DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
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FILE COPY
AUG 08 2018

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DEPUTY DIRECTOR

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DEPUTY DIRECTOR

July 27, 2018

2017/ELOG-2506(RY)
2018/ED-1(RY)

Mr. Scott Glenn
Director
Office of Environmental Quality Control
Department of Health, State of Hawaii
235 South Beretania Street, Room 702
Honolulu, Hawaii 96813

RECEIVED
'18 JUL 27 P2:43
OFC. OF ENVIRONMENTAL QUALITY CONTROL

Dear Mr. Glenn:

With this letter, the City and County of Honolulu, Department of Planning and Permitting, hereby transmits the Final Environmental Assessment (FEA) and Finding of No Significant Impact for the Kualoa Ranch Improvements project, situated at Tax Map Keys: 4-9-003: Portion 001, 4-9-004: Portion 002, 4-9-005: Portion 001, and 5-1-001: Portion 001 in the Ko'olau Poko and Ko'olau Loa Districts on the island of Oahu, for publication in the next available edition of the Environmental Notice.

Enclosed is a completed Office of Environmental Quality Control Publication Form, an electronic copy of the same in MS Word, a hard copy of the FEA, and a searchable PDF file of the same.

Should you have any questions, please contact Raymond Young, of our staff, at (808) 768-8049.

Very truly yours,

Kathy K. Sokugawa
Acting Director

KKS:ah

Enclosures

1618591

19-054

APPLICANT
PUBLICATION FORM

Project Name:	Kualoa Ranch Improvements
Project Short Name:	Kualoa Ranch Improvements
HRS §343-5 Trigger(s):	(4) Propose any use within any historic site as designated in the National Register or Hawaii Register
Island(s):	Oahu
Judicial District(s):	Ko'olau Poko and Ko'olau Loa
TMK(s):	4-9-003: Portion 001, 4-9-004: Portion 002, 4-9-005: Portion 001, and 5-1-001: Portion 001
Permit(s)/Approval(s):	State Special Use Permit and County Conditional Use Permit and Special Management Area Permit
Approving Agency:	Department of Planning and Permitting, City & County of Honolulu
Contact Name, Email, Telephone, Address	Raymond Young, rcsyoung@honolulu.gov, (808) 768-8049, 7th Floor, Fasi Municipal Building, 650 South King Street, Honolulu, Hawaii 96813
Applicant:	Kualoa Ranch Hawai'I, Inc.
Contact Name, Email, Telephone, Address	John Morgan, johnmorgan@kualoa.com, (808) 748-3221 P.O. Box 650, Ka'a'awa, Hawai'I 96730
Consultant:	G70
Contact Name, Email, Telephone, Address	Jeff Overton, jeffo@g70.design, (808) 523-5866 925 Bethel Street, 5th Floor, Honolulu, Hawai'I 96813

Status (select one)	**Submittal Requirements**
____ DEA-AFNSI	Submit 1) the approving agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEA, and 4) a searchable PDF of the DEA; a 30-day comment period follows from the date of publication in the Notice.
__X__ FEA-FONSI	Submit 1) the approving agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; no comment period follows from publication in the Notice.
____ FEA-EISPN	Submit 1) the approving agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; a 30-day comment period follows from the date of publication in the Notice.
____ Act 172-12 EISPN ("Direct to EIS")	Submit 1) the approving agency notice of determination letter on agency letterhead and 2) this completed OEQC publication form as a Word file; no EA is required and a 30-day comment period follows from the date of publication in the Notice.
____ DEIS	Submit 1) a transmittal letter to the OEQC and to the approving agency, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEIS, 4) a searchable PDF of the DEIS, and 5) a searchable PDF of the distribution list; a 45-day comment period follows from the date of publication in the Notice.
____ FEIS	Submit 1) a transmittal letter to the OEQC and to the approving agency, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEIS, 4) a searchable PDF of the FEIS, and 5) a searchable PDF of the distribution list; no comment period follows from publication in the Notice.
___ FEIS Acceptance Determination	The approving agency simultaneously transmits to both the OEQC and the applicant a letter of its determination of acceptance or nonacceptance (pursuant to Section 11-200-23, HAR) of the FEIS; no comment period ensues upon publication in the Notice.
____ FEIS Statutory Acceptance	The approving agency simultaneously transmits to both the OEQC and the applicant a notice that it did not make a timely determination on the acceptance or nonacceptance of the applicant's FEIS under Section 343-5(c), HRS, and therefore the applicant's FEIS is deemed accepted as a matter of law.
____ Supplemental EIS Determination	The approving agency simultaneously transmits its notice to both the applicant and the OEQC that it has reviewed (pursuant to Section 11-200-27, HAR) the previously accepted FEIS and determines that a supplemental EIS is or is not required; no EA is required and no comment period ensues upon publication in the Notice.

19-054

____ Withdrawal Identify the specific document(s) to withdraw and explain in the project summary section.

____ Other Contact the OEQC if your action is not one of the above items.

Project Summary

The Applicant proposes to obtain land use permits for existing and proposed uses and structures at Kualoa Ranch. Improvements planned under the proposed project include an expansion to the existing visitor's center, additional buildings for administration, maintenance, and employee support, tour depots, horseback riding stables, a farmers market, a ceremonial pavilion in Palikū, an agricultural, culinary, and movie facility in Ka'a'awa Valley. Also proposed for permitting are existing wedding and events hosting at various sites, and the occasional hosting of special events such as the annual Farm Fair and other special events. Various infrastructure improvements including driveways, parking, water supply, wastewater management, and drainage are also proposed. The Applicant also proposes to increase the number of visitors to Kualoa Ranch to about 2,000 persons per day, not including visitors for weddings and special events, and further diversify its agricultural operations. The proposed improvements would result in an an increase in floor area from 47,362 square feet to approximately 76,792 square feet, after removing existing floor area of 7,330 square feet.

19-054

KUALOA RANCH IMPROVEMENTS

KUALOA, KOʻOLAU POKO DISTRICT, OʻAHU, HAWAIʻI

FINAL ENVIRONMENTAL ASSESSMENT

KUALOA

AUGUST 2018

G70

KUALOA RANCH IMPROVEMENTS

Kualoa, Koʻolau Poko District, Oʻahu, Hawaiʻi

Final Environmental Assessment

Applicant:

Kualoa Ranch Hawaiʻi, Inc.
49-560 Kamehameha Highway
Kaneohe, Hawaiʻi 96744

Approving Agency:
City and County of Honolulu
Department of Planning and Permitting
650 South King Street
Honolulu, Hawaiʻi 96813

Prepared by:

G70
111 South King Street, Suite 170
Honolulu, Hawaiʻi 96813

August 2018

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APPENDICES

A FINAL Natural Resources Assessment for Planned Improvements at Kualoa Ranch, Windward Oʻahu, AECOS Inc., June 2015.

B FINAL Archaeological Assessment for Improvements to Kualoa Ranch, Kualoa 1 and 2 Ahupuaʻa, Koʻolaupoko District, and Kaʻaʻawa Ahupuaʻa, Koʻolauloa District, Island of Oʻahu, Hawaiʻi, Keala Pono Archaeological Consulting, LLC., December 2016.

C FINAL Cultural Impact Assessment for Improvements to Kualoa Ranch, Kualoa 1 and 2 Ahupuaʻa, Koʻolaupoko District, and Kaʻaʻawa Ahupuaʻa, Koʻolauloa District, Island of Oʻahu, Hawaiʻi, Keala Pono Archaeological Consulting, LLC. July 2015.

D Preliminary Engineering Report. Group 70 International, Inc., December 2017.

E Transportation Impact Assessment for the Proposed Kualoa Ranch Master Plan Improvements, Kaʻaʻawa, Oʻahu, Hawaiʻi. The Traffic Management Consultant, May 2018.

F Neighborhood Board Meeting Notes

G Kualoa Ranch Newspaper and Magazine Articles

1.0
INTRODUCTION

1.0 INTRODUCTION

This Environmental Assessment (EA) has been prepared in accordance with the requirements of Chapter 343, Hawai'i Revised Statutes (HRS) and Hawai'i Administrative Rules (HAR), Title 11, Chapter 200, Department of Health, which set requirements for the preparation of environmental assessments. The proposed action involves a Special Use Permit (SUP) and Conditional Use Permit (CUP), both of which require an EA as a prerequisite to the applications.

1.1 PROJECT INFORMATION SUMMARY

Type of Document:	Environmental Assessment
Project Name:	Kualoa Ranch Improvements
Ch. 343, HRS Triggers:	Located within Designated Historical Site
Applicant:	Kualoa Ranch Hawai'i, Inc. ("Kualoa Ranch") P. O. Box 650, Ka'a'awa, HI 96730 Contact: John Morgan, President/General Manager Telephone: (808) 748-3222
Accepting Authority:	Department of Planning and Permitting 650 South King Street, 7th Floor Honolulu, HI 96813 Telephone: (808) 768-8049
Recorded Fee Owner:	Kualoa Ranch, Inc. P. O. Box 650 Ka'a'awa, HI 96730
Planning Consultant/ Agent:	G70 111 S. King Street, Suite 170, Honolulu, Hawai'i 96813 Contact: Jeff Overton Telephone: (808) 523-5866
Anticipated Determination:	Finding of No Significant Impact (FONSI)
Project Location:	49-560 Kamehameha Highway Kualoa, Ko'olau Poko District, O'ahu *(Figure 1.1, 1.2)*
Tax Map Key:	TMK: 4-9-003:001; 4-9-004:002; 4-9-005:001; 5-1-001:001 *(Figures 1.3, 2.5, 2.7)*
Land Area:	Total Ranch Area: Approx. 3,850 acres; Project Area: 12.8 acres

State Land Use District: Agricultural *(Figure 1.4)*

City Zoning: AG-2 General Agricultural District *(Figure 1.5)*

City Development Plan: Koʻolau Poko Sustainable Communities Plan *(Figure 5.1)*
Koʻolau Loa Sustainable Communities Plan *(Figure 5.2)*

Flood Zone: Zone X (Outside 500 Yr. Flood Level) *(Figure 1.6)*

1.2 OVERVIEW AND BACKGROUND

Kualoa Ranch is located on Oʻahu's windward coast, approximately 25 miles from Honolulu. The land is owned by the descendants of Dr. Gerrit P. Judd, who purchased the land from King Kamehameha III in 1850. The lands of Kualoa Ranch encompass the area within three different ahupuaʻa, including Hakipuʻu, Kualoa, and Kaʻaʻawa. *Figure 1.1* displays the location of Kualoa Ranch and the surrounding land in the Kaʻaʻawa area of windward Oʻahu.

Kualoa Ranch was so named in 1927 and has been used for various purposes over the last eight decades. Between 1863 and 1870, the Kualoa Sugar Mill was built and operated by Charles H. Judd and Samuel G. Wilder, until the mill was closed after years of meager rainfall that effectively brought an end to sugar farming at Kualoa.

During World War II the U.S. military took over most of Kualoa Ranch, regarding it as a strategic location for an auxiliary airstrip and artillery defense battery in the cliffs because of its unobstructed coastal views. After Pearl Harbor was bombed on Dec. 7, 1941, a bunker and a dozen pillboxes were built in anticipation of additional attacks, which never occurred.

In 1971, the City and County of Honolulu condemned Mokoliʻi Islet and much of the beach at Kualoa Ranch, which is now used as Kualoa Regional Park. In October 1974, the Kualoa ahupuaʻa was listed on the National Register of Historic Places as the Kualoa Ahupuaʻa Historical District.

In the early 1980s, two-thirds of the company was owned by stockholders in their 90s, and the family members of Kualoa knew they needed to reassess their options. Guided by their values, the family knew they didn't want to develop or sell, and they wanted to operate the ranch themselves. This led to developing recreational enterprises that can financially support the Company's mission and remain compatible with the environment.

In 1985, the Ranch catered primarily to a Japanese visitor market with a one-stop shop package tour approach, which included horseback riding, jet skis, helicopter rides, scuba diving, windsurfing, and canoe rides. This approach worked for several years until business slowed due to the effects of the Gulf War in the 1990s and increased competition. The ranch reassessed and shifted to cater to a more diverse client base with Japanese visitors still a key, but with changes to other parts of the experience. The helicopters and jet skis were removed, and the focus shifted more on Hawaiian cultural history, natural beauty and the kamaʻaina family history. The diversified income has helped Kualoa Ranch restore riparian areas, protect endangered plant species, expand its agricultural activities, and make other ranch improvements. The recreation business also affords an opportunity to educate the public about past and present agriculture.

The mission of Kualoa is to offer guests a personal experience with the true nature and spirit of Hawai'i's past, present, and future. This is accomplished by serving as a steward of the land by preserving, protecting and enhancing Hawai'i's natural beauty and culture, while also developing recreational and agricultural enterprises that can financially support the Company's mission and remain compatible with the environment. Kualoa's recreational activities showcase Hawai'i's natural environment, agriculture and the land's rich cultural history.

Diversified Agriculture

Agriculture is the primary land use of Kualoa Ranch, which has sustained the rural character and lifestyle of this land. Agricultural uses account for 42% of the ranch land area (with preservation encompassing 57%, and other lands the remaining one percent). During the past 150 years, the lower slopes of Kualoa have been actively farmed for sugarcane and pineapple cultivation, grazing, aquaculture and various diversified crops. Although sugarcane and pineapple cultivation are no longer practiced, the Ranch continues this heritage with expanding uses for diversified agriculture, livestock, and aquaculture (see *Table 1.1).* The many forms of agriculture promoted at Kualoa bring to life the vibrant potential for raising food crops and landscape products. *Figure 1.7* identifies the locations of current agricultural operations.

Table 1.1 – Acreage of Agricultural Operations

	TYPE	LOCATION	FARM AREAS (ac)
AGRICULTURE	Diversified - field	Mōli'i Nursery and Gardens	60
	Diversified - field	Ka'a'awa	30
	Shadehouse	Ka'a'awa	3
CATTLE	Pasture	Hakipu'u Valley	400
	Pasture	Kualoa	300
	Pasture	Ka'a'awa	700
AQUACULTURE	Fishponds	Mōli'i	125
	Ponds and Aquaculture Tanks	Hakipu'u Education Center	6
	Ponds and Lagoons	Ka'a'awa	4
		TOTAL	**1,628**

There is an overarching vision for Kualoa to sustain and grow their agricultural operations, with over 100 acres of diversified nursery and horticulture, over 1,400 acres of cattle ranch, and 135 acres of aquaculture. Kualoa has embarked on a process to rehabilitate some of the agricultural lands that have gone fallow, resurrecting 50 acres over the next 10 years. The first phase of this expansion involves about 20 acres of diversified agricultural land mauka of Ka'a'awa town. The land was previously leased to tenant farmers, but active agricultural production has since ceased. The objective is for Kualoa to attract highly productive farmers to use the property, both for the agricultural production value and potential integration into the ranch tours.

Agriculture for Food and Landscape Products

Agriculture has always been an important part of Kualoa. Prior to the mid-1800s, there was extensive taro (kalo) cultivation by Hawaiians in Hakipuʻu valley. A decade after the Judd family purchased Kualoa, it grew sugar and became home to Oʻahu's first sugar mill, which operated from 1863 until it went bankrupt and closed in 1871. Pineapple cultivation began in the early 1900s.

Today, Kualoa maintains a vegetable, fruit, tropical plant, flower and plant nursery business, which was started in the 1970s. Crops include taro, breadfruit, papaya, jack fruit, banana, pineapple, bamboo, sugar cane, coffee, macadamia nuts, and a variety of ornamental plants and tropical flowers. Kualoa also raises field stock material including palms, ornamental trees, fruit trees, and landscape shrubs. Native and exotic hardwood tree species are also being propagated on the upper slopes of the Ranch with favorable higher rainfall conditions.

Cattle Ranching and Beef Production

Soon after the sugar cane era, the family began its cattle ranching operations in the 1870s. The ranch was then just a "cow/calf" operation (producing calves and shipping them live to the mainland) with some diversified farming and public horseback rides on weekends. Over time they added acreage in Hakipuʻu and Kaʻaʻawa. Today, Kualoa is one of Oʻahu's largest cattle ranches with approximately 500 head of cattle grazing on roughly 1,400 acres of pasture.

The cattle herd is primarily made up of a cross between Angus, Brangus and Hereford stock. The cattle are grass-fed, which produces leaner cuts of meat, lowering the fat content and providing a healthier choice. During the past decade, the grass-fed beef market has grown significantly across the U.S. and Hawaiʻi. Kualoa continues to expand its operations by leasing other ranch lands to raise additional cattle to serve this market.

Kualoa began serving its own ranch-grown, grass-fed beef burgers in 2010, and in 2011 expanded to sell its locally raised beef in four cuts: Ribeye Steak, T-bone steak, Teri Beef, and Ground Beef. This is available on a first-come, first-served basis, or can be reserved by phone or online ordering. Kualoa Beef production takes place completely in Hawai'i. The cattle are slaughtered at an FDA-inspected slaughterhouse in Campbell Industrial Park, and processed at Wong's Meat Market.

As one of the oldest and longest-running agricultural practices at the Ranch, raising cattle has become the main identity of Kualoa. In the past, the overall numbers of cattle have fluctuated slightly. The plan is to expand the cattle grazing operation and increase the cattle herd. One way to accomplish this is improve paddocks for grazing. The quality of the grazing pastures will be improved for increased production through weed control and the development of irrigation systems. The cattle will be kept after they are weaned, being fattened on grass until they weigh at least 1,000 lbs. The fully raised cattle will be custom slaughtered according to market needs.

The move into beef retailing is one of the most significant business changes since the Ranch was opened up to visitors about 30 years ago. All-natural beef raised on the ranch is served at the on-site restaurant. In 2011, Kualoa made its locally raised Kualoa Ranch Beef available to the public on-site and can be ordered by phone or online. The Ranch does not ship the beef, so it must be picked up at the Visitor Center. Once the operation from supply to production is organized and prepared appropriately and consistently, the beef will be sold in local supermarkets. The market price average among various supermarket beef products will be tracked, and Kualoa Beef prices will likely be set slightly above that average.

A marketing push will be needed to make the Kualoa Ranch 100% Grass-fed Beef label a household name. The Ranch expects to tap into the growing "locavore" movement, which encourages consumption of nearby food sources. Giving residents farm fresh, direct to customer beef follows the trend of supporting local agriculture and improving Hawai'i's food security.

The beef cattle herd is a major focus of Kualoa's land use, and cattle serves as the dominant theme of the ranch. Although not a part of the livestock food production, horses are also raised on the ranch and actively used for the horseback riding tours, a public opportunity that is scarce on O'ahu. In addition, passers-by love to see the approximately 100 horses grazing in pastures along the highway.

Aquaculture Cultivation of Fish, Prawns, Shrimp and Oysters

The Company's aquaculture efforts began in the late 1970s, producing fish and prawns for local markets. Kualoa currently runs two modern aquaculture facilities where shrimp, prawns, catfish and tilapia are raised, as well as an ancient historic Hawaiian fishpond.

The 125-acre Mōli'i Fishpond is one of the largest fishponds in Hawai'i still operational and commercially successful. It is a "loko kuapā" type built before 1300 A.D. The pond, which is owned by Kualoa Ranch, is divided into two sections, and three mākāhā (sea gates) connect it to Kāne'ohe Bay. Fish (awa, to'au, pualu, 'ō'io) are cultivated in the pond and will be sold to local markets. The Ranch raises Pacific oysters in cage systems at the pond. After State Department of Health approvals were obtained, commercial sale of the oysters began in 2014, with sales to restaurants and the public. There is substantial potential to raise high-value shellfish at Kualoa, with growth rates shown to be twice as fast as most growing areas on the West Coast.

Since awa are neither seined nor fished from the pond, only those which are trapped in the sea gates are harvested and sold. Their size can range anywhere from 1.5 to 9.0 kg. George Uyemura, a previous keeper of Mōli'i, noted peak annual production levels of 6,800 to 11,300 kg of fish or 137 to 288 kg per hectare. In the recent years, this figure has dropped to less than 9 kg per hectare. The potential for the pond has been estimated at 680 kg per ha per year with the use of fertilizers but not feed.

The ponds and lagoons in Ka'a'awa are stocked with Tuscan bass, Chinese catfish, channel catfish, Malaysian prawns, and grass carp. The Ranch also operates nine ponds near the Hakipu'u Education Center that produce a variety of prawns and fish species, and 15 tanks that produce about 500 pounds of Asian catfish a week. Kualoa Ranch Aquatic Farms also raises tilapia and marine shrimp seed. Live oysters, saltwater shrimp, and tilapia fillets are sold by phone or online ordering.

Agricultural Tours and Activities

While agriculture and land stewardship remain a top focus at Kualoa Ranch, tours of agricultural production areas at the Ranch help to provide needed economic diversification. Their fees help sustain the agricultural operations at the 4,000-acre ranch, and by its existence, the ranch helps preserve the area's open space and scenic splendor. Guests have the opportunity to tour Kualoa's agricultural operations within the overall ranch. Activities can be booked individually or in full or half day packages. These open area recreation activities are an allowed use under HRS 205-4.5. See *Figure 1.7* for the tour routes.

Horseback Tours

Kualoa's guests are able to witness magnificent vistas by riding horseback on defined trails throughout the 4,000-acre property and Ranch. Guests experience the agricultural operations, locations where famous movies were made, visit WWII bunkers, grazing pastures and Kualoa's Brangus cattle. One-hour and two-hour rides are available. The one-hour ride crosses pastures and wooded trails to a scenic overlook above Mōliʻi Pond, an 800-year old Hawaiian fishpond. The two-hour horseback tour visits gorgeous Kaʻaʻawa Valley, home to Kualoa's largest grazing pastures and cattle herds. Kaʻaʻawa Valley served as the location for many television and films over the past 50 years. The horseback tour operates with over 90 horses, which are supported by paddocks and stables at the ranch center.

Taste of Kualoa Farm Tour

Guests can experience the food products grown, harvested, and sold by Kualoa Ranch. This farm-to-table tasting tour visits the shrimp and tilapia ponds, and fresh oyster farm. The tour continues through the Hakipuʻu and Mōliʻi Fishpond area, which is a rich historic land with fields of tropical flowers, fruit trees and gardens. Guests are provided with a narrated tour aboard the canoe rafts transporting them across the 800-year old, 125-acre Hawaiian fishpond, one of the largest and most well-preserved fishponds left in Hawaiʻi. Guests enjoy the preparation and taste fresh samples of Kualoa's finest produce, seafood, and beef on this two-and-a-half-hour tour. The tour ends with a fresh tropical fruit smoothie made with Kualoa's own bananas, papayas, and other seasonal fruits.

ATV (All-Terrain Vehicle)

Guests drive their own ATV on designated trails (used extensively by ranching staff) that pass through active agricultural areas *(Figure 1.7),* and deep into the scenic valleys and remote areas rarely visited by others. One-hour and two-hour tours are available. The one-hour tour will take guests over a saddle trail to visit expansive grazing pastures, aquaculture ponds and movie sites located in beautiful 1,000-acre Kaʻaʻawa Valley. The two-hour tour takes guests even further into the Valley to experience mauka areas with hardwood forest restoration and breathtaking views.

Ranch & Movie Sites Tour

Kualoa's most popular narrated tour rumbles through agricultural areas in gorgeous Kaʻaʻawa Valley, to experience where many of Hollywood's biggest block buster movies and television shows were filmed. An "Ag hub" is featured on this tour, which includes pigs, chickens, sheep, bananas, papayas, breadfruit and other diversified agricultural crops. Guests will visit the Jurassic Park site, find Godzilla's footprints, see the famous battlefield from the movie WindTalkers, and listen as the guide tells about Pearl Harbor, 50 First Dates, George of the Jungle, You Me and Dupree and Lost. The popular current television series Hawaiʻi Five-O has also filmed many episodes at Kualoa Ranch.

Treetop Canopy Zipline Tour

The Treetop Canopy Zipline Tour begins at the top of Kaʻaʻawa Valley with seven tandem sections, two cable bridges and three mini-hiking nature trails about 5 minutes in length. Each zip line is named after a culturally significant aspect of the valley with zip lengths ranging from 200 feet up to a quarter of a mile in length. Guests learn about Hawaiian traditions and experience Kaʻaʻawa Valley first-hand zipping through native flora and fauna and crossing natural streams. Each zipline provides a new cultural experience and learning opportunity for the guests.

Legends & Legacy Tour

The lands of Kualoa are historically some of the most sacred on the island of Oʻahu. There are numerous references to Kualoa in legends and historical accounts as to the importance of this beautiful land. The Legends and Legacy Tour journeys through the foothills to the base of the majestic Kualoa cliffs of Moʻo Kapu o Hāloa, while guides share the legends and stories of the area, and how Kualoa became a ranch. One stop on the tour is a heiau replica and an exhibit honoring Lono, the Hawaiian god of fertility, peace, and agriculture. A short hike to the top of a ridge gives a spectacular 360-degree view of windward Oʻahu. The views of Kualoa's pastures below showcase the Ranch's active ranching, with horses and cattle grazing against an ocean backdrop. This tour provides an overview of Kualoa, and complements the historical exhibit and Hawaiian Paniolo (cowboy) informative video at Judd Theatre.

Jungle Expedition

Guests board four-wheel drive vehicles for this back-country narrated tour which navigates through historic Hakipuʻu. Kualoa has preserved and maintained the natural beauty here, and continues to restore Hawaiian loʻi as well as forests which house endangered native fauna. The tour maneuvers through rough terrain before ascending a hill. Guests on the tour can disembark at this location and, after a short hike, experience a dramatic view of the windward coast line. From this location, guests witness the agricultural areas and lush undeveloped tropical valleys below.

Secret Island

After crossing the ancient Hawaiian fishpond and living aquaculture facility, guests experience a secluded beach with a view of beautiful Kāneʻohe Bay and famous Mokoliʻi Islet (also known as Chinaman's Hat). Here one can swim, paddle on a kayak or canoe, lie on a hammock, or just bask in the sun.

Ocean Voyaging

Guests visiting Secret Island have the opportunity to board a 49-passenger catamaran. The catamaran takes them to beautiful Kāneʻohe Bay and past the famous Mokoliʻi Islet and Hōkūleʻa beach. This beach is the ceremonial home of the Hōkūleʻa, the first modern replica of an ancient sailing canoe. The views of Kualoa and Koʻolau mountains from the ocean are unmatched.

Hiking & Mountain Biking

Hiking and mountain biking tours take guests throughout the Ranch to learn about Kualoa's history and cultural significance. These tours emphasize various aspects of Kualoa, such as Hawaiian cultural agricultural practices in a valley believed to have cultivated some of the first breadfruit. Stops on the hike provide learning and photo opportunities. Hikers can visit a loʻi to learn about kalo cultivation. Another stop is at a lookout over Kāneʻohe Bay to hear the legend of Mokoliʻi Islet and to experience Mōliʻi Fishpond. Hiking and mountain biking tours can be arranged for groups on a custom basis.

Educational Activities
Education is one of Kualoa's primary missions and an important part of the company's culture. Kualoa's Hakipuʻu Education Center offers a wide range of education tours and activities in an outdoor environment. The programs foster a sense of stewardship through active participation in service experiences, conservation, environmental exploration and animal encounters. Student groups can take part in the educational activities at Kualoa, which include the Animal Friends Tour, Ancient Fishpond Tour, Environmental Exploration Tour, Mālama ʻĀina Tour, Team Building Challenge Courses, Horsemanship, and Kualoa by Moonlight. Students spend time with the ranch animals, pull invasive algae from the ancient fishpond, work in the loʻi (taro patches), hike through Kualoa Valley, and visit the stream ecosystem in Kaʻaʻawa Valley. Kualoa currently accommodates about 14,000 children a year, which represents about 7% of the estimated 200,000 Oʻahu public and private schoolchildren.

Special Events

Hawaiʻi State Farm Fair
In recent years the Hawaiʻi State Farm Fair has been hosted at Kualoa Ranch. This family-friendly weekend features fun activities, food and more. Approximately 12,000 people attended the event in 2017. The event also includes judging of a variety of livestock and gives guests the opportunity to have an up-close encounter with the animals raised by students of 4-H. Children from all over the island present the animal that they chose as their project for judging. At the end of the event there is an auction of these animals. The live auction includes swine, lamb, beef, steer and goats. The money generated from the auction goes towards the costs of raising the animal and the difference towards the child's college fund.

Rodeo
The rodeo arena has featured various rodeo events throughout the years, such as the Make A Wish Rodeo, Hawaiʻi High School Rodeo Association, and Hawaiʻi Women's Rodeo Association Annual "All Girls Rodeo". These rodeos feature a variety of skill-testing events to win top honors, including barrel racing, pole bending, breakaway roping, team roping, calf mugging, goat tying, and steer undecorating. Approximately 250 people attended each event in 2016.

Trail Running and Mountain Biking
Miles of trails and challenging terrain make Kualoa a popular location for trail running and mountain biking. Motorcycles are not allowed. The XTERRA Trail Running World Championship is an off-road half-marathon held each year at Kualoa Ranch that hosts 5km, 10km and 21km trail runs, a free OC16 kid's race, and an adventure walk. This is the same site for various high school cross-country races, the Makahiki Challenge, Spartan Race, Hawaiian Mountain Tour Pro/Am, the 24 Hours of Hell Mountain Bike Race and many other off-road triathlons. Of all of the running and biking events, the Spartan Race attracted the most in attendance at approximately 3,000 people each day.

Annual Kaʻaʻawa Elementary School Ocean Warrior 5K Family Fun Run/Walk
The Kaʻaʻawa Elementary School PTO Committee and Kualoa Ranch coordinate this annual community event. The entry fee buys access to the course trails, an event t-shirt, a bottle of water, and a coupon for 50% off three different activities at Kualoa Ranch. The annual event features shave ice, spam musubi, cotton candy, and music in a unique outdoor setting. Approximately 500 people attend this event each year.

There are no additional special events anticipated at this time, however there may be other potential community activities that can utilize the large open space that Kualoa has to offer.

Planned Improvements
To accommodate growing interest in the agricultural tours of Kualoa Ranch, improvements planned for the Ranch Headquarters area include a Visitor's Center expansion, Administrative Buildings, Employee Building, new Tour Depots, Horseback Riding Stables, and a Farmers Market. Additional improvements include a new open pavilion in Palikū, and an Agricultural Facility in Kaʻaʻawa. Various infrastructure improvements will also be completed, including driveways, parking, water supply, wastewater management, and drainage.

Supporting Kualoa's dedication to agriculture and outdoor recreation, the upgrades to the Ranch Headquarters will allow for improved facilities for visitors, residents, and Ranch employees. Moreover, these improvements foster Kualoa Ranch's efforts to create economically viable outlets that promote Kualoa's agricultural products (such as the Ranch's beef, fish, shrimp, oysters, produce, and tropical flowers), as well as local farmers and vendors from around Oʻahu.

1.3 PURPOSE OF THE ENVIRONMENTAL ASSESSMENT

This EA is being prepared pursuant to Hawaiʻi State laws to evaluate the uses planned under proposed Special Use Permit (SUP) and Conditional Use Permit (CUP) updates. The SUP petition will request modification to increase the SUP area to include the Ranch Headquarters and support facilities, remove the shooting range, allow for Agricultural & Outdoor Recreation tours to reflect current trail use that occurs in Kaʻaʻawa Valley (by both ATV riders and agriculture operators), allow for enough single- and multi-passenger recreational vehicles to accommodate up to 200 guests per day, allow for up to 2,000 ticketed tour visitors per day, and update operational hours to reflect current business operations. The SUP will also request allowance for weddings and film production that utilize agricultural and outdoor recreation areas in Kaʻaʻawa, Kualoa and Hakipuʻu.

The petition will request modification to the CUP by discontinuing paintball, target shooting, horse-drawn wagon and helicopter rides, and some ocean-oriented activities (such as snorkeling, scuba diving, windsurfing, and jet skiing) while adding kayak and stand up paddling (SUP) activities. The request will be made to allow weddings and film production that utilize agricultural and outdoor recreation areas in Kaʻaʻawa, Kualoa and Hakipuʻu.

Modifications to the CUP conditions would include enough single- and multi-passenger recreational vehicles to accommodate up to 200 guests per day, up to 2,000 ticketed tour visitors per day, and updated operational hours to reflect current business operations.

A modification to the 85/CUP-15 and 85/SUP-2 to allow the "temporary" Farm Fair event has been applied for and approved every year since 2012. As Kualoa Ranch supports having a Farm Fair at the ranch to help expose Hawaiʻi residents to the importance of agriculture, the CUP petition will also request a "permanent" Farm Fair event with substitution of the annual Farm Fair for the annual music event.

The City and County of Honolulu Department of Planning and Permitting (DPP) is the approving agency. The EA will comply with Hawai'i's Environmental Review Process, HRS Chapter 343. The EA examines the potential environmental impacts of the project and seeks agency and public comment on subject areas that should be addressed. The improvements of the facilities will help Kualoa to continue its consistent approach to agriculture, culture, and the natural environment.

1.4 AGENCIES, ORGANIZATIONS AND INDIVIDUALS CONTACTED IN PRE-CONSULTATION

Organizations and members of the community were consulted in the preparation of this Draft EA. The Ranch Improvements were discussed at meetings of the Kahalu'u and Ko'olau Loa Neighborhood Boards in July and August 2014, respectively. Issues discussed included location of the Visitor Center, traffic, and farming extent at Ka'a'awa. The Department of Planning and Permitting was also consulted as accepting authority for this proposed action. Additional parties contacted are listed below. Further discussion is detailed in Chapter 7.

Other Organizations and Individuals

State
Department of Health, Wastewater Branch
DLNR Historic Preservation Division
Department of Transportation

City
Honolulu Board of Water Supply

Citizen Groups, Individuals, and Consulted Parties
Kahalu'u Neighborhood Board #29
Ko'olau Loa Neighborhood Board #28
Kealoha Domingo
Winona Kaniho

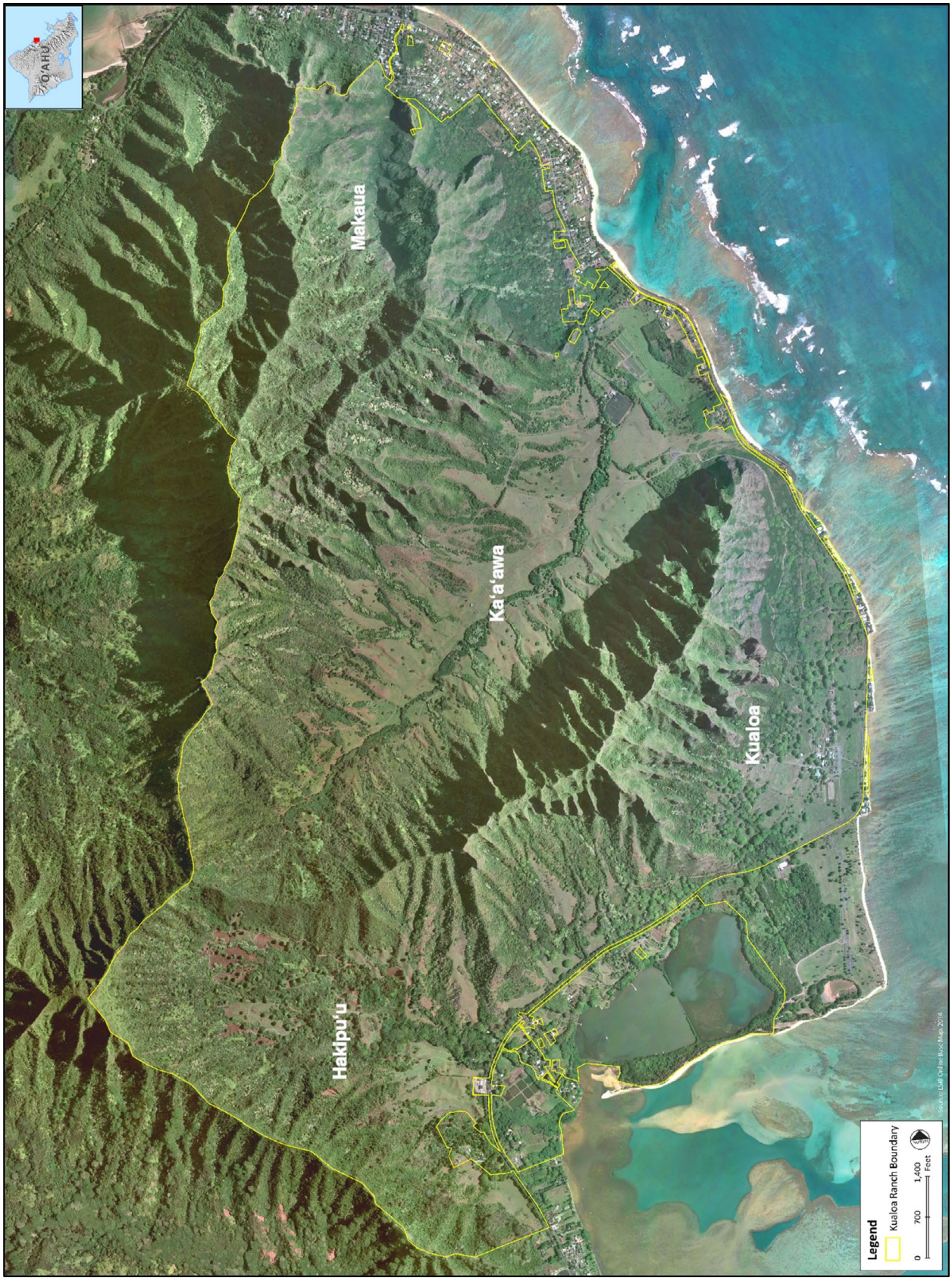

Figure 1.1 – Kualoa Ranch

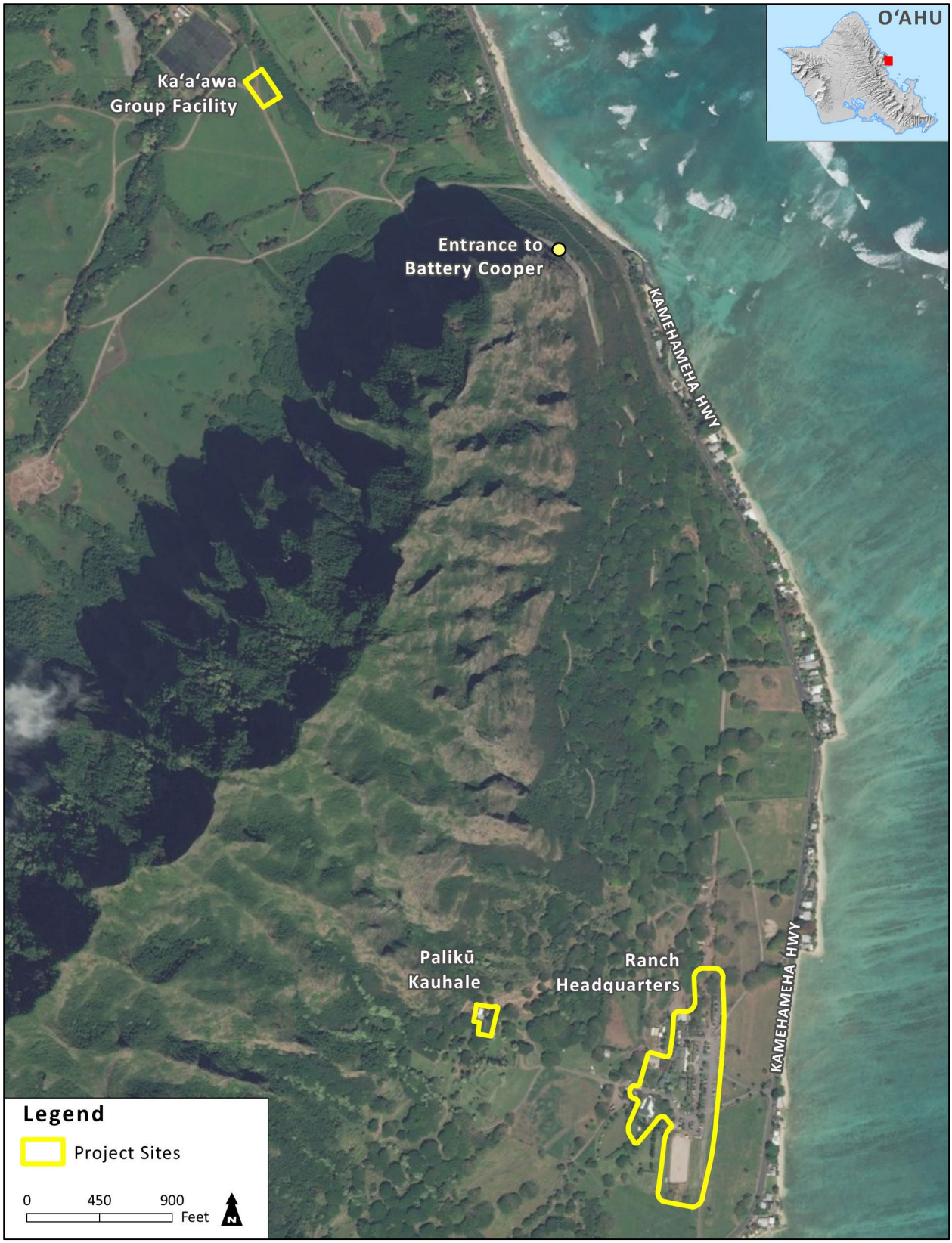

Figure 1.2 – Project Locations

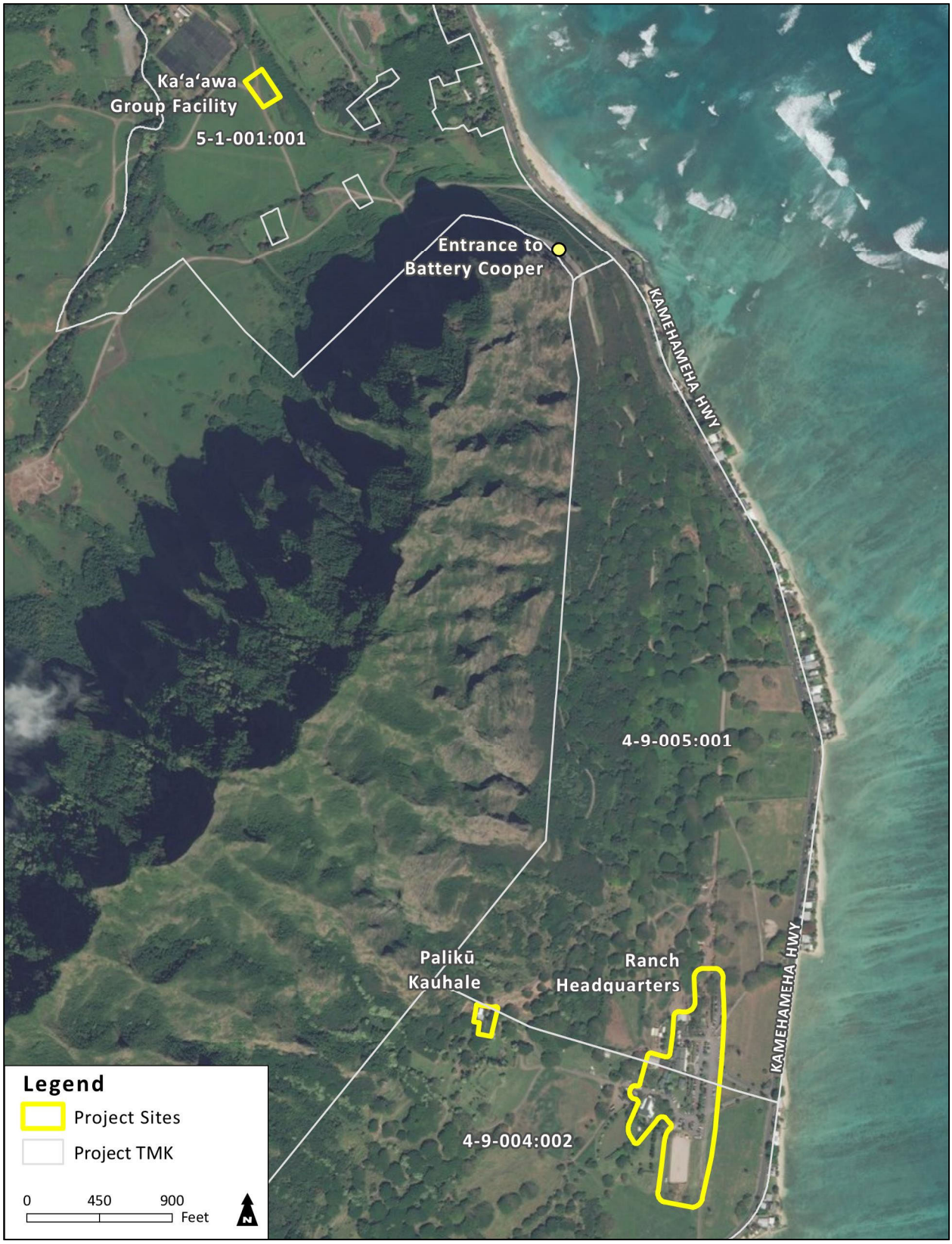

Figure 1.3 - Tax Map Key

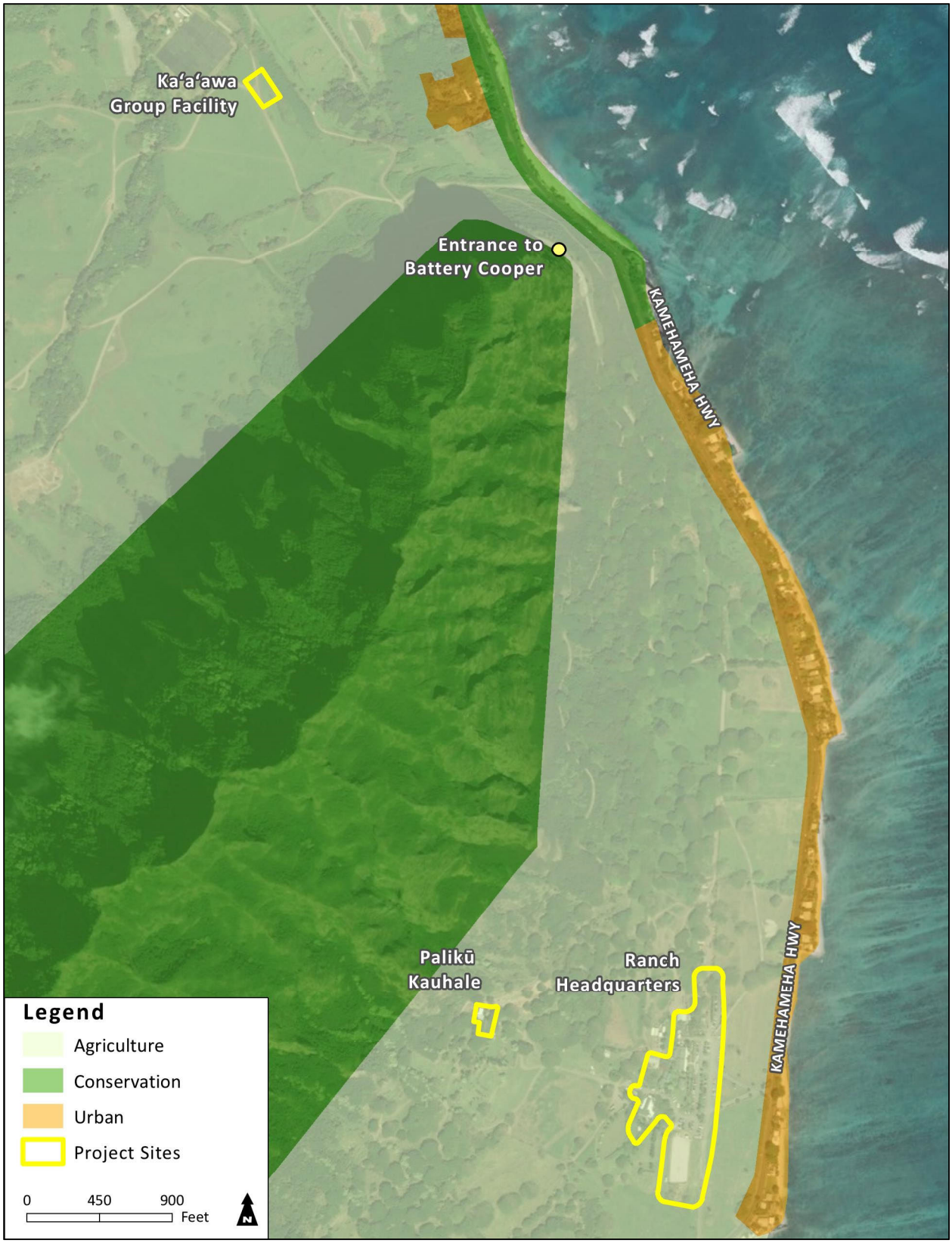

Figure 1.4 – State Land Use Classification

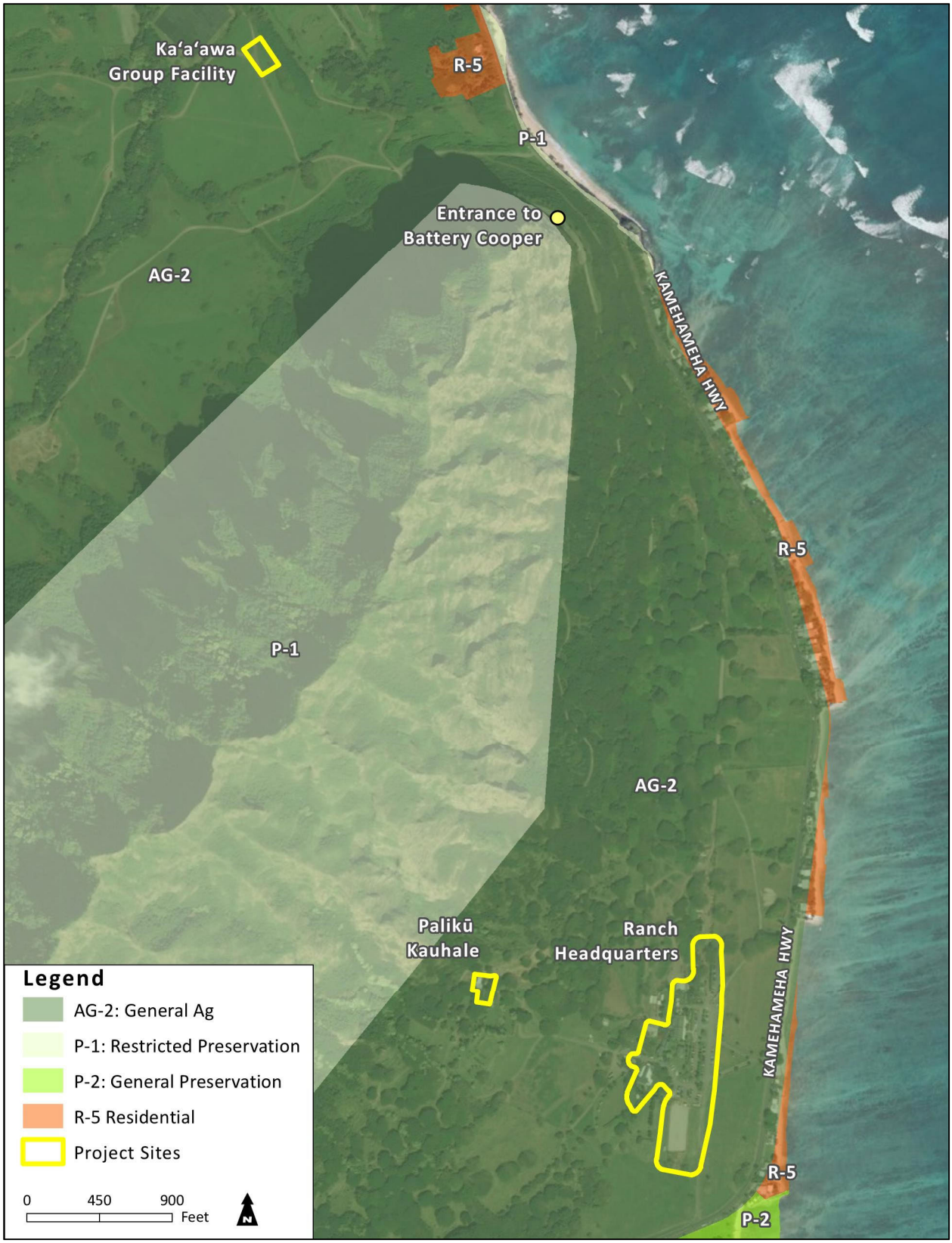

Figure 1.5 – City and County of Honolulu Zoning

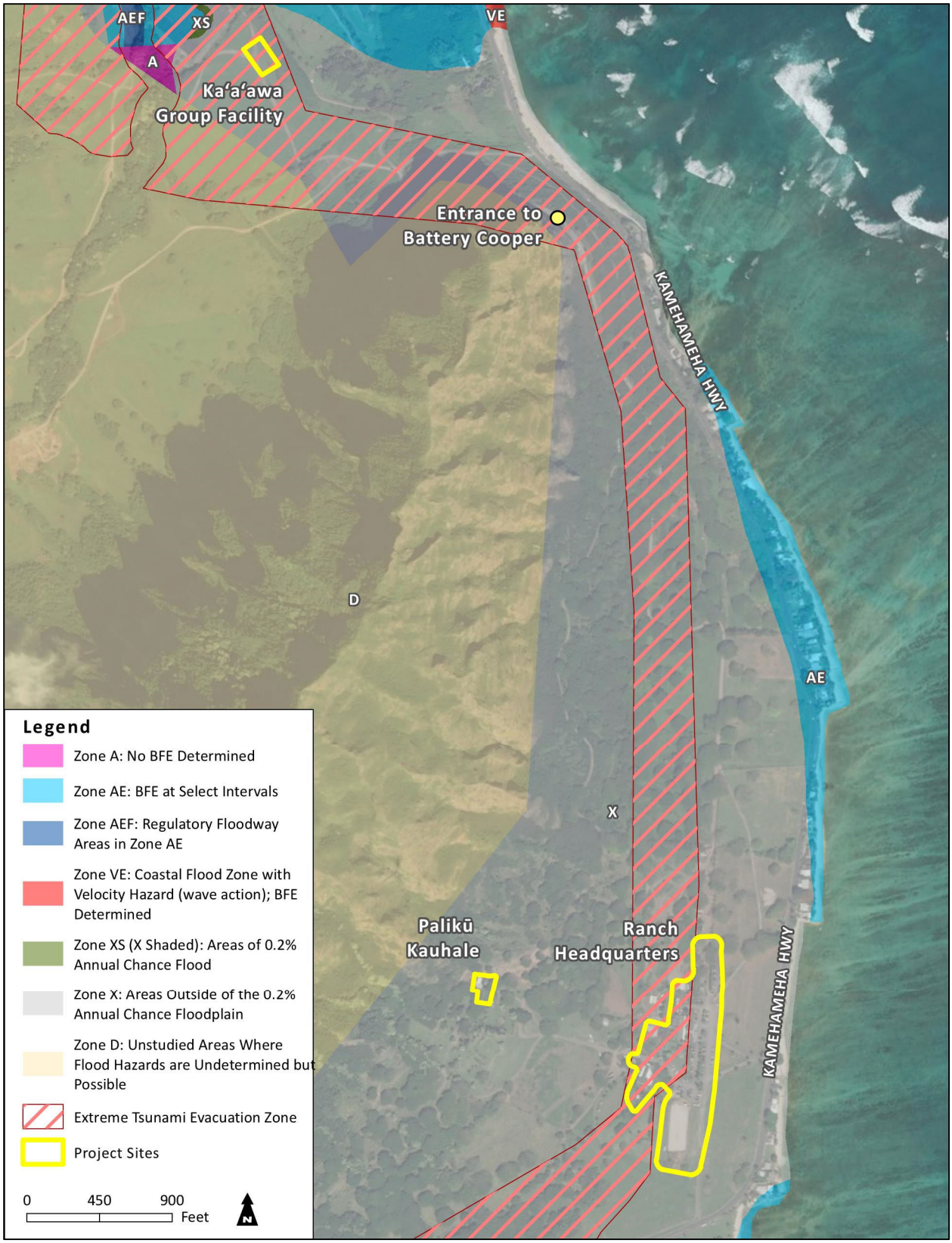

Figure 1.6 – Flood and Tsunami Evacuation Zones

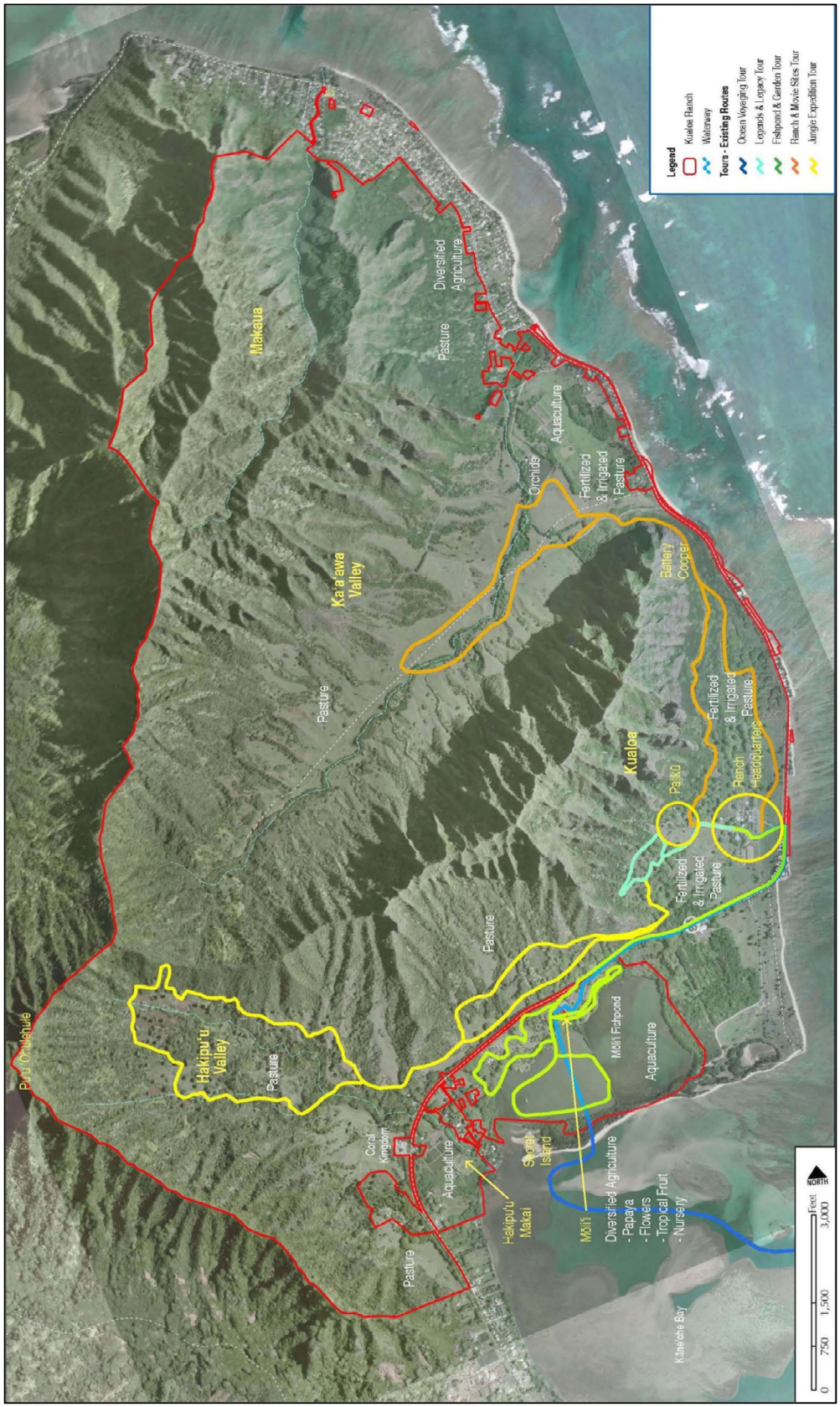

Figure 1.7 - Existing Agriculture Roadways and Agricultural Tour/ATV Routes

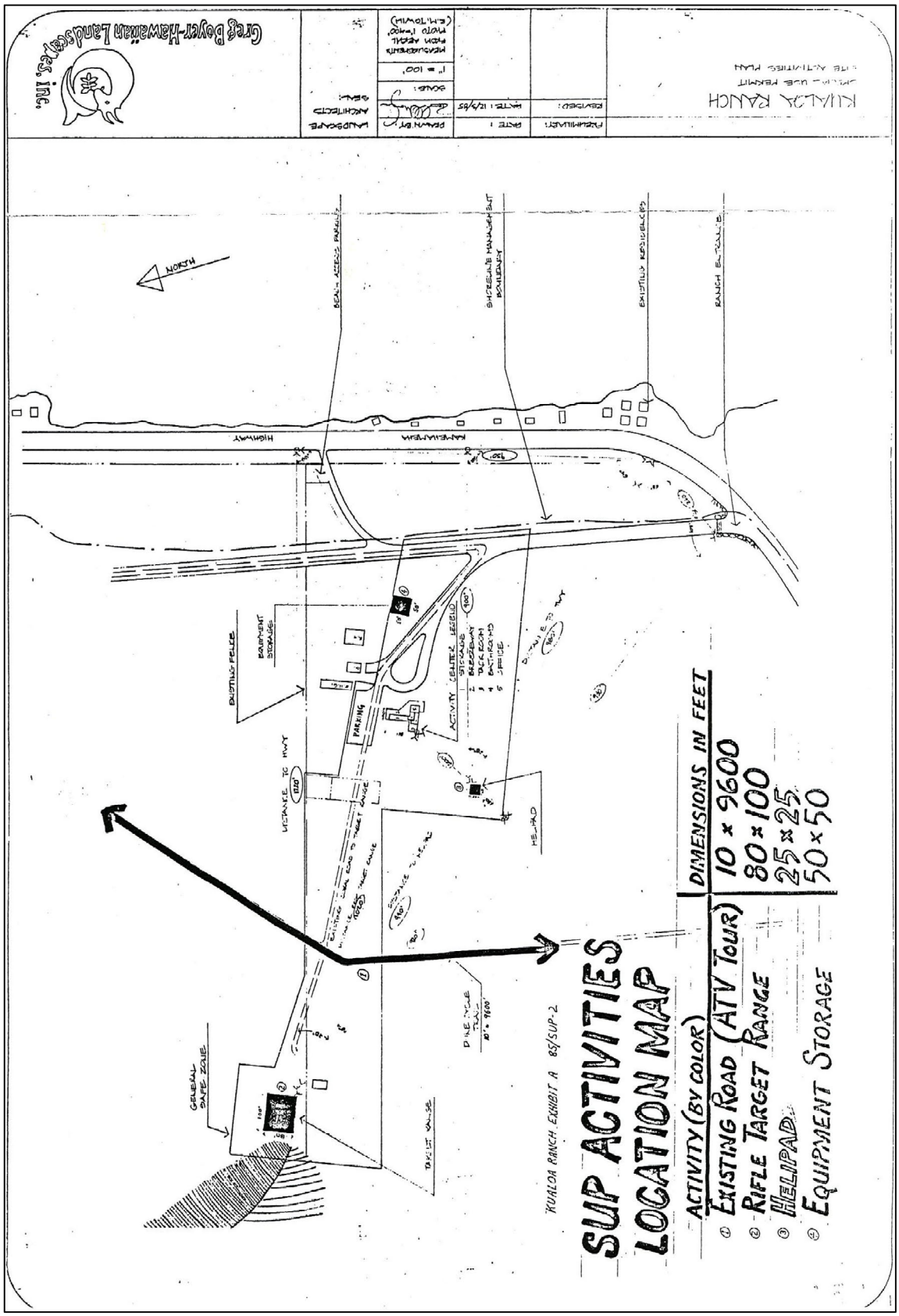

Figure 1.8 - 1985 SUP Activities

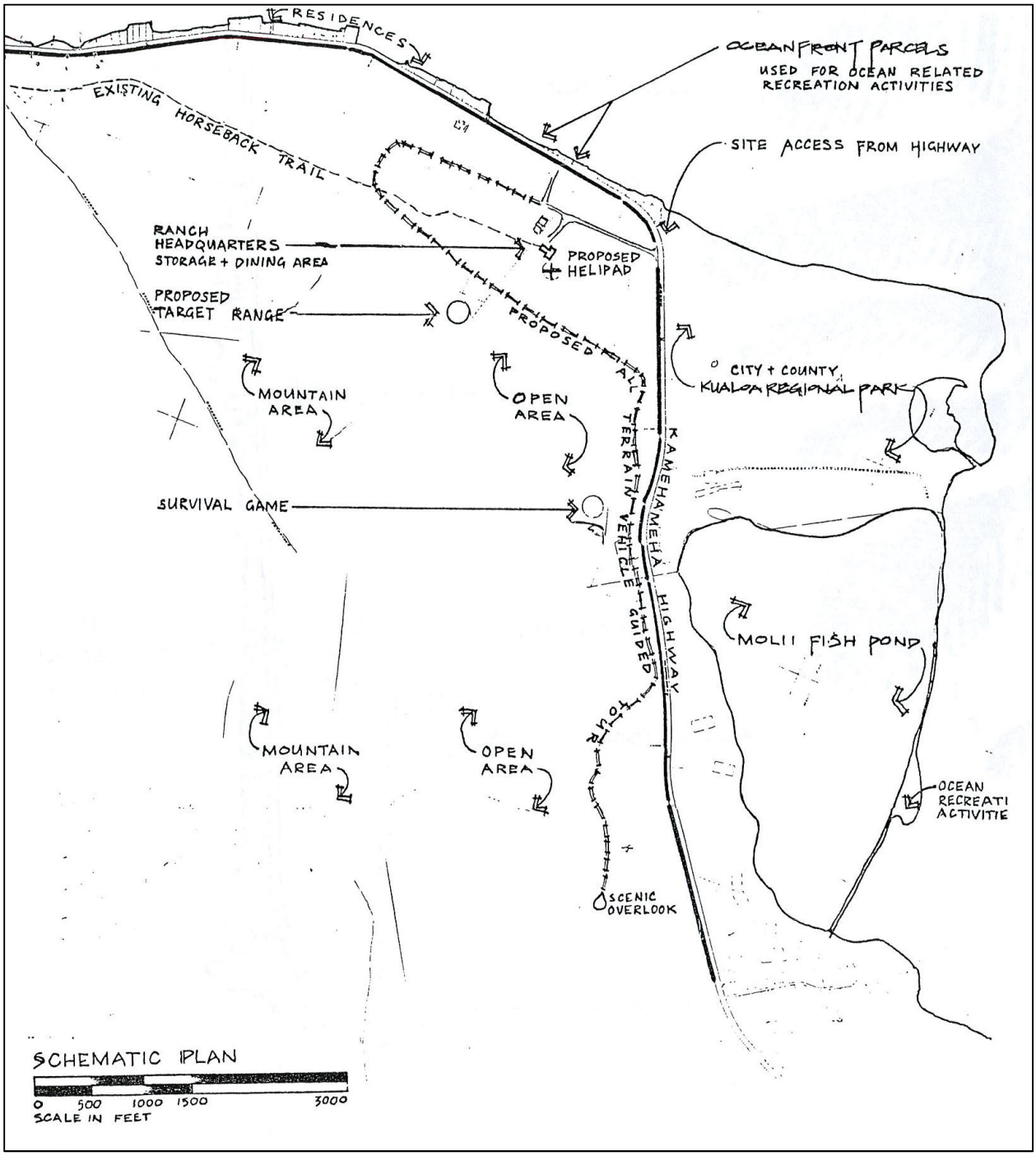

Figure 1.9 - 1985 CUP Activities

2.0
PROJECT DESCRIPTION

2.0 PROJECT DESCRIPTION

2.1 PROJECT LOCATION AND SITE CHARACTERISTICS

Kualoa Ranch is located in the agricultural region of Oʻahu's windward coast at the northern end of Kāneʻohe Bay. The Ranch is bounded by Kaʻaʻawa town to the north, Kamehameha Highway to the east, Kāneʻohe Bay to the south, and the Koʻolau mountain range to the west. Mokoliʻi Islet (Chinaman's Hat) is situated off the southeastern coast. The community of Waikāne is located approximately three miles from the Ranch Center to the south, and Kaʻaʻawa is approximately three miles to the north.

Zoned as agricultural land, the project areas are predominantly open pasture lands utilized for cattle grazing. The central area of Kualoa Ranch is the location for ranch offices and support facilities for agricultural operations and tour activities. The main gate, parking lot, Visitor's Center, ticketing offices, Ranch House, tour depots, and maintenance facilities are all located at this Ranch Center. Palikū is situated 1,000 feet (ft) above the Ranch Headquarters, at the base of the Moʻo Kapu o Hāloa mountain ridge. A Pavilion is available for group gatherings. This area is nestled in a tropical garden setting with dramatic ocean views of Mokoliʻi Islet and Kāneʻohe Bay. Miscellaneous agricultural structures and rain shelters of simple wood frame construction are located in Kaʻaʻawa. Located northeast of this project area is a shade house used to grow cacao, nursery crops and native plants, and lagoons stocked with Tuscan bass, channel catfish, and grass carp. Banana and papaya are also grown in Kaʻaʻawa, along with raising pigs, sheep, and cattle.

2.2 GENERAL DESCRIPTION OF THE PROPOSED ACTION

Kualoa Ranch proposes to improve the Ranch Headquarters area (Visitor's Center, new Tour Depots, Administrative Offices, Employee Building, Horseback Riding Stable, and Farmers Market); construct a ceremonial pavilion, or Hale Kupuna, in Palikū; and an agricultural facility/group culinary venue in Kaʻaʻawa. Weddings will occur at locations throughout the ranch. Various infrastructure improvements will also be completed, including driveways, parking, water supply, wastewater management, and drainage. The sites for the proposed facilities are shown in *Figure 1.2* along with the Special Use Permit (SUP) Petition Areas. Combined with the existing SUP activities, the total SUP activities area at Kualoa Ranch will be 12.8 acres. *Table 2.1* below lists existing and proposed facilities at the Ranch. Detailed descriptions of the proposed uses are provided in the following sections.

2.3 RANCH HEADQUARTERS

The Ranch Headquarters facility provides the visitor's first experience of the Ranch. This central area of Kualoa Ranch is the location for ranch offices and support facilities for the agricultural operations and tour activities. The main gate, parking, Visitor Center, Ranch House, and several smaller facilities make up the Ranch Headquarters including a ticketing office, tour depots, administrative office, maintenance shops, and storage areas. Facility improvements for the Ranch Headquarters include a new Visitor's Center and Parking Expansion, three new tour depots, two new Administrative Offices, employee building, a new Horseback Riding Stable, and Farmers Market Venue *(Figure 2.1).* Utilities

Table 2.1 – Existing and Proposed Facilities at Kualoa Ranch

Status	Facility	Area (sf)	Use/Type
HEADQUARTERS			
Existing	Visitor's Center	7,488	Food & Retail
Existing	Agricultural Maintenance	4,200	Storage
Existing	Agricultural Maintenance	7,600	Maintenance
Existing	ATV Storage	2,000	Storage
Existing	ATV Depot (To be Deconstructed)	2,000	Tours/Storage
Existing	ATV Tickets	200	ATV Tickets
Existing	Farrier's Shelter (To be Converted)	800	Horses
Existing	Horse Container	800	Livestock
Existing	Horseback Riding Stable (To be Converted)	3,300	Tours
Existing	Paniolo Exhibit	300	Tours
Existing	Activities Center – Tickets (To be Converted)	800	Tours
Existing	Judd Theatre/JM Office	2,600	Tours/Office
Existing	Keiki Pavilion (To be Converted)	1,600	Storage
Existing	Movie Site & Ranch Tour (To be Deconstructed)	2,700	Tours
Existing	Battery Cooper History Exhibit Entrance (a&b)	1,200	Tours
Existing	Jungle Expedition (To be Deconstructed)	200	Tours
Existing	Ranch House	7,604	Food & Retail
Existing	Administrative Building (To Be Deconstructed)	2,100	Offices
New Building	Arrival Pavilion*	3,970	Ticketing
New Building	Kualoa Market*	3,840	Retail
New Building	Additional Covered Walkways*	2,110	-
New Building	Horseback Riding Stable**	4,800	Tours
New Building	Southbound Tours Depot*	1,250	Tours
New Building	Jungle Tour Depot*	1,250	Tours
New Building	Movie Sites and Ranch Tour Depot*	3,420	Tours
New Building	ATV Depot*	3,600	Tours/Storage
New Building	Administrative Building 1*	3,600	Offices
New Building	Administrative Building 2*	3,600	Offices
New Building	Employee Building*	640	Offices
PALIKŪ KAUHALE/MALAE			
Existing	Pavilion	5,000	Gathering
Existing	Former Gun Range	1,870	Gathering
New Building	Hale Kupuna Ceremonial Pavilion*	960	Pavilion
KA'A'AWA AGRICULTURAL FACILITY			
Existing	Pavilion (To be Deconstructed)	330	Gathering
New Building	Ag Facility & Culinary Venue**	3,720	Ag /Culinary
TOTAL EXISTING RANCH FACILITIES			**47,362**
TOTAL FACILITIES TO BE DECONSTRUCTED			**(7,330)**
TOTAL NEW RANCH FACILITIES			**36,760**
*SUBTOTAL NEW ADMINISTRATIVE, VISITOR CTR, DEPOTS			28,240
**SUBTOTAL NEW AGRICULTURAL SUPPORT			8,520
TOTAL FACILITIES AFTER IMPROVEMENTS			**76,792**

will include internal road improvements, wastewater, water and drainage. In addition, signage and landscaping will be enhanced to improve visibility of Kualoa Ranch prior to visitor arrival at the gate.

In order to accommodate the growing number of visitors, two new additions to the Visitor's Center will be constructed. The Arrival Pavilion (3,970 sf [square feet]) will be used primarily for visitor orientation and ticketing, and Kualoa Market (3,840 sf) will house retail. The existing Visitor's Center building will be converted to solely food service operations, with expansion of the current kitchen and café. Kitchen storage will increase by 80%, and include areas for food and beverage dry storage, a refrigerator and freezer. The expansion of the Visitor Center will cause the main entry to migrate 200 feet south. The left arm of the current v-drive will be enhanced to direct guests to the Arrival Pavilion. Additional parking will then be added on the south side, balancing out this central focal point. The total number of parking spaces will increase from 218 standard stalls, six ADA, and nine coach buses to 306 standard, eight ADA, and 10 spaces for coach buses. In addition, a bicycle corral, motorcycle parking, and an electric vehicle stall will be designated. The second parking lot will include a drop-off area located near the expanded Visitor's Center. The bus parking stalls will be located adjacent to the expanded parking area. A porte-cochere arrival feature will be integrated with the Visitor's Center to keep guests dry and comfortable as they wait to board their buses. Oleander bushes will front the parking areas, partially obscuring the view of the parked cars from Kamehameha Highway.

The current All-Terrain Vehicle (ATV) depot will be replaced with a new 3,600 sf building to commence the ATV Tour experience. The new depot will provide a guest check-in area, video orientation room, and storage for ready-to-ride ATVs. The depot will also include two offices and storage for the Visitor's Center (retail dry storage and extra storage). The current depots for the Movie Sites Tour and Jungle Expedition will be deconstructed. The current horseback riding stable will be converted to the Movie Sites Tour Depot. A new depot will be built at the site of the current Movie Sites Tour Depot, for those tours that travel southbound, such as the Taste of Kualoa Farm Tour and the Ocean Voyaging Tour. A new depot will be built for the Jungle Expedition. Depots will be placed along a new main street, providing for safer transit and a more walkable environment than what is currently available. The new main street will primarily be restricted to internal tour vehicles. North of the current parking lot, two administration buildings (3,600 sf each) and an employee building (640 sf) using repurposed 40-ft containers will be constructed. Employee areas will be located here to provide space for employee breaks and meals. Business parking for approximately 62 vehicles (of which two are ADA compliant) is currently located in this area.

A new Horseback Riding Stable will be located west of the current one. It will be 20% larger than the current stable, which will be converted into the Movie Sites Tour Depot. The old Keiki Pavilion will become a Rain Shelter for the Kualoa cowboys to store their equipment and saddle up out of the rain, and the current Farrier's Shelter will be converted to storage. The current Activities Center/Ticketing Office will be converted into a Zip Line Depot. A Farmers Market, featuring agricultural products from Kualoa and O'ahu, will be held at the Ranch located in the area where the current stone bleachers and rodeo grounds stand, immediately south of the Visitor's Center. The area is strategically located for proximity to the parking lot. This allows easy access for local community members, as well as visitors exiting their tours and waiting for the coach back to Waikīkī. The Farmers Market will offer Kualoa meat products (beef, fish, shrimp and oysters) as well as tropical fruit and other agricultural products from Kualoa and around O'ahu. A craft area will feature local sculptors who make and sell wood carvings made from trees grown at Kualoa.

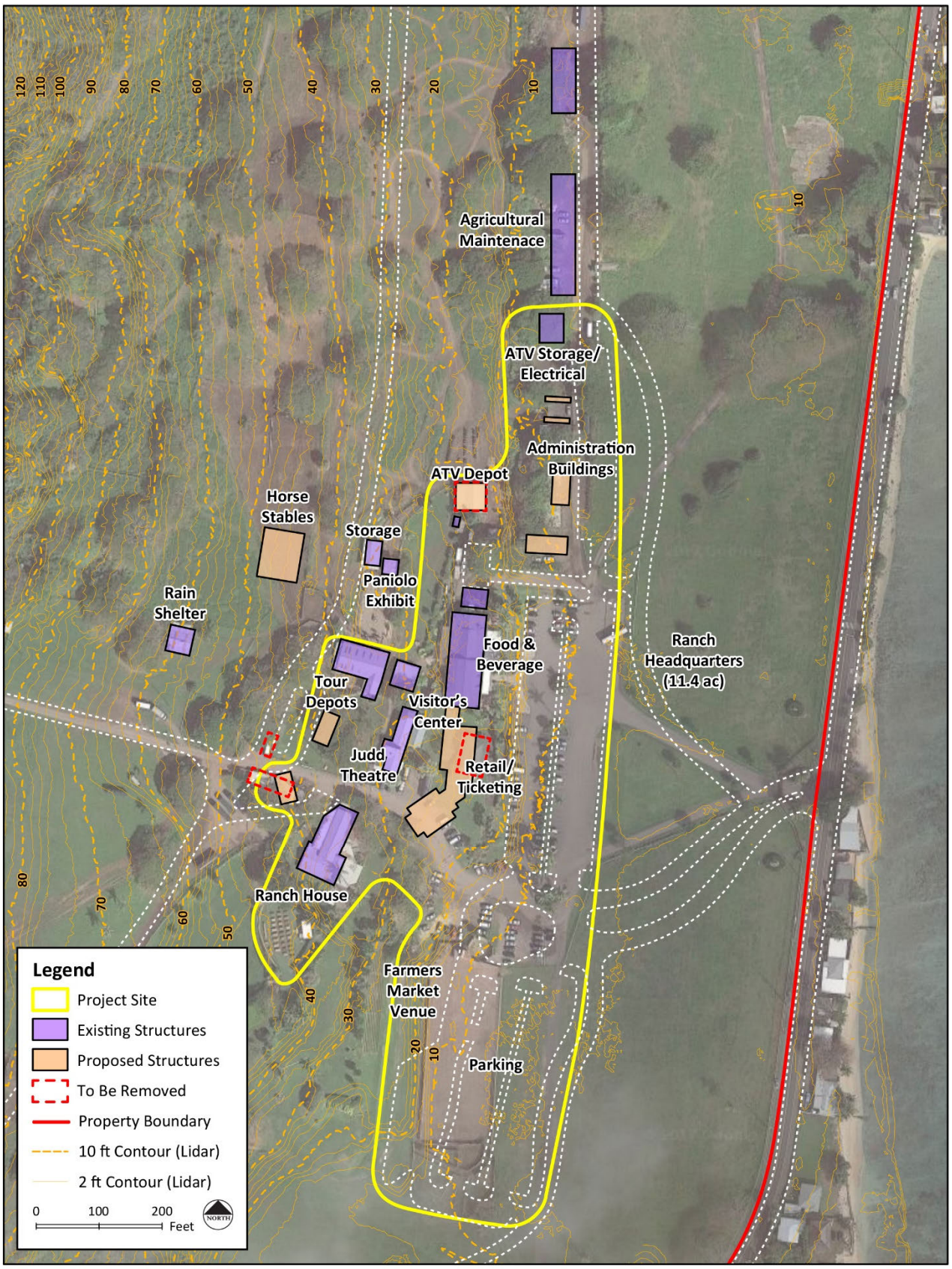

Figure 2.1 - Ranch Headquarters Location

Figure 2.2 - Ranch Headquarters Entrance Rendering

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2.4 PALIKŪ MALAE/KAUHALE

Visitors to Kualoa can experience the deep Hawaiian history and over a century of agricultural history of the Palikū area through Kualoa's Legends and Legacy Tour. The tour takes visitors through the foothills to the base of the majestic Kualoa cliffs of Moʻo Kapu o Hāloa, while guides share the legends and stories of the area, and how Kualoa became a ranch. One stop on the tour is a heiau replica and an exhibit honoring Lono, the Hawaiian god of fertility, peace, and agriculture. The views of Kualoa's pastures below showcase the Ranch's active ranching, with horses and cattle grazing against an ocean backdrop. This tour provides an overview of Kualoa, and complements the historical exhibits at the Ranch Headquarters.

Improvements in the Palikū area are planned to support gatherings and events with a distinctly Hawaiian cultural theme. The assortment of buildings, or kauhale, will be patterned after a Maori marae (malae in Hawaiian), or community cultural center and gathering place. Technically, the actual malae is the open yard area in front of or adjacent to one or more of the individual hale in the kauhale. The open space and its affiliated buildings designed with an architecturally Hawaiian theme will serve as a site for welcoming visitors, baby lūʻau, weddings, funerals, meetings, or other group events. In addition, the facility will be available for use in greeting and hosting dignitaries from the Pacific.

To complement the existing Palikū Pavilion, a new 960-sf, open-pavilion ceremonial meeting house (Hale Kupuna) will be located above the half circle garden area *(Figure 2.3)*. This facility is planned to be built to the south of the existing pavilion, and will serve as more of a visual representation of the Malae. The former gun range facility is no longer used for target practice, and has been renovated for use as a group facility. These facilities are available at the nearby Palikū Pavilion, the core of which was built by the military during World War II.

The drive to Palikū from the Visitor's Center parking lot will no longer cut through the center of the Headquarters area, and will instead be directed along a separate driveway. This will allow facility carts, private cars, and coach buses access to group facilities for private occasions. Grass parking for at least 20 vehicles is located in the yards around the building. The Visitor's Center parking lot will accommodate overflow parking. The separate drive to Palikū will reduce internal traffic and increase pedestrian safety.

No additional landscaping will occur at Palikū, as this area is already noted for its lush tropical, Hawaiian-themed grounds. The surrounding area of the Palikū Malae will be jointly used for rotational horse and cattle grazing, allowing Kualoa Ranch continued focus on agricultural uses.

Figure 2.3 - Palikū Group Facilities (Malae/Kauhale) & Film Location

2.5 KA'A'AWA AGRICULTURAL FACILITY

Ka'a'awa Valley supports approximately 700 acres of pasture for intensive cattle grazing, 30 acres of diversified agriculture (herbs, truck crops, etc.), four acres of aquaculture lagoons, and a three-acre shade house with tropical flowers. Ka'a'awa can be explored via the ATV, mountain biking, horseback, Ranch & Movie Sites, or Treetop Canopy Zipline tours. Guests drive their own ATV on designated trails that pass through active agricultural areas and into scenic valleys and remote areas of the Ranch. The one-hour horseback tour takes guests over a saddle trail to visit expansive grazing pastures, aquaculture ponds, and movie sites. The two-hour horseback tour takes guests even further into the Valley to experience mauka areas with hardwood forest restoration and breathtaking views.

Kualoa's most popular narrated tour, the Ranch & Movie Sites Tour rumbles through active agricultural areas in Ka'a'awa Valley to experience the backdrops to many of Hollywood's biggest blockbuster movies and television shows. One stop on the tour includes Battery Cooper, constructed in the early 1940s to protect the windward coast and Kāne'ohe Bay. Although no longer a coastal defense facility, Battery Cooper now houses an exhibit representing military history and films with scenes shot at the Ranch. The tour includes the current Ka'a'awa agriculture facilities and surrounding agricultural banana fields. Guests are able to view the aquaculture lagoons, shade house, papayas, cacao, and grazing cattle and sheep.

The Treetop Canopy Zipline Tour begins at the upper section of Ka'a'awa Valley with seven tandem sections, two cable bridges, and three mini-hiking nature trails. Guests learn about Hawaiian traditions and experience Ka'a'awa Valley first-hand by ziplining through native flora and fauna and crossing natural streams while viewing the Ranch's koa restoration efforts.

An Agricultural Facility is planned for lower Ka'a'awa, near the existing orchid shade house *(Figure 2.4)*. The facility will be housed in a new 3,720 sf structure located in close proximity to the aquaculture facility. Fruits and vegetables will be processed into value added products, such as dehydrated foods and fruit leather. Other value-added products are being researched.

The new structure will also be used as a group culinary facility. The site is on slightly elevated land, providing both mauka and makai views. This group facility will be able to accommodate groups of up to 150 people approximately once a week, and will include a wrap-around lanai, dining/gathering space, prep kitchen, storage for tables, and restrooms. Entrance to the facility will be from internal ranch driveways and not from the highway. Those using the Ka'a'awa facilities will either drive there after passing through the front entrance, or will board a bus at Headquarters that takes them there. Grass parking at the Agricultural Facility will accommodate at least 10 vehicles.

The surrounding lands will be used for intensive cattle grazing to maintain Kualoa's position as one of O'ahu's largest cattle ranches, providing fresh 100% grass-fed beef for island residents. Other uses of the surrounding area will include aquaculture, diversified agriculture (herbs, truck crops, etc.) and tropical flowers.

Figure 2.4 - Ka'a'awa Agricultural Facility & Film Site Plan

2.6 WEDDING SITES

The agricultural and open space landscapes of Kualoa Ranch offer several locations for weddings and other group events. Weddings and events typically range in size from 30 to 200 guests. The nature of the agricultural land provides preserved beautiful open spaces where couples seek to be married. Open pastures and garden settings provide tranquil and private locations for ceremonies. People are drawn to Kualoa because the settings are amidst an active working cattle ranch, next to an operational Hawaiian fishpond and in a beautiful natural, rural, agricultural setting. Some locations have limited support facilities, while many do not have any facilities and require temporary arrangements. Kualoa strictly limits the frequency, scale and time of these events.

Locations within the agricultural areas that are typically used for weddings at the Ranch are as follows:

- **Ranch House Terrace** - Kualoa's existing Ranch House *(Figure 2.1)* has the capacity for larger events, and the charm of classic paniolo country. The quaint, rustic Ranch House and lawn overlooks the rodeo arena, sculpture garden and Mokoli'i Islet, reminding guests of Kualoa's history as an authentic Hawaiian ranch dating back to the 1800's. The Ranch House has a kitchen equipped with a sink and standard refrigerator, restroom and dining area. Electrical outlets are available throughout the building space with limited access in the lawn area. Parking is provided at the nearby Visitor Center.

- **Palikū Gardens** - Located above the ranch at the base of the Kualoa mountain range, the existing Palikū Gardens *(Figure 2.3)* group facility provides guests with views of Kāne'ohe Bay, the Pacific Ocean, green gardens, active grazing cattle pastures, and iconic Mokoli'i Islet. The site consists of a large lawn area, garden, and an open-air pavilion. The pavilion has restrooms, a partial kitchen, and a large history room with private restroom. A gravel parking area is directly adjacent to the site.

- **Mōli'i Gardens** - Mōli'i Gardens *(Figure 2.5)* has a tropical garden setting surrounded by a tropical fruit tree orchard, an existing covered open-air pavilion and a main lawn area. The pavilion has water, electricity, restrooms and partial kitchen. A gravel parking area is provided.

2.7 FILM PRODUCTION

The agriculture, working ranch and open space at Kualoa offer a scenic location for film settings. Over the years, Kualoa has been used as a location for many film and television productions. There are few locations on O'ahu which offer the combination of scenic vistas and working agricultural operations. These production activities are complementary with the agricultural operations at the ranch, as the use is temporary and allows for continued agricultural operations. Film productions occur at various locations within the ranch. The multiple film and tv productions provide for local employment and business support. The SUP will request allowance for weddings and film production that utilize agricultural and outdoor recreation areas in Ka'a'awa, Kualoa and Hakipu'u.

Figure 2.5 – Mōli'i Gardens Wedding & Film Location

2.8 CIRCULATION AND OFF-STREET PARKING

Existing roads serving the current ranch operations will be improved to serve the expanded activities. The existing entrance to the ranch will be maintained, with an internal ranch circulation driveway improved with an asphalt surface to serve the Ranch Headquarters.

The Ranch is planning to develop an internal driveway which connects the existing Ranch Headquarters with the planned Palikū Malae in the mauka area. The planned driveway route currently exists as an unimproved ranch driveway, which will be widened and stabilized with a gravel or crushed coral travel surface. The road will provide two travel lanes improved to a width of approximately 16 ft.

Off-Street Parking and Loading. Adequate off-street parking will be provided to support the new facilities, as shown below per the City and County of Honolulu Land Use Ordinance (LUO) Sec. 21-6.20. The 2010 Americans with Disabilities Act Standards for Accessible Design requires eight accessible parking spaces per 301 to 400 total provided parking spaces. Two ADA compliant spaces will be added to the current six for a total of eight, required for the total 316 parking spaces after expansion of the main parking area.

Table 2.2 – Off-Street Parking Requirements

Facility	Total sf	Off-Street Parking Requirement	Parking Spaces Required	Proposed Parking Spaces
Ranch Headquarters - Arrival Pavilion - Kualoa Market - Administrative and Employee Buildings Palikū - Hale Kupuna Pavilion Ka'a'awa - Agricultural Facility	 3,970 3,840 7,840 960 3,720	1/400 sf (commerce and business)	51	88 standard 2 ADA
TOTALS	**20,330**	**-**	**51**	**90**

The number of off-street loading required for these recreational facilities amount to two spaces *(Table 2.3)*, as required under LUO Section 21-6.100 Off-street Loading Requirements for either Use Category A (Retail) or C (Offices). Two loading spaces will be provided at the northern end of the existing Visitor Center, along with ten bus spaces adjacent to the expanded parking area.

Table 2.3 – Off-Street Loading Requirements

Facility	Total sf	Off-Street Loading Requirement	Loading Spaces Required	Loading Spaces Provided
Ranch Headquarters - Arrival Pavilion - Kualoa Market Palikū - Hale Kupuna Pavilion Ka'a'awa - Agricultural Facility	 3,970 3,840 960 3,720	2 per 10,001 – 20,000 sf	2	2
SUBTOTAL	**12,490**	**-**	**2**	**2**
Ranch Headquarters - Administrative and Employee Buildings	7,840	1 per 20,000 – 50,000 sf	0	0
TOTALS	**20,330**	**-**	**2**	**2**

2.9 LANDSCAPING

A landscape plan was prepared for the project by Walters, Kimura, Motoda Inc. The Ranch Improvements will be enhanced with a mix of native and non-native non-invasive plants (*Figure 2.6*). A list of existing plant species is included in *Table 2.4.*

Table 2.4 – Existing Landscaping

Common Name	Scientific Name
Autograph Tree	*Clusia rosea*
Coconut Palm	*Cocos nucifera*
False Kamani	*Terminalia catappa*
Fiji Fan Palm	*Pritchardia pacifica*
Hala	*Pandanus tectorius*
Kukui	*Aleurites moluccanus*
Manila Palm	*Adonidia merrilii*
Monkeypod	*Pithecellobium saman*
Pink Plumeria	*Plumeria rubra*
Singapore Plumeria	*Plumeria obtusa*
Yellow Plumeria	*Plumeria rubra*
Seagrape	*Coccoloba uvifera*
True Kou	*Cordia subcordata*

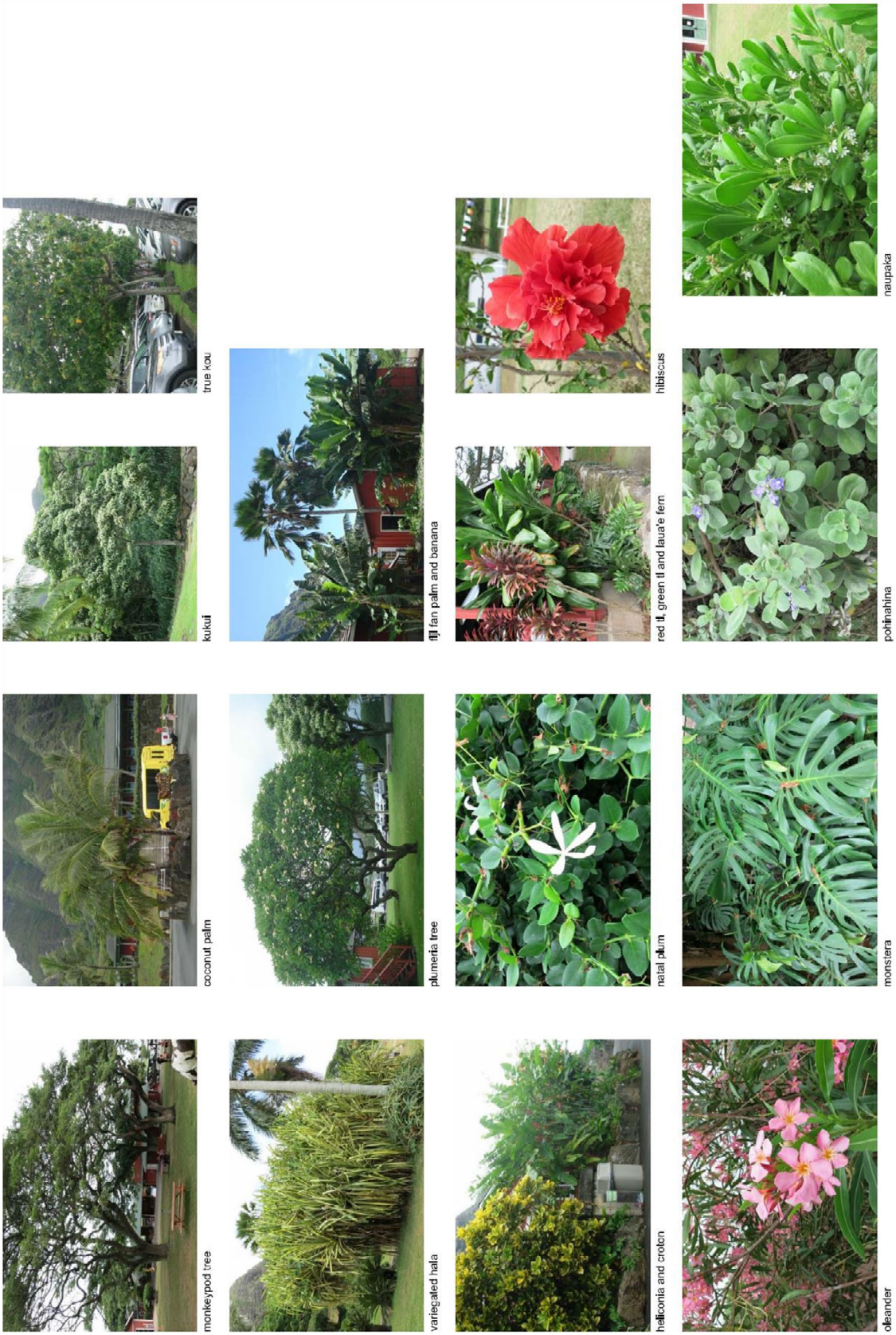


Figure 2.6 - Plant Palette

2.10 VARIOUS SITE INFORMATION

Signs. Kualoa will comply with LUO sign regulations. For internal circulation, signs will be located along the internal driveways, to provide directions to the Palikū Malae and the Ka'a'awa Agricultural Facility.

Setbacks, Yards and Other Open Spaces. Kualoa will comply with LUO yard setback standards for AG-2 General Agriculture of 15 ft for front yards and 10 ft for side/rear yards. The Ranch Headquarters and Ka'a'awa Agricultural Facility are located at distances of approximately 475 and 1,200 ft respectively, from the closest property boundary along Kamehameha Highway.

Additional landscaping will not occur at Palikū or Ka'a'awa. New landscaping at the Ranch Headquarters will match the existing plant palette. These plants will not be edible to cattle.

Height, Bulk and Location of Structures. Kualoa Ranch will comply with LUO standards 21-3.50-4 for maximum building heights (15 to 25 ft), building areas (10% of zoning lot for nonagricultural structures), and height setbacks (one foot for each two feet of additional height above 15 ft) for all structures within the AG-2 District.

2.11 HOURS AND MANNER OF OPERATION

The current Special Use Permit (SUP) states hours of operation from 10:00 a.m. to 3:00 p.m., Monday to Friday. Operating hours for Kualoa will be updated to reflect current business operations from 7:30 a.m. to 8:00 p.m. The last tour of the day ends at 5:30 p.m., and dinner events are occasionally held in the evenings. Kualoa employs approximately 300 local residents.

Current visitor count ranges between 1,000 to 1,500 visitors per day. The proposed improvements are primarily to accommodate the current numbers and support some limited growth over the next ten years. Kualoa is planning for up to 2,000 ticketed tour visitors per day. Several uses allowed under the 1985 SUP and 1985 Conditional Use Permit (CUP) have been discontinued, such as the rifle range, jet ski rides, and scuba diving. The expanded hours of operation are required to better serve visitors wishing to access half-day or all-day activities. There is a growing interest among the local resident community to access agricultural tours and activities at Kualoa Ranch. This interest is particularly great during the weekend period, which justifies the need for an expanded operating schedule.

2.12 REQUIRED PERMITS AND APPROVALS

Major Modification of State Special Use Permit (SUP) Activities - The activities approved in 1985 under the existing State Special Use Permit (85/SUP-2) apply to specific sites within the central portion of the ranch. The existing SUP specifies a variety of outdoor recreational activities, including the following uses:

- ATV tour road (4-wheel all-terrain vehicles)
- Target shooting range (.22 caliber rifle and pistol) *(discontinued)*
- Landing/departure site for helicopter rides *(discontinued)*
- Maintenance storage building

The areas and routes allocated for these activities are shown in *Figure 1.8*, as presented in the 1985 Planning Commission acceptance report. The proposed petition will request modification to increase the SUP area to include the Ranch Headquarters and support facilities, remove the shooting range, allow for Agricultural & Outdoor Recreation tours to reflect current trail use that occurs in Kaʻaʻawa Valley (by both ATV riders and agriculture operators), allow for enough single- and multi-passenger recreational vehicles to accommodate up to 200 guests per day, allow for up to 2,000 ticketed tour visitors per day, and update operational hours to reflect current business operations. The SUP will also request allowance for weddings and film production that utilize agricultural and outdoor recreation areas in Kaʻaʻawa, Kualoa and Hakipuʻu.

Conditional Use Permit (85/CUP-15) – Outdoor recreational activities approved under the 1985 CUP included paintball, target shooting, horse-drawn wagon and helicopter rides, and ocean-oriented activities (such as snorkeling, scuba diving, windsurfing, and jet skiing), with expanded agricultural operations *(Figure 1.9)*. Due to a greater emphasis on agricultural uses, these activities have largely been discontinued at the Ranch. The continuing outdoor recreational uses include a catamaran sailing tour and ATV tour of agricultural lands. Kayak and stand up paddling (SUP) activities will be added.

From 1987 to 2001, minor modifications were made to the 85/CUP-15, including the addition of a new storage shed near the ATV storage building, conversion of an existing equipment garage to office space and conference room, a horse barn, scheduling annual music events and construction of the Visitor Center. An additional minor modification was approved in 2013 for a Challenge Course and Forest Canopy Tour.

The proposed petition will request modification to the CUP by discontinuing the above-noted activities and allowing weddings and film production that utilize agricultural and outdoor recreation areas in Kaʻaʻawa, Kualoa and Hakipuʻu. Modifications to the CUP conditions would include enough single- and multi-passenger recreational vehicles to accommodate up to 200 guests per day, up to 2,000 ticketed tour visitors per day, and updated operational hours to reflect current business operations.

A minor modification to the 85/CUP-15 and 85/SUP-2 to allow the "temporary" Farm Fair event has been applied for and approved every year since 2012. Kualoa Ranch supports having a Farm Fair at the ranch to help expose Hawaiʻi residents to the importance of agriculture. The CUP petition will request a "permanent" Farm Fair event with substitution of the annual Farm Fair for the previously approved annual music event.

Other Permits and Approvals – In 1986, Kualoa received a Conservation District Use Permit (CDUP) from the State of Hawaiʻi Board of Land and Natural Resources for pier construction at Mōliʻi Pond. The pier supports boat tours of the pond and access to the beach and land area makai of the seaward fishpond wall. No new uses or improvements are planned at Mōliʻi Pond, with no changes to the existing CDUP.

There are other permits and approvals that are categorized as "ministerial" because they do not require approval by a commission or department director. These approvals include a Grading, Grubbing and Stockpiling Permit and Building Permits, which will be obtained in advance of construction. Approval from the State Department of Health is required for the individual wastewater treatment and disposal system.

Table 2.5 – Proposed Modifications to Special Use Permit (85/SUP-2)

1985 **Use Areas, Activities and Operational Conditions**	**2018** **Consistent Uses & Proposed Modifications to the SUP**
SUP Use Area: 2.45 acres	SUP Use Area: increase to 12.8 acres
Specified Uses:	Proposed Modification to Specified Uses:
Recreational vehicle trail (10′ x 9600′)	Agricultural & Outdoor Recreation tours – expand to reflect current trail use that occurs in Ka‘a‘awa Valley
Rifle range .22 caliber (80′ x 100′)	*Discontinued*
Helicopter landing pad (25 x 25′)	*Discontinued*
Recreational equipment storage (50′ x 50′)	Ranch Headquarters & Support Facilities (12.8 ac.)
	Weddings & Film production with Agricultural Tourism, Agri-business, Outdoor Recreation
Conditions:	Proposed Modification to Conditions:
1. Number of guests - limited to 100 persons per day	1. Number of guests - up to 2,000 ticketed tour visitors per day
2. Number of recreational vehicles - limited to 20	2. Number of recreational vehicles – enough single- and multi-passenger recreational vehicles to accommodate up to 200 guests per day
3. Site plan submittal & approval	3. 12.8 ac Site Plan & Access Details
4. Timing of Improvements	4. Timing of Improvements
5. HFD Coordination	5. HFD Coordination
6. HPD Permit for Target Range	*6. Discontinued*
7. Signage review & approval	7. Signage review & approval – proposed improvements
8. DOH food service requirements	8. DOH food service requirements
9. Operational Hours: 10:00 a.m. to 3:00 p.m., Monday to Friday	9. Operational Hours: 7:30 a.m. to 8:00 p.m., 7 days per week

Table 2.6 – Proposed Modifications to Conditional Use Permit (85/CUP-15)

1985 **Use Areas, Activities and Operational Conditions**	**2018** **Consistent Uses & Proposed Modifications to the CUP**
Specified CUP Uses:	Proposed Modification to Specified Uses:
Activity Club Recreation tours (via horse-drawn wagons, ATV)	Agricultural & Outdoor Recreation tours (various types)
Helicopter tours	*Discontinued*
Target shooting range (.22 caliber) & Paintball survival game	*Discontinued*
Makai-side ocean activities (SCUBA, windsurf, jet ski, sail tour)	Sail tour ongoing, include kayaks and Stand Up Paddling - *Discontinued SCUBA, windsurf, jet ski*
	Weddings & Film production with Agricultural Tourism, Agri-business, Outdoor Recreation
Conditions:	Proposed Modification to Conditions:
1. Number of guests - limited to 100 persons per day	1. Number of guests - up to 2,000 ticketed tour visitors per day
2. Number of recreational vehicles - limited to 20	2. Number of recreational vehicles – enough single- and multi-passenger recreational vehicles to accommodate up to 200 guests per day
3. Site plan submittal (setback, access, helipad)	3. 12.8 ac Site Plan & Access Details
4. Access and Highway Improvements	4. Update Access and Highway Improvements
5. Helicopter flight plan	*5. Discontinued*
6. Landscape plan	6. Update Landscape Plan
7. HFD coordination on improvements	7. HFD coordination on improvements
8. HPD approval for target shooting	*8. Discontinued*
9. Signage review & approval	9. Signage review & approval – proposed improvements
10. Site plan for Makai activities site	10. To be revised in CUP
11. Operational Hours: 10:00 a.m. to 3:00 p.m., Monday to Friday	11. Operational Hours: 7:30 a.m. to 8:00 p.m., 7 days per week

Figure 2.7 – SUP Request Areas

3.0
ENVIRONMENTAL SETTING, POTENTIAL IMPACTS, AND MITIGATION MEASURES

3.0 ENVIRONMENTAL SETTING, POTENTIAL IMPACTS, AND MITIGATION MEASURES

The environmental setting, potential impacts and mitigation measures for the proposed improvements to Kualoa Ranch are addressed in the sections below.

