Appendix H
Cultural Impact Assessment

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Cultural Impact Assessment for Schofield Generating Station Project, Waiʻanae Uka, Honouliuli, and Waikele Ahupuaʻa in Wahiawā and ʻEwa Districts, Oʻahu Island, Hawaiʻi

TMKs (1) 7-7-001:001, 9-2-005:026, and 9-4-012:003

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GANDA Report No. 2269-1

June 2014

MANAGEMENT SUMMARY

At the request of Tetra Tech, Inc., Garcia and Associates conducted a Cultural Impact Assessment (CIA) in support of a joint Federal/State Environmental Impact Statement (EIS) for the Schofield Generating Station Project (SGSP) in the western portion of O‘ahu’s central plateau. Tetra Tech, Inc. is supporting the Army and Hawaiian Electric Company in preparation of the joint EIS. The CIA is being conducted in accordance with the requirements of the Hawai‘i Environmental Policy Act (HEPA) as codified in Hawai‘i Revised Statutes (HRS) Chapter 343, Environmental Impact Statements. The study’s objective is to assess the level of impact that would be caused by implementing the proposed project on traditional and current cultural practices and beliefs. This assessment was accomplished by gathering information through archival research and consulting with appropriate and knowledgeable community members to identify cultural practices and traditional land use in the project area.

The collected data indicate that that there will be no adverse impact to cultural resources, cultural practices, and traditional beliefs by the proposed SGSP. Although O‘ahu’s central plateau played a significant role in traditional Hawaiian sociopolitical development, warfare, and ceremonial activities, more than a century of commercial agriculture, military development, and urban growth have eliminated most, if not all, of the tangible evidence of pre-Contact cultural activity in the project area and have disassociated the Hawaiian community from traditional land use practices. There is no tangible or intangible evidence of any former or ongoing cultural activities occurring in the project area.

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1.0 INTRODUCTION

At the request of Tetra Tech, Inc., Garcia and Associates conducted a Cultural Impact Assessment (CIA) in support of a joint Federal/State Environmental Impact Statement (EIS) for the Schofield Generating Station Project (SGSP). Tetra Tech, Inc. is supporting the Army and Hawaiian Electric Company in preparation of the joint EIS. The SGSP is in the western portion of Oʻahu's central plateau and includes portions of Waiʻanae Uka Ahupuaʻa in Waiʻanae District and Waikele and Honouliuli Ahupuaʻa in ʻEwa District (TMKs (1) 7-7-001:001, 9-2-005:026, and 9-4-012:003) (Figure 1).

The objective of the CIA is to assess the level of impact that would be caused by implementing the proposed SGSP on traditional and current cultural practices and beliefs. The assessment was accomplished by collecting and analyzing data on cultural practices and traditional land use in the project area through a combination of archival research and consultation with appropriate community members.

1.1 Proposed Action

The SGSP, a project of the U.S. Army's Energy Initiatives Task Force, is being undertaken to increase production and integration of renewable energy and to provide energy security to Army installations. U.S. Army Garrison-Hawaii proposes to lease Hawaiian Electric Company an 8.13-acre parcel on Schofield Barracks Military Reservation's (SBMR) Kunia Training Area (KUNTA) to construct a 50-megawatt biofuel-capable power generation plant (Figure 2).

To connect the generating station to the existing Hawaiian Electric Company grid at Wheeler Army Airfield (WAAF) and Wahiawā substations, U.S. Army Garrison-Hawaii and the State of Hawaiʻi will provide Hawaiian Electric Company with a 3.7-kilometer interconnection easement for a 46-kilovolt aboveground transmission line. The transmission line will extend from the east side of the new power plant, across Waiʻeli Gulch, and onto the southwest corner of SBMR's cantonment. The line will then continue along the southwestern extremity of the cantonment and cross Duck Road, Lyman Road, and Lyman Gate following the SBMR-Kunia Road fence line. It will then cross Kunia Road and enter WAAF between Waiʻanae Avenue and Eastman Road. At the U.S. Army's Wheeler Substation, the line will split with one line running northwest onto the SBMR cantonment (terminating at Ralston Field) and the other running east along Wilikina Drive. The Wilikina line will extend over the south fork of Wahiawā Reservoir (Lake Wilson) and terminate at Hawaiian Electric Company's Wahiawā Substation.

A series of 47 electrical poles will support the transmission line. The poles will be 60 to 80 feet high and 24 inches in diameter. Of the 47 poles, 36 will be newly installed, 7 will be replacements for existing poles, and 4 will be existing poles (Figure 2).

1.2 Regulatory Authority

Evaluation of impacts to cultural and historic resources for the SGSP is required by the U.S. Army's implementing regulations (Title 32 of the *Code of Federal Regulations* [CFR] Part 651, *Environmental Analysis of Army Actions*) of the National Environmental Policy Act (NEPA) [Title 42 of the *United States Code* (U.S.C.) Sections 4321 to 4370 (f)], NEPA regulations (40 CFR Parts 1500–1508), and the Hawaiʻi Environmental Policy Act (HEPA) as codified in Hawaiʻi Revised Statutes (HRS) Chapter 343, *Environmental Impact Statements*.

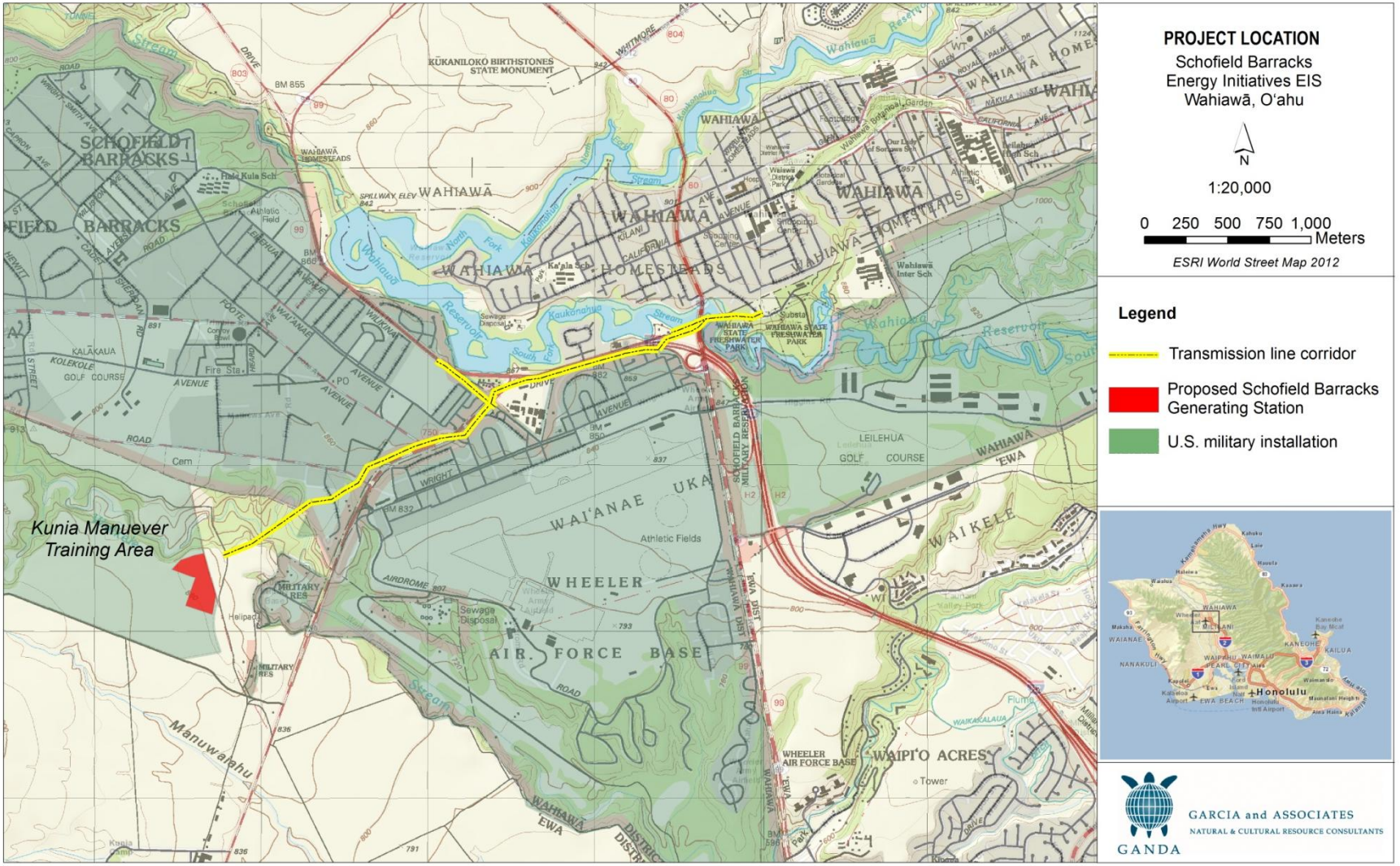

Figure 1. Location of the Schofield Generating Station Project.

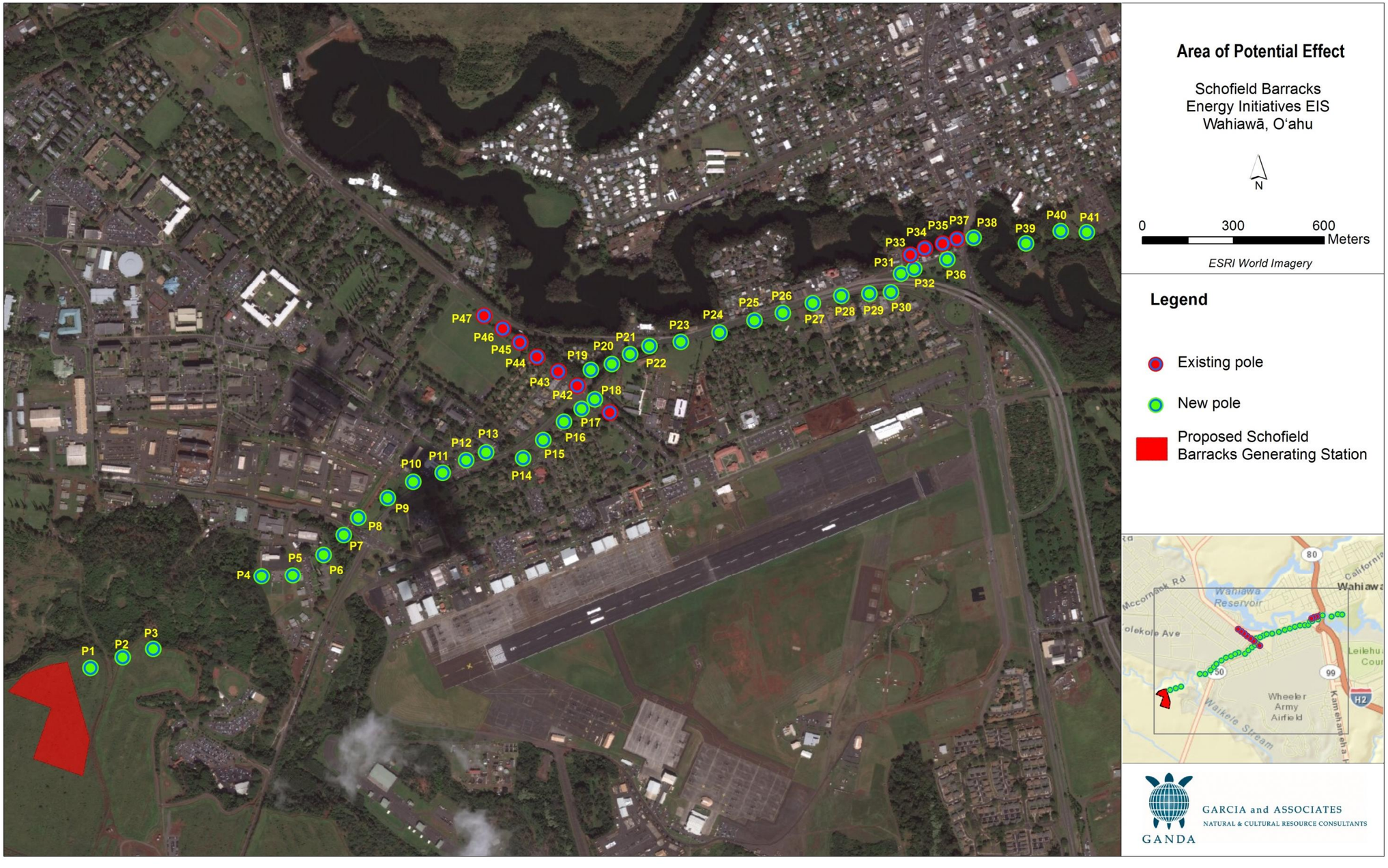

Figure 2. Area of Potential Effect (APE) for Schofield Generating Station, including transmission corridor improvements.

