor Hui Maka'ainana o Makana. I think they are very worthy of honoring at this time. The Mayor is such a dynamic speaker that I think…he's so enthusiastic about his preservation efforts that I'm looking forward to hearing him.

Ms. Griffin: Thank you.

Ms. Wichman: Thank you.

Ms. Griffin: Any other announcements and general business matters?

UNFINISHED BUSINESS (Continued)

Re: Report from investigative committee members (Permitted Interaction Group) to discuss and explore strategies on informing the public and land owners on the State and National Register of Historic Places Nomination Process and Incentives for placing historic structures on to the National and State Register of Historic Places.

Ms. Griffin: Going on to C.2., the report from the PIG to discuss and explore strategies on informing the public. There is a printed report here at this point. One (1) of the two (2) possibilities that was on the report that we made last month was the possibility of putting the Shell Station on the National Register, so I just wanted to mention that.

There was also, and we read in the minutes, I think that we had been suggesting our little mini education for this or next month, and that's why I was a little short, Larry, when you talked about cost because one (1) of the opportunities we have…there are tax incentives. Buildings built before 1936 that are on the National Register can get a 20% tax credit on rehabilitation. There are things like that that if we know about, we will be able to discuss with applicants, people who come before us, and to be able to get the information out. I'm hoping that, Mr. Hull, if you can arrange perhaps if Ian Jung will come back and educate us on his time. Or we have some other expert who could give us that training next month; I think would be beneficial for us all.

Was there anything else from our PIG that…?

Re: Report from investigative committee (Permitted Interaction Group) to discuss and explore creating a Smart Phone Application to identify and highlight Historic properties on Kaua'i.

Ms. Griffin: Then on C.3., report from the Permitted Interaction Group to discuss the Smart Phone App.

Ms. Wichman: Nothing has been done, so I'd like to defer that. Kuulei and I have not gotten together. We were supposed to be talking with the Kaua'i Nui Kuapapa, and that hasn't happened as well.

Ms. Griffin: Okay, great.

Ms. Wichman: So defer it, please.

Ms. Griffin: If we can just continue that on the agenda for next month.

Re: Discussion on the status of the Certified Local Government.

Ms. Griffin: And then the status of the Certified Local Government, C.4. I guess the most important question is, when are the applications due for the next round of Certified Local Government funds?

Mr. Hull: It usually happens, I believe, in March. We'll double-check on that.

Ms. Griffin: So perhaps if you can have in your tickler file to put in maybe our December or January agenda to start discussing possible projects. Inventory always comes up, but we do have the possibility of National Register nominations that our PIG has discussed.

Mr. Hull: And on that topic, to use that as an agenda item to segue into the fact that concerning the current inventory that we have or don't have, it's ultimately, and I think the Commission, you are going to have to start wrestling with whether or not they want to do this, but ultimately there are issues that both the Department and SHPD have with the inventory that was produced, and perhaps that needs to be, essentially, pared down. Essentially what it looks like could be a possibility for you guys to put on the back burner and start thinking about is that, to utilize this body, essentially, to go through the list and establish an acceptable inventory, essentially. There is a fair amount of work associated with that, and meetings could be a bit longer, but the inventory list is one (1) of the most critical resources for this body and for the County, in terms of preservation and that is probably the only avenue because it lends itself to public discourse and transparency that would be acceptable, really.

Ms. Griffin: That's great. I think that if we can establish another PIG so that three (3) or four (4) of us can do it, and then we can bring it back to the Commission and get it more efficient. So if you will remind us or have it as an agenda item next month.

Anything else on the CLG? In that case, our next meeting will be next month, November 5th, and hope to see you…yes?

Mr. Long: I have a question and a thought.

Ms. Griffin: Yes.

Mr. Long: We came up with these four (4) neighborhoods to do a historic survey of. We came up with four (4) because that seemed like a reasonable amount of work for them, but we don't know if Pākalā will be included in that group because it's privately owned. My guess is that we likely will not receive permission from the owner to do that survey there. In my discussions with some of the Planning Staff, there was a concern that we didn't have enough neighborhoods on this list. So my consideration is, do we want to put Hanapēpē and Waimea, which were the other two (2) communities that we discussed that we were going to be doing as a tier 2, phase 2, next year. Do we want to put those on this list so that we don't end up with less work than we possibly could have?

Ms. Griffin: Thank you. And that was in my anxiousness to get everybody out of here, I didn't give enough attention to that part of the CLG. It was my understanding that Staff was going to

compile the list of the several different areas that we discussed. Did that happen? Or did it just go down to…?

Mr. Hull: As I understand, it just went to the four (4), but I have to double-check with Myles on that.

Ms. Griffin: Okay.

Mr. Hull: But we should make a note to bring that back at the next KHPRC meeting.

Ms. Griffin: Okay. Yes, Myles did send a message saying that they are going to start doing their field surveys in October and November, but we don't really know… And they will have students as interns doing the inventorying and so forth, and the field surveys, and that they will let the Planning Department know when they have a real schedule for here.