3.1 Climate

Existing Conditions
Average annual temperature in the Kualoa region is generally within the low 70's (degrees Fahrenheit), depending upon the time of day and the season. Precipitation in the area is moderate, with annual rainfall averaging 54 inches annually – the majority of which occurs during winter months (Giambelluca et al., 2013).

The climate is ideal for current agricultural uses of the project location, which include cattle grazing, aquaculture, food cultivation (such as taro, breadfruit, papaya, banana, pineapple, sugar cane, and coffee), as well as growing ornamental and tropical plantings.

Anticipated Impacts and Proposed Mitigation
The proposed action will have no effect on climatic conditions, thus no mitigation measures are required.

3.2 TOPOGRAPHY

Existing Conditions
The topography at the project site of the Ranch Headquarters improvements is slightly less than 20 feet (ft) above sea level (*Figure 2.1*). The additional construction area of the Palikū Malae is approximately 115 to 140 ft above sea level, with a gently sloped terrain (*Figure 2.12*). The planned site for the Ka'a'awa Agricultural Facility is at an elevation of approximately 45 ft above sea level *(Figure 2.13).* The gently sloped and relatively flat expanses of land in the project locations are conducive to the current agricultural and recreational activities at the Ranch.

Anticipated Impacts and Proposed Mitigation
The proposed improvements will not have any significant impacts to the overall topography of the project area. Modifications to site topography are addressed under *Section 3.3 Soils and Grading.*

3.3 SOILS AND GRADING

Existing Conditions

Land Capability Groupings

The project sites at the Ranch Headquarters, Palikū, and Ka'a'awa contain soils classified as Waialua stony silty clay (WlB), Waialua very stony silty clay (WmD), and Mokuleia clay loam (Mt) *(Figure 3.1).*

The Waialua series (WIB, WmD) consists of moderately well-drained soils that developed in alluvium weathered from basic igneous rock. These soils are nearly level to steep and range in elevations from 10 to 100 ft (US Department of Agriculture Soil Conservation Service, 1972).

- WIB (Waialua stony silty clay, 3 to 8 % slopes) – This soil is typically found on smooth coastal plains and is generally dark reddish brown on the surface layer. There are sufficient stones to hinder tillage but not enough to make inter-tilled crops impractical. Due to dry conditions, irrigation is required. Runoff is slow, and the erosion hazard is slight. Workability is slightly difficult. This soil is used for sugarcane, diversified agriculture, orchards, and pasture.

- WmD (very stony silty clay, 12 to 20 % slopes) – This soil is similar to WIB, except that stones cover as much as 3 % of the surface. Due to dry conditions, irrigation is required. Runoff is medium, and the erosion hazard is moderate. Workability is difficult, so this soil is used for pasture.

The Mokuleia series (Mt) consists of well-drained soils along the coastal plains. These soils formed in recent alluvium deposited over coral sand, are shallow and nearly level. Elevations range from nearly sea level to 100 ft (US Department of Agriculture Soil Conservation Service, 1972).

- Mt (Mokuleia clay loam, 0 to 2 % slopes) - This soil is found on coastal plains, and is characterized as having a very dark grayish-brown clay loam surface layer, typically 16 inches thick. Permeability is moderate in the surface layer and rapid in the subsoil. Dry conditions in some areas require irrigation. Runoff is very slow, and the erosion hazard is no more than slight. These soils are used for sugarcane, diversified agriculture, and pasture.

Agricultural Lands of Importance in the State of Hawai'i

The Kualoa Ranch lands are predominantly classified as Non-Prime or "Other Important Agricultural Land" under the Agricultural Lands of Importance of the State of Hawai'i (ALISH) *(Figure 3.2).*

Overall Productivity Rating

The Land Study Bureau of the University of Hawai'i prepared an inventory and evaluation of the State's land resources during the 1960's and 1970's. Ratings were developed for overall productivity, with a rating of "A", very good to "E", not suitable. The majority of Kualoa's lands are rated E, with C in Ka'a'awa, C and D in Kualoa *(Figure 3.3).* There are no lands rated A on the Ranch.

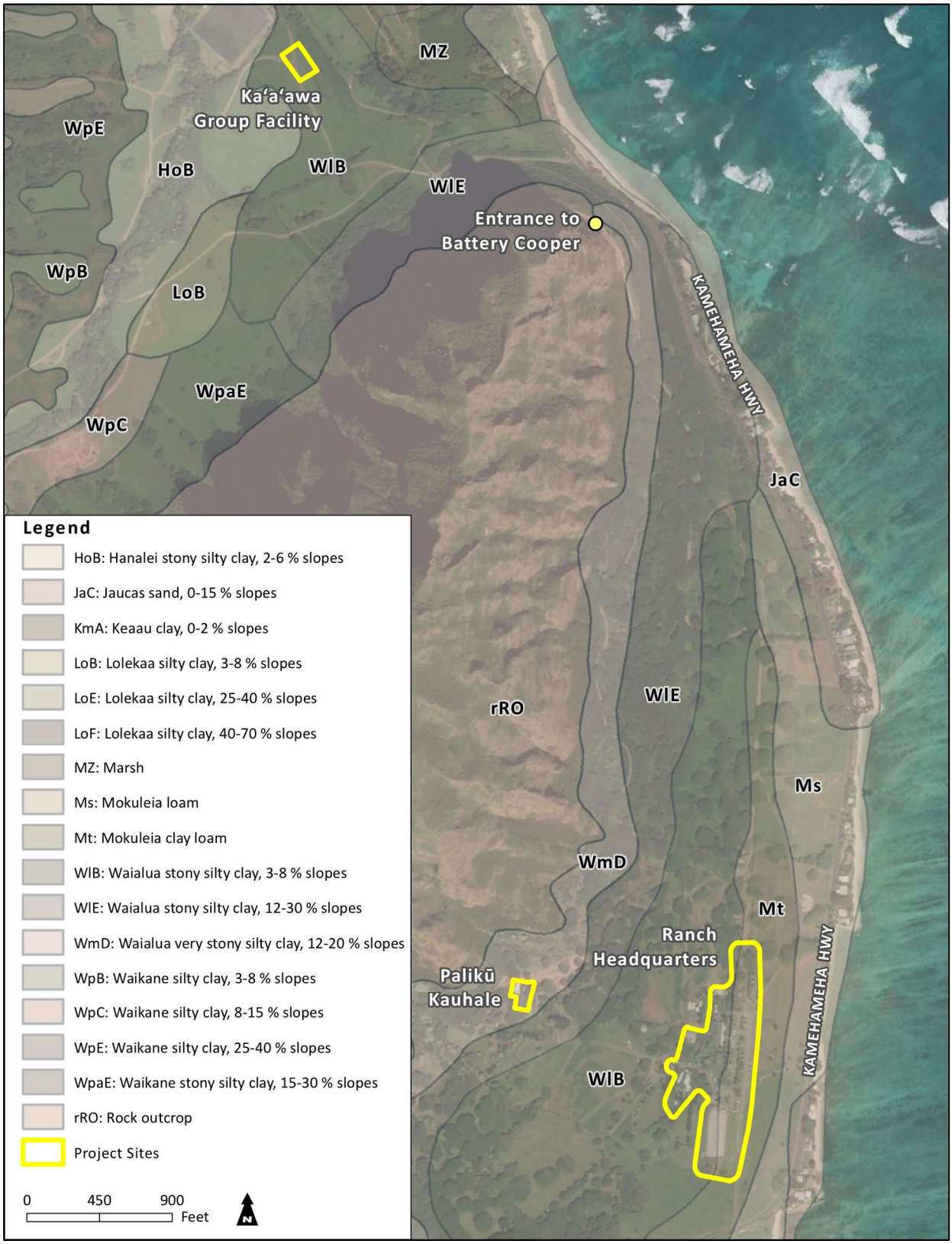


Figure 3.1 - U.S. Department of Agriculture Soil Conservation Service Land Capability Groupings

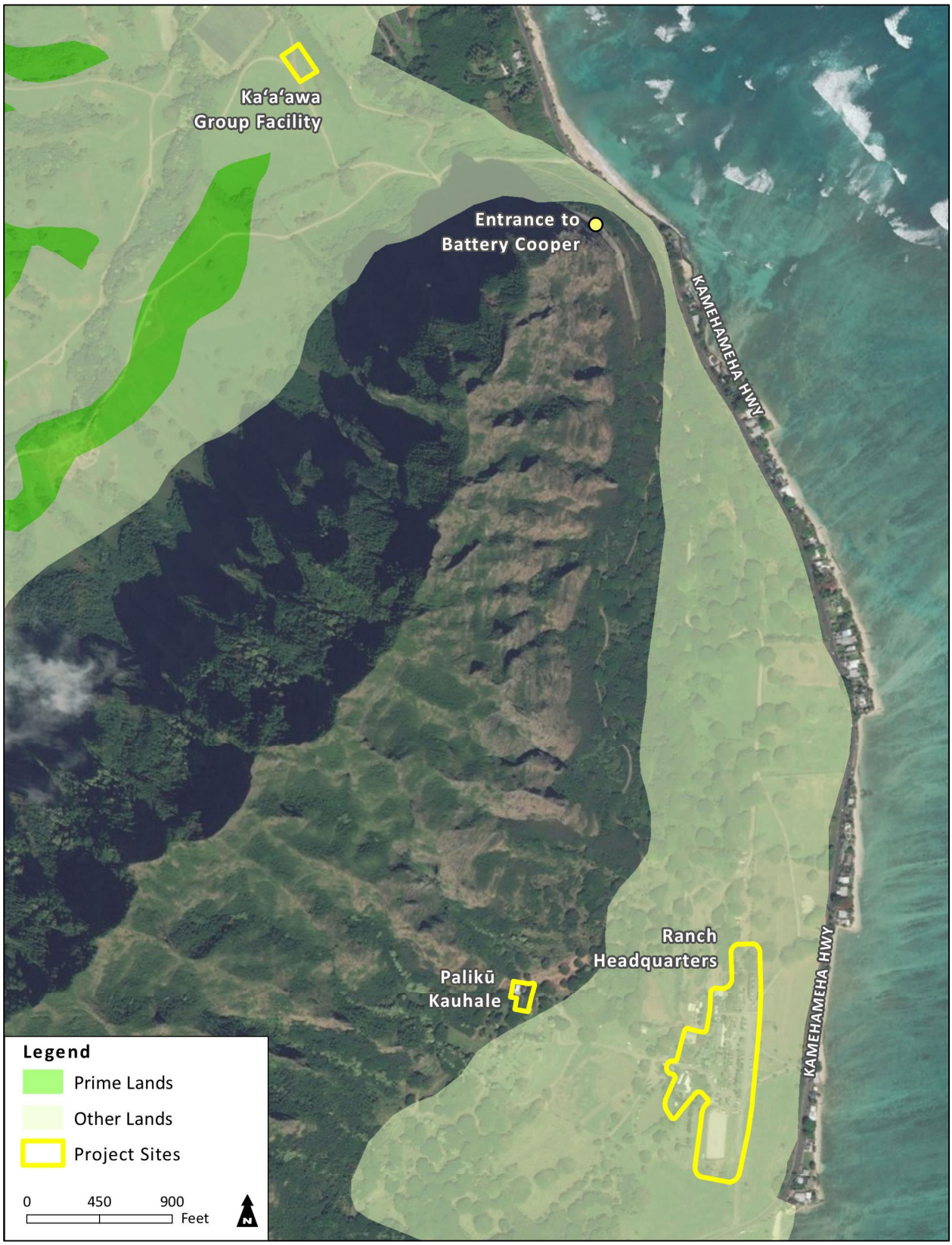


Figure 3.2 - Agricultural Lands of Importance to the State of Hawai'i

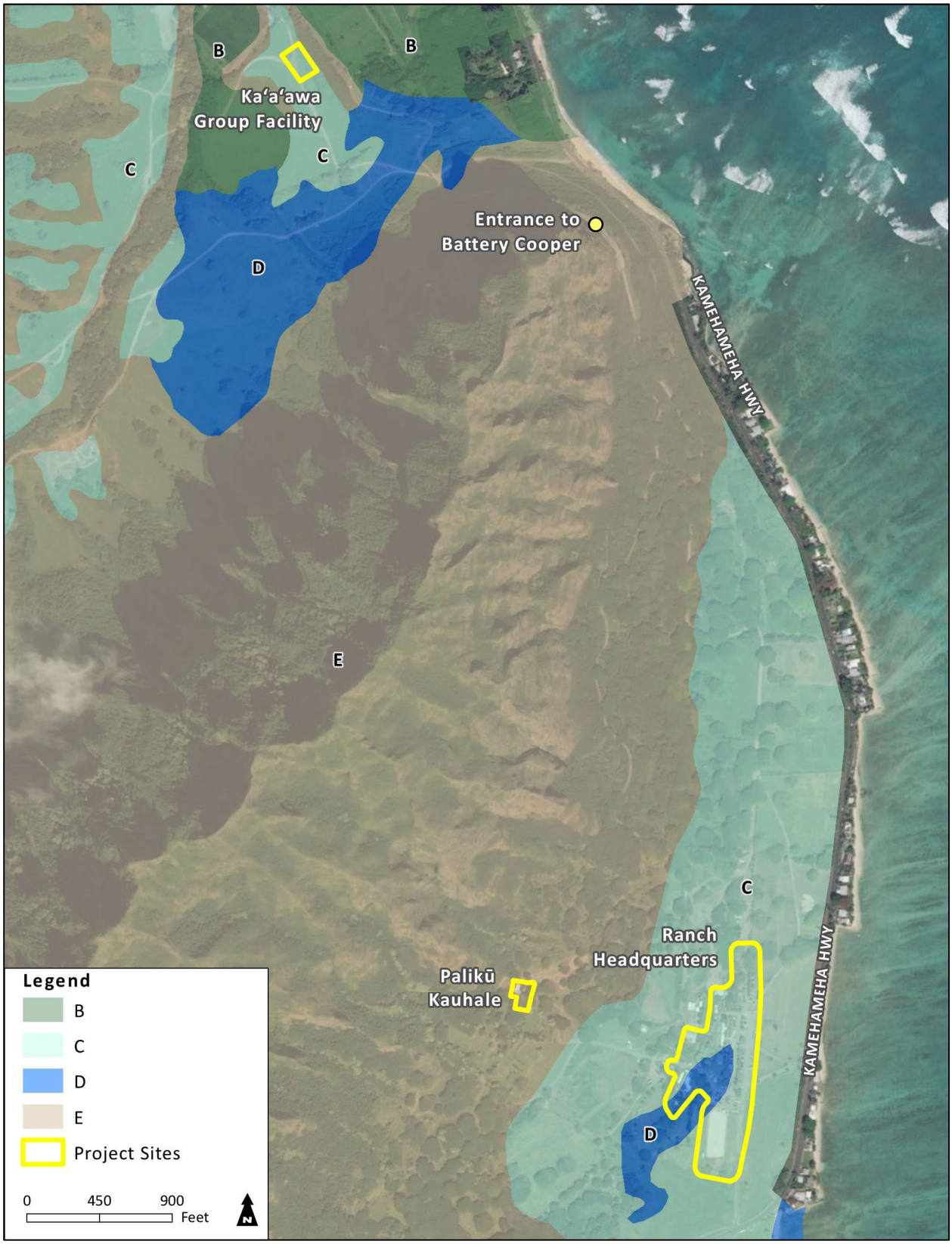


Figure 3.3 - Land Study Bureau Classifications

Anticipated Impacts and Proposed Mitigation

Land Capability Groupings

The engineering properties of the Kualoa Ranch clay soils include moderate to fast permeability with high water holding capacity. The clay soils have moderate shrink-swell potential, where the soils swell slightly when wetted and shrink when dried, creating cracks and unstable conditions for construction over time. However, additions of organic matter can improve soil tilth. Moderate physical structure in the Mokuleia series (eastern Ranch Headquarters area) provides moderate soil tilth and stable conditions for engineering and cultivation. Coral sand reached at a 12- to 24-inch depth may limit farming and engineering activities.

Earthwork and grading for construction will be limited for the proposed agricultural support facilities. Less than one acre will be affected for the construction of the Ranch Headquarters Improvements, Palikū Malae, and Ka'a'awa Agricultural Facility. Existing routes for the Ranch roads will be used as much as feasible to avoid grading new driveways. Tour routes will not be widened and landscaping will be established to minimize soil erosion and runoff.

Agricultural Lands of Importance in the State of Hawai'i

The improvements at Palikū are located on unclassified lands, and the improvements at the Ranch Headquarters and Ka'a'awa are located on lands classified as Other Important Agricultural Land. Other Important Agricultural Land is defined as lands that are important for producing food, feed, fiber, or forage crops in the State of Hawai'i, but that also exhibit limiting properties (such as seasonal wetness, erodibility, etc.), which exclude them from being classified as Prime or Unique Agricultural Land. Based on the ALISH classifications of the project areas, the project uses are consistent with the State's agricultural land-use compatibility goals.

Overall Productivity Rating

Best management practices will be implemented to manage soils at each work site. National Pollutant Discharge Elimination System (NPDES) Construction Permit conditions will be observed, as applicable.

3.4 HYDROLOGY AND DRAINAGE

Existing Conditions

Kualoa lies within the Kahana aquifer system, which has dike formations (dike complex and marginal dike zones) near the crest and small dike basal aquifers along the coast. The Kāne'ohe area is one in which surface discharge to the sea is high and groundwater underflow discharge low because dikes are parallel to the shore, compartmentalizing the aquifer, and near-shore rocks are poorly permeable. This causes high-level water table conditions. Because the front pasture area of the Ranch Headquarters is very near sea level, high tides and heavy rains bring the water table closer to the ground surface. Kamehameha Highway acts as a dam and the pasture between the Highway and parking lot becomes a detention basin during heavy rains. Existing culverts under the highway are not well maintained and become blocked. Brackish ground water can be found at relatively shallow depths throughout the site.

None of the project sites contain subsurface drainage systems. Stormwater from these sites generally sheet flows east towards the ocean.

Anticipated Impacts and Proposed Mitigation
Runoff from construction will be managed under grading permit requirements. According to HAR 11-55, an NPDES Construction Stormwater permit will be required because grading of the project site will involve one acre or more. Construction will be located away from natural stream areas at the Ranch, further minimizing the potential for top soil erosion and runoff to reach surface water. Long term drainage and water quality conditions, following construction, are expected to be similar to existing conditions or improved by new landscaping.

Proposed drainage improvements will be designed in compliance with the City's current storm drainage standard, Section 20-3-50 of the Rules Relating to Water Quality. Low Impact Development (LID) measures and Best Management Practices (BMP) are planned at Kualoa *(Figure 3.4)*. Based on future soil percolation testing, possible post-construction storm water BMPs could include biofiltration (vegetated bio-filters, vegetated buffer strips), retention (infiltration basin, infiltration trench, subsurface infiltration, bioretention basin), or alternate compliance (sand filter, detention basin). Kualoa is also considering using storm water for irrigation to reduce potable water demand. These and other actions will be further described in a Storm Water Quality Strategic Plan during the design stage as required by Section 20-3-50.

3.5 SHORELINE AND NEAR SHORE WATERS

Existing Conditions
Kualoa Ranch includes nearly 4,000 acres located mostly mauka of Kamehameha Highway. In many locations, the Highway is located adjacent to the shore, protected by houses scattered along the way. Although not an immediate issue adjacent to Kualoa, there are many locations further north where the Highway is eroding into the ocean due to beach erosion, rising sea levels and severe weather events.

The nearshore ocean water of the Pacific Ocean is classified as high quality (Class A) waters by the State Department of Health (DOH). Class A waters are designated for recreational purposes and aesthetic enjoyment and are classified for protection. These waters are not to act as receiving waters for any discharge which have not received the best degree of treatment compatible with NPDES criteria.

Anticipated Impacts and Proposed Mitigation
Proposed work on the Ranch Improvements will take place away from natural stream channels and the shoreline. The structure closest to the shoreline will be an administration building situated approximately 525 ft away. The construction and operations of these improvements will not adversely affect the shoreline or nearshore waters. According to HAR 11-54-1 antidegradation policy, existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.

Regarding Kamehameha Highway protection, the State Department of Transportation (DOT) is making repairs to those sections of the highway that have fallen into the ocean. Moving the highway inland has been discussed but would be extremely costly. The State DOT may want to consider installing short boulder groins perpendicular to the Highway to retain migrating sand as an erosion protection measure. Until a long-term solution is completed, boulders and concrete will be used by DOT to protect the road.

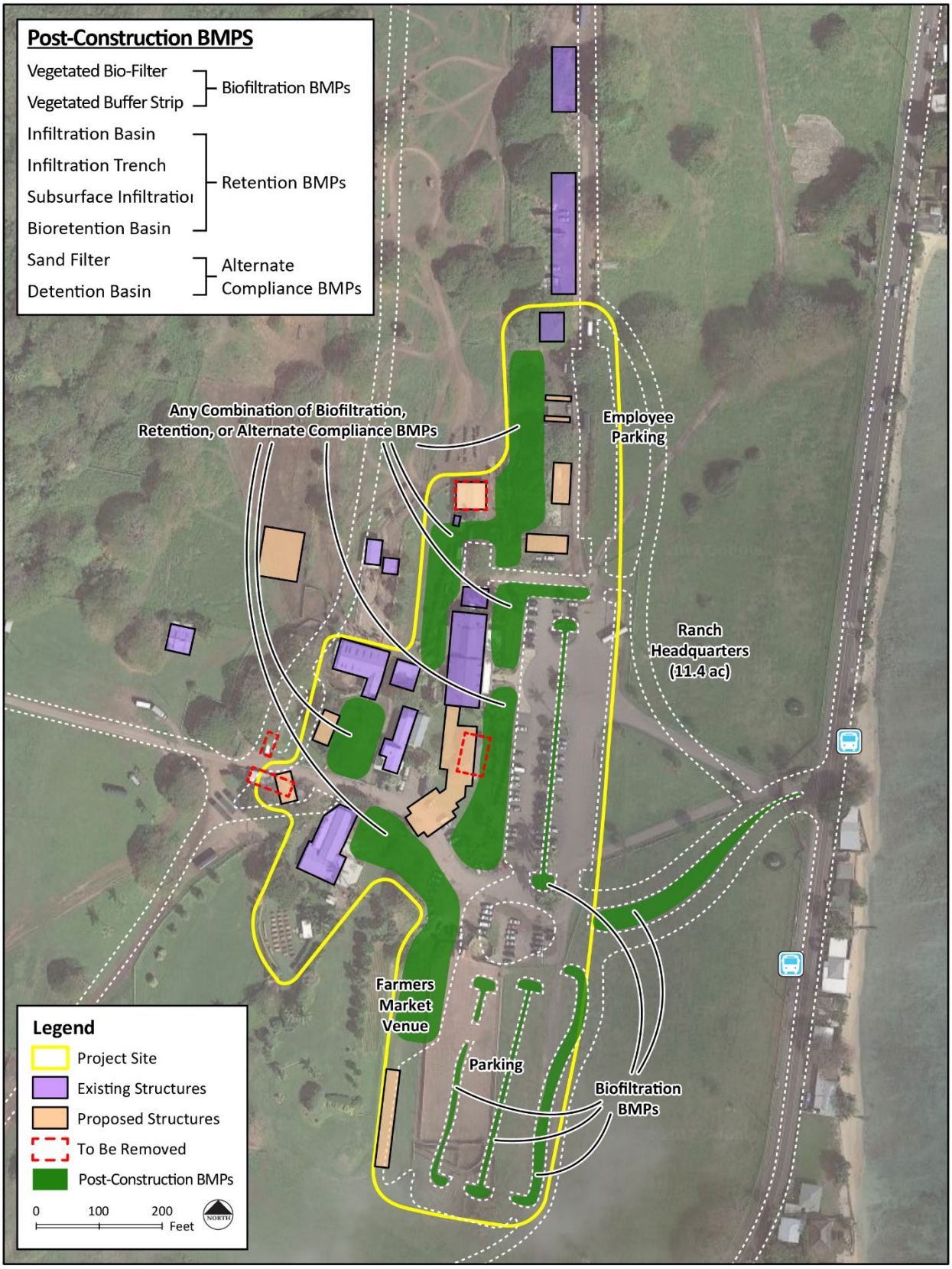


Figure 3.4 – Post-construction Storm Water Best Management Practices

3.6 NATURAL AND MANMADE HAZARDS

Existing Conditions

Hurricanes and Tropical Storms

Hurricanes and tropical storms are both categorized as tropical cyclones, which are warm-core storms which originate over tropical waters with well-defined centers of closed surface wind circulation. A hurricane is a tropical cyclone which sustains surface winds of 64 knots (74 mph) or more. Tropical storms are categorized as an organized system of strong thunderstorms with defined circulation and maximum sustained winds of 39-73 mph (National Oceanic and Atmospheric Administration [NOAA], 2015).

Hurricanes are considered to be relatively rare events in the Hawaiian Islands. Records show that strong wind storms have struck all major Hawaiian Islands. The first officially recognized hurricane in Hawaiian waters was Hurricane Hiki in August 1950. Since that time, five hurricanes have caused serious damage in Hawai'i: Nina (1957), Dot (1959), 'Iwa (1982), Estelle (1986), and 'Iniki (1992).

However, with rising global temperatures, Hawai'i is expected to experience a higher incidence of tropical storm events. In most recent history, Tropical Storm Iselle made landfall on Hawai'i Island in 2014, causing considerable damage to utility poles, roadways, and homes on the windward side of the island.

Earthquakes

Based on the 2006 United States Geological Survey (USGS) International Building Code (IBC) Seismic Design Map, the project sites could experience up to 0.15 earthquake ground motion accelerations (g-force). This represents the lower limits of probable force experienced by the island of O'ahu during a seismic event.

Flooding and Tsunami Inundation

The project sites are located in Flood Zone X (Minimal Flood Risk, Outside of 0.2% Annual Chance Floodplain) (*Figure 1.6*).

The sudden displacement of the ocean floor (earthquakes), landslides, or volcanism can generate tsunamis, which are a series of waves that can reach speeds of up to 600 mph (NOAA, n.d.). Upon reaching a coastline, a tsunami can become a wall of water reaching heights of 30 ft or more and capable of moving inland several hundred feet. Known major tsunami events in Hawai'i include the areas of East Hawai'i (1946, 1960, 1975) and North Shore O'ahu (1952, 1957) (Pacific Disaster Center).

Approximately half of the Ranch Headquarters area (primarily the parking lot and maintenance buildings) are located in the Tsunami Evacuation Zone (*Figure 1.6*). The remainder of the buildings in the Headquarters area are in the Extreme Tsunami Evacuation Zone. In the event of an extreme tsunami, waves may move significantly inland, and evacuation to the Safe Zone is recommended in accordance with guidance from emergency management authorities.

Climate Change and Sea Level Rise

Rapid anthropogenic climate change is a well-established fact within the scientific community. As a result of climate change, oceans are warming and acidifying, ice sheets and glaciers are melting, and sea levels are rising (National Aeronautics and Space Administration, 2015). A recent study by a University of Hawai'i (UH) team of researchers predicts that tropical regions will experience drastically warmer climates by the year 2047 (Mora et al., 2013).

In addition to rising temperatures, sea level rise is a notable concern for coastal communities such as Hawai'i, as it has historically driven shoreline changes throughout the islands. The global annual sea level rise averaged over the last century was roughly two millimeters, with previous studies indicating that this rate is now approaching three millimeters and may accelerate in the coming decades. According to the UH School of Ocean and Earth Science and Technology (SOEST), while predicting future sea level rise is challenging because of unknown parameters, research shows that global mean sea level may reach approximately one foot by mid-century and 2.5 to 6.2 ft by the end of the century. An appropriate planning target would include a sea level benchmark of one foot by mid-century and into the lower end (about three feet) of 2.5 to 6.2 ft by the end of the century. Planners can consider the impact of a worst-case scenario of 6.2 ft by end of the century and use this in the design of appropriate projects. In addition, it is practical to expect that a hurricane will make direct landfall in Hawai'i under conditions of higher sea level and that tsunami will continue to arrive at Hawaiian shores.

According to a 2014 UH Sea Grant College Program report titled, *Climate Change Impacts in Hawai'i – A Summary of Climate Change and its Impacts to Hawai'i's Ecosystem and Communities*, Hawai'i is experiencing climate change impacts in unique ways. It will be increasingly important to focus on the localized impacts of climate change and sea level rise to adequately understand and prepare for the changes to come.

Anticipated Impacts and Proposed Mitigation

Hurricanes and Tropical Storms

The effects of past storm events have caused minimal to no damage in the project area. The future threat of hurricanes in Kualoa Ranch cannot be calculated, although the frequency of hurricane threats may increase with climate change and warming ocean waters.

When a hurricane is approaching a coastal location, early evacuation is usually standard mitigation to address the possibility of accompanying storm surge with high winds. The National Weather Service provides guidance and when necessary during an event, issues a hurricane watch when a storm is expected to make landfall within 36 hours. A hurricane warning is issued when landfall is likely within 12 to 24 hours.

Earthquakes

All buildings for the project will be constructed in compliance with regulatory controls to meet City and County of Honolulu Building Code requirements as appropriate to IBC seismic probabilities.

Flooding and Tsunami Inundation
Using the potential for chronic flooding with 3.2 feet of sea level rise exposure area (SLR-XA) as the vulnerability zone for planning purposes, it is noted that the only infrastructure improvements located within areas potentially exposed to chronic flooding with sea level rise will be a portion of the parking lot *(Figure 3.5).* No mitigation measures are required in response to potential flooding or tsunami hazards. Kualoa Ranch has in place evacuation procedures in the event of a tsunami or flood event. See *Section 3.5* for mitigation suggestions for Kamehameha Highway.

Climate Change and Sea Level Rise
The Kualoa Ranch Improvements will not significantly contribute to adverse impacts relating to existing climate change and sea level rise. While the project may attract additional visitors to the area, the project is located along an existing route of Kamehameha Highway that visitors often travel to access other areas of the windward and north shore areas of the island. Therefore, it is likely that most of these visitors would be traveling to the area with or without the proposed improvements. Therefore, the project will not significantly contribute to additional greenhouse gas emissions and overall long-term climate changes.

Existing evidence on climate change highlights the need for actions to reduce greenhouse gas emissions and begin adapting to impacts. It is critical for Hawai'i to reduce the impacts of sea level rise by incorporating adaptation guidelines into development, trade, agriculture, and conservation activities. Hawai'i's communities may be more resilient through progressive land-use policies that integrate sustainability, hazard resilience, and hazard mitigation. Coastal resource conservation and ecosystem-based planning initiatives can provide protection of a specific resource while significantly reducing vulnerability to coastal hazards. Proactive efforts to increase open space, restore and provide buffers for coastal wetlands, and relocate major improvements away from vulnerable areas will greatly improve Hawai'i's resilience to climate change impacts. Hawai'i must adapt to global warming if we want to avoid the most serious impacts.

3.7 FLORA AND FAUNA

A natural resources assessment was performed for the project by AECOS, Inc. (June 2015). The findings of the assessment are included as *Appendix A.*

Existing Conditions
Flora
The findings of the botanical survey conducted for the project sites showed a mix of non-native, native, and ornamental species comprising 260 taxa in 71 families. There are no known endangered plant species at the sites of planned Ranch Improvements. This was one of the longest species lists prepared by the author in over 30 years of conducting botanical field surveys.
Eight of the 260 taxa are native, with most of these native species being common and widely distributed. A majority of the native plant species are present on site due to their use as part of the Ranch's planted landscaping. In addition, many of the native plants identified in the survey are found in the Ranch's native plant garden. Kualoa Ranch is the site of a number of Loulu palms; while most appear to be the non-native *Pritchardia pacifica*, it is possible that one or more of the planted palms could be a native species. The senior ranch landscaping staff did not recall if the native loulu plant was ever planted at Kualoa.

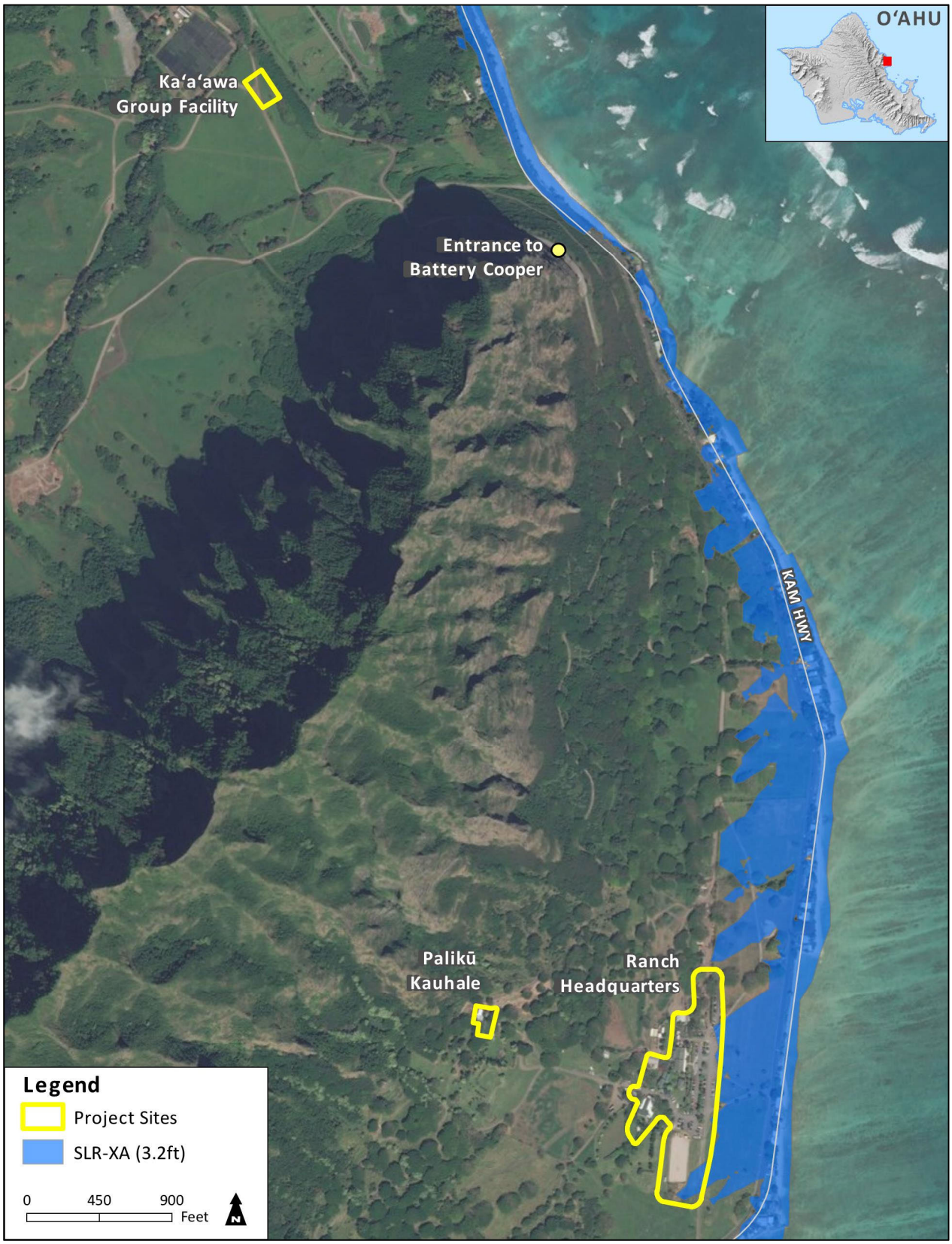


Figure 3.5 – Potential for Chronic Flooding with 3.2 Feet of Sea Level Rise (SLR-XA)

Fauna

Several species of birds and mammals live within the Ranch Improvements areas, including avifauna species such as the Common Myna (*Acridotheres tristis*), Red-vented Bulbul (*Pycnonotus cafer*), Spotted Dove (*Columba livia*), Scaly-breasted Munia (*Lonchura punctulata*), and Cattle Egret (*Bulbucus ibis*). Several common introduced mammals, including domestic horses (*equus caballus*), pigs (*sus scrofa*), goats (*capra hircus*), llamas (*lama glama*), cows (*bos Taurus*), and house cats (*felis catus*) also inhabit the vicinity of the project sites. Small Indian mongooses (*Herpestes auropunctatus*) live in the Palikū area as well as in an herb garden near the proposed Ka'a'awa Agricultural Facility.

Anticipated Impacts and Proposed Mitigation

The planned agricultural support uses of the Ranch facilities will not cause long term effects to endangered or threatened plant or animal species at Kualoa. While there will be temporary disturbance of wildlife during construction of the various support facilities, mitigation measures will be implemented to minimize impacts. In addition, new landscaping will restore and enhance the environment at the Ranch for the common species living in the area.

Although not identified during the avian and terrestrial mammal surveys, the potential presence of the following species may require additional consideration and mitigation measures:

- *Waterbirds* - Lagoons located near the Ka'a'awa Agricultural Facility site have been or could potentially be habitats for waterbirds such as the endangered Hawaiian stilt (*Himantopus mexicanus knudseni*), Hawaiian coot (*Fulica alai*), Hawaiian gallinule (*Gallinula galeata sandvicensis*), and Hawaiian duck (*Anas wyvilliana*). To avoid and minimize potential project impacts to Hawaiian waterbirds, the following measures can be applied:
  - In areas where waterbirds are known to be present, post and implement reduced speed limits, and inform project personnel and contractors about the presence of endangered species on-site.
  - If water resources are located within or adjacent to the project site, incorporate applicable best management practices regarding work in aquatic environments into the project design.
  - Have a biological monitor that is familiar with the species' biology conduct Hawaiian waterbird nest surveys where appropriate habitat occurs within the vicinity of the proposed project site prior to project initiation. Repeat surveys again within three days of project initiation and after any subsequent delay of work of three or more days (during which the birds may attempt to nest).
  - Design the proposed project in a manner that minimizes the amount of time standing water is present, thereby, reducing the potential to attract waterbirds.
  - Place signage in key areas around the property to educate visitors about waterbird issues.
  - Prohibit feeding of waterbirds.
  - Allow only closed and contained trash receptacles to prevent garbage from degrading waterbird nesting habitat.

- *Seabirds* – Hawaiian seabirds may traverse the project area at night during the breeding season (March 1 to December 15). Seabird species may include the endangered Hawaiian petrel (*Pterodroma sandwichensis*), threatened Newell's shearwater (*Puffinus auricularis newelli*), endangered Band-rumped storm-petrel (*Oceanodroma castro*), and a seabird species protected under the Migratory Bird Treaty Act of 1918, the Wedge-tailed Shearwater (*Ardenna pacificus*).

  While no seabird nestings are located within the proposed project sites, use of outdoor lights could pose a potential impact to birds, as lighting can disorient seabirds which can result in their downing or harm. Exterior facility lighting will be shielded to reduce the potential for interactions of nocturnally flying seabirds with external lights or other structures. Automatic motion sensor switches and controls on all outdoor lights can be installed or lights manually turned off when human activity is not occurring in the lighted area. Staff can also be educated about seabird fallout and be informed that downed seabirds can be taken to Sea Life Park for rehabilitation.

  All construction activity for the Ranch improvements will take place during daylight hours and will use sealed containers for waste to avoid attracting unwanted predators. Post-construction, covered trash receptacles and bait stations for rodents and mongoose will be used to minimize predator presence.

- *Hawaiian Hoary Bat* – The Hawaiian hoary bat, or opeʻapeʻa (*Lasiuris cinereus semotus*), potentially utilize project site areas. However, the project areas have very limited vegetation suitable for opeʻapeʻa roosting. To avoid any potential negative impacts to roosting bats, woody vegetation taller than 15 ft will not be removed during pupping season (between June 1 and September 15). The use of new sections of barbed wire will be minimized to avoid adverse impacts to bats.

3.8 LAND USE

Existing Conditions

Development patterns on Oʻahu are set by State Land Use District designations, the City and County of Honolulu General Plan, and City and County zoning district designations.

State Land Use Designation

The project sites in Kualoa, Palikū, and Kaʻaʻawa are classified as State Agricultural District lands by the State Land Use Commission (*Figure 1.4*).

Coastal Zone Management Program

The project sites are not located within the Special Management Area established to administer the Coastal Zone Management Program.

City and County of Honolulu General Plan

The City and County of Honolulu General Plan (2002) designates the project areas in the Koʻolau Poko and Koʻolau Loa regions as Rural.

City and County of Honolulu Zoning
These lands are zoned by the City and County of Honolulu as AG-2 General Agriculture district (*Figure 1.5*). The intent of AG-2 zoning is to conserve and protect agricultural activities. Most of the AG-2 lands on Ranch property are being utilized for agricultural purposes. Locations for movie productions and weddings at Kualoa will be addressed in an amendment of the Special Use Permit.

Anticipated Impacts and Proposed Mitigation
Of the 4,000 acres of the Ranch, less than one acre will be developed for improvements. The remaining acreage is either already developed lands, or will continue to be preserved as open space easements. The majority of existing open space surrounding the buildings will be preserved.

State Land Use Designation
The project uses are consistent with State Agricultural District lands, and further supports Kualoa's commitment to preserving its lands for agriculture and pasture use.

City and County of Honolulu General Plan
The improvements at the Ranch Headquarters, Palikū Malae, and Kaʻaʻawa Agricultural Facility are consistent with the Rural designation of the Kualoa area. The project will enable Kualoa Ranch to remain an integral and relevant part of the community, as well as the agricultural and visitor industries, while preserving the rural character of Koʻolau Poko and Koʻolau Loa.

City and County of Honolulu Zoning
The project sites are located on AG-2 General Agriculture zoned lands. The planned improvements to support the agricultural and recreational uses of the Ranch Headquarters, Palikū Malae, and Kaʻaʻawa Agricultural Facility will collectively maintain Kualoa Ranch's dedication to preventing agriculture land conversions for urban developments. The Special User Permit areas place a very limited footprint on this large agricultural land area.

3.9 ARCHAEOLOGICAL RESOURCES

An Archaeological Assessment was conducted by Keala Pono Archaeological Consulting, LLC for the project sites in April and July 2015, and is included as *Appendix B.*

Existing Conditions
The survey was conducted for portions of TMK: (1) 4-9-004:002, and (1) 4-9-005:001, and TMK (1) 5-1-001:001. The purpose of the survey was to determine the presence, nature, and extent of archaeological resources in the project area; evaluate their significance; and ensure compliance with the National Historic Preservation Act of 1966, as amended, Chapter 6E of Hawaiʻi Revised Statutes, and the guidelines established by the State Historic Preservation Division (SHPD).

The work included a pedestrian survey covering 100% of the project areas, as well as test excavations of 13 trenches in areas both within and outside of construction footprints. In total, the pedestrian and subsurface testing areas amounted to 11.174 acres. No surface archaeological remains were found during the pedestrian survey. None of the 13 trenches found evidence of

subsurface archaeological deposits, or features. Two metal artifacts and one ceramic sherd were collected and are most likely historic or modern.

Anticipated Impacts and Proposed Mitigation
Based on the lack of archaeological resource findings, archaeological monitoring is not recommended, except in the lower elevations of the Kualoa Ranch Headquarters where sandy deposits were encountered. Although no evidence was found during the archaeological inventory survey, there is a possibility of encountering human burials in intact beach sand deposits. In the event that any previously unidentified historic sites or remains are encountered during site work and construction phases, all work in the immediate area will cease and an archaeologist from SHPD will be notified. Work in the area will be suspended until further recommendations are made for the appropriate treatment of cultural materials.

3.10 HISTORICAL AND CULTURAL RESOURCES

A Cultural Impact Assessment, which included archival research and ethnographic surveys of area residents, was performed for the project by Keala Pono Archaeological Consulting, LLC (August 2015). The findings of the assessment are included as *Appendix C*.

Existing Conditions
Historically, Kualoa was an important and sacred place to the Hawaiian people. Moʻolelo refer to the area of Kualoa as once being known as Palikū, and as the home of Wākea, the Sky Father and progenitor of the human race, and Haumea, the goddess of fertility. Kualoa is often referenced as a puʻuhonua (place of refuge), and tribute area for makahiki events.

The Great Māhele took place in 1848, changing the course of traditional land tenure in Hawaiʻi. As a result, citizens, who were able to, legally claimed lands they were cultivating within Crown, Government, or Konohiki lands in 1850. Several of the Land Commission Awards (LCAs) located near the Ranch Headquarters, Palikū, and Kaʻaʻawa were once cultivated with sweet potatoes and paper mulberry on kula lands (*Table 3.1*), indicative of marginal land use and occupation of the area. After the Māhele period, plantation cultivation of rice and sugarcane dominated the landscape in the Kualoa region in the 1860's, followed by military and ranching activities by the 1870's.

Table 3.1 - LCAs in the Vicinity of the Project Areas

LCA	Claimant	Ahupuaʻa	ʻIli	Land Use
3045	Kaliiokahonua	Kualoa		Loʻi, house lot
3046	Kamanu	Kualoa		Kula, potatoes, house lot near shore
3047	Kauaiwahine	Kualoa		Kula, house lot
3048	Kekihe	Kualoa		Kula, potatoes, beans, wauke, house lot
3066	Kae	Kualoa		Loʻi, kula, wauke, house lot
3118	Haole	Kualoa		Loʻi, kula, house lot
3885	Pohue	Kaʻaʻawa	Nohomalu, Kaiaka	Loʻi, kula, potatoes, wooded upland, house lot
4402	Kauiki	Kaʻaʻawa	Nohomalu, Kuahu	Loʻi, kula, potatoes, house lot, kai
4408	Kaumu	Kaʻaʻawa	Nohomalu	Loʻi, kula, house lot, upland, pali kao
4420	Kaloena	Kaʻaʻawa	Noholoa	Loʻi, kula, house lot, upland, pali kao
8188	Heana	Kaʻaʻawa	Nohomalu	Loʻi, kalo, potatoes, melons, tobacco, wooded upland, house lot

Interviewees of the ethnographic survey were residents of the area or descendants of families from the area. The interviews touched on various topics such as their connection to Kualoa, archaeological sites, mo'olelo of the area, gathering practices, and the history and land use changes they've witnessed over time.

Anticipated Impacts and Proposed Mitigation
The planned sites for recreational activities and support facilities do not include known archaeological sites. The area has undergone extensive disturbances from previous agricultural operations, military construction and operations, bulldozing, and cattle grazing activities.

As a result of the ethnographic surveys, interviewees recommended the following in proceeding with the improvements at the ranch:

- Working with Kualoa Beach Park so that there is a repository for iwi in case they are disturbed during the project.
- Avoiding Pohaku o Kāne in Palikū
- Avoiding fishermen's burials in the mauka portions of Kualoa
- Honoring the cultural value of the area
- Respecting the 'āina
- Considering the community in the planning process
- Ensuring access for plant gathering and pig hunting
- Refraining from any further development; protecting the forest and sacred places.

3.11 SOCIO-ECONOMIC CHARACTERISTICS

Existing Conditions
The project site is located at the boundary of the Ko'olau Poko and Ko'olau Loa regions. The projects sites are located within the Census tracts 102.01 and 103.03. Kualoa has a small population of approximately 10,648 people and 3,548 housing units, which equates to about 1.1% of O'ahu's total population (953,207) and 1.0% of O'ahu's housing units (336,899), respectively. Compared to O'ahu, Kualoa's population is generally younger, with a racial mix of proportionately more Caucasians and Native Hawaiians. Slightly more than half (1,689) of the housing units are owner-occupied with an average household size of 3.38 persons per home. The median household income for Census tracts 102.01 and 103.03 are $68,108 and $84,583, respectively.

Anticipated Impacts and Proposed Mitigation
The proposed improvements to Kualoa Ranch facilities will have no foreseeable negative impacts on the residential population of the area. The Ranch Headquarters improvements and additional Ka'a'awa Agricultural Facility will increase the visitor population of Kualoa Ranch. However, the additional growth in numbers of visitors will not change the character or culture of the neighborhood. Kualoa Ranch is committed to preserving agriculture, the natural aesthetics and the longstanding rural and cultural qualities of the area. The project's integration of open space, agriculture, education and recreation is designed to achieve these goals, and this is generally understood by neighboring residents of the area. There are no permanent residential units being developed, therefore the project will not harm land and housing speculation, property values of area homes, or affordable housing in the area.

The development of the Ranch Headquarters, Palikū Malae, and the Ka'a'awa Agricultural Facility will have some short-term economic benefits resulting from the construction of the facilities. Construction will be completed by Kualoa Ranch employees and/or a local contractor. The estimated total construction cost for the facilities is estimated at approximately $4.4 million. Long-term economic benefits will also result from the employment of Ranch staff that will support the activities at the new facilities, such as the Farmer's Market at the Ranch Headquarters; weddings, baby lu'au and other community events at the Palikū Malae; and local culinary events at the Ka'a'awa Agricultural Facility. Because of its recreational operations, the Ranch has been able to provide jobs for 300 people, most of whom are local residents. Together, the Ranch Headquarters, Palikū Malae, and Ka'a'awa Agricultural Facility will help the company and its employees by broadening the attractiveness of the Ranch, resulting in a more sound economic foundation. In addition, these projects will benefit the community by providing new ways to enjoy the area as well as increased access to locally grown agriculture and food.

The rate and pattern of economic growth in this portion of O'ahu will not be affected by the new facility improvements and additions. Public costs for these facilities will be negligible, as there will be no additional demand placed on public services. Public revenues will be generated in the form of State General Excise Tax and personal Income Tax on employee salaries. There will be some construction jobs and between six to ten permanent ranch staff jobs generated by the addition of the Ranch Improvements, Palikū Malae, and Ka'a'awa Agricultural Facility. The availability of the Agricultural Facility as a site for small farm-to-table cooking classes will also support O'ahu's agricultural and culinary industries.

Kualoa Ranch has worked with the community through individual discussions to provide current information about short-term and long-term plans for the Ranch, including the proposed developments. At present, no specific concerns have been raised regarding these facilities. Those in the local community who have been contacted regarding this plan have been generally supportive of Kualoa's short-term and long-term visions for its lands.

3.12 VISUAL RESOURCES

Existing Conditions

The Ranch facilities are located at elevations from 10 ft to 150 ft above sea level, in close proximity to Kamehameha Highway lining the coast. Refer to *Figures 3.4A - 3.7A* for photographs of these sites. These elevations provide cool temperatures and panoramic vistas of the Ko'olau Mountains, Ranch and coastline.

Anticipated Impacts and Proposed Mitigation

The topography of the site will not be significantly modified by the new facilities. The facility grounds and parking lot will be landscaped. Most of the access driveways to the site have existed for years as ranch roads. Potential impacts to the physical environment are minimal, as discussed below:

Natural Environment

The natural environment of the sites for the Ranch Headquarters, Palikū Malae, and Ka'a'awa Agricultural Facility and their surrounding areas, will be maintained and enhanced by the proposed uses. Major trees will be retained, including many mature monkeypod trees. The existing contours of the gently sloping topography will not be modified.

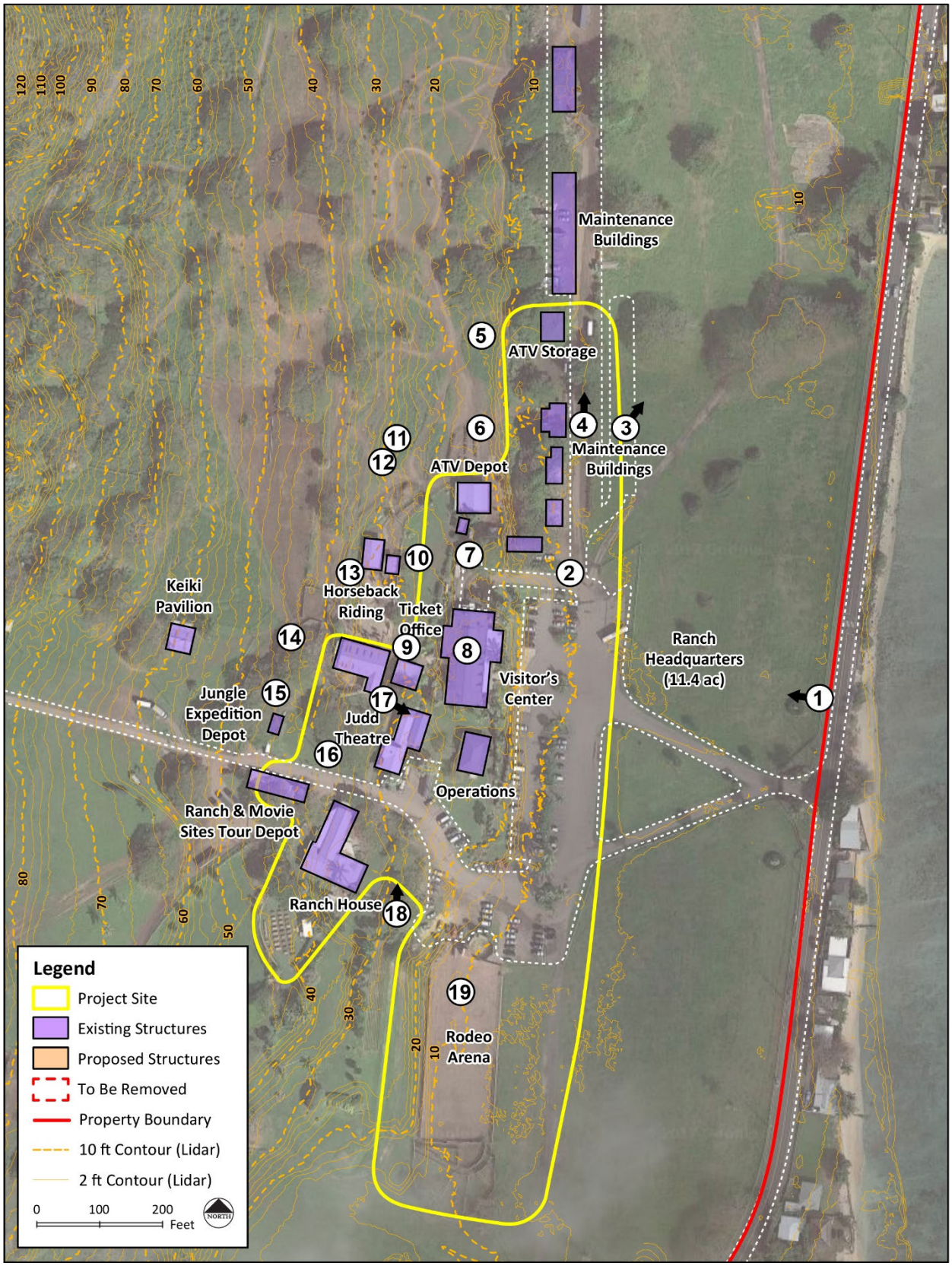


Figure 3.6 - Ranch Headquarters Site Photo Key

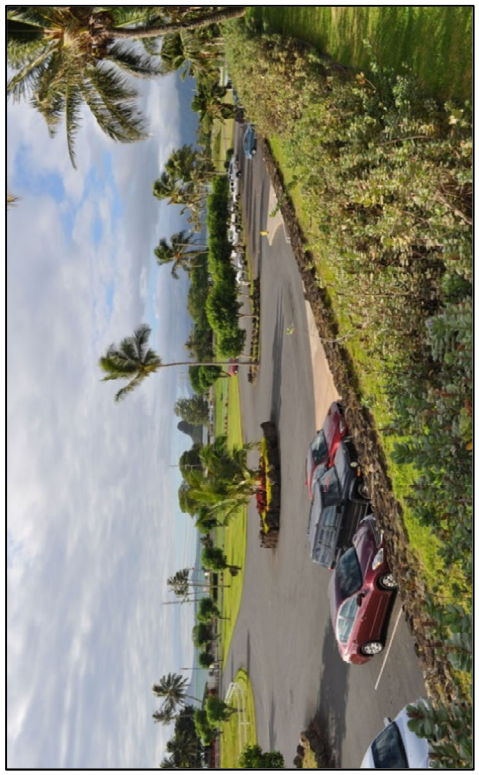


Figure 3.6A - Parking Lot (Key 2)

Figure 3.6D - Maintenance Buildings (Key 4)

RANCH HEADQUARTERS

Figure 3.6A - Entrance to Ranch Headquarters (Key 1)

Figure 3.6C - Internal Road Northbound to Ka'a'awa (Key 3)

RANCH HEADQUARTERS (CONTINUED)

Figure 3.6E - ATV Holding Area (Key 5)

Figure 3.6F - ATV Depot (Key 6)

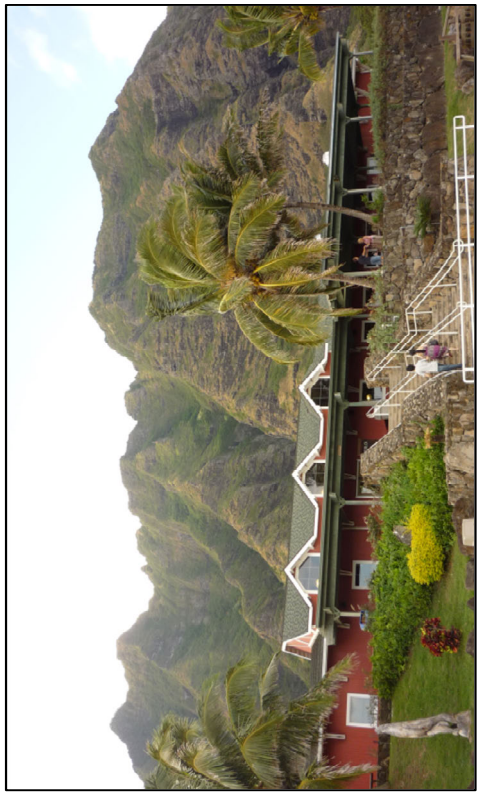


Figure 3.6G - Visitor's Center (Key 7)

Figure 3.6H - Ranch Administrative Building (Key 8)

RANCH HEADQUARTERS (CONTINUED)

Figure 3.6I- Judd Theatre (Key 9)

Figure 3.6J - Ticket Office (Key 10)

Figure 3.6K - Paniolo Exhibit (Key 11)

Figure 3.6L - Horseback Riding (Key 12)

Figure 3.6M - Horse Stables (Key 12)

Figure 3.6N - Horseback Riding Check in (Key 13)

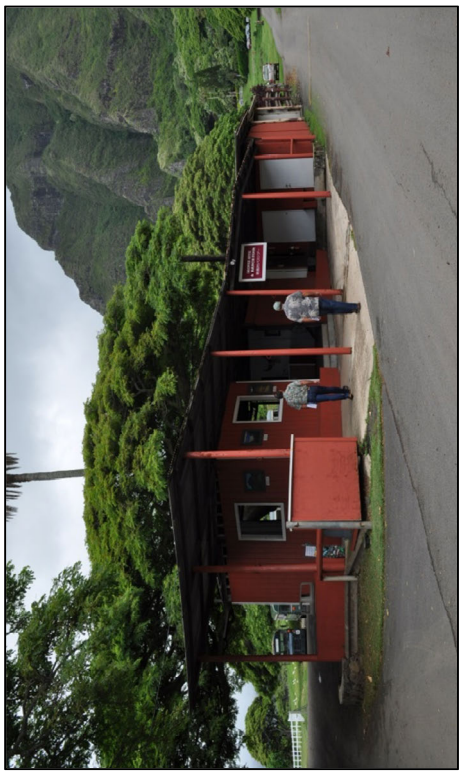


Figure 3.6P - Ranch & Movie Sites Tour Depot (Key 15)

Figure 3.6SR- Palikū Drive (Key 17)

RANCH HEADQUARTERS (CONTINUED)

Figure 3.6O - Jungle Expedition Depot (Key 14)

Figure 3.6Q - Ranch House (Key 16)

RANCH HEADQUARTERS (CONTINUED)

Figure 3.6S - Rodeo Bleachers (Key 18)

Figure 3.6T - Rodeo Arena (Key 19)

Figure 3.7 - Palikū Site Photo Key

KA'A'AWA SITE PHOTO

Figure 3.8A - Ka'a'awa Pavilion (Key 1)

MŌLI'I GARDENS SITE PHOTO

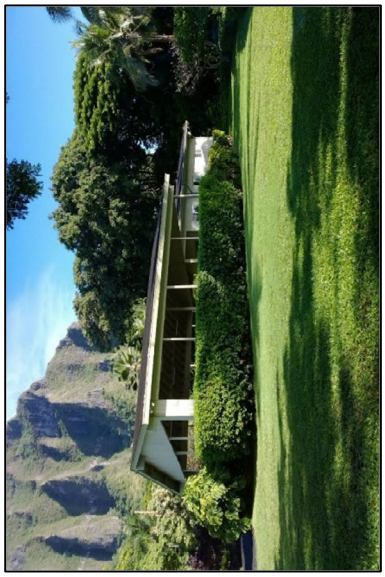


Figure 3.9A – Mōli'i Gardens Pavilion (Key 1)

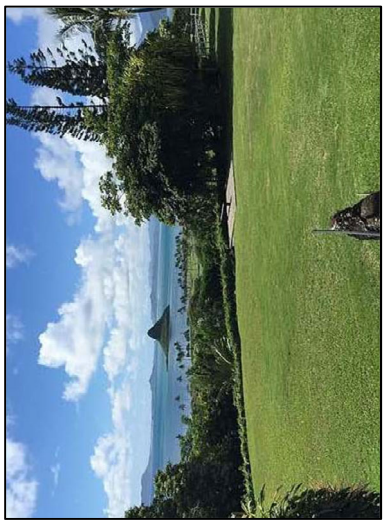


Figure 3.7C - Makai View from Palikū Malae (Key 3)

PALIKŪ SITE PHOTOS

Figure 3.7A - Former Gun Range Lower Floor (Key 1)

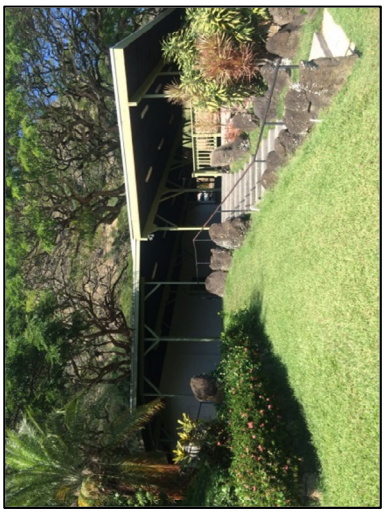


Figure 3.7B - Palikū Pavilion (Key 2)

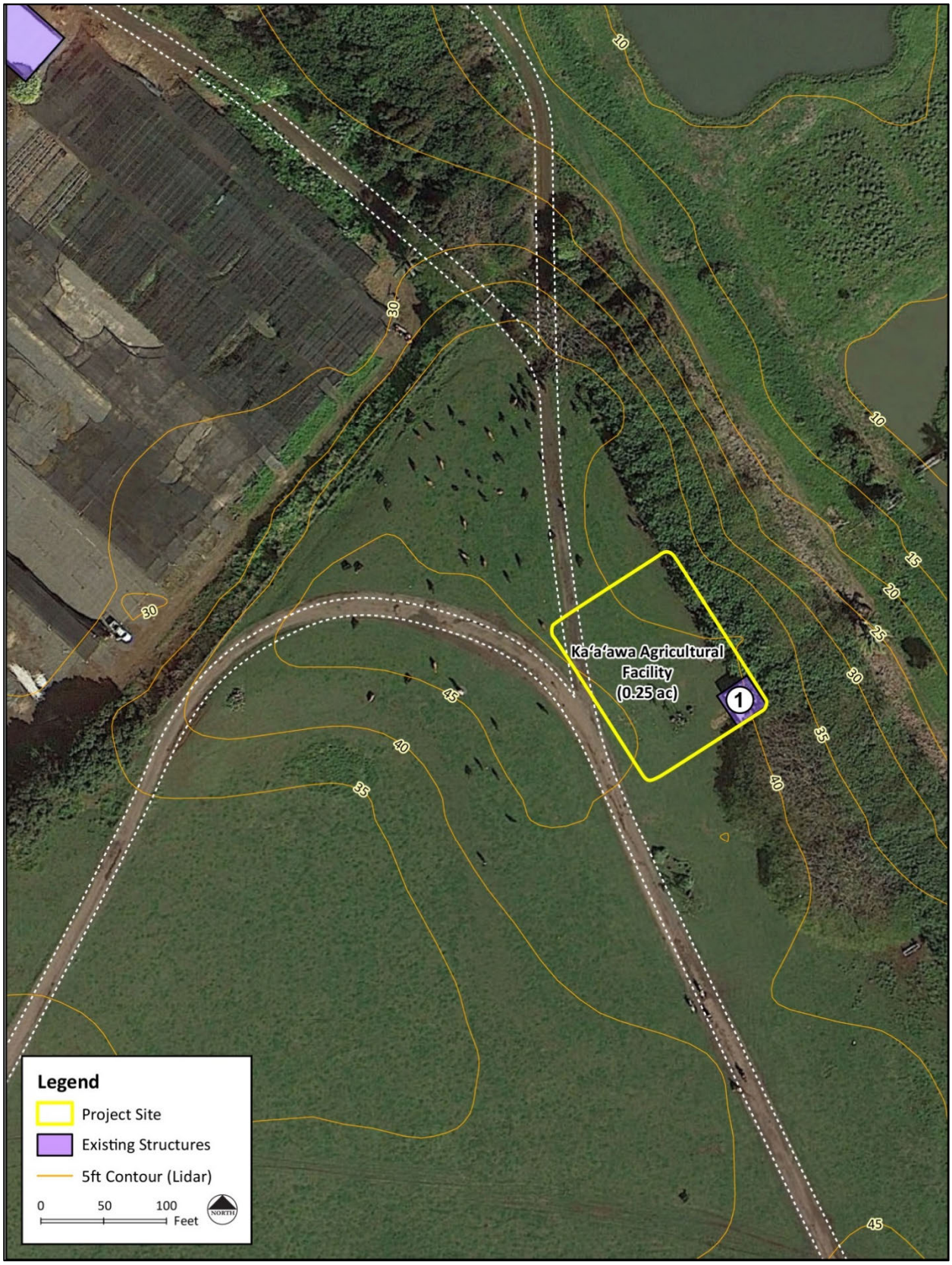


Figure 3.8 - Ka'a'awa Site Photo Key

Figure 3.9 – Mōli'i Gardens Site Photo Key

Natural Monuments, Landmarks and Scenic Views
Existing natural landmarks will not be affected by the Ranch Improvements. Scenic views of the land at Kualoa Ranch will not be altered by any of the facilities. The Palikū Malae will be clustered within existing groves of mature monkeypod and other large trees, with pocket views toward Kāneʻohe Bay to the southeast and the open ocean to the east and northeast. The Malae will not be noticeable from Kamehameha Highway.

Open Space
Open space will be retained and enhanced in the area surrounding the new facilities. Open space is a key element of the setting and character for these facilities, and the existing open space of the wooded hillside and grazing pasture will be retained.

Aesthetic Quality
Aesthetic quality of the area will be maintained and improved with the Headquarters, Palikū Malae, and Kaʻaʻawa Agricultural Facility, including new landscaping and control over aggressive invasive plants.

3.13 UTILITIES

A Preliminary Engineering Report (September 2016) was conducted by G70 and is included as *Appendix D*.

Water
Existing Conditions
Potable Water
30-inch and 6-inch City and County of Honolulu Board of Water Supply (BWS) water mains run parallel along Kamehameha Highway approximately 300, 1,700, and 1,300 ft makai of the Ranch Headquarters, Palikū Malae, and Kaʻaʻawa Agricultural Facility, respectively.

A type D water lateral and 4-inch water line provides domestic water service to the Ranch Headquarters and Palikū Malae off the BWS 6-inch water main from Kamehameha Highway. The 4-inch water line extends to the Visitors Center, Ranch House and Palikū buildings.

A 12-inch water line through an 8-inch detector check meter provides fire protection water service to the Ranch Headquarters and Palikū area off the 30-inch water main in Kamehameha Highway. However, existing BWS record drawings only depict two fire hydrants located near the Visitor's Center, and do not indicate fire protection water service at the Palikū site. Furthermore, according to BWS records, the locations of existing private water lines serving Palikū are unknown. The Kaʻaʻawa Agricultural Facility site does not contain any fire hydrants.

Non-Potable Water
The only existing non-potable water service of the three sites is located at Palikū. The private water tank is located approximately 330 ft south-southwest of the existing Palikū pavilion. In addition, the 6.5-foot tall tank with a diameter of 20 ft is located 150 ft above mean sea level, supplying agricultural water for Ranch livestock. The existing water source serving the water tank and distribution system is from a water collection system that comes from Hakipuʻu Valley.

No known non-potable water systems serve the Ranch Headquarters or Kaʻaʻawa sites.
State of Hawaiʻi Commission on Water Resources Management (CWRM) records indicate the presence of water wells near the Kaʻaʻawa site as well as the adjacent mauka TMK property, which is also owned by Kualoa Ranch. Two of the four wells are owned by Kualoa. Additional research is required to determine use of the wells, if the water is potable, and its capacity to serve the Kaʻaʻawa Agricultural Facility.

Anticipated Impacts and Proposed Mitigation

Potable Water

The project improvements at the Ranch Headquarters and Kaʻaʻawa are anticipated to increase daily water demands by approximately 17,800 gallons per day (GPD) and 2,300 GPD, respectively, for domestic use (see *Appendix D).* Water efficient fixtures will be installed, and water efficient practices implemented throughout the development to reduce the increased demand on the area's freshwater resources. Low-flow plumbing fixtures will be installed in restrooms to assist in maximizing water efficiency within the buildings and reduce the burden on municipal water supply and wastewater systems.

Landscape irrigation conservation BMPs endorsed by the Landscape Industry Council of Hawaiʻi will be used in the areas surrounding the Ranch Headquarters and Palikū. This includes designing irrigation system with sprinklers spaced with head to head coverage or better; using water conservation irrigation components such as rotary nozzles, pressure regulated spray heads and valves, rain switches and high efficiency nozzles; installing check valves; incorporating compost; and using non-potable water.

The BWS water mains in Kamehameha Highway are located approximately 5 ft to 30 ft lower in elevation than the Ranch Headquarters. It is anticipated that there will be static pressures of 121 pounds per square inch (psi) and 67 psi if connecting to the 30-inch transmission main and 6-inch distribution main, respectively. Additional analysis will be required to determine the ability of the existing on-site water main to accommodate the increased demand of 17,800 GPD additional flow at the Ranch Headquarters.

Similarly, the BWS mains are located approximately 30 ft to 35 ft lower in elevation than the Kaʻaʻawa site, which will result in anticipated static pressures of 119 psi and 65 psi if connecting to the 30-inch transmission main and 6-inch distribution main, respectively. New water service connection to the BWS system will require over 2,000 ft of water line to reach the Kaʻaʻawa site. Increased water demands at Kaʻaʻawa may be met via connections to an existing water line; however, additional research needs to be provided to determine size, location, and excess capacities of existing water lines in the vicinity of the project area.

Non-Potable Water

Non-potable water system improvements are not proposed as part of the Palikū site. Potential well drilling in Kaʻaʻawa would require a permit from CWRM.

Wastewater

Existing Conditions

City records indicate there is no municipal sewer system in the general area of the Ranch project sites. Department of Health records indicate the presence of two individual wastewater systems (IWS) at the Ranch Headquarters project property, one that serves the Visitor's Center and another that serves the Ranch House. The Visitor's Center IWS was constructed around 2005 and was designed to treat and dispose of 2,000 gallons per day (GPD) of wastewater. The Ranch House IWS was constructed around 2013 and was designed to treat and dispose of 1,000 GPD of wastewater. These IWS systems are located approximately 950 ft makai, downhill of the Palikū Site. Approval to construct another IWS was recently obtained from DOH to replace an undocumented large capacity cesspool. BWS records indicate three cesspools and one 750 GPD IWS designed for a two-bedroom dwelling are located at Ka'a'awa.

Anticipated Impacts and Proposed Mitigation

Wastewater flows from the Ranch Headquarters and Ka'a'awa improvements are anticipated to be an additional 14,240 GPD and 1,837 GPD, respectively *(Table 3.2).* Both sites are anticipated to use a packaged wastewater treatment plant. Another consideration for the Ranch Headquarters wastewater management is the consolidation of existing IWSs to minimize operation and maintenance costs. An IWS may also be under consideration at Ka'a'awa if the Agricultural Facility does not exceed 1,000 GPD.

Wastewater disposal at both sites will likely be through the use of an absorption bed. Due to the makai location and shallow brackish water lens, there is no potential for leached effluent to reach the potable drinking water aquifer. If wastewater treatment plants are utilized, cost analyses should be conducted to determine the feasibility of wastewater re-use in lieu of an absorption bed.

Electrical Power

Existing Conditions

The electricity for the ranch is currently provided by Hawaiian Electric Co. (HECO) via 12 kilovolt (kV) distribution lines extending off of Kamehameha Highway.

Anticipated Impacts and Proposed Mitigation

A new electrical room will be added to the ATV storage building due to increased electrical needs at the ATV center, Agricultural Maintenance, Administration and expanded Visitor Center. The additional electricity will be serviced by a new 12 kV transmission line extending from the highway. Eventually the overhead lines will go underground.

3.14 ROADWAYS, ACCESS AND TRAFFIC CONDITIONS

A Transportation Impact Assessment (TIA) was conducted for the project by The Traffic Management Consultant (April 2018). A turning movement traffic count survey and a pedestrian count survey on Kamehameha Highway and the Kualoa Ranch Driveway was conducted over a three-day period in March 2018. The findings of the assessment are included as *Appendix E.*

Table 3.2 – Wastewater Flow Projections

Headquarters Site		**WASTEWATER FLOW PROJECTION**			
Proposed Use:	WASTEWATER PROJECTION (gpcd)	Occupancy (# people)	Building Area (sf)	Daily Flows (GPD)	TOTAL (GPD)
Demolition (Loss of Space)					
Operations Office	-20	21	-2,100	-420	
Bus Terminal, Movie Site and Ranch Tour	-20	40	-2,700	-800	
Jungle Expedition	-20	20	-200	-400	
ATV Depot	-20	4	-2,000	-80	
Proposed (Increase in Space)					
Visitors Center Expansion		500	7,488		
Visitor Restrooms (50% use)	5	250		1,250	
Kitchen Waste per Meal (50% eat)	3	250		750	
Arrival Pavilion	20	265	3,970	5,300	
Kualoa Market	20	129	3,840	2,580	
Horseback Riding Stable	20	16	4,800	320	
Highway Tours Depot	20	50	1,250	1,000	
Jungle Tour Depot	20	50	1,250	1,000	
Movie Sites and Ranch Tour Depot	20	100	3,420	2,000	
ATV Depot	20	8	3,600	160	
Administrative Building 1	20	36	3,600	720	
Administrative Building 2	20	36	3,600	720	
Employee Building	20	7	640	140	
			SUBTOTAL	**14,240**	**--**
			GALLONS/WEEK	**99,680**	**99,680**
			AVG DAILY FLOW		**14,240**
			POTENTIAL RECYCLED WATER AVAILABLE (80% OF AVERAGE DAILY FLOW)		**11,392**
Ka'a'awa Site		**WASTEWATER FLOW PROJECTION**			
Proposed Use:	WASTEWATER PROJECTION (gpcd)	Occupancy (# people)	Daily Flows (GPD)	Event Flows (GPD)	TOTAL (GPD)
Agricultural Facility					
Ag Workers	20	9	180		
1 hose bibb @ 2.5 gpm * 12 hours	-	-	1,440		
Culinary Venue	8	96	768		
Group Facility	5	150		750	
			SUBTOTAL	**1,620**	**1,518**	**--**
			GALLONS/WEEK	**11,340**	**1,518**	**12,858**
			AVG DAILY FLOW			**1,837**
			POTENTIAL RECYCLED WATER AVAILABLE (80% OF AVERAGE DAILY FLOW)			**1,470**

Existing Conditions

Kamehameha Highway (State Route 83) is the main public roadway serving the upper windward coast of O'ahu. Kamehameha Highway provides the only roadway access to the Ranch with posted speeds of 35 mph in the vicinity of the project area. The existing driveway to the Ranch is controlled by a stop sign at its Tee-intersection with Kamehameha Highway. The existing Ranch Headquarters and Palikū site are currently accessed via ranch roads within Kualoa Ranch. The proposed Ka'a'awa Agricultural Facility area is also currently accessed via ranch roads within the property, and can additionally be served by a side road.

The highway capacity analysis, performed in this TIA, is based upon procedures presented in the Highway Capacity Manual 6th Edition (HCM), published by the Transportation Research Board. HCM defines the Level of Service (LOS) as "a quantitative stratification of a performance measure or measures representing quality of service." HCM defines the six (6) Levels of Service from the traveler's perspective, ranging from ideal or free-flow traffic operating conditions at LOS "A" to unacceptable or potentially congested traffic operating conditions at LOS "F" *(Table 3.3).*

Table 3.3 - Level of Service Criteria

LOS	Control Delay (sec/veh)	Description
A	$\leq$ 10	Control delay is minimal.
B	> 10 – 15	Control delay is not significant.
C	> 15 – 25	Stable operation. Queuing begins to occur.
D	> 25 – 35	Less stable condition. Increase in delays, decrease in travel speeds.
E	> 35 – 50	Unstable operation, significant delays.
F	> 50	High delays, extensive queuing.

The observed Weekday Peak Hour of Kualoa Ranch traffic on Kamehameha Highway occurred from 2:00 p.m. to 3:00 p.m. The left-turn movement from northbound Kamehameha Highway into the Kualoa Ranch Driveway operated at LOS "A". The average observed delay of left-turn traffic was five seconds, which confirmed the LOS "A" conditions. Traffic simulation of the existing left-turn movement on northbound Kamehameha Highway resulted in an average vehicle delay of 4.3 seconds, which also corresponded to the observed delay *(Table 3.3).*

The existing Saturday Peak Hour of Kualoa Ranch traffic also occurred between 2:00 p.m. and 3:00 p.m. During existing Saturday Peak Hour, the left-turn movement from northbound Kamehameha Highway operated at LOS "A". The average observed delay of left-turn traffic of four seconds confirmed the LOS "A" conditions. Traffic simulation of the existing left-turn movement on northbound Kamehameha Highway resulted in an average vehicle delay of 8.3 seconds, which also corresponded LOS "A" conditions.

Currently, the Kualoa Ranch Driveway operates at LOS "C" during Weekday Peak Hours of traffic, while traffic at the intersection during other times of the weekday operates at LOS "A". Five buses arrived, and nine buses departed Kualoa Ranch during the existing Weekday Peak Hour of traffic. Ten "light goods vehicles", which includes passenger vans, entered Kualoa Ranch and 10 vans exited Kualoa Ranch. The vans could have been delivering passengers or goods.

During Saturday Peak Hours of traffic, the Driveway operates at LOS "F", and other traffic movements operate at LOS "A". Eight buses arrived and 11 buses departed Kualoa Ranch during the Saturday Peak Hour of traffic. Eighteen vans entered and 22 vans exited Kualoa Ranch. Throughout the study period, up to 24 percent of the Kualoa Ranch trips were buses and passenger vans.

Should an accident occur along Kamehameha Highway fronting Kualoa Ranch, traffic is often allowed through a Kualoa Ranch bypass road. Special events, such as the Farm Fair, Rodeo and Makahiki Challenge, follow procedures for the anticipated influx in traffic. Typically, a State highway permit is requested to close off parking in the shoulder area fronting the Ranch along Kamehameha Highway. No parking signage is put out a day before the event and removed the day after. Electronic boards inform drivers of upcoming events. To avoid impeding traffic flow on Kamehameha Highway, a left turn lane is created with cones to turn into Kualoa. In addition, Honolulu Police Department officers direct traffic along the two entrances into the ranch to avoid back up along the highway. Ample free parking is available on the ranch grounds for these events.

Sustainable Mobility

Because of the remote location of Kualoa Ranch, visitors primarily arrive by vehicle. No bicycles entered or exited Kualoa Ranch during the existing Weekday Peak Hour of traffic. One bicycle on Kamehameha Highway passed Kualoa Ranch. The seven pedestrians entering and five pedestrians exiting the Kualoa Ranch Driveway were assumed to have arrived/departed using the City bus (TheBus). During the existing Saturday Peak Hour of traffic, no bicycles passed through the Kualoa Ranch Driveway or Kamehameha Highway intersection. The ten pedestrians entering and four pedestrians exiting the Kualoa Ranch Driveway were assumed to have used TheBus to/from Kualoa Ranch.

The stop for northbound buses 55 and 88A is 100 feet away from the Kualoa entrance. Southbound buses 55 and 88A stop 300 feet away from the Kualoa entrance. A crossing treatment available to bus users is currently located north of the Kualoa Ranch entrance on Kamehameha Highway. Pedestrians can use the grassed path along the roadway and Kualoa Ranch Driveway to access the Visitor Center.

Anticipated Impacts and Proposed Mitigation

The O'ahu Regional Transportation Plan 2035 (ORTP), was prepared for the O'ahu Metropolitan Planning Organization (OMPO) and is the basis for the long-range transportation planning on the island of O'ahu. The ORTP projected a 1.45% annual increase in traffic on Kamehameha Highway. The annual growth in traffic was used to estimate future peak hour traffic demands on Kamehameha Highway for the Year 2020.

SimTraffic was used to analyze the vehicle queuing and delays at Kamehameha Highway and the Kualoa Ranch Driveway. SimTraffic is a microscopic traffic simulation software developed by Trafficware Corporation. Microscopic traffic simulation is a stochastic process, which can analyze the interactions of individual vehicles as they pass through the roadway network. The results of ten independent simulations were averaged to determine the queuing and other operational parameters of the roadways. Worksheets for the capacity analysis performed throughout the Transportation Impact Assessment are compiled in *Appendix E.*

The planned improvements in total are expected to generate an additional approximately 112 vehicles at Weekday Peak Hour, and approximately 169 vehicles at Saturday Peak Hour full occupancy *(Table 3.4)*. Trip rates were developed by correlating the vehicle trips per hour (vph) per 1,000 square feet of gross floor area (SFGFA).

Table 3.4 - Trip Generation Characteristics

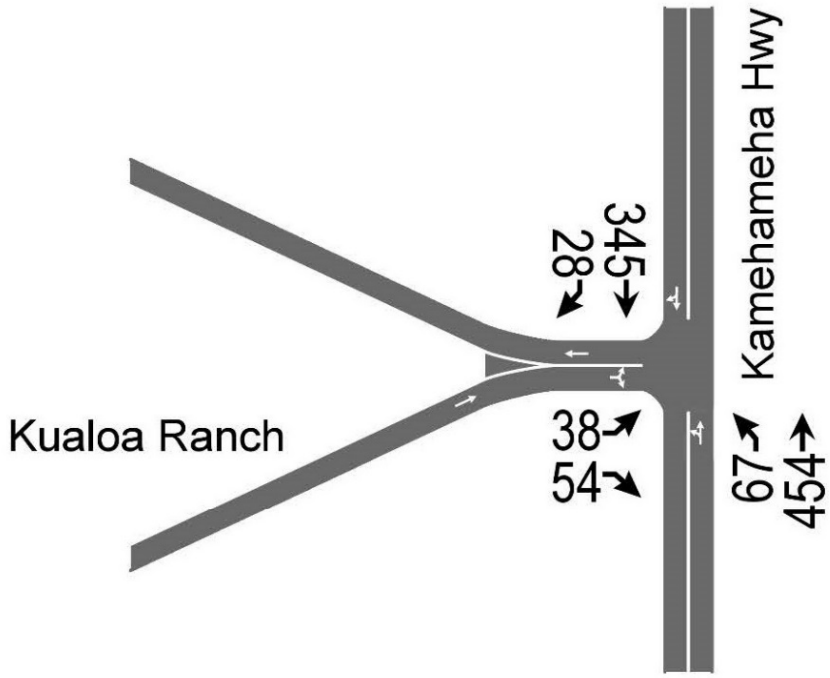
Scenario (SFGFA)	Units	Weekday Peak Hour			Saturday Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Existing Conditions (47,362)	vph	92	89	181	125	145	270
	vph/1,000 SFGFA	1.94	1.88	3.82	2.64	3.08	5.72
Kualoa Ranch Improvements (29,430)	vph	57	55	112	78	91	169

Figures 3.9 and 3.10 below show the projected peak hours of traffic at Kualoa Ranch in the year 2020 without and with the project, respectively. Without the project, the left-turn movement on northbound Kamehameha Highway is expected to continue to operate at LOS "A" at the Kualoa Ranch Driveway (exiting movement) during both the Weekday Peak Hour and Saturday Peak Hour traffic. The Kualoa Ranch Driveway is expected to continue to operate at LOS "C" and LOS "F" at Kamehameha Highway, during the Weekday Peak Hour and Saturday Peak Hour traffic, respectively.

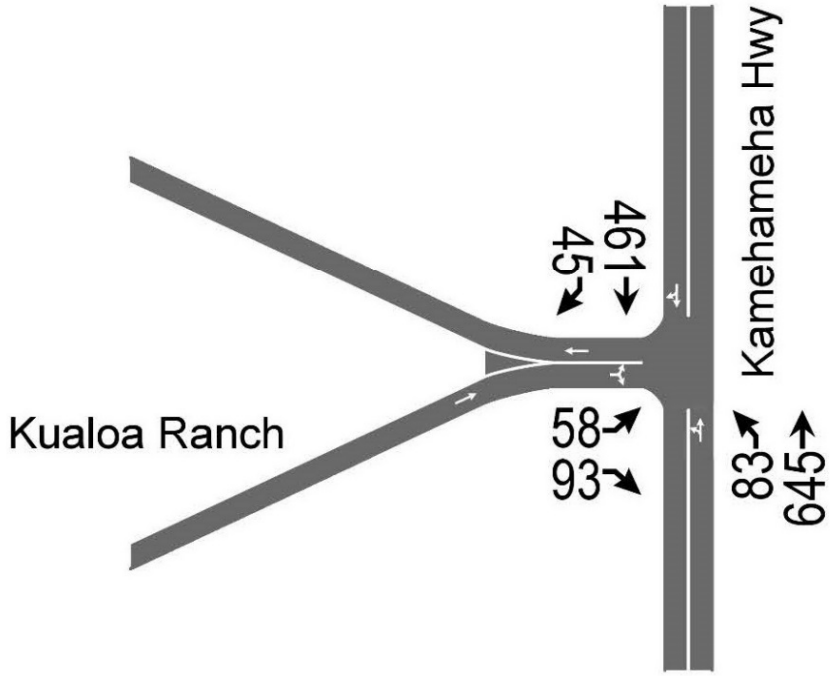
The long-term impact of the additional traffic due to improvements at this section of Kamehameha Highway traffic will be minimal. The left-turn movement on northbound Kamehameha Highway during the weekday is expected to continue to operate at LOS "A". Traffic simulation of the left-turn movement from Kamehameha Highway resulted in an average delay of 5.8 seconds, which confirms the LOS "A" conditions. Simulation indicates average queues of about two vehicle lengths on northbound Kamehameha Highway.

During the Saturday Peak Hour of traffic with the project, the left-turn movement on northbound Kamehameha Highway is expected to continue to operate at LOS "A". Traffic simulation of the left-turn movement from Kamehameha Highway resulted in an average delay of 12.3 seconds, which corresponds to the HCM LOS "B" conditions. The LOS "B" is acceptable for the left-turn movement. However, without an exclusive left-turn lane, the northbound through lane will queue back over 125 feet on average, and peak at 300 feet. Mitigation actions such as a temporary traffic-coned left-turn lane will be discussed with DOT.

Internal traffic for Kualoa patrons due to improvements will be slightly affected. The left-turn movements during Weekday and Saturday Peak Hours of traffic from Kualoa Ranch Driveway onto Kamehameha Highway are simulated to deteriorate to LOS "C" and LOS "F", respectively with the project. The right-turn movements from Kualoa Ranch Driveway onto Kamehameha Highway are predicted to operate at LOS "A" and "C" during Weekday and Saturday Peak Hours of traffic with the project, respectively.



Weekday Peak Hour Traffic Without Project



Saturday Peak Hour Traffic Without Project

Figure 3.10 - Future Traffic Conditions without Project

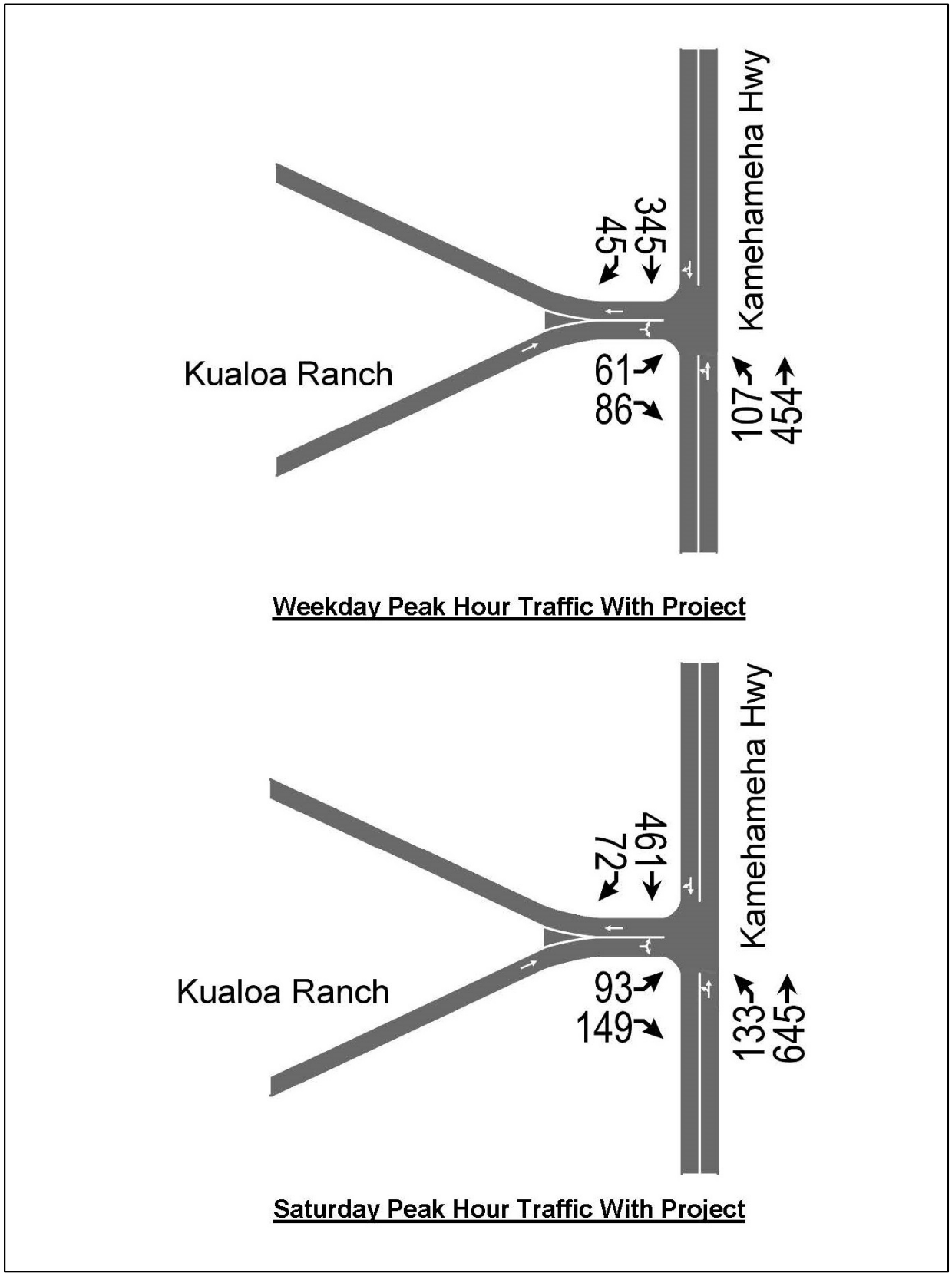


Figure 3.11 – Future Traffic Conditions with Project

Traffic improvements for the Ranch could include:

1) Widening the Kualoa Ranch Driveway to provide separate internal left-turn and right-turn lanes at Kamehameha Highway;
2) Widening the Kualoa Ranch Driveway to accommodate bus turning movements to/from Kamehameha Highway; and
3) In consultation with DOT, implementing traffic control plans during special events and excessive traffic, as necessary.

Construction period traffic will be limited in duration, mitigated by Ranch contractors combining worker vehicle use and off-peak equipment/materials delivery. Nonetheless, additional traffic improvements should be pursued to alleviate increased delays at the Kualoa Ranch Driveway.

Sustainable Mobility

In the interest of Complete Streets strategies, a Circulation Plan is provided as *Figure 3.12.* The TIA-updated transportation surveys indicated that use of the pedestrian, bicycle, and public bus modes were minimal. Pedestrians primarily arrive by TheBus. Walking typically occurs onsite after visitors arrive via City bus, chartered bus, and private vehicle.

The O'ahu Bike Plan has designated Kamehameha Highway as a proposed bike route adjacent to Kualoa. Bicyclists that use the Kualoa Ranch Driveway can access the bicycle corral via the main driveway or the service road. Center lines are not used in the Kualoa Ranch Driveway, facilitating the passing of people or bicycles by motor vehicles. Designated parking will also be available for motorcycles and electronic vehicles.

The parking lot is currently designed with a parking lot for employees and those visiting the administrative building that is separate from general parking. However, one does not exclude the other, and visitors can park in either lot. The location of the porte-cochere is adjacent to the coach bus parking and simply provides an overhang or covered area to keep guests dry and comfortable as they wait to board their busses. It will be constructed to allow for the coach bus height clearance. It does not extend out into the parking lot and does not allow vehicles to pass through.

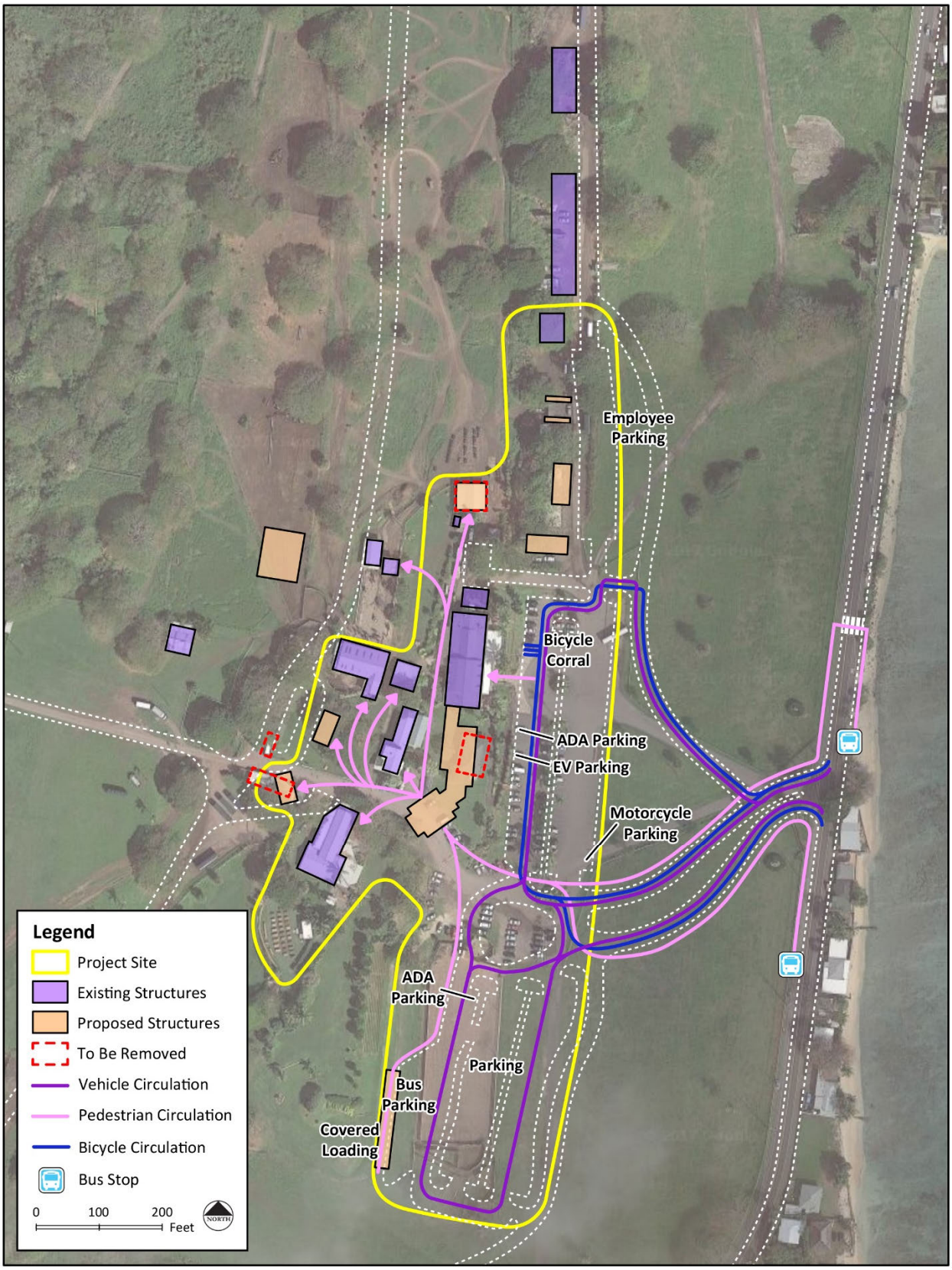


Figure 3.12 – Circulation Plan

3.15 AIR QUALITY AND NOISE

Existing Conditions

Air Quality

The U.S. Environmental Protection Agency (EPA) established the National Ambient Air Quality Standards (NAAQS) per the requirements of the Clean Air Act (last amended in 1990) to protect public health and welfare and prevent the significant deterioration of air quality. These standards account for seven major air pollutants: carbon monoxide (CO), nitrogen oxides (NO_X), ozone (O_3), particulate matter smaller than 10 microns (PM_{10}), particulate matter smaller than 2.5 microns ($PM_{2.5}$), sulfur oxides (SO_X), and lead. DOH, Clean Air Branch (CAB) has also established State Ambient Air Quality Standards (SAAQS) for six of these air pollutants to regulate air quality statewide. The SAAQS for carbon monoxide and nitrogen dioxide are more stringent than NAAQS. Hawai'i also has a stringent standard for hydrogen sulfide, which is a common odorous pollutant associated with wastewater treatment facilities.

DOH, CAB regularly samples ambient air quality at monitoring stations throughout the State and annually publishes this information. On O'ahu, there are six monitoring stations. Currently, no monitoring station exists on the North Shore of O'ahu. The DOH Air Monitoring Station nearest Kualoa is located in Pearl City off of 4th Street, approximately one mile west of HECO Waiau, and approximately southwest of the Pearl City Shopping Center and Kamehameha Highway.

Air quality of the project site is primarily affected by air pollutants from natural and/or vehicular sources. Natural sources of air pollution that may affect the air quality of the study area include ocean sea spray, aero-allergens from plants, and wind-blown dust from bare soil areas. In general, industrial and agricultural sources of air pollutants are located on the leeward and central portions of O'ahu, which are generally downwind from the project area. Depending upon the prevailing wind direction, emissions from motor vehicles traveling on Kamehameha Highway and local ranch roads may be dispersed in the project area.

Noise

Title 11, Chapter 46, or the Hawai'i Administrative Rules defines maximum permissible sound levels which are intended to protect, control, and abate noise pollution from stationary sources and construction, industrial, and agricultural equipment. As detailed below, maximum permissible sound levels in various zoning districts are set for excessive noise sources during the day (7 a.m. to 10 p.m.) and night (10 p.m. to 7 a.m.) at the property line where the activity occurs.

- Class A – Residential, conservation, preservation, public space, open space, or similar type zones – 55 decibel (dBA) (day) and 45 dBA (night)
- Class B – Multi-family dwellings, apartment, business, commercial, hotel, resort, or similar type zones – 60 dBa (day) and 50 dBa (night)
- Class C – Agriculture, country, industrial, or similar type zones – 70 dBa (day) and 70 dBA (night)

Noise generated by activities at the existing ranch facilities is relatively minimal. The predominant noises in the area are associated with vehicles and trucks traveling along Kamehameha Highway.

Anticipated Impacts and Proposed Mitigation

Air Quality

Construction activities at the Ranch Headquarters, Palikū Malae, and Ka'a'awa Agricultural Facility are not expected to generate significant air quality impacts. There will be limited grading required to establish these uses, with less than one acre affected by construction activities. Job site watering will be conducted to minimize dust loss during construction. Construction equipment and vehicles will be properly maintained to minimize emissions.

Operation of the proposed recreational uses will not generate adverse air quality impacts. Vehicles traveling to and from the ranch will generate emissions; however, the new uses will not generate significantly greater numbers of vehicle trips.

Noise

Construction noise at the proposed locations is not expected to be significant. There will be limited grading and facilities development. Construction will take place over 550 ft from the nearest residences and 520 ft from the entrance to Kualoa Ranch. State regulations and County Building Permit conditions limit construction noise generation construction activities to allowable limits.

The operations of the proposed ranch headquarter improvements, Palikū Malae, and Ka'a'awa Agricultural Facilities will not cause excessive noise. Of the proposed activities, the farmers market at the Ranch headquarters and Palikū Malae will create the most noticeable noise. However, these activities will primarily take place during work hours, and are at considerable distances from neighboring residences and public parks. Amplified live music is allowed one day per year, and has recently occurred during the Farm Fair special event. In 2016 the music was limited to 9:30 a.m. to 6:00 p.m. on a Saturday.

3.16 PUBLIC SERVICES

Existing Conditions and Anticipated Impacts

Medical Facilities

The closest hospital is approximately 9.8 miles away at the Straub Clinic and Hospital in Kāne'ohe. The next closest medical clinic is about 10.6 miles away at the Kaiser Permanente Ko'olau Clinic. Some visitors may infrequently require service from local medical facilities, although this will not affect the service capacity of these medical facilities.

Educational Facilities

There are two elementary schools (Ka'a'awa Elementary and Waiāhole Elementary) within a five mile radius of Kualoa Ranch. The nearest intermediate school and high schools are located in Kāne'ohe at King Intermediate School and Castle High School, which are approximately 9.4 miles and 10.8 miles away from the Ranch, respectively. The project will have no effect on existing educational facilities.

Recreational Facilities
Nearby recreational facilities include the Kualoa Regional Park (across the highway), Kahana Valley State Park (3.2 miles away), and He'eia State Park (8.4 miles away). These public recreational facilities will not be affected by the Ranch Headquarters improvements or the new Palikū Malae, and Ka'a'awa Agricultural Facility.

Police and Fire Services
Kualoa falls within HPD's District 4; the main station for District 4 is located in Kāne'ohe, approximately 10.2 miles away from the Ranch. The nearest fire station is about 3 miles away at Honolulu Fire Station 21 in Ka'a'awa. The Kualoa Ranch projects will not affect police services in the area and fire protection access and firefighting support requirements for the facilities will be satisfied.

Refuse
Refuse collection at the Ranch is provided by a private collection service. Construction-generated solid waste will be disposed of at an approved City and County of Honolulu refuse facility.