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Under NEPA and HEPA regulations, an EIS must consider the effects of the proposed action on the *human environment*, which 40 CFR 1508.14 defines as "the natural and physical environment and the relationship of people with that environment." The human environment includes important scientific, archaeological, and tangible and intangible cultural resources. Chapter 343, HRS, also requires consideration of a proposed action's effects on the cultural practices of the community and the State. The CIA was conducted in accordance with the State of Hawai'i Office of Environmental Quality Control's Guidelines for Assessing Cultural Impacts (1997).

1.3 Area of Potential Effect

The Area of Potential Effect (APE) is the surface and subsurface landscape that might be impacted by implementation of the proposed project. The APE for the SGSP falls largely within SBMR property, but also extends onto properties owned or leased by the State of Hawai'i's Departments of Agriculture, Transportation, and Land and Natural Resources. As stated above, the generating station will be sited on an 8.13-acre parcel on the western edge of KUNTA in Honouliuli Ahupua'a, and a 3.7-kilometer overhead transmission line will connect the power plant to Hawaiian Electric Company's WAAF and Wahiawā substations (Figure 1).

The project's APE includes the generating station's footprint and all locations at which new power poles will be installed. New pole installation will involve excavating boreholes sufficiently wide to support 24-inch-diameter power pole bases. The boreholes will extend 2.75 meters (9 feet) beneath the surface. As mentioned previously, 36 new poles will be installed at the locations shown in Figure 2. These 36 pole locations, and the 9 feet below ground, in addition to the generating station footprint, constitute the APE for direct effects of the project. Installation of replacement poles will use the holes remaining from the removal of old poles and will not involve new ground disturbance.

To keep construction impacts to a minimum, there will be no vegetation grubbing during new pole installation or during periodic line maintenance. No roads will be constructed through the gully to access pole installation locales. Indirect effects are therefore not anticipated for new pole installation or maintenance.

1.4 Personnel and Schedule

The CIA was carried out from January to April 2014. Jolie Liston, PhD, served as the project's Principal Investigator. She was assisted by Michael Desilets, MA, and Amanda Sims, BA. Dr. Liston has conducted oral history research extensively in Micronesia and has been conducting cultural resource management studies in Hawai'i for more than a decade.

2.0 Ethnographic Survey Methods

The CIA focuses on identifying historic and extant traditional Hawaiian practices associated with subsistence, medicinal, religious, and cultural activities and beliefs in the project area. This information is used to assess the impact of the proposed action on the relationship of Hawaiian community members to the identified cultural resources, beliefs, and traditional land uses. Archival research and an ethnographic survey were the two methods used to collect information for the CIA.

2.1 Ethnographic Consultation Methods

Ethnographic consultation consisted of locating expert cultural practitioners and appropriate community members to interview, consulting with the knowledgeable individuals, and analyzing the ethnographic data provided.

2.1.1 Consultant Selection

The first step in the ethnographic consultation process is locating individuals who are knowledgeable about, and willing to share, cultural practices, *mo'olelo*, and traditional land use in the APE and the surrounding area. The selection of consultants was based on the following criteria:

- Had or has ties to the project location
- Known Hawaiian cultural expert
- Known Hawaiian traditional practitioner
- Referred by a cultural expert, traditional practitioner, or cultural resource professional

Appropriate organizations and individuals who met the criteria were contacted (Table 1). Efforts to locate individuals with traditional knowledge about the specific APE met with limited success because of the inherent limitations in conducting an ethnographic survey of the lands encompassed by the SGSP. Few people retain generational or first-hand information about the project area's traditional cultural practices and land use. This is due to the Hawaiian population not occupying or using these lands since the U.S. military acquired them at the turn of the 20th century or since they became large-scale commercial agricultural plantations soon after.

Project Consultants

Very few of the contacts were willing to participate in the ethnographic survey, citing a lack of information about the project area. Two cultural consultants, Mr. Thomas T. Shirai, Jr. and Mr. Shad S. Kane, however, agreed to be interviewed.

Mr. Shirai has limited knowledge of the area, although his *mana'o* was taken into consideration. Mr. Kane provided a comprehensive overview of the traditional *mo'olelo* of the central plateau that he said relied heavily on archival literature and archaeological information.

Thomas T. Shirai, Jr., born in 1961 in Honolulu, is in the Kawaihapai *'ohana* from Mokuleia and lives in Waialua. Mr. Shirai is a graduate of Waialua High School. He is the great-great grandnephew of Anton Ka'o'o (a noted hula master from Waialua). Currently a member of the North Shore Neighborhood Board and the Mokuleia Community Association, Mr. Shirai served on the O'ahu Island Burial Council and the Office of Hawaiian Affairs Hawaiian Historic Preservation Council. Mr. Shirai was a consultant to U.S. Army Garrison-Hawaii for cultural resource matters associated with the Stryker Brigade Combat Team transformation project and various undertakings at Dillingham Airfield, O'ahu.

Table 1. List of Organizations and Individuals Contacted for Ethnographic Survey

Name of Contact	Contact Method	Results of Contact	Referred To
Hawaiian Civic Club of Wahi‘awa	announcement at meeting(s), posting on club Internet site (by Jo-Lin Lenchanko)	one-sentence email response from Thomas Lenchanko	-
Maria Kaimipono Orr	email	referrals to others	Thomas T. Shirai, Jr.; Shad S. Kane
Jo-Lin Lenchanko Kalimapau	email, telephone	contacted Hawaiian Civic Club of Wahi‘awa	-
Keona Mark	email, telephone	suggested taking interested parties on tour of APE to elicit comments	-
Thomas T. Shirai, Jr.	visit for consultation	no traditional knowledge of SGSP area	-
Shad S. Kane	visit for consultation	provided the significant recorded oral histories of project area	-
Ginger Burch	telephone, visit for consultation	not able to connect	-

Shad S. Kane served 34 years as a Honolulu Police Department Metropolitan Lieutenant. He was born on February 23, 1945, in Honolulu and graduated from Kamehameha Schools in 1964. He then acquired his BA from the University of Hawai‘i in 1976 and an MA in Public Administration from Central Michigan University in 1980. Mr. Kane lives in Kapolei where he is a charter member of the Kapolei Hawaiian Civic Club and chairman of the Committee on the Preservation of Historic Sites and Cultural Properties of the O‘ahu Council of Hawaiian Civic Clubs. He is also with the Royal Order of Kamehameha ‘Ekahi, the Native American Advisory Group as a Native Hawaiian member, the O‘ahu Island Burial Council, the Makakilo/Kapolei Lions Club, and a member of the Historic Preservation Partner of the Navy Region Hawai‘i.

2.1.2 Interview Process

Each interview was conducted at the convenience of the cultural consultant. Consultations were recorded on a digital audio recorder. A *makana*, or gift, was given to each consultant in keeping with traditional reciprocal protocol.

The consultation began with a brief overview of the nature and location of the SGSP. Topographic and satellite view maps of the project area were used to identify the exact location of the proposed generating station and electric poles. The cultural consultant was then given a consent or “agreement to participate” form to review and sign (see Appendix A).

Topics discussed included the cultural consultant’s background, general knowledge of the project area, and information on past and current traditional land use, place names, legends, and stories. Research categories were addressed in the form of open questions that allowed the cultural

consultant to answer in the manner in which he was most comfortable. Follow-up questions were asked based on the consultant's responses or to clarify what was said. The interviews were largely based on a "talk-story" form of sharing information, although questions were asked more directly when necessary.

2.1.3 Analysis of Ethnographic Data

Because of the lack of consultant data directly relating to the APE, much of the traditional information presented in this report is garnered from extensive regionally based ethnographic reports (see Section 2.2). Section 6.0 provides the analysis and evaluation of consultation data.

2.2 Archival and Literature Research

Research was conducted to collect all available information on traditional and post-Contact history, land use, place names, cultural practices, and *moʻolelo* pertinent to the project APE and its surroundings. This information was used to develop a historical context of the project area and to identify any previously reported Hawaiian cultural properties or practices in the project area. Research included a review of Hawaiian historical accounts, legends, and traditions; Māhele documents; and previous oral history and archaeological studies. The study also examined maps, historical photographs, and documents on file at the Hawaiʻi State Archives, the Bernice P. Bishop Museum, the State Historic Preservation Division, the State Survey Office, the University of Hawaiʻi at Mānoa's Hamilton Library, and the Bureau of Conveyances.

3.0 Environmental Context

The APE is on the fairly level central plateau of Oʻahu Island within the broad saddle between the Koʻolau and Waiʻanae mountain ranges. The project area ranges in elevation from approximately 160 to 268 meters (525 to 880 feet) above mean sea level.

Annual rainfall averages 96 centimeters (Giambelluca et al. 2013), with temperatures ranging from 59 to 87 degrees Fahrenheit (Armstrong 1983:56). Significant annual rainfall along the upper elevations of the Waiʻanae Range exceeding 250 centimeters contributes to the tributaries descending the steep, amphitheater-headed slopes of the mountains to form meandering and incised valleys within the lower plateau lands. Although represented on the U.S. Geological Survey (USGS) quadrangle maps as permanent watercourses, these streams flow intermittently in response to heavy rains.

The gulch formed by Waiʻeli Stream separates KUNTA, to the south, from the SBMR cantonment to the north. This seasonal stream flows southeast to join Waikakalaua Stream at WAAF's southern border and become Waikele Stream. WAAF construction altered the stream course east and downstream of the project area (Tomonari-Tuggle and Bouthillier 1994:9). Waikele continues on to Oʻahu's south coast to empty into Pearl Harbor's western embayment (the West Loch).

Kaukonahua Stream roughly bounds the SBMR cantonment's northeast edge before flowing northward to drain into the ocean at Waialua. In about 1905 a dam was constructed across the convergence of the north and south forks of the Kaukonahua Stream to supply irrigation water to the surrounding cultivated fields. This resulted in the formation of Lake Wilson (Wahiawā

Reservoir), O‘ahu’s largest freshwater impoundment. At the east end of the APE, along the south fork of Lake Wilson and Kaukonahua Stream, is the Department of Land and Natural Resources-managed Wahiawā State Freshwater Park.

This dam, along with other historic and modern land alterations, contributed to the current landscape by increasing slope erosion, accelerating siltation, and downcutting stream channels to form deep gulches.

Ethnohistoric documents relate O‘ahu’s plateau lands were once covered in forest. Serano Bishop, a resident of ‘Ewa in the 1830s, reported that:

> Beyond Kipapa gulch the upland was dotted with occasional groves of Koa tress. On the high plains ti plant abounded often so high as to intercept the view. No cattle then existed to destroy its succulent foliage. According to the statements of the natives a forest formerly covered the whole of the then nearly naked plains. [Bishop 1916:45, cited in Belt Collins Hawaii 2000:9-1]

Kamakau writes the following about the sandalwood (*Santalum* spp.) that covered the central plateau, especially the area around Wahiawā and likely the APE:

> At the completion of the fort [in 1816 at Honolulu] Ka-lani-moku and all the chiefs went to work cutting sandalwood at Wahiawa, Halemano, Pu‘ukapu, Kanewai, and the two Ko‘olaus. The largest trees were at Wahiawa, and it was hard work dragging them to the beach. [Kamakau 1992:207]

Koa (*Acacia koa*) and *lo‘ulu* (*Pritchardia* ssp.) probably also covered the plateau lands. Historically, KUNTA was under pineapple cultivation with its termination only after the recent military acquisition of the land. Regrowth consists of mostly non-native shrubs, grasses, and secondary saplings. The lands on or near the military installations are manicured and landscaped grounds consisting of non-native grasses, trees, and shrubs with a few stands of ti (*Cordyline terminalis*) near residential houses. The right-of-way along the major thoroughfares is manicured lawn, while the Wahiawā State Freshwater Park is wooded in both native and introduced species.