Mr. Long: In my conversation with Myles, he said that they are going to be relying on in-house Staff, students, and volunteers to do this survey work. I'm a member of the public; I would like to volunteer to be part of that team in that process.

Ms. Griffin: They specifically said that members of KHPRC are welcome to participate.

Mr. Hull: Okay. We'll have to look at that. I think having you as a volunteer would be wonderful, but then we'd also have to look at your ability to actually vote on that item though. Inadvertently you push yourself out of the decision-making process because you may have to recuse yourself, but Jodi can look into that.

Ms. Griffin: Thank you. Anything else on that agenda item?

SELECTION OF NEXT MEETING DATE AND AGENDA TOPICS (11/5/2015)

Ms. Griffin: Okay. Then the next meeting is set for November 5th, first Thursday. Is there a motion to adjourn?

Ms. Schneider: I make a motion.

Mr. Chaffin Jr.: Second.

Ms. Griffin: Thank you. All in favor? (Unanimous voice vote) Thank you. Thank you all for taking the time.

ADJOURNMENT

The meeting was adjourned at 5:45 p.m.

Respectfully Submitted,

Darcie Agaran
Commission Support Clerk

Date: 10/20/15

HISTORIC HAWAI'I FOUNDATION

December 9, 2015

Mr. J. Michael Will, P.E.
Project Manager
Federal Highway Administration
Central Federal Lands Highway Division
12300 West Dakota Avenue, Suite 380
Lakewood, CO 80228

Re: Mailihuna Intersection and Kapa'a Bridge Replacement Project
(Project No. HI STP SR56(1)
Kawaihau District, Island of Kaua'i, Kapa'a and Kealia Ahupua'a
Tax Map Key: (4)4-6-014:024, (4)4-6-14:092 Kūhiō Highway Right-of-way, (4)4-6-14:090 Kūhiō Highway Right-of-way, (4)4-6-014:031, (4)4-6-014:033, (4)4-6-014:999 Mailihuna Road Right-of-way, (4)4-7-008:042, (4)4-7-003:999 Kūhiō Highway Right-of-way, (4)4-7-003:001

FHWA Reference: HFPM-16

Dear Mr. Will,

Thank you for referring the above mentioned project to Historic Hawai'i Foundation (HHF) under Section 106 of the National Preservation Act (NHPA). HHF received your letter of August 26, 2015 opening consultation, containing the scope of work and attached exhibits, including a Draft Archaeological Inventory Survey Report (AISR).

Undertaking: The project would reconfigure the intersection of HI-56 and Mailihuna Road to improve traffic operations, safety, and local access and would replace the existing Kapa'a Bridge.

APE and Eligibility: The Area of Potential Effect (APE) includes the Hawai'i Department of Transportation (HDOT) right-of-way and portions of adjacent private property as indicated on the maps submitted. The HDOT Historic Bridges Inventory determined that the Kapa'a Bridge is not eligible for listing on the National Register of Historic Places (NRHP) due to its status as covered by "Program Comments," referring to the Advisory Council on Historic Preservation Program Comment Issued for Streamlining Section 106 Review for Actions Affecting Post-1945 Concrete and Steel Bridges (2012).

Additionally, the AISR states:

> *The State Historic Bridge Inventory Evaluation (MKE Associates LLC/Fung Associates, Inc. 2013:3-6) describes Kapa'a Stream Bridge as "a typical post-war bridge and falls under program comments." The status of "program comments" refers to common post-war bridges built after 1945 covered by the Advisory Council program comments. Hawai'i has not yet coordinated the inventory results with their Federal Preservation Office, so is currently* **not** *operating under the Program Comments exceptions. (Emphasis added) [Draft AISR, p. 62]*

680 Iwilei Road, Suite 690 / Honolulu, Hawai'i 96817 / Tel (808) 523-2900 / Fax (808)523-0800
Email preservation@historichawaii.org / Web www.historichawaii.org

We are concerned with the statement above that the apparent lack of eligibility for the Kapa'a Bridge falls under a provision that may not currently apply to Hawai'i. HHF therefore notes that as an issue that the FHWA/HDOT needs to resolve as part of this Section 106 consultation.

In addition, the ACHP Program Comment encourages the resolution of adverse effects that may result from replacement of existing common bridges.

The AISR identifies three additional cultural resources:

> *During the current AIS, two newly identified cultural resources were documented within the project area. The two cultural resources included SIHP # -2278, the Kapa'a Stream Bridge, and SIHP # -2279, a possibly historic water control complex. [Draft AISR, p. 78]*

> *Two cultural resources were [previously] identified within the project area including the Old Kaua'i Belt Highway bridge foundation (SIHP # -2075) and a new sub-feature of SIHP # -0789: Feature A, Kapa'a Stream Cane Haul Road Bridge (SIHP # -0789: Feature A, Sub-Feature 1). Two previously identified resources are remnants of an earlier bridge. [Draft AISR, pp. 75-76]*

All four resources have been evaluated as described in the Draft Archaeological Inventory Report and determined not eligible for listing on the Hawai'i or National Registers of Historic Places [Draft AISR p. 78]

The APE indicates that the project is adjacent to St. Catherine's Cemetery, but it is unclear if that historic property will be affected. Please confirm that the St. Catherine Cemetery will not be affected by the project.