3.17 POTENTIAL CUMULATIVE AND SECONDARY IMPACTS

Cumulative impacts are the result of incremental effects of an activity when combined with other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Minor but collectively significant actions over a period of time can result in cumulative impacts to a place. The project sites have all been previously disturbed through agriculture and military uses. The Kualoa Ranch Improvements will take place in existing development footprints, and as a result, are not anticipated to generate significant cumulative impacts on site. There are no new permitted development projects located within the vicinity of Kualoa Ranch. Proposed projects located along the Ko'olau Loa coast at Turtle Bay Resort and Lā'ie are in the planning stages and have not been permitted at this time. These potential future projects are not approved and their timetable is unknown, and are therefore not included in cumulative effects.

Secondary effects are impacts that are associated with an activity but do not result directly from the activity. Overall, the project will have beneficial secondary impacts on the Kualoa and O'ahu communities by improving the functionality and aesthetic of Kualoa Ranch. It is one of the leading locally-owned ranches preserving conservation land and expanding agriculture on O'ahu. The local economy is improved, as the Ranch employs approximately 300 people. In addition, the initiatives tied to the improvements, such as the Ka'a'awa Agricultural Facility, will have secondary effects on local agriculture and sustainable food initiatives by creating a local interface that will increase agricultural product demand.

4.0
ALTERNATIVES TO THE PROPOSED ACTION

4.0 ALTERNATIVES TO THE PROPOSED ACTION

Five alternatives to the proposed action are considered, including: (1) the No-action Alternative, (2) Location for the Proposed Project, (3) Development of Other Recreational Uses, and (4) Agricultural Lot Subdivision.

4.1 NO ACTION

The no-action alternative would involve Kualoa Ranch maintaining its current facilities with no additional improvements to the Ranch Headquarters, or additions of the Palikū Marae and Kaʻaʻawa Agricultural Facility. The existing facilities are operating at a level which is not perceived to sustain the ranch over the long-term. Kualoa Ranch has always sought to keep its land in open space and agricultural uses which retain the rural country character of the area. However, unless compatible revenue-generating uses are created in the near term, it may be necessary for the ranch to eventually consider conversion to other more profitable land uses which may require urban designation.

The short-term environmental impacts of the no-action alternative would be less than the proposed action. No new site clearing or construction would occur with no action. Negative socio-economic impacts associated with the no-action option include the following: agriculture growth would be stunted without revenues from outdoor recreation activities funding the Ranch's agricultural pursuits, a lack of new employment opportunities, reduced local area economic benefits, and reduced government revenues.

4.2 LOCATION FOR THE PROPOSED PROJECT

An alternative to the proposed project would relocate the facilities to other undeveloped areas of Kualoa Ranch. Seeking out other areas of the ranch would require additional site assessments for the new Visitor Center, ATV Depot, Administrative Buildings, Maintenance Buildings, Marae, and Agricultural Facility. The project sites for the proposed facilities were strategically selected and identified in Kualoa Ranch's 2011 Master Plan for their compatibility in relation to existing facilities and programs.

4.3 DEVELOPMENT OF OTHER RECREATIONAL USES

One possible alternative to the proposed Ranch Headquarters Improvements, Palikū Marae, and Kaʻaʻawa Agricultural Facility would involve the development of other recreational uses such as a golf course, clubhouse, driving range, or recreation camp. Development of a par 3 "executive" golf course could potentially be extremely popular. An 18-hole golf course would require substantially more land, but the expansive ranch area could be designed to become one of the top golf courses on Oʻahu. The closest 18-hole golf course is located in Kāneʻohe (Bay View Golf Course). The Ranch has spectacular views and would provide a unique setting for golfing on windward Oʻahu. It should be noted that Kualoa Ranch has no intention of pursuing golf course development at this site.

A recreation camp is another alternative that Kualoa Ranch considered. Facilities of this type would afford guests to stay on the Ranch for private, group, or school outdoor camping events. The closest recreation-type camp is located approximately 15 miles away in Mokulēʻia.

Development of a golf course at this location would result in greater environmental impacts, due to vegetation clearing, grading, runoff, traffic, water use, and visual impacts. Rezoning of the land from Agriculture to Park-Golf Course, Apartment, or Apartment Mixed Use would be required to develop either type of golf course or a recreational camp. The character of the land would be altered from an agricultural context to a more planned landscape setting of golf links and recreation camp lodges and associated facilities. Beneficial impacts of a golf course or recreation camp would include increased employment and government revenues. There would likely be large community opposition to converting these agricultural lands for golf course or visitor accommodation use.

4.4 AGRICULTURAL LOT SUBDIVISION

The form of residential development could come as agricultural lots of a minimum two-acre lot size under the existing AG-2 zoning. In the main Kualoa sector, as much as 300 acres of land could be considered for an agricultural lot subdivision, which would yield at least 130 home sites. Rezoning to Country District within the existing agricultural Development Plan designation is another option. This would allow a one-acre minimum lot size, resulting in as many as 240 homes. Under State Land Use law, agricultural uses must be conducted on each lot to provide revenues to the occupant of each "farm dwelling".

Kualoa Ranch has no interest in agricultural lot development of these lands, and has shown its commitment to keeping the land green and open through diversified agricultural and recreational uses. The potential impacts of the residential development options would be significant. A residential development would create additional impacts such as water demand, population, traffic, and visual impacts. There would be significant community concerns associated with an agricultural lot development proposal for these lands.

4.5 COMPARISON OF ALTERNATIVES

Among the four alternative scenarios available for consideration at Kualoa Ranch, the no-action alternative would have the least potential to generate adverse environmental impacts. The proposed action would create less adverse environmental effects than the other options for golf course or agricultural lot. The proposed action will create much less water demand, create less traffic, and have minimal visual impacts. In comparison to the development options, the proposed action will generate less direct economic benefits for the owners, State, County and local community. The proposed action creates more benefits than the no-action alternative with minimal adverse impacts.

5.0
CONFORMANCE WITH PLANS, REQUIRED PERMITS, AND APPROVALS

5.0 CONFORMANCE WITH PLANS, REQUIRED PERMITS, AND APPROVALS

The project's consistency with applicable State of Hawai'i and City and County of Honolulu planning and land use objectives, policies, principles and guidelines are discussed below.

5.1 AMERICANS WITH DISABILITIES ACT OF 1991

In 1991, the Federal government enacted the American with Disabilities Act (ADA) to provide equal accessibility for persons with disabilities. Part of this statute requires building designs to consider and incorporate the needs of persons with disabilities. Chapter 103-50 of the Hawai'i Revised Statutes (HRS) states,"…all plans and specifications for the construction of public buildings, facilities, and sites shall be prepared so that the buildings, facilities, and sites are accessible to and usable to persons with disabilities." The disability and communication access board shall adopt rules for the design of buildings, facilities, and site, by or on behalf of the State and Counties.

Discussion: The improvements at the Ranch Headquarters, Palikū Malae, and Ka'a'awa Agricultural Facility will all be designed to comply with ADA requirements.

5.2 HAWAI'I STATE PLAN

The Hawai'i State Plan establishes a statewide planning system that sets forth goals, objectives, policies, and priority directions to provide for the wise use of Hawai'i's resources and guide the future long-range development of the State. Discussed below is the project's relationship to the goals and applicable objectives, policies, and priority directions.

The goals of the State, as stated under the Hawai'i State Planning Act (Chapter 226, HRS), is to achieve the following:

- A strong, viable economy, characterized by stability, diversity, and growth, that enables the fulfillment of the needs and expectations of Hawai'i's present and future generations.

- A desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems, and uniqueness, that enhances the mental and physical well-being of the people.

- Physical, social, and economic well-being, for individuals and families in Hawai'i, that nourishes a sense of community responsibility, of caring, and of participation in community life.

The objectives and policies of the Hawai'i State Plan that are pertinent to the proposed project are as follows:

§226-6 Objectives and policies for the economy--in general.

(b) To achieve the general economic objectives, it shall be the policy of this State to:

(19) Promote and protect intangible resources in Hawai'i, such as scenic beauty and the aloha spirit, which are vital to a healthy economy.

Discussion: The mission of Kualoa Ranch is to be a role model as stewards of the land by preserving, protecting and enhancing its natural beauty and culture, while developing recreational and agricultural enterprises compatible with the environment and maximizing economic return. The Kualoa Ranch Improvements will enhance and protect the intangible resources in Hawai'i, such as scenic views and the aloha spirit, through the project developments at Palikū and Ka'a'awa, which are all being proposed at small scales to preserve ocean and mountain views of the area. The Ranch Improvements will also help continue Kualoa Ranch's operations as a sixth-generation locally owned company, and further promote its brand identity of agricultural activities, outdoor recreation, and education programs for visitors and residents alike.

§226-7 Objectives and policies for the economy--agriculture.

(b) To achieve the general agriculture objective, it shall be the policy of this State to:

(4) Establish strong relationships between the agricultural and visitor industries for mutual marketing benefits.

(7) Strengthen diversified agriculture by developing an effective promotion, marketing, and distribution system between Hawai'i's food producers and consumers in the State, nation, and world.

Discussion: The Ka'a'awa Agricultural Facility will foster relationships between the agriculture and visitor industries by promoting and utilizing high quality, local agriculture and food products. Farm-to-table events feature local chefs with guests seated in the dramatic scenery of Ka'a'awa Valley. These open-air feasts are promoted online along with other similar national events. Small group cooking classes will also be available at the facility. Local farmers will have the opportunity to gain visibility through the classes' purposeful integration of locally farmed and produced ingredients.

§226-8 Objective and policies for the economy--visitor industry.

(b) To achieve the visitor industry objective, it shall be the policy of this State to:

(1) Support and assist in the promotion of Hawai'i's visitor attractions and facilities.

(3) Improve the quality of existing visitor destination areas.

(8) Foster an understanding by visitors of the aloha spirit and of the unique and sensitive character of Hawai'i's cultures and values.

Discussion: Over the years, Kualoa Ranch's product mix has evolved, moving away from jet skis and other outdoor entertainment activities, in favor of an agricultural and cultural focus. Many

visitors come to Kualoa Ranch to enjoy the dramatic mauka to makai views, and to learn about and experience the cultural and agricultural legacies of the region through tours and recreational activities. The Kualoa Ranch Improvements will help to continue the Ranch's wide range of unique cultural and recreational activities that enhance the visitor experience.

§226-11 Objectives and policies for the physical environment--land-based, shoreline, and marine resources.

(a) Planning for the State's physical environment with regard to land-based, shoreline, and marine resources shall be directed towards achievement of the following objectives:

(1) Prudent use of Hawai'i's land-based, shoreline, and marine resources.

(2) Effective protection of Hawai'i's unique and fragile environmental resources.

(b) To achieve the land-based, shoreline, and marine resources objectives, it shall be the policy of this State to:

(2) Ensure compatibility between land-based and water-based activities and natural resources and ecological systems.

(3) Take into account the physical attributes of areas when planning and designing activities and facilities.

(8) Pursue compatible relationships among activities, facilities, and natural resources.

(9) Promote increased accessibility and prudent use of inland and shoreline areas for public recreational, educational, and scientific purposes.

Discussion: The project supports the protection of land-based, shoreline, and marine resources and has been designed to ensure compatibility between facility types and the physical attributes of each facility site. The existing activities throughout Kualoa Ranch, as well as the proposed new activities, promote prudent use of inland areas for recreational and educational purposes. Over the years, Kualoa Ranch has initiated stewardship initiatives throughout their properties which include: invasive species removal, native plant exclosure fencing, native plant restoration, stream clearing, and kalo and fishpond restoration. These efforts are made possible from the Ranch's financial ability generated by visitor business.

§226-12 Objective and policies for the physical environment--scenic, natural beauty, and historic resources.

(a) Planning for the State's physical environment shall be directed towards achievement of the objective of enhancement of Hawai'i's scenic assets, natural beauty, and multi-cultural/historical resources.

(b) To achieve the scenic, natural beauty, and historic resources objective, it shall be the policy of this State to:

(1) Promote the preservation and restoration of significant natural and historic resources.

(2) Provide incentives to maintain and enhance historic, cultural, and scenic amenities.

(3) Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes, and other natural features.

(4) Protect those special areas, structures, and elements that are an integral and functional part of Hawaii's ethnic and cultural heritage.

(5) Encourage the design of developments and activities that complement the natural beauty of the islands.

Discussion: Kualoa Ranch is known for its scenic and natural beauty, as well as its rich cultural and agricultural history. The Ranch is dedicated to documenting and protecting the natural, historic, and cultural resources throughout its properties. An archaeological assessment and a cultural impact assessment were performed for the project sites *(Section 3.9)* in compliance with State historic preservation requirements. In addition, Kualoa Ranch previously conducted an archaeological assessment of Puakea Heiau and created a Preservation Plan for Mōliʻi pond. The Ranch will continue to protect its special areas through environmental restoration and conservation work. In addition, the natural beauty and scenic views of the area will be preserved and enhanced throughout the Ranch, with new facilities designed to fit the rural character of the Ranch and the greater Koʻolau Poko and Koʻolau Loa regions.

§226-13 Objectives and policies for the physical environment--land, air, and water quality.

(a) Planning for the State's physical environment with regard to land, air, and water quality shall be directed towards achievement of the following objectives:

(1) Maintenance and pursuit of improved quality in Hawaiʻi's land, air, and water resources.

(2) Greater public awareness and appreciation of Hawaiʻi's environmental resources.

(b) To achieve the land, air, and water quality objectives, it shall be the policy of this State to:

(2) Promote the proper management of Hawaiʻi's land and water resources.

(3) Promote effective measures to achieve desired quality in Hawaiʻi's surface, ground, and coastal waters.

(4) Encourage actions to maintain or improve aural and air quality levels to enhance the health and well-being of Hawaiʻi's people.

Discussion: The agricultural and open space resources of the project site are the featured assets of Kualoa Ranch. Outdoor recreation and educational programs showcase Kualoa's natural beauty while providing visitors with information about the cultural and natural history, geology, flora, and fauna of the area. In 2013, Kualoa was a regional winner of the Environmental Stewardship Award from the National Cattlemen's Beef Association, a national award sponsored by the USDA Natural Resources Conservation Service. The common trait among all Environmental Stewardship Award winners is the desire to leave the land in better shape for future generations while also inspiring the next generation of land stewards.

The Ranch Headquarters Improvements will enable staff to continue to plan and coordinate ongoing restoration initiatives throughout the property. Planning, design, and construction activities for all improvements will comply with regulatory requirements that will mitigate or minimize potential impacts to natural resources and ecological systems.

§226-21 Objectives and policies for socio-cultural advancement--education.
(b) To achieve the education objective, it shall be the policy of this State to:

(1) Support educational programs and activities that enhance personal development, physical fitness, recreation, and cultural pursuits of all groups.

(3) Provide appropriate educational opportunities for groups with special needs.

(4) Promote educational programs which enhance understanding of Hawai'i's cultural heritage.

(5) Provide higher educational opportunities that enable Hawai'i's people to adapt to changing employment demands.

(9) Support research programs and activities that enhance the education programs of the State.

Discussion: Kualoa Ranch supports the objectives and policies of the State as it relates to education through its company-subsidized educational programs available for local schools at the Hakipu'u Education Center. The Ranch's outdoor education activities include animal and nature walks, loko i'a educational tours, ahupua'a environmental exploration, mālama 'āina service projects, sustainable farming, team building challenge courses, and outdoor environmental labs for science education. Kualoa currently accommodates approximately 12,000 children a year, which represents about 7.5% of the estimated 200,000 O'ahu public and private schoolchildren. The wide range of educational activities provides opportunities for Hawai'i youth to learn about Hawai'i's cultural heritage and the history of Kualoa, while also connecting the environment to relevant school subjects of science, math, animal husbandry, and physical education.

§226-23 Objectives and policies for socio-cultural advancement--leisure.
(b) To achieve the leisure objective, it shall be the policy of this State to:

(3) Enhance the enjoyment of recreational experiences through safety and security measures, educational opportunities, and improved facility design and maintenance.

(4) Promote the recreational and educational potential of natural resources having scenic, open space, cultural, historical, geological, or biological values while ensuring that their inherent values are preserved.

Discussion: While the Kualoa Ranch Improvements help support the agricultural ranching and farming activities on site, they also support the objectives and policies for advancing recreational experiences through outdoor recreational tours and education programs. The programs, available to all visitors of the ranch, serve as both educational and culturally enriching experiences. In addition, the Ranch also hosts family fun run/walks, trail runs, high school cross-country races, mountain bike races, and other off-road triathlons throughout the year. The Ranch Headquarters is also open, free to the public, and offers residents and visitors the opportunity to enjoy the landscaped gardens and animal exhibits.

§226-25 Objective and policies for socio-cultural advancement--culture.
(c) To achieve the culture objective, it shall be the policy of this State to:

(1) Foster increased knowledge and understanding of Hawai'i's ethnic and cultural heritages and the history of Hawai'i.

(2) Support activities and conditions that promote cultural values, customs, and the arts that enrich the lifestyles of Hawai'i's people and which are sensitive and responsive to family and community needs.

(3) Encourage increased awareness of the effects of proposed public and private actions on the integrity and quality of cultural and community lifestyles in Hawai'i.

(4) Encourage the essence of the aloha spirit in people's daily activities to promote harmonious relationships among Hawai'i's people and visitors.

Discussion: Kualoa has educational exhibits throughout the Ranch. The Ranch History Hall presents an in-depth historical perspective of the rich cultural history that is Kualoa. Hawaiian artifacts, masterful carvings and artwork are displayed as well as replicated documents of historical significance concerning mid-1800 life events in Hawai'i and at Kualoa Ranch. A mini-theatre shows a free 20-minute film about the history of Kualoa Ranch and of the Hawaiian Paniolo (cowboy) traditions of old Hawai'i.

Kualoa Ranch also supports activities that promote cultural values, customs, and arts by making its facilities available free of charge for lua training, hula halau practice, and kani ka pila.

The project is compatible with the objective and policies for advancing culture in the State of Hawai'i. The improvements at the Ranch Headquarters, Palikū, and Ka'a'awa will collectively enhance Kualoa Ranch's ability to provide visitors and residents the opportunity to learn about the cultural history of Kualoa. With increased resort and luxury home development on the Windward side of O'ahu, the Ranch Improvements also help to solidify Kualoa Ranch's commitment to preserving its lands from development as well its rural sense of place.

§226-102 Overall Direction
The State shall strive to improve the quality of life for Hawai'i's present and future population through the pursuit of desirable courses of action in seven major areas of statewide concern which merit priority attention: economic development, population growth and land resource management, affordable housing, crime and criminal justice, quality education, principles of sustainability, and climate change adaptation.

Discussion: Kualoa Ranch supports the overall direction of the State of Hawai'i in the areas of economic development, exemplary land resource management, quality education, and sustainability. Kualoa employs approximately 300 people, contributing to Hawai'i's economic development through wages and related taxes. In the area of education, Kualoa provides unique and popular educational programs for local students. Throughout the history of the ranch, Kualoa has been a committed corporate citizen, working to ensure environmental stewardship and sustainable practices throughout its lands.

The project will support Kualoa Ranch's efforts to remain both financially sustainable and dedicated to preserving its large agricultural landholdings from development. Together, the Ranch Improvements support the overall direction of HRS Chapter 226 by continuing the Ranch's efforts in environmental conservation and restoration throughout the property.

5.3 HAWAIʻI 2050 SUSTAINABILITY PLAN

The long-term strategy of the Hawaiʻi 2050 Sustainability Plan is supported by its main goals and objectives of respect for culture, character, beauty, and history of the State's island communities; balance among economic, community, and environmental priorities; and an effort to meet the needs of the present without compromising the ability of future generations to meet their own needs.

The 2050 Plan delineates five goals toward a sustainable Hawaiʻi accompanied by strategic actions for implementation and indicators to measure success or failure. The goals and strategic actions that are pertinent to the Ranch Improvements are as follows:

Goal One: *Living sustainably is part of our daily practice in Hawaiʻi.* Strategic Actions: *Develop a sustainability ethic.*

Goal Two: *Our diversified and globally competitive economy enables us to meaningfully live, work, and play in Hawaiʻi.* Strategic Actions: *Develop a more diverse and resilient economy; support the building blocks for economic stability and sustainability.*

Goal Three: *Our natural resources are responsibly and respectfully used, replenished, and preserved for future generations*. Strategic Actions: *Provide greater protection for air, and land-, fresh water- and ocean-based habitats; conserve agricultural, open space and conservation lands and resources.*

Goal Four: *Our community is strong, healthy, vibrant and nurturing, providing safety nets for those in need.* Strategic Actions: *Provide access to diverse recreational facilities and opportunities*.

Goal Five: *Our Kanaka Maoli and island cultures and values are thriving and perpetuated.* Strategic Actions: *Honor Kanaka Maoli culture and heritage; Celebrate our cultural diversity and island way of life.*

Discussion: The project will improve existing infrastructure through the Ranch Headquarters renovations while also expanding regional recreational and educational opportunities. These efforts will allow Kualoa Ranch to remain financially stable while continuing its legacy of ranching and protecting agricultural and conservation lands in the region. In addition, the Kaʻaʻawa Agricultural Facility supports the State's efforts to promote and increase local, sustainable food sources, while also diversifying products and industries of Hawaiʻi.

The Kualoa Ranch Sustainability Plan focuses on educating visitors about Kualoa's natural areas, restoring and preserving the native ecosystems on the Ranch, and fostering cultural and historical stewardship throughout its property. Kualoa Ranch is currently restoring approximately 20 loʻi in Hakipuʻu. Hawaiʻi Ecotourism Association recognized Kualoa Ranch as an Inaugural Certified Ecotour Operator in 2011. In 2013, Kualoa Ranch was selected as the Region VI Environmental Stewardship Award winner for its dedication as a ranch to sustainable practices and environmental conservation.

5.4 HAWAIʻI STATE LAND USE DISTRICT GUIDELINES

State Land Use Districts are established by the State Land Use Commission in accordance with the State of Hawaiʻi Land Use Law, Chapter 205 HRS. The basic intent of the law is to regulate the classification and uses of lands in the State in order to accommodate growth and development as needed, and to retain and protect important agricultural and natural resources areas. All State lands are classified as Urban, Rural, Agricultural, or Conservation, with consideration given to county general and development plans in determining the classification.

Discussion: The project sites are situated within the State Agricultural District. As will be discussed in this chapter, the Agricultural classification for the project site is consistent with City and County of Honolulu General Plan, Koolaupoko Sustainable Communities Plan, Koʻolau Loa Sustainable Communities Plan, and current zoning.

5.5 KA PAʻAKAI V. LAND USE COMMISSION

In this section, a cultural analysis of the project's potential effect on or impairment of valued cultural, historical, or natural resources in the petition area, including traditional and customary native Hawaiian rights, is performed to address the case Ka Paʻakai v. Land Use Commission, 94 Hawaiʻi 31, 74, 7 P.3d 1068, 1084 (2000). The Court in Ka Paʻakai held that the following analysis is to be conducted:

1. The identity and scope of valued cultural, historical, or natural resources in the petition area, including the extent to which traditional and customary native Hawaiian rights are exercised in the petition area;
2. The extent to which those resources - including traditional and customary native Hawaiian rights - will be affected or impaired by the proposed action; and
3. The feasible action, if any, to be taken by the Land Use Commission to reasonably protect native Hawaiian rights if they are found to exist.

Discussion: This Ka Paʻakai cultural analysis draws from the landscape plan *(Section 2.9)*, natural resources assessment *(Section 3.7* and *Appendix A)*, Archaeological Assessment *(Section 3.9* and *Appendix B)*, and Cultural Impact Assessment *(Section 3.10* and *Appendix C)* to determine the project's potential effect on or impairment of valued cultural, historical, or natural resources in the petition area, including traditional and customary native Hawaiian rights.

No historical resources have been identified in the petition area.

The findings of the botanical survey conducted for the project sites show a mix of non-native, native, and ornamental species comprising 260 taxa in 71 families. Eight of the 260 taxa (3%) are considered native (2 endemic, 6 indigenous), but these are common, widely distributed species, and most are on the site as part of the planted landscaping. Eleven species (4%) of early Polynesian introductions (so-called "canoe plants") are present. At one time Kualoa was known for the presence of pink wauke (paper mulberry), and some of those plans have been reintroduced on the property. Many of the "natives" (both indigenous and Polynesian introductions) are in a small native plant garden. New landscaping at the Ranch Headquarters will match the existing plant palette and will not be edible to cattle. The project will not affect or impair these plants.

The Cultural Impact Assessment found that no evidence of the exercise of traditional and customary native Hawaiian rights within the project area for at least forty years. This could be in part due to lack of present occurrence of native plants in this area. Gatherings for pāʻū riders and parades have occurred outside the project area. Gatherings for laʻau lapaʻau (medicinal healing) stopped a number of years ago. Work and accessory uses in the project area would not affect or impair traditional and customary native Hawaiian rights in any event.

Considering the analysis required under the Ka Paʻakai case, there is a determination that the project will not affect or impair valued cultural, historical, or natural resources in the petition area, including traditional and customary native Hawaiian rights.

In the event that any previously unidentified historic sites or native Hawaiian burials are encountered during site work and construction phases, all work in the immediate area will cease and SHPD will be notified. Work in the area will be suspended until further recommendations are made for the appropriate treatment of cultural materials.

5.6 HAWAIʻI COASTAL ZONE MANAGEMENT PROGRAM

The Coastal Zone Management Program (CZMP) is a comprehensive nationwide program that establishes and enforces standards and policies to guide the development of public and private lands within the coastal areas. In the State of Hawaiʻi, the CZMP is articulated in the State Coastal Zone Management (CZM) Law in Chapter 205A of the HRS. The State CZM objectives and policies address ten subject areas. These subject areas include recreational resources, historic resources, scenic and open space resources, coastal ecosystems, economic uses, coastal hazards, managing development, public participation, beach protection, and marine resources.

Virtually all relate to potential development impacts on the shoreline, near shore, and ocean area environments. The Hawaiʻi CZM Law charges each County with designating and administering Special Management Areas (SMA) within the State's coastal areas. Any "development," as defined by the CZM Law, located within the SMA requires a SMA Use Permit.

Discussion: The project areas at the Ranch Headquarters, Palikū Malae, and Kaʻaʻawa Agricultural Facility are not located within the coastal zone or SMA. Although no new physical development will occur, Mōliʻi Gardens is located within the SMA and use as a wedding site requires analysis. HRS Chapter 205A requires all state and county agencies to enforce CZM objectives and policies as set forth in HRS §205A-2. The following table addresses the applicability of the objectives/policies to the Kualoa Ranch Improvements in relation to the ten subject areas mentioned above.

Table 5.1 – CZM Objectives/Policy Applicable to Project

Subject Area	Objective/Policy
Recreational resources	The project is within the Kualoa Ranch property and does not affect the adjacent Kualoa Regional Park. The project does not alter existing shoreline areas. The ranch protects Mōliʻi fishpond and adjacent beaches. Improvements at Kualoa Ranch will enhance recreational opportunities within the area. Kualoa Ranch will adopt water quality standards and regulate point and nonpoint sources of pollution to protect the recreational value of coastal waters.
Historic resources	Archaeological studies have been conducted for this EA. The planned sites for recreational activities and support facilities do not include known archaeological sites. The area has undergone extensive disturbances from previous agricultural operations, military construction and operations, bulldozing, and cattle grazing activities. Should any unidentified deposits be uncovered during project construction, work will cease in the immediate area and SHPD will be contacted for further instructions on appropriate handling and treatment by a qualified archaeologist.
Scenic and open space resources	Kualoa Ranch will ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline.
Coastal ecosystems	The project is not expected to have any adverse effects on marine resources. Project activities do not involve alterations to stream channels or other water bodies or water resources. The project will not adversely affect marine and coastal resources. Kualoa Ranch will promote water quantity and quality planning and management practices that maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures.
Economic uses	The Kualoa Ranch Improvements will take place on land that is presently used for agricultural purposes. The project has been assessed for social, visual, and environmental impacts in accordance with Chapter 25, Revised Ordinance of Honolulu (ROH). No adverse impacts are expected to result from this project.

Table 5.1 – CZM Objectives/Policy Applicable to Project (continued)

Subject Area	Objective/Policy
Coastal hazards	According to the Federal Emergency Management Agency (FEMA), the project site is in an area designated as Zone X. The Zone X designation is used for areas located outside the 0.2% annual probability floodplain (or 500-year flood). All of the improvements are located within Zone X of the FEMA Flood Insurance Rate Map classifications, which is not considered a flood hazard area. Therefore, floodplain development standards do not apply. The effects of past storm events have caused minimal to no damage in the project area. The National Weather Service provides guidance and when necessary during an event, issues a hurricane watch when a storm is expected to make landfall within 36 hours. The project site is not anticipated to be adversely affected by a tsunami. In the event of an extreme tsunami evacuation to the Safe Zone is recommended in accordance with guidance by emergency management authorities.
Managing development	The project site is in the State Agricultural Land Use District and is zoned AG-2, General Agriculture. The existing use of the property for a ranch and crop production is permitted. All improvement activities will be conducted in compliance with State and County environmental rules and regulations. This Environmental Assessment (EA) identifies and, where necessary, proposes mitigation measures to address anticipated impacts from the construction and operation of the project.
Public participation	Public notification of the proposed action will be provided with publication of the Draft EA. See *Chapter 7* of this EA for a list of agencies, organizations and individuals consulted in the preparation of the project EA.
Beach protection	The Kualoa Ranch property boundary is located adjacent to the coastal Kamehameha Highway, and includes some shoreline lots. The proposed improvements will be constructed within the project areas that are located approximately 350 feet or more inland of the shoreline setback (normally approximately 40 feet from the State Certified Shoreline). The proposed improvements are not expected to interfere with existing recreational or ocean recreational activities, nor interfere with natural shoreline processes.
Marine resources	The project does not involve research, education, or technological development related to the coastal and marine environments. No impacts to marine resources are anticipated.

5.7 CITY AND COUNTY OF HONOLULU GENERAL PLAN (2002 AMENDMENT)

The General Plan for the City was adopted in 1977 and has been subsequently amended (most recently in 2002). The General Plan is a comprehensive statement of the long-range social, economic, environmental and design objectives for the general welfare and prosperity of the people of O'ahu. The objectives and policies are organized into 11 subject areas and are intended to guide and coordinate City land use plans and regulations, and budgeting policies and decisions for public facility capital improvements, operations and maintenance. The project is consistent with the applicable objectives and policies of the City and County of Honolulu General Plan as amended in 2002, described below:

Part II. Economic Activity
Objective A: To promote employment opportunities that will enable all people of O'ahu to attain a decent standard of living.

- *Policy 1. Encourage the growth and diversification of O'ahu's economic base.*

- *Policy 2. Encourage the development of small businesses and larger industries which contribute to the economic and social well-being of O'ahu residents.*

- *Policy 4. Encourage the development of local, national, and world markets for the products of O'ahu-based industries.*

Objective B: To maintain the viability of O'ahu's visitor industry.

- *Policy 8. Preserve the well-known and widely publicized beauty of O'ahu for visitors as well as residents.*

Objective C: To maintain the viability of agriculture on O'ahu.

- *Policy 1. Assist the agricultural industry to ensure the continuation of agriculture as an important source of income and employment.*

- *Policy 2. Support agricultural diversification in all agricultural areas on O'ahu.*

- *Policy 5. Maintain agricultural land along the Windward, North Shore, and Waianae coasts for truck farming, flower growing, aquaculture, livestock production, and other types of diversified agriculture.*

- *Policy 7. Encourage the use of more efficient production practices by agriculture, including the efficient use of water.*

- *Policy 8. Encourage the more efficient use of non-potable water for agricultural use.*

Objective D: To make full use of the economic resources of the sea.

- *Policy 2. Encourage the development of aquaculture, ocean research, and other ocean-related industries.*

Objective E: To prevent the occurrence of large scale unemployment.

- *Policy 1. Encourage the training and employment of present residents for currently available and future jobs.*

Discussion: The project supports the economic objectives of the General Plan by expanding and enhancing recreational and educational opportunities at Kualoa Ranch, while also ensuring the livelihoods of Kualoa's 300 employees – most of whom are local, and 39% of which identify themselves as part-Hawaiian. Moreover, the project will strengthen the financial sustainability of Ranch operations, which will further support Kualoa Ranch's dedication to utilizing its agricultural lands, and preserving the majority of its conservation lands from development. The project allows Kualoa Ranch to maintain agricultural land along the Windward coast for truck farming, flower growing, aquaculture, livestock production, and other types of diversified agriculture, expanding their market across Hawai'i and the United States.

Part III. Natural Environment
Objective A: To protect and preserve the natural environment.

- *Policy 1. Protect O'ahu's natural environment, especially the shoreline, valleys, and ridges, from incompatible development.*

- *Policy 2. Seek the restoration of environmentally damaged areas and natural resources.*

- *Policy 6. Design surface drainage and flood-control systems in a manner which will help preserve their natural settings.*

- *Policy 7. Protect the natural environment from damaging levels of air, water, and noise pollution.*

- *Policy 8. Protect plants, birds, and other animals that are unique to the State of Hawai'i and the Island of O'ahu.*

- *Policy 9. Protect mature trees on public and private lands and encourage their integration into new developments.*

- *Policy 10. Increase public awareness and appreciation of O'ahu's land, air and water resources.*

Objective B: To preserve and enhance the natural monuments and scenic views of O'ahu for the benefit of both residents and visitors.

- *Policy 1. Protect the Island's well-known resources: its mountains and craters; forests and watershed areas; marshes, rivers, and streams; shorelines, fishponds, and bays; and reefs and offshore islands.*

- *Policy 2. Protect O'ahu's scenic views, especially those seen from highly developed and heavily traveled areas.*

- *Policy 4. Provide opportunities for recreational and educational use and physical contact with O'ahu's natural environment.*

Discussion: The Kualoa Ranch Improvements will allow for greater access to, awareness, and appreciation of the exceptional natural environment at Kualoa. The Ranch Headquarters, Palikū Malae, and Ka'a'awa Agricultural Facility areas will be integrated with the existing outdoor tours at the Ranch. Culinary tour participants and Agricultural Facility guests will also experience the vast coastal and mountain vistas and natural ambiance from this unique area of O'ahu. As the facilities will be designed to fit the scale and character of the region, existing scenic views along Kamehameha Highway will continue to be preserved.

Part VII. Physical Development and Urban Design
Objective A: To coordinate changes in the physical environment of O'ahu to ensure that all new developments are timely, well-designed, and appropriate for the areas in which they will be located.

- *Policy 2. Coordinate the location and timing of new development with the availability of adequate water supply, sewage treatment, drainage, transportation, and public safety facilities.*

Discussion: As discussed and evaluated in *Chapter 3* of this Draft Environmental Assessment (EA), all components of the Ranch Improvements will be coordinated appropriately to ensure the availability of adequate water supply, sewage treatment, drainage, transportation, and other public facilities and services.

Part X. Culture and Recreation
Objective A: To foster the multiethnic culture of Hawai'i.

- *Policy 1. Encourage the preservation and enhancement of Hawai'i's diverse cultures.*

- *Policy 2. Encourage greater public awareness, understanding, and appreciation of cultural heritage and contributions to Hawai'i made by the City's various ethnic groups.*

Objective B: To protect O'ahu's cultural, historic, architectural, and archaeological resources.

- *Policy 1. Encourage the restoration and preservation of early Hawaiian structures, artifacts, and landmarks.*

- *Policy 2. Identify, and to the extent possible, preserve and restore buildings, sites, and areas of social, cultural, historic, architectural, and archaeological significance.*

- *Policy 4. Promote the interpretive and educational use of cultural, historic, architectural, and archaeological sites, buildings, and artifacts.*

Objective D: To provide a wide range of recreational facilities and services that are readily available to all residents of O'ahu.

- *Policy 7. Provide for recreation programs which serve a broad spectrum of the population.*
- *Policy 8. Encourage ocean and water-oriented recreation activities that do not adversely impact on the natural environment.*
- *Policy 10. Encourage the private provision of recreational and leisure-time facilities and services.*
- *Policy 13. Encourage the safe use of Oahu's ocean environments.*

Discussion: Kualoa Ranch fosters local cultures, values and traditions and supports the preservation of Hawaiian structures, artifacts, and landmarks. In addition, Kualoa provides facility space for use by lua practitioners, hula hālau, and kani ka pila sessions.

The Ranch Headquarters Improvements, Palikū Malae, and Ka'a'awa Agricultural Facility will expand and enhance the quality of recreational and leisure-time facilities and services for windward residents, as well as the greater O'ahu community.

5.8 CITY AND COUNTY OF HONOLULU KO'OLAU POKO SUSTAINABLE COMMUNITIES PLAN

The island of O'ahu is divided into eight regional plan areas; six areas (including Ko'olau Poko) are addressed in "sustainable communities plans" (SCP) in keeping with modest development patterns and rural characteristics. Each plan implements the objectives and policies of the General Plan and provides guidance on public policy, investment, and decision-making within each respective region. Together with the General Plan, they guide population and land use growth over a 20- to 25-year time span.

The majority of the project site is located within the region encompassed by the Ko'olau Poko SCP (*Figure 5.1*). The Ka'a'awa Agricultural Facility is located in the Ko'olau Loa SCP *(Section 5.9).* The Ko'olau Poko SCP was recently revised in August 2017. The August 2017 Plan's vision for Ko'olau Poko focuses on the long-term protection of community resources and its residential character, and the adoption of public improvement programs and development regulations that reflect a stable population. Key elements of the vision applicable to this project include: adopt the ahupua'a concept as a basis for land use and natural resources management; preserve and promote open space and agricultural uses; preserve and enhance scenic recreational and cultural features that define Ko'olau Poko's sense of place; and maintain the Community Growth Boundary to protect agricultural, open space, and natural resources.

The Kualoa Ranch Improvements relate to the following policies of the Ko'olau Poko SCP:

Open Space Preservation

- *Provide both active and passive open spaces. Active areas include community-based parks, golf courses, cemeteries and intensive agricultural uses. Passive areas include lands in the State Conservation District, drainage and utility corridors, nature parks, preserves and wetlands, and agricultural lands such as pastures, aquaculture ponds and fallow fields. Beach parks, which may be either active or passive, depending on the extent to which the landscape has been modified by grading and construction of facilities and the intensity of public use, are also part of the open space system.*
- *Improve the accessibility of recreational open space for public recreational use, especially in shoreline and mountain areas (as required by City ordinance and State law). Address the need for parking and emergency vehicle access.*
- *Protect scenic beauty and scenic views and provide recreation.*
- *Promote access to shoreline and mountain areas.*

Historic and Cultural Resources

- *Emphasize physical references to Ko'olau Poko's history and cultural roots.*
- *Protect existing visual landmarks and support the creation of new, culturally appropriate landmarks.*
- *Preserve significant historic features from earlier periods.*
- *Retain significant vistas associated with archaeological features.*
- *Implement in situ preservation and appropriate protection measures for sites that have high preservation value because of their good condition or unique features.*
- *Determine the appropriate treatment for a historic site by the particular qualities of the site and its relationship to its physical surroundings. Carefully plan and design adjacent uses to avoid conflicts or abrupt contrasts that detract from or destroy the physical integrity and historic or cultural value of the site since the context of a historic site is usually a significant part of its value.*
- *Establish the degree of public access and interpretation that would best promote the preservation of the historic, cultural and educational value of the site, recognizing that economic use is sometimes the only feasible way to preserve a site. Public access to a historic site can take many forms, from direct physical contact and use to limited visual contact. In some cases, however, it may be highly advisable to restrict access to protect the physical integrity or cultural value of the site.*

Agricultural Use

- *Encourage agricultural use of small lots.*
- *Provide support infrastructure, services and facilities to foster and sustain agricultural operations.*
- *Encourage organic and sustainable agriculture.*
- *Encourage self-contained land-based aquaculture in appropriate locations.*
- *Prevent the conversion of agricultural lots to residential or other nonagricultural uses.*
- *Develop and apply use standards to provide for all agricultural activities and uses customarily associated with agricultural areas, including ranching and plant nurseries (crop production with on-site retail or wholesale sales).*
- *Limit non-agricultural uses to those that provide support services for agricultural operations or operations related to public renewable energy sourcing, provided it does not remove high quality agricultural land.*

Discussion: The preservation, continuation and potential expansion of agricultural land use is important to Koʻolau Poko's future to provide jobs and economic activity; offers the choice of a rural lifestyle proximate to a major metropolitan area; and maintains open space and a rural ambience in a section of the island that is famed for its natural beauty. To preserve and protect agricultural use in Koʻolau Poko, it will be necessary to sustain commercially successful operations, as well as subsistence or culturally-based farming. The Kualoa Ranch Improvements support the intent and vision of the Koʻolau Poko SCP through its small-scale development and renovations to the Ranch, which will continue to preserve open space and promote agricultural cattle ranching and farming operations. Kualoa's commitment to long-term protection and preservation of scenic resources, agricultural areas, natural areas, and recreational areas are important to maintaining the character and attractiveness of Koʻolau Poko for both residents and visitors.

The Kualoa landscape includes many vestiges of Koʻolau Poko's cultural past, including ancient Mōliʻi fishpond fronting Kāneʻohe Bay, terraces for the cultivation of taro, heiau and other sacred sites. There are also historic structures and places representing Koʻolau Poko's more recent past, such as the sugar mill and military bunkers. To increase awareness of the role of the natural environment in Koʻolau Poko's cultural history, especially the importance of the ahupuaʻa in defining activities and communities, historic site restoration and interpretive programs have been integrated into the daily maintenance and development of Kualoa and its agricultural tours and activities.

The Farmer's Market will help to promote Kualoa's agricultural products (such as the Ranch's beef, fish, shrimp, oysters, and produce), as well as local farmers and vendors from around Oʻahu. The availability of the Agricultural Facility as a site for small farm-to-table cooking classes will also support Oʻahu's agricultural and culinary industries. Local farmers will have the opportunity to gain visibility through the classes' purposeful integration of locally farmed and produced ingredients. Overall, the Ranch Improvements are not intended nor anticipated to alter the community makeup and character of Kualoa.

5.9 CITY AND COUNTY OF HONOLULU KO'OLAU LOA SUSTAINABLE COMMUNITIES PLAN

In addition to the Koolaupoko SCP, Kualoa Ranch is also located in the region encompassed by the Ko'olau Loa SCP (*Figure 5.2*). The Ko'olau Loa SCP was last revised in 1999, with the most recent update being a public reviewed draft released in 2012. The 1999 Plan's vision for Ko'olau Loa focuses on preserving the rural character of the region, and its resources related to the environment, culture, views, recreation and agriculture. Key vision elements of the Plan applicable to the project include: preserving and enhancing the natural, recreational, and cultural resources which contribute to Ko'olau Loa's sense of "Old Hawai'i"; preserving agricultural lands and encourage diversification of agricultural-related enterprises to maintain its viability; and enhancing the existing recreational areas and resources which offer a variety of outdoor recreational activities and cultural experiences.

The Kualoa Ranch Improvements relate to the following policies and principles of the Ko'olau Loa SCP:

Open Space Preservation
General Policies

- *Maintain the region's rural character, protect scenic views and provide recreational resources.*

Planning Principles

- ***Provide Passive and Active Open Spaces.*** *The open space system consists of areas in both active and passive uses. Active areas include community-based and State parks, golf courses and agricultural fields. Passive areas include the State Conservation District, fallow land in the State Agricultural District, drainage and utility corridors, nature preserves, and other fallow lands left undeveloped due to physical or hazard constraints. Beach parks and shoreline areas may be either active or passive, depending on the extent to which the landscape has been modified by grading and construction of facilities and the intensity of public use.*
- ***Promote Accessibility of Recreational Open Space****. Public parks and most golf courses will be accessible for recreational use, but the open space system should also promote the accessibility of shoreline and mountain areas (as required by City Ordinance and State law). Access to mountain trails and shoreline areas should be readily available. Where required, this includes the provision of parking areas that are conducive to the environment.*

Agricultural Use
General Policies

- *Preserve the availability and crop production potential of lands designated as Agriculture in the Ko'olau Loa Sustainable Communities Plan.*
- *Protect agricultural lands from conversion to uses that are primarily residential, industrial, or commercial in purpose.*
- *Encourage the diversification of agriculture-related enterprises for the continued production of truck-crops, vegetables, flowers and landscaping plants, aquaculture and ranching activities.*
- *Allow facilities necessary to support intensive cultivation of arable agricultural lands to be located in agricultural areas.*
- *Allow for appropriate non-agricultural uses that are compatible with open space and resource character, such as recreational or educational programs, or other uses consistent with the character of a rural agricultural area which provide supplemental income necessary to sustain the primary*

agricultural activity. There should be a direct connection between those activities and the maintenance of agricultural uses on the same or nearby properties.

- *Recognize the function of agricultural areas as an important part of the region's natural drainage system. Cultivation activities or physical improvements in agricultural areas should not adversely modify critical natural drainageways.*
- *Agricultural uses should be designed to minimize environmental impacts such as soil erosion, siltation, pesticide and fertilizer runoff and avoid destruction to coastal, riparian and wetland habitat.*

Planning Principles

- ***Maintain the Long-Term Economic Viability of Agricultural Lands.*** *To preserve active agricultural uses and provide employment opportunities for Ko'olau Loa residents, reserve lands currently designated as Agriculture on the Ko'olau Loa Sustainable Communities Plan principally for such uses. No actions or uses that would undermine or irreversibly compromise their longterm availability or agricultural production capabilities should be permitted.*
- ***Recognize the Contribution of Agricultural Lands to Ko'olau Loa's Rural Character.*** *Ko'olau Loa's rural character is in large part defined by the region's agricultural areas. Allowable uses should be appropriate to onsite or adjacent resources and open space settings. Any onsite development must be low-key, low-impact and predominately open space in character.*

Historic and Cultural Resources

General Policies

- *Emphasize physical references to Ko'olau Loa's history and cultural roots.*
- *Protect existing visual landmarks and support the creation of new, culturally appropriate landmarks at ahupua'a boundaries.*
- *Preserve and restore historic and cultural resources associated with native Hawaiian and pre-contact periods.*
- *Preserve significant historic features from earlier periods such as the plantation era.*
- *Retain, wherever possible, significant vistas associated with archaeological features.*

Planning Principles

- ***Preservation and Protection****. Implement in situ preservation and appropriate protection measures for sites that have high preservation value because of their good condition or unique features.*
- ***Compatible Setting****. Determine the appropriate treatment for a historic site by the particular qualities of the site and its relationship to its physical surroundings. The context of a historic site is usually a significant part of its value. Care should be taken in the planning and design of adjacent uses to avoid conflicts or abrupt contrasts that detract from or destroy the physical integrity, historic or cultural value of the site.*
- ***Accessibility and Interpretation****. Establish the degree of public access and interpretation that would best promote the preservation of the historic, cultural and educational value of a site. Public access to and interpretation of an historic site may take many forms. In some cases, it may be highly advisable to restrict access to protect the physical integrity or sacred value of the site, while in other cases it may be necessary to recognize that some form of low-impact economic use is an appropriate and feasible way to preserve it.*

Visitor Facilities – Eco-tourism Operations

General Policies

- *Appropriate regulations should be adopted to address where eco-tourism operations should be located, their hours of operation, and allowable uses. Within the Koʻolau Loa region, potential appropriate locations for eco-tourism operations include less productive agricultural lands at Kualoa Ranch and within Kaʻaʻawa Valley, and mauka of Lāʻie's Technology Park site.*

Planning Principles

- ***Allowable Uses.*** *Such uses should be low impact, appropriate to sound management of affected resources, compatible with other existing uses in the area, and reflective of community values.*
- ***Environmental Compatibility.*** *Eco-tourism uses should be compatible with the natural environment and adjacent uses. Activities should not significantly or negatively alter the natural state of the environment in which they take place or impact other uses.*
- ***Appropriate Scale and Location.*** *Facilities used for the assembly of participants and parking of the vehicles should be low-rise and small in scale. They should also be sufficiently set back from public roadways and adjacent properties, and screened with landscaping, so that they are not visible from these locations.*
- ***Accessibility.*** *Eco-tourism operations should be reasonably accessible from Kamehameha Highway and should not adversely impact traffic on local streets.*

Discussion: The project supports the vision of the Koʻolau Loa SCP by continuing to preserve and utilize Kualoa Ranch's agricultural lands, and preserving and restoring the region's natural resources. Preserving and maintaining the agricultural lands retains the open space and identifiable rural character of the region. Kualoa Ranch actively cultivates diversified crops and aquaculture, as well as uses the land for passive ranching activities. In addition, outdoor recreation activities offered on the property are appropriate non-agricultural uses that are of a compatible open space and resource character, on agricultural lands not currently suitable for intensive cultivation. The majority of Kualoa's lands have a productivity rating of E, not suitable, with ratings of C in Kaʻaʻawa, and C and D in Kualoa. These activities contribute significantly to the diversified economic base for the Koʻolau Loa region and provide local employment opportunities for area residents, alleviating the need for people to commute outside of the region for employment.

Kualoa Ranch contains several different types of historic and cultural sites which are representative of its history and are valuable as historic records and cultural references. The Ranch is dedicated to documenting and protecting the natural, historic, and cultural resources throughout its properties. The Ranch will continue to protect its special areas through environmental restoration and conservation work. Compatible outdoor recreation and educational programs showcase Kualoa's natural beauty while providing visitors with information about the cultural and natural history, geology, flora, and fauna of the area.

Improvements to Kualoa Ranch facilities used for the assembly of participants and parking of vehicles will be low-rise and small in scale. Although the Visitor Center is reasonably accessible from Kamehameha Highway, is it still sufficiently set back from public roadways and adjacent properties. Parking will be screened with landscaping so that it is not visible from the Highway.

5.10 CITY AND COUNTY OF HONOLULU LAND USE ORDINANCE GUIDELINES

The purpose of the City and County of Honolulu Land Use Ordinance (LUO) is to regulate land use in a manner that will encourage orderly development in accordance with adopted land use policies, including the County General Plan and development plans. The LUO is also intended to provide reasonable development and design standards. These standards are applicable to the location, height, bulk and size of structures, yard areas, off-street parking facilities, and open spaces, and the use of structures and land for agriculture, industry, business, residences or other purposes (Revised Ordinance for the City and County of Honolulu (ROH), Chapter 21).

Discussion: The Ranch Headquarters, Palikū Malae, and Ka'a'awa Agricultural Facility sites are designated as AG-2 General Agricultural District by the County LUO *(Figure 1.5)*. The purpose of the agricultural districts is to maintain a strong agricultural economic base, to prevent unnecessary conflicts among incompatible uses, to minimize the cost of providing public improvements and services and to manage the rate and location of physical development consistent with the city's adopted land use policies.

The intent of the AG-2 General Agricultural District is to conserve and protect agricultural activities on smaller parcels of land. Compatible uses include some agricultural use, low density residential development, and some supporting services and uses. The project supports and complies with the land use designations by the LUO.

It is the intent of Kualoa Ranch to follow all agricultural uses and development standards as stated in Section 21-3.50-4. Detailed information on the proposed heights and setbacks is in *Section 2.9* of this document. Compliance is also required for a major modification to Conditional Use Permit (CUP) No. 85/CUP-15 for outdoor recreation and/or agribusiness.

With regards to LUO *Sec. 21-5.510 Recreational facilities – Outdoor*, not more than five riding animals will be kept for each acre of land within a site used for the horseback riding tours or stable. With a total land area of 3,850 acres, Kualoa Ranch has approximately 100 horses, or about 1 horse for every 40 acres. In addition, the current horse corral and farrier's shelter are over 700 feet from the nearest residential district. The new horse stable will be approximately 900 feet from the nearest residential district. Located in the AG-2 general agricultural district, Kualoa Ranch is dedicated to active agricultural use and open space. Agricultural uses account for 42% of the ranch land area, with preservation encompassing 57%, and other lands the remaining one percent. These uses are expected to continue for generations to come, particularly with Kualoa's agricultural commitment to consider Important Agricultural Lands (IAL) designation.

The Kualoa Visitor Center facilities provide a gathering place for people to learn about the agricultural uses and outdoor recreation uses at Kualoa. Retail space is one part of the overall support facilities, including ticketing, information, seating, food and beverage, dining, kitchen, restrooms and storage. The Café offers fresh Hawaiian-style homemade cooking and features locally-raised grass-fed Kualoa beef burgers. In accordance with LUO *Sec. 21-5.10A Agribusiness* activities, Kualoa Market offers Kualoa and island agricultural products; jams, jellies, candies and pickled or dried produce made from those products; and Ranch wear, Hawaiian crafts, handcrafted jewelry, wood carvings and keiki items.

Motorized vehicles used for guided or self-guided tours will be used in conjunction with and incidental to the existing agricultural operation on the same site, educating visitors on the types of agricultural operations and production occurring at Kualoa.

A Farmers Market, featuring agricultural products from Kualoa and O'ahu, will be held during daylight hours at the Ranch, strategically located for proximity to the parking lot. The Farmers Market will offer Kualoa meat products (beef, fish, shrimp and oysters) as well as tropical fruit and other agricultural products from Kualoa and around O'ahu. A craft area will feature local artists and crafters, including sculptors who make and sell wood carvings made from trees grown at Kualoa.

5.11 CITY AND COUNTY OF HONOLULU SPECIAL MANAGEMENT AREA GUIDELINES

The Special Management Area (SMA) is a designation established to preserve, protect, and where possible, to restore the natural resources of the coastal zone of Hawai'i. Special controls on developments within the SMA area are necessary to avoid permanent loss of valuable resources and foreclosure of management options. The review guidelines of Section 25-3.2 of the ROH are used by DPP and the City Council for the review of developments proposed in the SMA. These guidelines are derived from Section 205A-26 HRS.

Discussion: The project areas at the Ranch Headquarters, Palikū Malae, and Ka'a'awa Agricultural Facility are not within the SMA as delineated by the County and, as such, do not require additional review under State CZM and County SMA rules. Although no new physical development will occur, Mōli'i Gardens is located within the SMA and use as a wedding site requires analysis. See *Table 5.1* for this analysis.

5.12 CITY AND COUNTY OF HONOLULU COMPLETE STREETS POLICIES

The Department of Transportation adopted a Complete Streets policy (Act 54, Session Laws of Hawai'i 2009, HRS §264-20.5 and ROH 12-15) to guide and direct more comprehensive and balanced transportation systems. Under this policy, the city is committed to encourage the development of transportation facilities or projects that are planned, designed, constructed, operated, and maintained to provide safe mobility for all users, including pedestrians, bicyclists, transit users, motorists, and persons of all ages and abilities. Every transportation facility or project, whether new construction, reconstruction, or maintenance, provides the opportunity to implement complete streets policy and principles. This policy provides that a context sensitive solution process and multi-modal approach be considered in all planning documents and for the development of all city transportation facilities and projects.

Discussion: The Kualoa Ranch Improvements will comply with Complete Streets policies, including specific adherence to key Complete Streets principles, as follows:

(1) **Safety** will be improved though the planning, design, and construction of an environment that reduces risk and supports the safe movement of people and goods by all modes. Examples include directional signage and consistent lighting for increased pedestrian visibility. Center lines are not used in the Kualoa Ranch Driveway, facilitating the passing of people on bicycles by motor vehicles. A traffic circle within the parking lot also eases traffic speeds, and the separate drive to Palikū will reduce internal traffic and increase pedestrian safety in relation to the current internal road configuration. A service road will provide a separate driveway to the loading zone so that service vehicles do not drive through the visitor parking lot.

(2) A **Context Sensitive Solution** process using best practices has been applied to Kualoa transportation facilities that integrates community values and recognizes the importance of the surrounding rural context and environment. Locating the Farmers Market near the parking lot allows for ease of accessibility for local residents who don't necessarily want to stay for an agricultural tour. Screening the parking lot with Oleander bushes helps to keep the focus on the expansive beauty of the ranch. During special events, traffic accommodations are made using electronic billboards and traffic cones to facilitate vehicle movement. Kualoa also becomes a location of refuge for the local and visitor community during natural disasters.

(3) Protection and promotion of **accessibility and mobility for all** is made available through the planning and designing of Kualoa transportation facilities for ease of use and access to destinations by providing an appropriate path of travel for all users. This enhances the ability to move people and goods throughout the state, its counties, and at Kualoa. Americans with Disabilities Act (ADA) parking is provided, and ramps allow visitors with wheelchairs or strollers to easily access the Visitor's Center.

(4) Balancing the **needs and comfort of all modes and users** by providing a driveway that allows for use by coach buses, vans, cars, motorcycles, and bicyclists, with ample room to allow motor vehicles to safely pass bicyclists and pedestrians. Pedestrians can use the grassed path along the roadway.

(5) Kualoa will **consistently** use national industry best practice **design guidelines and standards** to select complete streets design elements within their driveway and parking lot improvements.

(6) Kualoa strives to improve **energy efficiency** in travel and mitigate vehicle emissions by promoting coach bus travel and providing parking for electric vehicles, motorcycles and bicycles.

(7) Kualoa fully encourages opportunities for physical activity and recognizes the **health** benefits of an active lifestyle and in providing alternative mode choices; and

(8) **Green infrastructure** is incorporated, including trees and landscaping to provide both human and ecosystem benefits, such as shade, to reduce the urban heat island effect, vegetation for carbon sequestration, reducing/filtering non-point source pollution and sediments, retaining stormwater, increasing groundwater recharge, and providing wildlife habitat.

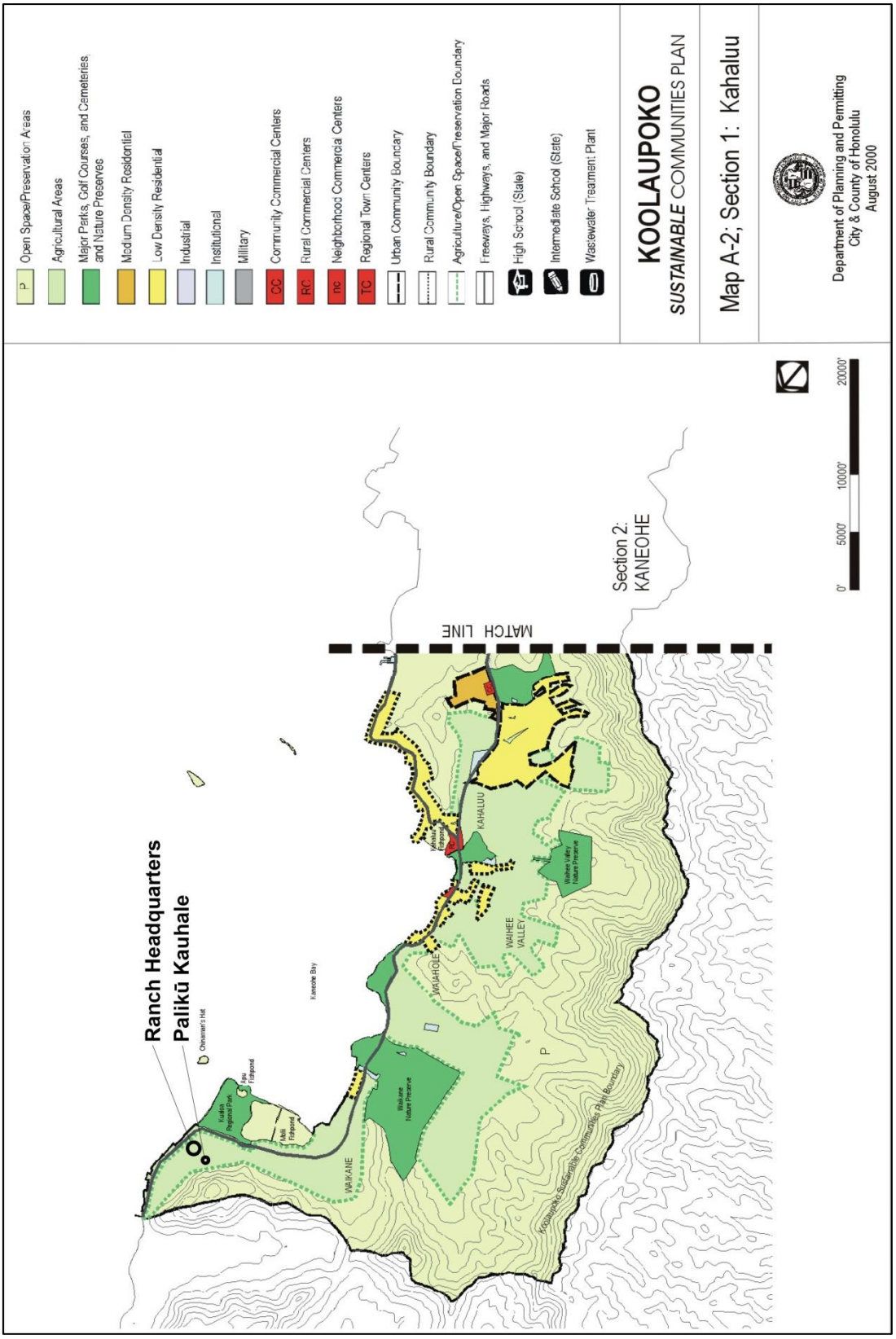


Figure 5.1 - City and County of Honolulu Koolaupoko Sustainable Communities Plan (SCP Update Pending)

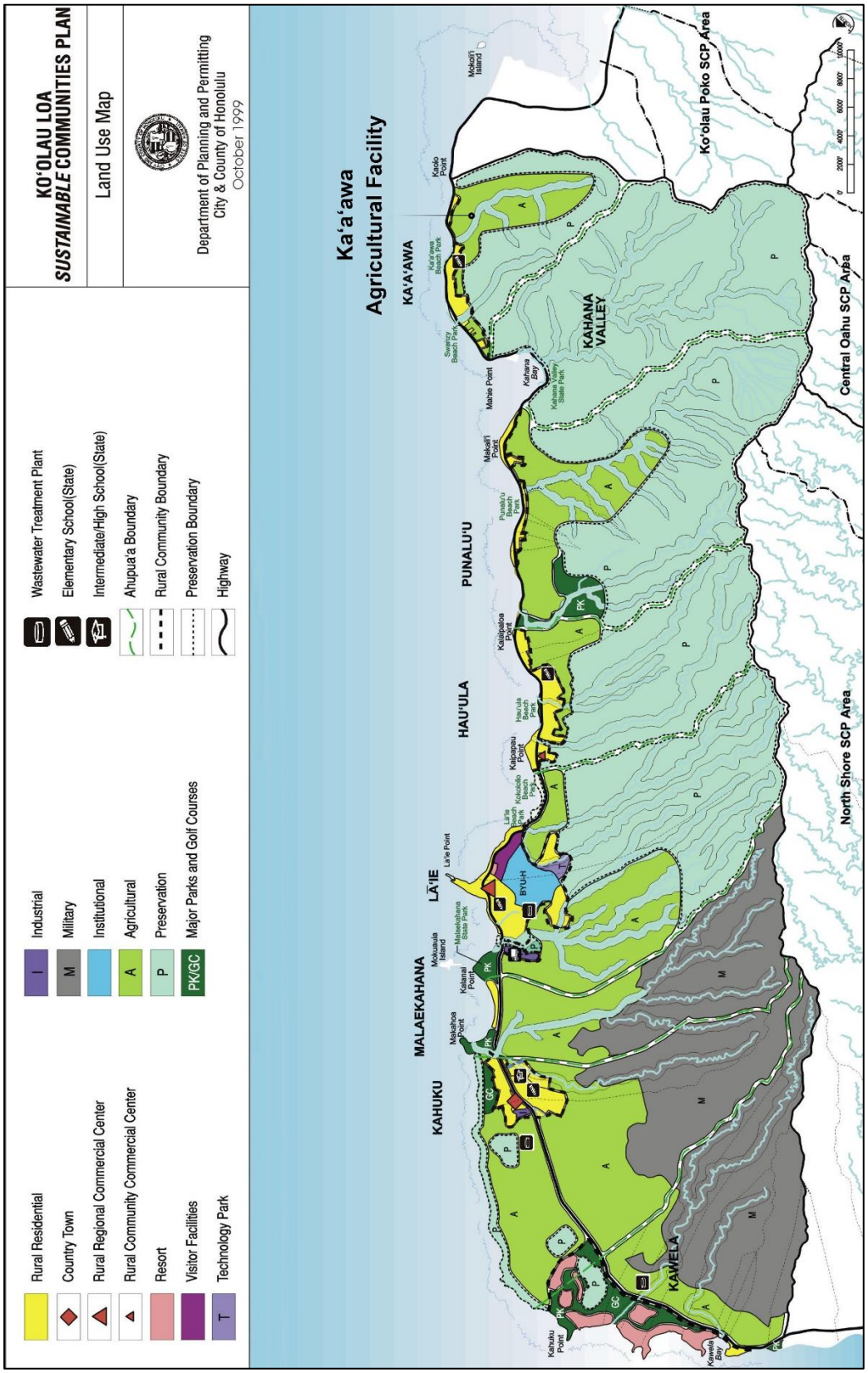


Figure 5.2 - City and County of Honolulu Ko'olau Loa Sustainable Communities Plan (SCP Update Pending)

6.0
FINDINGS AND REASONS SUPPORTING ANTICIPATED DETERMINATION

6.0 FINDINGS AND REASONS SUPPORTING ANTICIPATED DETERMINATION

6.1 ANTICIPATED DETERMINATION

The improvements proposed for Kualoa Ranch are not anticipated to cause significant adverse environmental effects to the site and surrounding area. There will be no adverse effects to historic and archaeological resources on the property, and therefore, there will be no negative impact to the resources of the Kualoa ahupuaʻa as recognized by its listing on the National Register of Historic Places.

After reviewing the significance criteria in Chapter 343, Hawaiʻi Revised Statutes (HRS), and Section 11-200-12, Hawaiʻi Administrative Rules (HAR), *Significance criteria*, it is anticipated that the proposed action will be determined to not result in significant adverse effects on the natural or human environment. A Finding of No Significant Impact (FONSI) is anticipated for the proposed action.

6.2 REASONS SUPPORTING THE ANTICIPATED DETERMINATION

The potential impacts of the improvements and future use after construction have been fully examined and discussed in this Environmental Assessment. As stated earlier, there are no significant environmental impacts expected to result from the project. This anticipated determination is based on the following assessments:

(1) Involve an irrevocable loss or destruction of any natural or cultural resources.

The project does not involve any known destruction of existing natural or cultural resources. The lands at the Ranch Headquarters, Palikū, and Kaʻaʻawa are already developed lands with no significant natural resources. If during the course of construction any cultural or archaeological resources are unearthed, the State Historic Preservation Division will immediately be notified, and necessary protection measures would be administered in compliance with regulatory requirements.

(2) Curtail the range of beneficial uses of the environment.

The Kualoa Ranch Improvements do not curtail the range of beneficial uses of the environment. Rather, the project will create economic and social benefits to the Kualoa community. The Ranch Improvements will enhance the range and quality of attractions and venues available at Kualoa Ranch for visitors and residents to experience. Furthermore, the office additions to the Ranch will better accommodate staff, thereby supporting the continuation of educational and environmental outreach activities throughout the property.

(3) **Conflict with the State's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders.**

The project does not conflict with the State's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders.

(4) Substantially affects the economic or social welfare of the community or State.

The Kualoa Ranch Improvements will benefit the Koʻolau Loa and Koʻolau Poko communities, and the greater island and State communities by preserving agricultural land uses on the windward side of the island. Local farmers and producers will also benefit from the Ranch Improvements at the Kaʻaʻawa Agricultural Facility, which will serve dual purposes as a cooperative kitchen for farmers and food producers, as well as a culinary center for cooking classes and farm-to-table demonstrations.

In addition, the Ranch Improvements will provide additional recreational and employment opportunities for residents, benefitting the social and economic welfare of the island.

(5) Substantially affects public health.

The project will not substantially affect public health. Although there would be some limited air and noise level impacts during construction, they will be mitigated through the implementation of best management practices. The long-term benefits associated with the project outweigh the temporary short-term impacts to air and noise levels.

(6) Involves substantial secondary impacts, such as population changes or effects on public facilities.

The project does not create any substantial secondary impacts on the existing population or on public facilities. Existing traffic conditions and projected future conditions without the project in place will require roadway improvements. Inclusion of the project will require driveway widening at Kualoa Ranch to accommodate bus turning movements to/from Kamehameha Highway, and to provide separate internal left-turn and right-turn lanes at Kamehameha Highway. In consultation with DOT, implementing traffic control plans during special events and excessive traffic, as necessary.

(7) Involves a substantial degradation of environmental quality.

Kualoa Ranch is dedicated to environmental conservation and restoration efforts throughout the 4,000 acres of land.

(8) Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions.

The development and implementation of the project will have a limited and negligible impact on the natural and cultural environment while providing an overall general improvement to the

social, recreational, and economic environments. These projects independently and collectively do not require or influence a commitment for larger actions.

(9) Substantially affects a rare, threatened or endangered species, or its habitat.

The planned agricultural support uses of the Ranch facilities will not cause long term effects to endangered or threatened plant or animal species at Kualoa.

(10) Detrimentally affects air or water quality or ambient noise levels.

Short-term effects on air, water quality or ambient noise levels during construction will be mitigated by compliance with City and County of Honolulu and State Department of Health rules which will regulate construction-related activities.

After construction, the impacts on air and water quality should be minimal. Noise levels will be increased moderately with the addition of new facilities. Noise levels may slightly increase when open air community events such as meetings or group activities are held at certain sites such as the Malae. However, noise levels should not increase above appropriate levels, and should not extend into any surrounding residential areas of the region.

(11) Affects or is likely to suffer damage by being located in an environmentally sensitive area such as flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters.

A majority of the project sites are not located in environmentally sensitive areas such as flood plains, tsunami zones, beach, erosion-prone areas, geologically hazardous lands, estuaries, or fresh or coastal waters. The lower portion of the Ranch Headquarters site lies within the tsunami evacuation zone. While no part of the Ranch is a designated as a tsunami refuge center, Kualoa Ranch opened its Palikū property (outside of the tsunami evacuation zone) to area residents during the 2011 tsunami warning.

(12) Substantially affects scenic vistas and view-planes identified in county or state plans or studies.

The project sites are located on previously developed lands, and the improvements will not deter from the overall appearance or aesthetics of the area. Prominent view planes to significant geographical points such as Moʻo Kapu o Hāloa and Mokoliʻi Islet (Chinaman's Hat) will be preserved through site orientation and placement of built features. Design guidelines could be developed during the detailed design phase of each facility to ensure the scale, setting, and character of the new and/or renovated buildings are appropriate to the region.

(13) Require substantial energy consumption.

Construction of the project will not require substantial energy consumption relative to other similarly sized projects. In total, the Ranch Improvements will add an additional 36,760 sf of buildings to the Ranch, a third of which will be used for storage and agricultural maintenance purposes. The application of sustainable design concepts will be utilized as much as feasible in the physical design of the buildings.

7.0
AGENCIES, ORGANIZATIONS AND INDIVIDUALS RECEIVING COPIES OF THE EA

7.0 AGENCIES, ORGANIZATIONS AND INDIVIDUALS RECEIVING COPIES OF THE EA

Early consultation included meetings with the City and County of Honolulu Department of Planning and Permitting (DPP), individuals, and announcements at both the Kahaluʻu and Koʻolau Loa Neighborhood Boards in July and August 2014, respectively (see *Appendix F).* Meetings that occurred following publication of the Draft EA included the Kahaluʻu and Koʻolau Loa Neighborhood Boards in January and February 2018 respectively, and with the Kaʻaʻawa Community Association in March 2018.

Kualoa Ranch is zoned AG-2 General Agricultural, therefore DPP is concerned with the land use reflecting this zoning. *Section 1.2* of this Environmental Assessment (EA), *Overview and Background*, details the past and current agricultural uses of the land.

Neighborhood Board meeting participants mentioned support of Kualoa Ranch for providing a strong economic center for the Windward community, being good stewards of the land, and preserving Hawaiʻi's natural environment, open space, culture, and agricultural traditions. Questions at the 2014 Kahaluʻu Neighborhood Board meeting were primarily related to the technical process of the EA, and whether Kualoa Ranch will be expanding their property, or if they would be impacting Kaʻaʻawa. Initial analysis of expansion into Hakipuʻu occurred, but is no longer considered. Comments at the 2018 Kahaluʻu Neighborhood Board meeting focused on climate change and erosion of Kamehameha Highway, potential regional traffic solutions, visitor count increase, operational timing, potable and wastewater impacts, and pre-contact/historical site impacts.

The 2014 Koʻolau Loa Neighborhood Board asked about the purpose and location of the new Visitor Center. The new facility will be next to the current Visitor Center and will be used for visitor orientation, ticketing, and retail. A meeting attendee asked if expanding the farm could occur without impacting any housing nearby. It is not anticipated that expansion will impact any housing. A question was asked as to whether Kualoa Ranch would continue to grow local agriculture for the front part of the farm. The Ranch is working to expand the farm in order to feed more people, and/or integrate a Hawaiian cultural farm. A tour will go through the agriculture area.

A comment was raised regarding projected traffic and ways to advertise traffic flow for special events. Electronic boards and signs are used for special events, directing traffic to three lanes and two entrances. Mitigation for projected traffic due to the expansion of the Visitor Center has been addressed in *Section 3.14 Roadways, Access and Traffic Conditions*. Questions regarding the EA technical process included the timeline of projected projects or events and if there would be a presentation to the board. The permitting process may affect the next three years. A presentation to the Board is part of the EA process, where the Board will have an opportunity to comment. The 2018 Koʻolau Loa Neighborhood Board meeting commented primarily on agricultural aspects of the ranch, including horse shows, slaughter of cattle, and farm to table events.

Parties contacted in preparation of the Draft EA process, comments received, and those that were provided an opportunity to review the Draft EA are identified below. Comments received during these consultation processes are also provided following this list.

Distribution and Respondents	Early Consultation	Received Draft EA	EA Comments Received
Federal Agencies			
U.S. Army Corps of Engineers		X	
Fish & Wildlife Services		X	X
State of Hawai'i Agencies			
Department of Agriculture		X	
Department of Business, Economic Development & Tourism		X	
Department of Health (DOH), Environmental Planning Office		X	X
DOH, Wastewater Division	X	X	
Department of Land and Natural Resources (DLNR)		X	X
DLNR Commission on Water Resource Management		X	X
DLNR Department of Forestry and Wildlife		X	X
DLNR Engineering Division		X	X
DLNR Historic Preservation Division	X	X	
DLNR Land Division – O'ahu District		X	X
Department of Transportation	X	X	X
Office of Environmental Quality Control		X	
Office of Hawaiian Affairs		X	
Office of Planning		X	
City and County of Honolulu Agencies			
Board of Water Supply	X	X	X
Department of Design and Construction		X	X
Department of Environmental Services		X	
Department of Facility Maintenance		X	X
Department of Parks and Recreation		X	X
Department of Planning and Permitting	X	X	X
Department of Transportation Services		X	X

Distribution and Respondents	Early Consultation	Received Draft EA	EA Comments Received
Elected Officials			
Senator Gil Riviere, District 23		X	X
State Representative Sean Quinlan, District 47		X	
Mayor Kirk Caldwell		X	
Councilmember Ernest Y. Martin		X	
Neighborhood Board No. 28 – Koʻolau Loa	X	X	
Neighborhood Board No. 29 - Kahaluʻu	X	X	
Distribution and Respondents	**Early Consultation**	**Received Draft EA**	**EA Comments Received**
Community Groups, Individuals, and Consulted Parties			
Hakipuʻu ʻOhana / Kahuli o Hāloa / Hakipuʻu Learning Center		X	
Historic Hawaiʻi Foundation		X	
Kaʻaʻawa Community Association		X	X
Koʻolauloa Hawaiian Civic Club		X	X
Koʻolaupoko Hawaiian Civic Club		X	
Malama Waiheʻe			X
Andrea Anixt			X
J. William Busch			X
Kealoha Domingo	X	X	
Winona Kaniho	X	X	
Kenneth Le Vasseur			X
Nancy Morgan			X
Libraries			
Kāneʻohe Public Library		X	

DRAFT ENVIRONMENTAL ASSESSMENT
COMMENT AND RESPONSE LETTERS

Barbara Natale

From: Valeros, Nanea <nanea_valeros@fws.gov>
Sent: Thursday, January 25, 2018 8:48 AM
To: kualoa
Cc: Nagatani, Leila; Aaron Nadig
Subject: Draft Environmental Assessment Kualoa Ranch Improvements, Koolaupoko, Oahu
Attachments: BMPs For Work in Aquatic Environment.docx

Dear Mr. Overton,

This email is in response to your request for comments for the Kualoa Ranch Improvements Draft Environmental Assessment, located at TMK: 4-9-005:01; 4-9-004:02; 5-1-001:01.

On behalf of the U.S. Fish and Wildlife Service, please see below for a list of species we believe could be in the vicinity of the project and recommendations to avoid and minimize impacts to those species.

Hawaiian hoary bat (*Lasiurus cinereus semotus*):
The Hawaiian hoary bat roosts in both exotic and native woody vegetation across all islands and will leave young unattended in trees and shrubs when they forage. If trees or shrubs 15 feet or taller are cleared during the pupping season, there is a risk that young bats could inadvertently be harmed or killed since they are too young to fly or may not move away.

To minimize impacts to the endangered Hawaiian hoary bat we recommend you consider incorporating the following measure into your project description:

- Woody plants greater than 15 feet tall will not be disturbed, removed, or trimmed during the bat birthing and pup rearing season (June 1 through September 15).

Endangered Hawaiian stilt (*Himantopus mexicanus knudseni*), endangered Hawaiian coot (*Fulica alai*), endangered Hawaiian gallinule (*Gallinula galeata sandvicensis*), endangered Hawaiian duck (*Anas wyvilliana*) (collectively referred to as Hawaiian waterbirds):
Listed Hawaiian waterbirds are found in fresh and brackish-water marshes and natural or man-made ponds. Hawaiian stilts may also be found wherever ephemeral or persistent standing water may occur. Hawaiian stilt nesting occurs from mid-February through August. Hawaiian coot nesting occurs primarily from March through September, although some nesting occurs in all months of the year. Hawaiian gallinules nest year-round, but mostly from March through August. For the Hawaiian duck nesting can occur year round. Threats to these species include non-native predators, habitat loss, and habitat degradation. Hawaiian ducks are also subject to threats from hybridization with introduced mallards. If a nest is present, potential impacts include parents being flushed from the nest for extended periods of time causing the nest to fail (e.g., exposed to predation) or eggs or chicks being crushed by humans or equipment.

Hawaiian waterbirds, in particular, the Hawaiian stilt, is known to nest in sub-optimal locations (e.g., any ponding water) if present. Hawaiian waterbirds attracted to sub-optimal habitat may suffer adverse impacts, such as predation, reduced reproductive success due to disturbance within the vicinity of a nest, injury or death from being hit by a vehicle and thus the project may create an attractive nuisance.

To avoid and minimize potential project impacts to Hawaiian waterbirds we recommend you consider incorporating the following applicable measures into your project description:

- In areas where waterbirds are known to be present, post and implement reduced speed limits, and inform project personnel and contractors about the presence of endangered species on-site.

- If water resources are located within or adjacent to the project site, incorporate applicable best management practices regarding work in aquatic environments into the project design.
- Have a biological monitor that is familiar with the species' biology conduct Hawaiian waterbird nest surveys where appropriate habitat occurs within the vicinity of the proposed project site prior to project initiation. Repeat surveys again within three days of project initiation and after any subsequent delay of work of three or more days (during which the birds may attempt to nest). If a nest or active brood is found:

  - Contact the Service within 48 hours for further guidance.
  - Establish and maintain a 100-foot buffer around all active nests and/or broods until the chicks/ducklings have fledged. Do not conduct potentially disruptive activities or habitat alteration within this buffer.
  - Have a biological monitor that is familiar with the species' biology present on the project site during all construction or earth moving activities until the chicks/ducklings fledge to ensure that Hawaiian waterbirds and nests are not adversely impacted.

- Design the proposed project in a manner that minimizes the amount of time standing water is present, thereby, reducing the potential to attract waterbirds.

There are additional concerns regarding Hawaiian waterbirds being in areas of high human traffic. Hawaiian waterbirds may be attracted to discarded food, or become habituated to people feeding the birds. This has the potential to result in disturbances and deaths of endangered waterbirds, chicks and/or eggs by people, vehicles and/or bikes. In addition, illegal disposal of garbage may degrade nesting habitat. As human traffic increases within the vicinity of the proposed project area, there is potential for the above impacts to occur. Therefore, we recommend the following measures be incorporated into your project description to avoid and minimize potential impacts to listed Hawaiian waterbirds:

- Place signage in key areas around the property to educate visitors about waterbird issues.
- Prohibit feeding of waterbirds.
- Allow only closed and contained trash receptacles to prevent garbage from degrading waterbird nesting habitat.

Endangered Hawaiian petrel (*Pterodroma sandwichensis*), Threatened Newell's shearwater (*Puffinus auricularis newelli*), Endangered Band-rumped storm-petrel (*Oceanodroma castro*), and a seabird species protected under the Migratory Bird Treaty Act of 1918, the Wedge-tailed Shearwater (*Ardenna pacificus*) (collectively referred to as Hawaiian Seabirds):
Hawaiian seabirds may traverse the project area at night during the breeding season (March 1 to December 15). Outdoor lighting could result in seabird disorientation, fallout, and injury or mortality. Seabirds are attracted to lights and after circling the lights they may become exhausted and collide with nearby wires, buildings, or other structures or they may land on the ground. Downed seabirds are subject to increased mortality due to collision with automobiles, starvation, and predation by dogs, cats, and other predators. Young birds (fledglings) traversing the project area between September 15 and December 15, in their first flights from their mountain nests to the sea, are particularly vulnerable.

To minimize potential project impacts to all Hawaiian seabirds we recommend you consider incorporating the following applicable measures into your project:

- Fully shield all outdoor lights so the bulb can only be seen from below bulb height and only use when necessary.
- Install automatic motion sensor switches and controls on all outdoor lights or turn off lights when human activity is not occurring in the lighted area.
- Avoid nighttime construction during the seabird fledging period, September 15 through December 15.
- Provide all project staff with information about seabird fallout and let them know that downed seabirds can be taken to Sea Life Park for rehabilitation.

Because the project involves earthwork, we are attaching the Service's recommended Best Management Practices regarding sedimentation and erosion control. We encourage you to incorporate the relevant practices into your project design.

Hope this helps. Please feel free to contact me if you have any further questions regarding this project.

--

Nanea Valeros

Biologist
O'ahu, Kaua'i, Papahānaumokuākea, and American Samoa
Pacific Islands Fish and Wildlife Office
U.S. Fish and Wildlife Service
300 Ala Moana Boulevard, Room 3-122
Honolulu, Hawai'i 96850

U.S. Fish and Wildlife Service
Recommended Standard Best Management Practices

The U.S. Fish and Wildlife Service (USFWS) recommends the following measures to be incorporated into project planning to avoid or minimize impacts to fish and wildlife resources. Best Management Practices (BMPs) include the incorporation of procedures or materials that may be used to reduce either direct or indirect negative impacts to aquatic habitats that result from project construction-related activities. These BMPs are recommended in addition to, and do not over-ride any terms, conditions, or other recommendations prepared by the USFWS, other federal, state or local agencies. If you have questions concerning these BMPs, please contact the USFWS Aquatic Ecosystems Conservation Program at 808-792-9400.

1. Authorized dredging and filling-related activities that may result in the temporary or permanent loss of aquatic habitats should be designed to avoid indirect, negative impacts to aquatic habitats beyond the planned project area.

2. Dredging/filling in the marine environment should be scheduled to avoid coral spawning and recruitment periods, and sea turtle nesting and hatching periods. Because these periods are variable throughout the Pacific islands, we recommend contacting the relevant local, state, or federal fish and wildlife resource agency for site specific guidance.

3. Turbidity and siltation from project-related work should be minimized and contained within the project area by silt containment devices and curtailing work during flooding or adverse tidal and weather conditions. BMPs should be maintained for the life of the construction period until turbidity and siltation within the project area is stabilized. All project construction-related debris and sediment containment devices should be removed and disposed of at an approved site.

4. All project construction-related materials and equipment (dredges, vessels, backhoes, silt curtains, etc.) to be placed in an aquatic environment should be inspected for pollutants including, but not limited to; marine fouling organisms, grease, oil, etc., and cleaned to remove pollutants prior to use. Project related activities should not result in any debris disposal, non-native species introductions, or attraction of non-native pests to the affected or adjacent aquatic or terrestrial habitats. Implementing both a litter-control plan and a Hazard Analysis and Critical Control Point plan (HACCP – see http://www.haccp-nrm.org/Wizard/default.asp) can help to prevent attraction and introduction of non-native species.

5. Project construction-related materials (fill, revetment rock, pipe, etc.) should not be stockpiled in, or in close proximity to aquatic habitats and should be protected from erosion (*e.g.*, with filter fabric, etc.), to prevent materials from being carried into waters by wind, rain, or high surf.

6. Fueling of project-related vehicles and equipment should take place away from the aquatic environment and a contingency plan to control petroleum products accidentally spilled during the project should be developed. The plan should be retained on site with the person responsible for compliance with the plan. Absorbent pads and containment booms should be stored on-site to facilitate the clean-up of accidental petroleum releases.

7. All deliberately exposed soil or under-layer materials used in the project near water should be protected from erosion and stabilized as soon as possible with geotextile, filter fabric or native or non-invasive vegetation matting, hydro-seeding, etc.

111 S. King Street
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July 11, 2018

Ms. Nanea Valeros, Biologist
Pacific Islands Fish and Wildlife Office
U.S. Fish and Wildlife Service
300 Ala Moana Boulevard, Room 3-122
Honolulu, Hawai'i 96850

Subject: **Chapter 343, HRS Draft Environmental Assessment**
Kualoa Ranch Improvements
TMK: 4-9-005:01; 4-9-004:02; 5-1-001:01 (portion)
O'ahu, Ko'olau Poko District, Kualoa Ahupua'a

Dear Ms. Valeros:

Thank you for your comment letter dated January 25, 2018 concerning the Chapter 343, Hawai'i Revised Statutes (HRS) Draft Environmental Assessment (EA) for the Kualoa Ranch Improvements project. The following responses are offered to your comments:

We acknowledge that the endangered Hawaiian waterbirds, seabird species and State and Federally listed Hawaiian hoary bat *(Lasiurus cinereus semotus)* have the potential to occur in the vicinity of the proposed project.

Endangered waterbirds include the Hawaiian stilt (*Himantopus mexicanus knudseni*), Hawaiian coot (*Fulica alai*), Hawaiian gallinule (*Gallinula galeata sandvicensis*), and Hawaiian duck (*Anas wyvilliana*). Seabird species include the endangered Hawaiian petrel (*Pterodroma sandwichensis*), Band-rumped storm-petrel (*Oceanodroma castro*), threatened Newell's shearwater (*Puffinus auricularis newelli*), and a seabird species protected under the Migratory Bird Treaty Act of 1918, the Wedge-tailed Shearwater (*Ardenna pacificus*).

The Environmental Assessment (EA) lists in Section 3.7 the avoidance and minimization measures for the Hawaiian hoary bat and seabirds as recommended by the U.S. Fish and Wildlife Service (USFWS). As described in the Draft EA, a biological study was conducted in June 2015, which concluded that the planned agricultural support uses of the Ranch facilities will not cause long term effects to endangered or threatened plant or animal species at Kualoa. Information presented by your letter with regard to the Hawaiian waterbirds has also been included in the Final EA.

Recommended avoidance and mitigation measures will be incorporated into the project design. The contractor will be required to adhere to project plans and specifications which will incorporate measures to avoid or minimize impacts to listed species during construction. The project will implement the identified concerns to minimize impacts to listed animal species.

We will provide you a copy of the Final EA. Thank you for your participation in the environmental review process.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal Planner

DAVID Y. IGE
GOVERNOR OF HAWAII

VIRGINIA PRESSLER, M.D.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 3378
HONOLULU, HI 96801-3378

In reply, please refer to:
File:

EPO 17-333

January 22, 2018

Mr. Jeff Overton
G70
925 Bethel Street, Fifth Floor
Honolulu, Hawaii 96813
Email: jeffo@g70.design

Dear Mr. Overton:

SUBJECT: Draft Environmental Assessment (DEA) for Kualoa Ranch Improvements
TMK: 4-9-04:002, 5-1-001:001

The Department of Health (DOH), Environmental Planning Office (EPO), acknowledges receipt of your DEA to our office via the OEQC link:
http://oeqc2.doh.hawaii.gov/EA_EIS_Library/2017-12-23-OA-DEA-Kualoa-Ranch-Improvements.pdf

We understand from the OEQC publication form project summary that *"To accommodate growing interest in the agricultural tours of Kualoa Ranch, improvements planned for the Ranch Headquarters area include a Visitor's Center expansion, Administrative Buildings, Employee Building, new Tour Depots, Horseback Riding Stables, and a Farmers Market. Additional improvements include a new open pavilion in Paliku, and an Agricultural Facility in Kaaawa. Various infrastructure improvements will also be completed, including driveways, parking, water supply, wastewater management, and drainage"*

Hawaii's environmental review laws require Environmental Assessments (EAs) and Environmental Impact Statements (EISs) to consider health in the discussion and the mitigation measures to reduce negative impacts. In its definition of 'impacts,' §11-200-2, Hawaii Administrative Rules (HAR) includes health effects, whether primary (direct), secondary (indirect), or cumulative. Further, §11-200-12(b)(5), HAR, lists public health as one of the criteria for determining whether an action may have a significant impact on the environment.

In the development and implementation of all projects, EPO strongly recommends regular review of State and Federal environmental health land use guidance. State standard comments to support sustainable healthy design are provided at: http://health.hawaii.gov/epo/landuse. Projects are required to adhere to all applicable standard comments.

We suggest you review the requirements of the Clean Water Branch (Hawaii Administrative Rules {HAR}, Chapter 11-54-1.1, -3, 4-8) and/or the National Pollutant Discharge Elimination System (NPDES) permit (HAR, Chapter 11-55) at: http://health.hawaii.gov/cwb. If you have any questions, please contact the Clean Water Branch (CWB), Engineering Section at (808) 586-4309 or cleanwaterbranch@doh.hawaii.gov. If your project involves waters of the U.S., it is highly recommended that you contact the Army Corps of Engineers, Regulatory Branch at: (808) 835-4303.

Please note that all wastewater plans must conform to applicable provisions (HAR, Chapter 11-62, "Wastewater Systems"). We reserve the right to review the detailed wastewater plans for conformance to applicable rules. Should you have any questions, please review online guidance at: http://health.hawaii.gov/wastewater and contact the Planning and Design Section of the Wastewater Branch (WWB) at (808) 586-4294.

If temporary fugitive dust emissions could be emitted when the project site is prepared for construction and/or when construction activities occur, we recommend you review the need and/or requirements for a Clean Air Branch (CAB) permit (HAR, Chapter 11-60.1 "Air Pollution Control"). Effective air pollution control measures need to be provided to prevent or minimize any fugitive dust emissions caused by construction work from affecting the surrounding areas. This includes the off-site roadways used to enter/exit the project. The control measures could include, but are not limited to, the use of water wagons, sprinkler systems, and dust fences. For questions contact the Clean Air Branch via e-mail at: Cab.General@doh.hawaii.gov or call (808) 586-4200.

Any waste generated by the project (that is not a hazardous waste as defined in state hazardous waste laws and regulations), needs to be disposed of at a solid waste management facility that complies with the applicable provisions (HAR, Chapter 11-58.1 "Solid Waste Management Control"). The open burning of any of these wastes, on or off site, is strictly prohibited. You may wish you review the Minimizing Construction & Demolition Waste Management Guide at: http://health.hawaii.gov/shwb/files/2016/05/constdem16.pdf Additional information is accessible at: http://health.hawaii.gov/shwb. For specific questions call (808) 586-4226.

If noise created during the construction phase of the project may exceed the maximum allowable levels (HAR, Chapter 11-46, "Community Noise Control") then a noise permit may be required and needs to be obtained before the commencement of work. Relevant information is online at: http://health.hawaii.gov/irhb/noise EPO recommends you contact the Indoor and Radiological Health Branch (IRHB) at (808) 586-4700 with any specific questions.

EPO also encourages you to examine and utilize the Hawaii Environmental Health Portal at: https://eha-cloud.doh.hawaii.gov. This site provides links to our e-Permitting Portal, Environmental Health Warehouse, Groundwater Contamination Viewer, Hawaii Emergency Response Exchange, Hawaii State and Local Emission Inventory System, Water Pollution Control Viewer, Water Quality Data, Warnings, Advisories and Postings.

The Hawaii Disability and Communication Access Board (DCAB) recommends the inclusion of access for persons with disabilities through all phases of design and construction. New construction and alteration work shall comply with all applicable accessibility requirements. Projects covered by §103-50, Hawaii Revised Statutes, and Hawaii Administrative Rules Title 11 Chapter 216 shall seek advice and recommendations from DCAB on any construction plans prior to commencing with construction. If you have any questions please contact DCAB at (808) 586-8121 or dcab@doh.hawaii.gov.

To better protect public health and the environment, the U.S. Environmental Protection Agency (EPA) has developed an environmental justice (EJ) mapping and screening tool called EJSCREEN. It is based on nationally consistent data and combines environmental and demographic indicators in maps and reports. EPO encourages you to explore, launch and utilize this powerful tool in planning your project. The EPA EJSCREEN tool is available at: http://www.epa.gov/ejscreen.

We hope this information is helpful. If you have any questions please contact us at DOH.epo@doh.hawaii.gov or call us at (808) 586-4337. Thank you for the opportunity to comment.

Mahalo nui loa,

Laura Leialoha Phillips McIntyre, AICP
Environmental Planning Office

LM:nn

c: John Morgan, Kualoa Ranch Hawaii, Inc. (via email: johnmorgan@kualoa.com)
DOH: CWB, WWB, CAB, IRHB, SHWB {via email only}

Attachment: U.S. EPA EJSCREEN Report for Project Area

Attachment: U.S. EPA EJSCREEN Report for Project Area

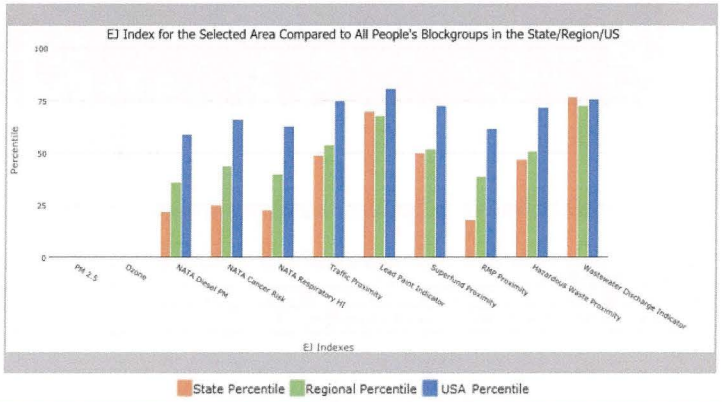
EJSCREEN Report (Version 2017)

1 mile Ring Centered at 21.520547,-157.837243, HAWAII, EPA Region 9

Approximate Population: 106

Input Area (sq. miles): 3.14

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
EJ Indexes			
EJ Index for PM2.5	N/A	N/A	N/A
EJ Index for Ozone	N/A	N/A	N/A
EJ Index for NATA* Diesel PM	22	36	59
EJ Index for NATA* Air Toxics Cancer Risk	25	44	66
EJ Index for NATA* Respiratory Hazard Index	23	40	63
EJ Index for Traffic Proximity and Volume	49	54	75
EJ Index for Lead Paint Indicator	70	68	81
EJ Index for Superfund Proximity	50	52	73
EJ Index for RMP Proximity	18	39	62
EJ Index for Hazardous Waste Proximity	47	51	72
EJ Index for Wastewater Discharge Indicator	77	73	76



This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.

EJSCREEN Report (Version 2017)

1 mile Ring Centered at 21.520547,-157.837243, HAWAII, EPA Region 9

Approximate Population: 106

Input Area (sq. miles): 3.14

Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	0

EPA United States Environmental Protection Agency

EJSCREEN Report (Version 2017)

1 mile Ring Centered at 21.520547,-157.837243, HAWAII, EPA Region 9

Approximate Population: 106

Input Area (sq. miles): 3.14

Selected Variables	Value	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
Environmental Indicators							
Particulate Matter (PM 2.5 in µg/m³)	N/A	N/A	N/A	9.9	N/A	9.14	N/A
Ozone (ppb)	N/A	N/A	N/A	41.8	N/A	38.4	N/A
NATA* Diesel PM (µg/m³)	0.0242	0.149	15	0.978	<50th	0.938	<50th
NATA* Cancer Risk (lifetime risk per million)	26	34	16	43	<50th	40	<50th
NATA* Respiratory Hazard Index	0.56	1	16	2	<50th	1.8	<50th
Traffic Proximity and Volume (daily traffic count/distance to road)	170	1000	51	1100	42	590	59
Lead Paint Indicator (% Pre-1960 Housing)	0.44	0.16	87	0.24	74	0.29	72
Superfund Proximity (site count/km distance)	0.064	0.1	56	0.15	46	0.13	51
RMP Proximity (facility count/km distance)	0.056	0.39	9	0.98	3	0.73	6
Hazardous Waste Proximity (facility count/km distance)	0.053	0.1	45	0.12	43	0.093	50
Wastewater Discharge Indicator (toxicity-weighted concentration/m distance)	3.1E-08	0.04	74	13	59	30	40
Demographic Indicators							
Demographic Index	52%	51%	53	47%	58	36%	75
Minority Population	79%	77%	42	59%	68	38%	84
Low Income Population	25%	26%	54	36%	38	34%	39
Linguistically Isolated Population	9%	6%	77	9%	62	5%	81
Population With Less Than High School Education	7%	9%	51	17%	32	13%	36
Population Under 5 years of age	4%	6%	29	7%	28	6%	30
Population over 64 years of age	16%	16%	56	13%	74	14%	68

* The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: https://www.epa.gov/national-air-toxics-assessment.

For additional information, see: www.epa.gov/environmentaljustice

EJSCREEN is a screening tool for pre-decisional use only. It can help identify areas that may warrant additional consideration, analysis, or outreach. It does not provide a basis for decision-making, but it may help identify potential areas of EJ concern. Users should keep in mind that screening tools are subject to substantial uncertainty in their demographic and environmental data, particularly when looking at small geographic areas. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports. This screening tool does not provide data on every environmental impact and demographic factor that may be relevant to a particular location. EJSCREEN outputs should be supplemented with additional information and local knowledge before taking any action to address potential EJ concerns.

G70

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July 11, 2018

Ms. Laura Leialoha Phillips McIntyre, AICP
State of Hawaii
Department of Health
Environmental Planning Office
P.O. Box 3378
Honolulu, HI 96801-3378

Subject: **Chapter 343, HRS Draft Environmental Assessment**
Kualoa Ranch Improvements
TMK: 4-9-005:01; 4-9-004:02; 5-1-001:01 (portion)
O'ahu, Ko'olau Poko District, Kualoa Ahupua'a

Dear Ms. Phillips McIntyre:

Thank you for your comment letter dated January 22, 2018 concerning the Chapter 343, Hawai'i Revised Statutes (HRS) Draft Environmental Assessment (EA) for the Kualoa Ranch Improvements project. The following responses are offered to your comments:

We appreciate the resources you have provided relating to Public Health Effects, Standard Comments, the Environmental Health Portal, Water Quality Standards Maps, and various sources on strategies to support the sustainable and healthy design of communities and buildings. The project will apply sustainability strategies and principles to the extent possible. The following responses are offered to your comments:

1. **Public Health Effects.** In its definition of 'impacts,' §11-200-2, Hawaii Administrative Rules (HAR) includes health effects, whether primary (direct), secondary (indirect), or cumulative. Further, §11-200-12(b)(5), HAR, lists public health as one of the criteria for determining whether an action may have a significant impact on the environment. As discussed in the Final EA (FEA), wastewater disposal (Section 3.13) will likely be through the use of an absorption bed. Due to the makai location and shallow brackish water lens, there is no potential for leached effluent to reach the potable drinking water aquifer. Air quality (Section 3.15) will be protected by using best management practices during construction. Operation of the proposed recreational uses will not generate adverse air quality impacts.

2. **State Standard Comments.** The State standard comments and available strategies to support sustainable and healthy design have been reviewed and will be adhered to during the development and implementation of the Project. For example, the nearshore ocean water of the Pacific Ocean is classified as high quality (Class A) waters by the State Department of Health (DOH). According to HAR 11-54-1 antidegradation policy, existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected. Phase I Environmental Site Assessments previously conducted at various sites throughout Kualoa were found to have no or undetermined hazards and therefore low priority or no further action necessary. An assessment completed at the Sugar Mill onsite found no evidence of pesticides associated with the sugar cane industry.

3. **Clean Water Branch (CWB) Requirements.** Requirements of the CWB and/or the National Pollutant Discharge Elimination System permit (HAR 11-55) will be followed during the project (Section 3.4), and the project team will coordinate with CWB, Engineering Section.

4. **Wastewater Systems.** All wastewater plans will conform to HAR, Chapter 11-62, "Wastewater Systems".

5. **Fugitive Dust.** Dust control measures will be implemented by the contractor to minimize fugitive dust emissions caused by construction work (Section 3.15).

6. **Solid Waste.** Construction-generated solid waste will be disposed of at an approved City and County of Honolulu refuse facility (Section 3.16).

7. **Community Noise Control.** We acknowledge that for noise created during the construction phase of the project, a noise permit may be required and needs to be obtained before the commencement of work (Section 3.15).

8. **Hawaii Environmental Health Portal.** The Hawaii Environmental Health Portal has been consulted in the formulation of the FEA to determine applicable permitting requirements.

9. **Hawaii Disability and Communication Access Board.** Access for persons with disabilities is included through all phases of design and construction, and the Kualoa improvements will comply with all applicable accessibility requirements. Advice and recommendations from DCAB will be sought prior to commencing with construction.

10. **Environmental Justice.** Thank you for providing guidance on the availability of the EJSCREEN tool relating to Environmental Justice. The use of the property for agriculture and outdoor recreation is planned to continue without affecting adjoining communities.

We will provide you a copy of the Final EA. Thank you for your participation in the environmental review process.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal Planner

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

January 19, 2018

G70 International, Inc.
Attention: Mr. Jeffrey H. Overton
925 Bethel Street, 5th Floor
Honolulu, Hawaii 96813

via email: kualoa@g70.design.com

Dear Mr. Overton:

SUBJECT: Draft Environmental Assessment (DEA) for **Kualoa Ranch Improvements**

Thank you for the opportunity to review and comment on the subject matter. The Department of Land and Natural Resources' (DLNR) Land Division distributed or made available a copy of your report pertaining to the subject matter to DLNR Divisions for their review and comments.

At this time, enclosed are comments from the (a) Land Division – Oahu District and (b) Engineering Division on the subject matter. Should you have any questions, please feel free to call Lydia Morikawa at 587-0410. Thank you.

Sincerely,

Russell Y. Tsuji
Land Administrator

Enclosure(s)

cc: Central Files

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

January 3, 2018

RECEIVED
LAND DIVISION
2018 JAN -9 AM 6:41
DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

MEMORANDUM

TO: **DLNR Agencies:**
__Div. of Aquatic Resources
__Div. of Boating & Ocean Recreation
X Engineering Division
X Div. of Forestry & Wildlife
__Div. of State Parks
X Commission on Water Resource Management
__Office of Conservation & Coastal Lands
X Land Division – Oahu District
X Historic Preservation

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Draft Environmental Assessment (DEA) for **Kualoa Ranch Improvements**
LOCATION: Koolaupoko District, Island of Oahu; TMK No. (1) 4-9-005:001; 4-9-004:002, 5-1-001:001 (por)
APPLICANT: Kualoa Ranch Hawaii

Transmitted for your review and comment is information on the above-referenced project. Please submit any comments by **January 19, 2017.**

The DEA can be found on-line at: http://health.hawaii.gov/oeqc/ (Click on the Current Environmental Notice in the middle of the page.)

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Lydia Morikawa at 587-0410. Thank you.

( ) We have no objections.
(✓) We have no comments.
( ) Comments are attached.