4.0 TRADITIONAL HISTORY AND MO‘OLELO

Traditional history, along with archaeological evidence, indicates that O‘ahu’s central plateau is politically and spiritually important. The ancient lands of Līhu‘e—south of SBMR on the eastern slopes of the Wai‘anae Range—and portions of Wahiawā overlap in the lower reaches of the central plateau to possibly encompass the entire APE.

The Chant for Kapawa exemplifies the connectedness of the various central plateau regions and sites[1]:

[1] Chant and translation provided by the historian of the Wahiawā Hawaiian Civic Club, August 2009 (Desilets et al. 2011:40).

ʻO Kapawa, ʻo ke aliʻi o Waiʻalua	Kapawa, the chief of Waiʻalua,
I hanau i Kūkaniloko	Was born at Kūkaniloko;
ʻO Wahiawā ke kahua	Wahiawā the foundation;
ʻO Līhuʻe ke ewe	At Līhuʻe the placenta, (taken away)
ʻO Kaʻala ka piko	At Kaʻala the navel cord, (buried)
ʻO Kapukapuakea ka aʻa	At Kapukapuakea (Heiau) the caul,
ʻO Kaiaka i Maeaea	(Heiau) of Kaiaka at Maeaea;
Haʻulei i Nukea i Wainakia	He died at Nukea at Wainakia
IʻAʻaka i Haleu	Through (the surf of) ʻAʻaka at Haleu,
I ka laʻi malino o Hauola	Through the calm stillness of Hauola,
Ke liʻi ʻo Kapawa hoʻi no	The chief Kapawa was taken,
Hoʻi no i uka ka waihona	Returning the organs to the uplands of Iʻao
Hoʻi no i ka pali kapu o na liʻi	Taken to the sacred pali of the chiefs,
He kiaʻi Kalahiki no Kakaʻe	Kalahiki is the "Watchman" of Kakaʻe,
ʻO Heleipawa ke keiki a Kapawa	Heleipawa was the son of Kapawa,
He keiki aliʻi no Waiʻalua i Oʻahu	A chiefly child of Waiʻalua, Oʻahu

This connectedness of the various central plateau regions was also recognized in an assessment of the SBMR and the Helemano Military Reservation for their potential to contain National Register of Historic Places (NRHP)-eligible traditional cultural places (TCPs), ethnographic landscapes, or archaeological districts (Desilets et al. 2011). The study found that the western portion of the SBMR, above ca. 1,000 feet elevation, can be defined as a Līhuʻe Uplands TCP or as a discontiguous archaeological district within the historic context of Hawaiian Occupation and *Lō Aliʻi* Social Organization AD 1100–1778. This same upland area, and potentially a larger region including Kūkaniloko to the east, might also qualify as an NRHP-eligible ethnographic landscape. Desilets et al. (2011) encountered no evidence to support the presence of NRHP-eligible TCPs, ethnographic landscapes, or archaeological districts within the lower elevations of Līhuʻe—where the current project is located—or within the Helemano Military Reservation.

4.1 Traditional Cultural Properties Identified in Archaeological Investigations

As Mr. Kane stated, much of the information on traditional land use is not contained in *moʻolelo* and personal histories, but is garnered from archaeological research. A summary of the results of archaeological investigations in the SBMR is provided to give a context for the remainder of the CIA because it highlights the degree of archaeological information that is no longer available in the project area. Robins et al. (2007) and Desilets et al. (2011) provide a comprehensive overview of the localized archaeological studies.

Commercial pineapple cultivation and residential, commercial, and military development have made it unlikely that archaeological and cultural sites are present in the SBMR cantonment, WAAF, the lower elevations of the South and East Ranges, and KUNTA. Archaeological investigations have encountered no remaining surface or subsurface pre-Contact or 19th century cultural properties in these lowland areas (Bouthillier et al. 1995; McIntosh et al. 1995; Tulchin and Hammatt 2013; Watanabe 1987). Cultural monitors working on the Stryker

Brigade Combat Team cultural resource management project observed no traditional Hawaiian resources or deposits in the sampling locations on the lower elevation tablelands (Desilets et al. 2011).

Regardless, an oral history study of the SBMR stated that, "According to Mr. Tom Lenchanko, there are numerous traditional properties in the SBMR area; however, for fear of exposing knowledge about their location, he would not disuses what these were or where they were located" (Social Research Pacific, Inc. 2004:23). Consultants interviewed during this project did not mention any tangible cultural properties remaining in or immediately adjacent to the APE.

Despite portions of the uplands being subjected to artillery bombardment, the remote location and restricted development of much of the higher elevations west of the APE has resulted in the preservation of many traditional cultural properties, particularly in the deep, upper elevation gulches and valleys. Mr. Kane noted some of these traditional sites while horseback riding along the gulches above the low tablelands. Documented upland cultural sites comprise mostly Hawaiian structures associated with habitation, animal husbandry, wetland and dryland agriculture, ceremonial activities, and possible burials. Historic roads and military structures associated with SBMR development and training were also identified.

Desilets et al. (2011) conclude that:

> The best site preservation is found in the deep, upper elevation gulches within both the South and West Ranges. Phase I and II surveys of the newly acquired South Range area (Roberts et al. 2004; Robins et al. 2007) indicate that the lower reaches, which were almost entirely in pineapple until very recently, have no remaining surface features. This is also true of some of the broad, upper elevation ridges. Pineapple was planted on any commercially feasible acreage within the South Range, extending right up to the current forest reserve boundary. Within the more inaccessible parts of the South Range, however, such as deep drainages, Hawaiian sites are quite plentiful and, in some cases, form extended complexes. Higher elevation valleys in the South Range also contain relatively large and well-preserved ceremonial sites (e.g., Site 50-80-08-6479). [Desilets et al. 2011:69] [refer to Figure 3 for locations]

For the purposes of this CIA, it is important to understand that these previous studies have unanimously concluded that more than a century of intensive impacts by military land use, urban development, and commercial agriculture have substantially altered the cultural landscape of the central plateau's tablelands. With the long-term destruction of traditional surface structures and little evidence of remaining subsurface deposits, the area's significance relates to "its context within a larger geographic area" (Tomonari-Tuggle and Bouthillier 1994:75).

4.2 Places and Place Names

The project APE is with the traditional lands of Līhuʻe, a broad regional term thought to include much of the central plateau, ranging from Helemano in the east to Kalena in the west. In its literal translation, *Līhuʻe* means "cold chill" (Pukui et al. 1974:132), a quality often referred to

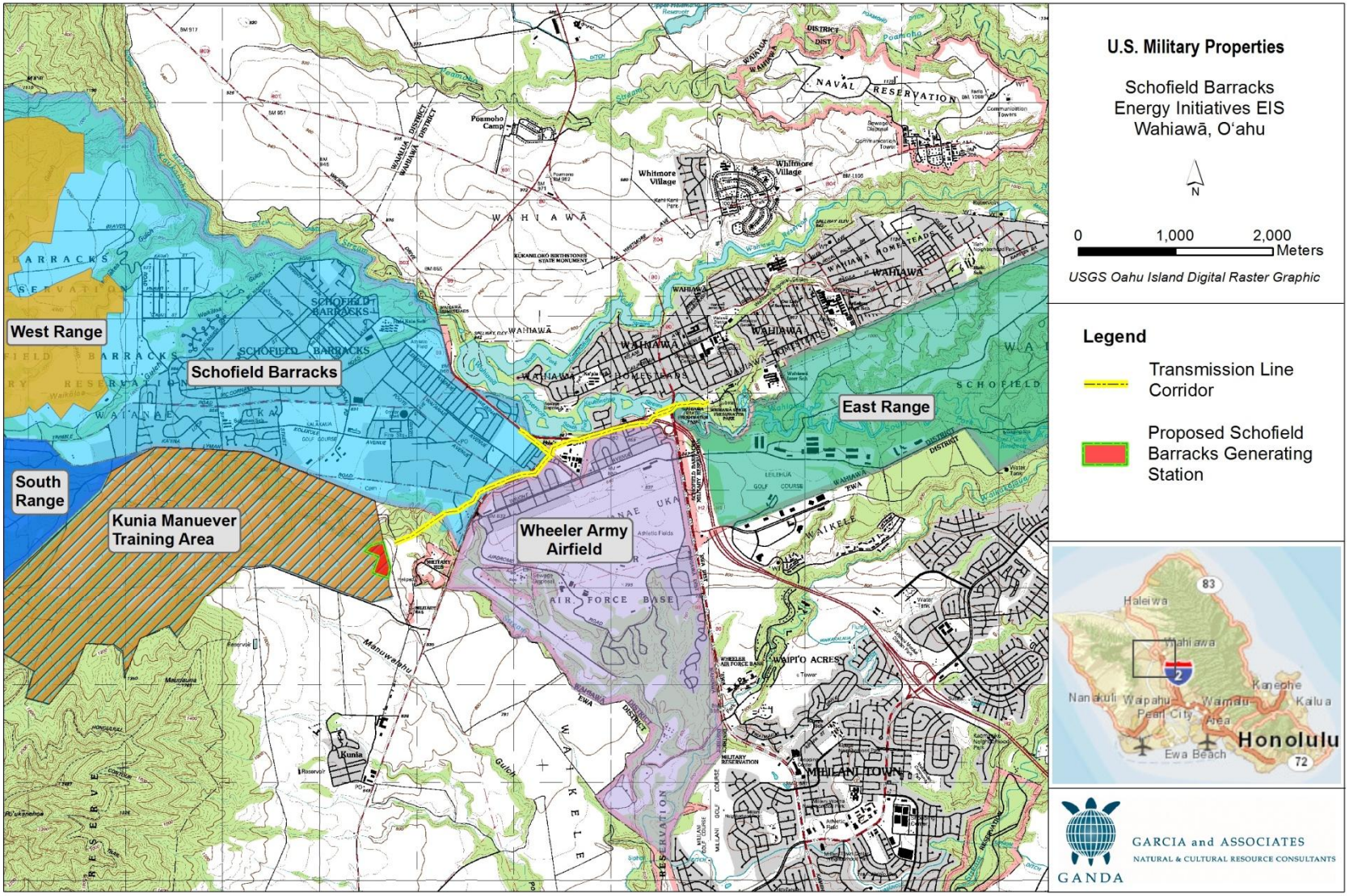

Figure 3. U.S. military properties around Schofield Generating Station with training ranges delineated.

in the traditional literature of Līhuʻe, Kalena, and Haleʻauʻau. Although not evidence of a strictly upland and mountainous boundary, it does point to the literature's tendency to focus on the higher elevation, upland portion of the Līhuʻe lands.

Honouliuli Ahupuaʻa, whose northern tip will support the proposed Schofield Generating Station, is Oʻahu's largest *ahupuaʻa*, encompassing most of the western half of the ʻEwa District. *Honouliuli* means "dark bay" (Pukui et al. 1974:51) and is apparently named after the West Loch bordering what is now Pearl Harbor. Honouliuli is known as the first place where human beings landed on Oʻahu (Beckwith 1970:343), and a place where *ʻulu* (breadfruit; *Artocarpus altilis*) was first introduced to Hawaiʻi (Burgett and Rosendahl 1992: Appendix E).

The proposed generating station and the west end of the transmission line are in two historically referenced *ʻili*, Paupauwela in Honouliuli Ahupuaʻa and Pouhala in Waikele Ahupuaʻa (Figure 4). Paupauwela is also written as *Popouwela* or *Poupowela* (ʻĪʻī 1959:97; Sterling and Summers 1978). *Pouhala ʻIli*, translated as "pandanus post" (Pukui et al. 1974:190), is also a named place in southern Waikele next to "an important fishpond" and *loʻi* or *kalo* patches called Kapalaha (Sterling and Summers 1978:29). The upland *ʻili* is referenced as "Pouhala Uka" in late 19th century land documents (Tomonari-Tuggle and Bouthillier 1994:20).

Waikele, translated as "muddy water," also refers to a stream formed by the convergence of Waiʻeli Stream north of the generating station and Waikakalaua Stream to the southeast. Waiʻeli Stream is sometimes written as *Waikele Stream* on more recent USGS maps and as *Waieli*, meaning "dug water" (Pukui et al. 1974:221), on a late 19th century Oʻahu Island map (Hawaiian Government Survey 1881). *Wahiawā* means "place of noise" (Pukui et al. 1974:71), referring possibly to the drums kept at Hoʻolonopahu Heiau that resonated across the plains to announce the birth of a high chief.