HHF concurs with the APE and the determination that the other three identified sites are not eligible for NRHP listing. However, we request to be included as a consulting party to resolve the status of the existing Kapa'a Bridge, and, if affected by the project, St. Catherine's Cemetery.

Thank you for the opportunity to comment on this undertaking under the National Historic Preservation Act Section 106 and we look forward to continuing consultation.

Very truly yours,

Kiersten Faulkner, AICP
Executive Director

Copies via email:
FHWA: Meesa Otani
HDOT: Todd Nishioka, Donald Smith
SHPD: Jessica Puff, Susan Lebo, Mary Jane Naone

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
Suite 380A
Lakewood, CO 80228-2583
Office: 720-963-3647
Fax: 720-963-3596
Michael.Will@dot.gov

July 8, 2016

In Reply Refer To:
HFPM-16

TO: THE HONORABLE SUZANNE CASE, CHAIRPERSON
DEPARTMENT OF LAND AND NATURAL RESOURCES

ATTN: SUZANNE CASE
STATE HISTORIC PRESERVATION OFFICER

FROM: J. MICHAEL WILL, P.E.
PROJECT MANAGER

SUBJECT: NATIONAL HISTORIC PRESERVATION ACT, SECTION 106 AND HAWAII REVISED STATUTES, CHAPTER 6E CONSULTATION
MAILIHUNA INTERSECTION AND KAPAA BRIDGE REPLACEMENT PROJECT
KAWAIHAU DISTRICT, KAUAI ISLAND, KAPAA AND KEALIA AHUPUAA
PROJECT NO. HI STP SR56(1)
TAX MAP KEY: (4)4-6-014:024 (POR.), 033 (POR.), 090 (POR.), 092 (POR.) KUHIO HIGHWAY AND MAILIHUNA ROAD RIGHTS-OF-WAY, 4-7-003:001 (POR.), AND 4-7-003:042 (POR.) KUHIO HIGHWAY RIGHT-OF-WAY

Dear Ms. Case:

The Federal Highway Administration (FHWA) Central Federal Lands Highway Division CFLHD), in partnership with the State of Hawaii Department of Transportation (HDOT), is proposing to improve the intersection of Kuhio Highway 56 (HI-56) and Mailihuna Road and replace the Kapaa Stream Bridge north of the intersection. The project area is located near Mile Post (MP) 10 on HI-56 (see attached Area of Potential Effects USGS Map for project location). The proposed project is considered a federal action and undertaking, and will comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (2006), as well as Hawaii Revised Statutes (HRS) Chapter 6E. This letter is to initiate consultation with the State Historic Preservation Division (SHPD) under Section 106 in accordance with Title 36 of the *Code of Federal Regulations* (CFR), Section 800.3, and in accordance with HRS Chapter 6E-8.

Overview of the Undertaking

The proposed project would reconfigure the intersection of HI-56 and Mailihuna Road to improve traffic operations, safety, and local access and would replace the existing Kapaa Bridge to maintain the Kapaa Stream crossing on HI-56 as a safe and functional component of the regional transportation system for highway users.

This project would reconfigure the intersection of Mailihuna Road and Kuhio Highway by installing traffic signals with new turn lanes or by constructing a roundabout. The preferred alternative for intersection improvements will be determined following the Draft Environmental Assessment review period, as prescribed under HRS Chapter 343.

> The signalization alternative would modify the intersection to add full traffic and pedestrian signals and crosswalks. A left-turn pocket would be added to the northbound side of Kuhio Highway before Mailihuna Road. In addition, a right-turn pocket would be added to the southbound side of the highway.
>
> The roundabout alternative would construct a single circulating lane that would be 18 feet wide, with an inscribed circle that would be at least 130 feet in diameter. The roundabout would include splitter islands and marked crosswalks on each approach.

Both intersection alternatives would include drainage improvements at the southwest corner of the intersection to prevent flooding and control runoff during heavy rains.

Also under consideration is a walkway on the *mauka* side of the highway extending from the intersection to the north side of the bridge. An existing private driveway which has direct access to the intersection would be relocated so that access is from Mailihuna Road, approximately 110 feet *mauka* of the intersection.

The existing Kapaa Bridge does not meet the current roadway standards for width and bridge standards for live loading and seismic requirements, and the existing bridge railings and approach railings do not meet current crash test requirements. Therefore, the bridge will be demolished and replaced with a single-span 190-foot long bridge. The new structure would be approximately 4 feet wider, accommodating two 12-foot travel lanes, two 8-foot shoulders, and guardrails on both sides.