Signed: Darlene Bryant-Takamatsu

Print Name: Darlene Bryant-Takamatsu
Date: 1/8/18

Attachment
cc: Central Files

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

January 3, 2018

MEMORANDUM

'18 JAN 03 AM 11:02 ENGINEERING
RECEIVED
LAND DIVISION

2018 JAN 19 AM 11:05
DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

TO:

DLNR Agencies:
__Div. of Aquatic Resources
__Div. of Boating & Ocean Recreation
X Engineering Division
X Div. of Forestry & Wildlife
__Div. of State Parks
X Commission on Water Resource Management
__Office of Conservation & Coastal Lands
X Land Division – Oahu District
X Historic Preservation

FROM

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Draft Environmental Assessment (DEA) for **Kualoa Ranch Improvements**
LOCATION: Koolaupoko District, Island of Oahu; TMK No. (1) 4-9-005:001; 4-9-004:002, 5-1-001:001 (por)
APPLICANT: Kualoa Ranch Hawaii

Transmitted for your review and comment is information on the above-referenced project. Please submit any comments by **January 19, 2017.**

The DEA can be found on-line at: http://health.hawaii.gov/oeqc/ (Click on the Current Environmental Notice in the middle of the page.)

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Lydia Morikawa at 587-0410. Thank you.

( ) We have no objections.
( ) We have no comments.
(✓) Comments are attached.

Signed: _____
Print Name: Carty S. Chang, Chief Engineer
Date: 1/12/18

Attachment
cc: Central Files

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LD/Russell Y. Tsuji
Ref: Draft Environmental Assessment (DEA) for Kualoa Ranch Improvements, Koolaupoko District, Island of Oahu; TMK No. (1) 4-9-005:001; 4-9-004:002, 5-1-001:001 (por.)

COMMENTS

The rules and regulations of the National Flood Insurance Program (NFIP), Title 44 of the Code of Federal Regulations (44CFR), are in effect when development falls within a Special Flood Hazard Area (high risk areas). Be advised that 44CFR reflects the minimum standards as set forth by the NFIP. Local community flood ordinances may stipulate higher standards that can be more restrictive and would take precedence over the minimum NFIP standards.

The owner of the project property and/or their representative is responsible to research the Flood Hazard Zone designation for the project. Flood Hazard Zones are designated on FEMA's Flood Insurance Rate Maps (FIRM), which can be viewed on our Flood Hazard Assessment Tool (FHAT) (http://gis.hawaiinfip.org/FHAT).

If there are questions regarding the local flood ordinances, please contact the applicable County NFIP coordinating agency below:

- Oahu: City and County of Honolulu, Department of Planning and Permitting (808) 768-8098.
- Hawaii Island: County of Hawaii, Department of Public Works (808) 961-8327.
- Maui/Molokai/Lanai County of Maui, Department of Planning (808) 270-7253.
- Kauai: County of Kauai, Department of Public Works (808) 241-4846.

Signed: _____
CARTY S. CHANG, CHIEF ENGINEER

Date: 1/12/18

111 S. King Street
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Honolulu, HI 96813
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July 11, 2018

Mr. Russell Y. Tsuji
Land Administrator
State of Hawaii
Department of Land and Natural Resources
Land Division
P.O. Box 621
Honolulu, HI 96809

Subject: **Chapter 343, HRS Draft Environmental Assessment**
Kualoa Ranch Improvements
TMK: 4-9-005:01; 4-9-004:02; 5-1-001:01 (portion)
O'ahu, Ko'olau Poko District, Kualoa Ahupua'a

Dear Mr. Tsuji:

Thank you for your comment letter dated January 19, 2018 concerning the Chapter 343, Hawai'i Revised Statutes (HRS) Draft Environmental Assessment (EA) for the Kualoa Ranch Improvements project.

We appreciate you providing us with comments from the Land Division – O'ahu District, the Engineering Division, and the Commission on Water Resource Management. We will directly provide our responses to each respective Division.

We will provide you a copy of the Final EA. Thank you for your participation in the environmental review process.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal Planner

111 S. King Street
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Honolulu, HI 96813
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www.g70.design

July 11, 2018

Ms. Darlene Bryant-Takanatsu
State of Hawaii
Department of Land and Natural Resources
Land Division – Oahu District
P.O. Box 621
Honolulu, HI 96809

Subject: **Chapter 343, HRS Draft Environmental Assessment**
Kualoa Ranch Improvements
TMK: 4-9-005:01; 4-9-004:02; 5-1-001:01 (portion)
O'ahu, Ko'olau Poko District, Kualoa Ahupua'a

Dear Ms. Bryant-Takanatsu:

Thank you for your comment letter dated January 8, 2018 concerning the Chapter 343, Hawai'i Revised Statutes (HRS) Draft Environmental Assessment (EA) for the Kualoa Ranch Improvements project.

We understand that the Department of Land and Natural Resources, Land Division – Oahu District has no comments at this time.

We will provide you a copy of the Final EA. Thank you for your participation in the environmental review process.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal Planner

ARCHITECTURE // CIVIL ENGINEERING // INTERIOR DESIGN // PLANNING & ENVIRONMENT

G70

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July 11, 2018

Mr. Carty S. Chang, Chief Engineer
State of Hawai'i
Department of Land and Natural Resources
Engineering Division
P.O. Box 621
Honolulu, HI 96809

Subject: **Chapter 343, HRS Draft Environmental Assessment**
Kualoa Ranch Improvements
TMK: 4-9-005:01; 4-9-004:02; 5-1-001:01 (portion)
O'ahu, Ko'olau Poko District, Kualoa Ahupua'a

Dear Ms. Chang:

Thank you for your comment letter dated January 18, 2018 concerning the Chapter 343, Hawai'i Revised Statutes (HRS) Draft Environmental Assessment (EA) for the Kualoa Ranch Improvements project.

We note that the rules and regulations of the National Flood Insurance Program, Title 44 of the Code of Federal Regulations are in effect if a development falls within a designated flood hazard. The project sites are located in Zone X, which are classified as areas of minimal flood risk, outside of the 0.2% annual chance floodplain. Additional information regarding flood conditions of the Ranch is located in Chapter 1 and Chapter 3.6 of the EA.

We will provide you a copy of the Final EA. Thank you for your participation in the environmental review process.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal Planner

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

January 24, 2018

G70 International, Inc.
Attention: Mr. Jeffrey H. Overton
925 Bethel Street, 5th Floor
Honolulu, Hawaii 96813

via email: kualoa@G70.design.com

Dear Mr. Overton:

SUBJECT: Draft Environmental Assessment (DEA) for **Kualoa Ranch Improvements**

Thank you for the opportunity to review and comment on the subject matter. In addition to the comments previously sent you dated January 19, 2018, enclosed are comments from the Commission on Water Resource Management on the subject matter. Should you have any questions, please feel free to call Lydia Morikawa at 587-0410. Thank you.

Sincerely,

for Russell Y. Tsuji
Land Administrator

Enclosure(s)
cc: Central Files

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

January 3, 2018

2018 JAN -3 PM 3:23

MEMORANDUM

TO: **DLNR Agencies:**
__Div. of Aquatic Resources
__Div. of Boating & Ocean Recreation
X Engineering Division
X Div. of Forestry & Wildlife
__Div. of State Parks
X Commission on Water Resource Management
__Office of Conservation & Coastal Lands
X Land Division – Oahu District
X Historic Preservation

2018 JAN 24 AM

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Draft Environmental Assessment (DEA) for **Kualoa Ranch Improvements**
LOCATION: Koolaupoko District, Island of Oahu; TMK No. (1) 4-9-005:001; 4-9-004:002, 5-1-001:001 (por)
APPLICANT: Kualoa Ranch Hawaii

Transmitted for your review and comment is information on the above-referenced project. Please submit any comments by **January 19, 2017.**

The DEA can be found on-line at: http://health.hawaii.gov/oeqc/ (Click on the Current Environmental Notice in the middle of the page.)

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Lydia Morikawa at 587-0410. Thank you.

( ) We have no objections.
( ) We have no comments.
(x) Comments are attached.

Signed: /s/ Jeffrey T. Pearson, P.E.

Print Name: Deputy Director
Date: January 23, 2018

FILE ID: RFD.4760.3
DOC ID: 192981

Attachment
cc: Central Files

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON

WILLIAM D. BALFOUR, JR.
KAMANA BEAMER, PH.D.
MICHAEL G. BUCK
NEIL J. HANNAHS
PAUL J. MEYER
VIRGINIA PRESSLER, M.D.

JEFFREY T. PEARSON, P.E.
DEPUTY DIRECTOR

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

January 23, 2018

REF: RFD.4760.3

TO: Mr. Russell Tsuji, Administrator
Land Division

FROM: Jeffrey T. Pearson, P.E., Deputy Director
Commission on Water Resource Management

SUBJECT: Draft Environmental Assessment (DEA) for Kualoa Ranch Improvements

FILE NO.: RFD.4760.3
TMK NO.: (1) 4-9-005:001; 4-9-004:002, 5-1-001:001 (por)

Thank you for the opportunity to review the subject document. The Commission on Water Resource Management (CWRM) is the agency responsible for administering the State Water Code (Code). Under the Code, all waters of the State are held in trust for the benefit of the citizens of the State, therefore all water use is subject to legally protected water rights. CWRM strongly promotes the efficient use of Hawaii's water resources through conservation measures and appropriate resource management. For more information, please refer to the State Water Code, Chapter 174C, Hawaii Revised Statutes, and Hawaii Administrative Rules, Chapters 13-167 to 13-171. These documents are available via the Internet at http://dlnr.hawaii.gov/cwrm.

Our comments related to water resources are checked off below.

[X] 1. We recommend coordination with the county to incorporate this project into the county's Water Use and Development Plan. Please contact the respective Planning Department and/or Department of Water Supply for further information.

[ ] 2. We recommend coordination with the Engineering Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.

[ ] 3. We recommend coordination with the Hawaii Department of Agriculture (HDOA) to incorporate the reclassification of agricultural zoned land and the redistribution of agricultural resources into the State's Agricultural Water Use and Development Plan (AWUDP). Please contact the HDOA for more information.

[X] 4. We recommend that water efficient fixtures be installed and water efficient practices implemented throughout the development to reduce the increased demand on the area's freshwater resources. Reducing the water usage of a home or building may earn credit towards Leadership in Energy and Environmental Design (LEED) certification. More information on LEED certification is available at http://www.usgbc.org/leed. A listing of fixtures certified by the EAP as having high water efficiency can be found at http://www.epa.gov/watersense.

[X] 5. We recommend the use of best management practices (BMP) for stormwater management to minimize the impact of the project to the existing area's hydrology while maintaining on-site infiltration and preventing polluted runoff from storm events. Stormwater management BMPs may earn credit toward LEED certification. More information on stormwater BMPs can be found at http://planning.hawaii.gov/czm/initiatives/low-impact-development/

[X] 6. We recommend the use of alternative water sources, wherever practicable.

[X] 7. We recommend participating in the Hawaii Green Business Program, that assists and recognizes businesses that strive to operate in an environmentally and socially responsible manner. The program description can be found online at http://energy.hawaii.gov/green-business-program.

[X] 8. We recommend adopting landscape irrigation conservation best management practices endorsed by the Landscape Industry Council of Hawaii. These practices can be found online at http://www.hawaiiscape.com/wp-content/uploads/2013/04/LICH_Irrigation_Conservation_BMPs.pdf.

- [ ] 9. There may be the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.
- [ ] 10. The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit is required prior to use of water. The Water Use Permit may be conditioned on the requirement to use dual line water supply systems for new industrial and commercial developments.
- [ ] 11. A Well Construction Permit(s) is (are) are required before the commencement of any well construction work.
- [ ] 12. A Pump Installation Permit(s) is (are) required before ground water is developed as a source of supply for the project.
- [ ] 13. There is (are) well(s) located on or adjacent to this project. If wells are not planned to be used and will be affected by any new construction, they must be properly abandoned and sealed. A permit for well abandonment must be obtained.
- [ ] 14. Ground-water withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.
- [ ] 15. A Stream Channel Alteration Permit(s) is (are) required before any alteration can be made to the bed and/or banks of a steam channel.
- [ ] 16. A Stream Diversion Works Permit(s) is (are) required before any stream diversion works is constructed or altered.
- [ ] 17. A Petition to Amend the Interim Instream Flow Standard is required for any new or expanded diversion(s) of surface water.
- [ ] 18. The planned source of water for this project has not been identified in this report. Therefore, we cannot determine what permits or petitions are required from our office, or whether there are potential impacts to water resources.

- [x] OTHER: Please provide more information on the non-potable Hakipuu water system, including a map showing the location of the diversion and a schematic diagram of the system. If an expansion of this diversion works is needed to support increased non-potable demands, then permits and approvals from the Commission may be required.

  If new wells are to be drilled, or use of the two existing wells is planned, permits from the Commission may be required, and the DEA should also discuss the ground water resources of the area and anticipated impacts on public trust resources and uses.

If you have any questions, please contact Lenore Ohye of the Commission staff at 587-0216.

G70
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Honolulu, HI 96813
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July 11, 2018

Mr. Jeffrey T. Pearson, P.E.
Deputy Director
State of Hawai'i, Department of Land and Natural Resources
Commission on Water Resource Management
P.O. Box 621
Honolulu, HI 96809

Subject: Chapter 343, HRS Draft Environmental Assessment
Kualoa Ranch Improvements
TMK: 4-9-005:01; 4-9-004:02; 5-1-001:01 (portion)
O'ahu, Ko'olau Poko District, Kualoa Ahupua'a

Dear Mr. Pearson:

Thank you for your comment letter dated January 23, 2018 concerning the Chapter 343, Hawai'i Revised Statutes (HRS) Draft Environmental Assessment (EA) for the Kualoa Ranch Improvements project. The following responses are offered to your comments:

1. **Water Use and Development Plan**
   We acknowledge your recommendation to coordinate with the county for incorporation of this project into the county's Water Use and Development Plan. Kualoa's water use is well below the available aquifer capacity. Although this particular improvement project is not listed, Kualoa Ranch is included in both the Ko'olau Poko and Ko'olau Loa Watershed Management Plans, which will be used to meet the requirements for preparing the O'ahu Water Use and Development Plan.

2. **Water Efficient Fixtures**
   We acknowledge your recommendation that water efficient fixtures be installed and water efficient practices implemented throughout the development to reduce the increased demand on the area's freshwater resources. Low-flow plumbing fixtures will be installed in restrooms to assist in maximizing water efficiency within the buildings and reduce the burden on municipal water supply and wastewater systems. The application of sustainable design concepts will be utilized as much as feasible in the physical design of the buildings.

3. **Stormwater Best Management Practices (BMPs)**
   We acknowledge your recommendation for the use of Best Management Practices (BMP) for stormwater management to minimize the impact of the project to the existing area's hydrology while maintaining on-site infiltration and preventing polluted runoff from storm events. Based on future soil percolation testing, possible post-construction storm water BMPs could include biofiltration (vegetated bio-filters, vegetated buffer strips), retention (infiltration basin, infiltration trench, subsurface infiltration, bioretention basin), or alternate compliance (sand filter, detention basin).

Kualoa is also considering using storm water for irrigation to reduce potable water demand. These and other actions will be further described in a Storm Water Quality Strategic Plan during the design stage as required by Section 20-3-50.

4. **Alternative Water Sources**
   We acknowledge your recommendation for the use of alternative water sources, wherever practicable. Surface water from Hakipu'u stream is currently piped to Kualoa to irrigate and provide water for livestock.

5. **Hawai'i Green Business Program**
   We acknowledge your recommendation to participate in the Hawai'i Green Business Program, that assists and recognizes businesses that strive to operate in an environmentally and socially responsible manner. Although not directly related, Hawai'i Ecotourism Association recognized Kualoa Ranch as an Inaugural Certified Ecotour Operator in 2011, and in 2013, Kualoa Ranch was selected as the Region VI Environmental Stewardship Award winner for its dedication as a ranch to sustainable practices and environmental conservation.

6. **Landscape Irrigations BMPs**
   Landscape irrigation conservation BMPs endorsed by the Landscape Industry Council of Hawai'i will be used in the areas surrounding the Ranch Headquarters and Palikū. This includes designing irrigation system with sprinklers spaced with head to head coverage or better; using water conservation irrigation components such as rotary nozzles, pressure regulated spray heads and valves, rain switches and high efficiency nozzles; installing check valves; incorporating compost; and using non-potable water.

7. **Hakipu'u Non-potable Water System**
   An existing non-potable water tank is located in Palikū. The tank supplies agricultural water for livestock and is served from a water collection system that comes from Hakipu'u Valley. The attached map shows the location of the diversions. Site 1 is a pump withdrawal method and the water is used for the cultivation of shrimp and tilapia at Hakipu'u Aquaculture center. Site 2 is a PVC pipe gravity intake method and the water is used to cultivate both tropical flowers at the flower farm, as well as to provide water for Kualoa's grass-fed beef cattle in the Hakipu'u area. Site 3 is not currently in use, however a cement intake box is present at this site. No expansion of this diversion system is expected.

8. **Well Drilling Permit**
   We acknowledge that a permit from the Commission may be required to drill a well in Ka'a'awa. Section 3.4 of the Final EA discuss the ground water resources of the area and anticipated impacts on public trust resources and uses.

We will provide you a copy of the Final EA. Thank you for your participation in the environmental review process.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal Planner

DAVID Y. IGE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
1151 PUNCHBOWL STREET, ROOM 325
HONOLULU, HAWAII 96813

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
FIRST DEPUTY

JEFFREY T. PEARSON, P.E.
DEPUTY DIRECTOR - WATER

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

Jeffrey Overton, AICP
Principal Planner, G70
925 Bethel Street, 5th Floor
Honolulu, HI 96813

January 22, 2018

Dear Jeffrey Overton,

The Department of Land and Natural Resources (DLNR) Division of Forestry and Wildlife (DOFAW) has received your inquiry regarding the Draft Environmental Assessment for Kualoa Ranch Improvements located at TMKs 4-9-005:02, 4-9-004:02, and 5-1-001:01. The planned improvements would include expansions of the visitor's center, administrative buildings, employee building, and horseback riding stables. Additional construction would include infrastructure improvements such as driveways, parking, water supply, wastewater management, and drainage. Kualoa Ranch also seeks to modify its existing Special Use Permit to allow agricultural and outdoor recreation tours with no area limit to trails, unrestrict the number of guests and recreational vehicles and increase operational hours. The improvements would create 36,760 sf of new ranch facilities bringing the entire facility to 84,112 square feet.

The State and Federally listed Hawaiian hoary bat (*Lasiurus cinereus semotus*) has the potential to occur in the vicinity of the project area. Therefore, DOFAW recommends avoiding using barbed wire, as bat mortalities have been documented as a result of becoming ensnared by barbed wire during flight. If any trees are planned for removal during the bat breeding season there is a risk of injury or mortality to juvenile bats. To avoid the potential for impacts to this species, woody plants greater than 15 feet (4.6 meters) tall should not be disturbed, removed, or trimmed during the bat birthing and pup rearing season (June 1 through September 15). Site clearing should be timed to avoid disturbance to breeding Hawaiian hoary bats.

Additionally, we note that artificial lighting can adversely impact seabirds that may pass through the area at night causing disorientation which could result in collision with manmade artifacts or grounding of birds. If nighttime lighting is required DOFAW recommends that any lights used be downward facing and fully shielded to minimize impacts, and all construction activities use sealed containers for waste to avoid attracting unwanted predators. Improvements are likely to increase the number of park users and may generate more trash. We recommend taking action to minimize predator presence; place bait stations for rodents and mongoose, and provide covered trash receptacles.

Should the proposed location of the project change, or should it become evident in the future that listed species are being impacted, DOFAW requests that the project proponent reinitiate consultation. If you have any questions, please contact Kate Cullison, Conservation Initiative Coordinator at 808-587-4148 or Katherine.cullison@hawaii.gov.

Sincerely,

James Cogswell
Wildlife Program Manager

G70
111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

July 11, 2018

Mr. James Cogswell
Wildlife Program Manager
State of Hawaii, Department of Land and Natural Resources
Division of Forestry and Wildlife
1151 Punchbowl Street, Room 325
Honolulu, HI 96813

Subject: Chapter 343, HRS Draft Environmental Assessment
Kualoa Ranch Improvements
TMK: 4-9-005:01; 4-9-004:02; 5-1-001:01 (portion)
Oʻahu, Koʻolau Poko District, Kualoa Ahupuaʻa

Dear Mr. Cogswell:

Thank you for your comment letter dated January 22, 2018 concerning the Chapter 343, Hawaiʻi Revised Statutes (HRS) Draft Environmental Assessment (EA) for the Kualoa Ranch Improvements project. The following responses are offered to your comments:

We acknowledge that the State and Federally listed Hawaiian hoary bat *(Lasiurus cinereus semotus)* has the potential to occur in the vicinity of the project. The Final EA (FEA) lists in Section 3.7 the avoidance and minimization measures for the Hawaiian hoary bat. Your comment with regard to the use of barbed wire for the safety of the Hawaiian hoary bat has been added to these measures.

We also acknowledge that seabirds have the potential to pass through the project area. The FEA lists in Section 3.7 the avoidance and minimization measures for seabirds. Your comments for minimizing predator presence have also been included in the FEA.

We will provide you a copy of the Final EA. Thank you for your participation in the environmental review process.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal Planner

DAVID Y. IGE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

JADE T. BUTAY
DIRECTOR

Deputy Director
ROY CATALANI
ROSS M. HIGASHI
EDWIN H. SNIFFEN
DARRELL T. YOUNG

IN REPLY REFER TO:
DIR 1641
HWY-PS 2.7690

June 14, 2018

RECEIVED
JUN 15 2018
G70

Mr. Jeffrey Overton
G70
925 Bethel Street, 5th Floor
Honolulu, Hawaii 96813-4307

Dear Mr. Overton:

Subject: Draft Environmental Assessment (DEA)
Kualoa Ranch Improvements
Oahu, Koolaupoko, TMK: (1) 4-9-005: 001; 4-9-004: 002; 5-1-001: 001 (Por)

Kualoa Ranch (Ranch) proposes to improve its Ranch Headquarters through expansion of facilities within the Ranch. The additional facilities, which would include a pavilion, Market, tour depots, administration and employee building, would amount to 36,760 SF. An additional 91 parking stalls would be a part of the expansion adding to the existing 233 stalls.

The Ranch accesses Kamehameha Highway, State Route 83, via Kualoa Ranch Driveway, a stop-controlled intersection.

An environmental assessment was prepared under, Hawaii Revised Statutes, Chapter 343 to comply with prerequisite requirements for applications for a Special Use Permit and Conditional Use Permit.

The DEA, dated December 2017, included a Traffic Impact Assessment (TIA) (September 15, 2015). We have received an updated TIA (TMC, May 3, 2018) and our comments will be addressed to this updated TIA.

The Hawaii Department of Transportation (HDOT) has the following comments:

1. The conclusion of the updated TIA that a left-turn storage lane on Kamehameha Highway was not warranted because the speed was posted at 35 mph compared to a 40 mph operating speed in the guidelines cited was not considered adequate justification, given that the warrants were otherwise met. Additional justification is needed or the conclusion needs to be revised and the improvement provided.

HWY-PS 2.7690

2. The Ranch should implement the recommended improvements. These improvements should be consistent with highway design standards and subject to HDOT review and approval. The improvements shall be at no cost to the State.

3. For future expansions, a relocated access intersection to Kamehameha Highway directly across from the Kualoa Regional Park access should be considered.

If there are any questions, please contact Ken Tatsuguchi, Engineering Program Manager, Highways Division, Planning Branch at (808) 587-1830. Please reference review file number 2018-003.

Sincerely,

JADE T. BUTAY
Director of Transportation

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July 11, 2018

Jade T. Butay, Director of Transportation
State of Hawai'i
Department of Transportation
869 Punchbowl Street
Honolulu, HI 96813

Subject: **Chapter 343, HRS Draft Environmental Assessment**
Kualoa Ranch Improvements
TMK: 4-9-005:01; 4-9-004:02; 5-1-001:01 (portion)
O'ahu, Ko'olau Poko District, Kualoa Ahupua'a

Dear Mr. Butay:

Thank you for your comment letter dated June 14, 2018 concerning the Chapter 343, Hawai'i Revised Statutes (HRS) Draft Environmental Assessment (EA) for the Kualoa Ranch Improvements project.

We acknowledge your comment that the Traffic Impact Assessment (TIA) conclusion of a left-turn storage lane was not warranted. The left-turn lane conclusion is a statement based upon the American Association of State Highway and Transportation Officials (AASHTO) guidelines, of which AASHTO provides for local interpretation. The TIA provides traffic mitigation in Section V.A.3. for the left-turn movement. We will continue to work closely with Department of Transportation (DOT) to implement a traffic control plan as necessary.

The recommended improvements will be implemented and consistent with highway design standards and subject to DOT review and approval, without cost to the State. For future expansions, we will consider a relocated access intersection to Kamehameha Highway directly across from the Kualoa Regional Park access.

We will provide you a copy of the Final EA. Thank you for your participation in the environmental review process.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal Planner

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843
www.boardofwatersupply.com

January 22, 2018

KIRK CALDWELL, MAYOR

BRYAN P. ANDAYA, Chair
KAPUA SPROAT, Vice Chair
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RAY C. SOON

ROSS S. SASAMURA, Ex-Officio
JADE T. BUTAY, Ex-Officio

ERNEST Y. W. LAU, P.E.
Manager and Chief Engineer

ELLEN E. KITAMURA, P.E.
Deputy Manager and Chief Engineer

RECEIVED
JAN 29 2018
G70

Mr. Jeffrey Overton
Group 70 International, Inc., dba G70
925 Bethel Street, Fifth Floor
Honolulu, Hawaii 96813-4307

Dear Mr. Overton:

Subject: Your Letter Dated December 22, 2017 Requesting Comments on the Draft Environmental Assessment for the Proposed Kualoa Ranch Improvements
Tax Map Key: 4-9-005: 001, 4-9-004: 002, and 5-1-001: 001

Thank you for the opportunity to comment on the proposed ranch improvements.

The existing water system is adequate to accommodate the proposed ranch improvements. However, please be advised that this information is based upon current data, and therefore, the Board of Water Supply reserves the right to change any position or information stated herein up until the final approval of the building permit application. The final decision on the availability of water will be confirmed when the building permit application is submitted for approval.

When water is made available, the applicant will be required to pay our Water System Facilities Charges for resource development, transmission and daily storage.

The on-site fire protection requirements should be coordinated with the Fire Prevention Bureau of the Honolulu Fire Department.

If you have any questions, please contact Robert Chun, Project Review Branch of our Water Resources Division at 748-5443.

Very truly yours,

ERNEST Y. W. LAU, P.E.
Manager and Chief Engineer

G70

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Suite 170
Honolulu, HI 96813
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July 11, 2018

Mr. Ernest Y.W. Lau, P.E.
Manager and Chief Engineer
City and County of Honolulu
Board of Water Supply
630 South Beretania Street
Honolulu, HI 96843

Subject: Chapter 343, HRS Draft Environmental Assessment
Kualoa Ranch Improvements
TMK: 4-9-005:01; 4-9-004:02; 5-1-001:01 (portion)
O'ahu, Ko'olau Poko District, Kualoa Ahupua'a

Dear Mr. Lau:

Thank you for your comment letter dated January 22, 2018 concerning the Chapter 343, Hawai'i Revised Statutes (HRS) Draft Environmental Assessment (EA) for the Kualoa Ranch Improvements project. The following responses are offered to your comments:

1. **Existing Water System.** We acknowledge your assessment that the existing water system is adequate to accommodate the ranch improvements. We further recognize that the Board of Water Supply (BWS) reserves the right to change its position on water availability until the building permit application has been approved.

2. **Water System Facilities Charge.** We acknowledge that once water is made available, Kualoa will be required to pay a Water System Facilities Charge for resource development, transmission and daily storage.

3. **Fire Protection Requirements.** The on-site fire protection requirements will be coordinated with the Fire Prevention Bureau of the Honolulu Fire Department during further planning and design of the ranch improvements.

We will provide you a copy of the Final EA. Thank you for your participation in the environmental review process.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal Planner

DEPARTMENT OF DESIGN AND CONSTRUCTION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 11TH FLOOR
HONOLULU, HAWAII 96813
Phone: (808) 768-8480 • Fax: (808) 768-4567
Web site: www.honolulu.gov

KIRK CALDWELL
MAYOR

ROBERT J. KRONING, P.E.
DIRECTOR

MARK YONAMINE, P.E.
DEPUTY DIRECTOR

January 17, 2018

RECEIVED
JAN 23 2018
G70

G70
ATTN: Jeff Overton
925 Bethel Street, Fifth Floor
Honolulu, Hawaii 96813

Dear Mr. Overton,

Subject: Chapter 343, HRS Draft Environmental Assessment Kualoa Ranch Improvements TMK: 4-9-005:01; 4-9-004:02; 5-1-001:01

Thank you for the opportunity to review and comment. The Department of Design and Construction has no comments at this time.

Should you have any further questions, please call me at 768-8480.

Sincerely,

Robert J. Kroning
Director

RJK:ms(713738)

G70

111 S. King Street
Suite 170
Honolulu, HI 96813
808.523.5866
www.g70.design

July 11, 2018

Mr. Robert J. Kroning, Director
City and County of Honolulu
Department of Design and Construction
650 S. King Street, 11th Floor
Honolulu, HI 96813

Subject: **Chapter 343, HRS Draft Environmental Assessment**
Kualoa Ranch Improvements
TMK: 4-9-005:01; 4-9-004:02; 5-1-001:01 (portion)
O'ahu, Ko'olau Poko District, Kualoa Ahupua'a

Dear Mr. Kroning:

Thank you for your comment letter dated January 17, 2018 concerning the Chapter 343, Hawai'i Revised Statutes (HRS) Draft Environmental Assessment (EA) for the Kualoa Ranch Improvements project.

We understand that the Department of Design and Construction has no comments at this time.

We will provide you a copy of the Final EA. Thank you for your participation in the environmental review process.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal Planner

DEPARTMENT OF FACILITY MAINTENANCE
CITY AND COUNTY OF HONOLULU
1000 Ulu'ohia Street, Suite 215, Kapolei, Hawaii 96707
Phone: (808) 768-3343 • Fax: (808) 768-3381
Website: www.honolulu.gov

KIRK CALDWELL
MAYOR

ROSS S. SASAMURA, P.E.
DIRECTOR AND CHIEF ENGINEER

EDUARDO P. MANGLALLAN
DEPUTY DIRECTOR

IN REPLY REFER TO:
DRM 18-20

January 11, 2018

RECEIVED
JAN 18 2018
G70

Mr. Jeff Overton
Group 70 International, Inc.
925 Bethel Street, 5th Floor
Honolulu, Hawaii 96813

Dear Mr. Overton:

SUBJECT: Draft Environmental Assessment Kualoa Ranch Improvements, TMK: 4-9-005:01; 4-9-004:02; 5-1-001:01

Thank you for the opportunity to review and to give our input regarding the subject project.

We have no comments at this time, as we do not have any facilities or easements on the subject property.

If you have any questions, please call Mr. Kyle Oyasato of the Division of Road Maintenance at 768-3697.

Sincerely,

Ross S. Sasamura, P. E.
Director and Chief Engineer

G70

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July 11, 2018

Mr. Ross S. Sasamura, P.E.
Director and Chief Engineer
City and County of Honolulu
Department of Facility Maintenance
1000 Ulu'ohia Street, Suite 215
Kapolei, HI 96707

Subject: **Chapter 343, HRS Draft Environmental Assessment**
Kualoa Ranch Improvements
TMK: 4-9-005:01; 4-9-004:02; 5-1-001:01 (portion)
O'ahu, Ko'olau Poko District, Kualoa Ahupua'a

Dear Mr. Sasamura:

Thank you for your comment letter dated January 11, 2018 concerning the Chapter 343, Hawai'i Revised Statutes (HRS) Draft Environmental Assessment (EA) for the Kualoa Ranch Improvements project.

We understand that the Department of Facility Maintenance has no comments at this time.

We will provide you a copy of the Final EA. Thank you for your participation in the environmental review process.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal Planner

DEPARTMENT OF PARKS & RECREATION
CITY AND COUNTY OF HONOLULU
1000 Uluohia Street, Suite 309, Kapolei, Hawaii 96707
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KIRK CALDWELL
MAYOR

MICHELE K. NEKOTA
DIRECTOR

JEANNE C. ISHIKAWA
DEPUTY DIRECTOR

RECEIVED
JAN 29 2018
G70

January 22, 2018

Mr. Jeffrey H. Overton, AICP, LEED, AP
G70
925 Bethel Street, 5th Floor
Honolulu, Hawaii 96813-4307

Dear Mr. Overton:

SUBJECT: Draft Environmental Assessment
Kualoa Ranch Improvements
TMK; 4-9-005:01; 4-9-004:002; 5-1-001:01 (portion)
Oahu, Koolau Poko District, Kualoa Ahupuaa

Thank you for the opportunity to review and comment on the subject Draft Environmental Assessment for Kualoa Ranch Improvements.

The Department of Parks and Recreation has no comment. As the proposed project will have no impact on any program or facility of the Department, you may remove us as a consulted party to the balance of the Environmental Impact Statement (EIS) process.

Should you have any questions, please contact John Reid, Planner at 768-3017.

Sincerely,

(for) Michele K. Nekota
Director

MKN:jr
(713872)

G70

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Suite 170
Honolulu, HI 96813
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July 11, 2018

Ms. Michel K. Nekota, Director
City and County of Honolulu
Department of Parks & Recreation
1000 Uluohia Street, Suite 309
Kapolei, HI 96707

Subject: **Chapter 343, HRS Draft Environmental Assessment**
Kualoa Ranch Improvements
TMK: 4-9-005:01; 4-9-004:02; 5-1-001:01 (portion)
O'ahu, Ko'olau Poko District, Kualoa Ahupua'a

Dear Ms. Nekota:

Thank you for your comment letter dated January 22, 2018 concerning the Chapter 343, Hawai'i Revised Statutes (HRS) Draft Environmental Assessment (EA) for the Kualoa Ranch Improvements project.

We understand that the Department of Parks and Recreation has no comment.

At your request, we will remove you as a consulted party for the balance of the EA process. Thank you for your participation.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal Planner

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
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KIRK CALDWELL
MAYOR

KATHY K. SOKUGAWA
ACTING DIRECTOR

TIMOTHY F. T. HIU
DEPUTY DIRECTOR

EUGENE H. TAKAHASHI
DEPUTY DIRECTOR

RECEIVED
JAN 23 2018
G70

2018/ED-1(ry)

January 22, 2018

Mr. Jeffrey H. Overton, AICP, LEED AP
Principal Planner
G70
925 Bethel Street, 5th Floor
Honolulu, Hawaii 96813

Dear Mr. Overton:

We have the following comments on the Draft Environmental Assessment (DEA) for Kualoa Ranch Improvements:

1. The proposal constitutes a major modification to Conditional Use Permit (CUP) No. 85/CUP-15 and a new CUP for outdoor recreation and/or agribusiness will be required. The Final Environmental Assessment (FEA) should describe how the proposal complies with the requirements of Land Use Ordinance (LUO) with emphasis on the requirements of a CUP.

2. Pursuant to the LUO, "personal services", which includes weddings venues, are not permitted uses in the Agricultural Zoning Districts. The FEA should explain how wedding and party venues could be permitted as the LUO prohibit these uses.

3. Portions of the project are within the Special Management Area (SMA). Development within the SMA must comply with Chapter 25, Revised Ordinances of Honolulu (ROH). "Development" includes change to the density or intensity of use of land. The proposed project increases intensity of use within the SMA. Therefore, a SMA permit will be required. The FEA should discuss compliance with Chapter 25, ROH, and provide sufficient details about the proposed uses within the SMA (including Molii Gardens as a wedding venue) in order to determine if the proposal would likely result in substantial environmental impact.

4. The FEA should explain the project's post-construction storm water quality management strategies pursuant to Section 20-3-50 of the Rules Relating to Water Quality.

5. The FEA should describe all proposed uses that are subject to approval under a Special Use Permit (SUP) and compare these uses to uses granted under the existing SUP.

6. Some thrill rides (single and multi-passengers ATVs) occur and/or are proposed for the project. Please be aware that the Hawaii Supreme Court (Case No. 7112) ruled on January 22, 1982 that a recreational theme park, which included cultural theme rides, restaurants, fast food shops, retail stores, exhibits, theaters, an amphitheater, a bank, nurseries, twelve acres of parking, a sewage treatment plant, and other related support services on agricultural land was not "unusual and reasonable use" and would not qualify for a SUP. The FEA should explain how the project compares with the Supreme Court ruling and whether the proposed project qualifies as a recreational theme park for which the above ruling applies.

Thank you for the opportunity to comment. Should you have any questions, please contact Raymond Young, of our staff, at 768-8049.

Very truly yours,

Eugene H. Takahashi
Deputy Director

EHT:ah
Doc 1552811

G70

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July 11, 2018

Mr. Eugene H. Takahashi
Deputy Director
City and County of Honolulu
Department of Planning and Permitting
650 South King Street, 7th Floor
Honolulu, HI 96813

Subject: **Chapter 343, HRS Draft Environmental Assessment**
Kualoa Ranch Improvements
TMK: 4-9-005:01; 4-9-004:02; 5-1-001:01 (portion)
O'ahu, Ko'olau Poko District, Kualoa Ahupua'a

Dear Mr. Takahashi:

Thank you for your comment letter dated January 22, 2018 concerning the Chapter 343, Hawai'i Revised Statutes (HRS) Draft Environmental Assessment (EA) for the Kualoa Ranch Improvements project. The following responses are offered to your comments:

1. **Compliance with LUO Requirements of a Conditional Use Permit (CUP).**
We acknowledge that a major modification to Conditional Use Permit (CUP) No. 85/CUP-15 for outdoor recreation and/or agribusiness will be required. Section 5.9 of the Final EA (FEA) presents details on compliance with the requirements of the Land Use Ordinance (LUO) for outdoor recreation facilities and agribusiness activities subject to a CUP-minor.

With regards to *Sec. 21-5.510 Recreational facilities – Outdoor*, not more than five riding animals will be kept for each acre of land within a site used for the horseback riding tours or stable. With a total land area of 3,850 acres, Kualoa Ranch has approximately 100 horses, or about 1 horse for every 40 acres. In addition, the current horse corral and farrier's shelter are over 700 feet from the nearest residential district. The new horse stable will be approximately 900 feet from the nearest residential district. Located in the AG-2 general agricultural district, Kualoa Ranch is dedicated to active agricultural use and open space. Agricultural uses account for 42% of the ranch land area, with preservation encompassing 57%, and other lands the remaining one percent. These uses are expected to continue for generations to come, particularly with Kualoa's agricultural commitment to consider Important Agricultural Lands (IAL) designation.

The Kualoa Visitor Center facilities provide a gathering place for people to learn about the agricultural uses and outdoor recreation uses at Kualoa. Retail space is one part of the overall support facilities, including ticketing, information, seating, food and beverage, dining, kitchen, restrooms and storage. The Café offers fresh Hawaiian-style homemade cooking and features locally-raised grass-fed Kualoa beef burgers. In accordance with *Sec. 21-5.10A Agribusiness* activities, Kualoa Market offers Kualoa and island agricultural products; jams, jellies, candies and pickled or dried produce made from those products; and Ranch wear, Hawaiian crafts, handcrafted jewelry, wood carvings and keiki items.

Motorized vehicles used for guided or self-guided tours will be used in conjunction with and incidental to the existing agricultural operation on the same site, educating visitors on the types of agricultural operations and production occurring at Kualoa.

A Farmers Market, featuring agricultural products from Kualoa and Oʻahu, will be held during daylight hours at the Ranch, strategically located for proximity to the parking lot. The Farmers Market will offer Kualoa meat products (beef, fish, shrimp and oysters) as well as tropical fruit and other agricultural products from Kualoa and around Oʻahu. A craft area will feature local artists and crafters, including sculptors who make and sell wood carvings made from trees grown at Kualoa.

2. **Personal Service Venues.**
Kualoa hosts wedding and party venues at several locations, and these experiences are closely tied to its core mission as an agricultural enterprise. Section 2.6 of the FEA describes how the agricultural and open space landscapes of Kualoa Ranch offer several locations for weddings and other group events. The nature of the agricultural land provides beautiful open spaces where couples seek to be married. Open pastures and garden settings provide tranquil and private locations for ceremonies. People are drawn to Kualoa to hold the event in the setting of an active working ranch and beautiful natural setting. Kualoa strictly limits the frequency, scale and time of these events.

3. **Special Management Area (SMA) Compliance.**
We acknowledge that the existing Mōliʻi Gardens facility is located within the SMA. The event use of this site is tied directly to the experience of the agricultural enterprise at Kualoa. This area is extensively farmed for fruit tree orchards, landscape field stock and aquaculture. Event attendees and Agricultural Tour guests are educated and experience the agricultural setting and products. No new structures or development is planned at this location. Final EA Section 5.5 includes analysis of the uses at the Mōliʻi Gardens location under the objectives and policies contained in HRS Section 205A-2 and Chapter 25, Revised Ordinances of Honolulu (ROH).

4. **Storm Water Quality Management.**
Section 3.4 of the FEA explains the project's post-construction storm water quality management strategies pursuant to Section 20-3-50 of the Rules Relating to Water Quality. Low Impact Development (LID) measures and Best Management Practices (BMP) are planned at Kualoa. Based on future soil percolation testing, possible post-construction storm water BMPs could include biofiltration (vegetated bio-filters, vegetated buffer strips), retention (infiltration basin, infiltration trench, subsurface infiltration, bioretention basin), or alternate compliance (sand filter, detention basin). Kualoa is also considering using storm water for irrigation to reduce potable water demand. These and other actions will be further described in a Storm Water Quality Strategic Plan during the design stage as required by Section 20-3-50.

5. **Special Use Permit (SUP) Uses.**
Section 2.11 of the FEA describes current uses granted under the existing Special Use Permit (SUP), and the planned uses that are subject to approval under the SUP modification. The activities approved in 1985 under the existing State SUP (85/SUP-2) apply to specific sites within the central portion of the ranch. The existing SUP specifies a variety of outdoor recreational activities, including: ATV Tour Road (4-wheel all-terrain vehicles); Target Shooting Range (.22 caliber rifle and pistol) *(discontinued);* Helipad *(discontinued);* and Maintenance Storage Building.

The SUP petition is requesting modification to: (1) Include the Ranch Headquarters and Support Facilities to the SUP area; (2) Include weddings and film production with agribusiness / outdoor recreation use; (3) Remove the Shooting Range (discontinued use); (4) Expand Agricultural & Outdoor Recreation tour routes; (5) Program Objectives for number of guests and recreational vehicles; and (6) Operational hours modified to 7:30 a.m. to 8:00 p.m. daily.

6. **Not a Recreational Theme Park.**
Improvements at Kualoa will not create a major commercial undertaking, such as the recreational theme park that was described in a 1982 Hawaiʻi Supreme Court ruling (Case No. 7112). The agricultural tours conducted at Kualoa, even with the use of single and multi-passenger ATVs, have none of the built features and intense land use as the 103-acre recreational theme park for which the 1982 Court ruling applies. For context here, the 1982 theme park would have been similar to mainland U.S. attractions, such as Great America or Six Flags Amusement Parks. The improvements at Kualoa will be very modest in scale and use, and conducted within existing facility sites, which total less than 13 acres within the 3,850-acre property.

The ATV rides at Kualoa occur on defined trails throughout the Ranch and use vehicles and trail routes that are also used for agricultural operations. Moving and handling cattle with ATVs is a common practice at Kualoa, and an increasing trend nationwide. The ATV tours at Kualoa are not a thrill ride, but rather a tour to expose the property and agricultural nature. The ATV tours are closely monitored with a lead tour guide and operate at speeds not to exceed 12 miles per hour. Riders that stray off the trail or exhibit reckless activities (like fishtailing) are immediately removed. To minimize the effects on the land by ATVs while accommodating an increase in visitors, Kualoa plans to use multi-passenger ATVs in the future.

Section 205-6, HRS, allows the "county planning commission to permit certain unusual and reasonable uses within the agricultural and rural districts other than those for which the district is classified. The county planning commission may, under such protective restrictions as may be deemed necessary, permit the desired use, but only when the use would promote the effectiveness and objective of this chapter."

In determining whether a proposed use is deemed "unusual and reasonable," Section 2-45 of the Planning Commission Rules established five guidelines:

a. *Such use shall not be contrary to the objectives sought to be accomplished by the Land Use Law and Regulations.*
b. *That the desired use would not adversely affect surrounding property.*
c. *Such use would not unreasonably burden public agencies to provide roads and streets, sewers, water, drainage and school improvements, and police and fire protection.*
d. *Unusual conditions, trends and needs have arisen since the district boundaries and regulations were established.*
e. *That the land upon which the proposed use is sought is unsuited for the uses permitted within the District.*

Kualoa is planning facility improvements to support its existing purposes of outdoor recreation uses. The SUP modifies the existing agribusiness operation and would not change the essential character of the agricultural district nor be inconsistent therewith. Plans for the SUP modification for Kualoa will generally meet the requirements of Chapter 205, HRS.

In comparison to Kualoa, the subject 1982 recreational theme park proposal failed to comply with the first and critical requirement, that the proposed use not run contrary to the objectives sought to be accomplished by the Land Use Laws and Regulations (the counterpart of the statutory mandate that the proposed use promote the effectiveness and objectives of HRS Chapter 205). The 1982 theme park covered 103 acres of agricultural land, a major commercial complex attracting 1.5 million people annually.

There is no comparison between the 1982 theme park and to the valued farming operation which Kualoa has conducted for over 150 years, successfully engaging its visitors to experience these lands at a sensible level.

We will provide you a copy of the Final EA. Thank you for your participation in the environmental review process.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal Planner

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU
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KIRK CALDWELL
MAYOR

WES FRYSZTACKI
DIRECTOR

JON Y. NOUCHI
DEPUTY DIRECTOR

TP12/17-714060R

January 31, 2018

Mr. Jeffrey H. Overton
Principal Planner
G70
925 Bethel Street, 5th Floor
Honolulu, Hawaii 96813-4307

Dear Mr. Overton:

SUBJECT: Kualoa Ranch Draft Environmental Assessment (DEA)

Thank you for the opportunity to provide comments on the Kualoa Ranch DEA. In response to your letter dated December 22, 2017 we have the following comments:

1. **Traffic Impact Analysis Report (TIAR).** We have the following comments on the TIAR:

   a. The TIAR in the DEA should be replaced with a Transportation Impact Assessment (TIA) that analyzes the multi-modal nature of all alternatives adjacent to City streets, the improvements needed, and recognizes the need for traffic control devices that encourage walking, bicycling, and transit use as the primary access modes for the proposed project. The TIA should identify parking management strategies both on- and off-street that will support sustainable mobility. The TIA should identify the locations of all nearby bus stops that employees and visitors are likely to use.

   b. Use person trips instead of vehicle trip rates from the Institute of Traffic Engineer's Trip Generation Manual and assign these trips to the transportation system. This will require analysis of crossing treatments using National Cooperative Highway Research Program 562 methodology for pedestrian measures.

   c. In addition to the calculated Level of Service (LOS), the observational LOS should be provided.

   d. Define performance measures for use in the study:
      a. V/C ratio targets that are >1 for 1st and/or 2nd highest peak hours;
      b. Identify where vehicle LOS will not be used;
      c. Pedestrian LOS;
      d. Bicycle Level of Traffic Stress (LTS);
      e. Transit Capacity and Quality of Service.

   e. Define the specific transit, pedestrian and bicycle improvements necessary where assessment reveals less than average conditions.

   f. Provide a pedestrian circulation plan for the project site, including sidewalks and pathways in internal parking lots. Continuous sidewalks or facilities equivalent for walking as per the Complete Streets Design Manual shall be provided.

   g. Appendix E Traffic Assessment Report: 3rd sentence in 3rd paragraph on page 12 says "…left turn lane on Kamehameha Highway, during the existing Saturday peak hour of weekday traffic." It should be "Saturday peak hour traffic."

   h. Appendix E Traffic Assessment Report: Figure 8 (Existing Weekday PM Peak Hour Traffic) and Figure 10 (Weekday PM Peak Hour Traffic without Master Plan) are exactly the same. The vehicle volumes on Figures 10 should be higher than the volumes on Figure 8.

   i. Kamehameha Highway fronting the proposed project is under the jurisdiction of the Hawaii Department of Transportation. The City portion of the Kamehameha Highway should not have a significant impact by the proposed project.

2. **Parking.** We have the following comments related to parking:

   a. **Off-Street Parking Requirements.** Table 2.2 on page 2-11 of the DEA proposes that 43 more off-street spaces be provided than the Land Use Ordinance (LUO) minimum. The Department of Transportation Services (DTS) requires that the project provide the

LUO minimum required number of spaces (51). This ratio shall not be exceeded in order to encourage sustainable mobility, unless some of the required stalls are converted to bicycle or motorcycle parking areas of equivalent or larger area as per Sec. 21-6.60 (d) of the LUO (page 142). ADA compliant spaces shall be added to meet the standard.

b. **Off-Street Loading Requirements.** Table 2.3 on page 212 of the DEA proposes two more off-street loading spaces be provided than the LUO minimum. The DTS requires specific justification for the two extra loading spaces in the Environmental Assessment (EA).

c. **Shared Parking.** The DTS requires a Shared Parking Analysis, based on the Urban Land Institute Shared Parking model, and a shared parking strategy. The analysis should include a qualitative description of how Kualoa Ranch Hawaii, Inc. will monitor and manage opportunities for shared parking between the various users (visitors and employees) of any parking lot or facility.

d. **Electric Vehicle Parking.** Places of public accommodation with at least 100 parking spaces available for use by the general public shall have at least one parking space exclusively for electric vehicles and equipped with an electric vehicle charging system located anywhere in the parking structure, as per HRS §291-71.

e. **Bicycle Parking.** Short- and long-term bicycle parking shall be provided whenever new floor area or when a new parking facility is proposed and is also available for public and/or visitor access and shall be located as close as possible to the entrances to the principal uses.

The EA site plan shall illustrate publicly accessible, ground-level, short-term high-capacity bicycle parking facilities appropriate commercial use, as outlined in the Complete Streets Design Manual (page 161-162). Bicycle parking in the development shall include bicycle corrals that accommodate higher bicycle demand than sidewalk racks.

f. **Street Parking.** Any street parking for visitors should be metered to promote frequent turnover.

g. **Visitor Drop-Off.** The DTS has pedestrian and bicycle safety and accessibility concerns with the inclusion of a porte cochere in the design of the arrival area. Describe and illustrate in the site plan how the project will safety accommodate bicyclists and pedestrians in the arrival area.

3. **Complete Streets**. The following comments are related to Complete Streets:

a. **Complete Streets Policies**. The EA shall contain a discussion of compliance with County and State Complete Streets policies, pursuant to Act 54, Session Laws of Hawaii 2009, HRS §264-20.5 and ROH 12-15. The project shall describe how it complies with Complete Streets policies, including specific adherence to the following key Complete Streets principles: 1) safety; 2) Context Sensitive Solutions; 3) accessibility and mobility for all; 4) use and comfort of all users; 5) consistency of design guidelines and standards; 6) energy efficiency; 7) health; and 8) green infrastructure.

b. **Complete Streets Design**. The design of the project should be consistent with the City's Complete Streets ordinance and include features to encourage walking, bicycling and public transit. It should evaluate whether improvements and facilities are needed to aid vehicular, pedestrian, bicycle and public transportation circulation by implementing Complete Streets principles.

c. **External Bicycle Connectivity.** The Oahu Bike Plan has designated Kamehameha Highway as a proposed bike route adjacent to the project site. Provide a map and describe how the project will safely accommodate bicyclists entering the project site through the internal driveway and parking lots through the implementation of designated bicycle facilities.

d. **Streetscape Ecosystem**. Provide both a map, framework plan and further discussion of strategies and framework plan used for to manage stormwater for the project. Please see Chapter 9 of the Complete Streets Design Manual for specific guidelines to promote green stormwater infrastructure through ecological design, bioretention, detention, and infiltration.

e. **Traffic Calming Features (TCFs)**. Provide a site plan of all of the TCFs for the project site and illustrate how they comply with the Honolulu Complete Streets Design Manual.

4. **Traffic Management Plan (TMP).** Prepare a TMP which:

   a. Is jointly reviewed and accepted by the DTS and the Department of Planning and Permitting.

   b. Provides a discussion of the traffic impacts that the project may have on any surrounding City roadways, including short-term impacts during construction and long-term impacts after construction with corresponding measures to mitigate these impacts by applying Complete Streets principles.

   c. Includes a description of how the project will: promote, encourage, and monitor transit use by its residents, and inform employees, residents and visitors of shuttle programs.

   d. Construction materials and equipment should be transferred to and from the project site during off-peak traffic hours (8:30 a.m. to 3:30 p.m.) to minimize any possible disruption to pedestrians and traffic on the local streets and project driveways.

   e. Best practice TMPs provide the City with information by which to monitor construction areas. The City will require cameras where sidewalks are closed to help assess effectiveness of management.

   f. Construction schedules should be coordinated with other nearby properties that have planned developments to ensure minimal impacts on City streets.

5. **Public Transit Service.** Existing transit service is not adequately depicted in the EA. Please contact Public Transit Division to ensure that transit routes are accurately depicted on maps in the EA, and that the project development does not adversely affect public transit services (bus operations, bus routes, bus stops and para-transit operations); submit project plans to DTS - Public Transit Division (PTD) for review and approval. Contact DTS-PTD at 768-8396, 768-8370, 768-8374 or TheBusStop@honolulu.gov.

6. **Priority Guidelines on Sustainability.** In addressing priority guidelines on sustainability through HRS§226-108, the Project should consider certification by a sustainable building rating system, including but not limited to nationally recognized rating systems such as Leadership in Energy and Environmental Design (LEED) for Building Design and Construction Version 4.0 or another comparable State-approved, nationally recognized, and consensus-based guideline, standard, or system.

   The DTS supports certification such as LEED for Building Design and Construction Version 4.0 as it reduces impacts including but not limited to: a) minimizing the environmental harms associated with parking facilities, including automobile dependence, land consumption, and rainwater runoff; b) reducing pollution by promoting alternatives to conventionally fueled automobiles; c) increasing access to quality transit; d) reducing Vehicle Miles Traveled (VMT) through the integration of bicycle facilities; and e) compact, walkable development that encourages a density and diversity of surrounding uses.

7. **Sea Level Rise and Resilience**. Infrastructure improvements located within areas potentially exposed to chronic flooding with sea level rise shall be subject to an in-depth analysis of the potential impacts of sea level rise on elevation, tolerance for risk, and the lifetime of the proposed structure or infrastructure. Any significant improvements within existing footprints should be dependent on established, resilient design guidelines, or otherwise be subject to relocation to a more suitable area.

   The potential for chronic flooding with 3.2 feet of sea level rise (SLR-XA) shall be used as the vulnerability zone for planning purposes. Maps of the project area shall be provided for both the SLR-XA and flooded highways. The applicant shall recommend strategies and designs that increase the flood resiliency for new development or improvements within the SLR-XA that cannot be relocated, or seek opportunities to plan new development or projects well landward of the SLR-XA. See the following to determine vulnerability: http://www.pacioos.hawaii.edu/shoreline/slr-hawaii

8. **Driveway Design.** All alternatives should have driveways that are designed with the highest pedestrian and bicycle safety measures, have adequate sight distances and supplementary safety measures such as electronic devices at driveways to warn drivers of pedestrians crossing in front, and constructed to current City standards.

9. **Vehicle Ramps.** Vehicle parking ramps should be designed to accommodate demands so that vehicles will not queue onto public streets and block the roadways.

10. **Loading and Unloading.** All loading and unloading needs, including refuse and service delivery vehicles should be handled on-site, rather than on City roadways. In addition, the project should be designed to accommodate TheHandi-Van para-transit vehicles on-site, which require a minimum 31-foot turning radius, a 10-foot, 6-inch height clearance, and the ability to exit the site without reversing onto public roadways.

11. **Neighborhood Impacts**. The area Neighborhood Board, as well as the area residents, businesses, emergency personnel (fire, ambulance and police), Oahu Transit Services, Inc. (TheBus and TheHandi-Van), etc., should be kept apprised of the details of the proposed project and the impacts that the project may have on the adjoining local street area network.

12. **Street Usage Permit.** A street usage permit from the DTS should be obtained for any construction-related work that may require the temporary closure of any traffic lane on a City street.

13. **Americans with Disabilities Act (ADA) Requirements**. In accordance with the requirements of Ordinance No. 2412, as amended, the proposed sidewalk areas on and adjacent to the property shall meet City and County of Honolulu standards and ADA requirements. Pavement materials shall be chosen to withstand the uplifting and fracturing that may occur from any large trees. Any damage to the existing roadway and sidewalk area caused by the project should be repaired to current City standards as well as meet ADA requirements.

14. **Best Management Practice Controls.** Best Management Practice controls should be included at the construction site to prevent trailing of dirt and debris on City roadways.

15. **Disability and Communication Access Board (DCAB)**. Project plans (interior and exterior layouts, vehicular and pedestrian circulation, sidewalks, parking and pedestrian pathways, vehicular ingress/egress, etc.) should be reviewed and approved by the DCAB to ensure full compliance with the ADA.

Thank you for the opportunity to review this matter. Should you have any questions, please contact Nicola Szibbo of my staff at 768-8359.

Very truly yours,

Wes Frysztacki
Director

G70

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July 11, 2018

Mr. Wes Frysztacki, Director
City and County of Honolulu
Department of Transportation Services
650 S. King Street, 3rd Floor
Honolulu, HI 96813

Subject: **Chapter 343, HRS Draft Environmental Assessment**
Kualoa Ranch Improvements
TMK: 4-9-005:01; 4-9-004:02; 5-1-001:01 (portion)
O'ahu, Ko'olau Poko District, Kualoa Ahupua'a

Dear Mr. Frysztacki:

Thank you for your comment letter dated January 31, 2018 concerning the Chapter 343, Hawai'i Revised Statutes (HRS) Draft Environmental Assessment (EA) for the Kualoa Ranch Improvements project. It is important to note that Kualoa is a very rural 4,000 acre working ranch, and many of the Department of Transportation (DTS) comments relate to a more urban setting. The responses reflect the appropriate adaptation to the policies prescribed by the Department. The following responses are offered to your comments:

1. **Traffic Impact Analysis Report (TIAR)**
   a. **Kualoa Primary Access Modes.** The TIAR in the Draft EA has been replaced with a Transportation Impact Assessment (TIA) in the Final EA (FEA). The nearest City street is Ka'a'awa Valley Road. Walking and bicycling to the facility are not common along the State-owned Kamehameha Highway that fronts Kualoa Ranch. Traffic observations conducted over a 3-day period in March 2018 counted 0 bicycles entering the ranch, 1 bicycle on Kamehameha Highway passing the ranch, and 17 pedestrians entering and 9 exiting the ranch, assumed to have arrived/departed using TheBus. Walking typically occurs onsite after visitors arrive via City bus, chartered bus, and private vehicle.

   Throughout the study period, up to 24 percent of the Kualoa Ranch trips were buses and passenger vans. All parking is provided off-street, and no provisions are made for on-street parking. The stop for northbound buses 55 and 88A is 100 feet away from the Kualoa entrance. Southbound buses 55 and 88A stop 300 feet away from the Kualoa entrance. A bicycle corral will be available with the improvements.
   b. **Vehicle Trips.** Because of the remote location of Kualoa Ranch, visitors primarily arrive by vehicle. Traffic consultant preference is to use vehicle trips instead of person trips in this rural location. A crossing treatment available to bus users is currently located north of the Kualoa Ranch entrance on Kamehameha Highway.

   c. **Observational LOS.** The observational Level of Service (LOS) has been provided in addition to the calculated LOS.
   d. **Performance Measures.** The TIA-updated transportation surveys indicated that use of the pedestrian, bicycle, and public bus modes were minimal. Therefore, specific analyses were not warranted. A significant portion of Kualoa Ranch visitors arrive by bus or van.
   e. **Transit Improvements.** Transit improvements for the Ranch include:
      i. Widening the Kualoa Ranch Driveway to provide separate internal left-turn and right-turn lanes at Kamehameha Highway;
      ii. Widening the Kualoa Ranch Driveway to accommodate the bus turning movements to/from Kamehameha Highway; and
      iii. In consultation with DOT, implementing traffic control plans during special events and excessive traffic, as necessary.
   f. **Pedestrian Circulation Plan.** A pedestrian circulation plan for the project site is included in Section 3.14 of the FEA. Sidewalks and pathways will not be included in internal parking lots.
   g. and h. **TIAR Corrections.** The TIA has been updated, therefore these recommended corrections do not apply.
   i. **Jurisdiction.** We acknowledge that the City portion of Kamehameha Highway should not have a significant impact by the proposed project.

2. **Parking**
   a. **Off-Street Parking Requirements.** We acknowledge that DTS requires the project to provide the LUO minimum required number of spaces (51). To encourage sustainable mobility, an additional bus stall will be added. Two of the parking stalls will be converted to bike parking using a bike corral. Three stalls will be converted to accommodate motorcycles. Two additional ADA stalls will be added to meet the standard.
   b. **Off-Street Loading Requirements.** Two loading spaces should be sufficient. The proposed two extra loading spaces have been removed in the FEA.
   c. **Shared Parking**. We acknowledge the request for a Shared Parking Analysis which is presented in Section 3.14. The parking lot is currently designed with a parking lot for employees and those visiting the administrative building that is separate from general parking. However, one does not exclude the other, and visitors can park in either lot.
   d. **Electric Vehicle Parking.** Kualoa Ranch will provide a parking space exclusively for electric vehicles, equipped with an electric vehicle charging system.
   e. **Bicycle Parking.** U-style bicycle racks will be provided near the Food & Beverage entrance.
   f. **Street Parking.** Street parking for visitors will not be designated along Kamehameha Highway.

g. **Visitor Drop-off.** The location of the porte-cochere is adjacent to the coach bus parking and simply provides an overhang or covered area to keep guests dry and comfortable as they wait to board their busses. It will be constructed to allow for the coach bus height clearance. It does not extend out into the parking lot and does not allow vehicles to pass through. Section 3.14 of the FEA includes a description and illustration showing how the project will safely accommodate bicyclists and pedestrians in the arrival area.

3. **Complete Streets**
   a. **Complete Streets Policies.** Section 5.11 of the FEA describes how the project complies with Complete Streets policies (Act 54, Session Laws of Hawaii 2009, HRS §264-20.5 and ROH 12-15), including specific adherence to key Complete Streets principles, as follows:
      i. **Safety** will be improved though the planning, design, and construction of an environment that reduces risk and supports the safe movement of people and goods by all modes. Examples include directional signage and consistent lighting for increased pedestrian visibility. Center lines are not used in the Kualoa Ranch Driveway, facilitating the passing of people or bicycles by motor vehicles. A traffic circle within the parking lot also eases traffic speeds, and the separate drive to Palikū will reduce internal traffic and increase pedestrian safety in relation to the current internal road configuration. A service road will provide a separate driveway to the loading zone so that service vehicles do not drive through the visitor parking lot.
      ii. A **Context Sensitive Solution** process using best practices has been applied to Kualoa transportation facilities that integrates community values and recognizes the importance of the surrounding rural context and environment. Locating the Farmers Market near the parking lot allows for ease of accessibility for local residents who don't necessarily want to stay for an agricultural tour. Screening the parking lot with Oleander bushes helps to keep the focus on the expansive beauty of the ranch. During special events, traffic accommodations are made using electronic billboards and traffic cones to facilitate vehicle movement. Kualoa also becomes a location of refuge for the local and visitor community during natural disasters.
      iii. Protection and promotion of **accessibility and mobility for all** is made available through the planning and designing of Kualoa transportation facilities for ease of use and access to destinations by providing an appropriate path of travel for all users. This enhances the ability to move people and goods throughout the state, its counties, and at Kualoa. Americans with Disabilities Act (ADA) parking is provided, and ramps allow visitors with wheelchairs or strollers to easily access the Visitor's Center.

      iv. Balancing the **needs and comfort of all modes and users** by providing a driveway that allows for use by coach buses, vans, cars, motorcycles, and bicyclists, with ample room to allow motor vehicles to safely pass bicyclists and pedestrians. Pedestrians can use the grassed path along the roadway.
      v. Kualoa will **consistently** use national industry best practice **design guidelines and standards** to select complete streets design elements within their driveway and parking lot improvements.
      vi. Kualoa strives to improve **energy efficiency** in travel and mitigate vehicle emissions by promoting coach bus travel and providing parking for electric vehicles, motorcycles and bicycles.
      vii. Kualoa fully encourages opportunities for physical activity and recognizes the **health** benefits of an active lifestyle and in providing alternative mode choices; and
      viii. **Green infrastructure** is incorporated, including trees and landscaping to provide both human and ecosystem benefits, such as shade, to reduce the urban heat island effect, vegetation for carbon sequestration, reducing/filtering non-point source pollution and sediments, retaining stormwater, increasing groundwater recharge, and providing wildlife habitat.
   b. **Complete Streets Design.** The design of the project will be consistent with the City's Complete Streets ordinance within a rural setting and include features to encourage walking, bicycling and public transit. Section 3.14 of the FEA evaluates whether improvements and facilities are needed to aid vehicular, pedestrian, bicycle and public transportation circulation by implementing Complete Streets principles.
   c. **External Bicycle Connectivity.** The Oʻahu Bike Plan has designated Kamehameha Highway as a proposed bike route adjacent to the project site. Although bicycle use is rare, Section 3.14 of the FEA provides a map and describes how the project will safely accommodate bicyclists entering Kualoa by traveling through the internal driveway and parking lots to designated bicycle facilities.
   d. **Streetscape Ecosystem.** Low Impact Development (LID) measures and Best Management Practices (BMP) are planned for managing stormwater at Kualoa. Based on future soil percolation testing, possible post-construction storm water BMPs could include biofiltration (vegetated bio-filters, vegetated buffer strips), retention (infiltration basin, infiltration trench, subsurface infiltration, bioretention basin), or alternate compliance (sand filter, detention basin). Grass parking at the Agricultural Facility, grass overflow parking at the Visitor Center and gravel parking at other sites will allow for additional infiltration. These stormwater strategies and a map of potential stormwater projects are located in Section 3.4.

e. **Traffic Calming Features (TCFs).** The cattle guard at the driveway entrance will cause most drivers to involuntarily slow down. Landscaping the front pasture along the Kualoa driveway with coconut trees has a traffic calming effect, encouraging the driver to reduce their speed and enjoy the scenery. In addition, center lines are not used in the Kualoa Ranch Driveway, facilitating the passing of people on bicycles by motor vehicles. A traffic circle within the parking lot also eases traffic speeds, and the separate drive to Palikū will reduce internal traffic and increase pedestrian safety.

4. **Traffic Management Plan (TMP)**
   a. We acknowledge that the TMP will be jointly reviewed and accepted by the DTS and Department of Planning and Permitting previous to the issuance of a certificate of occupancy.
   b. Short-term construction period traffic will be limited in duration, mitigated by Ranch contractors combining worker vehicle use and off-peak equipment/materials delivery. Although the long-term impact of the additional traffic at this section of Kamehameha Highway traffic will be minimal, internal traffic for Kualoa patrons will be slightly affected. This will be mitigated through the installation of separate left- and right-hand turn lanes.
   c. Kualoa encourages the use of shuttle transportation to and from Waikīkī and promotes the use of City buses on their website.
   d. Construction materials and equipment will be transferred to and from the project site during off-peak traffic hours (8:30 a.m. to 3:30 p.m.) to minimize any possible disruption to pedestrians and traffic on the local streets and Kualoa driveways.
   e. It is not expected that public sidewalks will be closed during construction, as none are available in the immediate Kualoa Ranch area.
   f. Construction schedules will be coordinated as best as possible with other nearby properties that have planned developments to ensure minimal impacts to the City portion of Kamehameha Highway.

5. **Public Transit Service.** Transit routes are depicted on a map in Section 3.14 of the FEA. Public Transit Division will be contacted for review and approval of project plans and to ensure project development does not adversely affect public transit services (bus operations, bus routes, bus stops and para-transit operations).

6. **Priority Guidelines on Sustainability.** The expanded Visitor Center and subsequent facilities have been designed with a fully integrated approach to meet the highest standards of certification practicable. The facility incorporates Leadership in Energy and Environmental Design (LEED®) Green Building Rating System™ design strategies that limit

the project's environmental footprint, facilitate flexibility and reduce operational costs. As with all future projects, the building designs will incorporate energy-saving features, renewable energy technologies, water-saving features, and the best in high-performance building design.

By using LEED for Building Design and Construction Version 4.0, Kualoa can reduce impacts can by a) minimizing the environmental harms associated with parking facilities, including automobile dependence, land consumption, and rainwater runoff; b) reducing pollution by promoting alternatives to conventionally fueled automobiles; and c) increasing access to quality transit.

7. **Sea Level Rise and Resilience.** Using the potential for chronic flooding with 3.2 feet of sea level rise (SLR-XA) as the vulnerability zone for planning purposes, it is noted that the only infrastructure improvements located within areas potentially exposed to chronic flooding with sea level rise will be a portion of the parking lot (*Figure* 3.5 of the FEA).

8. **Driveway Design.** The driveway will be designed with the highest pedestrian and bicycle safety measures through adequate sight distances and supplementary safety measures constructed in accordance with current City standards.

9. **Vehicle Ramps.** The Kualoa Ranch vehicle parking ramps are designed to accommodate demands so that vehicles will not queue onto public streets and block the roadways.

10. **Loading and Unloading.** All loading and unloading needs, including refuse and service delivery vehicles, will be handled on-site. A separate service road is provided so that service vehicles will not drive through the visitor parking lot. In addition, the project is designed to accommodate coach buses and TheHandi-Van para-transit vehicles on-site, which requires a minimum 31-foot turning radius, a 10-foot, 6-inch height clearance, and the ability to exit the site without reversing onto public roadways.

11. **Neighborhood Impacts.** The area Neighborhood Board, as well as the area residents, businesses, emergency personnel (fire, ambulance and police), Oahu Transit Services, Inc. (TheBus and TheHandi-Van), etc., will be kept apprised of the details of the proposed project and the impacts that the project may have on the adjoining local street area network.

12. **Street Usage Permit.** A street usage permit from the DTS will be obtained for any construction-related work that may require the temporary closure of any traffic lane on a City street.

13. **Americans with Disabilities Act (ADA) Requirements.** In accordance with the requirements of Ordinance No. 2412, as amended, the proposed sidewalk areas on and adjacent to the property will meet City and County of Honolulu standards and ADA requirements.

14. **Best Management Practice Controls.** Best Management Practice controls will be included at the construction site to prevent trailing of dirt and debris on City roadways.

15. **Disability and Communication Access Board (DCAB).** Project plans including interior and exterior layouts, vehicular and pedestrian circulation, sidewalks, parking and pedestrian pathways, vehicular ingress/egress, etc. will be reviewed and approved by the DCAB to ensure full compliance with the ADA.

We will provide you a copy of the Final EA. Thank you for your participation in the environmental review process.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal Planner

The Senate

STATE CAPITOL
HONOLULU, HAWAII 96813

January 22, 2018 SUBMITTED BY EMAIL

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RE: Kualoa Ranch Improvements Draft Environmental Assessment

Aloha.

Please accept these comments relating to the traffic impacts analysis and recommendations from the Kualoa Ranch Improvements Draft EA.

COMMENT 1: Kualoa proposes an increase of 312 new parking stalls to the existing 110 parking stalls, a 300 percent increase. The trip generation estimate shows a maximum increase of 80 vehicles on peak hour, Saturday (or 79, if adding the exit and entrance numbers in Table 3.3). Existing trip generation is 160 vehicles. There is no discussion of the number of buses and vans that arrive, or will arrive, at Kualoa after the proposed action. The report should include discussion on how the increased trip generation, visitor counts, and parking space estimates all work together.

Q1. What is the average time a car parks at Kualoa today and how often is the lot be full now?
Q2. Will the average time a car remains parked at Kualoa be constant, increase, or decrease due to the proposed action?
Q3. What are the numbers of buses and vans that arrive at Kualoa today?
Q4. What are the projected number of buses and vans expected due to the proposed action?
Q5. How is bus and van parking accommodated today?
Q6. What additional accommodation in bus and van parking is needed due to the proposed action?

COMMENT 2: Kualoa Ranch has other driveways and access points along Kamehameha Hwy. Each access point that may be impacted by the proposed action should be analyzed.

COMMENT 3: "Trip rates were developed by correlating the vehicle trips per hour (vph) per 1000 square feet of gross floor area (SFGFA)." Visitors will be engaged in numerous outdoor activities that are unrelated to the square footage of any buildings.

Q7. Is it reasonable to disregard all of the outdoor activities in developing trip generation estimates? If so, please describe how the amount of square footage of a gift shop, for example, correlates to any other outdoor adventure.
Q8. In calculating trips generated, how many trips will result in guests only visiting the buildings as compared to guests doing outdoor activities? How does the square footage of buildings factor into these equations?

COMMENT 3: The traffic counts were conducted in April, 2015, arguably a shoulder month in visitor counts. Tourism numbers have increased in the nearly three years since the traffic counts were performed.

Q9. Does the consultant believe April is an appropriate month to study traffic and visitor counts?
Q10. How does April compare to other months for traffic volume?
Q11. April 2015 was a long time ago. Why should there not be a new traffic study based on a more typical month of traffic counts?

COMMENT 4: The TIAR, page 12, says "The left turn demand from northbound Kamehameha Highway into Kualoa Ranch Driveway met the AASHTO guideline for an exclusive left-turn lane on Kamehameha Highway, during the existing Saturday peak hour of weekday traffic." The TIAR further describes LOS F for turning movement from Kualoa Ranch Driveway to northbound Kamehameha Highway on Saturday Peak Hour. The report is unclear on the LOS from northbound Kamehameha Highway to Kualoa Ranch Road and while it mentions Weekday Peak Hour does not warrant a turn lane, the TIAR is silent on Saturday Peak Hour, with the proposed action.

Q12. There is an obvious problem with LOS F on Saturday Peak Hour turning movements, yet the recommendations do not include any improvement to Kamehameha Highway. Why is there no recommendation, or even discussion, of the benefits to the intersection to addition of a stacking turn lane for northbound Kamehameha Highway traffic and a center merging lane for vehicles exiting northbound from Kualoa Ranch Driveway?
Q13. How could the consultant recommend acceptance of LOS F without providing a thorough discussion on possible mitigation measures to this unacceptable Level of Service?

In summary, the 2015 traffic analysis is outdated and curiously vague in describing the likely impacts at the intersection of Kamehameha Hwy and Kualoa Ranch Drive. Clearly needed for

proper consideration is discussion of potential mitigation measures, such as a stacking turn lane and merging lane on Kamehameha Hwy.

Furthermore, the TIAR fails to mention, much less study, any of the other driveways and access points that will be affected by the proposed action. Also missing is discussion of the impacts from buses and vans.

The TIAR must be redone.

Sincerely,

Gil Riviere
District 23
Oahu's North and Windward Shores

G70

925 Bethel Street
5th Floor
Honolulu, HI 96813
808.523.5866
www.g70.design

July 11, 2018

Senator Gil Riviere
Senate District 23
State of Hawaii
Hawaii State Capitol, Room 217
415 South Beretania Street
Honolulu, HI 96813

Subject: **Chapter 343, HRS Draft Environmental Assessment**
Kualoa Ranch Improvements
TMK: 4-9-005:01; 4-9-004:02; 5-1-001:01 (portion)
Oʻahu, Koʻolau Poko District, Kualoa Ahupuaʻa

Dear Senator Riviere:

Thank you for your comment letter dated January 22, 2018 concerning the Chapter 343, Hawaiʻi Revised Statutes (HRS) Draft Environmental Assessment (EA) for the Kualoa Ranch Improvements project. The following responses are offered to your comments:

1. **Parking**
   We acknowledge your concern regarding how the increased trip generation, visitor counts, and parking space estimates all work together. These numbers are all based on the square footage of the building increase. Current visitor count ranges between 1,000 to 1,500 visitors per day. The proposed improvements are primarily to accommodate the current numbers and support some limited growth over the next ten years. Kualoa is planning for up to 2,000 ticketed tour visitors per day.

   The main commerce and business facilities that will be built include the Arrival Pavilion, Kualoa Market, Administrative and Employee Buildings, Hale Kupuna Pavilion, and the Agricultural Processing Facility. This is an increase of 20,330 square feet, allowing for a maximum of 548 persons per day (International Building Code, 2015, Table 1004.1.2, Maximum Floor Area Allowances per Occupant). According to City and County of Honolulu Land Use Ordinance (LUO) Sec. 21-6.20, this requires an additional 51 parking spaces.

   We would like to clarify your first statement regarding the increase in parking stalls. The total number of parking spaces will increase from 218 standard stalls, six ADA, and nine coach buses to 306 standard, eight ADA, and 10 spaces for coach buses. This is a 39% increase.

   This stall count is higher than required by the City and County of Honolulu Land Use Ordinance (LUO) Sec. 21-6.20. To help reduce the need for additional parking stalls, multi-modal provisions will be made and promoted to fulfill City Complete Streets policies. These include the extra coach bus stall, an electric vehicle stall with charging station, motorcycle parking, and a bike corral.

   The planned improvements in total are expected to generate an additional approximately 112 vehicles at Weekday Peak Hour, and approximately 169 vehicles at Saturday Peak Hour full occupancy. Trip rates were developed by correlating the vehicle trips per hour (vph) per 1,000 square feet of gross floor area (SFGFA). This trip generation methodology is based upon generally accepted techniques developed by the Institute of Transportation Engineers (ITE) and published in Trip Generation, 9th Edition. Existing trip generation is 181 vph during the existing Weekday Peak Hour of traffic, and 271 vph during existing Saturday Peak Hour.

   Throughout the study period, up to 24 percent of the Kualoa Ranch trips were buses and passenger vans. The revised Transportation Impact Assessment observed the arrival of five buses/ten vans and departure of nine buses/ten vans during the existing weekday peak hour of traffic. During Saturday peak hours of traffic, eight buses/18 vans arrived and 11 buses/22 vans departed Kualoa Ranch. Bus and van parking is currently accommodated in a defined area to the right as the parking lot is entered. One additional bus stall will be added with the improvements. Based on the current 24 percent of vehicle trips, the planned improvements in total are expected to generate an additional approximately 27 buses and vans at Weekday Peak Hour, and approximately 41 vehicles at Saturday Peak Hour full occupancy.

   The average time a car is parked varies on the number of cars stopping in for a quick bite to eat (approximately 30 minutes) to the number of cars participating in a full day adventure package (approximately 6 hours). Parking lot capacity varies with time of day. It is expected that the average time a car remains parked at Kualoa will remain constant with the improvements.

2. **Access Points**
   The primary access for Kualoa Ranch will continue to be the existing Kualoa Ranch Driveway on Kamehameha Highway. Circulation between the various proposed project sites will largely be contained onsite and not expected to affect the public roadways.

3. **Trip Generation**
   Trip generation methodology is based upon generally accepted techniques developed by the Institute of Transportation Engineers (ITE) and published in Trip Generation, 9th Edition. Visitors who participate in outdoor activities will walk through the Arrival Pavilion to obtain their tickets. Whether they walk through the gift shop can not be guaranteed, however this method of generating trip rates by correlating vph per 1,000 SFGFA is a standard in the industry.

4. **Traffic Counts**
   Revised traffic counts were conducted in March 2018, a typical month for Kualoa Ranch traffic volume and an opportune time to obtain baseline data. The holidays tend to be the busiest times of the year.

5. **Turning Movements**
   The revised traffic study found that during the Saturday peak hour of traffic with the project, the left-turn movement on northbound Kamehameha Highway is expected to continue to operate at LOS "A". Traffic simulation of the left-turn movement from Kamehameha Highway resulted in an average delay of 12.3 seconds, which corresponds to the Highway Capacity Manual 6th Edition (HCM) LOS "B" conditions. The LOS "B" is acceptable for the left-turn movement. However, without an exclusive left-turn lane, the northbound through lane will queue back over 125 feet on average, and peak at 300 feet. Mitigation actions such as a temporary traffic coned left-turn lane will be discussed with DOT.

   The revised traffic study reported that internal traffic for Kualoa patrons due to improvements will be slightly affected. The internal left-turn movements exiting the ranch during Weekday and Saturday peak hours of traffic from Kualoa Ranch Driveway onto Kamehameha Highway are simulated to deteriorate to LOS "C" and LOS "F", respectively with the project. The right-turn movements from Kualoa Ranch Driveway onto Kamehameha Highway are predicted to operate at LOS "A" and "C" during Weekday and Saturday peak hours of traffic with the project, respectively. Recommended traffic improvements include widening the Kualoa Ranch Driveway to provide separate left-turn and right-turn lanes exiting onto Kamehameha Highway.

We will provide you a copy of the Final EA. Thank you for your participation in the environmental review process.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal Planner

RECEIVED
MAR 2 6 2018
GROUP 70 INT'L

Attention: Jeffery Overton, Group 70

Cc:

Councilman Ernie Martin

Kathy Sokugawa Honolulu Department of Planning and Permitting

Aloha mai kākou,

On behalf of the Ka'a'awa Community Association, I would like to extend our gratitude for your time and resource spent to present the Kualoa Ranch draft environmental assessment. As President of the Association, I have been asked to compile the cumulative feedback and position of the Ka'a'awa Community Association regarding this draft and the information presented wherein.

It is of resounding agreement that the Morgan Family and Kualoa Ranch have been great neighbors. We greatly appreciate and commend Kualoa Ranch for its support for the community at large, providing hundreds of jobs for community members and especially for being good stewards to the land by maintaining a minimal amount of development, preserving natural and open space, and for keeping urban sprawl from the areas of Ka'a'awa Valley, Kualoa and Hakipu'u, as well as other Ranch controlled lands.

Upon your presentation of the draft EA, we agree that Kualoa Ranch is due for a minor realignment, renovation and addition of minor and low impact development including relocation of the maintenance facility, upgrading of depots and stable areas, consolidation of food service facility and relocation of the retail storefront. We also agree that the minor upgrades proposed to the single structure in Ka'a'awa Valley are warranted granted they do not affect the natural and undisturbed nature of Ka'a'awa Valley as well as do not impact any possible unidentified cultural or burial sites.

There was a concern regarding relocating of the "Rodeo" area to be replaced with a parking lot as community members voiced concern that the site would potentially become an eyesore and alter the "country culture feeling." We are against haveing large parking lots in direct visibility of Kamehameha Hwy. with PCC's parking and bus area cited as an example.

In regards to reapplication for "County Special Use Permits" the Association has expressed great hesitation, specifically related to the request for "unlimited" patrons and "Self limiting." We feel that because Mr. Morgan can not guarantee future direction of his successors, it would be reckless for the Association to support such a request. The Ka'a'awa Community Association has stood firm against major development and excessive growth in neighboring communities and we are against setting any precedents that oppose that stance. We feel that it would be much more realistic to expand the current limit to potentially double the current, however we are requesting a more detailed breakdown of the Ranch's current patron spectrum, whether short term retail grab and go customer, vs 1/2 day visitor, full day visitor or others. Until further information can be shared, we do not support "unlimited" visitor restrictions. We feel that a more tangible number may be double the current limit at most.

Related to traffic impacts, we would request that traffic study results be presented prior to approval of this draft. We are also concerned regarding potential impacts due to ever increasing highway erosion, current conditions of flooding and hillside erosion, as well as impacts due to global warming and sea level rise.

Again we appreciate your efforts and we hope that we may come to address these concerns in a timely manner that will not hamper the Ranch's ability to make its needed improvements.

Me ka ha'a ha'a,

Robert "Kealoha" Domingo
Ka'a'awa Community Association President

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July 11, 2018

Mr. Robert "Kealoha" Domingo, President
Kaʻaʻawa Community Association
P.O. Box 33
Kaʻaʻawa, HI 96730

Subject: **Chapter 343, HRS Draft Environmental Assessment**
Kualoa Ranch Improvements
TMK: 4-9-005:01; 4-9-004:02; 5-1-001:01 (portion)
Oʻahu, Koʻolau Poko District, Kualoa Ahupuaʻa

Dear Mr. Domingo:

Thank you for your comment letter received March 28, 2018 concerning the Chapter 343, Hawaiʻi Revised Statutes (HRS) Draft Environmental Assessment (EA) for the Kualoa Ranch Improvements project. The Morgan family appreciates the community recognition of their efforts over the years to consistently protect the rural character at Kualoa. The following responses are offered to your comments:

Rodeo Area

1. The rodeo arena has given a sense of pride to Kualoa Ranch, reflecting its paniolo heritage. However, this is an activity that the community no longer supports in great numbers, and events now only occur approximately three times a year. The plan to replace the area with a parking lot will support the other agricultural tour activities and special events that will occur at Kualoa, including a Farmer's Market. Parking will be screened with planted oleander bushes, approximately four to six feet high.

Operational Program

2. Current visitor count ranges between 1,000 to 1,500 visitors per day. The proposed improvements are primarily to accommodate the current numbers and support some limited growth over the next ten years. Kualoa is planning for up to 2,000 ticketed tour visitors per day.

Traffic Analysis

3. The Final EA addresses potential impacts from the Improvements. As for regional conditions, the Final EA addresses highway erosion (Section 3.5), current conditions of flooding, as well as impacts due to global warming and sea level rise (Section 3.6). Large scale hillside erosion is not occurring at Kualoa, and therefore it is not addressed in the Final EA.

We will provide you a copy of the Final EA. Thank you for your participation in the environmental review process.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal Planner

January 20, 2018

Anoʻai Kakou,

On behalf of the members from the Ko'olauloa Hawaiian Civic Club, we are pleased to have been included in the mass mail out of the CD regarding the 2018 Expansion of Kualoa Ranch.

As the second oldest civic club founded by Mr. William Isaac Kanakanui on June 14, 1924, we are one of 64 clubs that make up the Association of Hawaiian Civic Clubs nationally. Our mission is to preserve and perpetuate the Hawaiian culture, its music, language and arts. We protect and steward sacred sites and places in our community while supporting Native Hawaiian students in pursuing a higher education. We also advocate for improved welfare of native Hawaiians in culture, health, economic development, education, and social welfare.

Unfortunately, our membership was not able to view the CD as a group. However, at our January 18, 2018 membership meeting, the information from the members shared the significance of Kualoa and its impact to local communities and visitors from around the globe. Recorded mythical legends, historical context and written stories available to our Hawaiian communities signify the importance of a "sacred site in place" minimizing changing its cultural landscape.

In our discussions, we agree that any additional structures and/or activities affecting the natural beauty and one of the last "open space" on the windward side would have adverse impacts. Both visitors and residents would experience long lines of traffic and obstruction of the beauty of Kualoa.

We request a review of your Master Plan and require additional information to fully understand the Impact of the Kualoa Expansion.

Respectfully,

Raynae Fonoimoana
Ko'olauloa Hawaiian Civic Club
1st Vice President

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July 11, 2018

Ms. Raynae Fonoimoana, 1st Vice President
Koʻolauloa Hawaiian Civic Club

Subject: **Chapter 343, HRS Draft Environmental Assessment**
Kualoa Ranch Improvements
TMK: 4-9-005:01; 4-9-004:02; 5-1-001:01 (portion)
Oʻahu, Koʻolau Poko District, Kualoa Ahupuaʻa

Dear Ms. Fonoimoana:

Thank you for your comment letter dated January 20, 2018 concerning the Chapter 343, Hawaiʻi Revised Statutes (HRS) Draft Environmental Assessment (EA) for the Kualoa Ranch Improvements project. The following responses are offered to your comments:

We acknowledge the mythical legends, historical context and significance of Kualoa and its impact to local communities and visitors from around the globe. In an effort to honor this "sacred site in place" and minimize changing this cultural landscape, new development will occur in place of and adjacent to current facilities. Kualoa intends to conserve the natural beauty and open space of the ranch.

We acknowledge your desire for additional information on the project. Rather than sending you materials, Kualoa would be glad to schedule a meeting with your group to discuss its ongoing plans to steward these lands and support its cultural heritage.

We will provide you a copy of the Final EA. Thank you for your participation in the environmental review process.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal Planner

Malama Waihe`e
PO Box 5491,
Kane`ohe, HI 96744

January 21, 2018

Mr. Jeff Overton
G70 design
925 Bethel Street, 5th Floor
Honolulu, HI 96813
(jeff@g70.design)

City and County of Honolulu
Department of Planning and Permitting
650 South King Street, 7th Floor
Honolulu, HI 96813
(rcsyoung@honolulu.gov)

Kualoa Ranch Hawai'i, Inc
John Morgan
P.O. Box 650,
Ka'a'awa, HI 96730
(johnmorgan@kualoa.com)

Subject: Kualoa Ranch Improvements -- Draft EA

Aloha Mr. Overton,

Thank you for the opportunity to provide comments on the Kualoa Ranch Improvements Draft Environmental Assessment and for providing a printed, as requested, at the regular January 2018 Kahalu'u NB meeting – always helpful for "old school" style review. Having worked in the area of Community Resource and Development at KEY Project Community Center for well over three decades, we know the value of keeping such documents on file and available for sharing with others in the community.

The comments that follow come from discussion between and among contributors to *Malama Waihe*`e, a hui that has come together out of concern for appropriate stewardship of not only Waihe`e Ahupua'a but those watersheds that make up a significant portion of Northern Ko'olaupoko and neighboring Ko'olauloa – land divisions that directly affect each other with respect to socio-economic considerations, cultural connections, connected infrastructure and more.

Malama Waihe'e generally supports the Kualoa Ranch mission and values its dedication in operating a multi-purpose recreational enterprise that is compatible with preservation of Hawaii's natural environment, culture, and agricultural traditions…appropriate for stewardship of the three significant ahupua'a affected: Hakipu'u, Kualoa and Ka'a'awa The Ranch's work educating the public, protecting historic and cultural landmarks and systems while also providing a strong economic and agricultural center for the Windward community is greatly valued.

While we understand that the subject document has been several years in the making we, like others (including the Kahalu'u and Ko'olauloa Neighborhood Boards – each of which meets only once a month), struggle with the short time frame in which to respond in detail. To this end we ask that you accept our comments in the spirit in which they are offered: As directly affected/concerned residents of the same community as the ranch we are "in it for the long haul", wanting to ensure long-term success for the ranch while also seeking support for continued protection of and consideration of broader community interests. We ask that you consider our organization a "consulted party" as the assessment process moves forward.

We fully support the Ranch's plans for upgrades, as described in the Draft EA: to the ranch headquarters area, Paliku, and Ka'a'awa. However, because the proposed action involves permanent changes to the Ranch Special Use Permit (SUP) and Conditional Use Permit (CUP), there are at least three areas in the Draft EA where we feel that clarification is needed:

1. Reference: Section 1.3 PURPOSE OF THE ENVIRONMENTAL ASSESSMENT

Changes to the SUP and CUP, if approved, will be permanent – running with the land for Hakipu'u, Kualoa and Ka'a'awa ahupua'a… not limited to Kualoa Ranch, Inc or its current owners, directors and management. We can't know the future so cannot rule out the possibility that at some point the Ranch might be owned by or managed by entities with different values and business plans. Therefore, we are concerned about the proposed elimination of any area limits to trails, and the complete elimination of restrictions on the number of guests, recreation vehicles, and operating hours. The current Ranch owners and management are best able to describe, based on the Ranch business plan and operating requirements, what changes should be made to the expansion of trails, the anticipated number of guests permitted daily, the number of recreation vehicles, and operating hours.

We would suggest revisions to the Draft Environmental Analysis to identify specific limits on the area proposed for expansion of trails, the number of daily guests, the number of recreation vehicles (by type and size), and operating hours of each location and activity.

2. Reference: Section 3.14 ROADWAY, ACCESS AND TRAFFIC CONDITIONS

The Kualoa Ranch traffic impact analysis was conducted in July 2015, prior to substantial increases in actual, planned, and proposed residential, commercial, and other tourist-oriented development in the northern Ko`olaupoko (Kahalu'u Neighborhood Board area) and Ko'olau Loa communities, and looked only at the impact of increased traffic activity related to Kualoa Ranch. We believe an updated traffic analysis is required to provide a comprehensive baseline of the cumulative impact of recent, planned, and proposed development(s) affecting Kamehameha Highway along the affected Windward Oahu coastline. That said, we appreciate concerns raised at the recent Kahalu'u Neighborhood Board meeting (including the Special meeting held on January 17, 2018) wherein it was expressed that such an update should *not* fall solely on the Ranch.

We call on the State Department of Transportation and the City & County of Honolulu to conduct an updated, comprehensive analysis of Kamehameha Highway traffic between Kahuku and Kaneohe. This analysis must address the cumulative impact of the expansion of the Urban Boundary in Bill 57 (the Ko'olaupoko Sustainable Community Plan), Bill 1 (the Ko'olauloa Sustainable Communities Plan) and other recently completed, planned, and proposed residential, commercial, and tourist-oriented developments. It should also take into consideration plans for

bridge replacement at both Waikane and Waiahole, including associated flooding, stream protection and area socio-economic impacts and options, potential access improvements at affected key intersections, bikeways etc. With respect to Kualoa Ranch vicinity, we urge consideration of alternatives for ingress/egress to improve safety in the area between the Ranch and Kualoa Regional Park, including consideration of a future "roundabout".

Please update the Draft Environmental Assessment to reflect the anticipated impact of Kualoa Ranch traffic given a baseline that reflects ongoing or known planned development along the Windward Oahu coast.

3. Reference: Section 1.4 AGENCIES, ORGANIZATIONS AND INDIVIDUALS CONTACTED IN PRE-CONSULTATION

Pre-consultation with Kahalu'u and Ko'olau Loa Neighborhood Boards was conducted more than two years ago and did not include important details on the Kualoa Ranch improvement plan. We ask that Kualoa Ranch provide more regular periodic presentations to keep Windward Oahu communities informed about the Ranch development plans.

Please update Section 1.4 with the statement that Kualoa Ranch will make periodic presentations to community organizations throughout the permitting and development construction process. (Note: Section 4.2 "Location for the Proposed Project" makes reference to "Kualoa Ranch's 2011 Master Plan". Please include same in Appendix for reference.

If you have questions or would like to schedule a meeting to discuss these comments, please contact:

John L. Reppun
Ph 808-277-8686
email: jreppun@gmail.com.

Thank you,

Very truly yours,

John L. Reppun | Garnett Howard | Peter Fields

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July 11, 2018

Mr. John L. Reppun
Malama Waiheʻe
P.O. Box 5491
Kāneʻohe, HI 96744

Subject: **Chapter 343, HRS Draft Environmental Assessment**
Kualoa Ranch Improvements
TMK: 4-9-005:01; 4-9-004:02; 5-1-001:01 (portion)
Oʻahu, Koʻolau Poko District, Kualoa Ahupuaʻa

Dear Mr. Reppun:

Thank you for your comment letter dated January 20, 2018 concerning the Chapter 343, Hawaiʻi Revised Statutes (HRS) Draft Environmental Assessment (EA) for the Kualoa Ranch Improvements project. The Morgan family appreciates the community recognition of their efforts over the years to consistently protect the rural character at Kualoa. The following responses are offered to your comments:

Operational Program

1. We acknowledge your comments regarding the permanent changes to the 1985 Special Use Permit (SUP) and Conditional Use Permit (CUP). Particularly, the elimination of restrictions on the number of daily guests, recreation vehicles, expansion of trails, and operating hours of each location and activity. Current visitor count ranges between 1,000 to 1,500 visitors per day. The proposed improvements are primarily to accommodate the current numbers and support some limited growth over the next ten years. Kualoa is planning for up to 2,000 ticketed tour visitors per day.

   The current maximum number of daily ATV riders is 320 passengers/day for ATV rides, and 30 passengers/day on multi-passenger ATVs. In order to accommodate an increase in ATV riders and maintain the integrity of the trails, up to 40 multi-passenger ATVs will be added to accommodate up to 200 guests per day. Physical trail expansion is not proposed. The modification to the ATV operational program will update the SUP to reflect current trail use that occurs in Kaʻaʻawa Valley (by both ATV riders and agriculture operators). Operating hours for Kualoa will be updated to reflect current business operations from 7:30am to 8:00pm. The last tour of the day ends at 5:30pm, and dinner events are occasionally held in the evenings.

Traffic Analysis

2. An updated traffic analysis is included in the Final EA. We acknowledge your interest in having State Department of Transportation and the City & County of Honolulu to conduct an updated, comprehensive analysis of Kamehameha Highway traffic between Kahuku and Kāne'ohe.

   With respect to Kualoa Ranch vicinity, an updated traffic analysis was completed for the Final EA (Section 3.14, Appendix E). Alternatives for ingress/egress to improve safety in the area between the Ranch and Kualoa Regional Park include: a) Widening the Kualoa Ranch Driveway to provide separate internal left-turn and right-turn lanes at Kamehameha Highway; b) Widening the Kualoa Ranch Driveway to accommodate bus turning movements to/from Kamehameha Highway; and c) In consultation with DOT, implementing traffic control plans during special events and excessive traffic, as necessary.

   The above improvements are expected to mitigate the traffic impacts of the Kualoa Ranch improvements. The updated study includes a baseline traffic count that reflects The O'ahu Regional Transportation Plan 2035 projection of a 1.45% annual increase in traffic on Kamehameha Highway.

Community Presentations

3. We acknowledge the need for continued communication with the community and will make periodic presentations to community organizations throughout the permitting and development construction process. We would be glad to continue discussions regarding Kualoa's long-range plans for stewardship of these lands.

We will provide you a copy of the Final EA. Thank you for your participation in the environmental review process.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal Planner

Barbara Natale

To: Barbara Natale
Subject: RE: Comment on the Draft Environmental Assessment for Kualoa Ranch expansion plan

From: andrea anixt <andreapeatmoss2@gmail.com>
To: kualoa@g70.design
Cc: rcsyoung@honolulu.gov
Bcc:
Date: Mon, 22 Jan 2018 13:10:22 -1000
Subject: Comment on the Draft Environmental Assessment for Kualoa Ranch expansion plan

Aloha,
I am a 40 year resident of Ka'a'awa, on the Ka'a'awa Community Association Board and its Citizen Advisory Committee Representative to Oahu Metropolitan Planning Organization. I am currently on the Ka'a'awa Beach Owner's Association Board, (KBOA); the Lead for a division of our Ka'a'awa Emergency Leadership Plan (KELP) team; and a CERT program attendee. My career background is as a geologist and as an international airline staff member for 38 years. I also serve on the Board of Friends of the Library Kahuku (FOLK).

Kualoa Ranch is currently a thriving business - the 10th most visited tourist attraction in all Hawai'i. Much of the Ranch is a good example of a land use practice in action on Oahu, in my opinion. I love it. It has Conservation Land and Agricultural land designations, plus has these commercial growth plans seeking permits now. The community members all support agricultural growth per their input to me.

The Ranch land stewardship philosophy has been appropriate and appreciated so far. The traffic problems created by some events there have been very frustrating to Windward residents and are potentially worse with expansion. The 488,605 visitors in 2016 will likely increase more than an "insignificant amount" with the 9.5 million tourists to the Hawai'ian islands expected in 2018...

The cumulative effect of this Kualoa Ranch plan, the building of 2 new hotels and 100 resort residential units at Turtle Bay Resort, (4401 daytime population increase), the 44 businesses increased size of PCC recently, and HRI's ultimate plans for a 'third city' in Malaekahana which is still in flux and whose effect is not being considered; no comprehensive traffic study has been done, and yet it is bound to be very significant...
There are also over 4,350 vacant, buildable, already urban zoned lots of only 3 of categories (R-5, R-7.5, and Country residential in Ko'olauloa) adding about 22,000 residents who will pass thru Kualoa ultimately.

I am concerned about that increased traffic. As the OMPO Representative, I know the Citizen's Advisory Committee's most wanted

project has been for a Traffic Corridor Study of Kamehameha Highway from Kahalu'u to Haleiwa for some years now. However, there has been no solution yet studied as to the viability of this road, none is in the Oahu Regional Transportation Plan to even begin until 2029, and it took 30 years from start to finish for H-3...The road is not considered likely to survive a disaster by the Emergency Management staff. The estimate is over 5.1 to 6+ hours for evacuation past Kualoa now, when a tsunami could take only 4 hours from the Aleutians to get here.

How many more completely unprepared tourists do we need for emergencies like a devastated road? We need to be prepared for 30 days self-reliance for food and water in Ka'a'awa per the State. B & B's are becoming numerous here already and present a big food and water security threat in a disaster.

Please address EA plan mitigations for these issues for me. That and the aesthetics of 100 new parking places on the pastures near the highway - instead of horses there sometimes and the feeling of open space it now gives. John Morgan says there will be landscaping , however cars and buses can't help but be highly visible and give that jarring tourist trap feeling of PCC. The irreplaceable beauty of Kualoa seems sadly compromised by this, its cultural heritage diminished.

90% of Ranch revenue is from the tours they run, and agricultural expansion is supported by this the EA states. I personally don't care how many tours they run ON the Ranch lands, however the helicopter tours that fly over the Ka'a'awa town and mountains right behind it are very noisy and potentially dangerous to residents.

We have increased noise pollution, sometimes it is like being in a war zone between hiker, ocean and medical rescue helicopters, plus KMACS and commercial flights, and tour choppers. I want to know the details of the amount/capacity/size and routes of plans from this helipad please.

The Ranch is wonderful and I wish the owners much continued prosperity. I do think less may be more in this case, so an estimate of how many visitors a day capacity this expansion is envisioned to accommodate would be information important to include for community evaluation. Please include that information.

People have been asking for a longer comment period too, fyi.

With aloha,

Andrea Anixt
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July 11, 2018

Ms. Andrea Anixt
P.O. Box 646
Kaʻaʻawa, HI 96730

Subject: **Chapter 343, HRS Draft Environmental Assessment**
Kualoa Ranch Improvements
TMK: 4-9-005:01; 4-9-004:02; 5-1-001:01 (portion)
Oʻahu, Koʻolau Poko District, Kualoa Ahupuaʻa

Dear Ms. Morgan:

Thank you for your comment letter dated January 16, 2018 concerning the Chapter 343, Hawaiʻi Revised Statutes (HRS) Draft Environmental Assessment (EA) for the Kualoa Ranch Improvements project. The Morgan family appreciates the community recognition of their efforts over the years to consistently protect the rural character at Kualoa. The following responses are offered to your comments:

Traffic and Roadway Conditions

1. We acknowledge your comment that the traffic problems created by some events at the Ranch have been very frustrating to Windward residents and could be potentially worse with expansion. Special events, such as the Farm Fair, Rodeo and Makahiki Challenge, follow procedures for the anticipated influx in traffic. Typically, a State highway permit is requested to close off parking in the shoulder area fronting the Ranch along Kamehameha Highway. No parking signage is put out a day before the event and removed the day after. Electronic boards inform drivers of upcoming events. To avoid impeding traffic flow on Kamehameha Highway, a left turn lane is created with cones to turn into Kualoa. In addition, Honolulu Police Department officers direct traffic along the two entrances into the ranch to avoid back up along the highway.

   With respect to Kualoa Ranch vicinity, an updated traffic analysis was completed for the Final EA (Section 3.14, Appendix E). Alternatives for ingress/egress to improve safety in the area between the Ranch and Kualoa Regional Park include: a) Widening the Kualoa Ranch Driveway to provide separate internal left-turn and right-turn lanes at Kamehameha Highway; b) Widening the Kualoa Ranch Driveway to accommodate bus turning movements to/from Kamehameha Highway; and c) In consultation with DOT, implementing traffic control plans during special events and excessive traffic, as necessary. The above improvements are expected to mitigate the traffic impacts of the Kualoa Ranch improvements. The updated study includes a baseline traffic count that reflects The Oʻahu Regional Transportation Plan 2035 projection of a 1.45% annual increase in traffic on Kamehameha Highway.

2. We acknowledge that there has been no comprehensive traffic study done in light of the various projects occurring along the Koʻolauloa coast. Kualoa would support an updated, comprehensive analysis of Kamehameha Highway traffic between Kahuku and Kāneʻohe conducted by the State Department of Transportation and the City & County of Honolulu.

3. We acknowledge your concern about the region's residents and tourists in the event of a disaster. While the Ranch is not designated as a tsunami refuge center, Kualoa Ranch opened its Palikū property (outside of the tsunami evacuation zone) to area residents during the 2011 tsunami warning. Kualoa again offered shelter and safety to visitors and neighboring residents during the 2018 ballistic missile threat.