The majority of the transmission line is in the lower elevations of Waiʻanae Uka Ahupuaʻa. The names and borders of any smaller traditional divisions once in this area are unknown. One of Oʻahu's largest *ahupuaʻa*, Waiʻanae Uka Ahupuaʻa, is landlocked and extends from the tablelands across the crests of the Waiʻanae and Koʻolau mountain ranges. Hawaiian deities guarded the boundary between Waiʻanae Uka and the *ahupuaʻa* to the west (Lualualei and Waiʻanae Uka). Mount Kaʻala is the home of the kind goddess Kaiona who harmed no one. The mountain goddess Kolekole protected the mountain pass (Sterling and Summers 1978:133–135). A likely ancient pass through the saddle is afforded at Kolekole (ʻĪʻī 1959:99) by Mount Kaʻala, the highest point on the island.

Handy et al. (1972:465) refer to a famous traditional place named Kukui-o-Lono, where the high chief Kūkaniloko is said to have made the first *loʻi*. Kukui-o-Lono might correspond to one of the cultivated watersheds in western Waiʻanae Uka (such as Kalena, Mohiākea, or Haleʻauʻau streams) because the location is described as "above and west" of the present town of Wahiawā north and northeast of the project area.

Another traditional place name near the APE is Kokoloea, the location of a benchmark in the late 1800s Crown Lands surveys and a USGS benchmark (271 meters, or 888 feet, above sea level) (Figure 4). Located on the south side of what is now Lake Wilson, near Wilikina Drive, the 1876 Boundary Commission testimonies describe an ancient *ʻulu maika* field or *kahua maika*

named Kapalauauai (ʻĪʻī 1959:99) as being at Kokoloea. Kokoloea was the name of a chief of the *Lo* class and the site of the "old Dowsett ranch house" (Tomonari-Tuggle 1997:13).

The SBMR oral history study (Social Research Pacific, Inc. 2004) reports that Mr. Lenchanko told of:

> a navigational chart was created on land that helped train people to use the ocean. But after 900 A.D. there was no need to sail since the land provided for the people, and sailing became an art form. The *Kaʻa Naniao*, located within the SBMR vicinities, is part of the traditional navigational chart. It is a grid that links sites together that are located on military properties throughout Oahu. The location of the *Kaʻa Naniao* was not revealed. [Social Research Pacific, Inc. 2004:23]

4.3 Early Settlement

Traditionally, Honouliuli Ahupuaʻa contained a large permanent settlement around what is now the West Loch, scattered fishing encampments elsewhere on the coast, and small permanent settlements and associated agricultural plots (Tuggle 1995:100). Initial settlement on the eastern slopes of the Waiʻanae Mountains and the central plains was likely mainly temporary and might have been related to bird hunting and the collection of other forest and inland resources.

Permanent Hawaiian settlement of Waiʻanae Uka might have started as early as AD 1250, as populations expanded into central Oʻahu (Roberts et al. 2004:6). Habitation sites are identified as primarily temporary, suggesting recurring occupation perhaps associated with cultivation seasons. The limited number of permanent occupation sites led Carson and Yeomans (2000:68) to propose intensive habitation began shortly before the area was abandoned because a long period of habitation would result in a more intensive archaeological landscape. However, the extensive historic and modern landscape alterations have effectively erased the archaeological remains of the traditional inhabitants so that the extent and type of traditional habitation in the plateau lands might never be known.

Two charcoal samples derived from pondfield contexts in an irrigated agricultural complex (State Inventory of Historic Places [SIHP] No. 5394) in upland Līhuʻe produced calibrated date ranges of AD 1120–1430 and AD 1280–1420 (Carson and Yeomans 2000:18). A similar calibrated date range of AD 1290–1470 was returned from agricultural deposits at nearby SIHP No. 5392 (Robins and Spear 2002: Appendix C-2).

These dates suggest that by about the 13th century, irrigated pondfields were developed along Waiʻeli Stream (and in other similar stream valleys) (Robins and Spear 1997a:7). Although a variety of ceremonial, habitation, burial, and agricultural sites have been identified in the uplands west of the APE, the distribution of sites suggest that intensive agriculture in the stream valleys was a focus of Hawaiian activity. Despite the lack of direct archaeological evidence resulting from extensive historic land disturbances, traditional Hawaiian land use in the neighboring tablelands of Honouliuli, Waiʻanae Uka, and Waikele are presumed to have followed the same pattern of cultivation and associated permanent habitation.

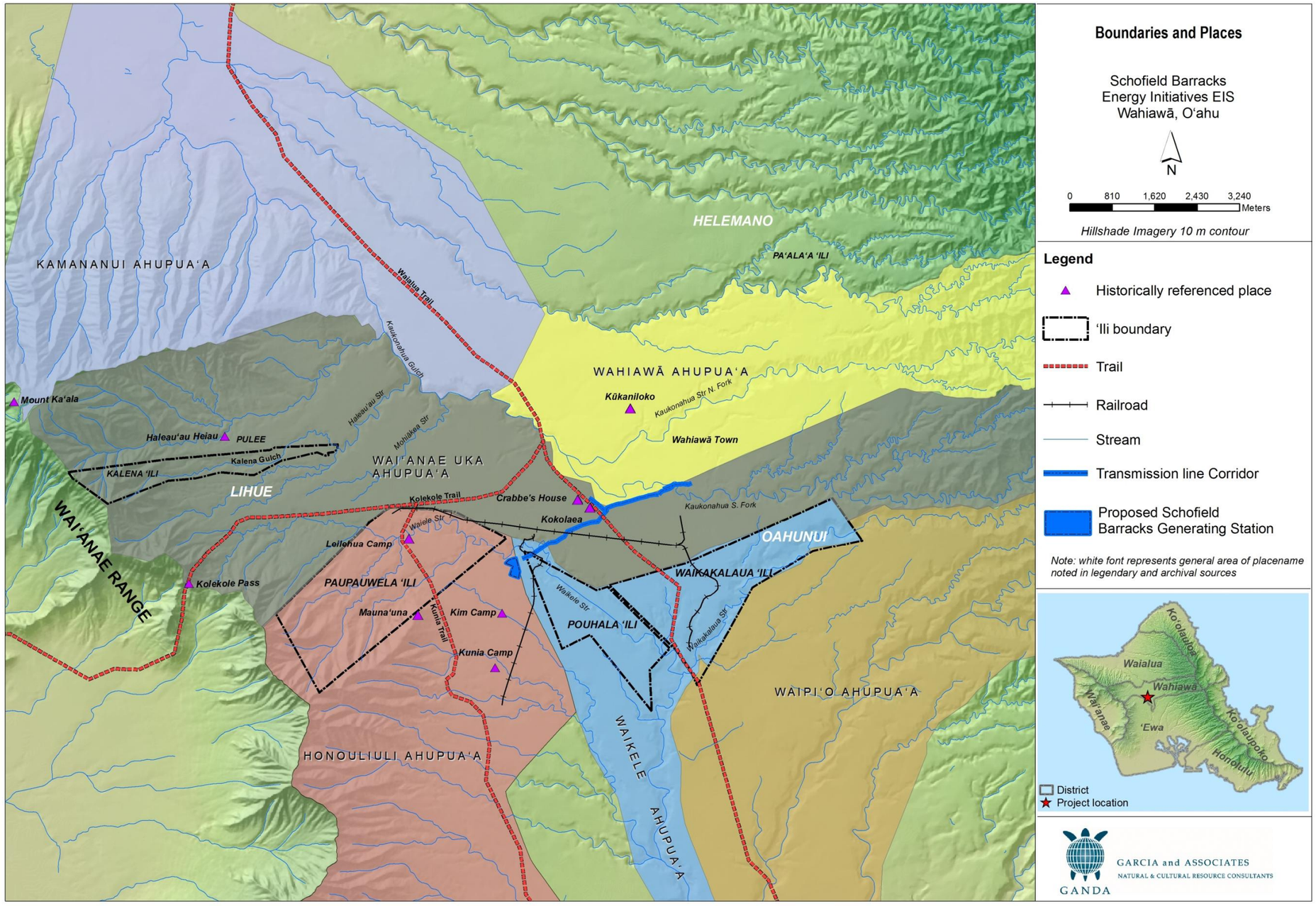

Figure 4. Traditional and historic boundaries and place names near the Schofield Generating Station Project.

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The large number of agricultural sites documented in the uplands above the SBMR suggests the areas' significance in traditional cultivation regimes. Mr. Kane agrees with this interpretation since the traditional inhabitants were living off the land and sea. Although little archaeological evidence remains, the lack of abundant water sources in the plateau lands suggests there was a reliance on dryland cultivation with wetland fields near the few streams and intermittently flowing gulches. It is possible that Waiʻeli Gulch held wetland cultivation plots and that the dryer reaches contained sweet potato or other dryland crops. However, the traditional stories and myths do not impart a sense of ancient types and methods of the APE's subsistence regimes.

Mr. Shirai suggests that because of the occasional presence of water in the gulch formed by Waiʻeli Stream, this would be an area that community members might be concerned with as potentially containing traditional cultural resources.

4.4 Trails

A network of trails provided access to settlement and ceremonial areas in central Oʻahu and connected these places with other parts of the island. The three main travel routes recorded by mid-18th century Hawaiian scholar John Papa ʻĪʻī (1959) provided transportation across the island (Figure 4). Mr. Kane stressed the importance of the tablelands in supplying transportation routes.

One trail extended in a northerly direction from the rich estuaries of Waikele along the south coast of the island to the north shore at Waialua (Waialua Trail). On its way to Kūkaniloko, the Waialua Trail passes under the transmission line just west of the intersection of Kunia Road and Wilikina Drive. Another route, the Kolekole Trail, passed through Waiʻanae Kai, crossed the Waiʻanae Mountains at Kolekole Pass and descended into western Waiʻanae Uka to meet with the Waialua Trail. The third trail, Kunia Trail, came from the south across Honouliuli Ahupuaʻa to meet the Kolekole Trail.

The following extended excerpt explains the trail system and references a number of important cultural sites and place names. Some of the place names are found in the 1881 Hawaiian Government (Figure 5) and 1902 Hawaiʻi Territory Survey (Figure 6) maps.

> They went down to the water and up, going above the group of taro patches of Waiau, to the stream of Kukehi, up to the two maika fields, Puehulunui and Haupuu. Puehulu lies at the crossroads, where one [trail] leads to Waialua and the other branches off to Honouliuli, and to Waianae. . . . There were three roads there at Puuokapolei, Pohakea, and **Kolekole**, from Kunia, the plain of Keahumoa, up to **Maunauna** and by Paupauwela where they join with the road from **Wahiawā** and the one from Waialua**,** on the west side of Mahu to Malamanui, to which spot one can look down from **Kolekole**, to Pokiʻi and Waianae-uka. There was a long cliff road, Eloui, from **Kalena** and **Haleʻauʻau**, on the east side of **Kaʻala**, coming down here to Waianae. There was also a trail going up and then down Makaha-uka, called Kumaipo. Below that trail was a fortress in the olden days, named Kawiwi. At the time of battle a boy was set as a guard every night [with no food--which led to turning over to rebels] . . . From the stream of Anahulu and from Kamani, above the homes, and taro patches a trail lies in front of Kuokoa's houselot and the church, which goes on to meet the creeks of Opaeula and **Halemano**, the sources of the stream of **Paalaa**, on down to the