During construction, Kapaa Bridge would be closed to traffic, and a temporary bypass road and bridge would be constructed makai of the existing bridge, between the existing bridge and the adjacent pedestrian trail, to maintain traffic over Kapaa Stream. The adjacent pedestrian bridge would not be impacted.

The proposed improvements at the HI-56 and Mailihuna Road intersection would occur within HDOT right-of-way and adjacent public and private properties. The Kapaa Bridge replacement would occur entirely within HDOT right-of-way. Construction parcels (temporary easements) would be needed for the temporary bypass road, construction zone, and staging areas. Archaeological monitoring will be conducted for all initial ground disturbance and excavation activities during construction.

Area of Potential Effects

The archaeological and historic architectural Areas of Potential Effects (APE) are illustrated in the APE Aerial Imagery map, and include both temporary and permanent impact areas. The APE comprises 4.1 acres and includes the following TMKs: (4)4-6-014:024 (por.), 033 (por.), 090, (por.), 092 (por.) Kuhio Highway and Mailihuna Road Rights-of-Way, 4-7-003:001 (por.), and

(4)4-7-008:042 (por.) Kuhio Highway Right-of-Way. Both of the intersection design alternatives are contained within the APE.

Determination of Eligibility

Pursuant to NHPA Section 106 and HRS Chapter 6E-8, a cultural resources investigation was performed within a field survey area that included the project's APE. The cultural resources investigation comprised an archival literature review and an archaeological inventory survey. The surveys identified four resources within the APE:

- SIHP #50-30-08-2278: Kapaa Stream Bridge
- SIHP #50-30-08-2279: Ditch and culvert
- SIHP #50-30-08-0789A Sub-Feature 1: Railroad bridge foundation
- SIHP #50-30-08-2075: Historic bridge foundation

The surveys did not identify any archaeological resources within the APE. FHWA believes all historic properties with potential to be affected by the undertaking have been identified

In discussion with the SHPD architecture branch in September, 2014, it was determined that the Kapaa Stream Bridge (SIHP #50-30-08-2278) is not eligible for listing on the NRHP or HRHP. At the request of the SHPD, architectural recordation was not conducted.

The historic ditch and culvert (SIHP #50-30-08-2279), railroad foundation (SIHP #50-30-08-0789A), and Kauai Belt Road, Kealia Bridge foundation (SIHP #50-30-08-2075) are all evaluated by Mason Architects as not eligible for listing on the NRHP or HRHP because they lack integrity of design, materials, workmanship, feeling, and association.

FHWA is in agreement with the recommendations of Mason Architects and has therefore determined that the Kapaa Stream Bridge (SIHP #50-30-08-2278), historic ditch and culvert (SIHP #50-30-08-2279), railroad foundation (SIHP #50-30-08-0789A), and Kauai Belt Road, Kealia Bridge foundation (SIHP #50-30-08-2075) are ***not eligible*** for the NRHP or HRHP.

Detailed information on the cultural, archaeological, and historical settings of the project area and the determination of eligibility are provided in the following study prepared for this project, included on the enclosed CD:

- Enclosure 1-APE Figures (USGS Map and Aerial Imagery)
- Enclosure 2- Kapaa Project Plans
- Enclosure 3- Draft Archaeological Inventory Survey Report for the Kapaa Stream Bridge, Kapaa and Kealia Ahupuaa, Kawaihau District, Kauai
- Enclosure 4- Hawaii SHPD Historic Resource Inventory Form (Reconnaissance Level) for the Kapaa Stream Bridge
- Enclosure 5- Kauai Historic Preservation Review Commission Comments
- Enclosure 6- Historic Hawaii Foundation Comments

Determination of Effects

FHWA has determined that the undertaking will result in a ***No Historic Properties Affected*** finding in accordance with Federal regulations (36 CFR 800.5) and in a ***No Effect*** finding in

accordance with HAR §13-13-275-7, because no resources are eligible for inclusion in the NRHP or HRHP.

Consultations

Section 106 notice/advertisement was published in *The Garden Island* on August 29 2015. Native Hawaiian organizations and Native Hawaiian descendants with ancestral, lineal, or cultural ties to, cultural knowledge or concerns for, and cultural or religious attachment to the proposed project area were asked to provide a response within 30 days of notification.

Section 106 consultation letters were sent to the following organizations as potential consulting parties:

- Office of Hawaiian Affairs
- Kauai Historic Preservation Review Commission
- Kauai-Niihau Island Burial Council
- Queen Deborah Kapule Hawaiian Civic Club
- Hookipa Network
- Historic Hawaii Foundation

The Kauai Historic Preservation Review Commission (KHPRC) met on October 1, 2015 to discuss the project and provided comments (in form of meeting minutes) on October 28, 2015. The KHPRC indicated they feel the Kapaa bridge is aesthetically significant and would like the new bridge railing to keep the same rhythm as the existing railing. General questions were asked regarding the presence of archaeological sites, and Cultural Surveys Hawaii, Inc., the archaeological consultant for the project, discussed the surveys performed and lack of resources identified in the project areas and the ongoing consultation with SHPD.