Aesthetics

4. To address the aesthetics of the expanded parking lot, Oleander bushes will front the parking areas, partially obscuring the view of the parked cars from Kamehameha Highway.

Helicopter Tours

5. While there are no plans to remove the existing helipad, Kualoa Ranch does not provide nor plans to provide helicopter tours.

Visitor Count

6. The improvements to Kualoa Ranch are being made to accommodate current business. The current visitor count is approximately 1,000 to 1,500 per day. We are forecasting no more than 1,700 to 2,000 visitors per day in five years.

Comment Period

7. We acknowledge your comment asking for a longer comment period. Thirty days is the standard timeframe for Draft Environmental Assessment review per Hawai'i Administrative Rules (HAR), Title 11, Chapter 200, Department of Health.

We will provide you a copy of the Final EA. Thank you for your participation in the environmental review process.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal Planner

Comments on the Kualoa Ranch Improvements Draft Environmental Assessment

Kualoa Ranch is, and has been, a respected part of the Windward side, providing a myriad of services, recreation and employment. It seems that any improvements to the facilities the Ranch feels are necessary should be at the discretion of the Ranch, subject to meeting all environmental rules and regulations. The Ranch has been a good shepherd of the land to date, and we would hope that the ranch continues to be such going forward.

But, the requested increase in hours and guest count is another matter. The problem lies with traffic. Traffic studies need to look at more than just the traffic at the Ranch intersection. A vast majority of the traffic coming to turn left into the Ranch comes from south of the Kahakili/Kamehameha intersection in Kahaluʻu. This intersection is already overburdened, especially on the weekend, along with the intersection of Kamehameha/Waihee. It is likely that during certain hours on the weekend, and at rush hours in the morning and evening of the weekdays, that the LOS level is E or F. Even if only C, any increase in traffic would force the LOS level to E or F. It is unfortunate that the lack of attention paid to remission of the traffic problems at the Kahakili/Kamehameha and the Kamehameha/Waihee intersections have a negative impact on the Ranch's plans, but, as it is, any increase in traffic to the Ranch would exacerbate the situation.

Also, the request to not have any limits imposed on hours and guest count is not appropriate. Although the Ranch states it will take community needs into account, having no limits leaves much too much to the Ranch's discretion. When the results of such decisions impacts the community, the community needs to have the ability to control those impacts through reasonable limits set by the community agencies tasked with looking after the best interests of the community.

At the present time, the worst traffic occurs in Kahaluʻu on the weekends and at rush hours on weekday evenings. It is these periods the Ranch wants to expand into, and the related increase in guest count would only exacerbate the traffic problems.

When the Kahaluʻu intersections are finally improved to handle the traffic issues, it would seem appropriate to then revisit the Ranch's request for increased hours and guest count. At the same time, it would not be appropriate to allow such increases in anticipation for such improvements, since the improvement issues in question have festered for a period of years, and show no indication of resolution in the near term.

I regret having to submit these comments, due to the fact, as mentioned before, that the Ranch is a respected part of the Windward community, but the net negative impacts of the expansion of hours and visitors would be detrimental to the community at this time, even considering the potential increase in employment such changes might bring about.

Respectfully,

J. William Busch

Kahaluʻu, Hawaii

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July 11, 2018

Mr. J. William Busch
Kahalu'u, HI
nedbusch@aol.com

Subject: **Chapter 343, HRS Draft Environmental Assessment**
Kualoa Ranch Improvements
TMK: 4-9-005:01; 4-9-004:02; 5-1-001:01 (portion)
O'ahu, Ko'olau Poko District, Kualoa Ahupua'a

Dear Mr. Busch:

Thank you for your comment letter concerning the Chapter 343, Hawai'i Revised Statutes (HRS) Draft Environmental Assessment (EA) for the Kualoa Ranch Improvements project. The Morgan family appreciates the community recognition of their efforts over the years to consistently protect the rural character at Kualoa. The following responses are offered to your comments:

Traffic Analysis

1. We acknowledge your concern regarding traffic along the Ko'olaupoko coast, spanning from the Kahekili/Kamehameha intersection in Kahalu'u to the intersection of Kamehameha/Waihe'e. With respect to Kualoa Ranch vicinity, an updated traffic analysis was completed for the Final EA (Section 3.14, Appendix E). Alternatives for ingress/egress to improve safety in the area between the Ranch and Kualoa Regional Park include: a) Widening the Kualoa Ranch Driveway to provide separate internal left-turn and right-turn lanes at Kamehameha Highway; b) Widening the Kualoa Ranch Driveway to accommodate bus turning movements to/from Kamehameha Highway; and c) In consultation with DOT, implementing traffic control plans during special events and excessive traffic, as necessary.

   The above improvements are expected to mitigate the traffic impacts of the Kualoa Ranch improvements. The updated study includes a baseline traffic count that reflects The O'ahu Regional Transportation Plan 2035 projection of a 1.45% annual increase in traffic on Kamehameha Highway.

Operational Program

2. We acknowledge your comments regarding the permanent changes to the 1985 Special Use Permit (SUP) and Conditional Use Permit (CUP). Particularly, the elimination of restrictions on the number of daily guests and operating hours of each location and activity.

   Current visitor count ranges between 1,000 to 1,500 visitors per day. The proposed improvements are primarily to accommodate the current numbers and support some limited growth over the next ten years. Kualoa is planning for up to 2,000 ticketed tour visitors per day.

   Operating hours for Kualoa will be updated to reflect current business operations from 7:30am to 8:00pm. The last tour of the day ends at 5:30pm, and dinner events are occasionally held in the evenings.

   For the past 15 to 20 years, Kualoa has been operating from 7:30am to 8:00pm. The hours of operation will be officially updated from the 1985 Special Use Permit. Ranch work starts early in the morning around 7:30am where there is preparation for guests. Most visitors depart the ranch by late afternoon, with clean up and maintenance work extending to around 8:00pm. There is no intention of starting an evening program.

We will provide you a copy of the Final EA. Thank you for your participation in the environmental review process.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal Planner

Kenneth W. Le Vasseur
47-389 Ahaolelo Road
Kaneohe, HI 96744

January 18, 2018

Mr. Jeff Overton
G70 design
925 Bethel Street, 5th Floor
Honolulu, HI 96813
(jeffo@g70.design)

Mr. John Morgan
Kualoa Ranch Hawai'i, Inc
P.O. Box 650,
Ka'a'awa, HI 96730
(johnmorgan@kualoa.com)

City and County of Honolulu
Department of Planning and Permitting
650 South King Street, 7th Floor
Honolulu, HI 96813
(rcsyoung@honolulu.gov)

Subject: Kualoa Ranch Improvements - Draft EA

Aloha Mr. Overton,

Mahalo for the opportunity to provide comments on the Kualoa Ranch Improvements Draft Environmental Assessment. Kualoa Ranch is an economic engine for our small community and has served the community very well over the years. However, this service has not been without bumps in the road. Most of these bumps have indeed been traffic related. Furthermore, there is no North Shore Corridor Transportation Study, nor has one been scheduled. This corridor study has been requested for many years and is still the highest level request by the North Windward Community and the Oahu Metropolitan Planning Organization Citizen Advisory Committee of which I am a member representing the Kahalu'u Neighborhood Board #29. My comments here are as an individual community member.

The expansion plans for Kualoa Ranch have to be placed in context and the most obvious context is the traffic study and how our two lanes can serve our North Shore and North Windward Communities and share the road with commercial interests, among them Kualoa Ranch. I have reservations concerning the approval of the expansion of commercial enterprises until the State DOT and City & County of Honolulu DPP prepare a coordinated development and transportation baseline like the North Shore Corridor Transportation Study. The growth of Kualoa Ranch must always be reasonably proposed within limits, even without a traffic study.

I fully support Malama Waihe`e's comments on the Ranch's plans for upgrades to the ranch headquarters area, Paliku, and Ka'a'awa. Because the proposed action involves permanent changes to the Kualoa Ranch Special Use Permit (SUP) and Conditional

Use Permit (CUP), I support Malama Waihe`e concern about the three areas in the Draft EA that should be clarified. I include them here verbatim.

1. Reference: Section 1.3

PURPOSE OF THE ENVIRONMENTAL ASSESSMENT

Changes to the SUP and CUP, if approved, are permanent to use of the land in the Kualoa Valley, and are not limited to Kualoa Ranch, Inc or it's current owners, directors and management. We can't know the future, and can't rule out the possibility that at some point the Ranch might be owned or managed by entities with different values and business plan. Therefore, we are concerned about the proposed elimination of any area limit to trails, and the complete elimination of restrictions on the number of guests, recreation vehicles, and operating hours. The current Ranch owners and management are best able to describe, based on the Ranch business plan and operating requirements, what changes should be made to the expansion of trails, the anticipated number of guests permitted daily, the number of recreation vehicles, and operating hours.

Please revise the Draft Environmental Analysis to identify specific limits on the area proposed for expansion of trails, the number of daily guests, the number of recreation vehicles (by type and size), and operating hours of each location and activity.

2. Reference: Section 3.14

ROADWAY, ACCESS AND TRAFFIC CONDITIONS

The Kualoa Ranch traffic impact analysis was conducted in July 2015, prior to substantial increases in actual, planned, and proposed residential, commercial, and other tourist-oriented development in Kahalu'u and Ko'olau Loa communities, and looked only at the impact of increased traffic activity related to Kualoa Ranch. We believe an updated traffic analysis is required to provide a comprehensive baseline of the cumulative impact of recent, planned, and proposed development affecting Kamehameha Highway along the Windward Oahu coastline.

The State Department of Transportation and City & County of Honolulu must conduct an updated, comprehensive analysis of Kamehameha Highway traffic between Kahuku and Kaneohe. This analysis must address the cumulative impact of expansion of the Urban Boundary in Bill 57 (the Ko'olaupoko Sustainable Community Plan), Bill 1 (the Ko'olauloa Sustainable Communities Plan) and other recently completed, planned, and proposed residential, commercial, and tourist-oriented developments.

Please update the Draft Environmental Assessment to reflect the anticipated impact of Kualoa Ranch traffic given a baseline that reflects ongoing or known planned development along the Windward Oahu coast.

3. Reference: Section 1.4

AGENCIES, ORGANIZATIONS AND INDIVIDUALS CONTACTED IN PRE-CONSULTATION

Pre-consultation with Kahalu'u and Ko'olau Loa Neighborhood Boards was conducted more than two years ago and did not include important details on the Kualoa Ranch improvement plan. We ask that Kualoa Ranch provide more regular periodic presentations to keep Windward Oahu communities informed about the Ranch development plans.

Please update Section 1.4 with the statement that Kualoa Ranch will make periodic presentations to community organizations throughout the permitting and development construction process.

Aloha,

Kenneth W. LeVasseur

808-239-5875
808-391-6393

Copies to:

Senator Gil Riviere, gil@gilriviere.com, senriviere@capitol.hawaii.gov

Andrea Anixt, Ka'a'awa Community Association, andreapeatmoss2@gmail.com

Flora Obayashi, Chair Kahalu'u Neighborhood Board #29, of8@hawaii.edu

Kealohi Reppun, kreppun@punahou.edu

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July 11, 2018

Mr. Kenneth W. Le Vasseur
47-389 Ahaolelo Road
Kaneohe, HI 96744

Subject: **Chapter 343, HRS Draft Environmental Assessment**
Kualoa Ranch Improvements
TMK: 4-9-005:01; 4-9-004:02; 5-1-001:01 (portion)
Oʻahu, Koʻolau Poko District, Kualoa Ahupuaʻa

Dear Mr. Le Vasseur:

Thank you for your comment letter concerning the Chapter 343, Hawaiʻi Revised Statutes (HRS) Draft Environmental Assessment (EA) for the Kualoa Ranch Improvements project. The following responses are offered to your comments:

Traffic Analysis

1. An updated traffic analysis is included in the Final EA. We acknowledge your interest in having State Department of Transportation and the City & County of Honolulu to conduct an updated, comprehensive analysis of Kamehameha Highway traffic between Kahuku and Kāneʻohe.

   With respect to Kualoa Ranch vicinity, an updated traffic analysis was completed for the Final EA (Section 3.14, Appendix E). Alternatives for ingress/egress to improve safety in the area between the Ranch and Kualoa Regional Park include: a) Widening the Kualoa Ranch Driveway to provide separate internal left-turn and right-turn lanes at Kamehameha Highway; b) Widening the Kualoa Ranch Driveway to accommodate bus turning movements to/from Kamehameha Highway; and c) In consultation with DOT, implementing traffic control plans during special events and excessive traffic, as necessary.

   The above improvements are expected to mitigate the traffic impacts of the Kualoa Ranch improvements. The updated study includes a baseline traffic count that reflects The Oʻahu Regional Transportation Plan 2035 projection of a 1.45% annual increase in traffic on Kamehameha Highway.

Operational Program

2. We acknowledge your concern regarding the modifications to the Special Use Permit (SUP) and Conditional Use Permit (CUP), especially regarding the operational program for daily guests, recreation vehicles, expansion of trails, and operating hours of locations and activities. Current visitor count ranges between 1,000 to 1,500 visitors per day. The proposed improvements are primarily to accommodate the current numbers and support some limited growth over the next ten years. Kualoa is planning for up to 2,000 ticketed tour visitors per day.

   The current maximum number of daily ATV riders is 320 passengers/day for ATV rides, and 30 passengers/day on multi-passenger ATVs. In order to accommodate an increase in ATV riders and maintain the integrity of the trails, up to 40 multi-passenger ATVs will be added to accommodate up to 200 guests per day. Physical trail expansion is not proposed. The modification to the ATV operational program will update the SUP to reflect current trail use that occurs in Ka'a'awa Valley (by both ATV riders and agriculture operators). Operating hours for Kualoa will be updated to reflect current business operations from 7:30am to 8:00pm. The last tour of the day ends at 5:30pm, and dinner events are occasionally held in the evenings.

Community Presentations

3. We acknowledge the need for continued communication with the community and will make periodic presentations to community organizations throughout the permitting and development construction process.

We will provide you a copy of the Final EA. Thank you for your participation in the environmental review process.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal Planner

Barbara Natale

To: Barbara Natale
Subject: RE: Kualoa EA

From: Nancy Morgan <namorgans@aol.com>
Date: January 16, 2018 at 1:57:41 PM HST
To: jeffo@g70.design
Subject: Kualoa EA

Aloha Jeff,

I have a couple of questions on the Kualoa EA. First, I was wondering how come the Hawaiian Stilts and Alae Ula were not included in the avian survey. They are both frequently found at Kualoa in the lower Ka'a'awa Valley.

My second question is about section 3-7 regarding the bats. When it says in the EA "To avoid any potential negative impacts to roosting bats, woody vegetation taller than 15 ft will not be removed during pupping season (between June 1 and September 15)." What does that mean? It it only the area in the EA or is it property wide? When it talks about vegetation being removed, does that also include trimming of trees over 15' tall? What about bulldozing of trees to make or improve roads? What about grinding trees down?

I know the 30 day comment period is ending soon, so I hope to hear back from you as soon as possible.

Mahalo,
Nancy Morgan

Sent from my iPad

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July 11, 2018

Ms. Nancy Morgan
namorgans@aol.com

Subject: **Chapter 343, HRS Draft Environmental Assessment**
Kualoa Ranch Improvements
TMK: 4-9-005:01; 4-9-004:02; 5-1-001:01 (portion)
O'ahu, Ko'olau Poko District, Kualoa Ahupua'a

Dear Ms. Morgan:

Thank you for your comment letter dated January 16, 2018 concerning the Chapter 343, Hawai'i Revised Statutes (HRS) Draft Environmental Assessment (EA) for the Kualoa Ranch Improvements project. The following responses are offered to your comments:

Hawaiian Stilts and Alae Ula

1. We acknowledge your comment regarding the exclusion of the Hawaiian Stilts and Alae Ula in the Draft EA. The avian survey is a snapshot in time, and records the species observed during the time allocation. Section 3.7 of the Final EA has been updated to include these bird species.

Hoary Bat

2. The bat directive in Section 3.7 is primarily for the EA improvements, although it would apply property-wide. This information comes from the US Fish and Wildlife Service for protective action, as the hoary bat is an endangered species. Trimming, bulldozing, or grinding trees or woody vegetation over 15 feet tall during the bat pupping season of June 1 to Sept. 15 is not advised.

We will provide you a copy of the Final EA. Thank you for your participation in the environmental review process.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeffrey H. Overton, AICP, LEED AP
Principal Planner

8.0
LIST OF REFERENCES

8.0 LIST OF REFERENCES

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APPENDIX A

NATURAL RESOURCES ASSESSMENT FOR
PLANNED IMPROVEMENTS AT KUALOA RANCH
(AECOS, INC.)

Natural resources assessment for planned improvements at Kualoa Ranch, Windward O‘ahu

June 18, 2015 **FINAL** *AECOS* No. 1425

Eric B. Guinther and Chad Linebough
AECOS Inc.
Kamehameha Hwy., Kāne‘ohe, Hawai‘i 96744
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Introduction

Kualoa Ranch, located in the *‘ahupua‘a* of Kualoa on windward O‘ahu (Figure 1), is planning various upgrades and improvements to facilities relating to tours and other activities on the property. Specifically, three already developed areas would be improved and/or new structures erected. Improvements would also be completed to support infrastructure, including roadways, parking, power, water supply, wastewater management, and drainage as appropriate. The three areas where planned improvements are slated to be undertaken are 1) Kualoa Ranch Headquarters and Visitor Center, 2) Palikū Gardens, and 3) Ka‘a‘awa Group Facility at an existing pavilion structure. *AECOS* Inc. biologists were requested to survey each of the three areas in order to establish that no natural resources of special value or regulatory interest would be adversely impacted by the proposed projects.

Methods

Survey work was conducted by the authors on May 22 and 29, 2015. Survey effort included pedestrian surveys ranging over the three project sites. As some last minute changes were occurring, the area surveyed in each case tended to exceed the anticipated work areas. A Trimble GeoXH (6000 Series) hand-held GNSS recorded the track of the botanist, defining the actual limits of the survey in each area (see Figures 2, 3, and 4). In the case of the vertebrates survey, the actual area of observations is not especially relevant, since results can be applied over a wide area surrounding each project site. In the case of the

botanical survey, the survey track is important because the results (species list) pertain rather specifically to the area of observations.

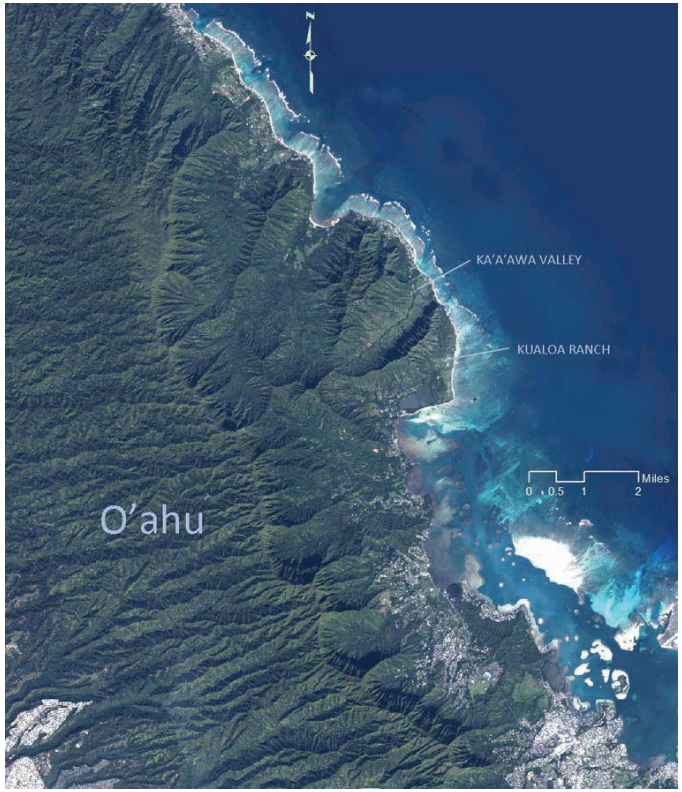

Figure 1. Map of the windward coast of O‘ahu showing project locations. Kāne‘ohe Bay occupies the lower right corner in this image.

Figure 2. Area 1) Kualoa Ranch Visitor Center and Headquarters site showing track of botanist defining survey area and avian point-count Stas. 2 and 5.

Botanical Survey

Plant names follow *Manual of the Flowering Plants of Hawai'i* (Wagner, Herbst, & Sohmer, 1990; Wagner & Herbst, 1999) for native and naturalized flowering plants, *Hawai'i's Ferns and Fern Allies* (Palmer, 2003) for ferns and fern allies,

Figure 3. Area 2) - Palikū Garden showing track of botanist defining survey area and avian point-count Station 1.

and *A Tropical Garden Flora* (Staples & Herbst, 2005) for ornamental plants. More recent name changes for naturalized plant species follow Imada (2012).

Plant species were identified as they were encountered and notations used to develop a qualitative sense of abundance of each (except for landscape plantings). Any plant not immediately recognized during the survey was

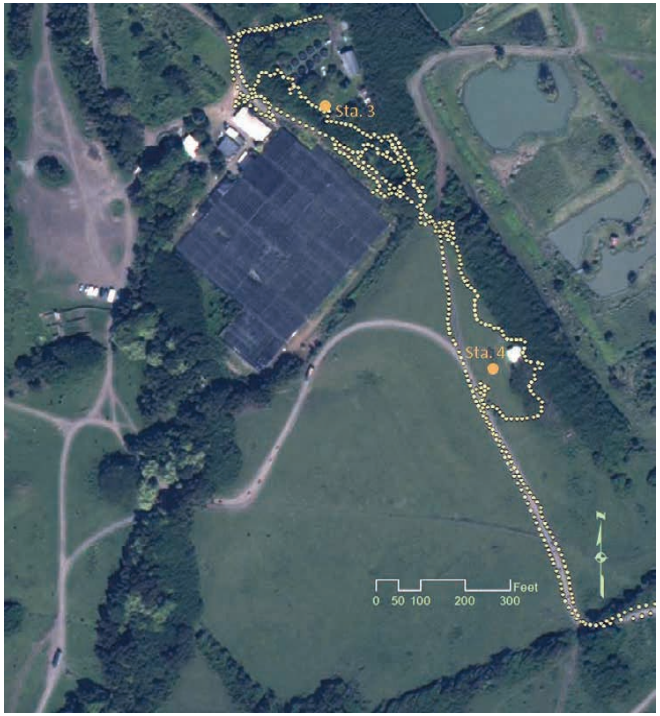

Figure 4. Area 2) - Ka'a'awa Group Facility site showing track of botanist defining survey area and avian point-count Stations 3 and 4.

photographed and/or a representative feature (flower, fruit, branch) collected for later identification at the laboratory. Because areas 1) and 2) (Ranch Headquarters and Palikū Garden) are essentially fully landscaped locations (with some areas of pasture in the front of the Ranch Headquarters area), quantitative or qualitative abundances by species would have no particular meaning beyond the sensibilities of the gardening staff. For these two areas,

only a presence/absence tally was recorded. Qualitative abundance of plants at the Ka'a'awa Valley site was recorded, although for planted species observed adjacent to the shade house and in a maintained garden area, again only presence/absence was recorded. The Group House structure is planned for the location at bird count Sta. 4 (Fig. 4, above), so the surveys in this area exceed the "impact" area.

Avian Survey

The avian survey included stationary point-counts at five stations in which all birds observed within a visible radius during an 8-minute counting period were recorded. Point-count stations (Figures 2, 3, and 4) were located: near the center of the Paliku Kauhale site (Sta. 1), just north of the visitor center (Sta. 2), just east of the proposed Ka'a'awa Group Facility (Sta. 3), approximately 750 ft north of the Ka'a'awa Group Facility (Sta. 4), and by the south end of the paddock near Kualoa Ranch headquarters (Sta. 5). Any additional bird species observed during pedestrian investigation of the proposed work areas were noted.

Stationary point-counts were conducted between 0800 and 1000 on May 22 (Stas. 1 and 2) and 29, 2015 (Stas. 3 through 5). Weather conditions during both surveys were ideal, with no rain, unlimited visibility, and light winds. Species identifications were verified with *A Photographic Guide to the Birds of Hawaii: the Main Islands and Offshore Waters* (Denny, 2009). Taxonomy follows the Checklist of North and Middle American Birds by American Ornithologists' Union (AOU, 2014).

Terrestrial Mammals Survey

A list of mammal species observed in the project area was noted as biologists conducted botanical and avian surveys. Visual observation for tracks, scat, and other signs of mammalian use of the Project area were undertaken concurrently with the avian survey. Mammal scientific names follow *Mammals in Hawaii* (Tomich, 1986).

Results

Vegetation

Although a natural, mostly non-native vegetation surrounds the survey areas, the locations proposed for improvements at Kualoa Ranch Headquarters and Palekū

are landscaped. The Ka'a'awa Group Facility is an area of pasture backed against a slope covered with *hau* (*Hibiscus tiliaceus*) forest (Figure 6).

Figure 6. Pasture at the location of the proposed Group Facility on the edge of a pasture. Shadow on right bottom is cast by an existing pavilion.

Flora

The following checklist (Table 1) is a compilation of plant species observed during our field survey. Entries are arranged alphabetically under their family names and include scientific name, common name, and status of the species (i.e., native or non-native; see key at end of table), and in some cases, a qualitative abundance value. There are two location columns: "Main" combining the Ranch Headquarters, Visitor Center, and Palikū Garden, and "Kawa" for the Group Facility in lower Ka'a'awa Valley. "Status" reflects the state-wide distributional status of the species, so a native, indigenous or endemic species used as an

Table 1. Checklist of the plants noted at Kualoa Ranch survey sites in May 2015 survey.

SCIENTIFIC NAME	common name	Status	Main	Kawa
PTERIDOPHYTA				
ASPLENIACEAE (spleenwort family)				
Asplenium nidus L.	bird's-nest fern	Nat	✓	--
NEPHROLEPIDACEAE (sword fern family)				
Nephrolepis cordifolia (L.) C. Presl	---	**Ind**	✓	--
Nephrolepis multiflora (Roxb.) F.M. Jarrett ex C. Morton	---	Nat	✓	--
POLYPODIACEAE (polypody fern family)				
Phymatosorus grossus (Langsd. & Fisch.) Brownlie	*laua'e*	Nat	✓	--
THELYPTERIDACEAE (wood fern family)				
Christella parasitica (L.) H. Lév.	wood fern	Nat	✓	--
GYMNOSPERMAE				
ARAUCARIACEAE (araucaria family)				
Araucaria columnaris (G. Forst.) J.D. Hook.	cook-pine	Nat	✓	--
CUPRESSACEAE (cypress family)				
Cupressus sp.	cypress	Orn	✓	--
CYCADACEAE (cycad family)				
Cycas sp.	sago	Orn	--	✓
ZAMIACEAE (coontie family)				
Zamia furfuracea L.	cardboard-palm	Orn	✓	--
ANGIOSPERMAE DICOTYLEDONAE				
ACANTHACEAE (acanthus family)				
Asystasia gangetica (L.) T. Anderson	Chinese violet	Nat	✓	--
Barleria repens C. Nees	pink-ruellia	Orn	✓	--
Graptophyllum pictum (L.) Griffith	caricature plant	Orn	✓	--
Hemigraphis reptans (G. Forst.) T. Anderson	---	Orn	✓	--
Pachystachys lutea C. Nees	yellow shrimp plant	Orn	✓	--
Pseuderanthemum carruthersii (Seemann) Guill.	pseuderanthemum	Orn	✓	--
Sanchezia parvibracteata Sprague & J. Hutch.	---	Orn	✓	--
Thunbergia fragrans Roxb.	sweet clock vine	Nat	✓	R

Table 1 (continued)

SCIENTIFIC NAME	common name	Status	Main	Kawa
AMARANTHACEAE (amaranth family)				
Achyranthes aspera L.	---	Nat	✓	--
Alternanthera pungens Kunth	khaki weed	Nat	✓	--
Amaranthus spinosus L.	spiny amaranth	Nat	✓	U2
Amaranthus viridis L.	slender amaranth	Nat	✓	U
ANACARDIACEAE (mango family)				
Mangifera indica L.	mango	Nat	✓	--
Schinus terebinthifolius Raddi	Christmas berry	Nat	✓	C
APIACEAE (parsley family)				
Anethum graveolens L.	dill	Orn	--	✓
APOCYNACEAE (dogbane family)				
Adenium obesum (Forssk.) J. Roemer & J. A, Schultes	desert rose	Orn	✓	--
Allamanda cathartica L.	allamanda	Orn	✓	--
Carissa macrocarpa (Ecklon) A. de Cand.	natal-plum	Orn	✓	--
Nerium oleander L.	oleander	Orn	✓	--
Plumeria rubra L.	plumeria	Orn	✓	R
ARALIACEAE (panax family)				
Polycias fruticosa (L.) Harms	parsley panax	Orn	✓	--
Polycias guilfoylei (W. Bull) L. H. Bailey	panax	Orn	✓	--
Schefflera actinophylla (Endl.) Harms	octopus tree	Nat	✓	R
Schefflera arboricola (Hayata) Merr.	dwarf schefflera	Orn	✓	--
ASTERACEAE (sunflower family)				
Ageretum conyzoides L.	*maile hohono*	Nat	✓	C
Bidens alba (L.) DC.	Spanish needle	Nat	✓	O1
Bidens pilosa	Spanish needle	Nat	--	U
Calyptocarpus vialis Less.	---	Nat	✓	O
Conyza bonariensis (L.) Cronq.	hairy horseweed	Nat	--	R
Eclipta prostrata (L.) L.	false daisy	Nat	✓	
Emilia fosbergii Nicolson	Flora's paintbrush	Nat	✓	O
Helianthus annuus L.	sunflower	Orn	--	✓
Sigesbeckia orientalis L.	small yellow crownbeard	Nat	--	U1
Sonchus oleraceus L.	sow thistle	Nat	✓	O1
Sphagneticola triloba (L.) Pruski	wedelia	Nat	✓	--
Synedrella nodiflora (L.) Gaertn.	nodeweed	Nat	✓	C
Tridax procumbans L.	coat buttons	Nat	✓	--
Youngia japonica (L.) DC.	Oriental hawksbeard	Nat	✓	U
BALSAMINACEAE (touch-me-not family)				
Impatiens wallerana J.D. Hook.	busy Lizzie, touch-me-not	Nat	✓	--

Table 1 (continued)

SCIENTIFIC NAME	common name	Status	Main	Kawa
BEGONIACEAE (begonia family)				
Begonia coccinia W.J. Hook.	angel-wing begonia	Orn	✓	--
BOMBACACEAE (bombax family)				
Pachira insignis (Sw.) Sw. ex Savigny	---	Orn	✓	--
BORAGINACEAE (borage family)				
Carmona retusa (Vahl) Massamune	Fukien-tea	Nat	✓	--
Cordia subcordata Lam.	*kou*	**Pol**	✓	--
Heliotropium procumbens Mill.	---	Nat	✓	U1
BRASSICACEAE (mustard family)				
Coronopus didymus (L.) Sm.	wartcress	Nat	✓	R2
Lepidium virginicum L.	pepperwort	Nat	✓	U
CARICACEAE (papaya family)				
Carica papaya L.	papaya	Nat	✓	--
CARYOPHYLLACEAE (pink family)				
Drymaria cordata (L.) Willd. ex Roem.	*pipili*	Nat	✓	--
CLUSIACEAE (clusis family)				
Calophyllum inophyllum L.	*kamani*			
Clusia rosea N. Jacq.	autograph tree	Nat	✓	--
COMBRETACEAE (combretum family)				
Terminalia catappa L.	tropical almond	Nat	✓	--
CONVOLVULACEAE (morning-glory family)				
Ipomoea batatas (L.) Lam.	*'uala*	**Pol**	✓	✓
Ipomoea obscura (L.) Ker-Gawl.	---	Nat	✓	U
Ipomoea triloba L.	little bell	Nat	✓	U
CUCURBITACEAE (gourd family)				
Coccinia grandis (L.) Voigt	scarlet-fruited gourd	Nat	✓	R
Momordica charantia L.	balsam pear	Nat	✓	U
ERICACEAE (rhododendron family)				
Rhododendron spp.	azaleas	Orn	✓	--
EUPHORBIACEAE (spurge family)				
Acalypha wilkesiana Müll Arg.	beefsteak plant	Orn	✓	--
Aleurites moluccana (L.) Wild.	*kukui*	**Pol**	✓	R
Breynia disticha J.R. & G. Forst.	snowbush	Orn	✓	--
Codiaeum variegatum (L.) Blume	croton	Orn	✓	--
Euphorbia cyathophora J.A. Murray	Mexican fire plant	Nat	✓	--
Euphorbia heterophylla L.	*kaliko*	Nat	✓	--
Euphorbia hirta L.	garden spurge	Nat	✓	C
Euphorbia hypericifolia L.	graceful spurge	Nat	✓	U
Euphorbia hyssopifolia L.	---	Nat	--	R

Table 1 (continued)

SCIENTIFIC NAME	common name	Status	Main	Kawa
EUPHORBIACEAE (continued)				
Euphorbia prostrata Small	prostrate spurge	Nat	✓	--
Euphorbia pulcherrima Klotz.	poinsettia	Orn	✓	--
Jatropha integerrima N. Jacq.	jatropha	Orn	✓	--
Pedilanthus tithymaloides (L.) Poit.	Japanese-poinsettia	Orn	✓	--
Phyllanthus debilis Klein ex Willd.	niruri	Nat	✓	O2
Phyllanthus tenellus Roxb.	---	Nat	✓	--
Ricinus communis L.	castor bean	Nat	✓	R
FABACEAE (pea family)				
Acacia farnesiana (L.) Willd.	*klu*	Nat	✓	R
Albizia saman F. Muell.	monkeypod	Nat	✓	U
Arachis pintoi Krapovickas & W.C. Gregory	golden-glory	Orn	--	✓
Caesalpinia pulcherrima (L.) Swartz	*'ohai ali'i*	Orn	✓	--
Cassia surrattensis	scrambled-egg plant	Nat	--	U
Cassia sp.	shower tree	Orn	✓	--
Chamaecrista nictitans (L.) Moench	partridge pea	Nat	✓	--
Crotalaria incana L.	fuzzy rattlepod	Nat	✓	R
Desmodium incanum DC.	Spanish clover, *ka'imi*	Nat	✓	O2
Erythrina sandwicensis Degener	*wiliwili*	**End**	--	R
Indigofera hendycaphyla Jacq.	prostrate indigo	Nat	✓	
Indigofera suffruticosa Mill.	indigo	Nat	--	R
Leucaena leucocephala (Lam.) de Wit	*koa haole*	Nat	✓	U
Macroptilium atropurpureum (DC.) Urb.	---	Nat	✓	U
Macroptilium lathyroides (L.) Urb.	cow pea	Nat	✓	O
Mimosa pudica L.	sensitive plant	Nat	✓	C
Medicago lupulina L.	black medick	Nat	✓	--
Medicago polymorpha L.	burr clover	Nat	✓	--
Pithecellobium dulce (Roxb.) Benth,	*'opiuma*	Nat	✓	--
Senna occidentalis (L.) Link	coffee senna	Nat	✓	--
Tamarindus indica L.	tamarind	Nat	✓	--
Vigna cf. *luteola* (Jacq.) Benth.	---	Nat	--	✓
GERANIACEAE (geranium family)				
Pelargonium 'Citrosum'	mosquito plant	Orn	--	✓
GOODENIACEAE (naupaka family)				
Scaevola taccada (J. Gaertn.) Roxb.	*naupaka kahakai*	Ind	✓	--
LAMIACEAE (mint family)				
Mentha xpeperita L.	peppermint	Orn	--	✓
Ocimum basilicum L.	sweet basil	Nat	--	✓

Table 1 (continued)

SCIENTIFIC NAME	common name	Status	Main	Kawa
LAMIACEAE (continued)				
Rosmarinus officinalis L.	rosemary	Orn	--	✓
Salvia officinalis L.	common sage	Orn	--	✓
Thymus vulgaris L.	common thyme, *kaima*	Orn	--	✓
LOGANIACEAE (strychnine family)				
Fagraea berteroana Benth.	*pua kenikeni*	Orn	✓	--
MALVACEAE (hibiscus family)				
Abutilon grandifolium (Willd.) Sweet	hairy abutilon	Nat	--	U
Hibiscus rosa-sinensis L.	Chinese hibiscus cultivars	Orn	✓	R
Hibiscus tiliaceus L.	*hau*	**Ind?**	--	C
Malvastrum coromandelianum (L.) Garcke ssp. *coromandelianum*	false mallow	Nat	✓	O1
Malvaviscus arboreus Cav.	wax mallow	Orn	✓	--
Sida ciliaris L.	---	Nat	✓	--
Sida rhombifolia L.	Cuba jute	Nat	✓	U
Sida spinosa L.	prickly sida	Nat	✓	U2
Sidastrum micranthum (St. Hil.) Fryx	---	Nat	✓	U
Thespesia populnea (L.) J.F. Corrêa	*milo*	**Pol?**	✓	U1
MELASTOMATACEAE (melastome family)				
Clidemia hirta (L.) D. Don	Koster's curse	Nat	✓	--
MORACEAE (fig family)				
Artocarpus communis Forst.	*'ulu*, breadfruit	**Pol**	✓	--
Broussonetia papyrifera (L.) Venten.	*wauke*	**Pol**	✓	--
Ficus microcarpa L. f.	Chinese banyan	Nat	✓	--
Ficus microcarpa var. *crassifolia* (W.C. Shieh) J.C. Liao	wax ficus	Orn	✓	--
Ficus natalensis Hochst.	Natal fig	Orn	✓	--
MYRTACEAE (myrtle family)				
Callistemon citrinus (Curtis) Skeels	crimson bottlebrush	Orn	✓	--
Psidium guajava L.	common guava	Nat	✓	U
Syzygium cumini (L.) Skeels	Java plum	Nat	✓	R
NYCTAGINACEAE (four-o'clock family)				
Boerhavia coccinea Mill.	false *alena*	Nat	✓	--
Bougainvillea spectabilis Willd.	bougainvillea	Orn	✓	--
OXALIDACEAE (wood sorrel family)				
Oxalis corniculata L.	yellow wood sorrel	**Pol**?	✓	O
Oxalis corymbosa DC.	pink wood sorrel	Nat	✓	--
PASSIFLORACEAE (passion flower family)				
Passiflora edulis Sims	passion fruit	Nat	✓	R

Table 1 (continued)

SCIENTIFIC NAME	common name	Status	Main	Kawa
PASSIFLORACEAE (continued)				
Passiflora foetida L.	love-in-a-mist, running pop	Nat	✓	--
Passiflora suberosa L.	*huehue haole*	Nat	✓	U
PHYTOLACCACEAE (pokeweed family)				
Rivina humilis L.	coral berry	Nat	✓	R
PIPERACEAE (pepper family)				
Piper methysticum G. Forst.	*'awa*	**Pol**	✓	✓
PLUMBAGINACEAE (plumbago family)				
Plumbago auriculata Lam.	blue plumbago	Orn	✓	--
PLANTAGINACEAE (plantain family)				
Plantago major	common plantain	Nat	--	R
POLYGONACEAE (buckwheat family)				
Coccoloba uvifera (L.) L.	sea-grape	Nat	✓	--
PORTULACAEA (purslane family)				
Portulaca oleracea L.	pigweed	Nat	✓	--
PRIMULACEAE (primrose family)				
Anagallis arvensis L.	scarlet pimpernel	Nat	--	O
PROTEACEAE (protea family)				
Macadamia integrifolia Maiden & Betche	macadamia	Nat	✓	--
RUBIACEAE (coffee family)				
Gardenia sp.		Orn	✓	--
Ixora sp.	ixora	Orn	✓	--
Morinda citrifolia L.	*noni*	**Pol**	✓	R
Paederia foetida L.	maile pilau	Nat	✓	O
RUTACEAE (citrus family)				
Murraya paniculata (L.) W. Jack	mock orange	Orn	✓	--
SOLANACEAE (nightshade family)				
Capsicum annuum L.	*nīoi*, bird pepper	Nat	✓	--
Solanum americanum Mill.	*pōpolo*	**Ind**	✓	U
Solanum lycopersicum var. *cerasiforme* (Dunal) Spooner, G.J. Anderson & R.K. Jansen	cherry tomato	Nat	✓	U
Solanum mauritianum Scop.	*pua nānā honua*	Nat	✓	R
Solanum torvum Sw.	turkey berry	Nat	--	U1
THYMELAEACEAE (*'ākia* family)				
Wikstroemia uva-ursi A. Gray	*'ākia*	**End**	✓	--
ULMACEAE (elm family)				
Tremma orientalis (L.) Blume	gunpowder tree	Nat	✓	R

Table 1 (continued)

SCIENTIFIC NAME	common name	Status	Main	Kawa
ERBENACEAE (verbena family)				
Citharexylum cf. *spinosum* L.	fiddlewood	Nat	✓	--
Clerodendrum quadriloculare (Blanco) Merr.	---	Orn	✓	--
Clerodendrum thomsonae I.B. Balfour	bleeding-heart vine	Orn	✓	--
Duranta erecta L.	golden dewdrop	Orn	✓	--
Lantana camara L.	lantana	Nat	✓	--
Verbena litoralis Kunth	*owi, oi*	Nat	✓	U
Vitex rotundifolia L. fil.	*pōhinahina*	**Ind**	✓	--
ZYGOPHYLLACEAE (Lignum-vitae family)				
Guaiacum officinale L.	lignum-vitae	Orn	✓	--
MONOCOTYLEDONEAE				
AGAVACEAE (agave family)				
Cordyline fruticosa (L.) A. Chev.	ti, *ki* cultivars	**Pol**	✓	--
Dracaena aubryana E. Morren	lance dracaena	Orn	✓	--
Dracaena fragrans (L.) Ker Gawl.	fragrant dracaena	Orn	✓	--
Dracaena fragrans "Janet Craig"	cultivar	Orn	✓	--
Dracaena marginata Lam.	money tree	Orn	✓	--
Dracaena marginata 'Tricolor'	tricolor variety	Orn	✓	--
Dracaena reflexa Lam.	---	Orn	✓	--
Dracaena sanderiana M.T. Masters	sanderiana	Orn	✓	--
Nolina recurvata (Lamaire) W. Hemsley	ponytail	Orn	✓	--
Sansevieria trifasciata Prain	bowstring- hemp	Nat	✓	--
ALOEACEAE (aloë family)				
Aloë vera (L.) N.L. Burm.	common aloë	Nat	✓	R
ARACEAE (aroid family)				
Alocasia plumbea K. Koch ex Van Houtte	---	Orn	✓	--
Dieffenbachia maculata (Lodd.) G. Don	dumb cane	Orn	✓	--
Epipremnum pinnatum (L.) Engler	pothos	Nat	✓	--
Colocasia esculenta (L.) Schott.	*kalo*	**Pol**	✓	--
Monstera deliciosa Lieb	monstera	Orn	✓	--
*Philodendron bipinnatifi*dum Endl.	selloum	Orn	✓	--
Philodendron xanadu Croat, Mayo, & J. Boos	---	Orn	✓	--
Syngonium sp.	nephthys	Nat	✓	--
Xanthosoma robusta Schott	*'ape*	Nat	✓	--
ARECACEAE (palm family)				
Caryota cf. *mitis* Lour.	fishtail palm	Orn	✓	--
Cocos nucifera L.	*niu*, coconut palm	Nat	✓	R

Table 1 (continued)

SCIENTIFIC NAME	common name	Status	Main	Kawa
ARECACEAE (continued)				
Dypsis decaryi (Jumelle) Beenje & Dransfield	triangle palm	Orn	✓	--
Dypsis lutescens (H. Wendl.) Beentje & J. Dransfield	areca palm	Orn	✓	U
Hyophorbe lagenicaulis (L.H. Bailey) H.E. Moore	bottle palm	Orn	✓	--
Hyophorbe verschaffeltii H. Wendl.	spindle palm	Orn	✓	--
Latania loddigesii Mart.	blue latan palm	Orn	✓	--
Licuala grandis H. Wendl.	licuala palm	Orn	✓	--
Licuala cf. *spinosa* Roxb.	mangrove fan palm	Orn	✓	--
Phoenix roebelenii O'Brien	dwarf date palm	Orn	✓	--
Pritchardia spp.	*loulu* palms	Orn	✓	--
Ptychosperma macarthurii (Veitch) J.D. Hooker	Macarthur palm	Orn	✓	--
Rhapis excelsa (Thunb.) Rehder	lady palm	Orn	✓	--
Roystonea regia (Kunth) O.F. Cook	royal palm	Orn	✓	R
Veitcha merrillii (Beccari) H.E. Moore	Manila palm	Orn	✓	--
Wodyetia bifurcata A.K. Irvine	foxtail palm	Orn	✓	--
BROMELIACEAE (bromeliad family)				
Aechmea blanchetiana (G.J. Baker) L.B. Smith	---	Orn	✓	--
Neoregalia sp.	---	Orn	✓	--
Quesnelia sp.	---	Orn	✓	--
COMMELINACEAE (spiderwort family)				
Commelina benghalensis	hairy *honohono*	Nat	--	R
Tradescantia spathacea Swartz	Moses-in-a-boat	Orn	✓	--
CYPERACEAE (sedge family)				
Cyperus gracilis R. Br.	McCoy grass	Nat	✓	--
Cyperus rotundus L.	nut grass	Nat	✓	--
Kyllinga nemoralis (J.R. Forst. & G. Forst.) Dandy ex Hutchinson & Dalziel	*kili'o'opu*	Nat	✓	O3
Mariscus javanicus (Houtt.) Merr. & Metcalf	*'ahu'awa*	**Ind**	✓	--
HELICONIACEAE (heliconia family)				
Heliconia bihai (L.) L.	lobster-claw	Orn	✓	✓
Heliconia platystachys J.G. Baker	---	Orn	--	✓
Heliconia rostrata Ruiz & Pavón	parrot's beak heliconia	Orn	✓	--
Heliconia stricta J.E. Huber	firebird heliconia	Orn	✓	✓
Heliconia sp.	spotted-leaf	Orn	✓	--

Table 1 (continued)

SCIENTIFIC NAME	common name	Status	Main	Kawa
IRIDACEAE (iris family)				
Neomarica cf. *gracilis* (Herbert) Sprague	walking iris	Orn	✓	--
Trimezia sp.	walking iris	Orn	✓	--
JUNCACEAE (rush family)				
Juncus tenuis Willd.	---	Nat	✓	--
LILIACEAE (lily family)				
Allium cf. *schoenoprasum* L.	chives	Orn	--	✓
Chlorophytum comosum (Thunb.) Jacq.	spider plant	Orn	✓	--
Crinum pedunculatum R. Br.	river lily	Orn	✓	--
Liriope sp.	lily turf	Orn	✓	--
MARANTACEAE (arrowroot family)				
Calathea majestica (J. Linden) H. Kennedy	---	Orn	✓	--
MUSACEAE (banana family)				
Musa acuminata Colla	banana hybrids	Orn	✓	U2
Musa uranoscopus Lour.	flowering banana	Orn	✓	--
PANDANACEAE (pandanus family)				
Pandanus tectorius S. Parkinson ex Z.	*hala*	**Ind**	✓	--
POACEAE (grass family)				
Axonopus compressus (Swartz) P. Beau.	broad-leaved carpetgrass	Nat	✓	A
Axonopus fissifolius (Raddi) Kuhlm.	narrow-leaved carpetgrass	Nat	✓	C
Bambusa wamin	Wamin bamboo	Orn	✓	--
Bothriochloa pertusa (L.) A. Camus	pitted beardgrass	Nat	✓	--
Cenchrus echinatus L.	common sandbur	Nat	✓	--
Chloris barbata (L.) Sw.	swollen fingergrass	Nat	✓	C
Chloris radiata (L.) Sw.	plushgrass	Nat	--	R
Cymbopogon citratus (C. Nees) Stapf	lemon grass	Orn	--	✓
Cynodon dactylon (L.) Pers.	Bermuda grass	Nat	✓	A
Cynodon nlemfuensis Vanderyst	giant star grass	Nat	✓	--
Cynodon x*magennisii* Hurcomb	tifdwarf grass	Orn	✓	--
Dactyloctenium aegypticum (L.) Willd.	beach wiregrass	Nat	✓	C
Digitaria ciliaris (Retz.) Koeler	Henry's crabgrass	Nat	✓	U
Digitaria insularis (L.) Mez ex Eckman	sourgrass	Nat	✓	O1
Echinochloa colona (L.) Link	jungle-rice	Nat	✓	--
Eleusine indica (L.) Gaertn.	wire grass	Nat	✓	C
Eragrostis pectinacea (Michx.) Nees	Carolina lovegrass	Nat	--	U
Leptochloa panicea (Retz.) Ohwi	---	Nat	--	O3

Table 1 (continued)

SCIENTIFIC NAME	common name	Status	Main	Kawa
POACEAE (continued)				
Paspalum congugatum Bergius	Hilo grass	Nat	✓	--
Paspalum dilatatum Poir	Dallis grass	Nat	✓	--
Paspalum fimbriatum Kunth	Panama grass	Nat	✓	O
Paspalum macrophyllum Kunth	---	Nat	✓	--
Phyllostachys nigra var. *nigra* (Lindley) Munro	black bamboo	Orn	✓	--
Setaria verticillata (L.) P. Beauv.	bristly foxtail	Nat	✓	O
Sorghum halepense (L.) Pers.	Johnson grass	Nat	--	R2
Sporobolus indicus (L.) R. Br.	Indian dropseed	Nat	✓	O
Urochloa maxima (Jacq.) Webster	Guinea grass	Nat	✓	O
Urochloa distachya (L.) T.Q. Nguyen	tropical signal grass	Nat	✓	C
ZINGIBERACEAE (ginger family)				
Alpinia purpurata (Vieill.) K. Schum.	red ginger	Orn	✓	--
Etlingera elatior (Jack) R.M. Smith	torch ginger	Orn	--	✓
Hedychium sp.	ginger	Nat	✓	--

Key to Table 1

STATUS:
- **End** = endemic (native to the Hawaiian Islands and not occurring naturally elsewhere).
- **Ind** = indigenous (native to the Hawaiian Islands and elsewhere).
- Nat = naturalized exotic (non-native species of accidental or deliberate introduction).
- Orn = ornamental.
- **Pol** = early Polynesian introduction; "canoe plant".

ABUNDANCE:
- R – Rare - only one or two plants seen.
- U - Uncommon - several to a dozen plants observed.
- O - Occasional - found regularly, but not abundant anywhere.
- C - Common - considered an important part of the vegetation and observed numerous times.
- A - Abundant - found in large numbers; may be locally dominant.
- AA - Abundant - very abundant and dominant; defining vegetation type.

Numbers are used to indicate a higher abundance rating within a localized area. For example: "R2" is a plant observed in a very few locations, but numerous where encountered.

ornamental is still an indigenous or endemic species under status. Note that the abundance columns have a check mark for landscape plants and a letter value for plants not considered landscape elements in the Ka'a'awa column only. All plants in the Main location are either planted as ornamentals or weeds. A short dashed line means not present at the location.

The vascular flora of the project sites comprises a mix of alien, native, and ornamental species of trees, shrubs, grasses, and forbs, comprising 260 taxa (includes 3 unidentified ornamentals) in 71 families. This is perhaps the longest species list prepared by the author in nearly three decades of conducting botanical field surveys. For such a small area, the list demonstrates the incredible variety of plants to be found planted in the Kualoa Ranch center areas 1) and 2).

Eight of the 260 taxa (3%) are considered native (2 endemic, 6 indigenous), but these are common, widely distributed species, and most are on the site as part of the planted landscaping. Eleven species (4%) of early Polynesian introductions (so-called "canoe plants") are present. Many of the "natives" (both indigenous and Polynesian introductions are in a small native plant garden planted behind the horse-ride booth by an employee break area tent. *Loulu* palms are numerous in the landscaping at Kualoa Ranch. Most appear to be *Pritchardia pacifica* or Fiji fan palm (a non-native). However, there are twenty-four endemic species of *Pritchardia* in Hawai'i (Hodel, 2012), and it is remotely possible one or more of the palms planted at Kualoa Ranch is a native species. Eight native *loulu* (*Pritchardia* spp.) are listed as endangered (USFWS, 2015; given incorrectly as *lo'ulu*, a type of fern). The species can be difficult to differentiate and identify in a landscape setting[1]. Possibly landscaping staff would have some knowledge of whether native *loulu* palms were ever planted here and if so, which species.

A single *wiliwili* tree (*Erythrina sandwicensis*)—obviously a planted specimen—occurs in a small planting area adjacent to the road in area 3). This native endemic is uncommon on O'ahu, but not a protected species.

Aviafauna

During the survey, mostly non-native birds were observed utilizing the property (Table 2). Common Myna (*Acridotheres tristis*) and Red-vented Bulbul (*Pycnonotus cafer*) accounted for nearly half (46%) of all birds observed during the point-counts and both species are present throughout the survey areas. Spotted Dove (*Streptopelia chinensis*) was observed at each station but in less abundance than Common Myna and Red-vented Bulbul. Cattle Egret (*Bubulcus ibis*) was observed consistently throughout the ranch, as was the Scaly-breasted Munia (*Lonchura punctulata*). In fact, though not represented in two station counts, the Scaly-breasted Munia was observed in abundance throughout the

[1] The two common, non-native *Pritchardia* planted in Hawaiian landscapes are Fiji palm (*P. pacifica*) and Thurston's fan palm (*P. thurstonii*). Fiji fan palm has stiff-tipped, wavy leaf margins and fruits under ½-in. Thurston's fan palm is easily recognized (in flower) by the inflorescence arching well beyond the fronds with fruits under ¼-inch in diameter (Staples and Herbst, 2005; Hodel, 2012).

Table 2. Avian species detected during point-counts at Kualoa Ranch in May 2015.

PHYLUM, CLASS, ORDER FAMILY *Genus species*	Common name	Status	Station Point Counts (SPC) Sta. 1	Sta. 2	Sta. 3	Sta. 4	Sta. 5	SPC Abundance (total/5)
CHORDATA, AVES								
ANSERIFORMES								
ANATIDAE								
Anas platyrhynchos Linnaeus	Mallard Duck	Nat	--	--	--	--	--	Incidental
CHARADRIIFORMES								
CHARADRIIDAE								
Pluvialis fulva Gmelin	Pacific Golden Plover; *kōlea*	**Ind**	--	--	--	--	--	Incidental
COLOMBIFORMES								
COLUMBIDAE								
Geopelia striata Linnaeus	Zebra Dove*	Nat	--	2	3	1	--	1.00
Streptopelia chinensis Scopoli	Spotted Dove*	Nat	3	2	1	2	1	1.50
Zenaida macroura Linnaeus	Mourning Dove*	Nat	--	1	--	--	--	0.17
GALLIFORMES								
PHASIANIDAE								
Gallus gallus Linnaeus	Red Junglefowl; *moa*	**Pol**	--	--	--	--	--	Incidental
PASSERIFORMES								
CARDINALIDAE								
Cardinalis cardinalis Linnaeus	Northern Cardinal	Nat	2	--	1	1	--	0.67
ESTRILDIDAE								
Estrilda astrild Linnaeus	Common Waxbill	Nat	6	--	--	4	--	1.17
Lonchura atricapilla Vieillot	Chestnut Munia	Nat	--	--	--	2	--	0.33
Lonchura punctulata Linnaeus	Scaly-breasted Munia	Nat	--	3	--	3	3	1.50

Table 2 (continued)

PHYLUM, CLASS, ORDER FAMILY *Genus species*	Common name	Status	Station Point Counts (SPC) Sta. 1	Sta. 2	Sta. 3	Sta. 4	Sta. 5	SPC Abundance (total/5)
FRINGILLIDAE								
Haemorhous mexicanus Statius Muller	House Finch	Nat	1	--	1	--	--	0.33
TIMIALIIDAE								
Leiothrix lutea Scopoli	Red-billed Leiothrix*	Nat	--	--	--	--	--	Incidental
MUSCICAPIDAE								
Copsychus malabaricus Scopoli	White-rumped Shama*	Nat	2	--	2	3	--	1.17
PASSERIDAE								
Passer domesticus Linnaeus	House Sparrow	Nat	4	--	--	--	2	1.00
PYCNONOTIDAE								
Pycnonotus cafer Linnaeus	Red-vented Bulbul*	Nat	8	8	3	2	2	3.83
Pycnonotus jocosus Linnaeus	Red-whiskered Bulbul*	Nat	--	--	--	--	--	Incidental
STURNIDAE								
Acridotheres tristis Linnaeus	Common Myna*	Nat	6	17	5	5	12	7.50
THRAUPIDAE								
Paroaria coronata J.F. Miller	Red-crested Cardinal	Nat	--	3	--	2	--	0.83
ZOSTEROPIDAE								
Zosterops japonicus Temminck & Schlegel	Japanese White-eye*	Nat	1	--	1	3	--	0.83
PELECANIFORMES								
ARDEIDAE								
Bubulcus ibis Linnaeus	Cattle Egret*	Nat	4	3	--	1	4	2.00
Nycticorax nycticorax Linnaeus	Black-crowned Night Heron	**Ind**	--	--	--	--	--	Incidental

* Listed as "Injurious Wildlife" by DLNR (2015, Exb. 5)

survey areas and is particularly common in the vicinity of the Ranch Headquarters.

Red Junglefowl (*Gallus gallus*), a Polynesian introduction, occurs in low numbers near Palikū Kauhale and Ranch Headquarters. Two indigenous birds were observed during the survey: Pacific Golden Plover (*Pluvialis fulva*) and Black-crowned Night Heron (*Nyticorax nyticorax*). A single Golden Plover was seen in the grassy opening south of the pavilion at Palikū Kauhale. The species is a migrant that spends summers in Alaska and winters in the Hawaiian Islands. Most individuals have left the Islands by the end of May. A few Black-crowned Night Heron (*Nycticorax nycticorax*) were observed flying over the Ka'a'awa survey area and along the shoreline of the ponds northeast of the proposed location for the Ka'a'awa Group Facility.

Mammals

Several mammals are present in the surveyed parts of the ranch (Table 3). Domestic horse (*Equus caballus*), pig (*Sus scrofa*), goat (*Capra hircus*) and llama (*Lama glama*) are confined in stables upslope from the visitor center. Horseback rides are a popular attraction at the ranch, and trails traverse much of the property. Domestic cow (*Bos taurus*) graze in Ka'a'awa valley, and cattle guards present throughout the ranch indicate they likely graze elsewhere, as well. House cat (*Felis catus*) sleep in the stables and barn and apparently feral individuals are present near the aquaculture ponds near the Ka'a'awa site. The small Indian mongoose (*Herpestes auropunctatus*) utilizes the Palikū Kauhale area and the herb garden near the proposed Ka'a'awa Group Facility.

Discussion

Botanical Resources

During this survey, no plants which are proposed, or listed as threatened or endangered species as set forth in the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543; USFWS, 2014), were seen, and none have been documented historically from the project area. For plants, state listing follows the federal listing (DLNR, 1997). The planted vegetation in the project sites is a valuable resource considering the numerous unique ornamentals. However, none of the plants listed in Table 1 is protected under state or federal regulations.

Table 3. Mammalian species detected during the surveys at Kualoa Ranch in May 2015.

PHYLUM, CLASS, ORDER FAMILY *Genus species*	Common name	Status	Abundance
CHORDATA, MAMMALIA, CARNIVORA			
CANIDAE			
Canis familiaris L.	Domestic dog; *'ilio*	Dom	R
VIVERRIDAE			
Herpestes auropunctatus Hodgson	Small Indian mongoose; *'iole manakuke**	Nat	O
FELIDAE			
Felis catus L.	House cat; *pōpiki*	Dom	O
PERISSODACTYLA			
EQUIDAE			
Equus caballus L.	Domestic horse; *lio*	Dom	C
ARTIODACTYLA			
CAMELIDAE			
Lama glama L.	Llama*	Dom	R
SUIDAE			
Sus scrofa L.	Pig; *pua'a**	Dom	R
BOVIDAE			
Bos taurus L.	Domestic cattle; *pipi*	Dom	C
Capra hircus L.	Domestic goat; *kao**	Dom	R

* Listed as "Injurious Wildlife" by DLNR (2015, Exb. 5)

Avian Resources

No animals currently protected or proposed for protection under either the federal or State of Hawai'i endangered species programs (DLNR, 2015; USFWS; 2005a, 2014) were detected during the course of our survey of the project sites. Indeed, no plants or animals of particular resource value occur on the surveyed property. Although not detected during the survey, the potential presence of the following species of birds (and mammals; see below) may require consideration.

Seabirds – Presumably seabirds overfly the site on occasion. No seabird nesting occurs within the proposed project sites, therefore the only likely impact to seabirds would be the temporary use of or permanent installation of outdoor lights. Night-time lighting can disorient seabirds, resulting in their potential

downing and harm from collision with objects and/or predation by feral dogs and cats.

Mammalian Resources

Hawaiian Hoary Bat - It is possible that Hawaiian hoary bat (*Lasiurus cinereus semotus*) or *'ōpe'ape'a* utilize the area on occasion (bats were not surveyed for, as detection requires special equipment deployed at night). Certainly, the ranch has trees with potential value as roosting habitat for this listed species. However, the area to be directly impacted by project work has very limited vegetation suitable for roosting. The limited scope of the project can likely be completed without the disturbance of large trees and consequently, roosting bats. Because bats use multiple roosts within a home territory, removal of vegetation would have no or very minimal impact on this species if resident there. However, during the pupping season (between June 1 and September 15), females carrying pups may be reluctant to vacate a roost site if a pup is present and very small pups may be unable to flee a tree that is being felled.

Federal Jurisdictional Waters / Critical Habitat

Our survey revealed no federal jurisdictional waters (streams or wetlands) in the project areas. Further, no federally delineated Critical Habitat for any species includes, or is close to the parcels. Thus, modifications of habitats on the site will not result in impacts to federally designated Critical Habitat. There is no equivalent statute under state law.

Recommendations

- If night-time construction activity or equipment maintenance is proposed during any construction, all associated lights should be shielded, and when large flood/work lights are used, they should be placed on poles that are high enough to allow the lights to be pointed directly downward at the ground.

- If exterior facility lighting is installed in conjunction with the project, it is recommended that the lights be shielded to reduce the potential for interactions of nocturnally flying seabirds with external lights or other man-made structures (Reed et al., 1985; Telfer et al., 1987).

- To avoid potential deleterious impacts to roosting bats it is recommended that no woody vegetation taller than 15 ft (4.6 m) be removed during the bat pupping season (between June 1 and September 15).

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APPENDIX B

ARCHAEOLOGICAL ASSESSMENT
FOR IMPROVEMENTS TO KUALOA RANCH
(KEALA PONO ARCHAEOLOGICAL CONSULTING, INC.)

FINAL—Archaeological Assessment for Improvements to Kualoa Ranch, Kualoa 1 and 2 Ahupuaʻa, Koʻolaupoko District, and Kaʻaʻawa Ahupuaʻa, Koʻolauloa District, Island of Oʻahu, Hawaiʻi

Portions of TMK: (1) 4-9-004:002, (1) 4-9-005:001, and (1) 5-1-001:001

Prepared For:

Group 70 International
925 Bethel Street, 5th Floor
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December 2016

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FINAL—Archaeological Assessment for Improvements to Kualoa Ranch, Kualoa 1 and 2 Ahupuaʻa, Koʻolaupoko District, and Kaʻaʻawa Ahupuaʻa, Koʻolauloa District, Island of Oʻahu, Hawaiʻi

Portions of TMK: (1) 4-9-004:002, (1) 4-9-005:001, and (1) 5-1-001:001

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Management Summary

An archaeological inventory survey was conducted for portions of TMK: (1) 4-9-004:002 and (1) 4-9-005:001 in Kualoa 1 and 2 Ahupuaʻa, Koʻolaupoko District, and TMK: (1) 5-1-001:001 in Kaʻaʻawa Ahupuaʻa, Koʻolauloa District on the island of Oʻahu. Due to negative findings, the AIS results are presented as an archaeological assessment (AA). The survey was done in preparation for ground disturbance associated with improvements to Kualoa Ranch. The archaeological work included a pedestrian survey that covered 100% of the project areas, as well as test excavations consisting of 13 trenches. The properties have been extensively disturbed by modern use, and no archaeological remains were found on the surface. Likewise, no subsurface cultural features or deposits were encountered during trenching. The only find consisted of three historic artifacts. Given the negative findings, archaeological monitoring is not recommended for the majority of the project area. Monitoring is recommended only in the lower elevations of the Kualoa Ranch Headquarters, where sandy deposits were encountered.

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INTRODUCTION

At the request of Group 70 International, Keala Pono Archaeological Consulting conducted an archaeological inventory survey (AIS) for portions of TMK: (1) 4-9-004:002, and (1) 4-9-005:001 in Kualoa 1 and 2 Ahupua‘a, Ko‘olaupoko District, and TMK: (1) 5-1-001:001 in Ka‘a‘awa Ahupua‘a, Ko‘olauloa District on the island of O‘ahu. Due to negative findings, the AIS results are presented as an archaeological assessment (AA). Kualoa Ranch is planning improvements to selected areas within these parcels. The survey was designed to identify any historic properties that may be located in the improvement areas in anticipation of the proposed construction.

This report is drafted to meet the requirements and standards of state historic preservation law, as set out in Chapter 6E of the Hawai‘i Revised Statutes and the State Historic Preservation Division's (SHPD's) draft *Rules Governing Standards for Archaeological Inventory Surveys and Reports*, §13–276. Due to negative findings, the AIS results are presented as an archaeological assessment per HAR §13–275.

The report begins with a description of the project area and a historical overview of land use and archaeology in the region. The next section delineates methods used in the fieldwork, followed by the results of the archaeological survey. Project results are summarized and recommendations are made in the final section. Hawaiian words, flora and fauna, and technical terms are defined in a glossary at the end of the document.

Project Location

The project area consists of three discontiguous survey blocks: Palikū, Kualoa Ranch Headquarters, and Ka‘a‘awa (Figures 1 and 2). These are situated within three *ahupua'a* and two districts: Kualoa 1 and 2 Ahupua‘a in Ko‘olaupoko District, and Ka‘a‘awa Ahupua‘a in Ko‘olauloa District. The survey areas are located on portions of TMK: (1) 4-9-004:002, (1) 4-9-005:001, and (1) 5-1-001:001 (Figures 3–5). The parcels are all owned by Kualoa Ranch, Inc., with Anna Simeona listed as a multiclaimant for TMK: (1) 4-9-005:001.

Within these TMK parcels, the project area covers 4.522 ha (11.174 ac.) in total: .187 ha (.461 ac.) in Palikū; 4.103 ha (10.138 ac.) at the Kualoa Ranch Headquarters; and .233 ha (.575 ac.) in Ka‘a‘awa.

Description of the Project

Kualoa Ranch plans to improve the Ranch Headquarters area with a new main entrance, visitor center, All-Terrain Vehicle (ATV) depot and storage, offices, maintenance area, and farmers market. The existing visitor center will be converted primarily to food service, where the current kitchen and café will be expanded. The parking lot will also be expanded, increasing the number of parking spaces to 246 standard, 7 Americans with Disabilities Act (ADA), and 12 for coach buses. Landscaped berms will front the parking areas and the driveway to shield the views of parked cars from Kamehameha Highway.

The Ranch will add a ceremonial meeting house in Palikū, renovate the former gun range, and create an improved driveway access to the Palikū area will be created. The other existing buildings in the Palikū vicinity will remain as they are. Landscaped berms will front the parking areas and the driveway to shield the views of parked cars from Kamehameha Highway. The landscaping here will be improved to reflect a Hawaiian theme.

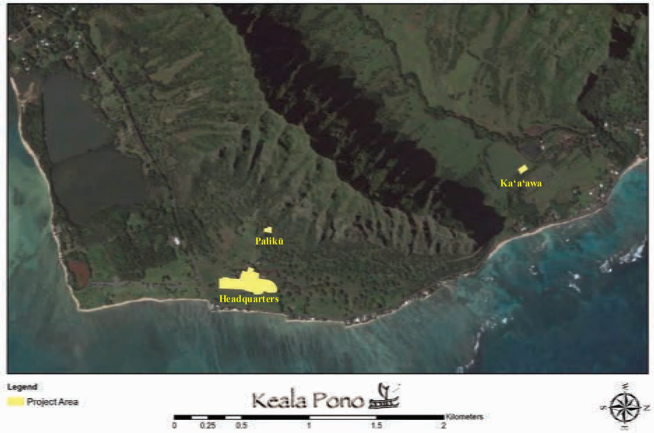

Figure 1. Project locations on an aerial image.

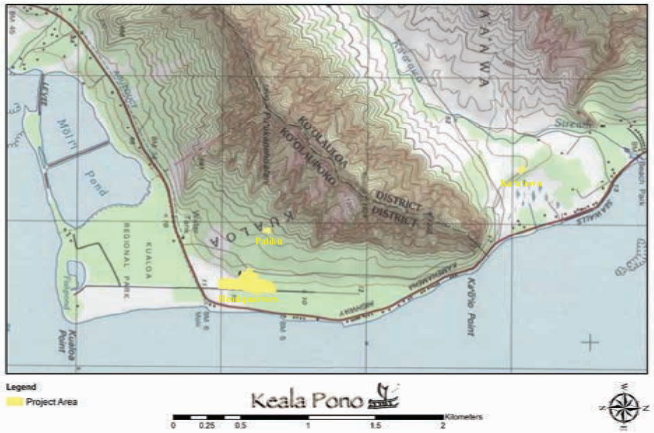

Figure 2. Project locations on a 1:2400 USGS Kahana 1992 quadrangle map.

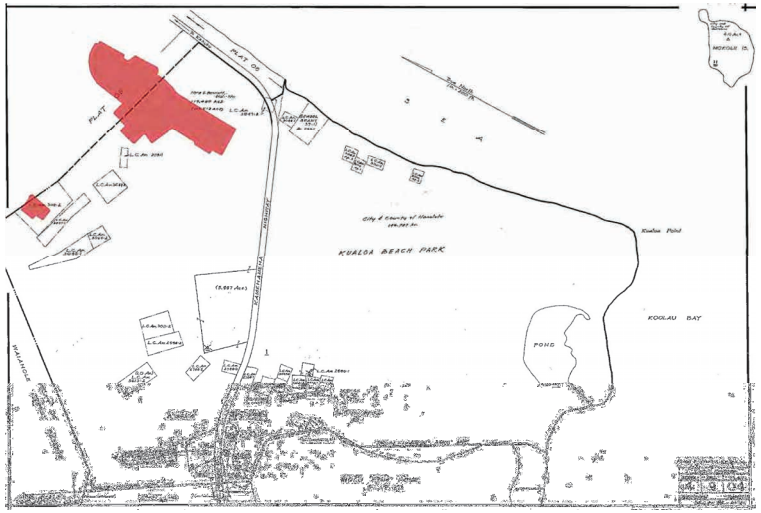

Figure 3. TMK plat (1) 4-9-004 (May 1937), showing the Palikū and the Kualoa Ranch Headquarters survey blocks in red.

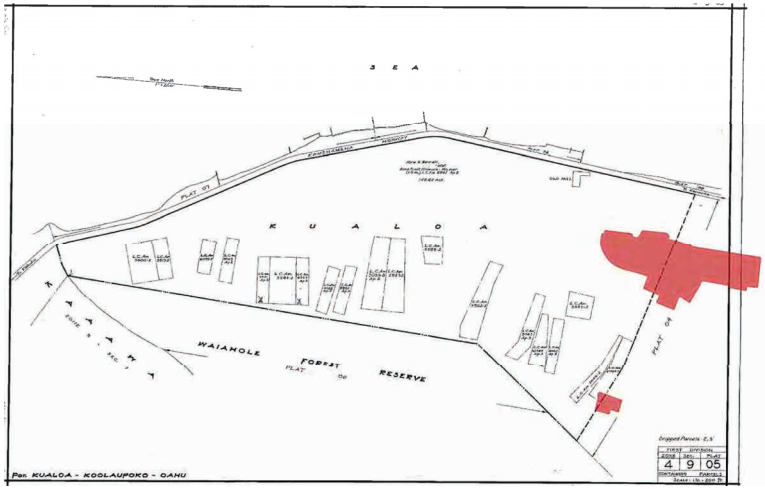

Figure 4. TMK plat (1) 4-9-005 (May 1937), showing the Palikū and Kualoa Ranch Headquarters survey blocks in red.

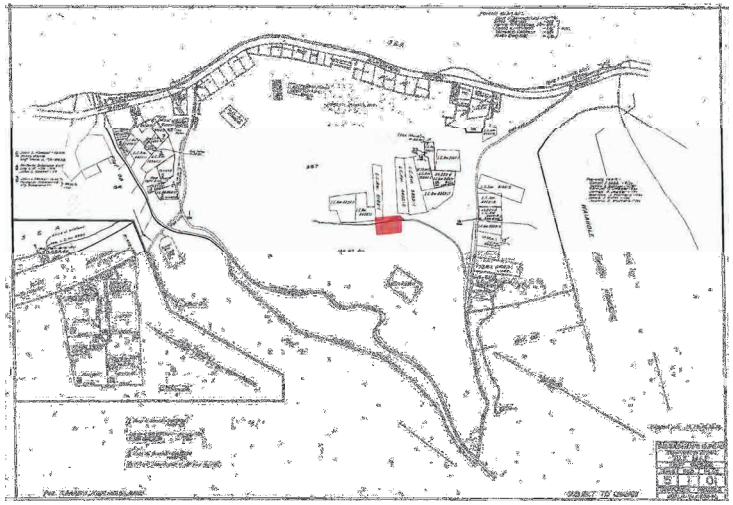

Figure 5. TMK plat (1) 5-1-001 (Oct. 1937), showing the Ka‘a‘awa survey block in red.

An agricultural products processing and group facility will be created in Ka‘a‘awa, replacing the current pavilion. The facility will be housed in a new structure that includes a lanai, prep kitchen, storage area for tables, and restrooms.

Physical Environment

The project area ranges from .18 km (.11 mi.) from the coast at the Ranch Headquarters to .65 km (.40 mi.) from the coast at Palikū. The survey blocks are situated between 2–47 m (5–155 ft.) above mean sea level. Terrain is relatively flat to moderately sloping.

The project area receives a good amount of rainfall, approximately 150–200 cm (60–80 in.) annually (Juvik and Juvik 1998). Several major watercourses are nearby, including Hakipu‘u Stream and Ka‘a‘awa Stream, both perennial waterways. Vegetation before human settlement is thought to have been lowland dry and mesic forests, woodlands, and scrublands (Juvik and Juvik 1998). Today however, the survey blocks are dominated by landscaped plants and lawn grass.

Soils within the project area are mostly of the Lolekaa-Waikane association, with some zones of the Kaena-Waialua association (Foote et al. 1972). The former are well-drained soils with mostly fine textured subsoil, while the latter are poorly to excessively drained soils with fine to coarse textured subsoils. Three specific soil types occur within the survey blocks, as depicted in Figure 6 (data from Foote et al. 1972):

Palikū

Waialua very stony silty clay, 12–20% slopes (WmD)

Kualoa Ranch Headquarters

Waialua stony silty clay, 3–8% slopes (WIB)
Mokuleia clay loam (Mt)

Ka‘a‘awa

Waialua stony silty clay, 3–8% slopes (WIB)

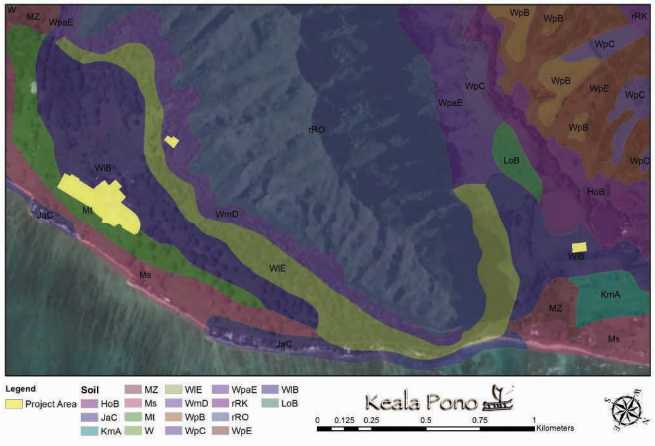

Figure 6. Soils in the vicinity of the project areas.

BACKGROUND

This chapter presents traditional and historic background information for the project region, including place names, Hawaiian proverbs and *mo'olelo*, land use, Māhele land tenure data, historic maps, and a summary of previous archaeological research.

Inoa 'Āina: Place Names

Place names often shed light on traditional views of an area and can provide important contextual information. Most of the *ahupua'a* names in the project region are associated with natural attributes of the place. Kualoa translates to "long back" (Pukui et al. 1974:119), and Ka'a'awa means "the wrasse fish" (Pukui et al. 1974:59). Palikū is an ancient name for Kualoa and is also the name of the ridge between Ko'olaupoko and Ko'olauloa. It literally means "vertical cliff" (Pukui et al. 1974:177).

Other important places are Mokoli'i, Koholālele, Moli'i, Kānehoalani, and 'Āpua. Mokoli'i is the islet off of Kualoa that is sometimes called Chinaman's Hat. Mokoli'i translates to "little *mo'o*" (Pukui et al. 1974:154), for it is said that the islet is the form of a slayed dragon (see *Mo'olelo* Section). Koholālele is a fishpond nearby whose name means "leaping whale" (Pukui et al. 1974:115). Moli'i is another fishpond in the area. Its name means "small section" (Pukui et al. 1974:156). Kānehoalani is the mountain ridge behind Kualoa. Translating to "Kāne royal companion," it was named for an ancestor of Pele (Pukui et al. 1974:84). 'Āpua refers to the flats of Kualoa as well as a fishpond there. It literally means "fish basket" (Pukui et al. 1974:13), probably referring to the abundance of fish at that location.

'Ōlelo No'eau

'Ōlelo no'eau, or Hawaiian proverbs and poetical sayings, provide further insight to traditional beliefs and practices of the area. Four *'ōlelo no'eau* were identified for Kualoa and Ka'a'awa.

> Ho'olalau ka helena i Kualoa, pi'i ana i ka pali o Kānehoalani.
> *In wandering about Kualoa, he ascends the cliff of Kānehoalani.*
> He goes off his course and thereby gets nothing. On the cliff of Kānehoalani stands a phallic stone, a symbol of bad luck when seen in a dream. (Pukui 1983:117)

> Ka limu lana o Kawahine.
> *The floating seaweed of Kawahine.*
> A term applied to the *kauwā* who were drowned at Kualoa, O'ahu, before serving as sacrifices. (Pukui 1983:156)

> He kai 'a'ai ko Ka'a'awa
> *Ka'a'awa has a sea that wears away the land*. (Pukui 1983:73)

> He moe kai no Ka'a'awa
> *A sleeper in the sea of Ka'a'awa.*
> Applied to a lawbreaker who was to be put to death. When Kuali'i was ruler of O'ahu, he punished lawbreakers by drowning them in the sea of Ka'a'awa. (Pukui 1983:90)

Mo'olelo

The region of study was renowned in *mo'olelo*, with Kualoa being so sacred that canoes had to lower their sails when passing by (Fornander 1969 [1880]:278). Kualoa was formerly known as Palikū and was the home of Wākea and his wife Haumea, progenitors of the human race.

An important saga involving the project lands is that of Hiʻiaka's journey across the islands to save Lohiau, the lover of her sister, Pele. Handy et al. (1991:446–447) provide a review of the events that took place on the windward side of Oʻahu, culminating in the slaying of the dragon Mokoliʻi, which created the islet of that name:

> Passing the shores of Waikane (the original name was Wai-a-Kane, Water-of-Kane), [Hiʻiaka] explained to her companion, Wahine-omaʻo, that here Kane first dug for water at a place called Poliuli (Dark breast), creating the Waiʻola-li which was male and the Waiʻola-la, which was female…These waters were also named in the Kumulipo creation chant as the progenitors of many subsequent generations…It was in the waters of Hakipuʻu, in fact but a short distance from the Moliʻi Fishpond, that Hiʻiaka encountered and slew her first, formidable adversary on Oahu, the reptile Mokoliʻi…It is the stumpy tail of this evil creature that to this day protrudes from the waters as the rocky islet Mokoliʻi (Little Reptile)…As their canoe sailed on past the land of Kualoa at Kanehoalani's feet, "Hiʻiaka said to Wahine-o-mao…'this is the sacred land of Haloa'" (*Hoku o Hawaii*, January 1, 1926) the first man, and progenitor of the human race.

As the saga continues, the distinctive cliffs of Kaʻaʻawa were formed (Emerson 1978). The *kupua* named Kauhi was one of Pele's followers that came from Kahiki. He was stationed on the cliffs of Kaʻaʻawa and could not leave. When Hiʻiaka arrived he longed to travel with her and when she politely refused, he attempted to rise. Kauhi could only get to a crouching position however, and there he became fixed, forming the cliff that is shaped like a crouching man.

A famous cave is said to be located on the cliff between Kualoa and Kaʻaʻawa (Kamakau 1991:38–39). The cave was on the cliffside at Kanehoalani and it was named Pohukaina. A second entrance was at the spring, Kaʻahula. The cave extended through the Koʻolau Mountains where other openings were at Moanalua, Kalihi, Puiwa, Waipahu, and Kahuku. There were many watercourses within the cave, along with man-made decorations.

Kualoa also marks the boundary of Koʻolaupoko and Koʻolauloa Districts. It was here that tribute from each *ahupuaʻa* was amassed at the end of the *makahiki* circuit (Kamakau 1991:20–21). Tribute collected included items such as food animals, *poi*, *kapa*, fishing nets, feathers, woven mats, pearls, ivory, and adzes (Kamakau 1991:21). If the tribute from a given *ahupuaʻa* was deemed unworthy, that *ahupuaʻa* would be plundered (Kamakau 1991:21).

Kualoa was also designated as a *puʻuhonua*, or place of refuge:

> The *puʻuhonua* in ancient times was an *ahupuaʻa* portion of a district (*ahupuaʻa ʻokana*), like Kailua and Waikane for Koʻolaupoko district on Oahu, and also Kualoa, which was a very sacred land and a true *puʻuhonua*, where persons marked for death were saved if they entered it. (Kamakau 1991:18)

Land Use and Subsistence

Kualoa has no streams and is generally not suited for the cultivation of wetland taro. Nevertheless, Koholālele Pond in ʻĀpua may have been made from an abandoned *loʻi* (Handy et al. 1991:444), although some say that the pond was built by *menehune*, while others assert that the pond was excavated in the historic period (McAllister 1933; Morgan 1964 in Sterling and Summers 1978:180–181). Agriculturally, Kualoa was known for the cultivation of *wauke* to make *kapa* (Handy et al. 1991:444). Kualoa was rich in coastal resources, enhanced by man-made fishponds:

> …This land had been very rich in the olden days and even to the present, because of running schools of mullet from Kaihuopalaai, the awa fish and mullets that had been kept and fattened in ponds. These good things of the land are long past. (Apuakehau 1919 in Sterling and Summers 1978:117)

Kaʻaʻawa relied heavily on the ocean for its resources and once supported a fishing village. At least one *koʻa* is known for the area (now destroyed), attesting to the importance of fishing (McAllister 1933). The valley's stream

created two passages in the reef, however, that make the beach not well protected. Kaʻaʻawa was not a good location for wetland taro, although there were some agricultural terraces on either side of the stream and in places that have turned into swamplands (Handy et al. 1991:444). Handy et al. remark on the productivity of the region:

> Kaʻaʻawa and Makaua must have been good only for sweet potatoes and no doubt there were coconut trees along the shore. There is hardly any beach, but a high shore and a well-protected lagoon make this a good fishing locality. (1991:445)

The Region in the Historic Period

The historic period (post-1778) saw widespread changes throughout the islands as a result of the arrival of foreigners to Hawaiʻi's shores. Though far from the central port of Honolulu, Kualoa and Kaʻaʻawa were not immune to these changes.

Māhele Land Tenure and Historic Land Use

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

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

The Land Commission Awards (LCAs) that are on or in the immediate vicinity of the project areas can be seen in Figures 3–5. Data for these can be found in Table 1.

For the Kualoa Headquarters and Palikū project areas, one of the survey blocks overlaps with LCA 3048:1 and 3118:2, while four other LCAs are nearby. LCA 3048 was awarded to Kekihe, and *kula*, potatoes, beans, *wauke*, and a house lot were mentioned in the testimony. LCA 3118 was awarded to Haole, and *loʻi*, *kula*, and a house lot were once there. Testimony for the four LCAs in the vicinity note the occurrence of *loʻi*, *kula*, potatoes, *wauke*, and house lots.

A small portion of LCA 8188:1 overlaps with the Kaʻaʻawa survey block, and another four LCAs are located nearby. LCA 8188 was awarded to Heana, and *loʻi*, *kula*, potatoes, melons, tobacco, a wooded upland, and a house lot were once there. Testimony for the nearby lots mentions *loʻi*, *kula*, potatoes, wooded uplands, *kai*, a fishery, and house lots. A *pali kao* is also noted, although it is unclear what this refers to. The 1937 TMK map for Kaʻaʻawa also shows a ditch running through the project area (see Figure 5). No other information could be found for the ditch.

In sum, all of the LCA awards mention *loʻi*, *kula*, and/or house lots, indicating that people were living and cultivating parcels on and near the survey areas in the mid-19th century. Other resources noted were melons, potatoes, *wauke*, beans, wooded uplands, a fishery, and *kai*. Clearly, a diverse array of subsistence practices was taking place in the region.

Table 1. LCAs in the Vicinity of the Project Areas (the highlighted LCAs are within the survey blocks, while the others are nearby)

LCA	Claimant	*Ahupua'a*	*'Ili*	Land Use
3045	Keliiokahonua	Kualoa		*lo'i*, house lot
3046	Kamanu	Kualoa		*kula,* potatoes, house lot near shore
3047	Kauaiwahine	Kualoa		*kula*, house lot
3048	Kekihe	Kualoa		*kula*, potatoes, beans, *wauke*, house lot
3066	Kae	Kualoa		*lo'i*, *kula*, *wauke*, house lot
3118	Haole	Kualoa		*lo'i*, *kula*, house lot
3885	Pohue	Ka'a'awa	Nohomalu, Kaiaka	*lo'i*, *kula*, potatoes, wooded upland, house lot
4402	Kauiki	Ka'a'awa	Nohomalu, Kuahu	*lo'i*, *kula*, potatoes, wooded upland, house lot, *kai*
4408	Kaumu	Ka'a'awa	Nohomalu	*lo'i, kula,* potatoes, house lot, large upland, fishery
4420	Kaloena	Ka'a'awa	Noholoa	*lo'i*, *kula*, house lot, upland, *pali kao*
8188	Heana	Ka'a'awa	Nohomalu	*lo'i*, *kula*, potatoes, melons, tobacco, wooded upland, house lot

Historic Maps

Historic maps help in visualizing what the project area was like in times past and illustrate the changes that have taken place in the region over the years. Two maps from the late 19th and early 20th centuries are presented below.

An early map from the Hawaii Territory Survey titled "Hakipuu, Koolau, Oahu," is dated February 1880 (Figure 7). The map notes read, "The total area of the AHUPUAA is 1165.5 acres, of which area there remains to the KANAINA ESTATE 924.5 acres, comprising 10 acres of RICE LAND, the FISHPOND of 124.5 acres and 790 acres of GRAZING and MOUNTAIN LAND." Yet in contrast to this text, the map shows two separate land grant parcels belonging to A.S. Cooke; another fairly large land grant labeled "Pahalona;" and a smaller parcel labeled "Nohonanahopu" which has a schoolhouse on it. There is one parcel of 56 acres which is labeled as the "Kanaina Estate," and there is a very small piece of property, wedged between some *kuleana* lands and the 124-acre fishpond, which is labeled as the remnant estate of Kanaina. All of the land grants and Kanaina's estate are along the coast within Hakipu'u Ahupua'a, and most of them straddle the coastal road which is labeled as the "Gov't Road." A "Loko" (pond) and a lone coconut tree are illustrated in Kualoa.

The second map is titled "Oahu, Hawaiian Islands" and is dated 1902 (Figure 8). The map illustrates the *moku*, *ahupua'a*, and smaller land districts and features across the entire island of O'ahu. A close-up of the region of interest shows the registered numbers of several land grants and LCAs. Interestingly, the map specifies only two land owners in this area by name: A.S. Cooke in Hakipu'u; and Judd, who appears to have received former Crown Lands in Kualoa. Also, the Moli'i Fishpond is illustrated near the Hakipu'u-Kualoa boundary.

Post-Māhele Land Use

Rice and sugarcane cultivation were practiced after the Māhele in the project lands, and military and ranching interests also made large scale changes to the landscape. Rice cultivation began as early as the 1860s in Ko'olaupoko and was undertaken mostly by Chinese immigrant farmers.

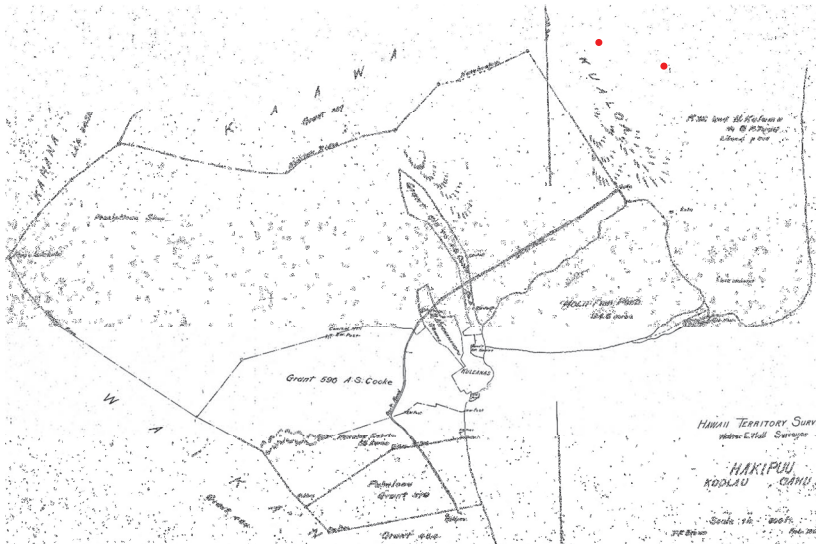

Figure 7. Portion of a Hawaii Territory Survey map of Hakipu'u (Wall 1880). The approximate locations of the Palikū and Ranch Headquarters survey blocks are shown as red dots (the Ka'a'awa survey block is off the map).

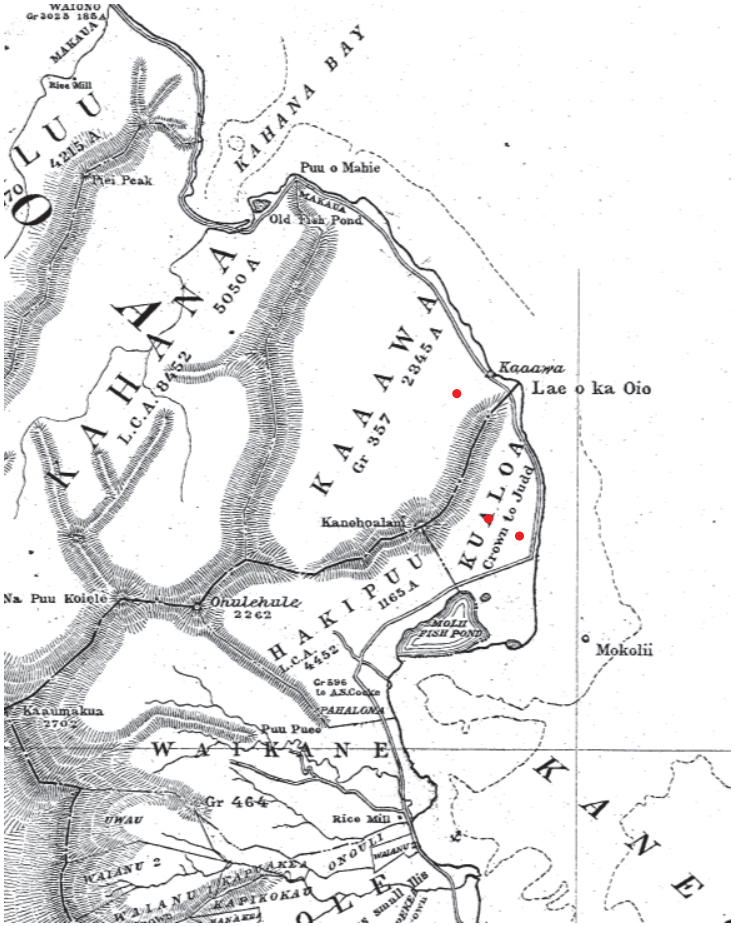

Figure 8. Portion of a Hawaii Territory Survey O‘ahu map (Wall 1902). The approximate locations of the survey areas are shown as red dots.

In Kualoa, sugarcane was grown as early as the 1860s by C.H. Judd and his son-in-law S.G. Wilder (Gunness 1993:53). The two also constructed a sugar mill on the *mauka* side of the highway in Kualoa, the remains of which are still visible today. By 1871, the operation was shut down and the area was turned into a ranch. At Kualoa Regional Park, an airfield was built during World War II, with a 6,000 x 150 foot strip bulldozed, graded, and filled for this endeavor (Gunness 1986:9). The park road was later constructed atop the airfield. Other military efforts in the region include construction of cement bunkers and pillboxes, particularly along the cliffs above Kamehameha Highway from Kualoa to Ka‘a‘awa.

Previous Archaeology

Many archaeological projects have been carried out in the vicinity of the project areas. The following paragraphs summarize the studies found in the SHPD Kapolei library that are within Kualoa and Ka‘a‘awa Ahupua‘a, 1.5 km away from the project areas or closer. Project locations are illustrated in Figures 9 and 10.

Kualoa

The entire *ahupua'a* of Kualoa was placed on the National Register of Historic Places (NRHP) in 1973 for its mythological, legendary, and political importance. It was designated as State Inventory of Historic Places (SIHP) 50-80-06-528. Moli‘i Fishpond is also listed on the NRHP because of its excellent state of preservation and interpretive potential. It was designated as SIHP 50-80-06-313. An early island-wide survey identified four sites in the project vicinity: Site 309 rock formations representing a woman and two children, Site 310, Niuolaa Heiau; Site 312, Koholālele Pond; and Site 313, Moli‘i Pond (McAllister 1933). For Niuolaa Heiau, McAllister reported that “nothing remains of the site” (1933:167).

Many prior studies have been conducted at Kualoa Regional Park (Tables 2 and 3). Among the earliest work was a preliminary investigation that focused on subsurface testing (Barrera 1974). A total of 51 1x1 m test pits were excavated throughout the East Beach area of the park. A subsurface cultural deposit was identified in the north end, thought to be associated with Site 50-Oa-G1-22 which had been recorded by the Bishop Museum. In all, 35 distinct archaeological features were identified, including pits, post holes, and a human burial. A wide range of artifacts were recovered, such as fishing gear, adzes and other tools, basalt and volcanic glass flakes, midden, and historic items.

Subsequent work aimed to “determine the nature and extent of archaeological remains” recorded by Barrera (1974) and to “enhance the cultural and environmental significance of the park through archaeological research and interpretive inputs” (Clark and Connolly 1975:i). Excavations at the South Beach of the park uncovered a fishpond wall thought to be associated with ‘Āpua Pond. Pre-contact artifacts were also recovered from reef areas. A later report proposed recommendations for interpretive programs (Clark and Connolly 1978). Sites with high interpretive value included East Beach, Mokoli‘i Island, ‘Āpua Fishpond, Moli‘i Fishpond, Koholālele Pond, a submerged fishpond wall, a stone house and pig burial area, and a stone platform in the northwest corner of the park that may be Niuolaa Heiau.

An archaeological reconnaissance survey was conducted for proposed beach replenishment between East and South Beach (Gunness 1978). A literature review, pedestrian survey, and test trenching did not identify historic properties, as the area had been extensively disturbed.

Subsurface testing was conducted at the East Beach of Kualoa Regional Park (Ahlo 1980). Most of the project area was found to be previously disturbed, however remnants of cultural deposits were identified below the surface in several locations.

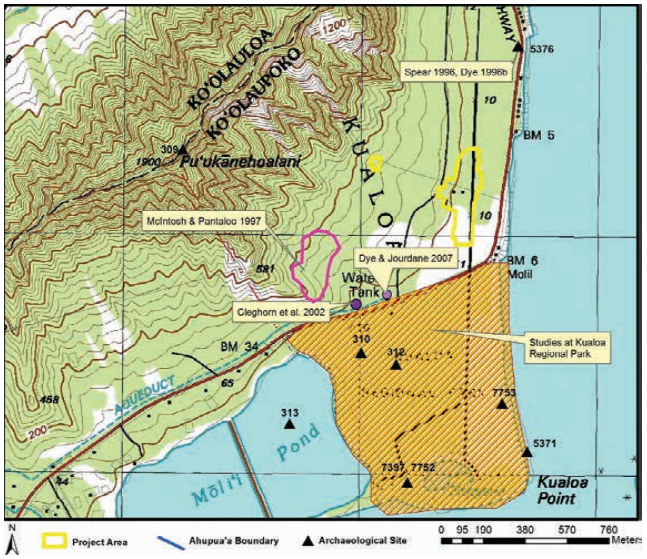

Figure 9. Previous archaeological studies and archaeological sites in Kualoa.

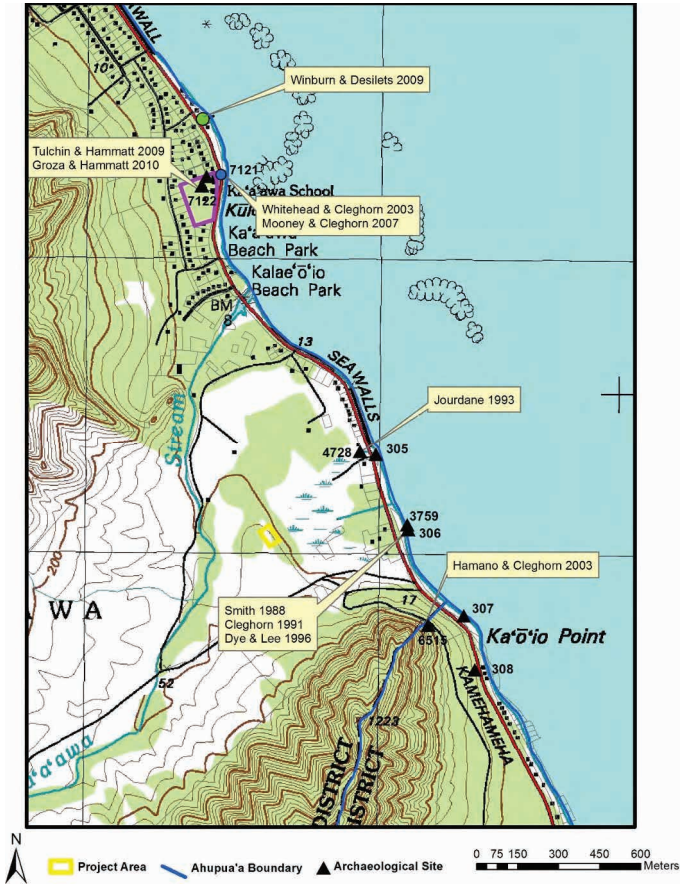

Figure 10. Previous archaeological studies and archaeological sites in the vicinity of the Ka'a'awa project area.

Table 2. Previous Archaeological Projects in the Vicinity of the Study Area, Kualoa Ahupuaʻa

Author & Year	Location	Work Completed	Findings
McAllister 1933	Island-Wide	Survey	Identified four sites near the Kualoa project area: Site 309, rock formations; Site 310, Niuolaa Heiau (reported destroyed); Site 312, Koholālele Pond; and Site 313, Moliʻi Fishpond.
Barrera 1974	Kualoa Regional Park, East Beach	Subsurface Testing	Cultural deposit with pits, postholes, traditional and nontraditional artifacts, midden, and a human burial.
Clark & Connoly 1975	Kualoa Regional Park, East Beach	Survey, Subsurface Testing	Buried fishpond wall; traditional artifacts on the reef.
Clark & Connoly 1978	Kualoa Regional Park	Archaeological Recommendations	Proposed recommendations for interpretive programs.
Gunness 1978	Kualoa Regional Park	Reconnaissance	None.
Ahlo 1980	Kualoa Regional Park, East Beach	Subsurface Testing	Most of the project area previously disturbed, but remnants of cultural deposits were found below the surface.
Gunness 1984	Kualoa Regional Park, South Beach	Subsurface Testing	Recorded 98 subsurface features and roughly 3,500 traditional artifacts near the South Beach access road. Features included pits, post holes, a human burial, and a dog burial. A stone bath house, whole pig offering, and fishpond wall were recorded in other areas.
Gunness 1985a, 1985b	Kualoa Regional Park	Subsurface Testing, Archaeological Assessment	Recorded an *imu* surrounded by post holes and a large assemblage of traditional artifacts.
Hammatt 1985	Kualoa Ranch	Reconnaissance	None.
Rutkowski 1988	Kualoa Regional Park	Burial Report	A skull and "several other bones" found near second bathroom.
Omori 1989	Kualoa Regional Park	Burial Report	Two individuals identified, one of which was a young Hawaiian female.
Pietrusewsky & Douglas 1989	Kualoa Regional Park	Burial Report	Analyzed 42 sets of remains, 41 of which were traditional Hawaiian and one post-contact.
Douglas 1990; Kawachi & Johnson 1990	Kualoa Regional Park	Burial Report	Identified one adult female, two adult males, one child, and two unassociated bone fragments.
Douglas 1991	Kualoa Regional Park	Burial Report	One adult male recovered from the south side of East Beach
Goodman & Cleghorn 1991	Kualoa Regional Park, East & South Beaches	Monitoring & Salvage Excavations	Two human burials, a historic rock wall, a row of post holes, and a small artifact assemblage were documented.
Meeker 1991	Kualoa Regional Park	Monitoring	Identified a disturbed midden deposit, two pits, and two post holes.
Somer 1991	Kualoa Regional Park	Burial Report	One adult male recovered from a pit feature.

Table 2. (Cont.)

Author & Year	Location	Work Completed	Findings
Cleghorn 1994	Kualoa Regional Park, East Beach	Burial Report	One individual identified at East Beach.
Lee 1994	Kualoa Regional Park	Artifact Report	Reported on an adze exposed by erosion.
Colin, Borthwick, & Hammatt 1995	Kualoa Regional Park	Burial Report	Removed one individual.
Colin, Heidel et al. 1995	Kualoa Regional Park	Data Recovery	Documented fire features and post holes and collected basalt flakes and midden.
Dye 1995	Kualoa Regional Park, East Beach	Burial Report	One coffin burial recorded.
Dye 1996a	Kualoa Regional Park	Burial Report	One individual recovered from the south side of East Beach, Site 5371.
Spear 1996; Dye 1996b	Kamehameha Hwy. outside Kualoa Ranch	Monitoring; Burial Report	Identified Site 5376, a human burial and cultural layer.
Colin & Hammatt 1997	Kualoa Regional Park	Literature Review and Excavation	Cultural layer containing fragments of human bone.
McIntosh & Pantaleo 1997	Kualoa Ranch	Survey	Identified two historic rock walls.
Bush & Hammatt 1998	Kualoa Maintenance Yard	Monitoring	None.
Borthwick et al. 1999	Kualoa Regional Park	Monitoring	None.
Hammatt & Shideler 1999	Kualoa Regional Park	Assessment	Literature review completed, archaeological monitoring recommended.
Hammatt & Shideler 2000	Kualoa Regional Park, East Beach	Investigation of Bulldozing	Three midden deposits and a trash pit.
Perzinski et al. 2000	Kualoa Regional Park	Monitoring	Documented a cultural layer with midden.
Hammatt & Shideler 2001	Kualoa Regional Park	Monitoring	Midden and a ceramic sherd collected.
Cleghorn et al. 2002	Kualoa Ranch	Assessment	None.
Rohrer 2005	Kualoa Regional Park	Monitoring	None.
Carson & Athens 2006	Kualoa Regional Park	Monitoring and Data Recovery	Provided further documentation for the subsurface cultural deposit known for the area.
Dye & Jourdane 2007	Kualoa Ranch	Historic Properties Assessment	None.