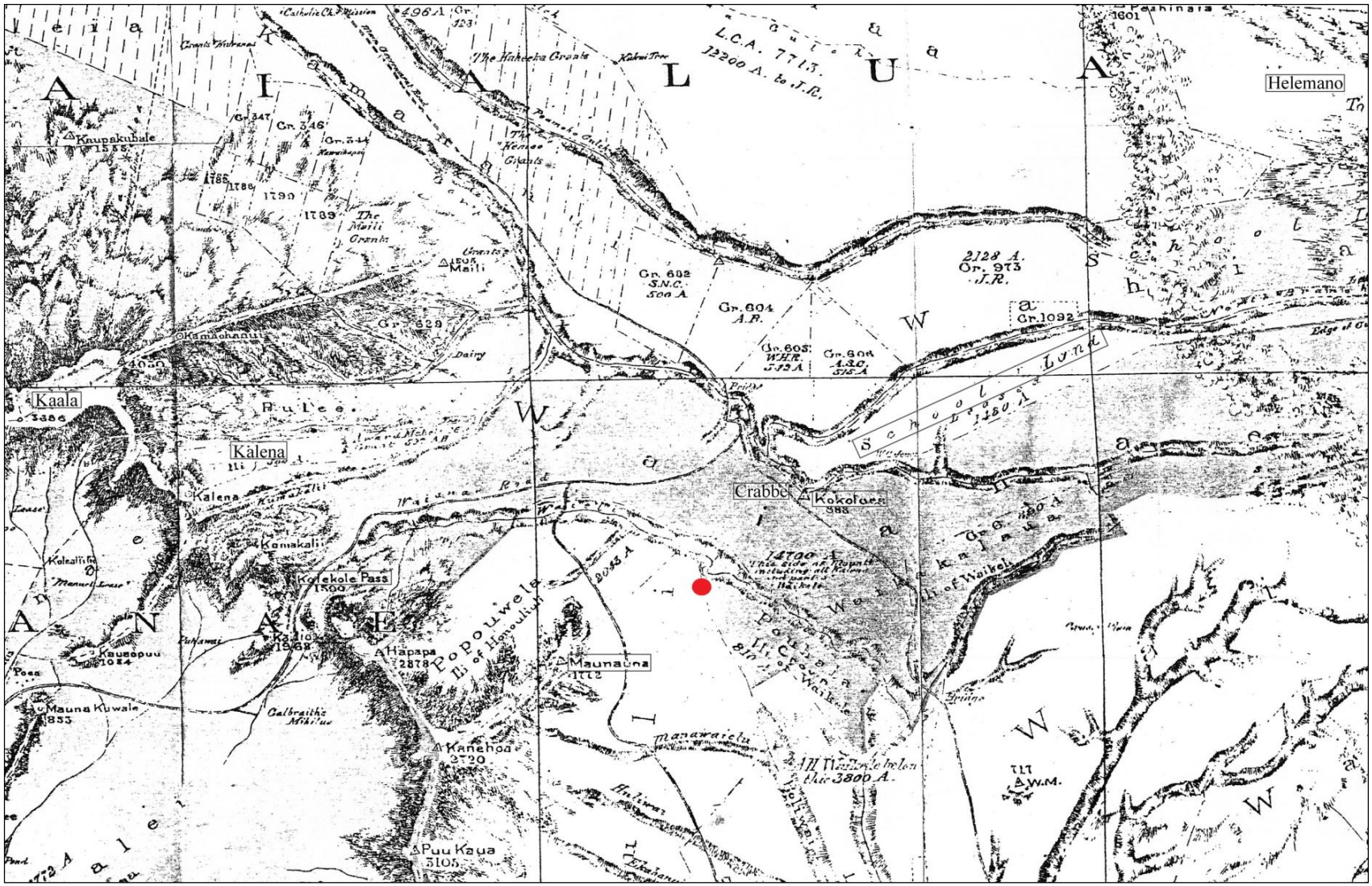

Figure 5. Enlarged detail of an 1881 O‘ahu Island map with proposed Schofield Generating Station marked in red and boxes around place names mentioned in text (Hawaiian Government Survey, W.D. Alexander – General Surveyor).

Figure 6. Enlarged detail of 1902 O‘ahu Island map with proposed Schofield Generating Station marked in red and boxes around place names mentioned in text (Hawai‘i Territory Survey, Walter E. Wall – Surveyor).

> stream of Pooamoho, and go to the crossroad which branches from Mokuleia to Kamananui and Kewaaihe, The kukui grove of Kahewahewa lies below the trail to **Kūkaniloko** where visitors gathered. It goes to the stream of Paka, and the maika playing field of Kapalauauai which lies above the pond belonging to the village. There the trail meets with the one from **Kolekole** and goes on to the stream of Waikakalaua, Piliamoo, the plain of Punaluu to a rise, then down to Kïpapa to Kehaulele, A trail runs off from this long trail to Kalakoa, **Oahunui** and other places much visited, like **Kūkaniloko**, and from there to the digging place of Kahalo. [ʻĪʻī 1959:99; emphasis added]

4.5 The Lō Aliʻi and Kūkaniloko

Oʻahu's central plateau has long been an important Hawaiian religious center with the establishment of an *aliʻi* birthplace at Kūkaniloko, *heiau,* such as Hoʻolonopahu, and Haleʻauʻau and Kalena in western Waiʻanae Uka, and the Maunauna site in Waikele Ahupuaʻa east of the project parcel (Figure 4).

The *lō aliʻi*, in conjunction with Kūkaniloko, are central to the traditional Hawaiian lore of the Līhuʻe-Wahiawā region of the central plateau and its mountainous periphery. The *lō aliʻi* were a specific class of *aliʻi* tied by birth and practice of strict *kapu* to the Līhuʻe-Wahiawā-Helemano region of Oʻahu's central plateau. Kamakau (1964) provides the following description of the *lō aliʻi* class:

> The chiefs of Līhuʻe, Wahiawā, and Halemano on Oʻahu were called *lō aliʻi*. Because the chiefs at these places lived there continually and guarded their *kapu,* they were called *lō aliʻi* [from whom a "guaranteed" chief might be obtained, *loaʻa*]. They were like gods, unseen, resembling men. [Kamakau 1964:40]

> The chiefs of Lihue, Wahiawa, and Halemano on Oahu were called *Lo* chiefs, *Poʻe Lo Aliʻi* {"people from whom to obtain a chief"}, because they preserved their chiefly kapus. The men had kapus, and the women had kapus, and when they joined their kapus and children were born, the children preserved their kapus. They lived in the mountains (*i kuahiwi*); and if the kingdom was without a chief, there in the mountains could be found a high chief (*aliʻi nui*) for the kingdom. Or if a chief was without a wife, there one could be found—one from chiefly ancestors. Kauakahiʻailani, Maʻilikukahi, Kalona, Piliwale, Kukaniloko, Paʻakakanilea {Paʻakanilea}, Kaʻakauualani, Kaʻau, Lale, Paoakalani, Pakapakakuaua, Nononui, Kokoloea, and a great many others were *Lo* chiefs. [Kamakau 1964:5][2]

The emergence of the *lō aliʻi* in central Oʻahu probably has its origin in the sacred birthing site of Kūkaniloko (SIHP No. 50-80-04-218), on the Waialua side of Kaukonahua Gulch. Tomonari-Tuggle and Bouthillier (1994:75) suggest that Kūkaniloko might have extended as far south as Waikalalaua and would therefore encompass some of the project area. Listed on the NRHP (Register No. 73000674), the Kūkaniloko birthstones was one of two sacred places in the

[2] An almost identical passage is found in the Appendix of *Kepelino's Traditions of Hawaii* (Beckwith 2007:196).

Hawaiian Islands where *kapu* chiefesses went to give birth (Handy et al. 1972:465; McAllister 1933:134–135; see also Cordy 1996:596; Fornander 1996:20; Kamakau 1991:136).

Around the 13th and 14th centuries, Kūkaniloko was established by Nanakāoko and his wife Kahihiokalani for the birth of their son, Kapawa. In a chant commemorating Kapawa, Līhuʻe and nearby lands, that are now within the project area, are referenced as metaphors for his birth at Kūkaniloko (Kamakau 1991:136):

> Kapawa, the chief of Waiʻalua
> Was born at Kukaniloko
> Wahiawa the site;
> At Lihue the placenta
> At Kaʻala the naval cord,
> At Kapukapuakea [heiau] the caul

Kūkaniloko can be translated as "an inland area from which great events are heralded" and "to anchor the cry within." According to Kamakau (1991:53), "Chiefs born at Kūkaniloko were the *akua* [gods, spirits] of the land and were *aliʻi kapu* as well."

Associated with Kūkaniloko is the nearby *heiau* of Hoʻolonopahu (SIHP No. 50-80-04-219). By 1933 pineapple cultivation had obliterated the *heiau* (McAllister 1933:137). Remnants of the *heiau* are said to be in the gulch to the south of the birth site (Au 1993, personal communication), although McAllister (1933:57) places the *heiau* to the north of Kūkaniloko, and hence, north of the project area.

The sacred drums of Opuku and Hawea were stored in Hoʻolonopahu, which translates to "sounding the *pahu* drum." The drums were sounded to announce the birth of an *aliʻi* and the cutting of the naval cord (Sterling and Summers 1976:140). Hawaiian traditions tell of:

> thunderous waves at Wai-a-lua being carried as far inland as Wahi-a-wa. Such passages sometimes refer not merely to the ocean's roar, but may also connote the sound of ceremonial drums signaling the birth of a royal chief. [Pukui and Korn 1973:33]

During the long period of island-wide rule by Līhuʻe chiefs, and continuing into the succeeding years, birth at Kūkaniloko remained a powerful status symbol. In 1797 Kamehameha arranged to have his son Liholiho born at Kūkaniloko, but the plan was foiled by the sickness of Queen Keopuolani. It is notable that by this date, the site had already "fallen into decay" (Sterling and Summers 1978:140).

Kūkaniloko also served as a *puʻuhonua*, or place of refuge. According to ʻĪʻī (1959:138), ". . . Kūkaniloko in Wahiawa, Oahu; and Holoholoku in Wailua, Kauai, were places to which one who had killed could run swiftly and be saved." The story of Lāʻieikawai provides additional evidence. Early in this story we learn that, "Now, Kapukaihaoa took Laielohelohe to the uplands of Wahiawa, to the place called Kukaniloko" (Haleole 2006). Kapukaihaoa, a priest, took Laielohelohe to Kūkaniloko because the baby girl would have been killed by her father (or his executioner) if he discovered she had been born.

Another story of the central plateau's traditional importance is set at Oʻahunui (east of the project area), said to have been a residence of high chiefs. However, it was abandoned during the reign of chief Oʻahunui, who was turned to stone when he became a cannibal and ate the two sons of his brother-in-law, Lehuanui (Nakuina 1897:90).

> Lo-Aikanaka is the name given to a family of South Sea chiefs who are driven from the plains of Mokuleia into the hills to a place called Hele-mano, where they are received by the chief Oahu-nui east of that locality and the two chiefs exchange courtesies. Oahu-nui develops a passion for human flesh and finally the two chubby sons of his sister Kilikiliula, wife of Lehua-nui, are sacrificed to his appetite during the absence of their father. Warned by a vision, the father returns, puts to death the chief and his sister, and abandons the place with his men. A curse hangs over the place...None has ever dared to live there since (T.Thrum quoted in Beckwith 1970:342).

Desilets et al. (2011:13) describe the sociopolitical and cultural importance of Oʻahu's central plateau:

> Around AD 1300, district (*moku*) level organization appears to have arisen on Oʻahu. By about AD 1320 to 1340, the *moku* of ʻEwa, Kona, and Koʻolaupoko were ruled by the sons of Maweke (Cordy 2002:22). ʻEwa, including not only ʻEwa proper, but Waiʻanae and Waiʻalua as well, was ruled by the Maweke-Kumuhonua line. It is possible that Maweke's grandson, Kumuhonua, ruled the entirety of Oʻahu between AD 1340 and 1360 from his seat of power in Līhuʻe on the central plateau. Kumuhonua's ʻEwa lands would have included the sacred birthing place Kūkaniloko and it is likely that Līhuʻe was the primary ruling center for all of Oʻahu. Although most chiefly classes were not regionally based, Līhuʻe was exceptional and was home to chiefs with the specific designation of *lō aliʻi* during this time. This class of chiefs populated the Central Plateau between the Koʻolau and Waiʻanae ranges, including all of what is today referred to as Waiʻanae Uka Ahupuaʻa. The high status of the *lō aliʻi* chiefs was likely derived from birthing at Kūkaniloko, interbreeding, and strict *kapu* observance.

4.6 Warfare

The chiefly residents of Līhuʻe were recognized for their skills in spear throwing and were known as excellent teachers of the skill (Kamakau 1991:50). Mr. Kane states that the central plateau is noted for its association with practices used to prepare for traditional warfare and wars. Mr. Lenchanko states that "longhouses were situated throughout the area and that this was the 'training grounds for the warriors'" (Social Research Pacific, Inc. 2004:23).

Lua, a battle method of dislocating joints of opponents, was practiced on unsuspecting travelers crossing over the western boundary of Waiʻanae Uka at Kolekole Pass (Sterling and Summers 1978:134–135).