The Historic Hawaii Foundation (HHF) provided comments on the project in a letter dated December 9, 2015. HHF requested that FHWA resolve the applicability of the Program Comments exception to the Kapaa Bridge as part of the Section 106 process. Additionally, HHF requested confirmation that the St. Catherine's Cemetery adjacent to the project area will not be affected by the proposed project.

We did not receive responses from any of the other organizations.

Request for Concurrence

We request your concurrence with the Area of Potential Effects and Determinations of Eligibility and Effects. We would appreciate a written response within 30 days from date of receipt, by email at Michael.will@dot.gov or by US Postal Service to 12300 West Dakota Avenue, Suite 380A, Lakewood, CO 80228-2583.

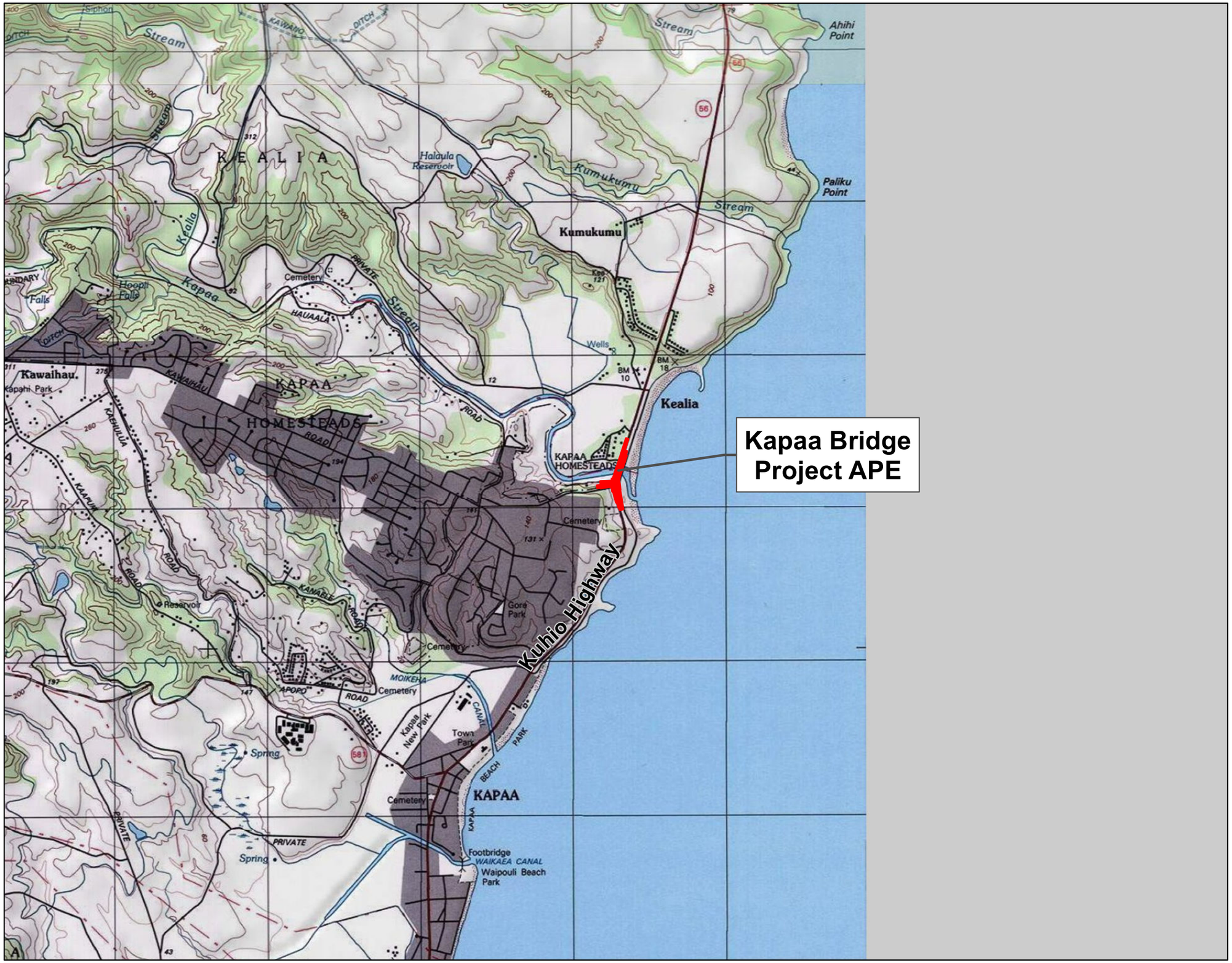
Please feel free to contact Thomas Parker, Environmental Protection Specialist, at (720) 963-3688, email: thomas.w.parker @dot.gov, if you have any questions. We look forward to working with the SHPO on these needed improvements.