Table 2. (Cont.)

Author & Year	Location	Work Completed	Findings
Colin & Hammatt 2008	Kualoa Regional Park, East Beach and Kualoa Point	Assessment and Subsurface Testing	Testing at East Beach uncovered a cultural layer with scattered bone fragments, some of them human.
Tulchin & Hammatt 2013	Kualoa Regional Park	Pedestrian Inspection and Subsurface Testing	Documented traditional artifacts and human remains.
Morriss & Hammatt 2015	Kualoa Regional Park	Data Recovery	Encountered Site 7397, a previously identified cultural layer, and Sites 7752 and 7753, newly identified cultural layers.

Table 3. Archaeological Sites in the Vicinity of the Kualoa Project Area

Site	Location	Description	Reference
309	Pu‘u Kānehoalani Ridge	Rock Formations	McAllister 1933
310	Kualoa Regional Park	Niuolaa Heiau	McAllister 1933
312	Kualoa Regional Park	Koholālele Pond	McAllister 1933
313	Kualoa Regional Park	Moli‘i Pond	McAllister 1933
528	Kualoa Ahupua‘a	Entire Ahupua‘a	National Register 1973
5371	Kualoa Regional Park	Human Remains	Dye 1996a
5376	Kualoa Ranch near Kamehameha Hwy.	Human Remains	Spear 1996, Dye 1996b
7397	Kualoa Regional Park	Cultural Layer	Moriss and Hammatt 2015
7752	Kualoa Regional Park	Cultural Layer	Moriss and Hammatt 2015
7753	Kualoa Regional Park	Cultural Layer	Moriss and Hammatt 2015

Additional work was conducted at South Beach (Gunness 1984). Excavations at a stone bath house revealed a variety of traditional artifacts, post holes, and a whole pig skeleton. As the pig was not eaten, it is thought to have been placed as an offering at the *ahupua‘a* boundary. Dates obtained from volcanic glass in this area suggested an age of the mid-15th century AD, although the method of dating volcanic glass has since been deemed unreliable (e.g., Graves and Ladefoged 1991). An area near the South Beach access road had been bulldozed without an archaeologist present, and a cultural layer with a large number of artifacts was disturbed. A total of 98 features were identified within seven test excavations. They consisted of pits, post holes, a human burial, a dog burial, and roughly 3,500 artifacts, including worked bone and pearl shell, a *niho palaoa*, coral abraders, a range of basalt tools, 589 pieces of volcanic glass, and more than 1,500 basalt flakes. A fishpond wall was also found, although only 20th century historic material was recovered from that area.

Subsurface testing was conducted prior to road improvements throughout the park (Gunness 1985a, 1985b). Heavy disturbance was noted in most areas, although an intact *imu* surrounded by post holes was found. Thousands of basalt flakes and a variety of other traditional artifacts were associated with the feature. Items collected include adzes, awls, hammerstones, an *‘ulu maika*, coral abraders, and a *poi* pounder.

Archaeological monitoring and salvage excavations were carried out on the East and South Beaches of the park for tree removal and replanting (Goodman and Cleghorn 1991). Two human burials were excavated. One was located on East Beach and the other in the tree nursery near the maintenance building. A historic rock wall and row of post holes were also identified in the tree nursery. A small selection of traditional and historic artifacts was also recovered.

Archaeological monitoring was conducted for sand replenishment and tree removal and replanting activities at the park (Meeker 1991). Midden, charcoal flecks, basalt debitage, and fire cracked rock were observed along the edge of an old farm road near Moli‘i Pond. The area was found to be heavily disturbed. Four subsurface features were noted within tree removal holes, consisting of two pits and two post holes. A few years later, an adze was found eroding out of the sand at Kualoa Regional park (Lee 1994). The adze and an associated cultural layer were exposed during high tide.

Data recovery excavations were carried out at five subsurface features in the park (Colin, Heidel, et al. 1995). The features consisted of fire pits and post holes, and basalt flakes and midden were collected. The area was heavily disturbed by historic and modern activity. A set of human remains was also disinterred (Colin, Borthwick, and Hammatt 1995).

A review of the archaeological literature was conducted and two 1.0 m^2 test units were excavated at a central location of the East Beach at Kualoa Park (Colin and Hammatt 1997). The test units demonstrated layers of fill over an intact cultural layer that contained small bone fragments, some of which were later determined to be human. Beneath the cultural layer was only sterile sand.

Archaeological monitoring was completed for the removal of contaminated soil at the maintenance yard in the park (Bush and Hammatt 1998). No cultural material or deposits were encountered. A year later, a literature review was completed for reconstruction of the wastewater system at the park (Hammatt and Shideler 1999). Archaeological monitoring for percolation test pits associated with the wastewater reconstruction reported no findings (Borthwick et al. 1999).

Several areas of bulldozing within Kualoa Regional Park were inspected, and surface collection and sampling were completed for three midden scatters and a trash pit (Hammatt and Shideler 2000). A range of traditional and historic artifacts were documented, the latter consisting of material dating from 1815 to the early 1900s.

Archaeological monitoring was conducted for ADA improvements to the park (Perzinski et al. 2000). Two midden concentrations and a cultural layer were identified. Among the cultural material collected were 350 g of midden, a 1920s–1930s era glass bottle, and a few basalt artifacts.

Archaeological monitoring was completed for soil testing at the proposed multipurpose building in the park (Hammatt and Shideler 2001). Marine shell midden and a single ceramic sherd were the only materials recorded. A few years later, archaeological monitoring was carried out for a water line break at the second bathroom at the park (Rohrer 2005). No findings were reported.

Archaeological monitoring and data recovery were completed during road realignment and landscaping (Carson and Athens 2006). A previously recorded cultural layer was further documented. A variety of traditional artifacts and midden were recovered, and post holes, fire pits, and stone pavings were recorded. Radiocarbon dating from the base of the cultural layer placed the earliest occupation at ca. AD 1040–1280. A canal that linked Koholālele Pond to the sea was also found.

A literature review and subsurface testing were conducted for an erosion control project (Colin and Hammatt 2008). Two test units excavated at East Beach revealed a subsurface cultural layer that contained scattered bone fragments, some of them human.

A pedestrian inspection and subsurface testing were completed at Kualoa Regional Park near Kualoa Point (Tulchin and Hammatt 2013:82). The project area was situated in a previously developed area of the park that contained asphalt roads, parking lots, concrete walkways, and comfort stations. As a result, no surface historic properties were identified. Subsurface testing revealed previously disturbed traditional Hawaiian artifacts including an *'ulu maika*, a micro-adze, lithic debitage, volcanic glass, and marine shell midden. In addition, an isolated human cranial fragment was discovered during excavations in a sandy fill layer. The sand layer was likely derived from the park during previous grading, however the original primary burial context could not be determined.

Recent work at the park included data recovery at SIHP 50-80-06-7397 and 50-80-06-7752, two subsurface cultural layers (Morriss and Hammatt 2015). The former was previously recorded, but 13 new pits and a selection of midden and traditional artifacts were identified. The latter included nine pits and fragmented human remains.

Kualoa Regional Park has a long history of human remains being exposed by erosion, and a number of burial reports have been filed. Those reports found in the SHPD library in Kapolei are summarized in the following paragraphs.

A skull and "several other bones" were found *makai* of the second bathroom in the park (Rutkowski 1998:1). They were taken to the police station and then transferred to the City and County Morgue. Remains were later found at an undisclosed location in the park and taken to the Honolulu Medical Examiner's Facility in Honolulu (Omori 1989). At least two individuals were represented, one of which was a young Hawaiian female.

A large assemblage of human remains from Kualua Regional Park were analyzed (Pietrusewsky and Douglas 1989). Of the 42 sets of remains, 41 were traditional Hawaiian and one was post-contact (dating to after 1778). Of these, roughly two-thirds were adults, and 14 were female and 11 male. All age groups were represented, from fetuses to older adults of 50+ years in age. Many of the males died as young adults. Skeletal modification was identified in the form of cranial deformation, defleshing cut marks, and burial vandalism.

Several sets of remains were found eroding out of the sand at SIHP 50-80-06-528 and examined at SHPD (Douglas 1990, Kawachi and Johnson 1990). One adult female, one adult male, and one child were identified in the first burial, an adult male was found in a second burial, and two unassociated bone fragments were also recovered. Another set of remains was documented on the south side of East Beach (Douglas 1991). They were identified as an adult male. Yet another set of remains was collected after being exposed by erosion (Somer 1991). The remains were excavated from a pit feature and identified as an adult male.

Again, one individual was found eroding out of the sand at East Beach (Cleghorn 1994). The individual was in a flexed position within a burial pit and designated as part of SIHP 50-80-06-528. A coffin burial was found near the historic burial identified during earlier work by Gunness (1984) (Dye 1995). It was posited that the two burials are related and associated with the LCA parcel belonging to Kaneakalau (Dye 1995). Another burial was later identified eroding from the sand on the south side of East Beach (Dye 1996a). It consisted of one individual in a burial pit with no grave goods. The burial was designated as SIHP 50-80-06-5371.

A few previous studies have been conducted at Kualoa Ranch and along Kamehameha Highway. An archaeological reconnaissance was carried out between Moli'i Pond and the highway (Hammatt 1985). The project site was previously graded and no surface archaeological remains were observed. Subsequent archaeological monitoring for another project identified a human burial and cultural deposit at Kualoa Ranch along Kamehameha Highway (Spear 1996, Dye 1996b). The remains were left in place at "approximately 400

feet [on the] Ka'a'awa side of the old sugar mill" near telephone pole #179 (Spear 1996:1). The burial was designated as SIHP 50-80-06-5376. A basalt awl and fragmented human remains were encountered in other excavations. Two historic rock walls were located during an archaeological survey at Kualoa Ranch (McIntosh and Pantaleo 1997). The systematic survey led to the identification of the basalt cobble and boulder walls (T-1 and T-2) and took place on a 10.48 acre area at the base of the Ko'olau Mountains.

An archaeological assessment was completed for a telecommunications facility just *mauka* of the highway across the street from Kualoa Regional Park (Cleghorn et al. 2002). There were no findings. Finally, a historic properties assessment was completed for a proposed cell antenna at Kualoa Ranch, just *mauka* of the highway in the vicinity of the paintball field (Dye and Jourdane 2007). The project area was located in a previously disturbed area with no surface archaeological remains.

Ka'a'awa

Several archaeological studies have been conducted in the vicinity of the project area in Ka'a'awa (Tables 4 and 5). McAllister's island-wide survey identified four sites near Kamehameha Highway. These consist of Site 305, a *ko'a* at Kalai o Kuonopuaa Point; Site 306, a burial near Lae o ka Oio, Site 307 a legendary cave; and Site 308 a terrace that had been damaged by floods. The cave is named Pohokaina, Pohukaina, or Pahukaina, and it is said to have many entrances, the most famous of which is at the boundary of Kualoa and Ka'a'awa.

An archaeological survey was proposed for the existing and future locations of Board of Water Supply well sites to assess the potential impact of the wells on archaeological resources (Barrera 1984). Due to lack of permission to access the areas, a literature review was conducted instead. The cave Pohukaina was mentioned as rumored to exist between Kualoa and Ka'a'awa Valley. Potential agricultural sites were also noted that Handy (1940:93) proposed were probable terracing for taro cultivation. It was concluded that archaeological resources would likely be found in the area.

A number of human burials have been found near Kamehameha Highway in Ka'a'awa. SIHP 50-80-06-3759 includes several burials and an associated cultural layer (Smith 1988, Cleghorn 1991, Dye and Lee 1996). SIHP 4728 is a single burial located on the *mauka* side of the highway (Jourdane 1993).

Archaeological monitoring was conducted for a telecommunications facility at Kaoia Point, *mauka* of the highway (Hamano and Cleghorn 2003). SIHP 50-80-06-6515 was recorded, consisting of a human burial and two charcoal concentrations. The human remains were left in place.

A three day archaeological inventory survey was conducted at Ka'a'awa Beach Park (Whitehead and Cleghorn 2003). Due to the developed nature of the areas in question the survey consisted of subsurface testing, which resulted in no archaeological finds. Archaeological monitoring was later conducted during the Ka'a'awa Beach Park Comfort Station and Parking Area improvements (Mooney and Cleghorn 2007). One feature and seven artifacts were encountered during monitoring, but they were not designated as significant per National Register of Historic Places criteria.

An archaeological assessment was conducted for wastewater improvements to Ka'a'awa Elementary School (Tulchin and Hammatt 2009). There were no findings. Another archaeological assessment of a private lot produced no findings (Winburn and Desilets 2009). Later archaeological monitoring at Ka'a'awa Elementary School identified SIHP 50-80-06-7121, a human burial; and 50-80-06-7122, a cultural layer with pit features, dog remains, midden, and sparse traditional artifacts (Groza and Hammatt 2010).

Table 4. Previous Archaeological Projects in the Vicinity of the Study Area, Kaʻaʻawa Ahupuaʻa

Author & Year	Location	Work Completed	Findings
McAllister 1933	Island-Wide	Survey	Identified 4 sites near the highway: 305, a *koʻa*; 306, a human burial; 307 a cave; and 308 a terrace.
Barrera 1984	Kaʻaʻawa, *mauka* of Kamehameha Hwy.	Literature Review	Noted Pohukaina burial cave and probable agricultural sites could be found in the area.
Smith 1988, Cleghorn 1991, Dye & Lee 1996	Coastal Kaʻaʻawa	Burial Report	Recorded Site 3759, human burials.
Jourdane 1993	Coastal Kaʻaʻawa	Burial Report	Documented Site 4728, a human burial.
Hamano & Cleghorn 2003	Kualoa Ranch, foot of the ridge	Monitoring	Identified Site 6515, a human burial and two charcoal concentrations.
Whitehead & Cleghorn 2003	Kaʻaʻawa Beach Park	Subsurface Testing	None.
Mooney & Cleghorn 2003	Kaʻaʻawa Beach Park	Monitoring	One feature and seven artifacts found but deemed not significant.
Tulchin & Hammatt 2009	Kaʻaʻawa Elementary School	Assessment	None.
Winburn & Desilets 2009	TMK: (1) 5-1-002:004	Assessment	None.
Groza & Hammatt 2010	Kaʻaʻawa Elementary School	Monitoring	Recorded Site 7121, a human burial; and Site 7122, a cultural layer.

Table 5. Archaeological Sites in the Vicinity of the Kaʻaʻawa Project Area

Site	Location	Description	Reference
305	Coastal Kaʻaʻawa	Koʻa	McAllister 1933
306	Coastal Kaʻaʻawa	Human Remains	McAllister 1933
307	Coastal Kaʻaʻawa	Cave	McAllister 1933
308	Foot of the ridge, *mauka* side of Kamehameha Hwy.	Terrace	McAllister 1933
3759	Coastal Kaʻaʻawa	Human Remains	Smith 1988, Cleghorn 1991, Dye & Lee 1996
4728	Coastal Kaʻaʻawa	Human Remains	Jourdane 1993
6515	Kualoa Ranch, foot of the ridge	Human Remains	Hamano & Cleghorn 1993
7121	Kaʻaʻawa Elementary School	Human Remains	Groza & Hammatt 2010
7122	Kaʻaʻawa Elementary School	Cultural Layer	Groza & Hammatt 2010

Summary and Settlement Patterns

The project lands were rich in natural resources such as fresh water, agricultural areas, and coastal resources. Because of this, the region likely supported a sizeable population. Wetland taro was likely not abundant in Kualoa and Kaʻaʻawa, but these areas had plentiful fishing grounds. The fishponds in Kualoa added to the abundance of the region. Settlement patterns would have seen fishing villages along the coast, where fishponds and other marine resources played a major role in subsistence. *Koʻa* would have been located along the coast, where fishing was important. Wetland agriculture would have been focused along the streams to take advantage of the fresh water, and habitation areas may have been situated nearby. Dryland agriculture and exploitation of upland resources took place on the valley slopes and further inland, and *heiau* and cave shelters were also located in this upland zone.

The study area is steeped in tradition, particularly Kualoa, which was so sacred that canoes would have to lower their sails when passing by. Kualoa was also where tribute from each *ahupuaʻa* was amassed at the end of the *makahiki* circuit. The region also figures prominently in the Hiʻiaka and Lohiau epic, with Mokoliʻi Islet formed when Hiʻiaka slew a dragon.

Three LCAs were located within the survey areas and several others occur nearby. Data for these claims indicate that *loʻi*, *kula*, and house lots were common, and diversified agriculture and fishing were practiced during the 19th century. A former ditch was also depicted on a 1937 Kaʻaʻawa TMK map, running through the survey block.

The historic period brought about widespread changes to the region. Sugarcane agriculture was short lived in Kualoa, but the remains of a sugar mill along Kamehameha Highway are a silent testament to the endeavor. Military interests also affected the landscape with an airstrip constructed at Kualoa and various bunkers established along the cliffs.

Previous archaeological projects have identified a wide range of archaeological sites, features, and cultural material near the areas of study. The entire *ahupuaʻa* of Kualoa is a NRHP site, and a wide variety of archaeological remains have been documented there, particularly at Kualoa Regional Park, *makai* of Kualoa Ranch. Most notable are cultural layers with fire pits, post holes, and abundant traditional artifacts and midden; a large number of human burials; fishpond remains; and a whole pig burial. Radiocarbon dating from the base of one of the cultural layers placed the earliest occupation at ca. AD 1040–1280. Cultural material and human remains continue to be exposed from erosion at Kualoa Regional Park. Fewer studies have been conducted at Kualoa Ranch, although rock walls and human remains have been found. Archaeological work in Kaʻaʻawa has identified a *koʻa*, a legendary cave, a cultural layer, and several human burials.

Anticipated Finds and Research Questions

Background research indicates that a wide variety of archaeological remains may be encountered during the survey. As for traditional sites, subsurface cultural layers, traditional artifacts, and human burials might be expected in Kualoa and Kaʻaʻawa. Post-contact sites may also be present and may consist of agricultural, ranching, or military structural remains and cultural material.

The survey areas are located on and near former LCA parcels. In Kaʻaʻawa, a former ditch or other agricultural remains, and/or vestiges of previous habitation might occur. In Palikū, remnants of agricultural fields and/or structures associated with the former house lots might be found.

Research questions will broadly address the identification of the above archaeological resources and may become more narrowly focused based on the kinds of resources that are found. Initial research questions are as follows:

1. Are there subsurface cultural deposits or evidence of human burial areas within the survey blocks? Where are they located and what time period do they belong to?
2. Is there any evidence of agriculture or habitation in the survey areas, particularly where LCAs were located? Where in the survey blocks were the resources mentioned in the Māhele claims?
3. Is the former ditch identifiable in the Ka‘a‘awa survey block? Is it associated with any other features, such as terraces or subsurface deposits? Is it a traditional or historic ditch?
4. Are there any vestiges of historic-era use of the project area, including ranching and/or rice or sugarcane cultivation, and/or military use?

Once these basic questions are answered, additional research questions may be developed in consultation with SHPD, tailored to the specific kinds of archaeological resources that occur in the project areas.

METHODS

Pedestrian survey was conducted on April 13, 2015 by Jeffrey Lapinad, Dietrix Duhaylonsod, BA, and Kathryn Burns, BA. Subsurface testing was carried out on April 13, 2015 by Windy McElroy, PhD, and on April 14 and 17, 2015 by Jeffrey Lapinad. On July 23, 2015, McElroy and Lapinad completed one additional day of pedestrian survey and subsurface testing, as project areas had been slightly changed since the earlier fieldwork. McElroy served as Principal Investigator, overseeing all aspects of the project.

For the pedestrian survey, the ground surface was visually inspected for surface archaeological remains, with transects walked for each survey block. Archaeologists were spaced approximately 5 m apart. Of the 4.522 ha (11.174 ac.) survey area, 100% was covered on foot. Vegetation was generally very light, consisting of landscaped grass, and did not affect visibility. Archaeological sites and their boundaries were identified visually, with any feature possibly made or used by humans and more than 50 years old considered a site, although none were found.

Test trenches (TR) were excavated in 13 locations, both in areas proposed for construction and outside the construction footprints. The excavation strategy was approved by SHPD’s Lead O‘ahu Archaeologist beforehand via email. A mini excavator (Figure 11) or a backhoe were used for excavation of the trenches. Vertical provenience was measured from the surface, and trenches were excavated to sterile deposits, water table, or as deep as safely possible. Profiles were drawn and photographed, and sediments were described using Munsell soil color charts and a sediment texture flowchart (Thien 1979). Trench locations were recorded with a 3 m-accurate Garmin GPSmap 62st, and all trenches were backfilled after excavation.

The scale in all field photographs is marked in 10 cm increments. The north arrow on all maps points to magnetic north. Throughout this report rock sizes follow the conventions outlined in *Field Book for Describing and Sampling Soils*: Gravel <7 cm; Cobble 7–25 cm; Stone 25–60 cm; Boulder >60 cm (Schoeneberger et al. 2002:2–35). A few artifacts were collected and are temporarily being curated at the Keala Pono office in Kāne‘ohe, Hawai‘i. They will be returned to Kualoa Ranch upon acceptance of this report. No other laboratory analyses were conducted.

SHPD correspondence was conducted via email and telephone from April–July 2015. Appendix A provides a copy of the email communication. At least three telephone calls were made between Windy McElroy of Keala Pono and Susan Lebo of SHPD. The proposed testing strategy was discussed in the first of these calls. Two trenches were planned for the Ka‘a‘awa location; six at the Kualoa Headquarters; two at Palikū; and one at Abad’s/Hakipu‘u. This latter survey area was taken out of the scope of work at a later time. Dr. Lebo agreed with the proposed testing strategy and indicated that subsurface testing should be conducted both within and outside the proposed construction footprints and to check with her again once testing is completed to determine if additional testing is necessary. The second phone call was a follow up to the first, to notify Dr. Lebo that there were no significant findings aside from a structure that may or may not be historic. Dr. Lebo recommended consulting with the SHPD architectural historian, which was done in May 2015. The historian indicated that an RLS inventory form should be filled out. This was not done at that time because it was unclear if the building in question was more than 50 years old. Also during this time, the project area boundaries changed slightly. Another phone call was made to Dr. Lebo in July 2015, in which she stressed that the entire project area (100%) must be surveyed on foot, and additional trenches should be excavated. This was done in July 2015, with 100% pedestrian survey completed for the revised project area and three additional trenches excavated: one at Ka‘a‘awa, one at Kualoa Headquarters, and one at Palikū. Between November 2015 and January 2016, the SHPD architectural historian was again consulted. It was determined that the one building over 50 years old had lost its integrity and no further documentation would be necessary.

Figure 11. Excavation of TR 4 with mini excavator. Orientation is to the northeast.

RESULTS

Pedestrian survey and subsurface testing were conducted in the 4.522 ha (11.174 ac.) project area. No historic properties were found. Excavation of 13 test trenches did not yield any evidence of subsurface archaeological deposits or features. Two metal artifacts and one ceramic sherd were collected; they are likely historic.

Community Consultation

Community consultation is currently underway in the form of a cultural impact assessment (McElroy et al. in prep.). At the time of writing, four ethnographic interviews were completed. The completed interviews were done in person between April and July, 2015 by Keala Pono Ethnographer, Dietrix Duhaylonsod, BA. People consulted were Kualoa Ranch President John Morgan, and community members/cultural practitioners Cy Bridges, Winona Kaniho, and Robert Kealoha Domingo, with the latter two individuals interviewed together. An additional interview with cultural practitioner Frank Kawaikapuokalani Hewett was completed via email.

Mr. Morgan was able to provide information on the age of several structures within the project area, none of which are historic. The rain shelter structure in the Ka‘a‘awa survey block was constructed between 1992 and 1993, and the structures in the ATV area of the Ranch Headquarters survey block were built between 2003 and 2004. He also mentioned that a World War II-era airfield was once located in the vicinity of the Ranch Headquarters survey block. The other interviewees did not know of specific cultural resources within the survey areas and requested a site visit, one of which was completed at the time of writing.

Pedestrian Survey

The surface survey included 100% of the 4.522 ha (11.174 ac.) project area. Several of the Kualoa Ranch Headquarters survey blocks currently house structures (e.g., Figures 12 and 13). The rest of the project area consists of landscaped lawns, which are relatively flat and covered in short grass (e.g., Figures 14 and 15). Archaeologists were careful to look for signs of the ditch that may have been located within the Ka‘a‘awa survey block. This ditch was depicted on a 1937 TMK map (see Figure 5), but no other information could be found. The ditch could not be seen within the survey area (see Figure 14). No surface archaeological remains were observed within any of the survey blocks; any archaeological features that may have once been present are no longer there because of the extensive modern use of the project areas.

Figure 12. A portion of the Kualoa Ranch Headquarters survey block. Orientation is to the north.

Figure 13. A portion of the Kualoa Ranch Headquarters survey block. Orientation is to the south.

Figure 14. The Ka'a'awa survey block, showing no traces of the former ditch, which would have run right to left through the photo. Orientation is to the northeast.

Figure 15. View from the Palikū survey block. Orientation is to the southeast.

Subsurface Testing

A total of 13 trenches were excavated in the three survey blocks to determine the presence or absence of subsurface archaeological deposits or material (Figures 16–17 and Table 6). Three trenches were located in Ka'a'awa; three trenches at Palikū, and seven trenches at the Kualoa Ranch Headquarters area. Note that the survey area boundaries changed several times throughout the project planning process so some of the trenches were excavated outside the current project footprint before the boundaries were finalized (see Figures 16 and 17) (see Methods Section).

No archaeological deposits were found, and stratigraphy generally consisted of natural deposits or fill atop natural deposits. Two metal items were collected from one of the trenches in Palikū, and one ceramic fragment was recovered from the Kualoa Ranch Headquarters survey area.

TR 1 was excavated in the southeast corner of the Kualoa Ranch Headquarters survey block (see Figure 17). The trench measured 8 m long and 70 cm wide and was excavated to 145 cm below surface (cmbs). Stratigraphy consisted of a topsoil layer, two layers of fill, and natural sand (Figure 18). The topsoil was 10YR 5/3 (very dark grayish brown) coarse sand with 2% roots. The upper fill layer was 10YR 8/2 (very pale brown) medium sand with sparse modern debris; the lower fill layer was 5YR 3/4 (dark reddish brown) sandy clay loam with 5% basalt cobbles. The basal natural layer was 10YR 8/2 (very pale brown) medium sand. A small, plain ceramic fragment was collected from Layer II. No archaeological deposits were identified.

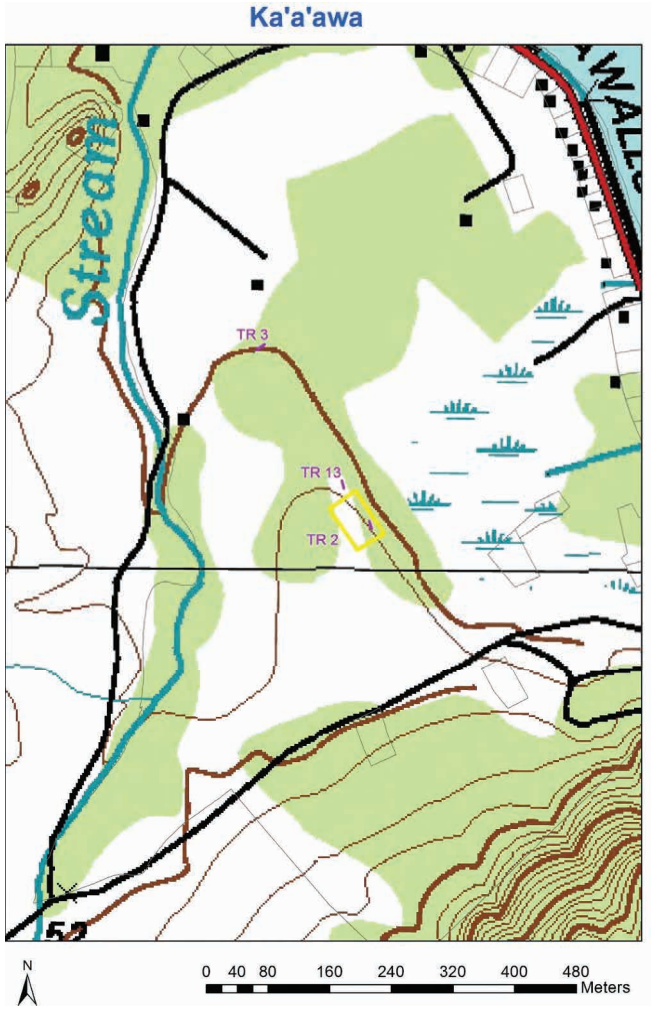

Figure 16. Location of trenches excavated in Ka‘a‘awa.

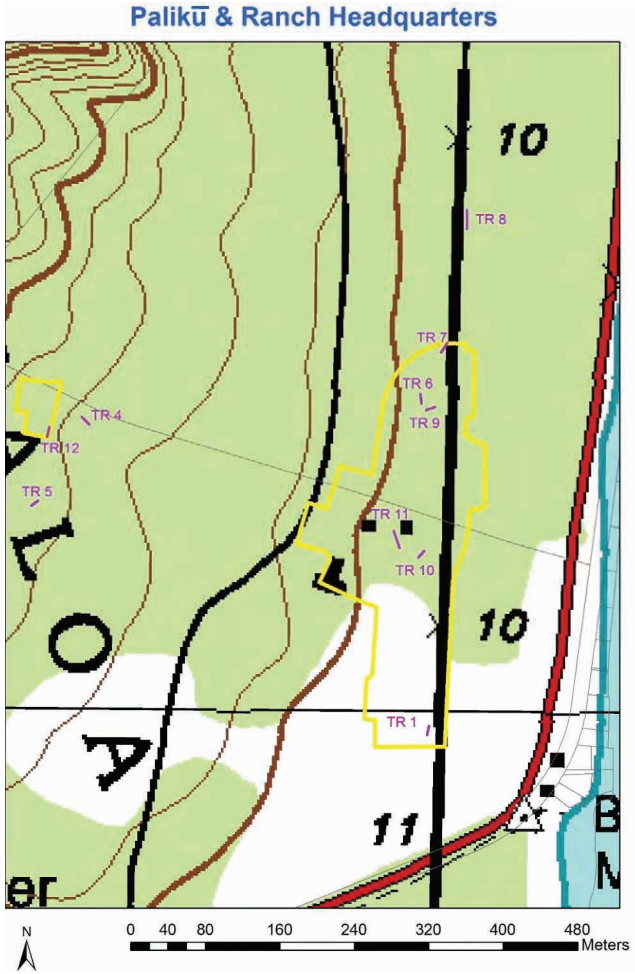

Figure 17. Location of the trenches excavated in the Palikū (left) and Kualoa Ranch Headquarters (right) areas.

Table 6. Sediment Descriptions

Location	Layer	Depth (cmbs)	Color	Description	Interpretation
TR 1	I	0–16	10YR 5/3	Coarse sand; 2% roots; smooth, clear boundary.	Topsoil
	II	16–42	10YR 8/2	Medium sand; modern debris; smooth, very abrupt boundary.	Fill
	III	42–55	5YR 3/4	Sandy clay loam; 5% basalt cobbles; smooth, very abrupt boundary.	Fill
	IV	55–145+	10 YR 8/2	Medium sand; water table at 140 cmbs; base of excavation.	Natural
TR 2	I	0–28	10YR 3/2	Silty clay loam; 20% roots, 10% basalt cobbles; smooth, abrupt boundary.	Topsoil
	II	28–125+	7.5YR 3/4	Silty clay loam; 2% roots, 50% basalt cobbles; base of excavation.	Natural
TR 3	I	0–33	10YR 3/2	Silty clay loam; 10% roots, 2% basalt cobbles; wavy, abrupt boundary.	Topsoil
	II	33–130+	7.5YR 3/3	Silty clay; 2% roots, 5% basalt cobbles; base of excavation.	Natural
TR 4	I	0–115+	10YR 3/2	Sandy clay loam; 10% roots, 60% basalt of all sizes; historic material in upper 20 cm; base of excavation.	Natural
TR 5	I	0–120+	10YR 3/2	Sandy loam; 2% roots, 40% basalt and coral cobbles and gravel, sparse modern debris; base of excavation.	Fill
TR 6	I	0–110+	10YR 3/2	Sandy clay loam; 10% roots, 50% basalt of all sizes; base of excavation.	Fill
TR 7	I	0–110	5YR 3/1	Sandy clay loam; 1% roots, 80% basalt cobbles; wavy, abrupt boundary.	Fill
	II	110–140+	5YR 2.5/2	Sandy clay; 5% basalt cobbles; base of excavation.	Natural
TR 8	I	0–15	10YR 2/2	Sandy clay loam; 2% roots, 40% basalt cobbles; smooth, very abrupt boundary.	Fill
	II	15–34	10YR 6/6	Medium sand; 80% coral gravel; smooth, very abrupt boundary.	Fill
	II	34–60	7.5YR 2.5/2	Sandy clay loam; 10% basalt cobbles; smooth, abrupt boundary.	Fill
	IV	60–160+	2.5Y 8/1	Medium sand; water table at 155 cmbs; base of excavation.	Natural
TR 9	I	0–50	10YR 2/2	Sandy loam; 1% roots, 40% basalt cobbles; modern debris; smooth, very abrupt boundary.	Fill
	II	50–73	10YR 2/1	Sandy loam; 1% roots, 30% basalt cobbles; modern debris; smooth, very abrupt boundary.	Fill
	III	73–120+	10YR 3/2	Sandy loam; 40% basalt cobbles; base of excavation.	Natural

Table 6. (Cont.)

Location	Layer	Depth (cmbs)	Color	Description	Interpretation
TR 10	I	0–48	10YR 2/2	Sandy loam; 2% roots, 15% basalt cobbles; smooth, very abrupt boundary.	Fill
	II	48–80	10YR 5/8	Medium sand; 1% roots, 80% coral gravel; smooth, very abrupt boundary.	Fill
	II	80–109	10YR 2/2	Sandy loam; 1% roots, 5% basalt cobbles; smooth, abrupt boundary.	Fill
	IV	109–170+	10YR 8/2	Medium sand; 10% basalt cobbles; base of excavation.	Natural
TR 11	I	0–70	10YR 2/1	Sandy loam; 10% roots, 15% basalt cobbles; modern debris; smooth, abrupt boundary.	Fill
	II	70–170+	10YR 2/2	Sandy loam; 10% basalt cobbles; base of excavation.	Natural
TR 12	I	0–69+	10YR 3/1	Sandy clay loam; 5% roots, 50% basalt of all sizes; base of excavation.	Natural
TR 13	I	0–43	10YR 3/2	Silty clay loam; 5% roots, 2% basalt cobbles; smooth, gradual boundary.	Topsoil
	II	43–135+	10YR 3/3	Silty clay loam; 2% basalt cobbles; base of excavation.	Natural

Figure 18. TR 1 east face profile drawing (left) and photo (right).

TR 2 was placed near the southeast corner of the Ka‘a‘awa survey block (see Figure 16). The trench measured 4.9 m long and 70 cm wide and was excavated to 125 cmbs. Stratigraphy consisted of an upper topsoil layer and a lower natural layer (Figure 19). The upper layer was 10YR 3/2 (very dark grayish brown) silty clay loam with 20% roots and 10% basalt cobbles; the lower layer was a more compact 7.5YR 3/4 (dark brown) silty clay with 2% roots and 50% basalt cobbles. No archaeological deposits or material were identified.

TR 3 was located north of the Ka‘a‘awa survey block, in an area no longer within the project footprint (see Figure 16). The trench measured 5.6 m long and 65 cm wide and was excavated to 130 cmbs. Stratigraphy consisted of an upper topsoil layer and a lower natural layer (Figure 20). The upper layer was 10YR 3/2 (very dark grayish brown) silty clay loam with 10% roots and 2% basalt cobbles; the lower layer was a more compact 7.5YR 3/3 (dark brown) silty clay with 2% roots and 5% basalt cobbles. No archaeological deposits or material were identified.

TR 4 was placed east of the Palikū survey block, in an area no longer within the project footprint (see Figure 17). The trench measured 5.5 m long and was excavated to 115 cmbs. The width of the trench was as great as 155 cm because of large natural boulders that were removed during excavation. Stratigraphy consisted of a single rocky, natural layer (Figure 21). This layer was 10YR 3/2 (very dark grayish brown) sandy clay loam with 10% roots and 60% basalt rock of all sizes. Two historic artifacts were found within the upper 20 cm of this layer. No archaeological deposits were identified.

TR 5 was located south of the Palikū survey block, in an area no longer within the project footprint (see Figure 17). The trench measured 3.7 m long and 70 cm wide and was excavated to 120 cmbs. Stratigraphy was composed of a single layer of fill (Figure 22). This consisted of 10YR 4/2 (dark grayish brown) sandy loam with 20% roots, 40% basalt and coral cobbles and gravel, and sparse modern debris. No archaeological deposits or material were identified.

TR 6 was excavated on the east side of the proposed ATV Depot in the Kualoa Ranch Headquarters survey block (see Figure 17). The trench measured 4 m long and 80 cm wide and was excavated to 110 cmbs. Stratigraphy consisted of a single layer of fill (Figure 23). This was 10YR 3/2 (very dark grayish brown) sandy clay loam with 10% roots and 50% basalt rocks of all sizes. No archaeological deposits or material were identified.

TR 7 was placed on the north side of the proposed administrative building in the Kualoa Ranch Headquarters survey block (see Figure 17). The trench measured 6.4 m long and 84 cm wide and was excavated to 140 cmbs. Stratigraphy was composed of an upper fill layer and a lower natural layer (Figure 24). The upper layer consisted of 5YR 3/1 (very dark gray) sandy clay loam with 1% roots and 80% basalt cobbles; the lower layer was 5YR 2.5/2 (dark reddish brown) sandy clay with 5% basalt cobbles. No archaeological deposits or material were identified.

TR 8 was placed 50 m north of the proposed warehouse, outside the Kualoa Ranch Headquarters survey block (see Figure 17). The trench measured 6.4 m long and 80 cm wide and was excavated to 160 cmbs. Stratigraphy consisted of three layers of fill atop natural sand (Figure 25). The uppermost fill layer was 10YR 2/2 (very dark brown) sandy clay loam with 2% roots and 40% basalt cobbles; the next fill layer was 10YR 6/6 (brownish yellow) medium sand with 80% coral cobbles; the lowest fill layer was 7.5YR 2.5/2 (very dark brown) sandy clay loam with 10% basalt cobbles; the basal layer was 2.5Y 8/1 (yellow) medium sand. The water table was encountered at 155 cmbs. No archaeological deposits or material were identified.

TR 9 was located on the west side of the proposed administrative building in the Kualoa Ranch Headquarters survey block (see Figure 17). The trench measured 5 m long and 80 cm wide, and was

Figure 19. TR 2 east face profile drawing (left) and photo (right).

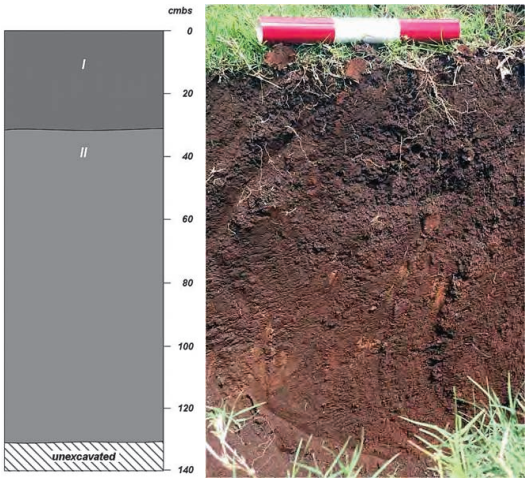

Figure 20. TR 3 north face profile drawing (left) and photo (right).

Figure 21. TR 4 north face profile drawing (left) and photo (right).

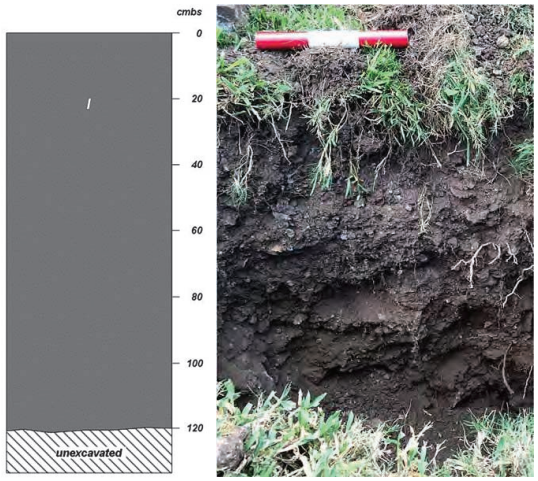

Figure 22. TR 5 northwest face profile drawing (left) and photo (right).

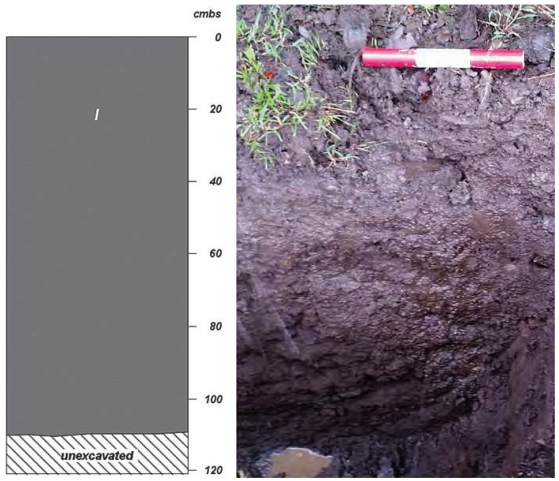

Figure 23. TR 6 west face profile drawing (left) and photo (right).

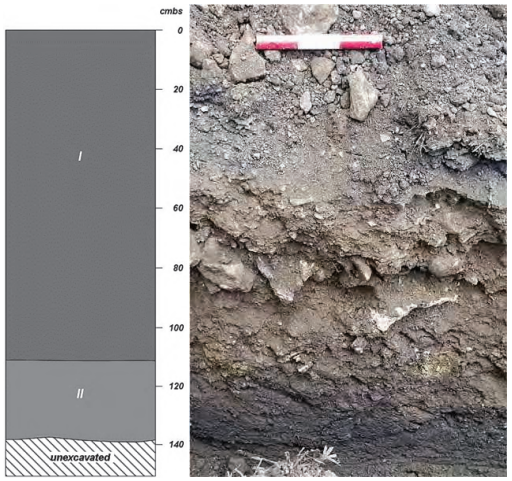

Figure 24. TR 7 northwest face profile drawing (left) and photo (right).

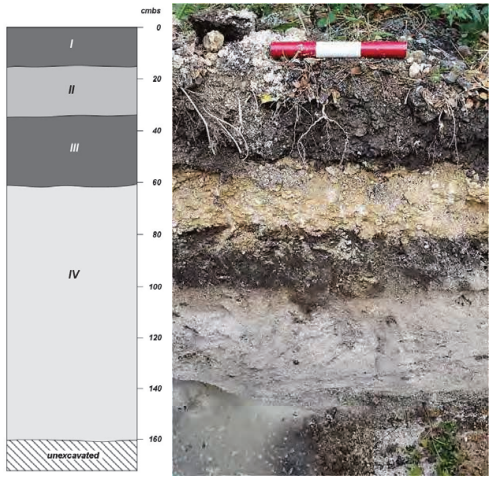

Figure 25. TR 8 west face profile drawing (left) and photo (right).

excavated to 170 cmbs. Stratigraphy was composed of two fill layers above a natural layer (Figure 26). The upper fill layer was 10YR 2/2 (very dark brown) sandy loam with 1% roots and 40% basalt cobbles; the lower fill layer consisted of 10YR 2/1 (black) sandy loam with 1% roots and 30% basalt cobbles; the basal layer was 10YR 3/2 (very dark grayish brown) sandy loam with 40% basalt cobbles. No archaeological deposits or material were identified.

TR 10 was excavated on the east side of the proposed visitor center at the Kualoa Ranch Headquarters survey block, which is also the southwest side of the current parking lot (see Figure 17). The trench measured 6 m long and 80 cm wide and was excavated to 170 cmbs. Stratigraphy consisted of three layers of fill atop natural sand (Figure 27). The uppermost fill layer was 10YR 2/2 (very dark brown) sandy loam with 2% roots and 15% basalt cobbles; the next fill layer was 10YR 5/8 (yellowish brown) medium sand with 1% roots and 80% coral cobbles; the lowest fill layer was 10YR 2/2 (very dark brown) sandy loam with 1% roots and 5% basalt cobbles; the basal layer consisted of 10YR 8/2 (very pale brown) medium sand. No archaeological deposits or material were identified.

TR 11 was located on the west side of the proposed visitor center at the Kualoa Ranch Headquarters survey block (see Figure 17). The trench measured 6 m long and 65 cm wide and was excavated to 170 cmbs. Stratigraphy was composed of a fill layer atop a natural layer (Figure 28). The fill was 10YR 2/1 (black) sandy loam with 10% roots, 15% basalt cobbles, and modern debris; the natural layer was 10YR 2/2 (very dark brown) sandy loam with 10% basalt cobbles. No archaeological deposits or material were identified.

TR 12 was placed on the southeast corner of the Palikū survey block (see Figure 17). The trench measured 5.1 m long and 72 cm wide and was excavated to 69 cmbs, where further excavation was

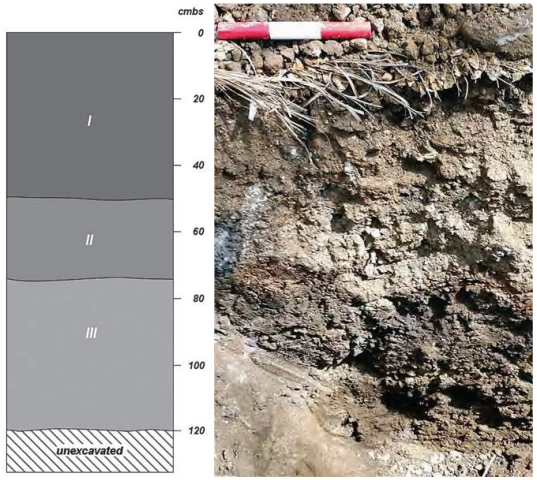

Figure 26. TR 9 south face profile drawing (left) and photo (right).

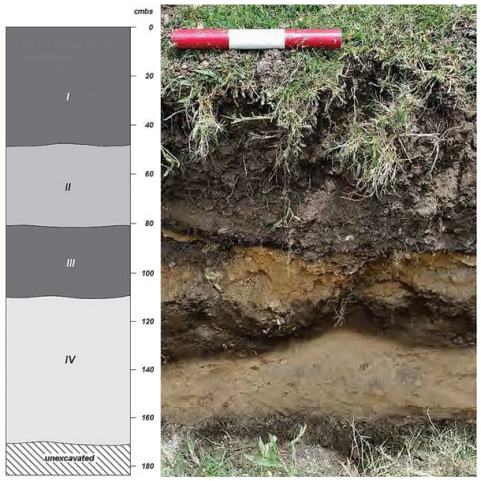

Figure 27. TR 10 southeast face profile drawing (left) and photo (right).

Figure 28. TR 11 west face profile drawing (left) and photo (right).

impeded by large boulders. Stratigraphy was composed of a single rocky natural layer (Figure 29). This was 10YR 3/1 (very dark gray) sandy clay loam with 5% roots, 50% basalt cobbles. No archaeological deposits or material were identified.

TR 13 was located on the northeast side of the Ka‘a‘awa survey block (see Figure 16). The trench measured 6.2 m long and 72 cm wide and was excavated to 135 cmbs. Stratigraphy was composed of a layer of topsoil above a natural layer (Figure 30). The topsoil was 10YR 3/2 (very dark grayish brown) silty clay loam with 5% roots and 2% basalt cobbles; the natural layer was a more compact 10YR 3/3 (dark brown) silty clay loam with 2% basalt cobbles. No archaeological deposits or material were identified.

Laboratory Analysis

Three historic artifacts were collected during subsurface testing (Table 7). Two of these came from TR 4 from approximately 0–20 cmbs. The third came from TR 1 from 16–42 cmbs. Given the location of the finds, they could be ranching -related.

Artifact 1 appears to be the head of a hammer (Figure 31, left). It measures 124 cm long and 110 cm wide and is quite heavy, weighing 427.8 g. The hammer head is made of metal and has a flat face and pointed peen rather than a claw. The item resembles a farrier’s hammer for shoeing horses, although farrier’s hammers usually have a claw and this specimen does not. The rusty, deteriorated condition of the artifact suggests a historic age, although this could not be confirmed.

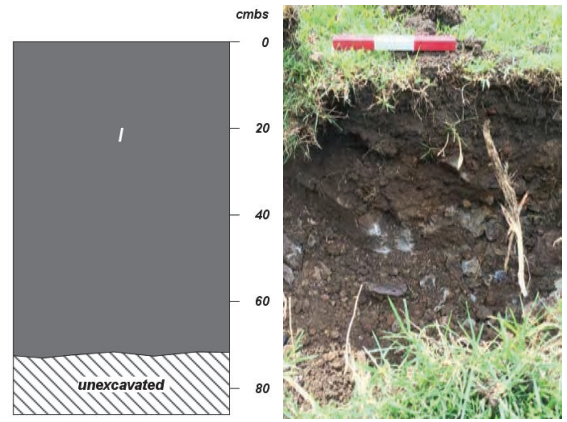

Figure 29. TR 12 east face profile drawing (left) and photo (right).

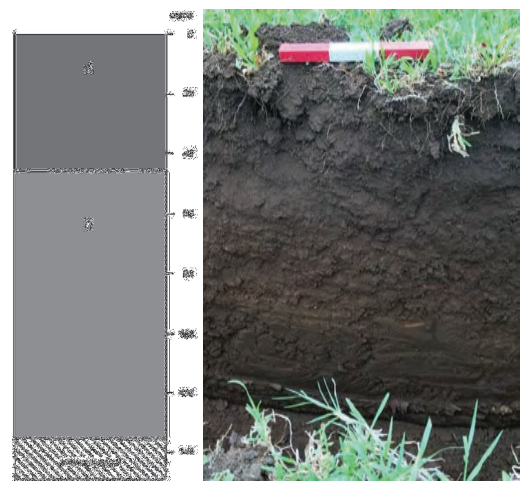

Figure 30. TR 13 northeast face profile drawing (left) and photo (right).

Artifact 2 is a metal harness buckle (Figure 31, right). It measures 7.2 cm long and 4.3 cm wide and weighs 17.6 g. The buckle is rectangular with two openings for a strap to thread through. The buckle is likely ranching related, as it was part of a harness. Like the hammer head, its rusty, deteriorated condition suggests a historic age, although this could not be confirmed.

Artifact 3 is a small ceramic plate rim fragment (Figure 32). The sherd is a common refined earthenware, whiteware, with a raised line design along the rim. It is likely historic.

Table 7. Collected Artifacts

Artifact No.	Length x Width (cm)	Weight (g)	Function	Age
1	124 x 110	427.8	Hammer	Possibly Historic
2	7.2 x 4.3	17.6	Buckle	Possibly Historic
3	3.5 x 2.2	4.1	Tableware	Possibly Historic

Figure 31. Artifacts 1 and 2, recovered from TR 4.

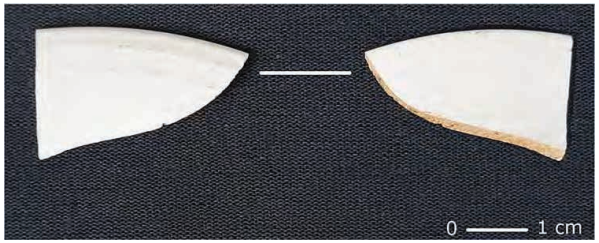

Figure 32. Artifact 3, recovered from TR 1 (front and back shown).

Summary of Findings

Pedestrian survey of 4.522 ha (11.174 ac.) in Kualoa 1 and 2, and Ka‘a‘awa Ahupua‘a yielded no evidence of surface archaeological remains. A 1937 TMK map showed that a ditch once ran through one of the Ka‘a‘awa survey blocks, but no traces of the ditch were found. Several structures are located within the survey boundaries, and consultation with Kualoa Ranch President, John Morgan indicated that they are less than 50 years of age.

Subsurface testing, consisting of 13 trenches, did not identify any subsurface cultural deposits or features. Stratigraphy generally consisted of natural deposits or fill atop natural deposits. Two artifacts were collected from TR 4 in Palikū and one artifact was recovered from TR 1 at the Ranch Headquarters. They are likely historic items related to ranching in the area.

Summary and Recommendations

An archaeological inventory survey was conducted for TMK: (1) 4-9-004:002, and (1) 4-9-005:001 in Kualoa 1 and 2 Ahupuaʻa, Koʻolaupoko District, and TMK: (1) 5-1-001:001 in Kaʻaʻawa Ahupuaʻa, Koʻolauloa District on the island of Oʻahu. Due to negative findings, the AIS results are presented as an archaeological assessment. The project area consists of three discontiguous survey blocks: Palikū, Kualoa Ranch Headquarters, and Kaʻaʻawa, which cover a total of 4.522 ha (11.174 ac.). Kualoa Ranch is planning improvements to selected areas within the survey blocks. The archaeological work included pedestrian survey that covered 100% of the project areas, as well as test excavations consisting of 13 trenches. Due to negative findings, the AIS results are presented as an archaeological assessment per HAR §13–275.

No surface archaeological remains were found during pedestrian survey of the parcel. The entire property has been disturbed by modern activity at the ranch, including landscaping of the lawns and construction of buildings. Likewise, subsurface testing did not yield any evidence of subsurface archaeological features or deposits. Stratigraphy generally consisted of natural deposits or fill atop natural layers. Two possible historic artifacts were recovered from one of the trenches in the Palikū survey area, and one from a trench in the Kualoa Ranch Headquarters area. Considering the former usage of the region, they are likely ranching or military-related. Several structures are located within the survey boundaries, and consultation with Kualoa Ranch President, John Morgan indicated that they are less than 50 years of age.

Given the negative findings, archaeological monitoring is not recommended for the majority of the project area. Monitoring is recommended only in the lower elevations of the Kualoa Ranch Headquarters, where sandy deposits were encountered. This recommendation is proposed because of the possibility of encountering human burials in intact beach sand deposits. It is possible that human remains may be discovered during construction activities, even though no such evidence was found during the survey. Should human burial remains be discovered during construction activities, work in the vicinity of the remains should cease and the SHPD should be contacted.

In sum, archaeological survey was conducted on 11.174 ac. in Kualoa 1 and 2 and Kaʻaʻawa Ahupuaʻa. No archaeological sites, features, or deposits were found. The only findings were three possible historic artifacts. Within the surveyed areas, improvements to Kualoa Ranch will have no effect on historic properties because no historic properties occur there. Nevertheless, archaeological monitoring is recommended for the lower elevations of the Kualoa Ranch Headquarters survey block, where sandy deposits occur.

Glossary

ahupuaʻa Traditional Hawaiian land division usually extending from the uplands to the sea.

ʻauwai Ditch, often for irrigated agriculture.

awa The milkfish, or *Chanos chanos*, often raised in fishponds in ancient times.

boulder Rock 60 cm and greater.

cobble Rock fragment ranging from 7 cm to less than 25 cm.

debitage Waste by-products of stone tool manufacture.

hala The indigenous pandanus tree, or *Pandanus odoratissimus*, which had many uses in traditional Hawaiʻi. Leaves were used in mats, house thatch, and basketry; flowers were used for their perfume; keys were utilized in lei and as brushes; roots and leaf buds were used medicinally; and wood was fashioned into bowls and other items.

heiau Place of worship and ritual in traditional Hawaiʻi.

humuhumunukunukuāpuaʻa A triggerfish of the genus *Rhinecanthus*, either *R. aculeatus* or *R. rectangulus*.

ʻili Land division, next in importance to *ahupuaʻa* and usually a subdivision of an *ahupuaʻa*.

imu Underground pit or oven used for cooking.

inoa Name, term, title.

kahakai Beach, seashore, coast.

Kahiki A far away land, sometimes refers to Tahiti.

kahua Open place for sports, such as *ʻulu maika*.

kahuna An expert in any profession, often referring to a priest, sorcerer, or magician.

kai Sea, sea water; area near the sea, seaside, lowlands; tide, current in the sea; insipid, brackish, tasteless.

kalo The Polynesian-introduced *Colocasia esculenta*, or taro, the staple of the traditional Hawaiian diet.

kamaʻāina Native-born.

kapa Tapa cloth.

kapu Taboo, prohibited, forbidden.

koʻa Fishing shrine.

konohiki The overseer of an *ahupuaʻa* ranked below a chief; land or fishing rights under control of the *konohiki*; such rights are sometimes called *konohiki* rights.

kula Plain, field, open country, pasture, land with no water rights.

kuleana Right, title, property, portion, responsibility, jurisdiction, authority, interest, claim, ownership.

kupua Demigod, hero, or supernatural being below the level of a full-fledged deity.

loʻi, loʻi kalo An irrigated terrace or set of terraces for the cultivation of taro.

loko	Inside, interior. Pond, lake, pool.
Māhele	The 1848 division of land.
makahiki	A traditional Hawaiian festival starting in mid October. The festival lasted for approximately four months, during which time there was a *kapu* on war.
makai	Toward the sea.
mauka	Inland, upland, toward the mountain.
menehune	Small people of legend who worked at night to build structures such as fishponds, roads, and *heiau*.
midden	A heap or stratum of refuse normally found on the site of an ancient settlement. In Hawai‘i, the term generally refers to food remains, whether or not they appear as a heap or stratum.
moku	District, island.
mo‘o	Lizard, dragon, water spirit.
mo‘olelo	A story, myth, history, tradition, legend, or record.
muliwai	River mouth, estuary, or pool near the mouth of a stream, enlarged by ocean water left there at high tide.
mullet	*Mugil cephalus*, or *‘ama‘ama*, a very choice indigenous fish.
niho palaoa	Pendant fashioned from whale tooth worn by Hawaiian royalty.
‘ōlelo no‘eau	Proverb, wise saying, traditional saying.
poi	A staple of traditional Hawai‘i, made of cooked and pounded taro mixed with water to form a paste.
post-contact	After A.D. 1778 and the first written records of the Hawaiian Islands made by Captain James Cook and his crew.
pre-contact	Prior to A.D. 1778 and the first written records of the Hawaiian Islands made by Captain James Cook and his crew.
pu‘uhonua	Place of refuge.
stone	Rock fragment ranging from 25 cm to less than 60 cm.
‘ulu	The Polynesian-introduced tree *Artocarpus altilis*, or breadfruit.
‘ulu maika	Stone used in the *maika* game, similar to bowling.
wauke	The paper mulberry, or *Broussonetia papyrifera*, which was made into tapa cloth in traditional Hawai‘i.

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APPENDIX A: SHPD EMAIL CORRESPONDENCE

Subject: Fw: Kualoa Ranch AIS
From: Susan.A.Lebo@hawaii.gov
Date: Fri, Apr 10, 2015 9:39 am
To: wkm@keala-pono.com, "Barbara Natale" <bnatale@group70int.com>

Hello Windy,

Thank you for discussing this project with us this morning. Your proposed testing looks good. Please consult with us before you complete the testing so we may discuss your field findings and whether additional testing is needed based on those initial findings.

Sincerely,

Susan

Susan A. Lebo, PhD
Oahu Lead Archaeologist
Acting Archaeology Branch Chief
State Historic Preservation Division
Kakuhihewa Building
601 Kamokila Blvd., Suite 555
Kapolei, Hawaii 96707
Susan.A.Lebo@hawaii.gov
(808) 692-8019

----- Forwarded by Susan A Lebo/DLNR/StateHiUS on 04/10/2015 09:37 AM -----

From: "Windy Keala McElroy" <wkm@keala-pono.com>
To: Susan.A.Lebo@hawaii.gov,
Cc: "Barbara Natale" <bnatale@group70int.com>
Date: 04/08/2015 09:14 AM
Subject: Kualoa Ranch AIS

Aloha Susan,

We are conducting an AIS and CIA for improvements to Kualoa Ranch on behalf of Group 70. I've attached a short project summary. We are planning to begin fieldwork for the AIS on Monday, with a 100% pedestrian survey and test trenching. Two trenches will be excavated at the Ka‘a‘awa location; six at the Kualoa Headquarters; two at Paliku; and one at Abad’s/Hakipu‘u. Is this enough information for you so that we can get started on Monday or do you need a more detailed excavation plan?

Mahalo,
Windy

Subject:

Re: Kualoa Ranch historic building

From: Jessica.L.Puff@hawaii.gov
Date: Tue, May 05, 2015 11:46 am
To: "Windy Keala McElroy" <wkm@keala-pono.com>

Aloha Windy,

Thank you for your email. Instead of modifying your Archaeological Assessment, would you fill out the attached RLS Inventory form for us? It'll help me to determine if the building retains its significance. Additionally, could you provide me with any photographs of the surrounding area and additional photos of the structure?

Thanks,

Jess

Jessica Puff
Architectural Historian
Hawaii State Historic Preservation Division
601 Kamokila Blvd. Suite 555
Kapolei, HI 96707
#: 808.692.8023
@: jessica.l.puff@hawaii.gov

From: "Windy Keala McElroy" <wkm@keala-pono.com>
To: jessica.l.puff@hawaii.gov,
Cc: Susan.A.Lebo@hawaii.gov
Date: 05/04/2015 09:48 AM
Subject: Kualoa Ranch historic building

Aloha Jessica,

We conducted an archaeological inventory survey for selected areas of Kualoa Ranch. There are several structures within our project area, but there's only one that we think may be historic- the building in the attached photo which likely dates to the 1950s. The building is slated for demolition, to be replaced by a new visitor center. We had no other findings so we were going to submit the report as an archaeological assessment. Does it need to change to an AIS because of the building? What other steps do we need to take to document it in our report? If you would like to come out for a site visit I'd be happy to meet you there one day next week if that will work for you.

Mahalo,
Windy

Subject: RE: Kualoa Ranch historic buildings

From: "Broverman, Anna E" <anna.e.broverman@hawaii.gov>

Date: Wed, Jan 06, 2016 9:54 am
To: Windy Keala McElroy <wkm@keala-pono.com>
Cc: "Lebo, Susan A" <susan.a.lebo@hawaii.gov>, Barbara Natale <bnatale@group70int.com>

Aloha Wendy,

We do not need any additional information on the buildings. The only one of 50 years old has lost its integrity.

Sorry for the delay and thanks for your patience!

Anna

From: Windy Keala McElroy [mailto:wkm@keala-pono.com]
Sent: Wednesday, January 06, 2016 9:32 AM
To: Broverman, Anna E <anna.e.broverman@hawaii.gov>
Cc: Lebo, Susan A <susan.a.lebo@hawaii.gov>; Barbara Natale <bnatale@group70int.com>
Subject: RE: Kualoa Ranch historic buildings

Hi Anna, we would like to wrap up our report revisions. Can you let us know how we should proceed with regard to the historic buildings?

Mahalo,

Windy

Windy Keala McElroy, PhD
Keala Pono Archaeological Consulting
808.381.2361
http://keala-pono.com

-------- Original Message --------

Subject: Re: Kualoa Ranch historic buildings
From: "Broverman, Anna E" <anna.e.broverman@hawaii.gov>
Date: Fri, November 13, 2015 11:27 am
To: Windy Keala McElroy <wkm@keala-pono.com>

Aloha Wendy,

The bunker is over 50 years old so it is a historic property. We may need more information regarding the operations as we can't definitely say it is 50 years old. I'll read the AIS to see if the properties are significant and retain their integrity. I will try to get back to you Monday.

Thanks!
Anna
Sent from my iPhone

On Nov 12, 2015, at 10:46 AM, Windy Keala McElroy <wkm@keala-pono.com> wrote:

Aloha Anna,

We completed an archaeological inventory survey at Kualoa Ranch (project area map attached) and need to consult with you regarding possible historic buildings. The attached table lists the structures within our project area, two of which may be of interest; they are highlighted in the table. The first is the operations building; we don't know its age but it was moved to the property in 1969. The second is a WWII bunker but it is no longer visible, as it was covered over by the patio of a later structure in 1987. Do either of these structures meet the definition of a historic property, and if they do, what documentation is needed?

Thanks so much,

Windy

APPENDIX C

CULTURAL IMPACT ASSESSMENT
FOR IMPROVEMENTS TO KUALOA RANCH
(KEALA PONO ARCHAEOLOGICAL CONSULTING, INC.)

FINAL—Cultural Impact Assessment for Improvements to Kualoa Ranch, Kualoa 1 and 2 Ahupuaʻa, Koʻolaupoko District, and Kaʻaʻawa Ahupuaʻa, Koʻolauloa District, Island of Oʻahu, Hawaiʻi

Portions of TMK: (1) 4-9-004:002, (1) 4-9-005:001, and (1) 5-1-001:001

Prepared For:

Group 70 International
925 Bethel Street, 5th Floor
Honolulu, Hawaii 96813

February 2016

Keala Pono Archaeological Consulting, LLC ● PO Box 1645, Kaneohe, HI 96744 ● Phone 808.381.2361

FINAL—Cultural Impact Assessment for Improvements to Kualoa Ranch, Kualoa 1 and 2 Ahupuaʻa, Koʻolaupoko District, and Kaʻaʻawa Ahupuaʻa, Koʻolauloa District, Island of Oʻahu, Hawaiʻi

Portions of TMK: (1) 4-9-004:002, (1) 4-9-005:001, and (1) 5-1-001:001

Prepared For:

Group 70 International
925 Bethel Street, 5th Floor
Honolulu, Hawaii 96813

Prepared By:

Windy Keala McElroy, PhD
Dietrix Duhaylonsod, BA
and
Joey J. Condit, MA

February 2016

Keala Pono Archaeological Consulting, LLC ● PO Box 1645, Kaneohe, HI 96744 ● Phone 808.381.2361

Management Summary

Keala Pono Archaeological Consulting conducted a Cultural Impact Assessment for portions of TMK: (1) 4-9-004:002, and (1) 4-9-005:001 in Kualoa 1 and 2 Ahupuaʻa, Koʻolaupoko District, and TMK: (1) 5-1-001:001 in Kaʻaʻawa Ahupuaʻa, Koʻolauloa District on the island of Oʻahu, prior to improvements proposed by Kualoa Ranch. This study highlights the unique past of Kualoa and Kaʻaʻawa and demonstrates the importance of these areas to the community. Five community members were interviewed to share their *manaʻo* and to help identify any potential cultural resources or practices that might be affected by proposed improvements to the ranch. The consultants did not identify any cultural resources within the project footprint that would be affected. They did recognize a variety of cultural resources in the general area and they offered valuable recommendations for the project. Some suggestions were to work with Kualoa Beach Park so that there is a repository for *iwi* in case they are disturbed during the project; to stay away from the Pōhaku a Kāne in Palikū and the fishermen's burials in the *mauka* portions of Kualoa; and to honor the cultural value of the area, respect the land, consider the community, and ensure access for plant gathering.

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INTRODUCTION

At the request of Group 70 International, Keala Pono Archaeological Consulting conducted a Cultural Impact Assessment (CIA) for portions of TMK: (1) 4-9-004:002, and (1) 4-9-005:001 in Kualoa 1 and 2 Ahupuaʻa, Koʻolaupoko District, and TMK: (1) 5-1-001:001 in Kaʻaʻawa Ahupuaʻa, Koʻolauloa District on the island of Oʻahu. Kualoa Ranch is planning improvements to selected areas within these parcels. The CIA was designed to identify any cultural resources or practices that may occur in the area and to gain an understanding of the community's perspectives on the proposed construction.

The report begins with a description of the project area and an historical overview of land use and archaeology in the area. The next section presents methods and results of the ethnographic survey. Project results are summarized, and recommendations are made in the final section. Hawaiian words, flora and fauna, and technical terms are defined in a glossary, and an index at the end of the report assists readers in finding specific information. Also included are appendices with documents relevant to the ethnographic survey, including full transcripts of the interviews.

Project Location

The project area consists of three discontiguous survey blocks: Palikū, Kualoa Ranch Headquarters, and Kaʻaʻawa (Figure 1). These are situated within three *ahupuaʻa* and two districts: Kualoa 1 and 2 Ahupuaʻa in Koʻolaupoko District, and Kaʻaʻawa Ahupuaʻa in Koʻolauloa District. The survey areas are located on portions of TMK: (1) 4-9-004:002, (1) 4-9-005:001, and (1) 5-1-001:001 (Figures 2–4). The parcels are all owned by Kualoa Ranch, Inc., with Anna Simeona listed as a multiclaimant for TMK: (1) 4-9-005:001.

Within these TMK parcels, the project area covers 4.522 ha (11.174 ac.) in total: .187 ha (.461 ac.) in Palikū; 4.103 ha (10.138 ac.) at the Kualoa Ranch Headquarters; and .233 ha (.575 ac.) in Kaʻaʻawa.

Description of the Project

Kualoa Ranch plans to improve the Ranch Headquarters area with a new main entrance, visitor center, All-Terrain Vehicle (ATV) depot and storage, offices, maintenance area, and farmers market. The existing visitor center will be converted primarily to food service, where the current kitchen and café will be expanded. The parking lot will also be expanded, increasing the number of parking spaces to 246 standard, 7 Americans with Disabilities Act (ADA), and 12 for coach buses. Landscaped berms will front the parking areas and the driveway to shield the views of parked cars from Kamehameha Highway.

The Ranch will add a ceremonial meeting house in Palikū, renovate the former gun range, and create an improved driveway access to the Palikū area will be created. The other existing buildings in the Palikū vicinity will remain as they are. Landscaped berms will front the parking areas and the driveway to shield the views of parked cars from Kamehameha Highway. The landscaping here will be improved to reflect a Hawaiian theme.

An agricultural products processing and group facility will be created in Kaʻaʻawa, replacing the current pavilion. The facility will be housed in a new structure that includes a lanai, prep kitchen, storage area for tables, and restrooms.

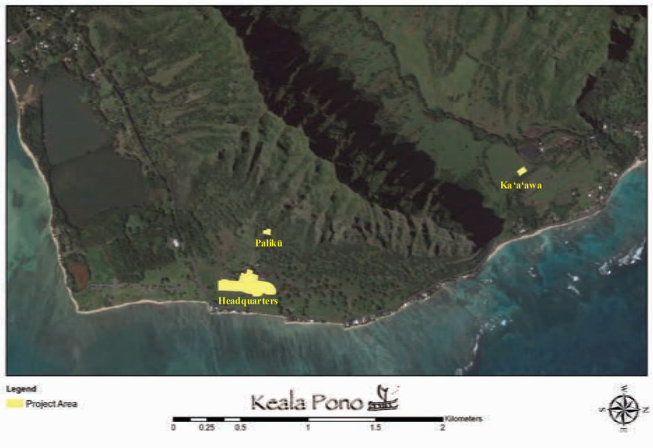

Figure 1. Project locations on a 7.5 minute USGS Kaaawa quadrangle map.

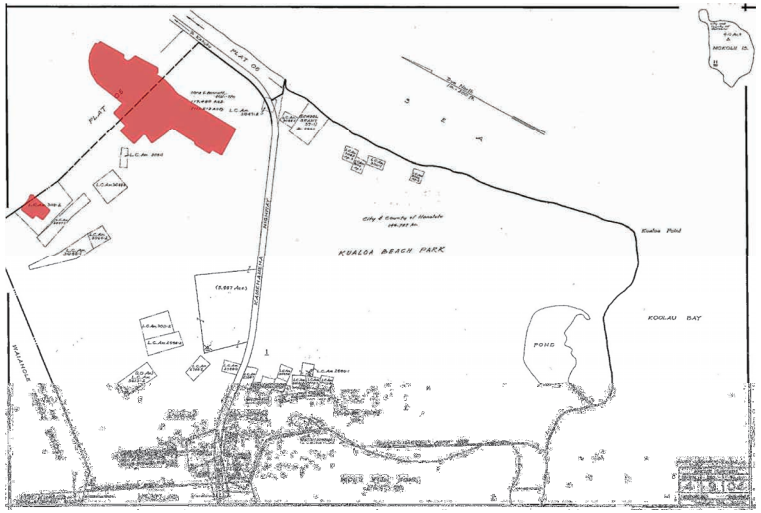

Figure 2. TMK plat (1) 4-9-004 (May 1937), showing the Palikū and Kualoa Ranch Headquarters survey blocks in red.

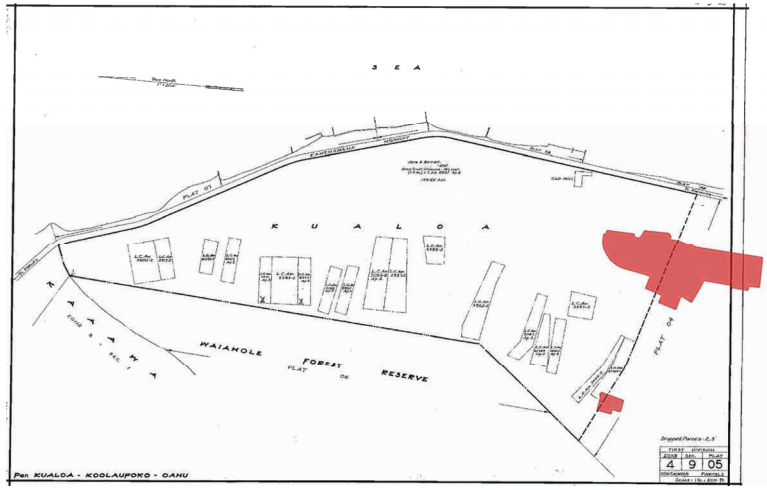

Figure 3. TMK plat (1) 4-9-005 (May 1937), showing the Palikū and Kualoa Ranch Headquarters survey blocks in red.

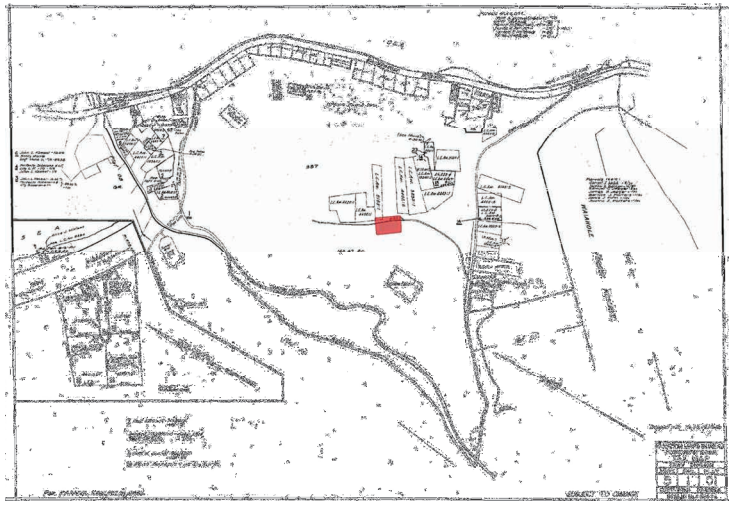

Figure 4. TMK plat (1) 5-1-001 (Oct. 1937), showing the Ka‘a‘awa survey block in red.

Physical Environment

The project area ranges from .18 km (.11 mi.) from the coast at the Ranch Headquarters to .65 km (.40 mi.) from the coast at Palikū. The survey blocks are situated between 2–47 m (5–155 ft.) above mean sea level. Terrain is relatively flat to moderately sloping.

The project area receives a good amount of rainfall, approximately 150–200 cm (60–80 in.) annually (Juvik and Juvik 1998). Several major watercourses are nearby, including Hakipu‘u Stream and Ka‘a‘awa Stream, both perennial waterways. Vegetation before human settlement is thought to have been lowland dry and mesic forests, woodlands, and scrublands (Juvik and Juvik 1998). Today however, the survey blocks are dominated by landscaped plants and lawn grass.

Soils within the project area are mostly of the Lolekaa-Waikane association, with some zones of the Kaena-Waialua association (Foote et al. 1972). The former are well-drained soils with mostly fine textured subsoil, while the latter are poorly to excessively drained soils with fine to coarse textured subsoils. Three specific soil types occur within the survey blocks, as depicted in Figure 5 (data from Foote et al. 1972):

Palikū

Waialua very stony silty clay, 12–20% slopes (WmD)

Kualoa Ranch Headquarters

Waialua stony silty clay, 3–8% slopes (WIB)
Mokuleia clay loam (Mt)

Ka‘a‘awa

Waialua stony silty clay, 3–8% slopes (WIB)

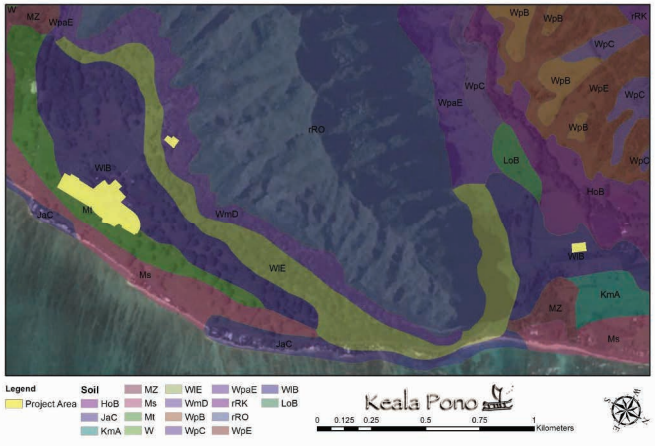

Figure 5. Soils in the vicinity of the project areas.

BACKGROUND

This chapter presents traditional and historic background information for the project region, including place names, Hawaiian proverbs and *mo'olelo*, land use, Māhele land tenure data, historic maps, and a summary of previous archaeological research.

Inoa 'Āina: Place Names

Place names often shed light on traditional views of an area and can provide important contextual information. Most of the *ahupua'a* names in the project region are associated with natural attributes of the place. Kualoa translates to "long back" (Pukui et al. 1974:119), and Ka'a'awa means "the wrasse fish" (Pukui et al. 1974:59). Palikū is an ancient name for Kualoa and is also the name of the ridge between Ko'olaupoko and Ko'olauloa. It literally means "vertical cliff" (Pukui et al. 1974:177).

Other important places are Mokoli'i, Koholālele, Moli'i, Kānehoalani, and 'Āpua. Mokoli'i is the islet off of Kualoa that is sometimes called Chinaman's Hat. Mokoli'i translates to "little *mo'o*" (Pukui et al. 1974:154), for it is said that the islet is the form of a slayed dragon (see *Mo'olelo* Section). Koholālele is a fishpond nearby whose name means "leaping whale" (Pukui et al. 1974:115). Moli'i is another fishpond in the area. Its name means "small section" (Pukui et al. 1974:156). Kānehoalani is the mountain ridge behind Kualoa. Translating to "Kāne royal companion," it was named for an ancestor of Pele (Pukui et al. 1974:84). 'Āpua refers to the flats of Kualoa as well as a fishpond there. It literally means "fish basket" (Pukui et al. 1974:13), probably referring to the abundance of fish at that location.

'Ōlelo No'eau

'Ōlelo no'eau, or Hawaiian proverbs and poetical sayings, provide further insight to traditional beliefs and practices of the area. Four *'ōlelo no'eau* were identified for Kualoa and Ka'a'awa.

> Ho'olalau ka helena i Kualoa, pi'i ana i ka pali o Kānehoalani.
> *In wandering about Kualoa, he ascends the cliff of Kānehoalani.*
> He goes off his course and thereby gets nothing. On the cliff of Kānehoalani stands a phallic stone, a symbol of bad luck when seen in a dream. (Pukui 1983:117)

> Ka limu lana o Kawahine.
> *The floating seaweed of Kawahine.*
> A term applied to the *kauwā* who were drowned at Kualoa, O'ahu, before serving as sacrifices. (Pukui 1983:156)

> He kai 'a'ai ko Ka'a'awa
> *Ka'a'awa has a sea that wears away the land*. (Pukui 1983:73)

> He moe kai no Ka'a'awa
> *A sleeper in the sea of Ka'a'awa.*
> Applied to a lawbreaker who was to be put to death. When Kuali'i was ruler of O'ahu, he punished lawbreakers by drowning them in the sea of Ka'a'awa. (Pukui 1983:90)

Mo'olelo

The region of study was renowned in *mo'olelo*, with Kualoa being so sacred that canoes had to lower their sails when passing by (Fornander 1969 [1880]:278). Kualoa was formerly known as Palikū and was the home of Wākea and his wife Haumea, progenitors of the human race.

An important saga involving the project lands is that of Hiʻiaka's journey across the islands to save Lohiau, the lover of her sister, Pele. Handy et al. (1991:446–447) provide a review of the events that took place on the windward side of Oʻahu, culminating in the slaying of the dragon Mokoliʻi, which created the islet of that name:

> Passing the shores of Waikane (the original name was Wai-a-Kane, Water-of-Kane), [Hiʻiaka] explained to her companion, Wahine-omaʻo, that here Kane first dug for water at a place called Poliuli (Dark breast), creating the Waiʻola-li which was male and the Waiʻola-la, which was female…These waters were also named in the Kumulipo creation chant as the progenitors of many subsequent generations…It was in the waters of Hakipuʻu, in fact but a short distance from the Moliʻi Fishpond, that Hiʻiaka encountered and slew her first, formidable adversary on Oahu, the reptile Mokoliʻi…It is the stumpy tail of this evil creature that to this day protrudes from the waters as the rocky islet Mokoliʻi (Little Reptile)…As their canoe sailed on past the land of Kualoa at Kanehoalani's feet, "Hiʻiaka said to Wahine-o-mao…'this is the sacred land of Haloa'" (*Hoku o Hawaii*, January 1, 1926) the first man, and progenitor of the human race.

As the saga continues, the distinctive cliffs of Kaʻaʻawa were formed (Emerson 1978). The *kupua* named Kauhi was one of Pele's followers that came from Kahiki. He was stationed on the cliffs of Kaʻaʻawa and could not leave. When Hiʻiaka arrived he longed to travel with her and when she politely refused, he attempted to rise. Kauhi could only get to a crouching position however, and there he became fixed, forming the cliff that is shaped like a crouching man.

A famous cave is said to be located on the cliff between Kualoa and Kaʻaʻawa (Kamakau 1991:38–39). The cave was on the cliffside at Kanehoalani and it was named Pohukaina. A second entrance was at the spring, Kaʻahula. The cave extended through the Koʻolau Mountains where other openings were at Moanalua, Kalihi, Puiwa, Waipahu, and Kahuku. There were many watercourses within the cave, along with man-made decorations.

Kualoa also marks the boundary of Koʻolaupoko and Koʻolauloa Districts. It was here that tribute from each *ahupuaʻa* was amassed at the end of the *makahiki* circuit (Kamakau 1991:20–21). Tribute collected included items such as food animals, *poi*, *kapa*, fishing nets, feathers, woven mats, pearls, ivory, and adzes (Kamakau 1991:21). If the tribute from a given *ahupuaʻa* was deemed unworthy, that *ahupuaʻa* would be plundered (Kamakau 1991:21).

Kualoa was also designated as a *puʻuhonua*, or place of refuge:

> The *puʻuhonua* in ancient times was an *ahupuaʻa* portion of a district (*ahupuaʻa ʻokana*), like Kailua and Waikane for Koʻolaupoko district on Oahu, and also Kualoa, which was a very sacred land and a true *puʻuhonua*, where persons marked for death were saved if they entered it. (Kamakau 1991:18)

Land Use and Subsistence

Kualoa has no streams and is generally not suited for the cultivation of wetland taro. Nevertheless, Koholālele Pond in ʻĀpua may have been made from an abandoned *loʻi* (Handy et al. 1991:444), although some say that the pond was built by *menehune*, while others assert that the pond was excavated in the historic period (McAllister 1933; Morgan 1964 in Sterling and Summers 1978:180–181). Agriculturally, Kualoa was known for the cultivation of *wauke* to make *kapa* (Handy et al. 1991:444). Kualoa was rich in coastal resources, enhanced by man-made fishponds:

> …This land had been very rich in the olden days and even to the present, because of running schools of mullet from Kaihuopalaai, the awa fish and mullets that had been kept and fattened in ponds. These good things of the land are long past. (Apuakehau 1919 in Sterling and Summers 1978:117)

Kaʻaʻawa relied heavily on the ocean for its resources and once supported a fishing village. At least one *koʻa* is known for the area (now destroyed), attesting to the importance of fishing (McAllister 1933). The valley's stream

created two passages in the reef, however, that make the beach not well protected. Kaʻaʻawa was not a good location for wetland taro, although there were some agricultural terraces on either side of the stream and in places that have turned into swamplands (Handy et al. 1991:444). Handy et al. remark on the productivity of the region:

> Kaʻaʻawa and Makaua must have been good only for sweet potatoes and no doubt there were coconut trees along the shore. There is hardly any beach, but a high shore and a well-protected lagoon make this a good fishing locality. (1991:445)

The Region in the Historic Period

The historic period (post-1778) saw widespread changes throughout the islands as a result of the arrival of foreigners to Hawaiʻi's shores. Though far from the central port of Honolulu, Kualoa and Kaʻaʻawa were not immune to these changes.

Māhele Land Tenure and Historic Land Use

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

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

The Land Commission Awards (LCAs) that are on or in the immediate vicinity of the project areas can be seen in Figures 2–4. Data for these can be found in Table 1.

For the Kualoa Headquarters and Palikū project areas, one of the survey blocks overlaps with LCA 3048:1 and 3118:2, while four other LCAs are nearby. LCA 3048 was awarded to Kekihe, and *kula*, potatoes, beans, *wauke*, and a house lot were mentioned in the testimony. LCA 3118 was awarded to Haole, and *loʻi*, *kula*, and a house lot were once there. Testimony for the four LCAs in the vicinity note the occurrence of *loʻi*, *kula*, potatoes, *wauke*, and house lots.

A small portion of LCA 8188:1 overlaps with the Kaʻaʻawa survey block, and another four LCAs are located nearby. LCA 8188 was awarded to Heana, and *loʻi*, *kula*, potatoes, melons, tobacco, a wooded upland, and a house lot were once there. Testimony for the nearby lots mentions *loʻi*, *kula*, potatoes, wooded uplands, *kai*, a fishery, and house lots. A *pali kao* is also noted, although it is unclear what this refers to. The 1937 TMK map for Kaʻaʻawa also shows a ditch running through the project area (see Figure 4). No other information could be found for the ditch.

In sum, all of the LCA awards mention *loʻi*, *kula*, and/or house lots, indicating that people were living and cultivating parcels on and near the survey areas in the mid-19th century. Other resources noted were melons, potatoes, *wauke*, beans, wooded uplands, a fishery, and *kai*. Clearly, a diverse array of subsistence practices was taking place in the region.

Table 1. LCAs in the Vicinity of the Project Areas (the highlighted LCAs are within the survey blocks, while the others are nearby)

LCA	Claimant	*Ahupua'a*	*'Ili*	Land Use
3045	Keliiokahonua	Kualoa		*lo'i*, house lot
3046	Kamanu	Kualoa		*kula,* potatoes, house lot near shore
3047	Kauaiwahine	Kualoa		*kula*, house lot
3048	Kekihe	Kualoa		*kula*, potatoes, beans, *wauke*, house lot
3066	Kae	Kualoa		*lo'i*, *kula*, *wauke*, house lot
3118	Haole	Kualoa		*lo'i*, *kula*, house lot
3885	Pohue	Ka'a'awa	Nohomalu, Kaiaka	*lo'i*, *kula*, potatoes, wooded upland, house lot
4402	Kauiki	Ka'a'awa	Nohomalu, Kuahu	*lo'i*, *kula*, potatoes, wooded upland, house lot, *kai*
4408	Kaumu	Ka'a'awa	Nohomalu	*lo'i, kula,* potatoes, house lot, large upland, fishery
4420	Kaloena	Ka'a'awa	Noholoa	*lo'i*, *kula*, house lot, upland, *pali kao*
8188	Heana	Ka'a'awa	Nohomalu	*lo'i*, *kula*, potatoes, melons, tobacco, wooded upland, house lot

Historic Maps

Historic maps help in visualizing what the project area was like in times past and illustrate the changes that have taken place in the region over the years. Two maps from the late 19th and early 20th centuries are presented below.

An early map from the Hawaii Territory Survey titled "Hakipuu, Koolau, Oahu," is dated February 1880 (Figure 6). The map notes read, "The total area of the AHUPUAA is 1165.5 acres, of which area there remains to the KANAINA ESTATE 924.5 acres, comprising 10 acres of RICE LAND, the FISHPOND of 124.5 acres and 790 acres of GRAZING and MOUNTAIN LAND." Yet in contrast to this text, the map shows two separate land grant parcels belonging to A.S. Cooke; another fairly large land grant labeled "Pahalona;" and a smaller parcel labeled "Nohonanahopu" which has a schoolhouse on it. There is one parcel of 56 acres which is labeled as the "Kanaina Estate," and there is a very small piece of property, wedged between some *kuleana* lands and the 124-acre fishpond, which is labeled as the remnant estate of Kanaina. All of the land grants and Kanaina's estate are along the coast within Hakipu'u Ahupua'a, and most of them straddle the coastal road which is labeled as the "Gov't Road." A "Loko" (pond) and a lone coconut tree are illustrated in Kualoa.

The second map is titled "Oahu, Hawaiian Islands" and is dated 1902 (Figure 7). The map illustrates the *moku*, *ahupua'a*, and smaller land districts and features across the entire island of O'ahu. A close-up of the region of interest shows the registered numbers of several land grants and LCAs. Interestingly, the map specifies only two land owners in this area by name: A.S. Cooke in Hakipu'u; and Judd, who appears to have received former Crown Lands in Kualoa. Also, the Moli'i Fishpond is illustrated near the Hakipu'u-Kualoa boundary.

Post-Māhele Land Use

Rice and sugarcane cultivation were practiced after the Māhele in the project lands, and military and ranching interests also made large scale changes to the landscape. Rice cultivation began as early as the 1860s in Ko'olaupoko and was undertaken mostly by Chinese immigrant farmers.

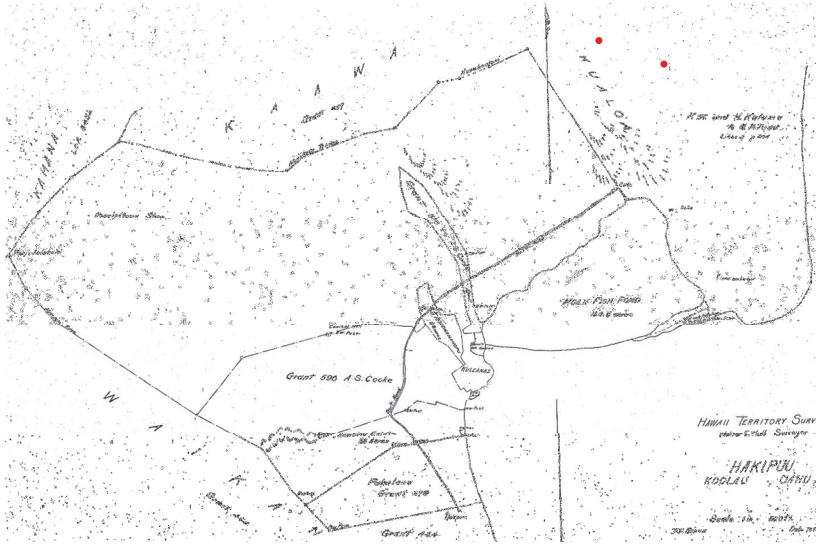

Figure 6. Portion of a Hawaii Territory Survey map of Hakipu'u (Wall 1880). The approximate locations of the Palikū and Ranch Headquarters survey blocks are shown as red dots (the Ka'a'awa survey block is off the map).

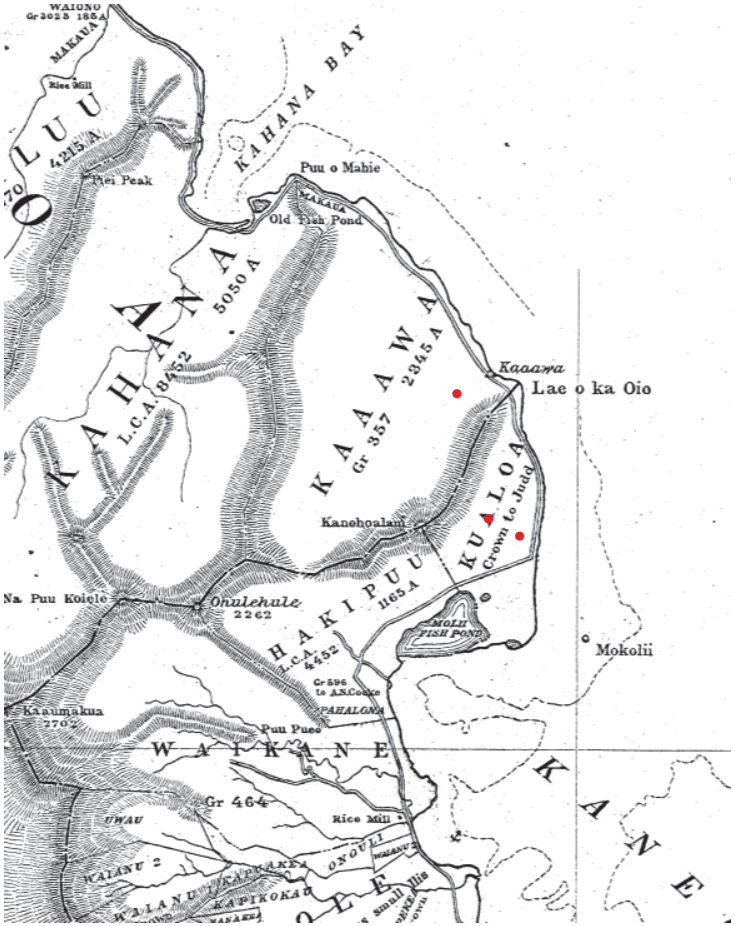

Figure 7. Portion of a Hawaii Territory Survey O'ahu map (Wall 1902). The approximate locations of the survey areas are shown as red dots.

In Kualoa, sugarcane was grown as early as the 1860s by C.H. Judd and his son-in-law S.G. Wilder (Gunness 1993:53). The two also constructed a sugar mill on the *mauka* side of the highway in Kualoa, the remains of which are still visible today. By 1871, the operation was shut down and the area was turned into a ranch. At Kualoa Regional Park, an airfield was built during World War II, with a 6,000 x 150 foot strip bulldozed, graded, and filled for this endeavor (Gunness 1986:9). The park road was later constructed atop the airfield. Other military efforts in the region include construction of cement bunkers and pillboxes, particularly along the cliffs above Kamehameha Highway from Kualoa to Ka'a'awa.

Previous Archaeology

Many archaeological projects have been carried out in the vicinity of the project areas. The following paragraphs summarize the most relevant reports that were found in the State Historic Preservation Division (SHPD) Kapolei library. Project locations are illustrated in Figures 8 and 9.

Kualoa

The entire *ahupua'a* of Kualoa was placed on the National Register of Historic Places (NRHP) in 1973 for its mythological, legendary, and political importance. It was designated as State Inventory of Historic Places (SIHP) 50-80-06-528. Moli'i Fishpond is also listed on the NRHP because of its excellent state of preservation and interpretive potential. It was designated as SIHP 50-80-06-313. An early island-wide survey identified three sites in the project vicinity: Site 310, Niuolaa Heiau; Site 312, Koholālele Pond; and Site 313, Moli'i Pond (McAllister 1933). For Niuolaa Heiau, McAllister reported that "nothing remains of the site" (1933:167).

Many prior studies have been conducted at Kualoa Regional Park (Table 2). Among the earliest work was a preliminary investigation that focused on subsurface testing (Barrera 1974). A total of 51 1x1 m test pits were excavated throughout the East Beach area of the park. A subsurface cultural deposit was identified in the north end, thought to be associated with Site 50-Oa-G1-22 which had been recorded by the Bishop Museum. In all, 35 distinct archaeological features were identified, including pits, post holes, and a human burial. A wide range of artifacts were recovered, such as fishing gear, adzes and other tools, basalt and volcanic glass flakes, midden, and historic items.

Subsequent work aimed to "determine the nature and extent of archaeological remains" recorded by Barrera (1974) and to "enhance the cultural and environmental significance of the park through archaeological research and interpretive inputs" (Clark and Connolly 1975:i). Excavations at the South Beach of the park uncovered a fishpond wall thought to be associated with 'Āpua Pond. Pre-contact artifacts were also recovered from reef areas. A later report proposed recommendations for interpretive programs (Clark and Connolly 1978). Sites with high interpretive value included East Beach, Mokoli'i Island, 'Āpua Fishpond, Moli'i Fishpond, Koholālele Pond, a submerged fishpond wall, a stone house and pig burial area, and a stone platform in the northwest corner of the park that may be Niuolaa Heiau.

An archaeological reconnaissance survey was conducted for proposed beach replenishment between East and South Beach (Gunness 1978). A literature review, pedestrian survey, and test trenching did not identify historic properties, as the area had been extensively disturbed.

Subsurface testing was conducted at the East Beach of Kualoa Regional Park (Ahlo 1980). Most of the project area was found to be previously disturbed, however remnants of cultural deposits were identified below the surface in several locations.

Additional work was conducted at South Beach (Gunness 1984). Excavations at a stone bath house revealed a variety of traditional artifacts, post holes, and a whole pig skeleton. As the pig was not eaten, it is thought to have been placed as an offering at the *ahupua'a* boundary. Dates obtained from volcanic glass in this area

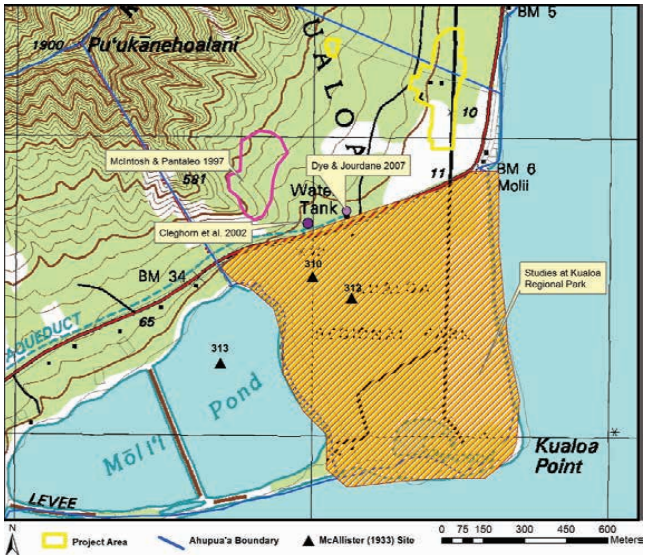

Figure 8. Previous archaeological studies in Kualoa.

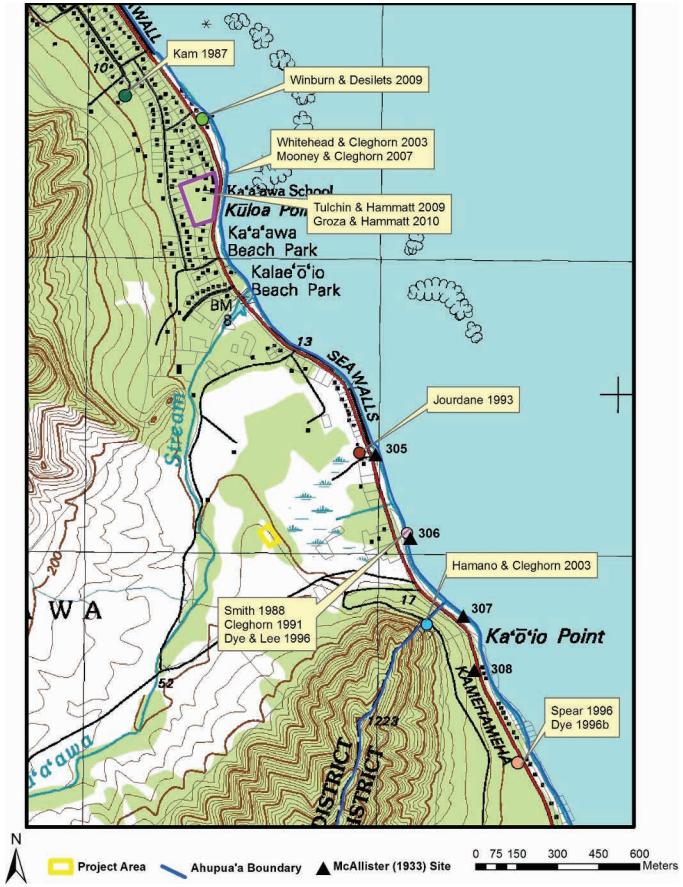

Figure 9. Previous archaeological studies in the vicinity of the Ka'a'awa project area.

Table 2. Previous Archaeological Projects in the Vicinity of the Study Area, Kualoa Ahupuaʻa

Author & Year	Location	Work Completed	Findings
McAllister 1933	Island-Wide	Survey	Identified three sites near the Kualoa project area: Site 310, Niuolaa Heiau (reported destroyed); Site 312, Koholālele Pond; and Site 313, Moliʻi Fishpond.
Barrera 1974	Kualoa Regional Park, East Beach	Subsurface Testing	Cultural deposit with pits, postholes, traditional and nontraditional artifacts, midden, and a human burial.
Clark & Connoly 1975	Kualoa Regional Park, East Beach	Survey, Subsurface Testing	Buried fishpond wall; traditional artifacts on the reef.
Clark & Connoly 1978	Kualoa Regional Park	Archaeological Recommendations	Proposed recommendations for interpretive programs.
Gunness 1978	Kualoa Regional Park	Reconnaissance	None.
Ahlo 1980	Kualoa Regional Park, East Beach	Subsurface Testing	Most of the project area previously disturbed, but remnants of cultural deposits were found below the surface.
Gunness 1984	Kualoa Regional Park, South Beach	Subsurface Testing	Recorded 98 subsurface features and roughly 3,500 traditional artifacts near the South Beach access road. Features included pits, post holes, a human burial, and a dog burial. A stone bath house, whole pig offering, and fishpond wall were recorded in other areas.
Gunness 1985a, 1985b	Kualoa Regional Park	Subsurface Testing, Archaeological Assessment	Recorded an *imu* surrounded by post holes and a large assemblage of traditional artifacts.
Hammatt 1985	Kualoa Ranch	Reconnaissance	None.
Rutkowski 1988	Kualoa Regional Park	Burial Report	A skull and "several other bones" found near second bathroom.
Omori 1989	Kualoa Regional Park	Burial Report	Two individuals identified, one of which was a young Hawaiian female.
Pietrusewsky & Douglas 1989	Kualoa Regional Park	Burial Report	Analyzed 42 sets of remains, 41 of which were traditional Hawaiian and one post-contact.
Douglas 1990; Kawachi & Johnson 1990	Kualoa Regional Park	Burial Report	Identified one adult female, two adult males, one child, and two unassociated bone fragments.
Douglas 1991	Kualoa Regional Park	Burial Report	One adult male recovered from the south side of East Beach
Goodman & Cleghorn 1991	Kualoa Regional Park, East & South Beaches	Monitoring & Salvage Excavations	Two human burials, a historic rock wall, a row of post holes, and a small artifact assemblage were documented.
Meeker 1991	Kualoa Regional Park	Monitoring	Identified a disturbed midden deposit, two pits, and two post holes.
Somer 1991	Kualoa Regional Park	Burial Report	One adult male recovered from a pit feature.

Table 2. (Cont.)