Paupauwela, Kalena, Pulee, and Malamanui were noted battlefields between the island chief Kualiʻi and rival island chiefs from the ʻEwa and Waialua districts (Fornander 1996:280–281). Fornander (1996:393) provides a translation of *Ka inoa o Kualiʻi*, or Chant of Kualiʻi, recounting the famous battle at Kalena:

Where, where was the field
[on which] the warriors fought?
Lo! The field is at Kalena;
Scattered about, overflowing
Poured out is the godly fluid

In the cultural monitor report for the cultural resource management associated with the Stryker Brigade Combat Team, Mr. Eric Burch discusses the battle of Kalena:

The Mele of Kalena
Ihea, ihea la ke kahua
Where, where is the field?
Paia ao O ke koa-a
On which the warriors fought
I kahua I Kalena
There the field is Kalena
I manini, I hanini
Scattered about, overflowing bodies
I ninia I ka wai Akua
Poured out is the godly fluid, blood
I kou hana I Malamanui
By your work (battle) at Malamanui

The Mele of Kalena talks about one chief whose name is Kuʻaliʻi and how he was trying to end the division between many Ahupuaʻa. This story talks about the people of old who fought for what they believed in. Just like the Kupuna today, how they try to fight for what they believe in. As you read about the story of "The Battle of Kalena," imagine and think about "What would you do?" to conquer twelve thousand men on one side and the other side had just four men.

Kuʻaliʻi was born at Waihole; he trained at Kualoa Valley that was a place where the Aliʻi trained. As he trained, he mastered the art of sling and spear throwing. He was a very disciplined person. He sounds like a person who was very dedicated in mastering some skills. It must have taken some time to put everything into perfection.

As he became a man, he noticed how all the districts on the island of Oahu became independent. He realized that each district was growing their food and the island was not unified under one rule. After analyzing what was going on in the island he decided that he wanted to become the Moʻi of the island. Moʻi means being the one to conquer, or a person who becomes successful. He started to come up with a plan to conquer the island of Oahu.

He decided to travel to the island of Kauai in search for the finest woods to make spears for his men. Kuʻaliʻi wanted to make sure he had the right type of weapon to become successful. He searched for the finest of weapon makers so they could make all the spears and other weapons he needed to fight in a war. After getting all his weapons together he returned back to Oahu. Upon returning back to Oahu, he saw people gathered at Kamaile. Kuʻaliʻi said, "If they want to fight, we will meet them at Kalena." As he got closer he noticed they were the chiefs of Ewa and Waialua.

> So Kuʻaliʻi started to get ready for battle by gathering up as many men to fight with him.
>
> Kuʻaliʻi, Maheleana, and Malanihaehae were the only ones to fight on Kuʻaliʻi's side.
>
> They took a nights rest before battle. The next morning the fighting began at Kalena on the plains of Haleauau (near Lihue). On one side there were twelve thousand men, while Kuʻaliʻi had only three men on his side. Kuʻaliʻi defeated all twelve thousand men with just having three men all together.
>
> The battle of Kalena happened at Schofield Barracks and seeing the sites, artifacts, and writing on rocks really explained what happened in the past. The story really made me feel the mana that the training area has until today. Working out at the BAX really makes me feel that history was once: they're walking around and planting plants and making food to survive. This story really made me think about how the Hawaiians were very smart when it came to war. [Toney and Desilets 2013:87–89]

At Mauna'una, the Wai'anae chief Kuiaia avoided a battle with Kuali'i, as well as impending slaughter, by heeding a warning from his advisor and performing a chant to the god Kū:

> Mauna-una…Kuiaia, the chief of Wai-anae, came with his forces to meet Kualii on the battleground here mentioned. His kahu, forewarned, told him when coming to battle should he find a knotted ti leaf on the road he would know he was in danger and surrounded by an ambush which would cut off his whole force. On finding this knotted ti leaf, he began and chanted this mele from the beginning to end, to the honor of Ku. All on both sides laid down in reverence. Ku gave the signal of reconciliation, and the slaughter was averted. [Fornander 1969, cited in Sterling and Summers 1978:38]

According to the Legend of Kuali'i (Beckwith 1970:395), it was after the battles in Malamanui, Pulee, and Paupauwela that Kuali'i "subdues the whole island" and reestablishes paramount rule between around AD 1720 and 1740 (Cordy 2002:32). Beckwith (1970:396–398) suggests the Kuali'i tradition might represent a political movement led in the name of Kū, rather than signifying the efforts of a single chief.

5.0 POST-CONTACT HISTORY

This section presents the post-contact history of the project area. Desilets et al. (2011), Tomonari-Tuggle (1997), and Tomonari-Tuggle and Bouthillier (1994) all provide a more detailed description of the historic context of O'ahu's central plateau.

5.1 Initial Post-Contact Impacts

By western contact, when history started being recorded, the central O'ahu plateau was dotted with villages. The location of schools provides insight into the size of central plateau settlements soon after contact.

> Kamakau (1992:424) writes that during the reign of Kamehameha III (1825-1854), "schools were built in the mountains and in the crowded settlements...At Kahalepo'ai, Hauone, Kalakoa, Wahiawa, Halemano, and

> Kanewai, there were large villages with teachers and schoolhouses; so at Lihu‘e, Kalena, Maunauna, Kake, and Pu‘uku‘u.” This probably occurred sometime after 1840 when a law establishing government schools was passed. This law required “that a school should be maintained in every community where there were fifteen or more children of suitable age” (Kuykendall 1968:347). Given that rural areas throughout the islands were being abandoned in the early 1800s as a result of factors such as population collapse or out-migration to Honolulu, the fact that these settlements could support government schools at mid-century suggests that they had been of substantial size and/or stability at contact. [Tomonari-Tuggle 1997:15]

School land, leased to W.C. Jones, is shown in the 1881 O‘ahu map drafted as part of the Hawaiian Government Survey by W.D. Alexander, General Surveyor, in the area of what would become the town of Wahiawā (Figure 5). The map also displays much of the plateau as undeveloped and devoid of forest land.

Like elsewhere in the Hawaiian Islands, the native population of central O‘ahu experienced a major decline due to the spread of foreign diseases and movement away from remote localities to the shipping ports and business centers, such as Honolulu. Reverend Artemis Bishop recounts the quick and devastating effects of a measles epidemic he observed from 1848 to 1849 in the Wai‘anae and ‘Ewa residents:

> The past has been a year of trials and sorrows among my people in passing through scenes of sickness and death, beyond what I had ever witnessed…how strikingly their former athletic frames and warlike habits contrast with their enfeebled and effeminate corpses.
>
> Middle of October the measles broke out like wildfire…burning the dead was the great work, all other occupations were suspended and people staggered about like walking corpses. [Bishop 1849 and 1851: Mission letters]

Not long after western contact (ca. 1815–1826), ‘*iliahi* or sandalwood was extensively harvested from the Hawaiian Islands, resulting in the decimation of much of the native forests, particularly in the lower, more accessible elevations. Central O‘ahu was undoubtedly affected by the over-harvesting of sandalwood because Wahiawā was famous for its large sandalwood trees (Kamakau 1992:251–252). In pursuit of the riches gained in the sandalwood trade, chiefs ordered the *maka‘āinana* (commoners) to devote all their time to cutting sandalwood. As a consequence, subsistence practices were abandoned, such as farming and fishing, and famine was experienced throughout the islands (McGrath et al. 1973:18). Foreign contact also led to the over-harvesting of other forest trees used as fuel on whaling ships to render whale blubber into oil (Cuddihy and Stone 1990:38).

The establishment of Christian mission stations in Waialua, Wai‘anae, and ‘Ewa resulted in transportation route improvements for easier travel between settlements in the vicinity of the project area. In 1837 Reverend Emerson reported improvements to the Kolekole Trail:

> During the year past, a number of patches of road have been made, which considerably facilitate our access to some remote parts of the station and to Waianae. The pali between Waialua and Waianae, which formerly rendered the latter place inaccessible from Waialua except on foot, has been so

> improved that a horse can be rode up and down without difficulty (Emerson 1837: Mission letters).

Historical documents and archival data for the central Oʻahu region indicate that Native Hawaiians continued to live and cultivate crops during the mid- to late-1800s, particularly along Mohiākea and Kalena ʻIli, and along Waiʻeli Stream which runs through the study area (Robins and Spear 2002:23, 24, 31, and 32). An 1886 photograph with Kolekole pass in the background shows the location of a homestead and active pondfields (likely *loʻi kalo*) along a portion of Waiʻeli Stream to the west of the project area (Figure 7). It is presumed that the rectangular features represent fenced boundaries of traditional features, such as dwellings and active or recently active croplands.

5.2 Historic Land Tenure

In the mid-1800s Māhele, all of Waiʻanae Uka Ahupuaʻa, with the exclusion of Kalena ʻIli, was designated as Crown Land. Honouliuli Ahupuaʻa was awarded to Kekauʻohoni, grandchild of Kamehameha I. Upon her death in 1851, her husband Levi Haʻalelea inherited the majority of the land, and later (1864) passed it on to his wife at the time, Amoe Haʻalelea. Haʻalelea sold it to her brother-in-law John Harvey Coney. The land has since been acquired by private owners and the state and federal government for ranching, cultivation practices, and U.S. military activities as detailed in the following sections.

5.3 Ranching

Honoluliuli

In 1877 James Campbell purchased the portion of Honouliuli retained by John Harvey Coney (about 43,640 acres) and established a cattle ranch under the namesake of Honouliuli Ranch. Before the purchase, John Meek and James Dowsett leased portions of Honouliuli for cattle grazing and stock running. Meek and Dowsett "introduced grazing in areas too high or dry for agriculture" (Burgett and Rosendahl 1992:E-7). Meek was known to have leased more than 3,000 acres in the ʻEwa District, including Waikakalaua Gulch, and had 4,000–5,000 head of cattle (Tomonari-Tuggle and Bouthillier 1994:19). By 1881 Honouliuli Ranch was a successful ranch with 10,000 acres devoted to agriculture. Some of the cultivated land may have encompassed the project area.

Waiʻanae Uka

Meek was the first individual to ranch cattle at Waiʻanae Uka. In 1851 Kalena ʻIli was conveyed to Meek by Reverend Bishop (Bureau of Conveyances, Book 17:148), who described the parcel as having "taro patches for 4 or 5 families" (Department of the Interior, n.d.). By 1875 his heirs leased the entire *ahupuaʻa* of Waiʻanae Uka.

Meek's affluence in Oʻahu society is remembered by Taylor (1922:223):

> The days are recalled, also, when Captain Meek controlled Lihue and Wahiawa on Oahu under lease from the government. He raised thoroughbred horses, and his daughters rode the finest in the islands…

Figure 7. 1886 photograph showing homestead and active crops in Wai‘eli Stream (Bishop Museum Archives, Neg. CP117, 503), from Robins and Spear (2002:31).

A ranch house once likely occupied by Meek’s daughter Elizabeth Meek Crabbe and husband Horation Crabbe is shown on a late 19th century map as “Crabbe” (Hawaiian Government Survey 1881) (Figure 4, Figure 5). Between 1875 and 1889, Wai‘anae Uka was leased to various westerners for cattle ranching, including a shared lease between Meek (and his heirs) and Dowsett.

In 1882 King Kalākaua and C.H. Judd purchased two-thirds of Wai‘anae Uka, under whom the lands were named Leilehua Ranch (Tomonari-Tuggle and Bouthillier 1994:22; Figure 4, Figure 6). Kalākaua and Judd built a hunting lodge, Malamanui, to use as a retreat and place to entertain influential people (Nedbalek 1984:13). In 1889 Dowsett purchased the lease and Leilehua Ranch assets, which consisted of more than 20,000 acres and 3,000 head of cattle and other stock (Tomonari-Tuggle and Bouthillier 1994:24). Wai‘anae Uka remained under Dowsett Ranch until the U.S. military took over in the early 1900s.

Tomonari-Tuggle (1997:24) describes the significant effect of more than 20 years of cattle ranching on the central plateau as follows:

> the probable final demise of native plants as the dominant vegetation of the area. Cattle are known to have opened up native forests through foraging, trampling of the forest understory, and spreading of alien grasses. In addition, associated human activities exacerbated the actions of the cattle. Logging often preceded ranch operations or was used to expand existing pastures. Timber was cut for fencing or ranch buildings. Some native plants

> were considered "noxious" and removed to encourage pasture growth and facilitate the movement of cattle (Cuddihy and Stone 1990:62).