Sincerely yours,

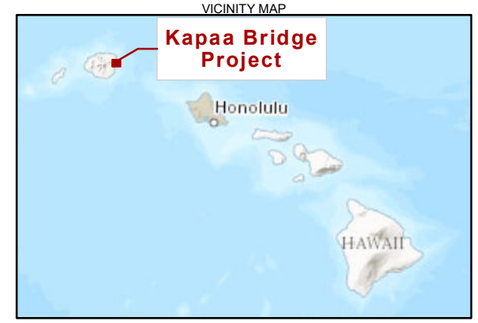
J. Michael Will, P.E.
Project Manager

Enclosures:
1. Area of Potential Effects (USGS Map and Aerial Imagery)
2. Bridge and intersection design drawings
3. On CD: Draft Archaeological Inventory Survey Report for the Kapaa Stream Bridge, Kapaa and Kealia Ahupuaa, Kawaihau District, Kauai
4. On CD: Hawaii SHPD Historic Resource Inventory Form (Reconaissance Level) for Kapaa Bridge
5. KHPRC Comments (October 28, 2015 meeting minutes of October 1, 2015 meeting)
6. Consulting party letter from HHF dated December 9, 2015

cc (with all enclosures on CD):
Christine Yamasaki, HDOT
Todd Nishioka, HDOT
Jessica Puff, SHPD
Susan Lebo, SHPD
Mary Jane Naone, SHPD



VICINITY MAP



LEGEND

Area of Potential Effects

N

0 2,000 4,000

Feet

Notes:
1. Imagery Source: ESRI USA Topographic Maps

Kapaa Bridge Project
Area of Potential Effects (USGS Map)
Central Federal Lands - Kawaihau, Kauai

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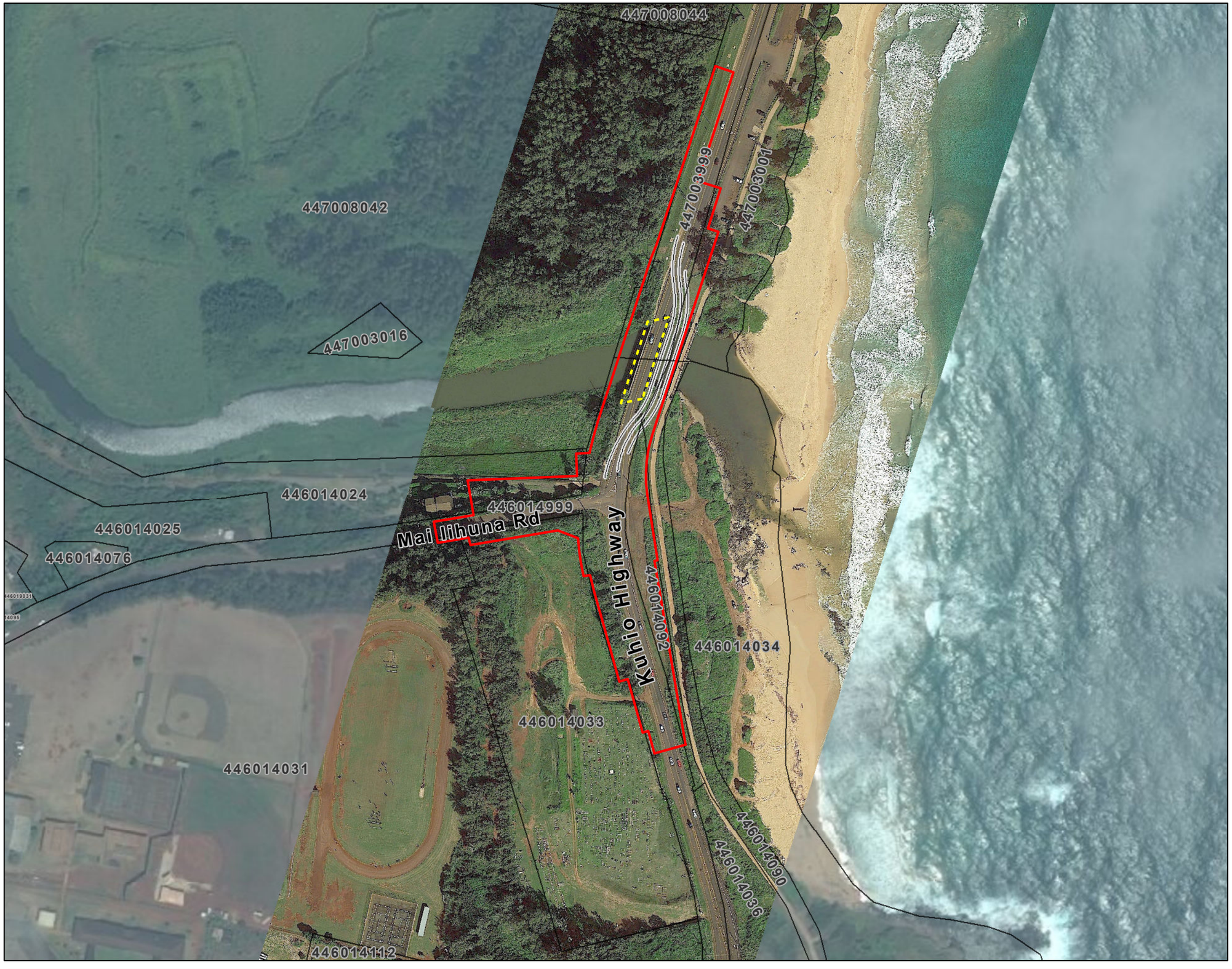