Author & Year	Location	Work Completed	Findings
Cleghorn 1994	Kualoa Regional Park, East Beach	Burial Report	One individual identified at East Beach.
Lee 1994	Kualoa Regional Park	Artifact Report	Reported on an adze exposed by erosion.
Colin, Borthwick, & Hammatt 1995	Kualoa Regional Park	Burial Report	Removed one individual.
Colin, Heidel et al. 1995	Kualoa Regional Park	Data Recovery	Documented fire features and post holes and collected basalt flakes and midden.
Dye 1995	Kualoa Regional Park, East Beach	Burial Report	One coffin burial recorded.
Dye 1996a	Kualoa Regional Park	Burial Report	One individual recovered from the south side of East Beach.
Spear 1996; Dye 1996b	Kamehameha Hwy. outside Kualoa Ranch	Monitoring; Burial Report	Identified Site 5376, a human burial and cultural layer.
Colin & Hammatt 1997	Kualoa Regional Park	Literature Review and Excavation	Cultural layer containing fragments of human bone.
McIntosh & Pantaleo 1997	Kualoa Ranch	Survey	Identified two historic rock walls.
Bush & Hammatt 1998	Kualoa Maintenance Yard	Monitoring	None.
Borthwick et al. 1999	Kualoa Regional Park	Monitoring	None.
Hammatt & Shideler 1999	Kualoa Regional Park	Assessment	Literature review completed, archaeological monitoring recommended.
Hammatt & Shideler 2000	Kualoa Regional Park, East Beach	Investigation of Bulldozing	Three midden deposits and a trash pit.
Perzinski et al. 2000	Kualoa Regional Park	Monitoring	Documented a cultural layer with midden.
Hammatt & Shideler 2001	Kualoa Regional Park	Monitoring	Midden and a ceramic sherd collected.
Cleghorn et al. 2002	Kualoa Ranch	Assessment	None.
Hamano & Cleghorn 2003	Kualoa Ranch	Monitoring	Identified Site 6515, a human burial and two charcoal concentrations.
Rohrer 2005	Kualoa Regional Park	Monitoring	None.
Carson & Athens 2006	Kualoa Regional Park	Monitoring and Data Recovery	Provided further documentation for the subsurface cultural deposit known for the area.
Dye & Jourdane 2007	Kualoa Ranch	Historic Properties Assessment	None.

Table 2. (Cont.)

Author & Year	Location	Work Completed	Findings
Colin & Hammatt 2008	Kualoa Regional Park, East Beach and Kualoa Point	Assessment and Subsurface Testing	Testing at East Beach uncovered a cultural layer with scattered bone fragments, some of them human.
Tulchin & Hammatt 2013	Kualoa Regional Park	Pedestrian Inspection and Subsurface Testing	Documented traditional artifacts and human remains.
Morriss & Hammatt 2015	Kualoa Regional Park	Data Recovery	Encountered Site 7397, a previously identified cultural layer, and Site 7752, a newly identified cultural layer.

suggested an age of the mid-15th century AD, although the method of dating volcanic glass has since been deemed unreliable (e.g., Graves and Ladefoged 1991). An area near the South Beach access road had been bulldozed without an archaeologist present, and a cultural layer with a large number of artifacts was disturbed. A total of 98 features were identified within seven test excavations. They consisted of pits, post holes, a human burial, a dog burial, and roughly 3,500 artifacts, including worked bone and pearl shell, a *niho palaoa*, coral abraders, a range of basalt tools, 589 pieces of volcanic glass, and more than 1,500 basalt flakes. A fishpond wall was also found, although only 20th century historic material was recovered from that area.

Subsurface testing was conducted prior to road improvements throughout the park (Gunness 1985a, 1985b). Heavy disturbance was noted in most areas, although an intact *imu* surrounded by post holes was found. Thousands of basalt flakes and a variety of other traditional artifacts were associated with the feature. Items collected include adzes, awls, hammerstones, an *'ulu maika*, coral abraders, and a *poi* pounder.

Archaeological monitoring and salvage excavations were carried out on the East and South Beaches of the park for tree removal and replanting (Goodman and Cleghorn 1991). Two human burials were excavated. One was located on East Beach and the other in the tree nursery near the maintenance building. A historic rock wall and row of post holes were also identified in the tree nursery. A small selection of traditional and historic artifacts was also recovered.

Archaeological monitoring was conducted for sand replenishment and tree removal and replanting activities at the park (Meeker 1991). Midden, charcoal flecks, basalt debitage, and fire cracked rock were observed along the edge of an old farm road near Moli'i Pond. The area was found to be heavily disturbed. Four subsurface features were noted within tree removal holes, consisting of two pits and two post holes. A few years later, an adze was found eroding out of the sand at Kualoa Regional park (Lee 1994). The adze and an associated cultural layer were exposed during high tide.

Data recovery excavations were carried out at five subsurface features in the park (Colin, Heidel, et al. 1995). The features consisted of fire pits and post holes, and basalt flakes and midden were collected. The area was heavily disturbed by historic and modern activity. A set of human remains was also disinterred (Colin, Borthwick, and Hammatt 1995).

A review of the archaeological literature was conducted and two 1.0 m^2 test units were excavated at a central location of the East Beach at Kualoa Park (Colin and Hammatt 1997). The test units demonstrated layers of fill over an intact cultural layer that contained small bone fragments, some of which were later determined to be human. Beneath the cultural layer was only sterile sand.

Archaeological monitoring was completed for the removal of contaminated soil at the maintenance yard in the park (Bush and Hammatt 1998). No cultural material or deposits were encountered. A year later, a literature

review was completed for reconstruction of the wastewater system at the park (Hammatt and Shideler 1999). Archaeological monitoring for percolation test pits associated with the wastewater reconstruction reported no findings (Borthwick et al. 1999).

Several areas of bulldozing within Kualoa Regional Park were inspected, and surface collection and sampling were completed for three midden scatters and a trash pit (Hammatt and Shideler 2000). A range of traditional and historic artifacts were documented, the latter consisting of material dating from 1815 to the early 1900s.

Archaeological monitoring was conducted for ADA improvements to the park (Perzinski et al. 2000). Two midden concentrations and a cultural layer were identified. Among the cultural material collected were 350 g of midden, a 1920s–1930s era glass bottle, and a few basalt artifacts.

Archaeological monitoring was completed for soil testing at the proposed multipurpose building in the park (Hammatt and Shideler 2001). Marine shell midden and a single ceramic sherd were the only materials recorded. A few years later, archaeological monitoring was carried out for a water line break at the second bathroom at the park (Rohrer 2005). No findings were reported.

Archaeological monitoring and data recovery were completed during road realignment and landscaping (Carson and Athens 2006). A previously recorded cultural layer was further documented. A variety of traditional artifacts and midden were recovered, and post holes, fire pits, and stone pavings were recorded. Radiocarbon dating from the base of the cultural layer placed the earliest occupation at ca. AD 1040–1280. A canal that linked Koholālele Pond to the sea was also found.

A literature review and subsurface testing were conducted for an erosion control project (Colin and Hammatt 2008). Two test units excavated at East Beach revealed a subsurface cultural layer that contained scattered bone fragments, some of them human.

A pedestrian inspection and subsurface testing were completed at Kualoa Regional Park near Kualoa Point (Tulchin and Hammatt 2013:82). The project area was situated in a previously developed area of the park that contained asphalt roads, parking lots, concrete walkways, and comfort stations. As a result, no surface historic properties were identified. Subsurface testing revealed previously disturbed traditional Hawaiian artifacts including an *'ulu maika*, a micro-adze, lithic debitage, volcanic glass, and marine shell midden. In addition, an isolated human cranial fragment was discovered during excavations in a sandy fill layer. The sand layer was likely derived from the park during previous grading, however the original primary burial context could not be determined.

Recent work at the park included data recovery at SIHP 50-80-06-7397 and 50-80-06-7752, two subsurface cultural layers (Morriss and Hammatt 2015). The former was previously recorded, but 13 new pits and a selection of midden and traditional artifacts were identified. The latter included nine pits and fragmented human remains.

Kualoa Regional Park has a long history of human remains being exposed by erosion, and a number of burial reports have been filed. Those reports found in the SHPD library in Kapolei are summarized in the following paragraphs.

A skull and "several other bones" were found *makai* of the second bathroom in the park (Rutkowski 1998:1). They were taken to the police station and then transferred to the City and County Morgue. Remains were later found at an undisclosed location in the park and taken to the Honolulu Medical Examiner's Facility in Honolulu (Omori 1989). At least two individuals were represented, one of which was a young Hawaiian female.

A large assemblage of human remains from Kualua Regional Park were analyzed (Pietrusewsky and Douglas 1989). Of the 42 sets of remains, 41 were traditional Hawaiian and one was post-contact (dating to after 1778).

Of these, roughly two-thirds were adults, and 14 were female and 11 male. All age groups were represented, from fetuses to older adults of 50+ years in age. Many of the males died as young adults. Skeletal modification was identified in the form of cranial deformation, defleshing cut marks, and burial vandalism.

Several sets of remains were found eroding out of the sand at SIHP 50-80-06-528 and examined at SHPD (Douglas 1990, Kawachi and Johnson 1990). One adult female, one adult male, and one child were identified in the first burial, an adult male was found in a second burial, and two unassociated bone fragments were also recovered. Another set of remains was documented on the south side of East Beach (Douglas 1991). They were identified as an adult male. Yet another set of remains was collected after being exposed by erosion (Somer 1991). The remains were excavated from a pit feature and identified as an adult male.

Again, one individual was found eroding out of the sand at East Beach (Cleghorn 1994). The individual was in a flexed position within a burial pit and designated as part of SIHP 50-80-06-528. A coffin burial was found near the historic burial identified during earlier work by Gunness (1984) (Dye 1995). It was posited that the two burials are related and associated with the LCA parcel belonging to Kaneakalau (Dye 1995). Another burial was later identified eroding from the sand on the south side of East Beach (Dye 1996a). It consisted of one individual in a burial pit with no grave goods. The burial was designated as SIHP 50-80-06-5371.

A few previous studies have been conducted at Kualoa Ranch and along Kamehameha Highway. An archaeological reconnaissance was carried out between Moli‘i Pond and the highway (Hammatt 1985). The project site was previously graded and no surface archaeological remains were observed. Subsequent archaeological monitoring for another project identified a human burial and cultural deposit at Kualoa Ranch along Kamehameha Highway (Spear 1996, Dye 1996b). The remains were left in place at “approximately 400 feet [on the] Ka‘a‘awa side of the old sugar mill” near telephone pole #179 (Spear 1996:1). The burial was designated as SIHP 50-80-06-5376. A basalt awl and fragmented human remains were encountered in other excavations. Two historic rock walls were located during an archaeological survey at Kualoa Ranch (McIntosh and Pantaleo 1997). The systematic survey led to the identification of the basalt cobble and boulder walls (T-1 and T-2) and took place on a 10.48 acre area at the base of the Ko‘olau Mountains.

An archaeological assessment was completed for a telecommunications facility just *mauka* of the highway across the street from Kualoa Regional Park (Cleghorn et al. 2002). There were no findings. Archaeological monitoring was conducted for a telecommunications facility at Kaoia Point, *mauka* of the highway (Hamano and Cleghorn 2003). SIHP 50-80-06-6515 was recorded, consisting of a human burial and two charcoal concentrations. The human remains were left in place. Finally, a historic properties assessment was completed for a proposed cell antenna at Kualoa Ranch, just *mauka* of the highway in the vicinity of the paintball field (Dye and Jourdane 2007). The project area was located in a previously disturbed area with no surface archaeological remains.

Ka‘a‘awa

Several archaeological studies have been conducted in the vicinity of the project area in Ka‘a‘awa (Table 3). McAllister’s island-wide survey identified three sites near Kamehameha Highway. These consist of Site 305, a *ko‘a* at Kalai o Kuonopuaa Point; Site 306, a burial near Lae o ka Oio, and Site 307 a legendary cave. The cave is named Pohokaina, Pohukaina, or Pahukaina, and it is said to have many entrances, the most famous of which is at the boundary of Kualoa and Ka‘a‘awa.

An archaeological survey was proposed for the existing and future locations of Board of Water Supply well sites to assess the potential impact of the wells on archaeological resources (Barrera 1984). Due to lack of permission to access the areas, a literature review was conducted instead. The cave Pohukaina was mentioned as rumored to exist between Kualoa and Ka‘a‘awa Valley. Potential agricultural sites were also noted that Handy (1940:93) proposed were probable terracing for taro cultivation. It was concluded that archaeological resources would likely be found in the area.

Table 3. Previous Archaeological Projects in the Vicinity of the Study Area, Ka‘a‘awa Ahupua‘a

Author & Year	Location	Work Completed	Findings
McAllister 1933	Island-Wide	Survey	Identified 3 sites near the highway: 305, a *ko‘a*; 306, a human burial; and 307 a cave.
Barrera 1984	Ka‘a‘awa, *mauka* of Kamehameha Hwy.	Literature Review	Noted Pohukaina burial cave and probable agricultural sites could be found in the area.
Kam 1987	Ka‘a‘awa, *mauka* of Kamehameha Hwy.	Burial Report	Identified an adult male that was later reburied in the same location.
Smith 1988, Cleghorn 1991, Dye & Lee 1996	Coastal Ka‘a‘awa	Burial Report	Recorded Site 3759, human burials.
Jourdane 1993	Coastal Ka‘a‘awa	Burial Report	Documented Site 4728, a human burial.
Whitehead & Cleghorn 2003	Ka‘a‘awa Beach Park	Subsurface Testing	None.
Mooney & Cleghorn 2003	Ka‘a‘awa Beach Park	Monitoring	One feature and seven artifacts found but deemed not significant.
Tulchin & Hammatt 2009	Ka‘a‘awa Elementary School	Assessment	None.
Winburn & Desilets 2009	TMK: (1) 5-1-002:004	Assessment	None.
Groza & Hammatt 2010	Ka‘a‘awa Elementary School	Monitoring	Recorded Site 7121, a human burial; and Site 7122, a cultural layer.

Human skeletal remains were inadvertently discovered on private land in Ka‘a‘awa due to sewer line excavations (Kam 1987). The adult male was reburied in the same location shortly after.

A number of human burials have been found near Kamehameha Highway in Ka‘a‘awa. SIHP 50-80-06-3759 includes several burials and an associated cultural layer (Smith 1988, Cleghorn 1991, Dye and Lee 1996). SIHP 4728 is a single burial located on the *mauka* side of the highway (Jourdane 1993).

A three day archaeological inventory survey was conducted at Ka‘a‘awa Beach Park (Whitehead and Cleghorn 2003). Due to the developed nature of the areas in question the survey consisted of subsurface testing, which resulted in no archaeological finds. Archaeological monitoring was later conducted during the Ka‘a‘awa Beach Park Comfort Station and Parking Area improvements (Mooney and Cleghorn 2007). One feature and seven artifacts were encountered during monitoring, but they were not designated as significant per National Register of Historic Places criteria.

An archaeological assessment was conducted for wastewater improvements to Ka‘a‘awa Elementary School (Tulchin and Hammatt 2009). There were no findings. Another archaeological assessment of a private lot produced no findings (Winburn and Desilets 2009). Later archaeological monitoring at Ka‘a‘awa Elementary School identified SIHP 50-80-06-7121, a human burial; and 50-80-06-7122, a cultural layer with pit features, dog remains, midden, and sparse traditional artifacts (Groza and Hammatt 2010).

Summary and Settlement Patterns

The project lands were rich in natural resources such as fresh water, agricultural areas, and coastal resources. Because of this, the region likely supported a sizeable population. Wetland taro was likely not abundant in Kualoa and Ka‘a‘awa, but these areas had plentiful fishing grounds. The fishponds in Kualoa added to the abundance of the region. Settlement patterns would have seen fishing villages along the coast, where fishponds and other marine resources played a major role in subsistence. *Ko‘a* would have been located along the coast, where fishing was important. Wetland agriculture would have been focused along the streams to take advantage of the fresh water, and habitation areas may have been situated nearby. Dryland agriculture and exploitation of upland resources took place on the valley slopes and further inland, and *heiau* and cave shelters were also located in this upland zone.

The study area is steeped in tradition, particularly Kualoa, which was so sacred that canoes would have to lower their sails when passing by. Kualoa was also where tribute from each *ahupua‘a* was amassed at the end of the *makahiki* circuit. The region also figures prominently in the Hi‘iaka and Lohiau epic, with Mokoli‘i Islet formed when Hi‘iaka slew a dragon.

Three LCAs were located within the survey areas and several others occur nearby. Data for these claims indicate that *lo‘i*, *kula*, and house lots were common, and diversified agriculture and fishing were practiced during the 19th century. A former ditch was also depicted on a 1937 Ka‘a‘awa TMK map, running through the survey block.

The historic period brought about widespread changes to the region. Sugarcane agriculture was short lived in Kualoa, but the remains of a sugar mill along Kamehameha Highway are a silent testament to the endeavor. Military interests also affected the landscape with an airstrip constructed at Kualoa and various bunkers established along the cliffs.

Previous archaeological projects have identified a wide range of archaeological sites, features, and cultural material near the areas of study. The entire *ahupua‘a* of Kualoa is a NRHP site, and a wide variety of archaeological remains have been documented there, particularly at Kualoa Regional Park, *makai* of Kualoa Ranch. Most notable are cultural layers with fire pits, post holes, and abundant traditional artifacts and midden; a large number of human burials; fishpond remains; and a whole pig burial. Radiocarbon dating from the base of one of the cultural layers placed the earliest occupation at ca. AD 1040–1280. Cultural material and human remains continue to be exposed from erosion at Kualoa Regional Park. Fewer studies have been conducted at Kualoa Ranch, although rock walls and human remains have been found. Archaeological work in Ka‘a‘awa has identified a *ko‘a*, a legendary cave, a cultural layer, and several human burials.

ETHNOGRAPHIC SURVEY

As we all know, there are some things that cannot be found in the archives, in textbooks, or at the library. It is here, through the stories, knowledge and experiences of our *kama‘āina* and *kūpuna*, that we are able to better understand the past and plan for our future. With the goal to identify and understand the importance of, and potential impacts to, traditional Hawaiian and/or historic cultural resources and traditional cultural practices of the Kualoa region, ethnographic interviews were conducted with community members who are knowledgeable about the project area.

Methods

This Cultural Impact Assessment was conducted through a multi-phase process between April and July, 2015. Guiding documents for this work include The Hawai‘i Environmental Council’s Guidelines for Assessing Cultural Impacts, A Bill for Environmental Impact Statements, and Act 50 (State of Hawai‘i). Personnel involved with this study include Windy McElroy, PhD, Principal Investigator of Keala Pono Archaeological Consulting, Joey Condit, MA, Archival Researcher, and Dietrix Duhaylonsod, BA, Ethnographer.

Consultants were selected because they met one or more of the following criteria: 1) was referred by Keala Pono Archaeological Consulting, Kualoa Ranch, or Group 70; 2) had/has ties to the project area or vicinity; 3) is a known Hawaiian cultural resource person; 4) is a known Hawaiian traditional practitioner; or 5) was referred by other cultural resource professionals. Five individuals participated in the current study. *Mana‘o* and *‘ike* shared during these interviews are included in this report.

Interviews were taped using a digital MP3 recorder. During the interviews, consultants were provided with a map or aerial photograph of the subject property, the Agreement to Participate (Appendix A), and Consent Form (Appendix B), and briefed on the purpose of the Cultural Impact Assessment. Research categories were addressed in the form of open questions which allowed the consultant to answer in the manner that he/she was most comfortable. Follow-up questions were asked based on the consultant‘s responses or to clarify what was said.

Transcription was completed by listening to recordings and typing what was said. A copy of the edited transcript was sent to each consultant for review, along with the Transcript Release Form. The Transcript Release Form provided space for clarifications, corrections, additions, or deletions to the transcript, as well as an opportunity to address any objections to the release of the document (Appendix C). When the forms were returned, transcripts were corrected to reflect any changes made by the consultant.

The ethnographic analysis process consisted of examining each transcript and organizing information into research themes, or categories. Research topics include connections to the project lands, archaeological sites, gathering practices, *mo‘olelo*, the historic era, change through time, and concerns and recommendations for the project. Edited transcripts are presented in Appendices D–G.

Consultant Background

The following section includes background information for each consultant, in their own words. This includes information on the consultant’s *‘ohana* and where the consultant was born and raised. The interviewees are Cy Bridges, Kealoha Domingo, Frank Kawaikapuokalani Hewett, Winona Kaniho, and John Morgan.

Cy Bridges

My name is Cy Bridges. I was born at Queens Hospital, now Queens Medical Center in Downtown, Kona, Honolulu, Oʻahu, Hawaiʻi. For the most part I grew up in Koʻolaupoko and Koʻolauloa. I lived for a few years in Honolulu on Buckle Lane which no longer exists, which is right near Liliha Street. And then we purchased a home in Kāneʻohe. But because my mother is from Koʻolauloa as well as Kualoa/Hakipuʻu, that was always a place that we went to, part of our growing up.

I went to school, James B. Castle High School. Lately they had a story about Mr. B, Mr. Bright, Ronald Bright, that just passed away. He was one of my teachers, awesome guy, awesome man.

My *ʻohana*, I'm the second oldest of only four children of my parents, George Allen Kaleimakaliʻi and Audrey Kamakeʻeʻāina Bridges.

Kealoha Domingo

My name is Robert Kealoha Domingo from Kaʻaʻawa. I've lived in Kaʻaʻawa just about all of my life, 44 years old. My *ʻohana* has been in Kaʻaʻawa for, I want to say, to my current knowledge, at least six generations or more, seven possibly, according to the documentation that I have anyway, but I've been in Kaʻaʻawa a long time.

…My *ʻohana* has been here for a long time at the property that I live on currently, still is the property that many of my *kūpuna* are laid to rest. We have some headstones marking back to the early 1900s and some unmarked burials as well.

I guess my great-grandmother and my great-great-grandmother were the ones who would have been known in Kaʻaʻawa. My great-grandmother was Hattie Padeken Domingo, and she was known as a spiritual healer practitioner, and I guess, you know, a respected *kupuna* in Kaʻaʻawa.

Frank Kawaikapuokalani Hewett

My name is Kawaikapuokalani Hewett. I am from Kāneʻohe, where I have lived all of my life. I am now 61 years of age. I was born in Honolulu, Territory of Hawaii, in 1954. I first went to St. Ann's School in Kāneʻohe, from there to Heʻeia Elementary School, King Intermediate School, Castle High School, Windward Community College, and graduated with a B.A. from University of Hawaii Hilo campus…

Our family Komomua Akona are the founding families of Kāneʻohe. We have been there perhaps for 9 or 10 generations, still holding title to *kuleana* lands. Part of our family migrated from Kohala, Hawaiʻi to help build the first Catholic Church in ʻĀhuimanu and then later St. Ann's Church in Kāneʻohe. The families that descend from Wahinealiʻi Komomua and Akona include Jones, Adams, Rowan, Scott, McCabe, and others. Wahinealiʻi Komomua and Akona have almost 3,000 descendants, of which the majority still live in the windward area.

Winona Kaniho

…My name is Winona Kamalu Kaniho, and I was raised in Nuʻuanu, and I also lived in ʻĀina Haina. So I actually went to school at Roosevelt High School.

…We came here in 1960, and we bought a home here, it was a family estate. When I came here, it was because my husband was a police officer in this area. And it just happened, that time, the river at Waiāhole broke, and so they couldn't get home. So in order for him to come home when we lived in Kāneʻohe, they had to go all the way around the island, come down the Old Pali Road, and then he can come to Kāneʻohe. And so my uncle who worked in real estate found this property, and he told me, "Nona, I think you should look at this house and buy this for you folks." So I bought the house as a vacation home so my husband could have a place to stay in case anything happen. But we came here once in the summer in 1960, and we never went back to our Kāneʻohe house. So I've been here almost like close to 45 years.

John Morgan

…My name is John Morgan, the last of Francis and Margo's children, born and raised here in Honolulu. My ancestors beyond that was Rosamond Swanzy Morgan, my grandmother; Julie Swanzy, my great-grandmother; Charles Hastings Judd, my great-great-grandfather; and Dr. Gerritt P. Judd, my great-great-great-grandfather.

On my mother's side, we come from Aotearoa, actually, coming down from the Hoturoa line of the Tainui iwi. …

When I was one year old, born November 21, 1956, my parents built a house down at Kualoa Park because it was part of the ranch at that time. And so I was basically raised in Nuʻuanu and at Kualoa. We lost the park land to the government in 1971. That was part of the *ahupuaʻa* of Kualoa.

I went to school at Punahou, graduated in the class of 1974. I went all the way through 13 years. [John Morgan is now the president of Kualoa Ranch.]

Topical Breakouts

A wealth of information was obtained through the oral interviews. This is organized in the following sections by topic. Topical breakouts include connections to the project lands, archaeological sites, gathering practices, *moʻolelo*, the historic era, change through time, and concerns and recommendations for the project. Quotes from the interviews are provided below for each topic.

Connections to the Project Lands

…My family's been the stewards of this property going back to Dr. Judd. The land was part of the *ʻāina* owned by King Kamehameha III and Hakaleleponikapakuhaili. I guess it was jointly because they're both on the deed. But anyway, Dr. Judd first bought it in 1850, and he, from what we know, grew melons and other things, and he built the first house in the 1860s. [John Morgan]

Charles Judd [John Morgan's great-great-grandfather] actually bought the *ahupuaʻa*, with his brother-in-law Samuel Wilder, from Dr. Judd, and started a sugar mill in 1863. It went bankrupt in 1871. Dr. Judd took the land back because it went bankrupt, and they owed him money. But then when he died, I think Dr. Judd died in 1873, as I recall, he willed it back to Charles…So it went from Charles to his kids. It was four kids, one of which was Julie Judd who married a Swanzy, Francis Swanzy. And then I think it was, who my father called Aunty Tom, who was Emily Pauahi Judd, and Charles Hastings Judd, Jr., and Helen Haunani Judd Farley, I think. [John Morgan]

Then, because of the foresight, interest, and financial ability, Julie bought out all her siblings. So she became the sole owner of Kualoa Ranch including the *ahupua'a* of Kualoa, and also, Hakipu'u and Ka'a'awa in 1927. And so, that's when the land got to her, and then it went down, she had two daughters, one of which was my grandmother Rosamond, the other, my great-aunt Nora. And then Aunty Nora had no kids, and so all of the ownership and the stewardship responsibilities are still handled by the family. Of course, a lot of different people worked on the land, just like they do now. But there's a direct *kuleana* towards stewardship, went down through Charles, down to Julie, down to Rosamond, down to my father and his brother and sister, and now down to us today. [John Morgan]

One source of knowledge is definitely from all the people. I've been working here since 1971. I started at the age of 14, and so, 58 now, so that's quite a few years, and all of the different people that've worked here, whether it's Abraham Akau, who's since passed away, or my father, or Ernest Koriyasu, who's still alive, or all of the other people that worked here. So that was one way. [Additionally there's] My mother, who is very much a student of Hawaiian history, and then other people in the area, and the things that I've read. And then my own personal experience walking around, I love to hike and walk all over the place and go climbing up in the mountains. So I have my own personal experience with the land. [John Morgan]

Well for me, I was fortunate enough to have the privilege of knowing Mr. Morgan…And he used to come to my place, and we used to talk story. John was a young boy at that time, and so he would come in and work the ranch. And Uncle Abraham [Akau] was in charge at that time. So that's how far I go back with the ranch. [Winona Kaniho]

Abraham Akau…was originally hired by John's father from Kamuela. Yeah, he was one of the outstanding *paniolos*. [Winona Kaniho]

I know the father really loved this place. I documented him for the Queen Lili'uokalani Children Center, and so I plan to get that to John someday. And John was there when I interviewed the dad. And so I am very comfortable with John handling the ranch, number one. He has a good *mana'o* about him. And I know he is in a very difficult position, not only being the heir, but he also has to contend with family. He also has to contend with the ranch as well as with the people that sometimes are opposed against things. But I will always listen to John and find out because I said, "He's got a good head on his shoulders." And I know he loves the land. And so I'm very comfortable with him asking and giving out my *mana'o*. I'm very, very comfortable. [Winona Kaniho]

Actually, my son worked for the ranch for 15 years. He actually started working when he was 15, and he was with 'em, I think, almost 20 years. [Winona Kaniho]

Actually, I love Palikū. Palikū has been a very, very beautiful place. And we use that area for when we have a tsunami. And John opens up the area so the people from Ka'a'awa can come in here and have an area to be safe. And also we're pleased with it because I know we have access out of this area if need be. This ranch has a road that we can get into to Hakipu'u…I'm very, very comfortable with that particular area. To me, it means a lot. There are a lot of areas in here that are very special, and like I can go on forever, but I won't. [Winona Kaniho]

I suppose oral histories and stories that I've heard of Ka'a'awa in general, and Kualoa in particular being a very sacred place on O'ahu. I know it's also documented in a lot of history books, but just hearing of the sacredness of Kānehoalani and Palikū, and Kualoa being revered so much that the canoes would lower their sails as they came past, *kūnou*. [Kealoha Domingo]

I've also heard through oral history that my *'ohana* at one point in time lived in Ka'a'awa Valley. You know when you don't have any written documentation of that, but I do firmly believe that, especially when I'm there in the valley. [Kealoha Domingo]

I suppose most of my stories are memories of my childhood running around in the ranch, I guess. I spent a lot of time up here, up near where Aunty lives up the road, just playing in the river and what not, running around and stuff like that, and just hunting, pig hunting…Honestly I wasn't very in tune or interested in cultural things back in those days, but as the years have gone on, I realize the importance. And I've been teaching my kids to at least know the names of this *wahi pana*. [Kealoha Domingo]

My grandmother Eva Rowan Wahineali'i Kana'e was the primary source of the knowledge I have of this area. She was the one that pointed out to me several *wahi pana*, or legendary places, in this area, such as Waiū-o-lewa and Ka-ule-o-nanahoa, Mokoli'i and the story attached to Hi'iaka i ka poli o Pele, Ka Lae o ka 'Oio and other places. [Frank Kawaikapuokalani Hewett]

Also our family is connected to La'amaikahiki, who was brought from Tahiti to establish rule in Hawai'i. He had three sons: Ahukina-a-la'a, Kukona-a-la'a, and Lauli-a-La'a. Many family members carry the name Ahukini-a-La'a, including my own son….La'amaikahiki is the chief that brought institutionalized worship to Hawai'i, set up the *heiau*, the priestly system, the *pahu* drum….Bear in mind these are just memories of stories I have heard from my *kupuna*, grandparents. [Frank Kawaikapuokalani Hewett]

Also, our family had land in that area under the names of Kekakeiki, Kahui, or Kahue. I think it was a large piece of land. These people were the great-grandchildren of King Kekaulike of Maui. So they were given large parcels. I know my great-great-great-grandmother, their sister who lived in Waialua, O'ahu, was given 100 acres and some *lo'i kalo*. All members of their family had large parcels of *'āina*. I think our *'ohana* lands were located on the Hakipu'u side of the Kuāloa Ranch area. [Frank Kawaikapuokalani Hewett]

My association to the subject property, family, land is that my family is from that area. Our connection goes back to the time that Wākea had a home over there in Kualoa. It is considered to be one of two most sacred spots on this island. It was a *pu'uhonua*, and the other is Kūkaniloko, and they're both related anyway. [Cy Bridges]

…I was one very *nīele* kid when I was small. I was normal; I go play with my cousins, but I *nīele* Tūtū. One thing that I never realized until I got married, my wife told me how fortunate that I was. I don't know how come I fortunate because I don't live on Hawai'i Loa Ridge, I live in Hau'ula. But she said that when she grew up, she had the opportunity of knowing one grandmother. She did not meet any great-grandparents. And her father's parents had died when she was just a kid. Whereas, for me, I knew all my grandparents. All of them were Hawaiian. I knew my four great-grandmothers; every one of them were born in the 1800s. They were not from Honolulu. They were from remote areas. They were from Wai'opae, Kaupo, Maui; Honouli, Makena, Maui; Hālawa Valley, Moloka'i; and Napo'opo'o, South Kona. Some of those places even today in the year 2015, they're considered to be very remote. So you figure how it was when they were born, it was even more [remote]. [Cy Bridges]

And I was a freshman in college when my great-great-grandmother passed away in Napo'opo'o, South Kona. So there were many times when I sat at the table with my grandmother on one side and my grandma's grandma on the other side. And while they were alive, their families used to come and visit, so I had opportunity to meet with them, and actually it's interesting because their relatives were, and I never realized this [at the

time], their relatives were really icons in the Hawaiian cultural community. And one of my aunts who became one of my teachers was considered to be one of the most sought-after teachers of Hawaiian knowledge, and that's Mary Kawena Puku'i. In hula, there was 'Iolani Luahine, who was given the distinction of "the high priestess of the hula." And these were aunties, it was no big deal. And so in that light, my wife felt that I was fortunate because she didn't have that, kind of. [Cy Bridges]

…My great-great-grandmother Elena, her grandfather was Naholowa'a that it was given, but anyway, Tūtū Elena, as a child, she was adopted by her uncle. She was adopted by her uncle, and by being adopted, so she's no longer an heir to that property. [Cy Bridges]

So I mentioned to them that my Bridges ancestor, Ka'ainahuna, she was adopted by her uncle Kapule. In fact, she didn't go by the name Kaleimakali'i. She used her adopted name Kapule. But after her death, her father's land, Kaleimakali'i land in Waikīkī, my great-grandfather them were still heirs to their land. And there's a place called Kamakahonu in Waikīkī, and his property, Kamakahonu, Pahupahupua'a, Kawehiwehi, Waikīkī, the lands, although she was legally adopted, her name was changed, but they were still heirs to the land. So how come it's not the same? [Cy Bridges]

My *tūtū* man, he was a chanter for Kalākaua, Kuluwaimaka [was his name], and he composed a *mele* for Haleaka Wilder. And she as living over there at Kualoa. And that's the kind of connection we get. That's the closeness they get. And I know it will sadden them to think that now, I not as bad as some of my other cousins, because it also mentions if I'm aware of anybody else in the family, get plenty guys. Plenty. Lot of the families are all gone. They left, moved away, they have passed into the hallowed halls of time. But many others, they have worse feelings than me because it was something that went 'away from them. I read on Facebook about my nieces, they write some terrible things. And I don't know if you like interview any of them because it is gonna be not a very diplomatic conversation because I've heard some of their comments. [Cy Bridges]

But, because Kalama's father Naihekukui, his brother Palakē had a son named Naihekukui II, [who was] named after the Uncle Naihekukui, and had a daughter named Kalama, named after the queen. Kalama had a daughter named Annie 'Ī'ahu'ulaikepo'oka'ulaokalani. That's my great-great-grandmother that I knew. She died when I was in college. And had my great grandmother Lele, that was one chart I could not find. I was gonna come and show you because it has all of that. [Cy Bridges]

So aside from being from Kualoa, being from that line, but the Kalama, that's our family line. But I was told by one of my cousins that Keoki is no longer on Johnson Road. He's out, but he's around the area making waves. [Cy Bridges]

But I understand, but see, I'm not a researcher. I only know what I know from talking to *tūtū*. And fortunate for me, they explained a lot of things, why it's like that. They explained. Sacred? Why? They tell me. [Cy Bridges]

Archaeological Sites

For me, I would wanna give a blanket statement that this whole area over here is highly sensitive, culturally significant, again referring to the history and the sacredness of the area, definitely I would say, highly sought after as a place to be laid to rest for *kūpuna*. But in particular, I know over here in the valley, I'm not sure where it is on this map, but up above where Aunty folks live, many times I've seen different *pōhaku* stones observed, one that I wasn't for sure if it was some type of *ahu* or *heiau* in the past. [Kealoha Domingo]

This is a very spiritual area and a very sacred area. History has shown that Kamehameha trained his warriors here, and that should be something we should always remember. [Winona Kaniho]

But as far as the cultural sites, just that whole area of Kualoa was deemed sacred because of La'amaikahiki. And of course, La'amaikahiki contributed a lot to the Hawaiian culture. And then, the different sites, my grandmother would point out to us. And then of course, as you leave Kualoa, and you come into Ka'a'awa, that's Kalaeoka'ō'io which is a *leina*. And you know, when we were camping every summer, major accidents there, because that is a *leina*, and people drive through there on a regular basis. So you know, with Hawaiians, yeah, they always *pule*, they always say prayers. And my grandma was always saying her prayers as we drove through that area. So what is a *leina*? It's that spirit doorway that spirits, after death, transcend into the *ao 'aumakua*. And that's Kalaeoka'ō'io. [Frank Kawaikapuokalani Hewett]

Well, structures that we can see, the only thing I can think of is the sugar mill that is there. But all of the other sites, I mean, I've named several: Pohukaina, Pu'u Wākea. I don't know if Kānewailani is one….Kānewailani is Kahuneonānāhoa, just like Moloka'i, get one big, over there, they get one, it's called Kānewailani….But I was told, according to Gramma-them, they said that one is more nice than the one on Moloka'i. No [it's not in the project area]. It is more towards the Hakipu'u side. [Cy Bridges]

But actually, even from here, you don't know, although the main burial chambers are in Pohukaina, in the cave, but we have uncovered about a hundred plus burials over there. And I was one of the coordinators for the reinternment of the *iwi*. We have a place in Kualoa Park. We put cement. Anyway, whenever we find, on the road and stuff like that, when they have construction, they call, and then we go. We put the *iwi* in. [Cy Bridges]

That [former *'auwai* in Ka'a'awa], we think, actually was on the bluff. These look like *lo'i* down here [pointing to the map], and this is all high ground, this is all the low ground. And so there is a spring up here, but it's a tiny, tiny, tiny spring. And the stream kind of follows this thing here. So I really don't know 'cause there's no source of water that I'm familiar with that would get up this high. This is a road that goes down over here. And so I really wouldn't even guess on what the source of water is for this. [John Morgan]

Mo'olelo

Well, I mentioned that it is considered one of the most sacred places. And once we were at a gathering and my nephews, Keliko Ho them, were talking about the sacredness of Kualoa. So when I went up, I said that I hear them talk about the sacredness, but nobody say why. Why is it sacred? Nobody says that. So I proceeded to say that this goes back to the time, lot of [other] places they talk about certain chiefs that lived here and all of that, but this one here, you had all of the chiefs. It was a playground of chiefs from Kakuhihewa and Kuali'i. [Cy Bridges]

We go over here? Why? Kalae'ō'io? No. They [people] say because get the *'ō'io* fish? No. *Oi'o*; not *'ō'io*. Oh, how come "*oi'o*?" Because, "*oi'o*" is the path, or the procession. That's where the spirits of the chiefs, they march over there. From Oi'o you go to Ka'ahu'ula Punawai, and then right into Pohukaina. So they [the *kūpuna*] explained that kind. [Cy Bridges]

Kuali'i was a master of what they call "*lele pali*." *Lele pali* was cliff diving, and using his cape, he would dive off of Palikū. And he was well-known for that, among others, but

Kualiʻi had surpassed many others, as well as his great-great-grandfather Kakuhihewa. [Cy Bridges]

But when Laʻamaikahiki came, I mean, they know that he went, and he brought the first *pahu*, Hawea, and he left it at Kūkaniloko. But no, he didn't leave one drum; he had two drums, Hawea and ʻOpuku, two drums. But nobody talk about the two drums that he put at Kualoa. Kualoa had two drums, Kapahuʻula and Kaʻahuʻula, which was given the name, the pond in front of Pohukaina. That's another reason why it's sacred because of Pohukaina. Pohukaina is like Kapelakapuokakai in ʻĪao Valley. It is the burial place of the highest chiefs of the highest noble strains. And Pohukaina, you get openings all over the island, Nuʻuanu, Mānoa, on the other side, and even in Pohukaina itself, the first burial mound at ʻIolani Palace is Pohukaina. That area is Pohukaina. But anyway, that's another reason why. [Cy Bridges]

But up there, on the hill above where Wākea's home was, *mauka* of his place, he lived right at the edge of Palikū by ʻApua Pond, and you go right above his house, there is the *puʻu*, at that time was called Puʻu Wākea. And years later, it was called Kauakahi, which was named after the *moʻopuna* of Kakuhihewa, because [reciting genealogy] Kakuhihewa, Kaʻihikapuokakuhihewa, Kahoʻowahakalani, and Kahoʻowaha's son was Kauakahi, [who] was the father of Kualiʻi. Anyway, the hill became known as Kauakahikahoʻowaha. And that is where they had that *heiau* platform over there and the *hale pahu*, and Kaʻahuʻula and Kapahuʻula were inside there. So not only Kūkaniloko, they had two over there as well, brought by Laʻamaikahiki, and he lived over there for over a year, when he came home to retrieve the *iwi* of Moʻikeha, who was his uncle, but he [Laʻamaikahiki] was adopted by Moʻikeha, so he considered Moʻikeha his father. But it was only his *hānai* father. [Cy Bridges]

But I mean the first and second *heiau*, well actually, the first *heiau* really was Wākea when he made it out of his hands because he was in the water. His brother Līhauʻula was trying to kill him, and he was going, and his *kahuna* told him to make a *heiau* and do an offering. And so he was in the water, and that's when he did that and to the fish, and he did a prayer. And the brother met his demise. They fought, and so he [Wākea] was saved. [Cy Bridges]

Then another time, when Wākea was captured by the chief Kumuhonua. He was captured, and his wife, Haumea, also known as Papanuihānaumoku, she went, and she released him, let him go. And they took off. They came down and hid in one of the caves at Kualoa, at Kānehoalani. And Kumuhonua found out where he was, and he came down with his warriors. And you see, Haumea was a master fighter, and her women, they were known as "Nā Koa Wahine o Haumea." They were all *lua* fighters, but they were all hiding. And the interesting thing is when Kumuhonua and his warriors came, they were annihilated by Nā Koa Wahine o Haumea. Nobody went touch them. They used the *mākū*, the *kukui*. And they said it came out like rain. That's why the old-timers, they call the rain over there, they call it "*ka ua koko*", "the rain of blood", or "*ka ua kukui*" because of when Kumuhonua and his warriors got killed because of the *kukui* that was coming down like rain. [Cy Bridges]

Wākea's home was over there by ʻApua, as I mentioned, and it was there that his son was born, Hāloa. And they buried the son over there in the corner of the house, and that corner of the house is where they say the first taro grew. Now people talk about that story, they don't talk about the place. They go to Waipiʻo Valley. No, it's not over there, because that was Wākea's sanctuary (by ʻApua). And so from the corner of his house where that taro plant came up, right above there from his house, right above, that's where you get Puʻu Wākea. Right above Puʻu Wākea, you get Mōkapu o Hāloa. So it all connects from the house, the hill, and Kapahuʻula all the way up to Mōkapu o Hāloa. There's no Mōkapu o Hāloa anyplace else, it's over there. And that's the line. [Cy Bridges]

Unfortunately a lot of that has been destroyed. Today the military was using all of that over there. But those are only some of the reasons why there is the sacredness of Kualoa. And I don't hear nobody talk about that. I don't hear people talk about that. Maybe they never *nīele* too like me. But I think I going off the track, yeah? [Cy Bridges]

I know my area where I live in is known as the Night Marchers' trail. And that's the reason why I never close my doors from the back to the front because I know that's the area that they walk, and I experienced some things there, so I know, and I honor that. So that ranch is in the back of me, they have land, and so I know that area is always open. [Winona Kaniho]

You know, right up the mountain, above ranch headquarters, there's a place we know about called Holuapeʻe, which is where Kamapuaʻa, when he was running away from Pele, at one point, went and hid. And so that's part of our lore. I don't know where it's written, but that's what we remember. [John Morgan]

Of course, the battle of the *moʻo* and Hiʻiaka in the long *moʻolelo* of Hiʻiakaikapoliopele, I've got the book over here I think. I didn't read the whole thing yet, but Hiʻiaka coming around and battling the *moʻo*, that's one thing. [John Morgan]

There's a number or other references that I recall to Kualoa. Luanuʻu was supposed to make a sacrifice, and he was told to go until he found this steep *pali* next to the ocean. So that was referring to here. [John Morgan]

I recall at some point in the Kumulipo, Kualoa's referred to. [John Morgan]

This is where, getting more into modern times, [Oʻahu king] Kahahana held a council of chiefs. And then when he was trying to figure out what to do with [Maui king] Kahekili, and this is in the middle of the 1700s I think, and [Kahuna Nui] Kaʻōpulupulu was the one who said it was not his [Kahahana's] right to give away Kualoa because he didn't get it in conquest, he was basically elected. So it would be like ceding the sovereignty of Oʻahu because of the sacredness, this is where the whale bone ivory would wash up [on shore]. And also, jumping around here, the site where the sacred drums of Kapahuʻula and Kaʻahulapunawai were kept, it was the site of the *makahiki* and the *puʻuhonua*, so all these different references to how important this place was. [John Morgan]

So yeah, I heard so many stories coming through that area there. So hopefully, that wisdom, yeah, I will lend to this project if people want to know about the different things that I remember as a child. And you know, I do remember this, yeah, that driving through one day, there were some rocks, that were standing up, and I forget the story. But my grandmother told me that they were people, either people or warriors that were turned into stone. Because if you look at them, yeah, but I have to say today, I am not sure where they were. And I'm not sure if they were even knocked down. But they were like, you know, it's those stalactites that hang from the top, but these were lava formations from the ground up, that looked like people standing in a row, look like columns. And I haven't, like I said, seen them for a long time. But you know when you're driving down, and there's that last house on the left side, where they carving tikis now?...Ok, just past that on the left hand side. I don't know if they're covered by trees, or what happened. But as a kid, I remembered seeing them. And then right above them is Waiūolewa, the two mounds, yeah, that looks like the *waiū*, the breasts. I have to really think about all these stories that my grandma showed me, but yeah, for now, basically. [Frank Kawaikapuokalani Hewett]

And you know, in the meantime, you should look at all the stories of Laʻamaikahiki, because when they came through Kualoa, and that's Kapalikapuokualoa, right, The Sacred

Cliffs of Kualoa, because this place was so sacred, they dropped all the canoe sails. [Frank Kawaikapuokalani Hewett]

Gathering Practices

Gathering is common practice amongst Native Hawaiian people, it is a part of our culture, as we are not only gatherers but also stewards of the land. It is our responsibility to also respect and care for the areas that we gather from to maintain them for future use. [Frank Kawaikapuokalani Hewett]

Well, yeah, there's something about access for gathering, and I'm wondering if that will be allowed, I mean, to have the right to go and gather. For our family, we have stopped for quite a number of years to go get things for *lapa'au* and things like that. But only up until a few years ago, and my son was one of them, my nephew, my son, my uncle-them, they used to continue to go pig hunting. They go through our *kuleana*, and they go up, but it is no longer now. And of the 19th of this month, the sheriff come. I get cousins still living over there, and nieces and nephews, and as of the 19th of this month, my wife's birthday, the sheriff is gonna go out there, and move everybody out. Fortunately for me, I going be in Japan because I leave on Wednesday, you know? [Cy Bridges]

But I don't know if they gonna be allowed because if something happens with these gatherers, who's liable for them? Can they sue the ranch? You know? So I don't know. And even for me, those kind of things are important, but for me, if I was a landowner, and people have the right to go and gather, they have gathering rights, but what rights do I have as a landowner? [Cy Bridges]

There really hasn't been any [gathering] in my lifetime here [in the project area], probably in part because there's almost no native plants in this area. We did, in fact I was just talking to Mahealani Cypher from the Ko'olaupoko Hawaiian Civic Club, and another thing Kualoa was known for was the pink *wauke*. And she was talking about planting the pink *wauke*, and I said that we had planted some, and it's still growing there. [John Morgan]

So no, I'm not aware of anybody who had exercised, in the last 40 years of working here, or wanting to exercise gathering rights in the project area. But we hope to do things that maybe won't result in practicing traditional rights, but providing materials that are associated with that kind of thing. [John Morgan]

The Historic Era

You know, Mrs. Swanzy was a pillar in the community, if you wanna call it. And from the stories, she was kind of a prim and proper lady. And so she actually started the Daughters of Hawai'i. She was regent there for 20 years, I think. And she started a bunch of different things and was very philanthropic actually. She started an educational foundation. She would educate a bunch of the Hawaiian kids from this area, and just seemed like a, you know, very broad-minded person, civic-minded person. But she was also prim. [John Morgan]

And one of my uncles, Albert Francis Judd III, I think it was, who's since passed away, told the story that when Mrs. Swanzy was at Kananelu, which is the very first house as you get into Ka'a'awa Valley, and that was the family house, and it was in the '40s, I think it was, the 1940s, and she was there, and a bunch of servicemen were there. They figured they were way out in the middle of the country, and so, they just took off all their clothes and went swimming. And she was kind of aghast at this, you know, show of indecency. So Albert Francis Judd told her, "Now Julie, these are the modern times. If you don't wanna

see this kind of thing, why don't you donate land for a park down at the far end of the ranch so you don't have to see it in your backyard." [laughs] So that's the story we heard about why she gave Swanzy Beach Park to the state. And she also donated land for Ka'a'awa School. Real stories. [John Morgan]

After December 7, 1941, there was a huge effort to make Hawai'i secure. And so, I'm not sure exactly how the Army, this was an Army airfield here, commandeered the place. But, you know, they did [the same to] a lot of places. So they came in, and basically, from what my father told me, in 1942, they designed and built the full airfield with all of the gun emplacements and everything else, and then was operational by 1943. [John Morgan]

What he said was that by 1945, it basically fell into disuse because they understood that the threat of invasion was very low by that time, the war had gone on the Allied side's favor. So when my father came back from the war, it was basically all overgrown already. [John Morgan]

Yeah, they took it over, basically borrowed the land, and they took it over because of that threat that they were worried about. But the plains only went to one mission, and that was the Battle of Midway. [John Morgan]

The main new visitor center facilities are on a bluff, and the airfield was right below. So right where the new offices are gonna go, and the new maintenance facility, that's kind of right on the airfield. The new visitor facility was right on the bluff right above that. [John Morgan]

The *marae kauhale* group facility is above, adjacent to another military facility that now is kind of part of a garden, a pavilion. That pavilion actually was a communications center for the military, a big cement building. [John Morgan]

One of the historical structures, the sugar mill, is still there, the remnants. It was built in 1863. I think it was 1990, we had a whole bunch of holes in it, so we kind of had a mason come and just shore it up so it wouldn't fall down. So that's one thing. [John Morgan]

The only, what looks like Hawaiian structures, were walls. There's one that looks like it's an *ahupua'a* boundary between Hakipu'u and Kualoa. And there are several others that kind of go off to the mountain, mostly on the *mauka* side because the military didn't, who knows what happened, 'cause it doesn't exist on the *makai* side of the property. But there are several old walls. We have not done a complete archaeological inventory, but when some of the archaeologists have come up, they think those are newer walls perhaps that were put up to protect things from animals. So that's the feedback that we've gotten, so maybe the middle 1800s or whatever. [John Morgan]

We don't know when the first cattle were brought on property. Again, Dr. Judd bought the place in 1850. The only thing we know in his will, it says, "The land will go to Charles Judd and all the cattle that are on it." So there was cattle there in 1873 [when he died][?]. So how many? We don't know. And who brought 'em? [John Morgan]

Charles Judd was known for bringing good horse flesh and bringing in more cattle. I don't know personally much details about when and how and what breeds and all of that other than he focused on that kind of thing, as did my great-grandmother, my grandmother, and my father was the one I had most contact with. [John Morgan]

And my father was very proud of his. He had a registered Angus herd in Hakipu'u, and he had a dairy. There was actually a dairy here in Kua'oa[?], and it's right in the homestead

area across from the park. And there are still remnants of the dairy. But there's been livestock here my entire life. [John Morgan]

Change Through Time

Well, that area was country. It was country. No more shopping center, no more, you out in the trees, actually when you come to Kualoa and Hakipu'u, you in the trees, you among the animals, the cows and the horses, and that's what it was. It was country, and it was country people doing country things, in the old way. In fact, even our house, I remember the house outside. We had the *hale 'au'au* outside and gee wiz, everybody bathe outside. We had outhouse. [Cy Bridges]

But change is something that is inevitable. That's one thing that will happen. And it has changed, that area [Kualoa], it has become a lot more commercial for the sake of gaining revenue, for the almighty dollar. And it's understandable, you know, people need to survive. But everywhere you look over there now, you have right where our home was, you come out of the road, and right over there, they get guys selling things right on the road, carvings, they get shows and stuff. Anyway, that whole area, is very, very commercial. Tour buses and all of those kind of things dominate the area. And so that's a real big change.[Cy Bridges]

Well actually this was a ranch, and that's all they did was ranch with the cows. The change has come, and I'm very, very pleased with the change. This particular area would never be able to survive unless John did what he did. He had to do this in order to survive. But he's also kept it very agricultural, and he's always kept the people's concerns. So it's really changed a lot, but I think it's changed for the best. [Winona Kaniho]

For me, definitely, I mean, we're sitting in the restaurant seeing all the people around us, you know? It's been a significant change in the building of this ranch. Like Aunty Nona said, I understand that it was a decision that they made to sustain the ranch. And I definitely appreciate that and understand that. [Kealoha Domingo]

There's one thing that I'd like to say, that I'd really like to thank John for, is that he's restoring my area with all the cattle again. It reminds me, and I really miss those days when his dad used to come riding his horse in the area…But what I really miss is Uncle Abraham rounding up the cattle in the back with his Hawaiian rope, calling out, and the saddle. Those are the things that I miss. Those are the things that I don't think anybody has that knowledge to do that again. And so I'm very thankful that I really got to know a lot of the ranch men that worked here. And now, I think at that time, we only had maybe at the most, I would say, off the top of my head, maybe twelve people that were hired, you know, *paniolos*, and everything. But today, I notice that he has a huge amount of people that he hired from within the area. So he has become a very good employer. [Winona Kaniho]

As a child all I remember about that place was the old sugar mill, where there was some tragic accident, and I think someone died. So we were very afraid of passing that area. And on every trip our grandmother would tell us the story. [Frank Kawaikapuokalani Hewett]

Much of the area was ranch land for cattle and horses. A lot of it on the Ka'a'awa side was covered in brush. [Frank Kawaikapuokalani Hewett]

Well, it's obvious that they've developed a lot over the years from when I was a kid, yeah? 'Cause imagine driving from Kāne'ohe to Ka'a'awa, where our family lives, you got a pasture there yeah? And all we saw was that one white house, I think the Akau family used

to live in, and cows, basically from Hakipu'u, driving through to, you know, there was a time when we couldn't even see what was in Kualoa. [Frank Kawaikapuokalani Hewett]

Kualoa, until it became a public park, basically, we never saw what was in Kualoa. And so all we could see driving through was, of course, all the cows, left hand side, and then we'd come to the house that the Akau family lived in, and then to the old sugar mill, yeah? And I think in Mr. Morgan's family there was an accident, somebody died at the sugar mill. And then, of course, the sugar mill closed down. [Frank Kawaikapuokalani Hewett]

…When I was young, I remember it being very bushy, much more, kind of covered with *haole koa*, than it is now. When we used to chase cows, we used to get off and have to tie our horse or lead our horse 'cause you couldn't ride through the *haole koa* as much. So we did that all over the place. Now it's very easy to get around. We bought a bulldozer in 1984, I think it was. We had one before that, but it wasn't a new one. And *haole koa* grows fast, so those are the kinds of things [I remember], but it was still a cattle ranch back then. [John Morgan]

It wasn't during my memory, but we do know that the military took over this place, the whole *ahupua'a* of Kualoa, and did extensive grading. We still have the maps if you want to see 'em, they're in the tunnel. There's a whole kind of blueprint of the entire *ahupua'a*. There's stuff all over the place. But again, *haole koa* grows really fast, so that's what I recall when I was a real young person. But over the years, we cleared. We got rid of a lot of monkeypod trees. We got rid of a lot of *haole koa* and just made the pastures a lot more productive. [John Morgan]

No, Hakipu'u, that was the place where we called 'the bogs'. That was tenant farmers down there. So we had tenant farmers over there, and during my whole upbringing, people were actively farming that. [John Morgan]

Ka'a'awa, that area, was all part of pasture. It was a lot more bushy. We cleared that. I remember clearing it not too long ago, like ten, fifteen years ago. [John Morgan]

Concerns and Recommendations

I don't think [the project will impact a place of cultural significance] in a negative way, I think perhaps in a positive way. Our whole goal as a company and as a family, and the values that drive it, are to preserve the place. And so by developing the types of things that we want to develop, it will enable us to preserve and then basically enhance, hopefully, maybe not in a particular project area, but we do know of other very important cultural sites that we do want to preserve and protect. In Hakipu'u, there's 'Apuakea Heiau. We've done an archaeological inventory on that already. We'd love to consider restoration which would have its own process. The Moli'i Fishpond, which is arguably one of the most well-preserved fishponds left in Hawai'i, is something that's very important. So while the development of the project areas, I don't think will have any impact on any other type of cultural artifacts or values, it will be a positive effect. [John Morgan]

The only one I can think of is that, we work with the park, Kualoa Park, and we know we have an area there for the *iwi*. So that's about the only thing. [Winona Kaniho]

Repository yeah. And that's out of this part [outside the project area], towards the beach park. [The concern is with] *Iwi* along the coast, reburial. [Kealoha Domingo]

Oh and what I was thinking of, you know the fishermen, some of them are buried in the back in the mountains, many, many years ago. And that would be my concern to make sure that they are not disturbed. [Winona Kaniho]

Up here at Palikū, my one concern was just getting little bit too close to the Pōhaku a Kāne area of the mountain, outside of the existing footprint. You know, within the existing footprint, I would say it's relatively safe at this point. [Kealoha Domingo]

I do, from the other standpoint, want to be sure that the cultural value of this whole area is honored from even before the times of ranching. You know, again, with all of the significant known history, I think it's beneficial for not only us as cultural descendants, but for people who come to visit, to know about the sanctity of this place. And again, it's not that I don't appreciate the ranch, but I have an even deeper appreciation for our *kūpuna*. I'm talking about our *kūpuna* from a hundred, two hundred years ago. [Kealoha Domingo]

[I recommend] No development, protection of the forest and sacred as historical places that have deep relationships and significance to the host culture. [Frank Kawaikapuokalani Hewett]

But being and having been a member on the Hawai'i Tourism Authority, it's really quite obvious that this is a tourist destination, absolutely nothing wrong with that. But that has to balance with [being a] community destination. For me, you know, you're in that community, you're part of that community [Kualoa Ranch is a part of the bigger community]. And community is about making contributions. So what aspect of all of this is going to be community? And that would be another of my concerns. [Frank Kawaikapuokalani Hewett]

So the respect, the caretaker-ship of the land, that is always paramount. But these are just other things that I would be concerned about. But I'm nobody's boss. I'm here just to give advice. I'm nobody's boss, and I don't own anything but my blood. And I know who I am, so, you know, 'nuff said right? I neva come over here for boss you around or anybody. But if you want my wisdom and expertise, yeah, I'll be more than willing to help. [Frank Kawaikapuokalani Hewett]

You know, I think I said this earlier. Our ancestors had to build, yeah? They had to build houses. They had to build *hālau*. They had to build canoes. And of course, in doing so, they had specific *kahuna* who advised them where to build, what to build, how to build, much like what we're doing today with advisory committees. [Frank Kawaikapuokalani Hewett]

But again, it's all based on how we respect the land. And how we have this respect for the land is exactly going to be a reflection of the outcome that we will receive from the land, yeah? *'O kou mālama 'ana o ka'āina, 'o kō ka 'āina mālama 'ana iā 'oe*. How you take care of the land is how the land will take care of you. *'O kou mālama 'ole i ka 'āina*, how you disrespect the land, *'o kō ka 'āina mālama 'ole iā 'oe*, how the land is going to disrespect you. So, work with the *'āina*, work in respect to the *'āina*. Honor and take care of the *'āina*, and the outcome will always be good. That's what it's saying. So if you do things in a half-ass way, obviously at the end, that's all you gonna have is ass, you cannot move forward. And I talk the way I talk because I mean it. If you do good, good gonna happen. So if they have good in their hearts, with the outcome it's good. [Frank Kawaikapuokalani Hewett]

Like I say, the land will take care of everyone. The land will take care of our *kupa'āina*, our natives. And the land will take care of the *malihini*, the visitors. But, everybody has to

come with *mālama*, honor, and respect, because this may be like 2015, but those old sacred things that were implanted into the *'āina* by our ancestors still remain. And so if you go on the land with disrespect, and you do all kinds of *pilau* things, yeah, and *kāpulu* the *'āina*, then maybe bad things are going to happen. I know people nowdays don't have that kind of thought in their minds, but there are powerful things out there. [Frank Kawaikapuokalani Hewett]

So to give you as an example, yeah, as children, we were not allowed to go on any *heiau*. So we would go on hikes, and so, like say we went to 'Aiea Heiau for a picnic, or we went to the *heiau* at Pūpūkea, my grandparents would not allow us, not at all. Those areas, they felt, should be blocked off, because the old things that are there, the old spirits that are there, the old ancient *mana* that is there, belongs to that time. What is our *kuleana* today? [It is] to honor and respect that. And to say, "I know the protocol," you weren't there, how do you know the protocol? You weren't there a hundred years ago. You weren't there two hundred years ago. You weren't there three hundred years ago. So what can we surmise other than that this is sacred? Honor and respect it. And by doing so, the outcome will be that you have success in what your endeavors are. But if you go in automatically thinking, "Ah we just going bulldoze all this, push this, and do all of that," then already you starting off with disrespect. So that you take the time and the effort to try and put things in the *pono*, in the order of how it needs to be done. At the end, you probably end up better. [Frank Kawaikapuokalani Hewett]

And growing up in Hawai'i, yeah, with my grandparents, we had so many things as kids that we had to learn. And one was concerning lightning, yeah, like in our home, when there was an impending storm, eh, the first lightning strike, everybody had to be in the house. But of course, everybody does that right? But during the time of the storm, there's no talking. You cannot play, you cannot act stupid, and you cannot talk any kind of business. And I found later in life through my grandma because there was a *kapu* on that in the old days, and my grandmother continued to observe that, yeah, in respect to Kāne, yeah, Kānekahekili, that there are things, in order to give the respect, that will bring that honor and respect back to the family. So basically we all had to sit in the living room, and my grandmother just sat down and prayed the whole time. And you may think, a lot people is like, "That's just f*cken lightning." Oh no, no, no. To my grandparents, no, that was the god, Kānekahekili. And we had to learn all of these things. [Frank Kawaikapuokalani Hewett]

You know, today we take so much for granted. But these little things meant so much to them, oh my God. So I remember, man, I got couple cracks for, you know, screaming and laughing and playing when it was thundering. And my grandmother said, "No, no, you don't do that. That going bring bad luck on the family." Today, who the f*ck cares? But when you look at everybody today, they all running around like a bunch of eggheads. They don't know what the hell to do because they have no connection, nooooo touch to all of that. I mean, it's sad. Oh it's so sad when I think about all these things. Everybody is getting farther and farther and farther and farther away from their source and their connection. [Frank Kawaikapuokalani Hewett]

You say, "Oh no, you can go gather any place you like, but not over here." You know? So I don't know whether that would be continued. And I tell you, personally, knowing John [Morgan], he's one person who is always conscientious and considerate of cultural aspects. He is a cultural practitioner himself. He's a member of the *lua* with Mitchell Eli. So he's not just any kine *haole*, he's a different one. That doesn't erase the reality of what we go through as family. [Cy Bridges]

Now, to me, when we talk about our traditions as Hawaiians, yeah, gathering and all of that, that's good. But the gathering of things, leaves or *lapa'au* and stuff, to me personally,

is small bubblegum compared to the greatest tradition, as living as a Hawaiian on our ancestral lands. And then coming through some kind of legal technicalities, whatever, that that cannot happen. [Cy Bridges]

And that's beyond your scope of *kuleana*, you know, those kind of things. That's something that we gotta do. But for us, we can show our connection to Kualoa, and there are documents from Kamehameha III and Keoni Ana, but now those lands of Kualoa, what connection does Kualoa have besides quitclaims and confiscating? But that's something that we just gotta deal with. [Cy Bridges]

I don't know. If most of the renovations are on the footprint of the ranch, most likely, there won't be too much of an intrusion, or have adverse effects if it's on that footprint because it's been there and in operation for so long. I mean, I've been there many, many times as a guest of John, and also practicing [my gathering rights] when I help with *pāʻū* riders and when I help for parades. I don't think many people would know that particular site because it's just the family who's been on there. But our family, and the Wilders, the Swanzys, the Judds, they were very, very close. They were very close. In fact, that's how on a lot of our lands, for the record, they came into our property, because Tūtū Elena had a sister, there were two sisters, Elena and Kekala, and Kekala wanted to borrow money. She neva have money, so she went to her friends, the Wilders, and that's the *kupuna* [of John]. She went to them to go borrow money, which was quite a few times. But no can pay back? Ah, neva mind, that's yours now [the land], I no need because I get land over here in Hauʻula. Well, so the family always make the point that they [Kualoa Ranch] only get Kekala's interest, but not Elena. Needless to say that their name is in there. But they were very close. I mean, I get one *mele* [showing me a copy of a *mele*] [Cy Bridges]

Summary of Ethnographic Survey

The consultants shared a wealth of knowledge on Kualoa and Kaʻaʻawa, and offered their opinions on the proposed project. They stated that the whole area is culturally significant, and archaeological sites in the region include a *leina*, human burials, culturally significant *pōhaku*, as well as *loʻi* and *ʻauwai*. Many *moʻolelo* were shared, including stories of Laʻamaikahiki, Wākea, Hiʻiakaikapoliopele, and other important figures from Hawaiian history. Kualoa was a sacred place, and a place where chiefs were buried. Other *moʻolelo* reference the night marchers in Kaʻaʻawa and a place in Palikū where Kualiʻi wound go cliff diving, as well as other stories significant to Hawaiian culture. When asked about gathering practices, the consultants agreed that gathering rights and access are important, and pig hunting as well as plant gathering were mentioned. However, there are not necessarily any gathering areas within the project footprint.

Regarding the historic era, information was conveyed about an army airfield at Kualoa during World War II, historic ranching walls, the old sugar mill, and a former dairy. The consultants noted that the region has changed significantly over the course of their lifetime. Particularly, it was much more "country" before, whereas the land is commercial and developed now. The area seemed to be more vegetated in the past as well.

Several concerns and recommendations were shared. Opinions on the project were on opposite ends of the spectrum, from the view that the project would have no negative impacts to a recommendation for no development at all. Some suggestions were to work with Kualoa Beach Park so that there is a repository for *iwi* in case they are disturbed during the project; to stay away from the Pōhaku a Kāne in Palikū and the fishermen's burials in the *mauka* portions of Kualoa; and to honor the cultural value of the area, respect the land, consider the community, and ensure access for gathering and hunting.

SUMMARY AND RECOMMENDATIONS

Kualoa has been known as a sacred place throughout history, and Kualoa Ranch has been a mainstay of the region for nearly a century. This study highlights the unique past of Kualoa and Kaʻaʻawa and demonstrates the importance of these areas to the community. Five community members were interviewed to share their *manaʻo* and to help identify any potential cultural resources or practices that might be affected by proposed improvements to the ranch. The consultants did not identify any cultural resources within the project footprint that would be affected. They did recognize a variety of cultural resources in the general area and they offered valuable recommendations for the project.

Cultural Resources, Practices, and Beliefs Identified

The ethnographic interviews revealed that the project area was a sacred place and a place for chiefs, and the region is rich in *moʻolelo*. A *leina*, human burials, culturally significant *pōhaku*, *loʻi*, and *ʻauwai* were located in the vicinity. In the historic period, there was a sugar mill, a dairy, LCA parcels, and a World War II-era airfield in the region. Subsurface archaeological remains of these resources might be found during construction. Regarding cultural practices, the consultants agreed that gathering rights and access are important, and pig hunting and plant gathering were mentioned. However, there are not necessarily any gathering areas within the project footprint.

Potential Effects of the Proposed Project

The consultants were not aware of any specific cultural resources or practices which may be affected by the proposed project, although the entire area is culturally significant and there are known cultural resources outside the project footprint.

Confidential Information Withheld

During the course of researching the present report and conducting the ethnographic survey program, no sensitive or confidential information was discovered or revealed, therefore, no confidential information was withheld.

Conflicting Information

No conflicting information was obvious in analyzing the gathered sources. On the contrary, a number of themes were repeated and information was generally confirmed by independent sources.

Recommendations/Mitigations

The interviewees shared several concerns and recommendations for the project:

- work with Kualoa Beach Park so that there is a repository for *iwi* in case they are disturbed during the project
- stay away from the Pōhaku a Kāne in Palikū
- stay away from the fishermen's burials in the *mauka* portions of Kualoa
- honor the cultural value of the area
- respect the *ʻāina*
- consider the community in the planning process
- ensure access for plant gathering and pig hunting
- refrain from any further development; protect the forest and sacred places

Background research and oral history interviews did not reveal any surface archaeological resources within the project area. It is possible, however, that subsurface remains might be found. Keala Pono recommends that a program of archaeological monitoring is developed for the project to ensure that any historic properties are not adversely affected by the proposed improvements. Community concerns and recommendations should be considered during all phases of the project.

GLOSSARY

‘a‘ale	No. Variation of *‘a‘ole*.
ahupua‘a	Traditional Hawaiian land division usually extending from the uplands to the sea.
‘āina	Land.
ao	Day, light, dawn; high clouds; realm, world, earth; to be careful.
‘au‘au	To bathe.
‘aumakua	Family or personal gods. The plural form of the word is *‘aumākua*.
‘auwai	Ditch, often for irrigated agriculture.
awa	The milkfish, or *Chanos chanos*, often raised in fishponds in ancient times.
boulder	Rock 60 cm and greater**.**
cobble	Rock fragment ranging from 7 cm to less than 25 cm.
debitage	Waste by-products of stone tool manufacture.
hala	The indigenous pandanus tree, or *Pandanus odoratissimus*, which had many uses in traditional Hawai‘i. Leaves were used in mats, house thatch, and basketry; flowers were used for their perfume; keys were utilized in lei and as brushes; roots and leaf buds were used medicinally; and wood was fashioned into bowls and other items.
hālau	Meeting house for hula instruction or long house for canoes.
hale	House.
hānai	Foster child, adopted child; to raise, feed, or sustain; a provider or caretaker.
haole	White person, American, Englishman, Caucasian; formerly any foreigner.
heiau	Place of worship and ritual in traditional Hawai‘i.
huaka‘i	Trip, voyage, journey; to travel.
humuhumunukunukuāpua‘a	A triggerfish of the genus *Rhinecanthus*, either *R. aculeatus* or *R. rectangulus*.
‘ike	To see, know, feel; knowledge, awareness, understanding.
‘ili	Land division, next in importance to *ahupua‘a* and usually a subdivision of an *ahupua‘a*.
imu	Underground pit or oven used for cooking.
inoa	Name, term, title.
iwi	Bone.
kahakai	Beach, seashore, coast.
Kahiki	A far away land, sometimes refers to Tahiti.
kahua	Open place for sports, such as *‘ulu maika*.
kahuna	An expert in any profession, often referring to a priest, sorcerer, or magician.
kai	Sea, sea water; area near the sea, seaside, lowlands; tide, current in the sea; insipid, brackish, tasteless.

kāpulu Careless, unclean, disgusting.

kalo The Polynesian-introduced *Colocasia esculenta*, or taro, the staple of the traditional Hawaiian diet.

kamaʻāina Native-born.

kāne Man, husband, male.

kapa Tapa cloth.

kapu Taboo, prohibited, forbidden.

kauhale A group of houses that comprise the traditional Hawaiian homestead. Often included are a sleeping house, men's eating house, women's eating house, cooking house, and canoe house.

koʻa Fishing shrine.

koa haole The small tree *Leucaena glauca*, historically-introduced to Hawaiʻi.

konohiki The overseer of an *ahupuaʻa* ranked below a chief; land or fishing rights under control of the *konohiki*; such rights are sometimes called *konohiki* rights.

kūkākūkā To negotiate or discuss.

kukui The candlenut tree, or *Aleurites moluccana*, the nuts of which were eaten as a relish and used for lamp fuel in traditional times.

kula Plain, field, open country, pasture, land with no water rights.

kuleana Right, title, property, portion, responsibility, jurisdiction, authority, interest, claim, ownership.

kūlou, kūnou To bow the head or beckon with the head.

kumu Teacher.

kumu hula *Hula* teacher/master.

kupa Citizen or native; army worm; red cowry shell; stew or soup.

kupua Demigod, hero, or supernatural being below the level of a full-fledged deity.

kupuna Grandparent, ancestor; *kūpuna* is the plural form.

lapaʻau Medicine.

leina To leap or spring. *Leina ka ʻuhane* or *leina a ke akua* were places where spirits leapt into the nether world.

lele pali Cliff diving.

loʻi, loʻi kalo An irrigated terrace or set of terraces for the cultivation of taro.

loko Inside, interior. Pond, lake, pool.

lua The ancient style of fighting involving the breaking of bones, dislocation of joints, and inflicting pain by applying pressure to nerve centers.

mahalo Thank you.

Māhele The 1848 division of land.

mākū The *kokiʻo*, a variety of native hibiscus.

makahiki A traditional Hawaiian festival starting in mid October. The festival lasted for approximately four months, during which time there was a *kapu* on war.

makai Toward the sea.

mālama To care for, preserve, or protect.

malihini Foreigner, stranger, newcomer, guest.

manaʻo Thoughts, opinions, ideas.

marae An Eastern Polynesian term for a religious, ceremonial, or communal structure.

mauka Inland, upland, toward the mountain.

mele Song, chant, or poem.

menehune Small people of legend who worked at night to build structures such as fishponds, roads, and *heiau*.

midden A heap or stratum of refuse normally found on the site of an ancient settlement. In Hawaiʻi, the term generally refers to food remains, whether or not they appear as a heap or stratum.

moku District, island.

monkeypod A large tree, *Samanea saman*, introduced to Hawaiʻi from tropical America.

moʻo Lizard, dragon, water spirit.

moʻolelo A story, myth, history, tradition, legend, or record.

moʻopuna Relatives two generations later, such as grandchild, great-niece or great-nephew.

muliwai River mouth, estuary, or pool near the mouth of a stream, enlarged by ocean water left there at high tide.

mullet *Mugil cephalus*, or *ʻamaʻama*, a very choice indigenous fish.

nīele Curious, inquisitive; to keep asking questions.

niho palaoa Pendant fashioned from whale tooth worn by Hawaiian royalty.

ʻohana Family.

ʻoki To cut, separate, annul, cancel; a cut, division, or amputation.

ʻōlelo noʻeau Proverb, wise saying, traditional saying.

oli Chant.

ʻōʻio Ladyfish, bonefish (*Albula vulpes*).

pahu Drum.

pali Cliff, steep hill.

paniolo Cowboy.

pāʻū Women's sarong or skirt; skirt worn by women on horseback.

piko Navel; summit; center.

pilau Rotten, foul.

pōhaku Rock, stone.

poi	A staple of traditional Hawai‘i, made of cooked and pounded taro mixed with water to form a paste.
pono	Correct, proper, good.
post-contact	After A.D. 1778 and the first written records of the Hawaiian Islands made by Captain James Cook and his crew.
pre-contact	Prior to A.D. 1778 and the first written records of the Hawaiian Islands made by Captain James Cook and his crew.
pule	Prayer; to pray.
pu‘u	Hill, mound, peak.
pu‘uhonua	Place of refuge.
stone	Rock fragment ranging from 25 cm to less than 60 cm.
tūtū	Grandmother or grandfather.
‘ulu	The Polynesian-introduced tree *Artocarpus altilis*, or breadfruit.
‘ulu maika	Stone used in the *maika* game, similar to bowling.
wahi pana	Sacred places or legendary places that may or may not be *kapu*, or taboo.
waiū	Milk; breast.
wao akua	A distant mountain region believed to be inhabited only by spirits; wilderness, desert.
wauke	The paper mulberry, or *Broussonetia papyrifera*, which was made into tapa cloth in traditional Hawai‘i.

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APPENDIX A: AGREEMENT TO PARTICIPATE

Agreement to Participate in the Cultural Impact Assessment for the Kualoa Ranch Renovation Project
Dietrix J.U. Duhaylonsod, Ethnographer, Keala Pono Archaeological Consulting

You are invited to participate in a Cultural Impact Assessment (CIA) of the Kualoa Ranch Renovation Project in Kualoa, on the island of O'ahu (herein referred to as "the Project"). The Project is being conducted by Keala Pono Archaeological Consulting (Keala Pono), a cultural resource management firm, on behalf of Group 70 International. 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 CIA is being conducted to collect information about the Project property in Kualoa and its surrounding areas in the Ko'olaupoko region of O'ahu Island through interviews with individuals who are knowledgeable about this area, and/or about information including (but not limited to) cultural practices and beliefs, *mo'olelo*, *mele*, or *oli* associated with this area. The goal of this Project is to identify and understand the importance of any traditional Hawaiian and/or historic cultural resources, or traditional cultural practices in properties on the current subject properties. This Assessment will also attempt to identify any affects that the proposed development may have on cultural resources present, or once present within the Project area.

Procedures

After agreeing to participate in the Project and signing the Consent Form, the ethnographer will digitally record your interview and it may be transcribed in part or in full. The transcript may be sent to you for editing and final approval. Data from the interview will be used as part of the ethno-historical report for this project 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. If the transcription of your interview is to be included in the report, you will be given an opportunity to review your transcript, and to revise or delete any part of the interview.

APPENDIX B: CONSENT FORM

Consent Form

I, _____, am a participant in the Kualoa Ranch Renovation Project Cultural 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 subject property and surrounding area in the Ko'olaupoko region of O'ahu Island. I understand that Keala Pono Archaeological Consulting and/or Group 70 will retain the product of my participation (digital recording, 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 Keala Pono and Group 70 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 Keala Pono and Group 70 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 Keala Pono and Group 70 and its assignees in any medium for purposes of the Project.

_____ I agree that Keala Pono and Group 70 may use my name, photographic image, biographical information, statements, and voice reproduction for this Project without further approval on my part.

_____ If transcriptions are to be included in the report, 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 two weeks 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.

APPENDIX C: TRANSCRIPT RELEASE

Transcript Release

I, _____, am a participant in the Cultural Impact Assessment for the Kualoa Ranch Renovation Project (herein referred to as "Project") and was interviewed for the Project. I have reviewed the transcripts of the interview and agree that the transcript is complete and accurate except for those matters delineated below under the heading "CLARIFICATION, CORRECTIONS, ADDITIONS, DELETIONS."

I agree that Keala Pono Archaeological Consulting and/or Group 70 may use and release my identity, biographical information, and other interview information, for the purpose of including such information in a report to be made public, subject to my specific objections, to release as set forth below under the heading "OBJECTIONS TO RELEASE OF INTERVIEW MATERIALS."

CLARIFICATION, CORRECTIONS, ADDITIONS, DELETIONS:

OBJECTIONS TO RELEASE OF INTERVIEW MATERIALS:

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

APPENDIX D: INTERVIEW WITH CY BRIDGES

TALKING STORY WITH

CY BRIDGES (CY)

Oral History for the Kualoa Ranch renovation project by Dietrix Duhaylonsod (DD)
For Keala Pono 7/11/2015

DD: *Aloha*, today is Saturday, July 11, we're sitting at the Hauʻula shopping center with Kumu Cy Bridges. We'll be talking about this project that Kualoa Ranch has; they want to do some renovations at their headquarters, at Palikū, and at Kaʻaʻawa. So we're just going to be talking story a little bit, and before we go any further, we just want to say, *mahalo nui loa* to Kumu Cy Bridges for taking time out of his busy schedule to sit down and talk story with us. So *aloha*, Kumu.

CY: Hi, *aloha*.

DD: If we could start, could you state your name and maybe give a little background on yourself; where/when were you born; where you grew up; where you went to school; and anything about your family background that you would like to share.

CY: My name is Cy Bridges. I was born at Queens Hospital, now Queens Medical Center in Downtown, Kona, Honolulu, Oʻahu, Hawaiʻi. For the most part I grew up in Koʻolaupoko and Koʻolauloa. I lived for a few years in Honolulu on Buckle Lane which no longer exists, which is right near Liliha Street. And then we purchased a home in Kāneʻohe. But because my mother is from Koʻolauloa as well as Kualoa/Hakipuʻu, that was always a place that we went to, part of our growing up.

I went to school, James B. Castle High School. Lately they had a story about Mr. B, Mr. Bright, Ronald Bright, that just passed away. He was one of my teachers, awesome guy, awesome man.

My *ʻohana*, I'm the second oldest of only four children of my parents, George Allen Kaleimakaliʻi and Audrey Kamakeʻeʻāina Bridges.

My association to the subject property, family, land is that my family is from that area. Our connection goes back to the time that Wākea had a home over there in Kualoa. It is considered to be one of two most sacred spots on this island. It was a *pu'uhonua*, and the other is Kūkaniloko, and they're both related anyway.

How I acquired special knowledge? [Cy Bridges looking at the typewritten interview questions] I was one very *nīele* kid when I was small. I was normal; I go play with my cousins, but I *nīele* Tūtū. One thing that I never realized until I got married, my wife told me how fortunate that I was. I don't know how come I fortunate because I don't live on Hawaiʻi Loa Ridge, I live in Hauʻula. But she said that when she grew up, she had the opportunity of knowing one grandmother. She did not meet any great-grandparents. And her father's parents had died when she was just a kid. Whereas, for me, I knew all my grandparents. All of them were Hawaiian. I knew my four great-grandmothers; every one of them were born in the 1800s. They were not from Honolulu. They were from remote areas. They were from Waiʻopae, Kaupo, Maui; Honouli, Makena, Maui; Hālawa Valley, Molokaʻi; and Napoʻopoʻo, South Kona. Some of those places even today in the year 2015, they're considered to be very remote. So you figure how it was when they were born, it was even more [remote].

And I was a freshman in college when my great-great-grandmother passed away in Napoʻopoʻo, South Kona. So there were many times when I sat at the table with my grandmother on one side and my grandma's grandma on the other side. And while they were alive, their families used to come

and visit, so I had opportunity to meet with them, and actually it's interesting because their relatives were, and I never realized this [at the time], their relatives were really icons in the Hawaiian cultural community. And one of my aunts who became one of my teachers was considered to be one of the most sought-after teachers of Hawaiian knowledge, and that's Mary Kawena Puku'i. In hula, there was 'Iolani Luahine, who was given the distinction of "the high priestess of the hula." And these were aunties, it was no big deal. And so in that light, my wife felt that I was fortunate because she didn't have that, kind of.

DD: Wow. As far as you remember with your experiences, how has the area changed? Could you share how it used to be and how it's different?

CY: Well, that area was country. It was country. No more shopping center, no more, you out in the trees, actually when you come to Kualoa and Hakipu'u, you in the trees, you among the animals, the cows and the horses, and that's what it was. It was country, and it was country people doing country things, in the old way. In fact, even our house, I remember the house outside. We had the *hale 'au'au* outside and gee wiz, everybody bathe outside. We had outhouse.

But change is something that is inevitable. That's one thing that will happen. And it has changed, that area [Kualoa], it has become a lot more commercial for the sake of gaining revenue, for the almighty dollar. And it's understandable, you know, people need to survive. But everywhere you look over there now, you have right where our home was, you come out of the road, and right over there, they get guys selling things right on the road, carvings, they get shows and stuff. Anyway, that whole area, is very, very commercial. Tour buses and all of those kind of things dominate the area. And so that's a real big change.

DD: What about the *mo'olelo*, *mele*, *oli* about the area, are there certain themes that stand out in these oral histories of the area that you can talk about, of the Kualoa area?

CY: Well, I mentioned that it is considered one of the most sacred places. And once we were at a gathering and my nephews, Keliko Ho them, were talking about the sacredness of Kualoa. So when I went up, I said that I hear them talk about the sacredness, but nobody say why. Why is it sacred? Nobody says that. So I proceeded to say that this goes back to the time, lot of [other] places they talk about certain chiefs that lived here and all of that, but this one here, you had all of the chiefs. It was a playground of chiefs from Kakuhihewa and Kuali'i.

Kuali'i was a master of what they call "*lele pali*." *Lele pali* was cliff diving, and using his cape, he would dive off of Palikū. And he was well-known for that, among others, but Kuali'i had surpassed many others, as well as his great-great-grandfather Kakuhihewa.

But when La'amaikahiki came, I mean, they know that he went, and he brought the first *pahu*, Hawea, and he left it at Kūkaniloko. But no, he didn't leave one drum; he had two drums, Hawea and 'Opuku, two drums. But nobody talk about the two drums that he put at Kualoa. Kualoa had two drums, Kapahu'ula and Ka'ahu'ula, which was given the name, the pond in front of Pohukaina. That's another reason why it's sacred because of Pohukaina. Pohukaina is like Kapelakapuokakai in 'Īao Valley. It is the burial place of the highest chiefs of the highest noble strains. And Pohukaina, you get openings all over the island, Nu'uanu, Mānoa, on the other side, and even in Pohukaina itself, the first burial mound at 'Iolani Palace is Pohukaina. That area is Pohukaina. But anyway, that's another reason why.

But up there, on the hill above where Wākea's home was, *mauka* of his place, he lived right at the edge of Palikū by 'Apua Pond, and you go right above his house, there is the *pu'u*, at that time was called Pu'u Wākea. And years later, it was called Kauakahi, which was named after the *mo'opuna*

of Kakuhihewa, because [reciting genealogy] Kakuhihewa, Ka'ihikapuokakuhihewa, Kaho'owahakalani, and Kaho'owaha's son was Kauakahi, [who] was the father of Kuali'i. Anyway, the hill became known as Kauakahikaho'owaha. And that is where they had that *heiau* platform over there and the *hale pahu*, and Ka'ahu'ula and Kapahu'ula were inside there. So not only Kūkaniloko, they had two over there as well, brought by La'amaikahiki, and he lived over there for over a year, when he came home to retrieve the *iwi* of Mo'ikeha, who was his uncle, but he [La'amaikahiki] was adopted by Mo'ikeha, so he considered Mo'ikeha his father. But it was only his *hānai* father.

But I mean the first and second *heiau*, well actually, the first *heiau* really was Wākea when he made it out of his hands because he was in the water. His brother Līhau'ula was trying to kill him, and he was going, and his *kahuna* told him to make a *heiau* and do an offering. And so he was in the water, and that's when he did that and to the fish, and he did a prayer. And the brother met his demise. They fought, and so he [Wākea] was saved.

Then another time, when Wākea was captured by the chief Kumuhonua. He was captured, and his wife, Haumea, also known as Papanuihānaumoku, she went, and she released him, let him go. And they took off. They came down and hid in one of the caves at Kualoa, at Kānehoalani. And Kumuhonua found out where he was, and he came down with his warriors. And you see, Haumea was a master fighter, and her women, they were known as "Nā Koa Wahine o Haumea." They were all *lua* fighters, but they were all hiding. And the interesting thing is when Kumuhonua and his warriors came, they were annihilated by Nā Koa Wahine o Haumea. Nobody went touch them. They used the *mākū*, the *kukui*. And they said it came out like rain. That's why the old-timers, they call the rain over there, they call it "*ka ua koko*", "the rain of blood", or "*ka ua kukui*" because of when Kumuhonua and his warriors got killed because of the *kukui* that was coming down like rain.

Wākea's home was over there by 'Apua, as I mentioned, and it was there that his son was born, Hāloa. And they buried the son over there in the corner of the house, and that corner of the house is where they say the first taro grew. Now people talk about that story, they don't talk about the place. They go to Waipi'o Valley. No, it's not over there, because that was Wākea's sanctuary (by 'Apua). And so from the corner of his house where that taro plant came up, right above there from his house, right above, that's where you get Pu'u Wākea. Right above Pu'u Wākea, you get Mōkapu o Hāloa. So it all connects from the house, the hill, and Kapahu'ula all the way up to Mōkapu o Hāloa. There's no Mōkapu o Hāloa anyplace else, it's over there. And that's the line.

Unfortunately a lot of that has been destroyed. Today the military was using all of that over there. But those are only some of the reasons why there is the sacredness of Kualoa. And I don't hear nobody talk about that. I don't hear people talk about that. Maybe they never *nīele* too like me. But I think I going off the track, yeah?

DD: No, it definitely attests to the sacredness of this area. Thank you for sharing that. Now with renovations planned for the Ranch headquarters and at Palikū/Ka'a'awa, are there any cultural sites, or archaeological sites, or historical buildings, places of *iwi* or other places that should be avoided?

CB: Well, structures that we can see, the only thing I can think of is the sugar mill that is there. But all of the other sites, I mean, I've named several: Pohukaina, Pu'u Wākea. I don't know if Kānewailani is one. Do you know what is Kānewailani?

DD: *'A'ale*.

CB: Kānewailani is Kahuneonānāhoa, just like Moloka'i, get one big, over there, they get one, it's called Kānewailani.

DD: Oh ok, it's the same as Nānāhoa?

CB: Yeah, but I was told, according to Gramma-them, they said that one is more nice than the one on Moloka'i.

DD: According to the map, das going be in the area?

CB: No. It is more towards the Hakipu'u side.

DD: Ok, ok.

CB: But actually, even from here, you don't know, although the main burial chambers are in Pohukaina, in the cave, but we have uncovered about a hundred plus burials over there. And I was one of the coordinators for the reinternment of the *iwi*. We have a place in Kualoa Park. We put cement. Anyway, whenever we find, on the road and stuff like that, when they have construction, they call, and then we go. We put the *iwi* in.

Eh, howzit Harold [saying hi to someone walking by our table].

But so here and there, you find *iwi* that are uncovered.

DD: So do you think that the proposed renovations would affect these places, or even access to these places, these places of cultural significance?

CB: Well, yeah, there's something about access for gathering, and I'm wondering if that will be allowed, I mean, to have the right to go and gather. For our family, we have stopped for quite a number of years to go get things for *lapa'au* and things like that. But only up until a few years ago, and my son was one of them, my nephew, my son, my uncle-them, they used to continue to go pig hunting. They go through our *kuleana*, and they go up, but it is no longer now. And of the 19th of this month, the sheriff come. I get cousins still living over there, and nieces and nephews, and as of the 19th of this month, my wife's birthday, the sheriff is gonna go out there, and move everybody out. Fortunately for me, I going be in Japan because I leave on Wednesday, you know?

DD: Right.

CB: But I don't know if they gonna be allowed because if something happens with these gatherers, who's liable for them? Can they sue the ranch? You know? So I don't know. And even for me, those kind of things are important, but for me, if I was a landowner, and people have the right to go and gather, they have gathering rights, but what rights do I have as a landowner?

DD: Yeah.

CB: You say, "Oh no, you can go gather any place you like, but not over here." You know? So I don't know whether that would be continued. And I tell you, personally, knowing John [Morgan], he's one person who is always conscientious and considerate of cultural aspects. He is a cultural practitioner himself. He's a member of the *lua* with Mitchell Eli. So he's not just any kine *haole*, he's a different one. That doesn't erase the reality of what we go through as family.

Now, to me, when we talk about our traditions as Hawaiians, yeah, gathering and all of that, that's good. But the gathering of things, leaves or *lapa'au* and stuff, to me personally, is small bubblegum compared to the greatest tradition, as living as a Hawaiian on our ancestral lands. And then coming through some kind of legal technicalities, whatever, that that cannot happen.

DD: Yeah, I see.

CB: And that's beyond your scope of *kuleana*, you know, those kind of things. That's something that we gotta do. But for us, we can show our connection to Kualoa, and there are documents from Kamehameha III and Keoni Ana, but now those lands of Kualoa, what connection does Kualoa have besides quitclaims and confiscating? But that's something that we just gotta deal with.

DD: Yeah, thank you for sharing that, Kumu.

As a recap, it's a good point about gathering rights and if any construction would stop gathering rights, but also the point about what responsibilities do you have as a landowner if people are coming through. But then again, there's an even more important point, thank you for sharing it, that gathering rights are small, it's nothing big when you look at the more important matter of being able to live on your ancestral land. And some of this land we're looking at in Kualoa is directly connected to your family.

Did I get that correct?

CB: Yeah. And their premise is actually that my great-great-grandmother Elena, her grandfather was Naholowa'a that it was given, but anyway, Tūtū Elena, as a child, she was adopted by her uncle. She was adopted by her uncle, and by being adopted, so she's no longer an heir to that property.

So I mentioned to them that my Bridges ancestor, Ka'ainahuna, she was adopted by her uncle Kapule. In fact, she didn't go by the name Kaleimakali'i. She used her adopted name Kapule. But after her death, her father's land, Kaleimakali'i land in Waikīkī, my great-grandfather them were still heirs to their land. And there's a place called Kamakahonu in Waikīkī, and his property, Kamakahonu, Pahupahupua'a, Kawehiwehi, Waikīkī, the lands, although she was legally adopted, her name was changed, but they were still heirs to the land. So how come it's not the same?

DD: Right.

CB: I don't understand, and I'm not a lawyer, but anyway.

DD: Right, *mahalo*. Mahalo, Kumu for sharing that. In talking about adverse effects, are there any adverse effects you can think of regarding this construction, and what could be done to lessen these adverse effects?

CB: I don't know. If most of the renovations are on the footprint of the ranch, most likely, there won't be too much of an intrusion, or have adverse effects if it's on that footprint because it's been there and in operation for so long. I mean, I've been there many, many times as a guest of John, and also practicing [my gathering rights] when I help with *pā'ū* riders and when I help for parades. I don't think many people would know that particular site because it's just the family who's been on there. But our family, and the Wilders, the Swanzys, the Judds, they were very, very close. They were very close. In fact, that's how on a lot of our lands, for the record, they came into our property, because Tūtū Elena had a sister, there were two sisters, Elena and Kekala, and Kekala wanted to borrow money. She neva have money, so she went to her friends, the Wilders, and that's the *kupuna* [of John]. She went to them to go borrow money, which was quite a few times. But no can pay back? Ah, neva mind, that's yours now [the land], I no need because I get land over here in Hau'ula. Well, so the family always make the point that they [Kualoa Ranch] only get Kekala's interest, but not Elena. Needless to say that their name is in there. But they were very close. I mean, I get one *mele* [showing me a copy of a *mele*]

DD: Wow.

CB: My *tūtū* man, he was a chanter for Kalākaua, Kuluwaimaka [was his name], and he composed a *mele* for Haleaka Wilder. And she as living over there at Kualoa. And that's the kind of connection we get. That's the closeness they get. And I know it will sadden them to think that now, I not as bad as some of my other cousins, because it also mentions if I'm aware of anybody else in the family, get plenty guys. Plenty. Lot of the families are all gone. They left, moved away, they have passed into the hallowed halls of time. But many others, they have worse feelings than me because it was something that went *'*away from them. I read on Facebook about my nieces, they write some terrible things. And I don't know if you like interview any of them because it is gonna be not a very diplomatic conversation because I've heard some of their comments.

DD: In going with that, are there any other people you would recommend that we talk to for this project?

CB: Well, of course, the Ho's [family], and I don't know if my Aunty Claire, she's not too well, Johnson. She's a Parker, but they live on Johnson Road. And even Aunty Rachel, I love Aunty Rachel Johnson, bettah not, we related to her through her mother, Tūtū Grace Kapaekukui, and Clarence Kinney, whose daughter Aunty Rachel married a Johnson, thus you have Johnson Road. And then their son married another aunty who was a Parker, same Parker from Parker Ranch, Aunty Claire, but she's been sick for quite a few years. She's lived there. But of course, she went there for the purpose of commercially making a flower farm, very successful.

And I don't know if you even spoke with Keoki Fukumitsu because he was down there on Johnson Road. And it's interesting because my cousin took a video of his grandmother when she was still alive. And the grandmother said, "I got this land from my uncle. My uncle allow us to stay over here as long as we live." And they said, "Who's your uncle?" She said, "Sam Kahele." And Keoki's over there, "No, no, no, no, no, don't listen to her. She don't know what she talking about. Don't listen to her." But he's one of the real renegades. He's been fighting against John for years. And even his *lo'i*, when I say, "Oh where you get your water from?" He say, "I get 'em from up there, Naholowa'a." I said, "Oh yeah?" He said, "You don't know Naholowa'a?" I said, "You looking at one Naholowa'a."

And even at one time, he came to me, and he telling me that the place all belong to Kalama, a lot of this belong to Kalama. "You know who's Kalama? You know who's Kalama?" And he was in my face like this. I just put my hand like that [putting his hand up]. I said, "Don't talk to me about Kalama. Don't say one word about Kalama." He said, "You know who's Kalama? You know who's Kalama?" I said, "Do you know who's Kalama?" He said, "I can tell you who's Kalama." I said, "Who's Kalama's parents? Who's her family?" [He said] "I don't know." I said, "Her mother is 'Ī'ahu'ulaikepo'oka'ulaokalani. Her father is Kapihenaihekukui. That's her parents. Go look it up. I'm telling you. Don't talk to me about Kalama." Just at that time, my son, who was about three years old, went walking by. I said, "E, Boy, *'o wai kou inoa*? [What is your name?]" My son, he look at me, he look at him. And he says, "Naihekukui." I said, "There you are brah. Don't you talk to me about Kalama."

Hui, I though you guys went go vacation? [talking story little bit with, and introducing me to the owners of Papa Ole's, as they are opening up their doors and doing work nearby us]

But, because Kalama's father Naihekukui, his brother Palakē had a son named Naihekukui II, [who was] named after the Uncle Naihekukui, and had a daughter named Kalama, named after the queen. Kalama had a daughter named Annie 'Ī'ahu'ulaikepo'oka'ulaokalani. That's my great-great-

grandmother that I knew. She died when I was in college. And had my great grandmother Lele, that was one chart I could not find. I was gonna come and show you because it has all of that.

So aside from being from Kualoa, being from that line, but the Kalama, that's our family line. But I was told by one of my cousins that Keoki is no longer on Johnson Road. He's out, but he's around the area making waves.

But I understand, but see, I'm not a researcher. I only know what I know from talking to *tūtū*. And fortunate for me, they explained a lot of things, why it's like that. They explained. Sacred? Why? They tell me.

DD: Right, right.

CB: We go over here? Why?

Kalae'ō'io? No. They [people] say because get the *'ō'io* fish? No.

Oi'o; not *'ō'io*.

Oh, how come "*oi'o*?"

Because, "*oi'o*" is the path, or the procession. That's where the spirits of the chiefs, they march over there. From Oi'o you go to Ka'ahu'ula Punawai, and then right into Pohukaina.

So they [the *kūpuna*] explained that kind.

DD: Right, right.

CB: And I'm fortunate that as *nīele* as I was, at least they shared that kind of things.

DD: Mm-hmm.

CB: You know?

DD: [nodding head] Well that comes to the end of our *kūkā*, Kumu, thank you so much for spending the time and sharing this. We really appreciate it; we know you're busy, especially with your schedule this weekend.

CB: No, no, no.

DD: But *mahalo nui loa.*

CB: Sorry for all the, you know over here, you related to everybody, or that's your classmate, or your whatever.

DD: Oh no, *maika'i wale*, *maika'i wale.* [laughs] *Maika'i.*

Yeah, so that concludes. And ok, have a good day. And *aloha*.

CB: *Aloha*, *aloha*.

APPENDIX E: INTERVIEW WITH KEALOHA DOMINGO AND WINONA KANIHO

TALKING STORY WITH

WINONA KANIHO (WK) AND KEALOHA DOMINGO (KD)

Oral History for the Kualoa Ranch renovation project by Dietrix Duhaylonsod (DD)
For Keala Pono 4/26/2015

DD: *Aloha*, today is Sunday, April 26, 2015. We're sitting at Kualoa Ranch, and we're gonna be talking about these renovation and construction projects they want to do at Kualoa Ranch. One is at Hakipuʻu; another part is at the ranch headquarters; another is at Palikū; another is at Kaʻaʻawa. We're talking story with Aunty Winona Kaniho and also with brotha Kealoha Domingo from Kaʻaʻawa. So before we go any further, we'd just like to say, "*Mahaaaalo*. Thank you for taking time out of your Sunday for coming and talking story this day. *Aloha*."

So Aunty, if you could start, if you don't mind stating your name and your background of where/when you were born; where you went to school?

WK: Ok, my name is Winona Kamalu Kaniho, and I was raised in Nuʻuanu, and I also lived in ʻĀina Haina. So I actually went to school at Roosevelt High School.

DD: Ok, thank you, Aunty, so that's the Red Raiders, no, Rough Riders.

WK: [nodding her head smiling]

DD: [chuckles] Ok thank you Aunty, and you brotha, could you introduce yourself, too?

KD: My name is Robert Kealoha Domingo from Kaʻaʻawa. I've lived in Kaʻaʻawa just about all of my life, 44 years old. My *ʻohana* has been in Kaʻaʻawa for, I want to say, to my current knowledge, at least six generations or more, seven possibly, according to the documentation that I have anyway, but I've been in Kaʻaʻawa a long time.

DD: Ok, *mahalo*. And is there anything else you could share about your family background and maybe your family connection to Kaʻa'awa?

WK: [motioning to Kealoha to go ahead and reply first]

KD: Well, like how I was saying, my *ʻohana* has been here for a long time at the property that I live on currently, still is the property that many of my *kūpuna* are laid to rest. We have some headstones marking back to the early 1900s and some unmarked burials as well.

I guess my great-grandmother and my great-great-grandmother were the ones who would have been known in Kaʻaʻawa. My great-grandmother was Hattie Padeken Domingo, and she was known as a spiritual healer practitioner, and I guess, you know, a respected *kupuna* in Kaʻaʻawa.

DD: *Mahaaalo*. And Aunty, anything you could share about your *ʻohana*?

WK: Actually, we came here in 1960, and we bought a home here, it was a family estate. When I came here, it was because my husband was a police officer in this area. And it just happened, that time, the river at Waiāhole broke, and so they couldn't get home. So in order for him to come home when we lived in Kāneʻohe, they had to go all the way around the island, come down the Old Pali Road, and then he can come to Kāneʻohe. And so my uncle who worked in real estate found this property, and he told me, "Nona, I think you should look at this house and buy this for you folks."

So I bought the house as a vacation home so my husband could have a place to stay in case anything happen. But we came here once in the summer in 1960, and we never went back to our Kāneʻohe house. So I've been here almost like close to 45 years.

DD: Long time, *mahalo*. *Mahalo* for sharing that.

So since we're talking about Kaʻaʻawa, and Kualoa and Hakipuʻu, but specifically Kaʻaʻawa, could you share some ways that you have learned about this place, how you've gotten some knowledge about this place?

WK: Well for me, I was fortunate enough to have the privilege of knowing Mr. Morgan. We called him Fanny[?]. And he used to come to my place, and we used to talk story. John was a young boy at that time, and so he would come in and work the ranch. And Uncle Abraham was in charge at that time. So that's how far I go back with the ranch.

I know the father really loved this place. I documented him for the Queen Liliʻuokalani Children Center, and so I plan to get that to John someday. And John was there when I interviewed the dad. And so I am very comfortable with John handling the ranch, number one. He has a good *manaʻo* about him. And I know he is in a very difficult position, not only being the heir, but he also has to contend with family. He also has to contend with the ranch as well as with the people that sometimes are opposed against things. But I will always listen to John and find out because I said, "He's got a good head on his shoulders." And I know he loves the land. And so I'm very comfortable with him asking and giving out my *manaʻo*. I'm very, very comfortable.

DD: You mentioned Uncle Abraham. Was that Uncle Abraham Morgan?

WK: Abraham Akau.

DD: Akau. Ok.

WK: Yeah. He was originally hired by John's father from Kamuela.

DD: Oh ok.

WK: Yeah, he was one of the outstanding *paniolos*.

DD: Ok, I heard of his name. Ok.

And then, Kealoha, could you share how you got some of the *ʻike* from this area?

KD: I suppose oral histories and stories that I've heard of Kaʻaʻawa in general, and Kualoa in particular being a very sacred place on Oʻahu. I know it's also documented in a lot of history books, but just hearing of the sacredness of Kānehoalani and Palikū, and Kualoa being revered so much that the canoes would lower their sails as they came past, *kūnou*.

I've also heard through oral history that my *ʻohana* at one point in time lived in Kaʻaʻawa Valley. You know when you don't have any written documentation of that, but I do firmly believe that, especially when I'm there in the valley.

DD: Yes, I see the connections over here, *mahalo* for sharing.

So as far as you remember and your experiences, how has the place changed? Could you share how it was before and how it's different now?

WK: Well actually this was a ranch, and that's all they did was ranch with the cows. The change has come, and I'm very, very pleased with the change. This particular area would never be able to survive unless John did what he did. He had to do this in order to survive. But he's also kept it very agricultural, and he's always kept the people's concerns. So it's really changed a lot, but I think it's changed for the best.

DD: Good change?

WK: Mmhmm.

DD: Good to hear that.

And any changes you'd like to point out? [looking at Kealoha]

KD: For me, definitely, I mean, we're sitting in the restaurant seeing all the people around us, you know? It's been a significant change in the building of this ranch. Like Aunty Nona said, I understand that it was a decision that they made to sustain the ranch. And I definitely appreciate that and understand that.