5.4 Commercial Agriculture

In 1897 the Oahu Sugar Company was established on the 'Ewa Plains by the predecessor of Amfac, H. Hackfield & Co. (Wilcox 1996:98). In 1898 a group of homesteaders began settling the Wahiawā Colony Tract, which the Land Act of 1895 designated as a homestead land (Nedbalek 1984:18). Clearly shown in the 1902 survey map, W.C. Jones' leased land has been split into 17 homesteads roughly bounded by the north and south forks of Kaukonahua Stream (Figure 6).

James B. Dole began growing pineapple in the Wahiawā Tract in 1900 for his canning operation, the Hawaiian Pineapple Company. The east part of the military reservation, and the school land leased to W.C. Jones, is shown as pineapple land in the 1902 map (Figure 6).

The Wahiawā Colony organized the Wahiawa Water Company, which by 1902 built a network of flumes, ditches, and tunnels to provide water to the homesteads and cultivated fields (Nedbalek 1984:28). The water company completed a dam across Kaukonahua Gulch in 1906 to form the reservoir now known as Lake Wilson (Haile 1976). By the 1920s more than 71 artesian wells had been dug in Honouliuli, which produced more than 100 million gallons of water per day (Burgett and Rosendahl 1992: Appendix E). Within a decade, thousands of acres of pineapple fields were being cultivated in central O'ahu.

In 1906 the Oahu Rail and Land Company (OR&L) extended their railway from Waipahu to Wahiawā, through what would become WAAF, so that pineapples could be transported from the fields to the new Dole cannery constructed at Iwilei in Honolulu. These rail lines expanded over the decades to keep up with the commercial growth of the central plateau (Figure 4).

Between 1910 and 1920 a number of smaller plantations were established in central O'ahu, mostly by Japanese immigrants. Masanari Saito was one of the independent growers who, in 1913, first planted pineapple on leased fields near Kunia using pineapple tops discarded by another grower (Nedbalek 1984:56). Saito decided to move his plantation from Kunia to "Leilehua…in the valley west of Schofield," which proved to be a difficult undertaking:

> He and his friend Tamotsu Ono traveled by horse and began clearing a path as they moved along. At Leilehua first he built something that looked like a chicken coop and slept there. Then he built a kitchen and slept there and finally he made the main rooms. After the land had been cleared, plowed and planted he bought passage on a ship and returned to Japan for the woman who would be his bride. [Nedbalek 1984:56]

North of the project area, a plantation camp labeled as "Leilehua" might correspond to Saito's early plantation that Nedbalek (1984) also refers to as Leilehua (Figure 6).

Large corporations, including Dole and Hawaiian Islands Packing Company, established labor camps near the fields, including the Kunia and Robinson I camps southeast of the present study area. Small stores and itinerant peddlers served these outlying communities and isolated plantations.

By the 1920s mechanized pineapple farming and military occupation of the central plateau at SBMR and WAAF contributed to economic expansion centered in Wahiawā that gradually promoted infilling development and an even greater expansion of pineapple farming throughout the central plateau. USGS maps from the 1920s to 1953 indicate that all of the upper plateau lands and broad ridge tops were cultivated in pineapple, and a network of roads were also established for access between the fields (Figure 8, Figure 9).

An aerial photo of SBMR cantonment dated to 1926 shows the Schofield Generating Station area, in the left foreground below Waiʻeli Stream, planted in pineapple (Figure 10). A photo of anti-aircraft training amidst pineapple fields in Oʻahu's central plateau during World War II also shows the extent of commercial cultivation (Figure 11). Pineapple cultivation continued in and around KUNTA under various companies (Roberts et al. 2004:6) until Del Monte Pineapple Company abruptly shut down operations in November 2006.

5.5 U.S. Military

Following annexation of the Hawaiian Islands by the United States in 1898, former Crown Lands, including Waiʻanae Uka, became the property of the federal government. In 1899 Waiʻanae Uka (excluding Kalena ʻIli) was set aside as a military reservation. In the 1902 Hawaiʻi Territory Survey map by Walter E. Wall, Surveyor, much of the central plateau, with the exception of Kalena, is shown as U.S. Military Reservation (Figure 6). The military reservation was not occupied until 1909 when it was mandated to be the base for Oʻahu's mobile defense troops because of its strategic central location.

The landscape of the project area is described in a report on the adequacy of the central plateau for a military post:

> The main road across the island runs across the tract, cutting it into two pieces of 8,000 and 6,000 acres respectively. The west section is cultivated with pineapples and is the smaller of the two and in my opinion the other tract is amply large for all purposes and not having been broken up, is covered with sod which is a very great advantage as the red dirt here is beastly dusty in dry weather and equally vile in wet. The site is an ideal one for a post being a level or practically level place, but there is not a tree on the tract. [Foster 1908, cited in Tomonari-Tuggle 1997:25]

Initially called either Leilehua Barracks or Castner Village, the latter named for the construction supervisor Captain Castner, SBMR was first occupied by 473 soldiers from the 5th Cavalry Regiment (Alvarez 1982:16). In April 1909 the military base was formally named Schofield Barracks in honor of Lt. General John M. Schofield, a former Civil War hero and Commander of the Army's Pacific Division. Although World War I halted construction, most major construction for SBMR (General Officers housing, new barracks for artillery troops, new infantry barracks, and additional Officers Quarters for the infantry and cavalry sections) was finished in the early 1920s (Robins and Spear 1997b:39–42). A 1909–1919 military survey map suggests initial development of SBMR was centered immediately north of the study area at a place called Leilehua along the north boundary. An OR&L railroad track terminating at several structures in Leilehua might be the original track that was extended into the military reservation in 1906 (U.S. Army Military Survey 1909).

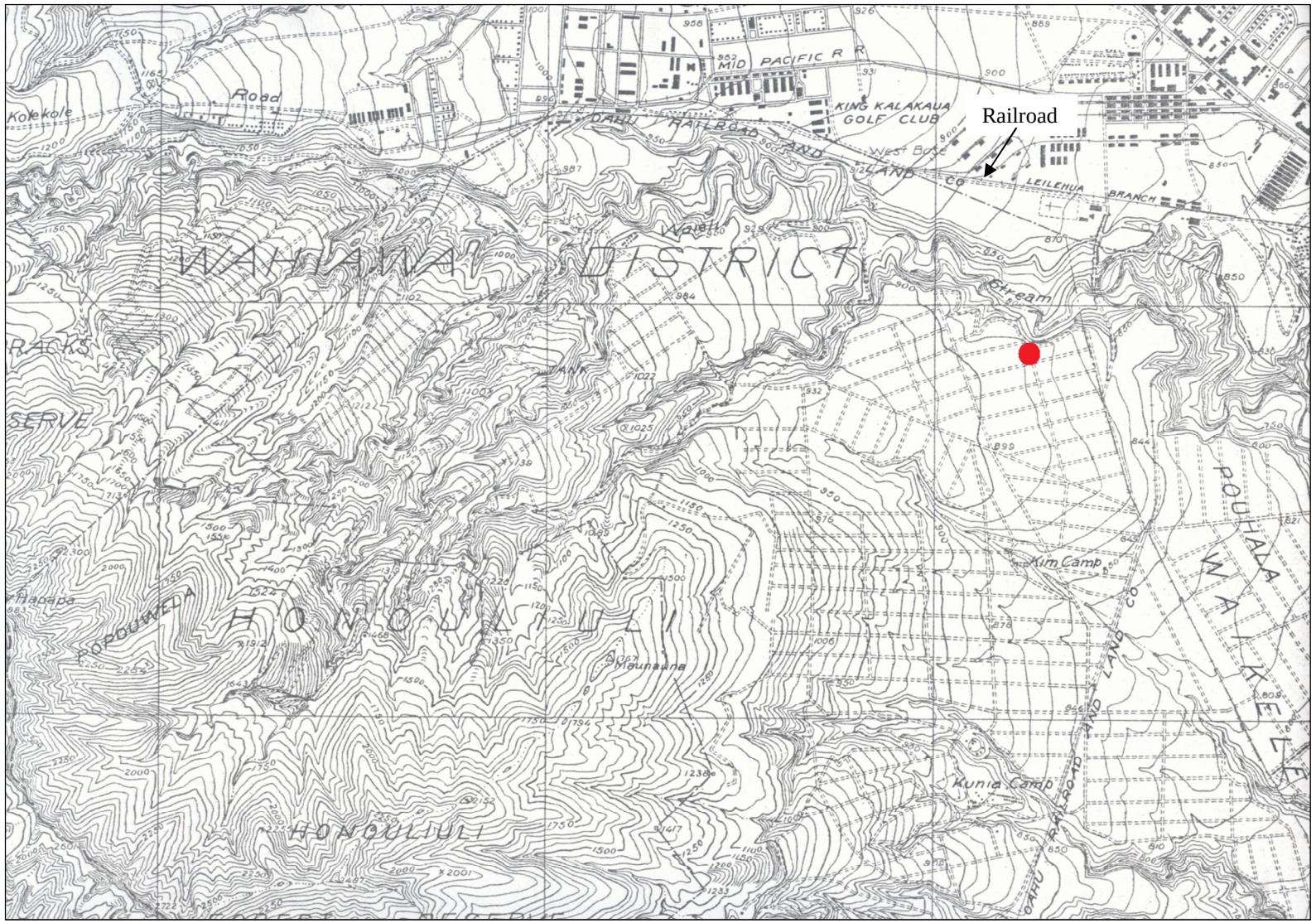

Figure 8. Enlarged detail of the 1927–1930 USGS Schofield Quadrangle with proposed Schofield Generating Station marked. Dashed lines around marked area indicate one-lane roads through cultivated fields.

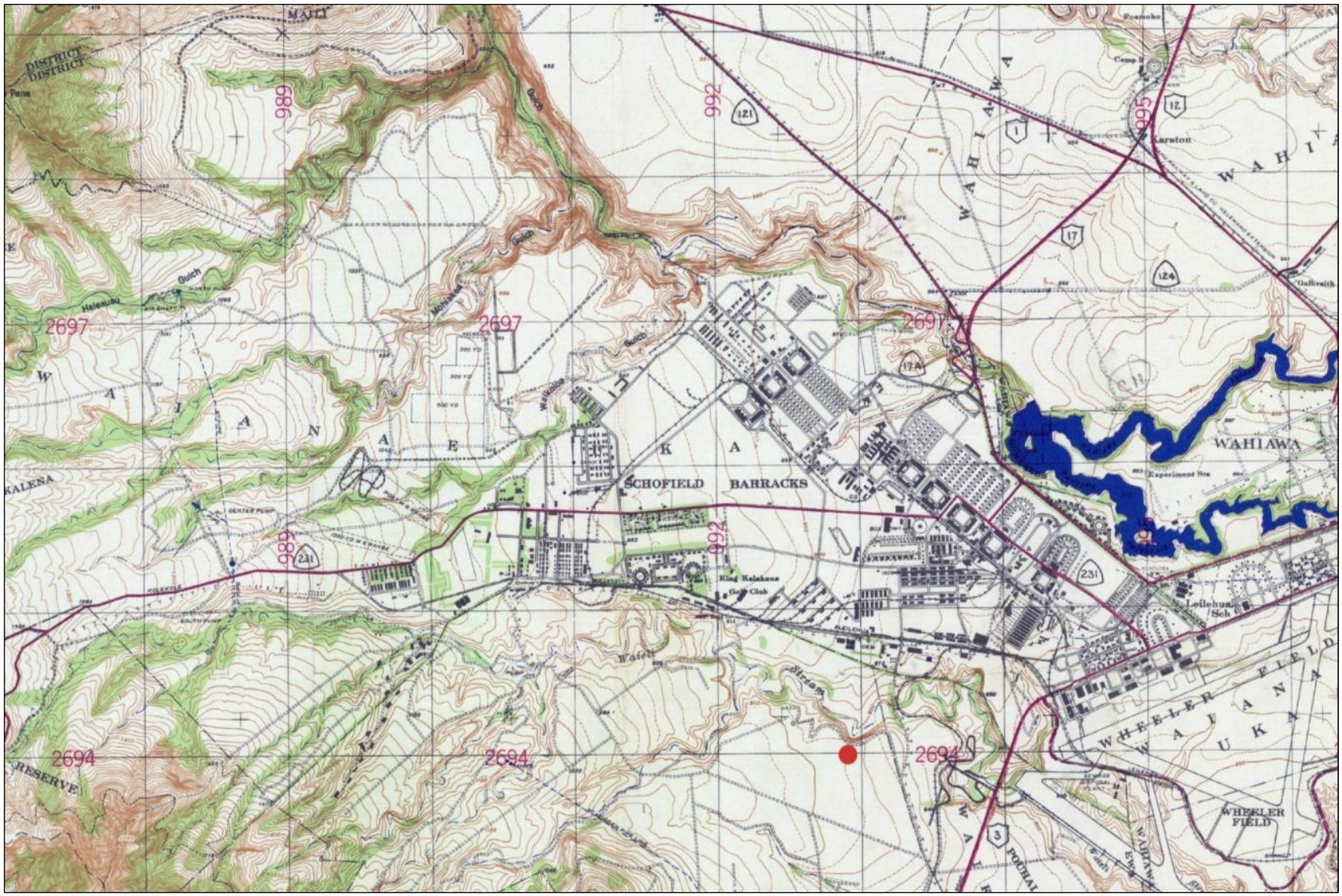

Figure 9. Enlarged detail of the 1943 USGS Schofield Quadrangle with proposed Schofield Generating Station marked.