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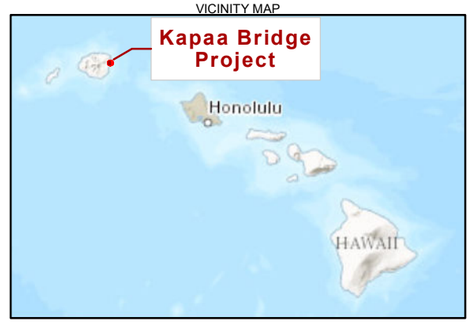

LEGEND

- Existing Bridge
- Area of Potential Effects
- TMK
- Detour Route

N

0 200 400
Feet

Notes:
1. High-Res Imagery Source: Google Earth 12/16/2013
2. Low-Res Imagery Source: Digital Globe 08/26/2011
3. Imagery base map is not orthorectified; therefore project features may not properly align with the imagery.

Kapaa Bridge Project
Area of Potential Effects (Aerial Imagery)
Central Federal Lands - Kawaihau, Kauai

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Appendix H
Public Information Meeting Summary, September 17, 2015

Kuhio Highway/Mailihuna Road Intersection and Kapaa Stream Bridge Public Meeting Summary

ATTENDEES: HDOT: Mike Hinazumi, Ray McCormick, Donald Smith, Fred Reyes
FHWA-CFLHD: Mike Will, Nicole Winterton
CH2M: Kathleen Chu, Nancy Nishikawa, Kim Nokes

COPY TO: Ed Hammontree, Bill Lang

PREPARED BY: Nancy Nishikawa

MEETING DATE: September 17, 2015

PROJECT: Hawaii Bridge Program: Kuhio Hwy/Mailihuna Rd Intersection and Kapaa Stream Bridge

Meeting Objectives

I. Provide an overview of the project:
- The purpose and need for the bridge
- The purpose and need for the intersection improvements at Kuhio Highway and Mailihuna Rd.
- The proposed design and construction schedule
- How we plan to manage traffic during construction

II. Obtain community feedback

Meeting Summary

Ray McCormick opened the meeting by thanking the public for attending and emphasizing the importance of public feedback.

Kathleen Chu gave a short presentation of the Kuhio Highway/Mailihuna Road Intersection and Kapaa Stream Bridge Project. The meeting then proceeded to comments and questions.

Comments/Questions

The public information meeting was attended by 10 people. Their primary concerns related to intersection performance under the signalization and roundabout alternatives; pedestrian accommodation through the roundabout and on the bridge and continuation of the sidewalk on the mauka side of the highway; potential impacts on the shared use path; railing design and view planes; and narrow highway shoulders

Attendees raised the following questions and comments:

1. Is this project funded yet?
2. What about people walking on the bridge?

3. There is a worn path on the mauka side of the highway. Without a mauka sidewalk on the bridge, students who live on Kealia Road (and using the shared use path) would have to cross the highway twice. The sidewalk on the mauka side should be extended between Mailihuna and Kealia Roads because it's an important connection.
4. How will pedestrians and bicyclists get across the roundabout?
5. The bridge railing should not cut the visual plane for those crossing the bridge. I like the metal railing that you can see through. Keep in mind that we want to see water when crossing the bridge.
6. People speed southbound on Kuhio Highway, especially trucks. It's hard to turn left onto the highway from Mailihuna Road to get to Kealia Beach.
7. How far is the path from the roundabout?
8. Have you estimated the speed of flow through the roundabout compared to the traffic signal?
9. If you are trying to slow down traffic, then the roundabout works better.
10. At the Wilcox roundabout, I've heard that traffic comes to a stop when parents pick up their children.
11. The Wilcox pick up/drop off area is close to the roundabout, which is a different situation from Kapaa High School. At the Mailihuna intersection, there isn't the same kind of driveway nearby.
12. How does the Olohena roundabout work for fire trucks? *[Firefighters in attendance said that the Olohena roundabout is fine, but the Wilcox roundabout is tight for their equipment.]*
13. A roundabout is safe for pedestrians who only cross one lane at a time (about 15 feet) with pedestrian refuges and motorists having to slow down. At a traffic signal, pedestrians have a protected crossing.
14. For the signalized intersection, the crosswalk should be on the south side so it doesn't conflict with vehicles making a left turn from Mailihuna Road onto the highway. Although on the south side, there would be potential conflicts with right-turning vehicles.
15. Were other alternatives considered?
16. Is it possible to have a pedestrian signal with a roundabout?
17. Either alternative is an improvement over the existing intersection. A consideration is how much room on the shoulders is available for cars to pull over so emergency vehicles can pass. Fire trucks use this stretch of highway a lot, and it's a long distance through the curve in the highway where it can be difficult to get past other vehicles.
18. What's the schedule for other public meetings and opportunities for involvement?