Figure 10. 1936 aerial photograph of Schofield Barracks showing surrounding pineapple fields (Tropic Lighting Museum).

Figure 11. Anti-aircraft training amidst pineapple fields in central Oʻahu during World War II (From Paradise of the Pacific 1944:49).

During early development of SBMR, water was scarce and was apparently derived from one primary source at a "spring on the slopes of the Waianae Mountains Range" (Nedbalek 1984:59). Photographs taken in 1909 show water tanks and a water supply camp in western Waiʻanae Uka that might correlate with the location of a probable pump house identified as SIHP Site No. 6557 in Haleʻauʻau Stream (Robins et al. 2005:16). A water shortage continued at SBMR until 1925 when Ku Tree Reservoir was constructed in eastern Waiʻanae Uka (Nedbalek 1984:60) and a deep well was excavated in 1938 (Addleman 1940, cited in Spencer Mason Architects 1997).

A northwestern extension of the OR&L line connected the lower post with the artillery area in the 1920s and 1930s. The USGS Schofield Barracks Quadrangle map of 1927–1930 displays two rail companies extending through the plateau; the OR&L and the Mid Pacific Railroad (Figure 8). Both companies have rails leading to the cantonment area. The same shows the Leilehua Ranch house is now identified as the King Kalākaua Golf Club.

WAAF was established as a military installation in 1922 on land included in the 1909 Executive Order establishing SBMR. Initially used for mounted cavalry training, WAAF was constructed in the 1920s by a detachment from the Army Air Service based at Luke Field on Ford Island. During the 1930s the field was upgraded and new buildings were constructed, including houses, hangars, and a fire station. At the same time, the OR&L relocated their railroad tracks to avoid the aviation field that was under construction.

During the 7 December 1941 Japanese attack on Pearl Harbor, SBMR was subject to Japanese air fire. Troops returned fire from the quadrangle roofs, shooting down two Japanese planes and one U.S. plane (Alvarez 1982:64). No significant damage was incurred at SBMR during the attack; however, nearby WAAF was hit hard. SBMR was used as a major training camp during the Pacific campaign of World War II. The Ranger Combat Training School at SBMR was established in 1942 and intended to train the troops for jungle warfare (Alvarez 1982:68). In 1947 WAAF was moved to U.S. Air Force control and then put in caretaker status from 1948 until 1951, when the Korean War began.

While the number of troops and level of activity at SBMR has varied considerably since the close of World War II, the reservation has continued in its importance as a training center and post for the U.S. Army's 25th Infantry Division. WAAF remained in U.S. Air Force control until 1993, when it was returned to the U.S. Army. The 1943 USGS map displays few changes from the 1930 USGS map (Figure 9). There are a few more permanent structures. Mid Pacific Railroad is no longer displayed; and WAAF is established.

In 2005 the U.S. Army purchased 1,402 acres south of the SBMR cantonment and east of the South Range from the Campbell Estate. The northernmost of the three parcels, composing the South Range Acquisition Area, would become KUNTA. At the time of purchase, the lands, including broad ridges and stream floors, were still under pineapple cultivation as they had been for almost a century.

6.0 CULTURAL IMPACT ASSESSMENT RESULTS

Native Hawaiian use of the lands encompassed by the APE ended more than a century ago as U.S. military, ranching, and commercial agricultural endeavors encroached upon the traditional

landscape. These developments transformed the landscape into extensive farmlands, military installations, and an urban development. Lack of public access to the portions of the APE within SBMR likely had a deleterious effect on traditional use of those areas. As previous oral history and ethnographic studies of SBMR and WAAF (e.g., Desilets et al. 2011; Social Research Pacific, Inc. 2004) have found, there are very few, if any, Hawaiian oral historians, *kapuna*, and community members with knowledge of traditional cultural practices and land use associated with this region.

According to the cultural consultants in this CIA, most knowledge about cultural practices and cultural sites on Oʻahu's central plains is only available from archival documents and archaeological research rather than first-hand experience. The cultural consultants knew of no traditional Hawaiian resources, sites, or practices within the APE and saw no adverse effects from the project.

6.1 Cultural Resources, Practices, and Beliefs Identified—Location and Significance

All archival ethnohistoric research and ethnographic consultations conducted during this study indicate that the lower elevations of Oʻahu's central plateau contained important traditional transportation routes, centers for training in warfare, and battlefields. Most significantly the Līhuʻe-Wahiawā-Helemano region is associated with a specific class of high chiefs, the *lō aliʻi*, tied by birth and practice of strict *kapu* to the uplands. The only remnants of this cultural complex are the Kūkaniloko birthing stones, located well outside of the project area, and a large number of archaeological sites in the upland reaches of SBMR, also quite distant from the project area. More than a century of commercial agriculture, military development, and urban growth appear to have eliminated most, if not all, evidence of traditional cultural activity within the APE.

Data analyzed during this assessment indicate that the long period of historic development, particularly that related to the vast expanses of pineapple fields and military installations, has resulted in the termination of any traditional cultural practices that might have once occurred in or adjacent to the project area. There is no tangible or intangible evidence of any former or ongoing cultural practices (including resource procurement through hunting or gathering, transportation routes, burials, or other ceremonial activities) occurring in the APE.

6.2 Effects of the Proposed Project

Based on the above findings, this study concludes that there will be no adverse impact to cultural resources, cultural practices, and traditional beliefs by the SGSP. Traditional Hawaiian land use in the APE terminated more than a century ago with any potential tangible remains long lost to commercial agricultural endeavors, military activities, and urban development. Along with this loss of cultural properties in the project area, the *moʻolelo* once held by traditional community members were forgotten.

6.3 Confidential Information Withheld

During the course of conducting the ethnographic survey for the SGSP, no sensitive or confidential information was discovered in the background literature or communicated by consultants. All results of this effort are therefore presented in an unrestricted manner and no data was withheld.

6.4 Conflicting Information

No conflicting information was identified in the consultation process or in the archival research. A number of themes were consistently repeated in interviews and background literature (i.e., transportation routes, warfare) demonstrating independent confirmation and verification of findings.

6.5 Proposed/Potential Physical Alterations and Isolation/Alteration of Resources

With no known tangible or intangible cultural resources or practices in the project area, the SGSP presents very little potential to physically alter or isolate any cultural resources.

6.6 Recommendations

It is recommended that the proposed design for constructing the generating station and installing the electric poles and overhead lines be followed as planned. The proposed design will not impact any known cultural sites or practices and avoids impact to Wai‘eli Stream gulch, which which a cultural consultant noted might raise concerns of community members. Should the planned development substantially change, it is recommended that this CIA be revisited.

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APPENDIX A: AGREEMENT TO PARTICIPATE

Agreement to Participate in the Cultural Impact Assessment for the Schofield Generating Station EIS

Jolie Liston, Garcia and Associates

You are invited to participate in the Cultural Impact Assessment of the Schofield Generating Station Environmental Impact Assessment (EIS) on O'ahu (herein referred to as "Project"). The Project is being conducted by Garcia & Associates, a cultural resource management firm, on behalf of TetraTech, who is conducting the EIS on behalf of the Hawaiian Electric Company. The ethnographer will explain the purpose of the Project, the procedures that will be followed, and the potential benefits and risks of participating. A brief description of the Project is written below. Feel free to ask the ethnographer questions if the Project or procedures need further clarification. If you decide to participate in the Project, please sign the attached Consent Form. A copy of this form will be provided for you to keep.

Description of the Project

This ethno-historic study is being conducted to collect information about the long-term land use in and around the project area through interviews with individuals who are knowledgeable about this area, and/or about information including cultural practices, legends, songs, or chants. The goal of this Project is to identify and understand the importance of any traditional Hawaiian and/or historic cultural resources, places, or traditional cultural practices in these properties.

Procedures

After agreeing to participate in the Project and signing the Consent Form, the ethnographer will record your interview on audio tape and have it transcribed. The transcript will be sent to you for editing and final approval. Data from the interview will be used as part of the Cultural Impact Assessment for this EIS and transcripts may be included in part or in full as an appendix to the report. The ethnographer may take notes and photographs and ask you to spell out names or unfamiliar words.

Discomforts and Risks

Possible risks and/or discomforts resulting from participation in this Project may include, but are not limited to the following: being interviewed and recorded; having to speak loudly for the recorder; providing information for reports which may be used in the future as a public reference; your uncompensated dedication of time; possible misunderstanding in the transcribing of information; loss of privacy; and worry that your comments may not be understood in the same way you understand them. It is not possible to identify all potential risks, although reasonable safeguards have been taken to minimize them.

Benefits

This Project will give you the opportunity to express your thoughts and opinions and share your knowledge, which will be considered, shared, and documented for future generations. Your sharing of knowledge may be instrumental in the preservation of cultural resources, practices, and information.

Confidentiality

Your rights of privacy, confidentiality and/or anonymity will be protected upon request. You may request, for example, that your name and/or sex not be mentioned in Project material, such as in written notes, on tape, and in reports; or you may request that some of the information you provide remain off-the-record and not be recorded in any way. To ensure protection of your privacy, confidentiality and/or anonymity,

you should immediately inform the ethnographer of your requests. The ethnographer will ask you to specify the method of protection, and note it on the attached Consent Form.

Refusal/Withdrawal

At any time during the interview process, you may choose to not participate any further and ask the ethnographer for the tape and/or notes. Please note that you will be given an opportunity to review your transcript, and to revise or delete any part of the interview.

Consent Form

I, _____, am a participant in the Cultural Impact Assessment for the Schofield Generating Station Project Environmental Impact Assessment (herein referred to as "Project"). I understand that the purpose of the Project is to conduct oral history interviews with individuals knowledgeable about the lands the project will impact. I understand that Garcia and Associates and/or TetraTech will retain the product of my participation (audio tapes, transcripts of interviews, etc.) as part of their permanent collection and that the materials may be used for scholarly, educational, land management, and other purposes.

_____ I hereby grant to Garcia and Associates and TetraTech ownership of the physical property delivered to the institution and the right to use the property that is the product of my participation (e.g., my interview, photographs, and written materials) as stated above. By giving permission, I understand that I do not give up any copyright or performance rights that I may hold.

_____ I also grant to Garcia and Associates and TetraTech my consent for any photographs provided by me or taken of me in the course of my participation in the Project to be used, published, and copied by Garcia and Associates and TetraTech and its assignees in any medium for purposes of the Project.

_____ I agree that Garcia and Associates and TetraTech may use my name, photographic image, biographical information, statements, and voice reproduction for this Project without further approval on my part.

_____ I understand that I will have the opportunity to review my transcripts to ensure that they accurately depict what I meant to convey. I also understand that if I do not return the revised transcripts after one week from the date of receipt, my signature below will indicate my release of information for the draft report, although I will still have the opportunity to make revisions during the draft review process.

By signing this permission form, I am acknowledging that I have been informed about the purpose of this Project, the procedure, how the data will be gathered, and how the data will be analyzed. I understand that my participation is strictly voluntary, and that I may withdraw from participation at any time without consequence.

Consultant Signature	**Date**
Print Name	**Phone**
Address	

Thank you for participating in this valuable study.