The key points to the responses were:

- Thanking the public for sharing their input and concerns.
- The project has been funded through design. Construction funds would depend on HDOT's fiscal analysis and evaluation of statewide priorities.
- The Olohena and Chiefess Middle School roundabouts are similar in size—on the order of 125-130 feet in diameter. The Wilcox roundabout is smaller, closer to 100 feet in diameter. In general, larger roundabouts seem to operate better since there's more capacity with greater distance between entering and exiting vehicles.

- In terms of travel speed, highway vehicles would be able to travel through a signalized intersection at the 40 mph speed limit when the light is green. If there is a roundabout, motorists would need to slow down to 15-20 mph to go through. *[Don Smith mentioned that, independent of this project, HDOT is evaluating a reduction in the highway speed limit to 35 mph in the vicinity of Kealia Beach.]*
- Level of service improvements at the Kuhio Highway/Mailihuna Road intersection are expected to be comparable (LOS B) under either alternative once motorists adjust to the changes. However, with increased traffic volumes over the long term, level of service is expected to decline for motorists entering the roundabout from Mailihuna Road.
- Installing pedestrian signals within the roundabout can be evaluated if there is a history of accidents.
- The proposed roundabout is within 20 feet from the shared use path. One of the challenges is vehicle storage from the beach access.
- In addition to the signalized intersection and roundabout alternatives, the project team considered turn lanes without a traffic signal.
- The project team will consider input regarding a mauka sidewalk on Kapaa Stream Bridge.
- Public outreach has included letters requesting input for the Draft Environmental Assessment (EA) and notifications about this public information meeting. Based on feedback, CFLHD will consider a need for additional meetings. Public outreach would also occur as part of the construction phase. The public will have an opportunity to review and comment on the Draft EA.

Next Steps

- CH2M will compile a stakeholder list of who wants to remain informed.
- A copy of this public meeting summary will be posted on the CFL project site.
- The Draft Environmental Assessment is scheduled for release before the end of 2015. Members of the public will have an opportunity to review and comment on the document.

Attachments

- Powerpoint Presentation
- Pdf of the Display Boards
- Sign-in Sheet
- Comment forms

U.S. Department of Transportation
Federal Highway Administration

SIGN-IN SHEET
Kuhio Hwy/Mailihuna Rd Intersection Improvements and Kapaa Stream Bridge Replacement Project
Public Meeting – September 17, 2015

Name & Agency or Jurisdiction	Mailing Address	City / State	Zip Code	Phone	Email
Marge Freeman	4-820 Kuhio Hwy	Kapaa	96746		freemanmargery@gmail.com
GABRIELA TAYLOR	5620 KEAPANA Rd	KAPAA	96746		gabriela@KEAPANA.net
MICHAEL MOULE				241-4891	MMOULE@KAUAI.GOV
Fred Reyer	1760 Haleukana St #1	Lihue	96766	241-3017	fred.reyer@hawaii.gov
Lee Steinmetz	County of Kauai	"	96766	241-4[illegible]	lsteinmetz@kauai.gov
Sheri Kunioka-Volz	4810 Iwi Rd	Kapaa	96746	482-1597	kalivolz@yahoo.com
MICAH MOKUAHI	6675 Puupilo Place	KAPAA	96746		
Albert Kaui	4444 Rice St. Lihue, Hi	Lihue	96766	241-6577	akaui@kauai.gov
Sean Kitamura	1734 MEI Pl. Kapaa, HI	KAPAA/HI	96746		
Daniel S Hamada	496 Mailhuna Rd Kapaa Hi	Kapaa	9674	82-4400	daniel_hamada@notes.k12.hi.us

U.S. Department of Transportation
Federal Highway Administration

SIGN-IN SHEET
Kuhio Hwy/Mailihuna Rd Intersection Improvements and Kapaa Stream Bridge Replacement Project
Public Meeting – September 17, 2015

DEPARTMENT OF TRANSPORTATION · STATE OF HAWAII

Name & Agency or Jurisdiction	Mailing Address	City / State	Zip Code	Phone	Email
Rep. Derek Kawakami (Gini Kapali-OM)	415 S. Beretania St. Rm 314	Honolulu, HI	96813	586-8435	repkawakami@capitol.hawaii.gov