I do, from the other standpoint, want to be sure that the cultural value of this whole area is honored from even before the times of ranching. You know, again, with all of the significant known history, I think it's beneficial for not only us as cultural descendants, but for people who come to visit, to know about the sanctity of this place. And again, it's not that I don't appreciate the ranch, but I have an even deeper appreciation for our *kūpuna*. I'm talking about our *kūpuna* from a hundred, two hundred years ago.

DD: Yes, you're saying that as much as the ranch is good, and it's a big part of the history here, there are also other parts of the history that predate it, and that's just as important if not more important, the sanctity of it all, and to keep that within the development as we move forward. Is that what you're saying?

KD: Yeah, acknowledge that.

DD: *Mahalo*. Yeah, ok. What about any personal stories, *mele*, *oli*, or just place names that you'd like to share about this place?

WK: I can go on forever. [jokingly]

DD: [laughs] Aunty said she could go on forever. [everyone laughs] Would you like to pick one or two that stand out in your mind?

WK: Actually, I love Palikū. Palikū has been a very, very beautiful place. And we use that area for when we have a tsunami. And John opens up the area so the people from Kaʻaʻawa can come in here and have an area to be safe. And also we're pleased with it because I know we have access out of this area if need be. This ranch has a road that we can get into to Hakipuʻu.

I'm very, very comfortable with that particular area. To me, it means a lot. There are a lot of areas in here that are very special, and like I can go on forever, but I won't.

DD: Just to point out, Aunty is pointing out Palikū for the tsunami, and it is higher ground. Yeah.

Ok, and Kealoha, any personal stories, place names, or *mo'olelo*, *mele* that you'd like to point out connected to this place?

KD: I suppose most of my stories are memories of my childhood running around in the ranch, I guess. I spent a lot of time up here, up near where Aunty lives up the road, just playing in the river and what not, running around and stuff like that, and just hunting, pig hunting.

Honestly I wasn't very in tune or interested in cultural things back in those days, but as the years have gone on, I realize the importance. And I've been teaching my kids to at least know the names of this *wahi pana*.

WK: There's one thing that I'd like to say, that I'd really like to thank John for, is that he's restoring my area with all the cattle again. It reminds me, and I really miss those days when his dad used to come riding his horse in the area.

But what I really miss is Uncle Abraham rounding up the cattle in the back with his Hawaiian rope, calling out, and the saddle. Those are the things that I miss. Those are the things that I don't think anybody has that knowledge to do that again. And so I'm very thankful that I really got to know a lot of the ranch men that worked here. And now, I think at that time, we only had maybe at the most, I would say, off the top of my head, maybe twelve people that were hired, you know, *paniolos*, and everything. But today, I notice that he has a huge amount of people that he hired from within the area. So he has become a very good employer.

DD: Mmhmm. That's a nice scenery that you're painting with the moving the cattle, that bygone era. I can imagine seeing that over here, and it had to have looked very much different. Yeah, ok, *mahalo* for sharing that Aunty.

WK: Actually, my son worked for the ranch for 15 years. He actually started working when he was 15, and he was with 'em, I think, almost 20 years.

DD: So he not working here now?

WK: No.

DD: No, ok.

So are there any traditional sites, cultural sites, archaeological sites, historic buildings, any of those things, even places of *iwi* in the project area?

WK: You mean, on the site?

DD: Like these four sites, Hakipu'u, Kualoa, Palikū, Ka'a'awa, as far as cultural sites, archaeological sites, burials, or historic buildings, is there anything we should be mindful of in those project areas?

KD: For me, I would wanna give a blanket statement that this whole area over here is highly sensitive, culturally significant, again referring to the history and the sacredness of the area, definitely I would say, highly sought after as a place to be laid to rest for *kūpuna*. But in particular, I know over here in the valley, I'm not sure where it is on this map, but up above where Aunty folks live, many times I've seen different *pōhaku* stones observed, one that I wasn't for sure if it was some type of *ahu* or *heiau* in the past.

Up here at Palikū, my one concern was just getting little bit too close to the Pōhaku a Kāne area of the mountain, outside of the existing footprint. You know, within the existing footprint, I would say it's relatively safe at this point.

DD: Ok, so what Kealoha is saying is that there are certain areas to take note of, especially up *mauka*.

KD: *Wao akua*.

DD: Yeah, the *wao akua*, the upper altitude, and also, further back, away from the ocean, yeah? That there may be some things to be mindful of, but in addition, he's saying that this whole area, he's pointing at the map, and the whole area from Hakipu'u to Ka'a'awa, which includes Kualoa in the middle, that whole place is sensitive and special to be mindful of, yeah?

KD: Yeah. [nodding]

DD: Ok. Aunty, any other things you want to add to that?

WK: No, I agree with him. This is a very spiritual area and a very sacred area. History has shown that Kamehameha trained his warriors here, and that should be something we should always remember.

DD: Right. Ok, *mahalo* for sharing that, and as far as this project and the four places of development, do you think it would affect any places of cultural significance, or do you think it would affect any access to any place of cultural significance?

KD: I think, like we've discussed earlier, further detail [we could get] with a site visit would help us to elaborate on that.

DD: Kealoha is saying, and also Aunty was saying earlier, as far as noting a place of cultural significance, or access, they would like to see a more detailed map of where everything's gonna be placed. Is that correct? [both nodding] And also a site visit to get a better idea so that they could really comment on and share their *mana'o* on it. Is that correct?

WK: Yeah.

DD: Anything else, Aunty, I need to add to that?

WK: No.

DD: Ok. Ok, what about traditional gathering practices, is there anything that you could share about traditional gathering practices within these areas of proposed construction?

KD: For myself, I wouldn't be able to make an accurate statement right now because I actually haven't been into those areas for quite a while, those particular areas anyway.

WK: You know, it's unfortunate that a lot of the old timers that you folks would need to talk to are no longer here. It's like Kealoha's grandmother, she was very well-respected, and she would have more *mana'o* to share. Uncle Abraham is not here. If anyone could share a lot, he would be the one.

KD: Hard to say right now. Maybe we gotta go look, too.

DD: Right. With the site visit, you could get a better idea if there are any places of traditional gathering at the specific project sites, but also, like Aunty was saying, a lot of the elders who knew, from the older generation, they have all passed on.

WK: As for me, can I interject at this point?

DD: Mmhmm.

WK: I know my area where I live in is known as the Night Marchers' trail. And that's the reason why I never close my doors from the back to the front because I know that's the area that they walk, and I experienced some things there, so I know, and I honor that. So that ranch is in the back of me, they have land, and so I know that area is always open.

DD: Right. And this is in Ka'a'awa. Uh Aunty, your place, from the Kualoa property, is it more *makai*, more towards Kahuku, more towards Kualoa here, can you kind of like share where your place is?

WK: Right in the middle of Ka'a'awa.

DD: Oh right in the middle? [all laughing] Oh, right in the *piko*.

WK: I'm right in the middle of Ka'a'awa.

DD: Ok, thank you for sharing that, and the *huaka'i* of the Nightmarchers.

Well, you bring up a good point about some elders who have passed and who had knowledge to share, but by the same token, by you sharing, it's really appreciated, taking the time to share here too.

So are there any other cultural concerns the community might have that you can think of that we should be mindful of?

WK: On Kualoa Ranch?

DD: Yeah, this project area, any other cultural concerns we didn't talk about that maybe we should be mindful of?

WK: The only one I can think of is that, we work with the park, Kualoa Park, and we know we have an area there for the *iwi*. So that's about the only thing.

KD: Repository yeah.

WK: Yeah.

KD: And that's out of this part, towards the beach park.

DD: Ok, so the concern has to do with *iwi*.

KD: *Iwi* along the coast, reburial.

WK: Oh and what I was thinking of, you know the fishermen, some of them are buried in the back in the mountains, many, many years ago. And that would be my concern to make sure that they are not disturbed.

DD: So that would be previous burials of fishermen within this area and not disturbing them.

Ok, and lastly, are there any other *kūpuna* or descendants or *kama'āina* that you think that we should talk to?

WK: The only one I could think of is a lady that lives in the back with her husband. Actually she is, I think, one of the great-great-granddaughters of the person that owns the land, and her name is Simpson. And she is surrounded by the ranch. And they have a lot of history. And she lives in that area.

DD: You know her first name?

WK: Haunani.

DD: Haunani Simpson, ok.

Is there anything else I missed?

WK: The old timers are all gone. You know what might be interesting, I don't know if you're aware of, but there is the Coral House here that was given to them by Kamehameha. And they have a lot of history in the area, but they're on the ocean side, not connected to the ranch.

DD: Coral House?

WK: Because the ranch actually gave them the land because Kamehameha asked them to, from my understanding.

DD: Oh ok, further down?

KD: No, no, it's right across [everybody looking at and pointing on the map]

DD: Ok, Coral House. And what family is that?

WK: She is one of the great-great-granddaughters of the area. I would have to, let me see.

DD: Aunty is looking through her address book.

WK: Well, her first name is Hi'ilani.

DD: Hi'ilani, ok.

WK: And I can get you her phone number, because that is actually a historical area.

DD: Ok. That's in the Ka'a'awa area?

WK: No, it's Kualoa.

DD: Oh ok, Kualoa right here.

WK: Yeah.

DD: Ok, so we're gonna keep in contact, we're gonna look for a more close-up map, and also, we'll try to schedule a site visit.

So that concludes our talk story today, and again, thank you very much, *mahalo nui loa*, Aunty Nona and brotha Kealoha, for coming by, talking story, and taking time out of your Sunday. So have a good day, and *aloha*.

APPENDIX F: INTERVIEW WITH FRANK KAWAIKAPUOKALANI HEWETT

Note: Frank Kawaikapuokalani Hewett completed an email interview while traveling and was later interviewed in person. The email interview is presented first, and the transcript of the in-person interview follows.

1) To start please tell us about yourself…Name? Where/When you were born? Where you grew up? Where you went to school?

My name is Kawaikapuokalani Hewett. I am from Kāneʻohe, where I have lived all of my life. I am now 61 years of age. I was born in Honolulu, Territory of Hawaii, in 1954. I first went to St. Ann's School in Kaneohe, from there to Heʻeia Elementary School, King Intermediate School, Castle High School, Windward Community College, and graduated with a B.A. from University of Hawaii Hilo campus…

2) Could you tell us about your *ʻohana*/family background?

Our family Komomua Akona are the founding families of Kāneʻohe. We have been there perhaps for 9 or 10 generations, still holding title to *kuleana* lands. Part of our family migrated from Kohala, Hawaiʻi to help build the first Catholic Church in ʻĀhuimanu and then later St. Ann's Church in Kāneʻohe. The families that descend from Wahinealiʻi Komomua and Akona include Jones, Adams, Rowan, Scott, McCabe, and others. Wahinealiʻi Komomua and Akona have almost 3,000 descendants, of which the majority still live in the windward area.

3) What is your association to the subject property (family land, work place, etc.)?

As a child our families would all move down to Kaʻaʻawa Beach area and camp for the entire summer. Across the street from the beach park is the homes of all the Kaʻaʻawa families tied into Komomua and Akona. We did this every year from around age 5 until I graduated from high school. It was at these times I learned of the legends and lore of this place known to us as Kuāloa.

4) What are the ways you have acquired special knowledge of this area (from your *ʻohana*, personal research, specific sources)?

My grandmother Eva Rowan Wahinealiʻi Kanaʻe was the primary source of the knowledge I have of this area. She was the one that pointed out to me several *wahi pana*, or legendary places, in this area, such as Waiū-o-lewa and Ka-ule-o-nanahoa, Mokoliʻi and the story attached to Hiʻiaka i ka poli o Pele, Ka Lae o ka ʻOio and other places.

Also our family is connected to Laʻamaikahiki, who was brought from Tahiti to establish rule in Hawaiʻi. He had three sons: Ahukina-a-laʻa, Kukona-a-laʻa, and Lauli-a-Laʻa. Many family members carry the name Ahukini-a-Laʻa, including my own son.

Laʻamaikahiki is the chief that brought institutionalized worship to Hawaiʻi, set up the *heiau*, the priestly system, the *pahu* drum.

Bear in mind these are just memories of stories I have heard from my *kupuna*, grandparents.

Also, our family had land in that area under the names of Kekakeiki, Kahui, or Kahue. I think it was a large piece of land. These people were the great-grandchildren of King Kekaulike of Maui. So they were given large parcels. I know my great-great-great-grandmother, their sister who lived in Waialua, Oʻahu, was given 100 acres and some *loʻi kalo*. All members of their family had large

parcels of *ʻāina*. I think our *ʻohana* lands were located on the Hakipuʻu side of the Kuāloa Ranch area.

5) As far as you remember and your experiences, how has the area changed? Could you share how it was when you were young and how it's different now?

The area has changed greatly. Kuāloa Ranch did not look the way it looks now. Back 55 years ago…there have been many changes.

As a child all I remember about that place was the old sugar mill, where there was some tragic accident, and I think someone died. So we were very afraid of passing that area. And on every trip our grandmother would tell us the story.

Much of the area was ranch land for cattle and horses. A lot of it on the Kaʻaʻawa side was covered in brush.

5) Could you share your *manaʻo* relevant to the area of the Kualoa Ranch renovation project and the surrounding region (personal anecdotes, *moʻolelo*, *mele*, *oli*, place names, etc.)?

Not at this time. My notebooks are home in Hawaiʻi and I am here traveling in Japan for 6 weeks.

7) Do you know of any traditional sites or historically significant buildings which are or were located on the Project site--for example: cultural sites, archaeological sites, historic structures and/or burials? Please elaborate.

I think I kind of answered this question in an earlier question. Again, being there at the site will bring back more memories, stories, etc., etc., etc.

8) Do you think the proposed development would affect any place of cultural significance or access to a place of cultural significance? Please elaborate.

I have yet to study this and get back to you. A site visit would be most appropriate.

9) Are you aware of any traditional gathering practices at the Project area and/or within the surrounding areas both past and ongoing?

Gathering is common practice amongst Native Hawaiian people, it is a part of our culture, as we are not only gatherers but also stewards of the land. It is our responsibility to also respect and care for the areas that we gather from to maintain them for future use.

10) While development of the area continues, what could be done to lessen the adverse effects on any current cultural practices in the area?

No development, protection of the forest and sacred as historical places that have deep relationships and significance to the host culture.

11) Are you aware of any other cultural concerns the community might have related to Hawaiian cultural practices within or in the vicinity of the Project site and its surrounding areas?

No, not at this time.

12) Do you know of any other *kūpuna*, *kama'āina* or cultural/lineal descendants who might be willing to share their *mana'o* of the Project area and of the surrounding Kualoa?

No, not at this time, but this is something that I will think about and get back to you.

TALKING STORY WITH

FRANK HEWETT (FH)

Oral History for the Kualoa Ranch renovation project by Dietrix Duhaylonsod (DD)
For Keala Pono 8/10/2015

FH: I think the first step for me is being able to go to all the different sites and gaining some kind of a spiritual insight of those areas, and then from there, learn, even if it's just talk story, what the plans are as far as the developments are in those particular areas.

You know, it's a business, and the business gotta survive. That's one end, yeah? The other end is that all land is sacred. All land has life. And how do we balance the respect and the caretaker-ship with the business side? And of course, it can happen. It's not a problem at all. We can move forward together.

But being and having been a member on the Hawai'i Tourism Authority, it's really quite obvious that this is a tourist destination, absolutely nothing wrong with that. But that has to balance with [being a] community destination. For me, you know, you're in that community, you're part of that community [Kualoa Ranch is a part of the bigger community]. And community is about making contributions. So what aspect of all of this is going to be community? And that would be another of my concerns.

So the respect, the caretaker-ship of the land, that is always paramount. But these are just other things that I would be concerned about. But I'm nobody's boss. I'm here just to give advice. I'm nobody's boss, and I don't own anything but my blood. And I know who I am, so, you know, 'nuff said right? I neva come over here for boss you around or anybody. But if you want my wisdom and expertise, yeah, I'll be more than willing to help.

DD: Ok, so *mahalo*. That is Kumu Frank Hewett. Today is August 10. We're sitting at The Gazebo at Macy's in Windward Mall. First and foremost, *mahalo nui loa* to Kumu for talking story with us, spending time out of his day. We're lucky to meet up with him being that he's back and forth off of the island. Yeah, so thank you for talking story with us about this project, the Kualoa renovations.

Already, Kumu sent us something in writing about his background. So we'd like to ask him about how Kualoa has changed and if there are any places of particular cultural significance on the blueprint that the developer has. We'll also be asking about gathering practices and access. But we want to first state that Kumu has said that he would like to have a site visit one of these days, so hopefully we could set that up so he could see the spots where these renovations will take place in Ka'a'awa, Palikū, and at the Ranch Headquarters.

So *mahalo*, Kumu, *aloha.*

FH: You're very, very welcome. Thank you.

DD: You know, unless you'd like to share more about your background that you've shared with us in writing --- your name, where/when you were born, your family background, your association to this project's property --- maybe we could talk about how this place has changed, how it used to be, and how it is today. Is there anything you'd like to share regarding that?

FH: Well, it's obvious that they've developed a lot over the years from when I was a kid, yeah? 'Cause imagine driving from Kāne'ohe to Ka'a'awa, where our family lives, you got a pasture there

yeah? And all we saw was that one white house, I think the Akau family used to live in, and cows, basically from Hakipu‘u, driving through to, you know, there was a time when we couldn't even see what was in Kualoa.

Kualoa, until it became a public park, basically, we never saw what was in Kualoa. And so all we could see driving through was, of course, all the cows, left hand side, and then we'd come to the house that the Akau family lived in, and then to the old sugar mill, yeah? And I think in Mr. Morgan's family there was an accident, somebody died at the sugar mill. And then, of course, the sugar mill closed down.

But as far as the cultural sites, just that whole area of Kualoa was deemed sacred because of La‘amaikahiki. And of course, La‘amaikahiki contributed a lot to the Hawaiian culture. And then, the different sites, my grandmother would point out to us. And then of course, as you leave Kualoa, and you come into Ka‘a‘awa, that's Kalaeoka‘ō‘io which is a *leina*. And you know, when we were camping every summer, major accidents there, because that is a *leina*, and people drive through there on a regular basis. So you know, with Hawaiians, yeah, they always *pule*, they always say prayers. And my grandma was always saying her prayers as we drove through that area. So what is a *leina*? It's that spirit doorway that spirits, after death, transcend into the *ao ʻaumakua*. And that's Kalaeoka‘ō‘io.

So yeah, I heard so many stories coming through that area there. So hopefully, that wisdom, yeah, I will lend to this project if people want to know about the different things that I remember as a child. And you know, I do remember this, yeah, that driving through one day, there were some rocks, that were standing up, and I forget the story. But my grandmother told me that they were people, either people or warriors that were turned into stone. Because if you look at them, yeah, but I have to say today, I am not sure where they were. And I'm not sure if they were even knocked down. But they were like, you know, it's those stalactites that hang from the top, but these were lava formations from the ground up, that looked like people standing in a row, look like columns. And I haven't, like I said, seen them for a long time. But you know when you're driving down, and there's that last house on the left side, where they carving tikis now? You know?

DD: Right.

FH: Ok, just past that on the left hand side. I don't know if they're covered by trees, or what happened. But as a kid, I remembered seeing them. And then right above them is Waiūolewa, the two mounds, yeah, that looks like the *waiū*, the breasts. I have to really think about all these stories that my grandma showed me, but yeah, for now, basically.

DD: Ok. *Mahalo* Kumu.

You know, you touched upon the sacredness of this entire place, not just the particular parcels slated for construction. So regarding the sacredness of the entire place, connected with La‘amaikahiki and other special places within the landscape, do you think these renovations would affect this place as a place of cultural significance?

FH: You know, I think I said this earlier. Our ancestors had to build, yeah? They had to build houses. They had to build *hālau*. They had to build canoes. And of course, in doing so, they had specific *kahuna* who advised them where to build, what to build, how to build, much like what we're doing today with advisory committees.

But again, it's all based on how we respect the land. And how we have this respect for the land is exactly going to be a reflection of the outcome that we will receive from the land, yeah? *ʻO kou*

mālama ʻana o kaʻāina, ʻo kō ka ʻāina mālama ʻana iā ʻoe. How you take care of the land is how the land will take care of you. *ʻO kou mālama ʻole i ka ʻāina*, how you disrespect the land, *ʻo kō ka ʻāina mālama ʻole iā ʻoe*, how the land is going to disrespect you. So, work with the *ʻāina*, work in respect to the *ʻāina*. Honor and take care of the *ʻāina*, and the outcome will always be good. That's what it's saying. So if you do things in a half-ass way, obviously at the end, that's all you gonna have is ass, you cannot move forward. And I talk the way I talk because I mean it. If you do good, good gonna happen. So if they have good in their hearts, with the outcome it's good.

Like I say, the land will take care of everyone. The land will take care of our *kupaʻāina*, our natives. And the land will take care of the *malihini*, the visitors. But, everybody has to come with *mālama*, honor, and respect, because this may be like 2015, but those old sacred things that were implanted into the *ʻāina* by our ancestors still remain. And so if you go on the land with disrespect, and you do all kinds of *pilau* things, yeah, and *kāpulu* the *ʻāina*, then maybe bad things are going to happen. I know people nowdays don't have that kind of thought in their minds, but there are powerful things out there.

So to give you as an example, yeah, as children, we were not allowed to go on any *heiau*. So we would go on hikes, and so, like say we went to ‘Aiea Heiau for a picnic, or we went to the *heiau* at Pūpūkea, my grandparents would not allow us, not at all. Those areas, they felt, should be blocked off, because the old things that are there, the old spirits that are there, the old ancient *mana* that is there, belongs to that time. What is our *kuleana* today? [It is] to honor and respect that. And to say, "I know the protocol," you weren't there, how do you know the protocol? You weren't there a hundred years ago. You weren't there two hundred years ago. You weren't there three hundred years ago. So what can we surmise other than that this is sacred? Honor and respect it. And by doing so, the outcome will be that you have success in what your endeavors are. But if you go in automatically thinking, "Ah we just going bulldoze all this, push this, and do all of that," then already you starting off with disrespect. So that you take the time and the effort to try and put things in the *pono*, in the order of how it needs to be done. At the end, you probably end up better.

DD: *Mahalo*, Kumu.

FH: You're welcome. [whispering, "I have to go"]

DD: Yes, Kumu has to go.

FH: Yeah, so you know, we can meet the next time I come back, I'll call you again, and then we can meet.

DD: [I] had couple more questions I wanted to ask, but can I just send them to you in an email, regarding any gathering practices, or any access, your thoughts, is that ok?

FH: Yes. Yes, yes. I would love that.

But I really, really want to set up a meeting to go there.

DD: Let's do that.

FH: And you know, in the meantime, you should look at all the stories of La‘amaikahiki, because when they came through Kualoa, and that's Kapalikapuokualoa, right, The Sacred Cliffs of Kualoa, because this place was so sacred, they dropped all the canoe sails.

And growing up in Hawai‘i, yeah, with my grandparents, we had so many things as kids that we had to learn. And one was concerning lightning, yeah, like in our home, when there was an impending storm, eh, the first lightning strike, everybody had to be in the house. But of course, everybody does that right? But during the time of the storm, there’s no talking. You cannot play, you cannot act stupid, and you cannot talk any kind of business. And I found later in life through my grandma because there was a *kapu* on that in the old days, and my grandmother continued to observe that, yeah, in respect to Kāne, yeah, Kānekahekili, that there are things, in order to give the respect, that will bring that honor and respect back to the family. So basically we all had to sit in the living room, and my grandmother just sat down and prayed the whole time. And you may think, a lot people is like, “That’s just f*cken lightning.” Oh no, no, no. To my grandparents, no, that was the god, Kānekahekili. And we had to learn all of these things.

You know, today we take so much for granted. But these little things meant so much to them, oh my God. So I remember, man, I got couple cracks for, you know, screaming and laughing and playing when it was thundering. And my grandmother said, “No, no, you don’t do that. That going bring bad luck on the family.” Today, who the f*ck cares? But when you look at everybody today, they all running around like a bunch of eggheads. They don’t know what the hell to do because they have no connection, nooooo touch to all of that. I mean, it’s sad. Oh it’s so sad when I think about all these things. Everybody is getting farther and farther and farther and farther away from their source and their connection. [grabbing his things as he is talking]

DD: Ok, well *mahalo* Kumu.

Kumu has to leave. So thank you for spending time, and I’ll see if we can get that site visit.

FH: Don’t type, “What the f*ck,” ah. [laughs]

DD: Ok. [laughs]

Have a good day. *Aloha*.

APPENDIX G: INTERVIEW WITH JOHN MORGAN

TALKING STORY WITH

JOHN MORGAN (JM)

Oral History for the Kualoa Ranch renovation project by Dietrix Duhaylonsod (DD)
For Keala Pono 4/24/2015

DD: *Aloha*, today is Friday, April 24, 2015. We are in the *ahupuaʻa* of Kualoa, talking story with John Morgan. We're gonna be talking about the Kualoa area, and this is in regards to the renovations at Kualoa Ranch. Before anything else, first, we'd like to say, "*Mahalo nui loa*, thank you very much," to John Morgan for taking time out of his busy schedule to meet with us and talk story. *Aloha*.

JM: *Aloha*.

DD: So if we could begin, if we could just get a little background on yourself, your name, where/when you were born, where you grew up, and where you went to school perhaps?

JM: Ok, my name is John Morgan, the last of Francis and Margo's children, born and raised here in Honolulu. My ancestors beyond that was Rosamond Swanzy Morgan, my grandmother; Julie Swanzy, my great-grandmother; Charles Hastings Judd, my great-great-grandfather; and Dr. Gerritt P. Judd, my great-great-great-grandfather.

On my mother's side, we come from Aotearoa, actually, coming down from the Hoturoa line of the Tainui iwi. So that's that.

When I was one year old, born November 21, 1956, my parents built a house down at Kualoa Park because it was part of the ranch at that time. And so I was basically raised in Nuʻuanu and at Kualoa. We lost the park land to the government in 1971. That was part of the *ahupuaʻa* of Kualoa.

I went to school at Punahou, graduated in the class of 1974. I went all the way through 13 years.

DD: Ok, *mahalo* for sharing all of that. You were mentioning your family, is there anything else you can share about your family connection to the project area?

JM: Yeah, my family's been the stewards of this property going back to Dr. Judd. The land was part of the *ʻāina* owned by King Kamehameha III and Hakaleleponikapakuhaili. I guess it was jointly because they're both on the deed. But anyway, Dr. Judd first bought it in 1850, and he, from what we know, grew melons and other things, and he built the first house in the 1860s.

Charles Judd [John Morgan's great-great-grandfather] actually bought the *ahupuaʻa*, with his brother-in-law Samuel Wilder, from Dr. Judd, and started a sugar mill in 1863. It went bankrupt in 1871. Dr. Judd took the land back because it went bankrupt, and they owed him money. But then when he died, I think Dr. Judd died in 1873, as I recall, he willed it back to Charles.

So it went from Charles to his kids. It was four kids, one of which was Julie Judd who married a Swanzy, Francis Swanzy. And then I think it was, who my father called Aunty Tom, who was Emily Pauahi Judd, and Charles Hastings Judd, Jr., and Helen Haunani Judd Farley, I think.

Then, because of the foresight, interest, and financial ability, Julie bought out all her siblings. So she became the sole owner of Kualoa Ranch including the *ahupuaʻa* of Kualoa, and also, Hakipuʻu and Kaʻaʻawa in 1927. And so, that's when the land got to her, and then it went down, she had two

daughters, one of which was my grandmother Rosamond, the other, my great-aunt Nora. And then Aunty Nora had no kids, and so all of the ownership and the stewardship responsibilities are still handled by the family. Of course, a lot of different people worked on the land, just like they do now. But there's a direct *kuleana* towards stewardship, went down through Charles, down to Julie, down to Rosamond, down to my father and his brother and sister, and now down to us today.

DD: Wow, what an awesome history. I'm wondering about that Swanzy, is that connected to Swanzyland?

JM: Yeah, Swanzy Beach Park, absolutely. [laughs]

DD: [laughs]

JM: Yeah, so there's a cute little story on that. You know, Mrs. Swanzy was a pillar in the community, if you wanna call it. And from the stories, she was kind of a prim and proper lady. And so she actually started the Daughters of Hawaiʻi. She was regent there for 20 years, I think. And she started a bunch of different things and was very philanthropic actually. She started an educational foundation. She would educate a bunch of the Hawaiian kids from this area, and just seemed like a, you know, very broad-minded person, civic-minded person. But she was also prim.

And one of my uncles, Albert Francis Judd III, I think it was, who's since passed away, told the story that when Mrs. Swanzy was at Kananelu, which is the very first house as you get into Kaʻaʻawa Valley, and that was the family house, and it was in the '40s, I think it was, the 1940s, and she was there, and a bunch of servicemen were there. They figured they were way out in the middle of the country, and so, they just took off all their clothes and went swimming. And she was kind of aghast at this, you know, show of indecency. So Albert Francis Judd told her, "Now Julie, these are the modern times. If you don't wanna see this kind of thing, why don't you donate land for a park down at the far end of the ranch so you don't have to see it in your backyard." [laughs] So that's the story we heard about why she gave Swanzy Beach Park to the state. And she also donated land for Kaʻaʻawa School. Real stories.

DD: Yeah [laughs]

And I believe Mrs. Kaniho was telling me about some land being donated for a school from your family.

JM: Mmhmm.

DD: Ok, so as far as this project area, could you tell a little bit about how you gained knowledge of this area?

JM: One source of knowledge is definitely from all the people. I've been working here since 1971. I started at the age of 14, and so, 58 now, so that's quite a few years, and all of the different people that've worked here, whether it's Abraham Akau, who's since passed away, or my father, or Ernest Koriyasu, who's still alive, or all of the other people that worked here. So that was one way. [Additionally there's] My mother, who is very much a student of Hawaiian history, and then other people in the area, and the things that I've read. And then my own personal experience walking around, I love to hike and walk all over the place and go climbing up in the mountains. So I have my own personal experience with the land.

DD: Great, thank you for sharing that. It's definitely a beautiful place to go walking around and hiking.

As far as you remember and your experiences, how has the area changed? Could you share how it was when you were young and how it's different now?

JM: Ahh, when I was young, I remember it being very bushy, much more, kind of covered with *haole koa*, than it is now. When we used to chase cows, we used to get off and have to tie our horse or lead our horse 'cause you couldn't ride through the *haole koa* as much. So we did that all over the place. Now it's very easy to get around. We bought a bulldozer in 1984, I think it was. We had one before that, but it wasn't a new one. And *haole koa* grows fast, so those are the kinds of things [I remember], but it was still a cattle ranch back then.

It wasn't during my memory, but we do know that the military took over this place, the whole *ahupua'a* of Kualoa, and did extensive grading. We still have the maps if you want to see 'em, they're in the tunnel. There's a whole kind of blueprint of the entire *ahupua'a*. There's stuff all over the place. But again, *haole koa* grows really fast, so that's what I recall when I was a real young person. But over the years, we cleared. We got rid of a lot of monkeypod trees. We got rid of a lot of *haole koa* and just made the pastures a lot more productive.

DD: Wow, I'm picturing that. And then a portion of this project area is near the sea, in Hakipu'u, and then there's another one in Ka'a'awa. Would you say that all of that was *haole koa*, that you remember?

JM: No, Hakipu'u, that was the place where we called 'the bogs'. That was tenant farmers down there. So we had tenant farmers over there, and during my whole upbringing, people were actively farming that.

Ka'a'awa, that area, was all part of pasture. It was a lot more bushy. We cleared that. I remember clearing it not too long ago, like ten, fifteen years ago.

DD: Ok, and then I heard you mention that the military did a lot of construction here. How did that happen that they got a hold of the land, and it got back to the family? Could you kind of explain that?

JM: Sure, sure. After December 7, 1941, there was a huge effort to make Hawai'i secure. And so, I'm not sure exactly how the Army, this was an Army airfield here, commandeered the place. But, you know, they did [the same to] a lot of places. So they came in, and basically, from what my father told me, in 1942, they designed and built the full airfield with all of the gun emplacements and everything else, and then was operational by 1943.

What he said was that by 1945, it basically fell into disuse because they understood that the threat of invasion was very low by that time, the war had gone on the Allied side's favor. So when my father came back from the war, it was basically all overgrown already.

DD: So they were kind of borrowing the land.

JM: Yeah, they took it over, basically borrowed the land, and they took it over because of that threat that they were worried about. But the plains only went to one mission, and that was the Battle of Midway.

DD: Ok, in relation to the land where we're gonna be doing the construction, where would you say these gun emplacements and airfield were?

JM: The main new visitor center facilities are on a bluff, and the airfield was right below. So right where the new offices are gonna go, and the new maintenance facility, that's kind of right on the airfield. The new visitor facility was right on the bluff right above that.

The *marae kauhale* group facility is above, adjacent to another military facility that now is kind of part of a garden, a pavilion. That pavilion actually was a communications center for the military, a big cement building.

DD: Ok, I picture that, and below the bluff, I can see that flat land going out there, perfect for an airfield.

JM: And we have pictures of all of this in the tunnel if you wanna go take a look.

DD: Oh ok, yes, *mahalo* for sharing.

Ok, are there any *mo'olelo*, stories, *mele*, place names about this place that you'd like to share?

JM: Sure, sure. Yeah. You know, right up the mountain, above ranch headquarters, there's a place we know about called Holuape'e, which is where Kamapua'a, when he was running away from Pele, at one point, went and hid. And so that's part of our lore. I don't know where it's written, but that's what we remember.

Of course, the battle of the *mo'o* and Hi'iaka in the long *mo'olelo* of Hi'iakaikapoliopele, I've got the book over here I think. I didn't read the whole thing yet, but Hi'iaka coming around and battling the *mo'o*, that's one thing.

There's a number or other references that I recall to Kualoa. Luanu'u was supposed to make a sacrifice, and he was told to go until he found this steep *pali* next to the ocean. So that was referring to here.

I recall at some point in the Kumulipo, Kualoa's referred to.

This is where, getting more into modern times, [O'ahu king] Kahahana held a council of chiefs. And then when he was trying to figure out what to do with [Maui king] Kahekili, and this is in the middle of the 1700s I think, and [Kahuna Nui] Ka'ōpulupulu was the one who said it was not his [Kahahana's] right to give away Kualoa because he didn't get it in conquest, he was basically elected. So it would be like ceding the sovereignty of O'ahu because of the sacredness, this is where the whale bone ivory would wash up [on shore]. And also, jumping around here, the site where the sacred drums of Kapahu'ula and Ka'ahulapunawai were kept, it was the site of the *makahiki* and the *pu'uhonua*, so all these different references to how important this place was.

DD: It's definitely a very storied place, with Hi'iaka and Kahahana and all, *mahalo* for sharing that.

You mentioned a few military-dated structures here. Are there any other historically significant buildings that you'd like to tell us about? Or even other ancient cultural sites, archaeological sites, places of burials that we should be mindful of?

JM: Sure. One of the historical structures, the sugar mill, is still there, the remnants. It was built in 1863. I think it was 1990, we had a whole bunch of holes in it, so we kind of had a mason come and just shore it up so it wouldn't fall down. So that's one thing.

The only, what looks like Hawaiian structures, were walls. There's one that looks like it's an *ahupua'a* boundary between Hakipu'u and Kualoa. And there are several others that kind of go off to the mountain, mostly on the *mauka* side because the military didn't, who knows what happened, 'cause it doesn't exist on the *makai* side of the property. But there are several old walls. We have not done a complete archaeological inventory, but when some of the archaeologists have come up, they think those are newer walls perhaps that were put up to protect things from animals. So that's the feedback that we've gotten, so maybe the middle 1800s or whatever.

DD: Yeah, I've heard of cattle just damaging everything wherever they go. [laughs]

JM: [laughs] Yeah.

DD: Ok, do you think that the proposed development of these specific portions within Kualoa Ranch would affect any place of cultural significance or perhaps any access to a place of cultural significance?

JM: I don't think so. I don't think in a negative way, I think perhaps in a positive way. Our whole goal as a company and as a family, and the values that drive it, are to preserve the place. And so by developing the types of things that we want to develop, it will enable us to preserve and then basically enhance, hopefully, maybe not in a particular project area, but we do know of other very important cultural sites that we do want to preserve and protect. In Hakipu'u, there's 'Apuakea Heiau. We've done an archaeological inventory on that already. We'd love to consider restoration which would have its own process. The Moli'i Fishpond, which is arguably one of the most well-preserved fishponds left in Hawai'i, is something that's very important. So while the development of the project areas, I don't think will have any impact on any other type of cultural artifacts or values, it will be a positive effect.

DD: Ok, yes, understandable.

What about traditional gathering practices, could you talk about any traditional gathering practices around or within the project area?

JM: There really hasn't been any in my lifetime here, probably in part because there's almost no native plants in this area. We did, in fact I was just talking to Mahealani Cypher from the Ko'olaupoko Hawaiian Civic Club, and another thing Kualoa was known for was the pink *wauke*. And she was talking about planting the pink *wauke*, and I said that we had planted some, and it's still growing there.

So no, I'm not aware of anybody who had exercised, in the last 40 years of working here, or wanting to exercise gathering rights in the project area. But we hope to do things that maybe won't result in practicing traditional rights, but providing materials that are associated with that kind of thing.

DD: Ok, thank you.

So, ranching would be post-contact, yet it is a cultural practice that is a part of Hawai'i now, could you elaborate a little bit about the ranching activities that Kualoa is connected to?

JM: Yeah, sure. We don't know when the first cattle were brought on property. Again, Dr. Judd bought the place in 1850. The only thing we know in his will, it says, "The land will go to Charles Judd and all the cattle that are on it." So there was cattle there in 1873 [when he died][?]. So how many? We don't know. And who brought 'em?

Charles Judd was known for bringing good horse flesh and bringing in more cattle. I don't know personally much details about when and how and what breeds and all of that other than he focused on that kind of thing, as did my great-grandmother, my grandmother, and my father was the one I had most contact with.

And my father was very proud of his. He had a registered Angus herd in Hakipu'u, and he had a dairy. There was actually a dairy here in Kua'oa[?], and it's right in the homestead area across from the park. And there are still remnants of the dairy. But there's been livestock here my entire life.

DD: Wow, the ranch life ah?

JM: The ranch life, yeah.

DD: Ok, thank you for sharing that.

We have this photo; we found two artifacts on property, just *mauka* of here, the Paliku area. One looks like a little hammer, the other looks kind of like a buckle. I just was wondering if maybe you had some thoughts on those two? [showing the picture of the artifacts]

JM: Yeah, if you found it at Paliku, gosh, I would think, my mind would go to the military. But I don't know.

DD: Yeah, it is kind of rusted and old.

JM: Yeah.

DD: Ok, there's one more picture. There's an *'auwai* that comes through Ka'a'awa, and we were just wondering if you knew the age of it or what the *'auwai* was used for? [showing the map/picture of the *'auwai* running through Ka'a'awa]

JM: Yeah. That, we think, actually was on the bluff. These look like *lo'i* down here [pointing to the map], and this is all high ground, this is all the low ground. And so there is a spring up here, but it's a tiny, tiny, tiny spring. And the stream kind of follows this thing here. So I really don't know 'cause there's no source of water that I'm familiar with that would get up this high. This is a road that goes down over here. And so I really wouldn't even guess on what the source of water is for this.

DD: Right, ok. And then we wouldn't know what age that was either then?

JM: No.

DD: Ok. Ok, thank you. For the sake of the recorder, we have a map, and we have a picture of these artifacts that we're showing John Morgan.

The other question that I wanted to ask is that there is an ATV structure on the main property, and the pavilion in Ka'a'awa, and then also the building over here that we're gonna renovate, do you know the ages of these buildings?

JM: Yeah, the one in Ka'a'awa, it's kind of like a little rain shelter?

DD: Mmhmm, yes.

JM: Ok, that one is about 1993 or something like that, 1992, 1993.

DD: Ok.

JM: The ATV area, which is basically two 40-foot storage containers with a roof on top of it, probably 2004.

And the area right below is probably the same, 2003, 2004, something like that.

DD: Ok, just wanted to try to put a date to it. Ok, thank you.

So are you aware of any other cultural concerns that the community might have related to cultural practices within or in the vicinity of the project area?

JM: I'm not.

DD: Ok. And are there any other *kūpuna*, *kama'āina*, other descendants that you would recommend we talk to, I know you already gave us some names.

JM: Yeah, did it get to you, the name of Richard Paglinawan?

DD: Yes.

JM: Yeah, ok, I think he is a lineal descendant. And then Cy Bridges. You know Cy Bridges, you met him?

DD: I know him through my *kumu*. They both have been strong *hula kāne kumu* for a long time.

JM: Yeah. I don't know if you know Kenny Brown? He passed away, he was from John Papa 'I'i. And so when Kenny passed away, Cy Bridges did his whole genealogy, ho was chicken skin, he's probably one of the best.

DD: Yeah, I've heard him chant, ho awesome.

JM: Yeah.

DD: Ok. Well that concludes our *kūkākūkā*, we thank John Morgan again for taking time to talk story with us. And so, *aloha*.

JM: *Mahalo*. Thank you.

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APPENDIX D

PRELIMINARY ENGINEERING REPORT
(G70)

Kualoa Ranch

Kualoa, O'ahu; TMK No. (1) 4-9-005:01, 4-9-004:02; 5-1-001:01

Kualoa Ranch Improvements
Preliminary Engineering Report

Prepared for:
Kualoa Ranch Hawai'i, Inc.
PO Box 650
Ka'a'awa, Hawai'i 96730

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G70
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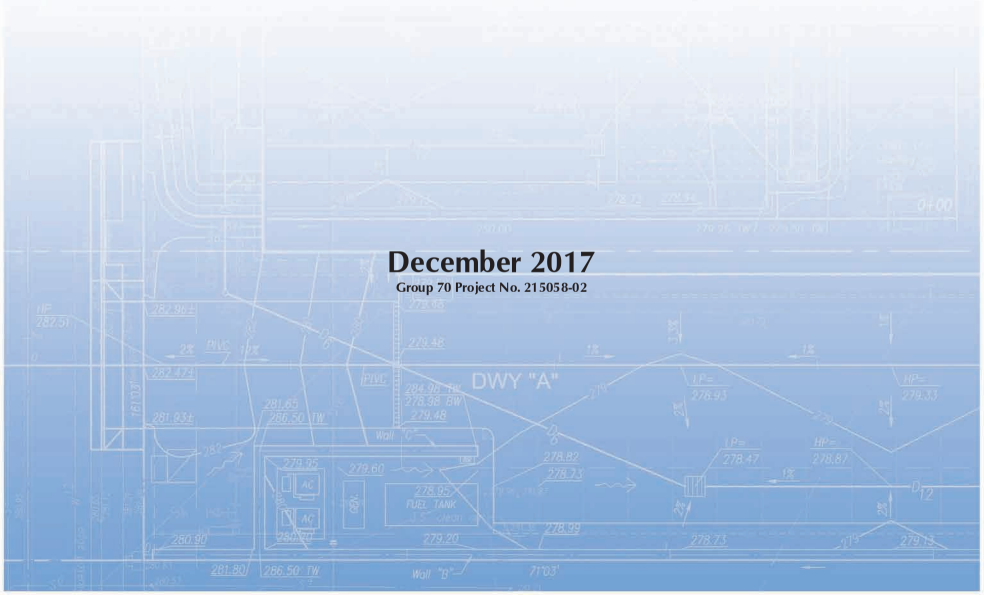

December 2017
Group 70 Project No. 215058-02

1 Headquarters Site

1.1 Headquarters Overview

The Headquarters Site is located approximately 300' mauka of Kamehameha Highway and straddles the border that separates TMK (1) 4-9-004:002 and TMK (1) 4-9-005:001. The Headquarters Site is the first area experienced by visitors when entering the Project property and serves as a base for most of the operations and excursions provided by Kualoa Ranch. As such, improved parking and visitor areas, offices and maintenance/storage areas are proposed at this site.

1.2 Proposed Improvements to Headquarters Site

The table below depicts existing and proposed building improvements, areas and use at the Headquarters Site. In addition to the proposed buildings are site improvements inclusive of driveway improvements, parking lot expansion (for a total of 312 standard, 8 ADA and 10 bus stalls) and landscaping.

Table 1-1: Existing and Proposed Use – Headquarters Site

Existing Building(s)	Proposed Building(s)	Area (sf)	Occupancy factor	Occupancy
Horseback Riding	Renovate	3,300	300 (ag)	11
Farrier's Shelter	Renovate	800	300 (ag)	3
Operations	Demolish	(2,100)	100 (business)	21
Keiki Pavilion	Renovate	1,600	15 (assembly)	107
Activities Center - Tickets	Renovate	800	100 (business)	8
Bus Terminal, Movie Site and Ranch Tour	Demolish	(2,700)	Fixed seating	40
Jungle Expedition	Demolish	(200)	Fixed seating	20
ATV Depot	Demolish	(2,000)	500 (warehouse)	4
Visitor's Center	Renovate / convert to F&B	7,488	15 (assembly)	500
-	Arrival Pavilion	3,970	15 (assembly)	265
-	Kualoa Market	3,840	30 (mercantile)	129
-	Additional Covered Walkways	2,110	-	-
-	Horseback Riding Stable	4,800	300 (ag)	16
-	Highway Tours Depot	1,250	Fixed seating	50
-	Jungle Tour Depot	1,250	Fixed seating	50
-	Movie Sites and Ranch Tour Depot	3,420	Fixed seating	100

Table 1-1: Existing and Proposed Use – Headquarters Site (continued)

Existing Building(s)	Proposed Building(s)	Area (sf)	Occupancy factor	Occupancy
-	ATV Depot	3,600	500 (warehouse)	8
-	Administrative Building 1	3,600	100 (business)	36
-	Administrative Building 2	3,600	100 (business)	36
-	Employee Building	640	100 (business)	7

1.3 Existing Water

1.3.1 Existing Potable Water System

Existing 30″ and 6″ BWS water mains are installed along Kamehameha Highway in parallel, approximately 300′ makai of the Headquarters Site at approximately 5′ above Mean Sea Level. See Figure 1. Existing flow and pressure data provided by BWS indicates the following:

- 30″ BWS Water Main
  - Static Pressure = 134 PSI
  - Residual Pressure = 93 PSI @ 2,000 gpm
- 6″ BWS Water Main
  - Static Pressure = 80 PSI
  - Residual Pressure = 20 PSI @ 250 gpm

BWS records indicate a type D water lateral (2″ lateral; 1.5″ domestic meter) and 4″ water line provides domestic water service to the Headquarters Site off the BWS 6″ water main in Kamehameha Highway. The 4″ water line extends to its terminus at the Visitor's Center, but does not appear to serve other buildings at the project site. As such, water source and distribution of domestic water to the remainder of the Headquarters Site is unknown/unverified.

Records also indicate a 12″ water line through an 8″ detector check meter provides fire protection water service to the site off the BWS 30″ water main in Kamehameha Highway. The 12″ fire protection water line serves 2 fire hydrants located near the existing Visitor's Center.

1.3.2 Existing Non-Potable Water System

There are no known non-potable water systems that currently serve the Headquarters Site.

1.3.3 Existing Water Pressure at On-Site Fire Hydrants

A fire hydrant flow test was performed in January 2014 at both existing fire hydrants, one of which was located at the fire protection water line's terminus, east of the Visitor's Center. The flow test at the terminus (approximately 24′ above MSL) indicated static pressure is 132 PSI and 105 psi residual pressure was measured during a 1,216 GPM flow rate. Calculations indicate a 64.2 PSI residual pressure would be experienced at the line's terminus during a 2,000 GPM flow rate.

Since the fire protection and domestic water lines are served from different BWS water mains, hydrant flow test results are not applicable to the domestic water line. Pressure and flow data is not currently available for the domestic water line.

1.4 Proposed Water

1.4.1 Water Demand

Calculations in Table 1-2 indicate the proposed improvements increased average daily water demand by approximately 17,800 gallons per day (GPD) for domestic use. All proposed uses are expected to exhibit variability in water demands during the week.

1.4.2 Water System Considerations

BWS water mains in Kamehameha Highway are located approximately 5′ to 30′ lower in elevation than the site, resulting in anticipated static pressures of 121 psi and 67 psi if connecting to the 30″ transmission main and 6″ distribution main, respectively. Additional analysis is needed to determine ability of the existing on-site water main to accommodate 17,800 gpd additional flow. Additional research is also needed to determine existence of additional private water lines near the project site.

Table 1-2: Headquarters Site Water Demand

Headquarters Site		WATER DEMAND				
Proposed Use:	WATER DEMAND (gcpd)	Occupancy (# people)	Building Area (sf)	POTABLE (gpd) 7 days/wk	TOTAL	UNITS
Demolition (Loss of Space)						
Operations Office Demolition	-25	21	-2,100	-525		
Bus Terminal, Movie Site and Ranch Tour	-25	40	-2,700	-1,000		
Jungle Expedition	-25	20	-200	-500		
ATV Depot	-25	4	-2,000	-100		
Proposed (Increase in Space)						
Visitors Center Expansion		500	7,488			
Visitor Restrooms (50% use)	6.25	250		1,563		
Kitchen Waste per Meal (50% eat)	3.75	250		938		
Arrival Pavilion	25	265	3,970	6,625		
Kualoa Market	25	129	3,840	3,225		
Additional Covered Walkways	25		2,110	0		
Horseback Riding Stable	25	16	4,800	400		
Highway Tours Depot	25	50	1,250	1,250		
Jungle Tour Depot	25	50	1,250	1,250		
Movie Sites and Ranch Tour Depot	25	100	3,420	2,500		
ATV Depot	25	8	3,600	200		
Administrative Building 1	25	36	3,600	900		
Administrative Building 2	25	36	3,600	900		
Employee Building	25	7	640	175		
SUBTOTAL				**17,801**	**--**	gpd
GALLONS/WEEK				**124,607**	**124,607**	g
AVG DAILY DEMAND					**17,801**	gpd
MAX DAILY DEMAND (1.5 for Potable, 1.65 for Irrigation)					**26,702**	gpd
PEAK HOUR DEMAND (3)					**53,403**	gpd
FIRE FLOW (1000gpm for 0.5 hrs)					**30,000**	g

1.5 Existing Wastewater

City records indicate there is no municipal sewer system in the general area.

Department of Health records indicate presence of two individual wastewater systems (IWS) at the project property, one that serves the Visitor's Center and another that serves the Ranch House. The Visitor's Center IWS was constructed around 2005 and was designed to treat and dispose of 2,000 GPD of wastewater. The Ranch House IWS was constructed around 2013 and was designed to treat and dispose of 1,000 GPD of wastewater.

The project properties are bisected by the BWS pass/no-pass line. The Headquarters site is located in the pass zone, where wastewater discharge into the ground is allowed. The properties are also bisected by the DOH UIC line. Most of the Headquarters Site is located makai of the delineation, where the use of injection wells, any disposal well that is deeper than it is wide, may be considered.

1.6 Proposed Wastewater

1.6.1 Wastewater Projection

Based on HAR 11-62 Wastewater Systems, proposed improvements are anticipated to generate an additional 14,240 GPD of wastewater flow, as seen in Table 1-3. Similar to the water system, variable flows are anticipated at this site.

1.6.2 Wastewater Collection and Treatment

Based on the proposed uses and flow projections indicated in Table 1-3, use of a packaged wastewater treatment plant is anticipated. Consolidation of existing IWSs in the Headquarters site should be considered to minimize operation and maintenance costs.

The owner indicated the grease receptor is undersized and will be upgraded in the future.

1.6.3 Wastewater Disposal/Reuse

Disposal will likely be through the use of an absorption bed. However, feasibility of re-use will be assessed during design.

Table 1-3: Headquarters Site Wastewater Projection

Headquarters Site		WASTEWATER FLOW PROJECTION				
Proposed Use:	WASTEWATER PROJECTION (gpcd)	Occupancy (# people)	Building Area (sf)	GPD 7 days/wk	TOTAL	UNITS
Demolition (Loss of Space)						
Operations Office Demolition	-20	21	-2,100	-420		
Bus Terminal, Movie Site and Ranch Tour	-20	40	-2,700	-800		
Jungle Expedition	-20	20	-200	-400		
ATV Depot	-20	4	-2,000	-80		
Proposed (Increase in Space)						
Visitors Center Expansion		500	7,488			
Visitor Restrooms (50% use)	5	250		1,250		
Kitchen Waste per Meal (50% eat)	3	250		750		
Arrival Pavilion	20	265	3,970	5,300		
Kualoa Market	20	129	3,840	2,580		
Additional Covered Walkways	20		2,110	0		
Horseback Riding Stable	20	16	4,800	320		
Highway Tours Depot	20	50	1,250	1,000		
Jungle Tour Depot	20	50	1,250	1,000		
Movie Sites and Ranch Tour Depot	20	100	3,420	2,000		
ATV Depot	20	8	3,600	160		
Administrative Building 1	20	36	3,600	720		
Administrative Building 2	20	36	3,600	720		
Employee Building	20	7	640	140		
SUBTOTAL				**14,240**	**--**	gpd
GALLONS/WEEK				**99,680**	**99,680**	g
AVG DAILY FLOW					**14,240**	gpd
POTENTIAL RECYCLED WATER AVAILABLE (80% OF AVERAGE DAILY FLOW)					**11,392**	gpd

1.7 Existing Drainage

1.7.1 Existing Soil Conditions

The United States Department of Agriculture Web Soil Survey indicates approximately half of the project area consists of Waialua stony silty clay, with 3 to 8 % slopes. The remainder of the project area consists of Mokuleia clay loam and Mokuleia loam.

1.7.2 Existing Topography and Drainage Patterns

Elevations at the site range between 5′ and 35′ above MSL and stormwater generally sheet flows east, towards the ocean. There is no subsurface drainage system at the Headquarters Site.

1.7.3 Existing Flood Hazards

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) indicate the project site is located within Flood Zone X, "Areas determined to be outside the 0.2% annual chance floodplain".

1.8 Drainage Considerations

Proposed drainage improvements will be designed in compliance with the City's current storm drainage standard. As such, runoff will continue to discharge overland and pre-development flow patterns and flow rates will generally remain in post-development conditions.

This project is anticipated to exceed 1 acre of disturbance. As such, City Low Impact Development (LID) requirements will likely be triggered. The project can include a combination of post-construction BMPs: biofiltration-type, retention-type, and alternative compliance BMPs. BMP selection, sizing and implementation will comply with the City and County of Honolulu's Storm Drainage Standards (August 2017) and Administrative Rules, Title 20, Chapter 3 – Rules Related to Water Quality. As required by the City standards, post-construction BMPs will be distributed and installed throughout the site where practical and feasible to improve storm water quality and manage storm water quantity runoff. The proposed project will maximize the pervious and landscaped areas within the project site.

2 Paliku Site

2.1 Paliku Site Overview

The Paliku Site is located approximately 950′ mauka of the Kualoa Ranch Headquarters, along the northeastern edge of TMK (1) 4-9-004:002. Due to its centralized location and proximity to several trail intersections, it is an ideal spot for a gathering place. As such, a meeting pavilion is proposed to complement an existing pavilion and a gun range that is no longer in use and instead used for meetings.

2.1.1 Existing and Proposed Structures

The table below depicts existing and proposed building improvements, areas and use at the Paliku Site.

Table 2-1: Existing and Proposed Use Paliku Site

Existing Building(s)	Proposed Building(s)	Area (sf)	Use
Pavilion	-	5,000	Meetings and Banquets
Gun Range Building	-	1,870	Meetings
-	Hale Kupuna Ceremonial Meeting Pavilion	960	Meetings

2.2 Existing Water

2.2.1 Existing Potable Water System

Existing 30″ and 6″ BWS water mains are installed along Kamehameha Highway in parallel, approximately 1,700′ makai of the Paliku Site. See Figure 1.

BWS records indicate a type D water lateral (2″ lateral; 1.5″ domestic meter) and 4″ water line provides domestic water service to the property off the BWS 6″ water main in Kamehameha Highway. Records also indicate a 12″ water line through an 8″ detector check meter provides fire protection water service to the property off the BWS 30″ water main in Kamehameha Highway. However, the available record drawings only depict domestic and fire protection water service to the existing Headquarters Site and do not depict the location of existing private water lines that serve the Paliku Site. As such, domestic and fire protection water source and distribution to the Paliku Site are unknown.

2.2.2 Existing Non-Potable Water System

An existing non-potable water tank (private) is located approximately 330′ south-southwest of the existing pavilion. The 20′ diameter x 6.5′ high tank is located 150′ above mean sea level (MSL) and supplies agricultural water for livestock. The existing water source serving the water tank and distribution system is from a water collection system that comes from Hakipuu Valley. The water is used for irrigation and livestock.

2.3 Proposed Water

Water system improvements are not proposed as part of the Paliku Site.

2.4 Existing Wastewater

City records indicate there is no municipal sewer system in the general area.

Department of Health records indicate presence of two individual wastewater systems at the project property. However, both systems are installed at the Headquarters Site, approximately 950′ makai of the Paliku Site. Approval to construct another IWS was recently obtained from DOH to replace an undocumented large capacity cesspool.

The Paliku Site is located in the BWS no pass zone, indicating wastewater disposal systems must be zero discharge systems. The site is also located mauka of the DOH UIC line, restricting the use of injection wells (any disposal well that is deeper than it is wide).

2.5 Proposed Wastewater

Wastewater system improvements are not proposed as part of the Paliku Site.

If wastewater service is needed in the future, the disposal system must be a zero discharge system or must be located makai of the pass/no-pass line, near the Headquarters Site.

2.6 Existing Drainage

2.6.1 Existing Soil Conditions

The United States Department of Agriculture Web Soil Survey indicates approximately half of the project area consists of Waialua stony silty clay, with 12 to 30 % slopes. The remaining area consists of Waialua very stony silty clay, with 12 to 30% slopes.

2.6.2 Existing Topography and Drainage Patterns

Elevations at the site range between 125′ and 150′ above MSL and stormwater generally sheet flows east, towards the ocean. There is no subsurface drainage system at the Paliku Site.

2.6.3 Existing Flood Hazards

The FEMA FIRM indicates the project site is located within Flood Zone X, defined as “Areas determined to be outside the 0.2% annual chance floodplain”.

2.7 Drainage Considerations

Proposed drainage improvements will be designed in compliance with the City’s current storm drainage standard. As such, runoff will continue to discharge overland and pre-development flow patterns and flow rates will generally remain in post-development conditions.

This project is not anticipated to exceed 1 acre of disturbance. As such, City LID requirements are not anticipated to be triggered.

3 Kaaawa Site

3.1 Kaaawa Site Overview

3.1.1 Existing and Proposed Improvements to Kaaawa Site

The Kaaawa Site is located in TMK (1) 5-1-001:001, approximately one mile north-northwest of the Headquarters Site. This site is located in an area that is surrounded by agricultural uses. As such, an Agricultural Facility is proposed to support the surrounding users.

3.1.2 Existing and Proposed Structures

The table below depicts existing and proposed building improvements, areas and use at the Kaaawa Site.

Table 3-1: Existing and Proposed Use Kaaawa Site

Existing Building(s)	Proposed Building(s)	Area (sf)	Use
Pavilion	Demolished	330	Gathering
-	Agricultural Facility	3,720	Agricultural Processing, Culinary Venue and Group Facility

3.2 Existing Water

3.2.1 Existing Potable Water System

Existing 30″ and 6″ BWS water mains are installed along Kamehameha Highway in parallel, approximately 1,300′ makai of the Kaaawa Site at approximately 10′ above Mean Sea Level. See Figure 2. Existing flow and pressure data provided by BWS indicates the following:

- 30″ BWS Water Main
  - Static Pressure = 134 PSI
  - Residual Pressure = 102 PSI @ 2,000 gpm
- 6″ BWS Water Main
  - Static Pressure = 80 PSI
  - Residual Pressure = 20 PSI @ 1,000 gpm

BWS records indicate presence of 6 separate water laterals that serve 6 single family residences. 4 laterals provide domestic water service through 5/8″ meters, while 2 laterals provide domestic and fire protection water service through 2″ meters.

There are no fire hydrants in the general area.

3.2.2 Existing Non-Potable Water System

There are no known non-potable water systems that currently serve the Kaaawa Site.

3.2.3 Existing Wells

Kualoa Ranch owns the adjacent property, mauka of the Kaaawa Site. CWRM records indicate presence of water wells on the project property and the adjacent property, two of which are owned by Kualoa while the other two wells are owned by private parties. Additional research is needed to determine what the wells serve, if the wells are potable and if there is capacity or infrastructure to serve the Kaaawa Site.

3.3 Proposed Water

3.3.1 Water Demand

Calculations in Table 3-2 indicate the proposed improvements increase average daily water demand by approximately 2,300 gallons per day (GPD) for domestic use. Although large events that occur once a week results in some variability in daily water demands, all proposed uses are expected to exhibit variability in water demands during the week.

Table 3-2: Kaaawa Site Water Demand

Kaaawa Site		WATER DEMAND				
Proposed Use:	WATER DEMAND (gpcd)	Occupancy (# people)	POTABLE (gpd) 7 days/wk	POTABLE (gpd) 1 days/wk	TOTAL	UNITS
Agricultural Facility						
Ag Workers	25	9	225			
1 hose bibb @ 2.5 gpm * 12 hours	-	-	1,800			
Culinary Venue	10	96		960		
Group Facility	6.25	150		938		
SUBTOTAL			**2,025**	**1,898**		gpd
GALLONS/WEEK			**14,175**	**1,898**	**16,073**	g
AVG DAILY DEMAND					**2,296**	gpd
MAX DAILY DEMAND (1.5 for Potable, 1.65 for Irrigation)					**3,444**	gpd
PEAK HOUR DEMAND (3)					**10,332**	gpd
FIRE FLOW (1,000 gpm for 0.5 hrs)					**30,000**	g

3.3.2 Water System Considerations

The Honolulu Board of Water Supply is located approximately 30′ to 35′ lower in elevation, resulting in anticipated static pressures of 119 psi and 65 psi if connecting to the 30″ transmission main and 6″ distribution main, respectively. However, providing a new water service connection to the BWS system requires over 2,000′ of water line to serve the project site.

Connection to an existing water line may be preferable over a new BWS connection, but additional research is needed to determine size, location and excess capacity of existing private water lines near the project site.

3.4 Existing Wastewater

City records indicate there is no municipal sewer system in the general area.

Department of Health records indicate presence of 3 cesspools and 1 individual wastewater system at the project property. Records also indicate the IWS is a 750 gpd system designed to serve a 2 bedroom dwelling. However, final approval for this system was not obtained and construction may not have been completed. If construction was completed, it is recommended to perform and submit the final inspection to DOH to obtain a final approval letter.

The Kaaawa Site is located in the BWS pass zone, indicating that wastewater discharge into the ground is allowed. The site is also located makai of the DOH UIC line, indicating the use of injection wells (any disposal well that is deeper than it is wide) may be considered.

3.5 Proposed Wastewater

3.5.1 Wastewater Projection

Based on HAR 11-62 Wastewater Systems, proposed improvements are anticipated to generate an additional approximately 1,850 GPD of wastewater flow, as seen in Table 3-3. Similar to the water system, variable flows are anticipated at this site.

Table 3-3: Kaaawa Site Wastewater Projection

Kaaawa Site		**WASTEWATER FLOW PROJECTION**				
Proposed Use:	WASTEWATER PROJECTION (gpcd)	Occupancy (# people)	GPD 7 days/wk	GPD 1 days/wk	TOTAL	UNITS
Agricultural Facility						
Ag Workers	20	9	180			
1 hose bibb @ 2.5 gpm * 12 hours	-	-	1,440			
Culinary Venue	8	96		768		
Group Facility	5	150		750		
		SUBTOTAL	**1,620**	**1,518**	**--**	gpd
		GALLONS/WEEK	**11,340**	**1,518**	**12,858**	g
		AVG DAILY FLOW			**1,837**	gpd
		POTENTIAL RECYCLED WATER AVAILABLE (80% OF AVERAGE DAILY FLOW)			**1,470**	gpd

3.5.2 Wastewater Collection and Treatment

Based on the proposed uses and flow projections indicated in Table 3-3, use of a packaged wastewater treatment plant is anticipated. However, if the agricultural facility does not require water/sewer service, projected flow rates will total approximately 1,000 gpd and an IWS may be considered instead. As such, consideration of an agricultural facility that does not need water/sewer service is recommended to avoid additional initial and operation/maintenance costs associated with a wastewater treatment plant vs. an IWS.

3.5.3 Wastewater Disposal/Reuse

Disposal will likely be through the use of an absorption bed. If a wastewater treatment plant is utilized, a cost analysis should be conducted to determine feasibility of re-use in lieu of an absorption bed.

3.6 Existing Drainage

3.6.1 Existing Soil Conditions

The United States Department of Agriculture Web Soil Survey indicates the project area consists of Waialua stony silty clay, with 3 to 8 % slopes.

3.6.2 Existing Topography and Drainage Patterns

Elevations at the site range between 40′ and 45′ above MSL and storm water generally sheet flows east, towards the ocean. There is no subsurface drainage system at the Kaaawa Site.

3.6.3 Existing Flood Hazards

The FEMA FIRM indicates the project site is located within Flood Zone X, defined as “Areas determined to be outside the 0.2% annual chance floodplain”.

3.7 Drainage Considerations

Proposed drainage improvements will be designed in compliance with the City’s current storm drainage standard. As such, pre-development flow patterns and flow rates will generally remain in post-development conditions with runoff continuing to discharge overland.

This project is not anticipated to exceed 1 acre of disturbance. As such, City LID requirements are not anticipated to be triggered.

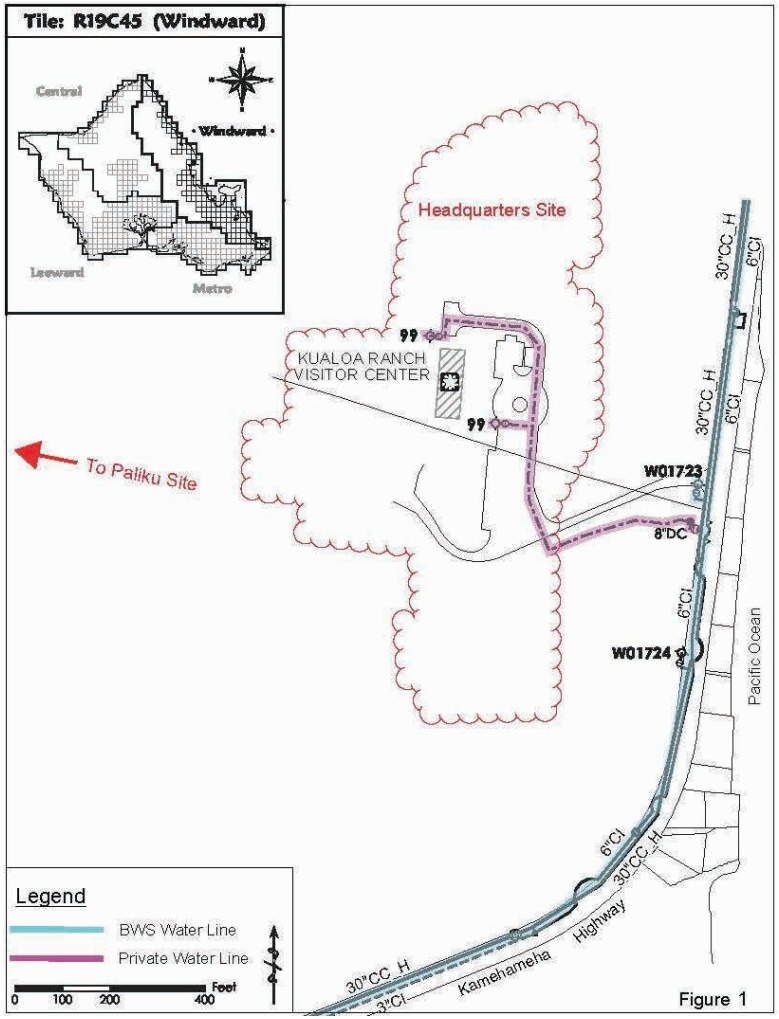

Figure 1

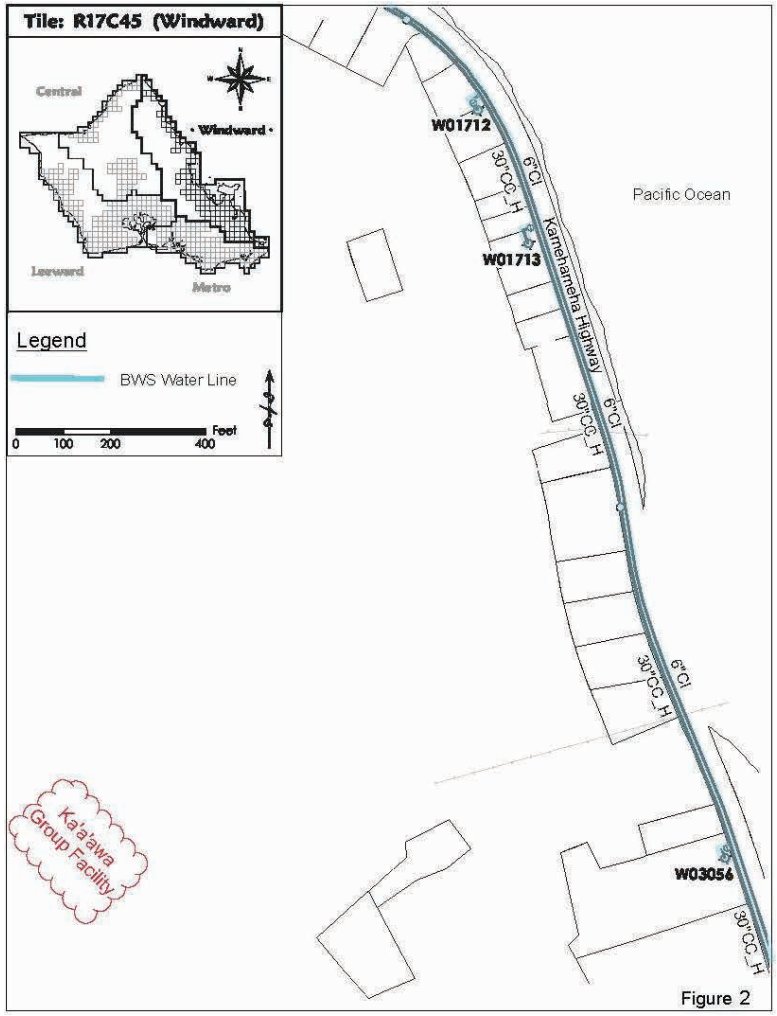

Figure 2

APPENDIX E

TRANSPORTATION IMPACT ASSESSMENT FOR THE PROPOSED KUALOA RANCH MASTER PLAN IMPROVEMENTS (THE TRAFFIC MANAGEMENT CONSULTANT)

TRANSPORTION IMPACT ASSESSMENT

FOR THE PROPOSED THE

KUALOA RANCH IMPROVEMENTS

KA`A`AWA, OAHU, HAWAII

PREPARED FOR

G70

MAY 3, 2018

PREPARED BY

THE TRAFFIC MANAGEMENT CONSULTANT

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RANDALL S. OKANEKU, P.E., PRINCIPAL • 1188 BISHOP STREET, SUITE 1907 • HONOLULU, HI 96813

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TRANSPORTATION IMPACT ASSESSMENT FOR THE PROPOSED THE KUALOA RANCH IMPROVEMENTS KA`A`AWA, OAHU, HAWAII

I. Introduction

A. Project Description

Kualoa Ranch is located on Kamehameha Highway, about 5.7 miles north of its junction with Kahekili Highway in Ka`a`awa, Oahu, Hawaii. Figure 1 depicts the location map and overall site map of Kualoa Ranch. In addition to its agricultural operations, Kualoa Ranch provides a variety of visitor experiences. Visitor activities include horseback riding, all-terrain vehicle (ATV) tours, a Zipline Tour, hiking, and various theme tours. The horseback riding, the ATV tours, the agricultural operations, and the Zipline Tour are located in Ka`a`awa Valley. However, visitor access originates at the Ranch Headquarters. JJ's Outpost gift shop and Aunty Pat's Paniolo Café also are located at the Ranch Headquarters. The proposed Kualoa Ranch Headquarters site plan is depicted on Figure 2. Figures 3 and 4 depict the proposed Paliku and Ka`a`awa site plans, respectively.

Kualoa Ranch is planning to improve its Ranch Headquarters. The existing Ranch facilities total 47,362 square feet of gross floor area (SFGFA). The existing facilities include a visitor center, maintenance and storage facilities, ATV and horse-back riding facilities, several gathering venues, and administration buildings. A few existing facilities, totaling 7,330 SFGFA, will be demolished. The proposed Ranch facilities include an arrival pavilion, Kualoa Market, tour depots, administration buildings, and an employee building, totaling 36,760 SFGFA. The net increase in building floor area will be 29,430 SFGFA. The existing 233 parking stall count is proposed to be increased by 91 stalls for a total of 324 stalls. Additional parking will be provided for bicycles, motorcycles, and electric vehicles.

The primary access for Kualoa Ranch will continue to be the existing Kualoa Ranch Driveway on Kamehameha Highway. Circulation between the various proposed project sites will be contained onsite and is not expected to affect the public roadways. Table 1 summarizes the proposed Kualoa Ranch Improvements. For the purpose of this transportation impact assessment, the Kualoa Ranch Improvements are expected to be built out by the Year 2020.

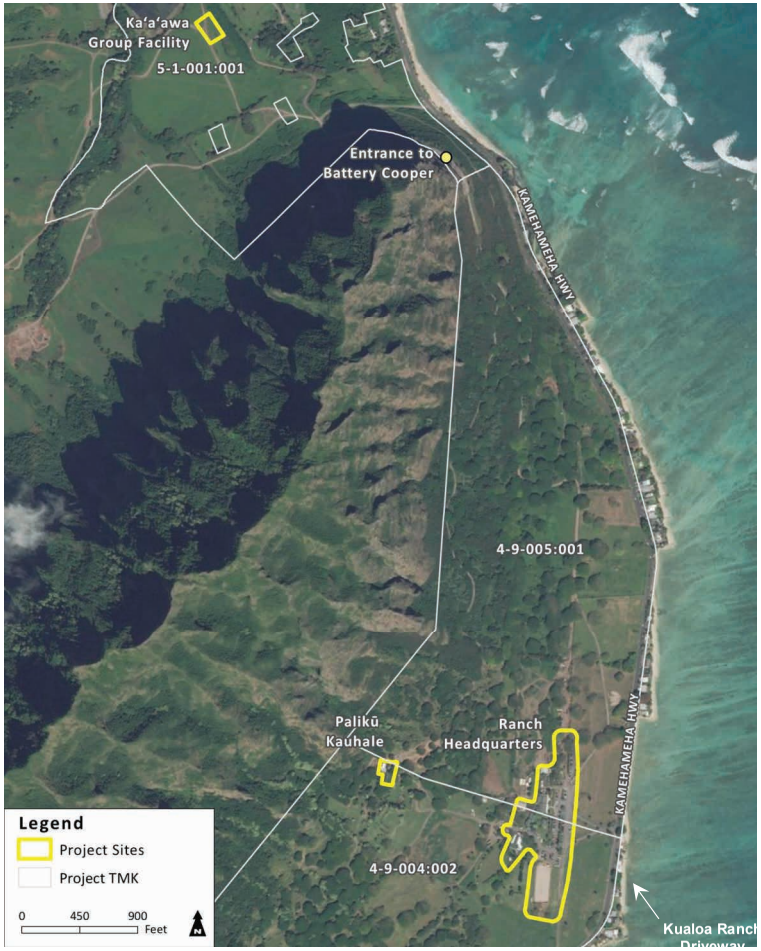


Figure 1. Location and Vicinity Map

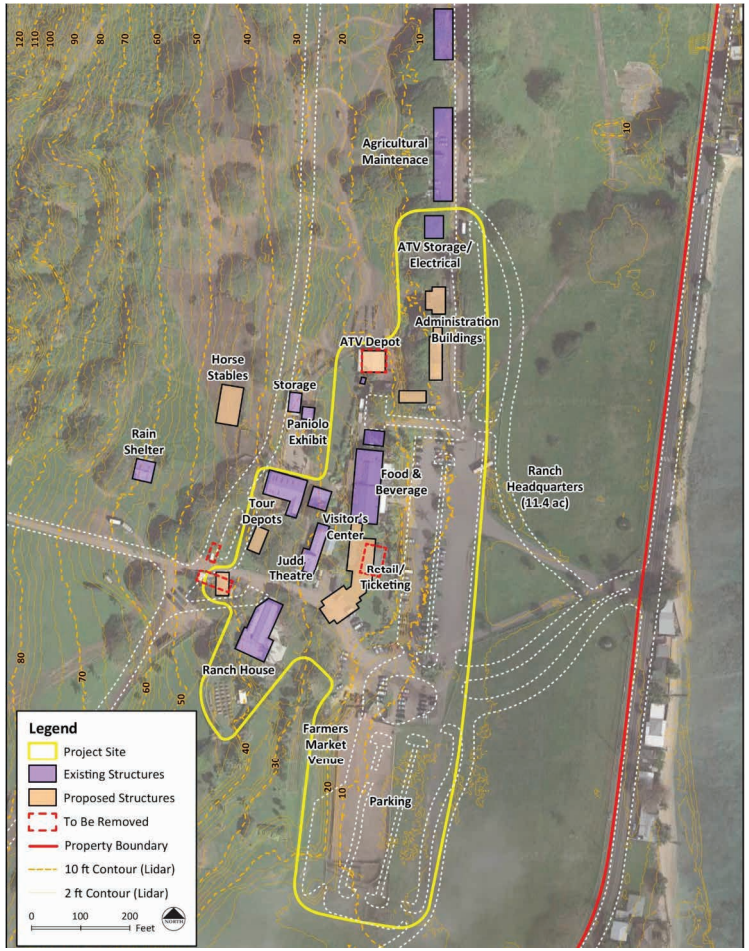


Figure 2. Ranch Headquarters Site Plan

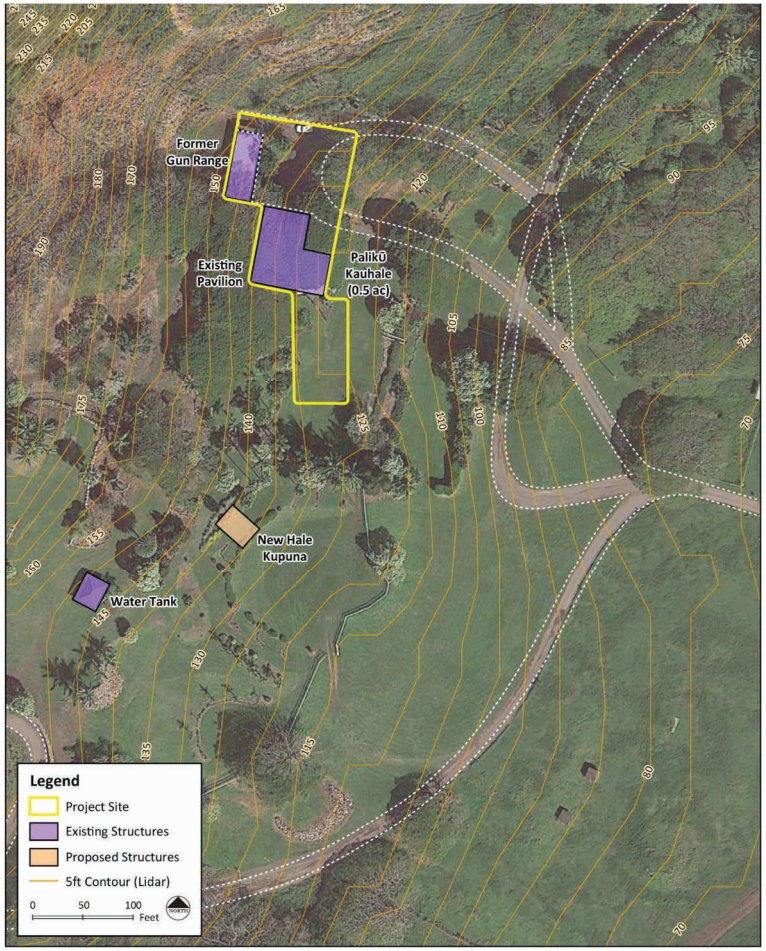


Figure 3. Paliku Site Plan

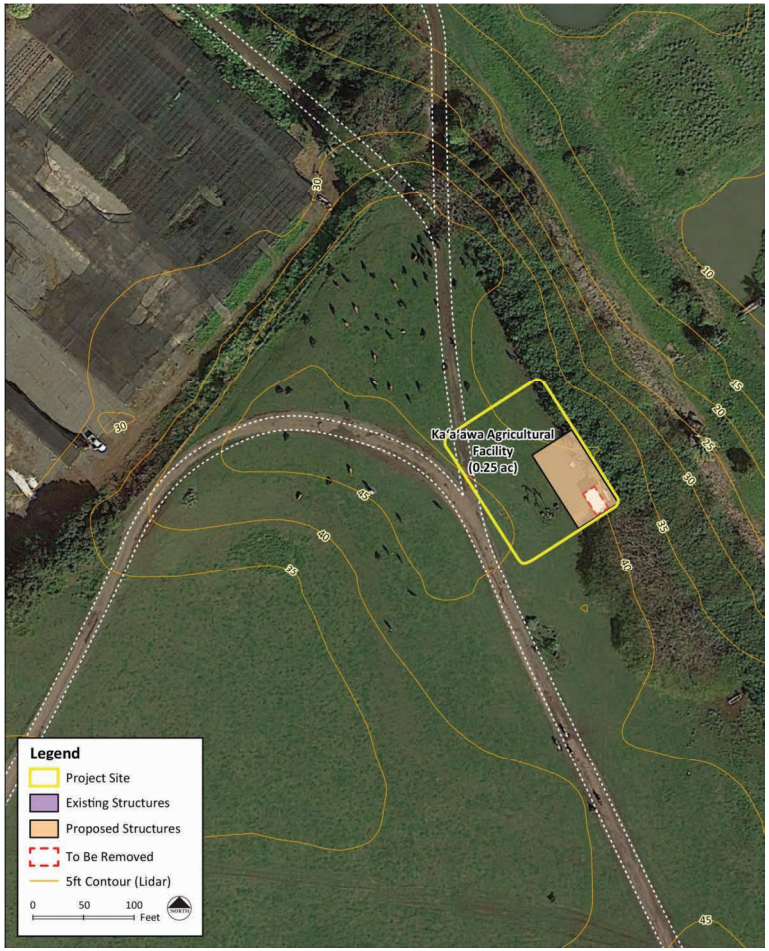


Figure 4. Ka`a`awa Site Plan

Table 1. Kualoa Ranch Improvements	
Improvements	**Description**
Parking Expansion	91 stalls
Arrival Pavilion	3,970 SFGFA
Kualoa Market	3,840 SFGFA
Horseback Riding Stable	4,800 SFGFA
Tour Depots	9,520 SFGFA
Administration/Employee Buildings	7,840 SFGFA
Miscellaneous	2,110 SFGFA
Hale Kupuna Ceremonial Pavilion	960 SFGFA
Agricultural Facility & Culinary Venue	3,720 SFGA
Total Floor Area	**36,760 SFGFA**

B. Purpose and Scope of the Study

The purpose of this study is to analyze the traffic impacts resulting from the proposed Kualoa Ranch Improvements. This report presents the findings and recommendations of the study, the scope of which includes:

1. Description of the proposed project.
2. Evaluation of existing roadways and traffic conditions.
3. Development of trip generation characteristics of the proposed project.
4. Analysis of the future traffic conditions without the proposed project.
5. Identification and analysis of the traffic impacts resulting from the development of the proposed project.
6. Recommendations of traffic improvements, which would mitigate the traffic impacts identified in this study.

C. Methodologies

1. Capacity Analysis Methodology

The highway capacity analysis, performed in this study, is based upon procedures presented in the Highway Capacity Manual 6th Edition (HCM), published by the Transportation Research Board. HCM defines the Level of Service (LOS) as "a quantitative stratification of a performance measure or measures representing quality of service." HCM defines the six (6) Levels of Service from the traveler's perspective, ranging from the best LOS "A" to the worst LOS "F". LOS translates the complex mathematical results of highway capacity analysis into an A through F grading system for the purpose of simplifying the roadway performance for non-technical decision makers.

LOS's "A", "B", and "C" are considered satisfactory Levels of Service. LOS "D" is generally considered a "desirable minimum" operating Level of Service. LOS's "E" and "F" are undesirable conditions. Intersection LOS is primarily based upon average delay (d) in seconds per vehicle (sec/veh). The delays at unsignalized intersections, which includes stop-controlled intersections and roundabouts, are generally longer than signalized intersections, due to the drivers' expectation and acceptance of longer delays at higher-volume signalized intersections. Table 2 summarizes the LOS criteria.

Table 2. Level of Service Criteria (HCM)		
LOS	**Control Delay (sec/veh)**	**Description**
A	≤ 10	Control delay is minimal.
B	> 10 – 15	Control delay is not significant.
C	> 15 – 25	Stable operation. Queuing begins to occur.
D	> 25 – 35	Less stable condition. Increase in delays, decrease in travel speeds.
E	> 35 – 50	Unstable operation, significant delays.
F	> 50	High delays, extensive queuing.

Synchro is a traffic analysis software that was developed by Trafficware Corporation. Synchro is an intersection analysis program that is based upon HCM methodology. SimTraffic is a microscopic traffic simulation software also developed by Trafficware Corporation. Microscopic traffic simulation is a stochastic process, which can analyze the interactions of individual vehicles as they pass through the roadway network. SimTraffic was used to analyze the vehicle queuing and delays. The results of ten (10) independent simulations were averaged to determine the queuing and other operational parameters of the roadways. Worksheets for the capacity analysis performed throughout this report are compiled in the Appendix.

2. Trip Generation Methodology

The trip generation methodology is based upon generally accepted techniques developed by the Institute of Transportation Engineers (ITE) and published in Trip Generation, 9th Edition. ITE trip rates were developed by correlating the total vehicle trip generation data with various activity/land use characteristics, such as the vehicle trips per hour (vph) per 1,000 square feet of gross floor area (SFGFA).

ITE does not publish trip generation characteristics for the various types of activities at Kualoa Ranch. Therefore, the observed trip generation at Kualoa Ranch was used to develop the trip generation characteristics of the proposed Kualoa Ranch Improvements.

3. Left-Turn Lane Guidelines

The left-turn lane analysis was based upon A Policy on Geometric Design of Highways and Streets, published by the American Association of State Highway and Transportation Officials (AASHTO). The AASHTO guidelines are based upon the combination of the left-turn volume (minimum 5 percent of the advancing volume), the advancing volume, the opposing volume, and a minimum operating speed of 40 miles per hour. The AASHTO guidelines were based upon the "Volume Warrants for Left-Turn Storage Lanes at Unsignalized Grade Intersections", Highway Research Record 211, Highway Research Board, 1967, by M. D. Harmelink. The Harmelink left-turn volume warrant analyzed the probability of the arrival of an advancing vehicle slowing and/or stopping behind a stopped vehicle, waiting to turn left from the through lane. Harmelink determined that the probability of this occurrence should not exceed 2 percent on a two-lane highway with a 40 miles per hour operating speed.

II. Existing Conditions

A. Roadways

Kamehameha Highway is the primary arterial highway in Windward Oahu. Kamehameha Highway is a two-way, two-lane highway with a posted speed of 35 miles per hour (mph), in the vicinity of the proposed project.

The existing Kualoa Ranch Driveway is stop-controlled at its Tee-intersection with Kamehameha Highway. An exclusive left-turn lane is not provided on northbound Kamehameha Highway at the Kualoa Ranch Driveway.

B. Public Transit

TheBus Route 55 provides transit service to Kualoa Ranch at approximately 30-minute intervals from 4:30 AM through midnight. TheBus stops are located on both sides of Kamehameha Highway, about 200 feet to the north (northbound) and 300 feet to the south (southbound) of the Kualoa Ranch Driveway.

C. Existing Peak Hour Traffic Volumes and Operating Conditions

1. Field Investigation and Data Collection

A turning movement traffic count survey and a pedestrian count survey on Kamehameha Highway and the Kualoa Ranch Driveway, were conducted on March 15, 2015 (Thursday) from 7:30 AM to 7:00 PM, March 16, 2018 (Friday) from 6:00 AM to 9:00 AM, and on March 17, 2018 (Saturday) from 7:00 AM to 7:00 PM. The commuter peak hours of traffic on Kamehameha Highway was not apparent during the field investigation. Therefore, the peak hours of analysis were based upon the weekday

and Saturday peak hours of generator, which were determined from the peak traffic driveway traffic on Kualoa Ranch Driveway.

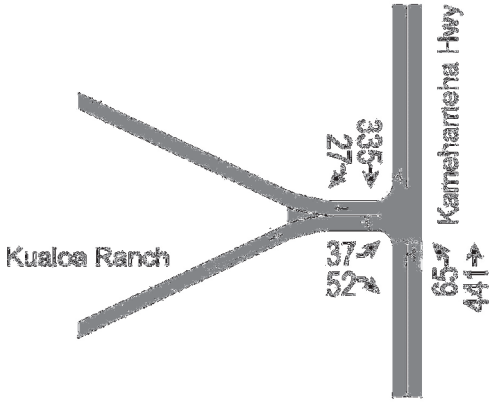
2. Existing Weekday Peak Hour Traffic

The existing weekday peak hour of Kualoa Ranch traffic on Kamehameha Highway occurred from 2:00 PM to 3:00 PM. Kamehameha Highway carried about 900 vehicles per hour (vph), total for both directions. Traffic on the two-lane Highway flowed in platoons, led by the slowest moving vehicle. The Kualoa Ranch generated a total of 181 vph, during the existing peak hour of weekday traffic, 92 vph entering the site and 89 vph exiting the site. Five (5) buses arrived and 9 buses departed Kualoa Ranch during the existing weekday peak hour of traffic. Ten (10) "light goods vehicles", which included passenger vans, entered Kualoa Ranch and 10 vans exited Kualoa Ranch. The vans may have been delivering passengers or goods. No (0) bicycles entered or exited Kualoa Ranch during the existing weekday peak hour of traffic. One (1) bicycle passed Kualoa Ranch on Kamehameha Highway. The 7 pedestrians entered, and 5 pedestrians exited the Kualoa Ranch Driveway, during the existing weekday peak hour of traffic. The pedestrian trips were assumed to have arrived/departed via TheBus.

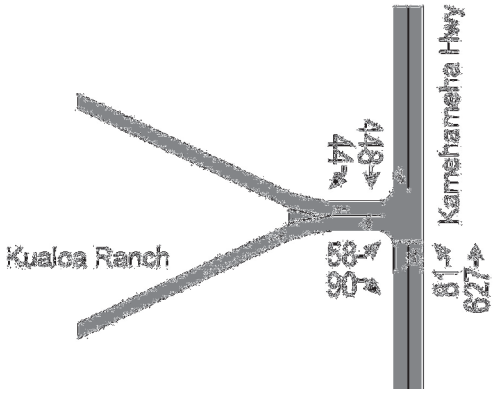
The Kualoa Ranch Driveway operated at LOS "C", during the existing peak hour of weekday traffic. The average observed delay of exiting traffic was 7 seconds, which corresponded to LOS "A" conditions. Further analysis of the Kualoa Ranch Driveway at Kamehameha Highway, using traffic simulation methodology, resulted in an average vehicle delay of 8.1 seconds.

The left-turn movement from northbound Kamehameha Highway into the Kualoa Ranch Driveway operated at LOS "A". The average observed delay of left-turn traffic was 5 seconds, which confirmed the LOS "A" conditions. Traffic simulation of the existing left-turn movement on northbound Kamehameha Highway resulted in an average vehicle delay of 4.3 seconds, which also corresponded to the observed delay.

The left-turn traffic demand from northbound Kamehameha Highway into the Kualoa Ranch Driveway met the AASHTO guideline for an exclusive left-turn lane, during the existing peak hour of weekday traffic. However, the posted speed of 35-mph on Kamehameha Highway did not meet the AASHTO minimum operating speed for an exclusive left-turn lane. Figure 5 depicts the existing weekday peak hour traffic volumes.



Existing Weekday Peak Hour Traffic



Existing Saturday Peak Hour Traffic

Figure 5. Existing Peak Hour Traffic

3. Existing Saturday Peak Hour Traffic

The existing Saturday peak hour of Kualoa Ranch traffic also occurred between 2:00 PM and 3:00 PM. Kamehameha Highway carried about 1,200 vph, total for both directions. Traffic on Kamehameha Highway again exhibited platoon flow. During the existing Saturday peak hour of traffic, Kualoa Ranch generated a total of 271 vph, 125 vph entering and 146 vph exiting the site.

Eight (8) buses arrived and 11 buses departed Kualoa Ranch. Eighteen (18) vans entered Kualoa Ranch and 22 vans exited Kualoa Ranch, during the Saturday peak hour of traffic. No (0) bicycles passed through the Kualoa Ranch Driveway and Kamehameha Highway intersection, during the existing Saturday peak hour of traffic. The 10 pedestrians entered, and 4 pedestrians exited the Kualoa Ranch Driveway, during the existing Saturday peak hour of traffic. The pedestrian trips were assumed to have used TheBus to/from Kualoa Ranch.

The Kualoa Ranch Driveway operated at LOS "F" at Kamehameha Highway, during the existing Saturday peak hour of traffic. The average observed delay of exiting traffic was 7 seconds, which corresponded to LOS "A" conditions. Traffic simulation of the existing Kualoa Ranch Driveway approach at Kamehameha Highway resulted in an average vehicle delay of 48.2 seconds, which corresponded to the HCM LOS "E" conditions.

The left-turn movement from northbound Kamehameha Highway operated at LOS "A". The average observed delay of left-turn traffic of 4 seconds confirmed the LOS "A" conditions. Traffic simulation of the existing left-turn movement on northbound Kamehameha Highway resulted in an average vehicle delay of 8.3 seconds, which also corresponded to LOS "A" conditions.

While the left-turn demand from northbound Kamehameha Highway into the Kualoa Ranch Driveway met the AASHTO guideline for an exclusive left-turn lane, during the existing Saturday peak hour of traffic, the posted speed limit on Kamehameha Highway did not meet the AASHTO minimum operating speed. The existing Saturday peak hour traffic volumes also are depicted on Figure 5.

4. Special Event Traffic Control

Although the field investigation for this transportation impact assessment did not include the analysis of special event traffic, Kualoa Ranch has implemented special event traffic control plans on Kamehameha Highway in the past. For example, the Hawaii State Farm Fair was held at Kualoa Ranch on July 15-16, 2017. In order to accommodate an estimated attendance of 13,000 people over the two-day event, Kualoa Ranch implemented a temporary traffic control plan, which relocated the main entrance to a driveway about 700 feet to the north and immediately south of the Kualoa Sugar Mill.

The paved shoulders along Kamehameha Highway provided sufficient roadway width for a temporary left-turn lane, which was delineated with traffic cones. Off-duty Honolulu Police officers directed traffic at the temporary entrance to mitigate queuing on the Highway.

III. Future Traffic Conditions Without the Proposed project

A. Background Growth in Traffic

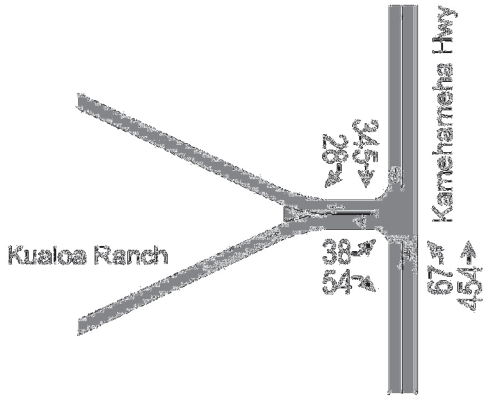
According to the Institute of Transportation Engineers (ITE), an area-wide transportation plan can be more accurate than growth projections based upon historical trends (Transportation Impact Analysis for Site Development). The Oahu Regional Transportation Plan 2035 (ORTP), was prepared for the Oahu Metropolitan Planning Organization (OMPO), dated April 2011. The ORTP is the basis for the long-range transportation planning on the island of Oahu. The Year 2035 weekday traffic forecasts for Windward Oahu were obtained from OMPO. The interim traffic forecasts on Kamehameha Highway were derived by linear interpolation between the Year 2035 ORTP model forecasts and the Base Year 2011 DOT data for weekday traffic. The ORTP projected a 1.45 percent annual increase in traffic on Kamehameha Highway. The annual growth in traffic was used to estimate future peak hour traffic demands on Kamehameha Highway for the Year 2020.

B. Weekday Peak Hour Traffic Without the Proposed Project

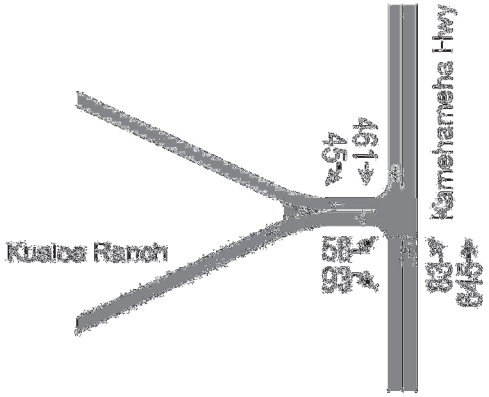
The Kualoa Ranch Driveway is expected to continue to operate at LOS "C" at Kamehameha Highway, during the PM peak hour of weekday traffic without the proposed project. The left-turn movement on northbound Kamehameha Highway is expected to operate at LOS "A" at the Kualoa Ranch Driveway. Figure 6 depicts the weekday PM hour traffic without the proposed Kualoa Ranch Improvements.

C. Saturday Peak Hour Traffic Without the Proposed Project

The Kualoa Ranch Driveway is expected to continue to operate at LOS "F", during the Saturday peak hour of traffic without the proposed project. The left-turn movement on northbound Kamehameha Highway is expected to operate at LOS "A" at the Kualoa Ranch Driveway. The Saturday peak hour traffic without the proposed project also is depicted on Figure 6.



Weekday Peak Hour Traffic Without Project



Saturday Peak Hour Traffic Without Project

Figure 6. Peak Hour Traffic Without Kualoa Ranch Improvements

IV. Transportation Impact Assessment

A. Trip Generation Characteristics

A trip generation study was conducted at Kualoa Ranch by correlating the peak hour traffic with the existing floor areas. The existing trip rates per 1,000 SFGFA were applied to the proposed floor areas to develop the trip generation characteristics of the proposed Kualoa Ranch Improvements. The trip generation characteristics for the proposed project are summarized in Table 3.

Table 3. Trip Generation Characteristics

Scenario (SFGFA)	Units	Weekday Peak Hour			Saturday Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Existing Conditions (47,362)	vph	92	89	181	125	145	270
	vph/1,000 SFGFA	1.94	1.88	3.82	2.64	3.08	5.72
Kualoa Ranch Improvements (29,430)	vph	57	55	112	78	91	169

B. Weekday Peak Hour Traffic Analysis With the Kualoa Ranch Improvements

The Kualoa Ranch Driveway should be widened to provide separate left-turn and right-turn lanes onto Kamehameha Highway. Kualoa Ranch Driveway pavement returns should be widened, as necessary, to accommodate the bus turning movements to/from Kamehameha Highway.

The HCM analysis indicates that the left-turn and right-turn movements from the Kualoa Ranch Driveway onto Kamehameha Highway are expected to operate at LOS "D" and LOS "B", during the weekday peak hour of traffic with the Kualoa Ranch Improvements, respectively. Traffic simulation of the improved Kualoa Ranch Driveway approach indicates that the left-turn and right-turn movements from the Kualoa Ranch Driveway are expected to experience average delays of 21.1 seconds per vehicle and 4.7 seconds per vehicle, respectively. These simulated delays on the left-turn and right-turn movements translate into the HCM LOS "C" and LOS "A", respectively.

The left-turn movement on northbound Kamehameha Highway is expected to continue to operate at LOS "A". Traffic simulation of the left-turn movement from Kamehameha Highway resulted in an average delay of 5.8 seconds, which confirms the LOS "A" conditions. Simulation indicates average queues of about two (2) vehicle lengths on

northbound Kamehameha Highway. Figure 7 depicts the PM peak hour traffic with the proposed Kualoa Ranch Improvements.

C. Saturday Peak Hour Traffic Analysis With the Kualoa Ranch Improvements

During the Saturday peak hour of traffic with the proposed Kualoa Ranch Improvements, the left-turn and right-turn movements from the Kualoa Ranch Driveway onto Kamehameha Highway is expected to operate at LOS "F" and LOS "C", respectively. Traffic simulation of the Kualoa Ranch Driveway approach at Kamehameha Highway resulted in an average vehicle delay of 65 seconds, which confirms to the HCM LOS "F" conditions.

The left-turn movement on northbound Kamehameha Highway is expected to continue to operate at LOS "A", during the Saturday peak hour of traffic with the proposed project. Traffic simulation of the left-turn movement from Kamehameha Highway resulted in an average delay of 12.3 seconds, which corresponds to the HCM LOS "B" conditions. Simulation indicates average queues of about five (5) vehicle lengths on northbound Kamehameha Highway. The Saturday peak hour traffic with the proposed Kualoa Ranch Improvements also is depicted on Figure 7.

V. Recommendations and Conclusions

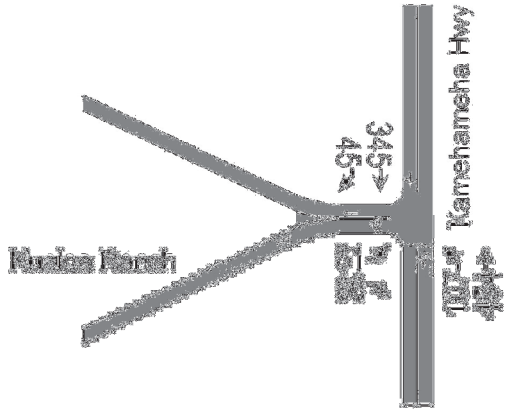
A. Recommended Traffic Improvements

1. Widen the Kualoa Ranch Driveway to provide separate left-turn and right-turn lanes at Kamehameha Highway.
2. Widen the Kualoa Ranch Driveway to accommodate the bus turning movements to/from Kamehameha Highway.
3. Implement the special event traffic control plans on Saturdays, as necessary.

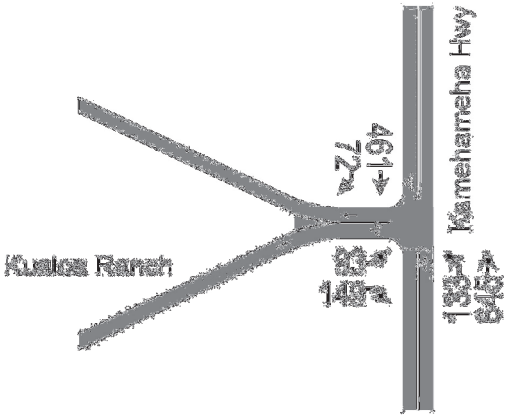
B. Conclusions

The observed traffic delays on the Kualoa Ranch Driveway at Kamehameha Highway were much lower than the HCM calculated LOS's and the traffic simulation delays. The lower observed delays can be attributed to the "considerate driving" behavior, observed during the field investigation.

The existing weekday and Saturday peak hour traffic demands at the intersection of Kamehameha Highway and the Kualoa Ranch Driveway met the AASHTO guidelines for the installation of an exclusive left-turn lane. However, the AASHTO guidelines apply to a minimum operating speed of 40 mph. The posted speed limit on Kamehameha Highway of 35 mph does <u>not</u> meet the AASHTO guidelines.



Weekday Peak Hour Traffic With Project



Saturday Peak Hour Traffic With Project

Figure 7. Peak Hour Traffic With Kualoa Ranch Improvements

Bicycle traffic was virtually non-existent at the Kamehameha Highway intersection at the Kualoa Ranch Driveway. The pedestrian traffic and the use of public transit by Kualoa Ranch visitors also were minimal.

The existing Kualoa Ranch trip generation consisted of relatively high percentages of high-occupancy vehicles. Up to 19 percent of the trips generated by Kualoa Ranch, during the weekday peak hour of traffic, were comprised of buses and passenger vans. During the Saturday peak hour of traffic, up to 22 percent of the Kualoa Ranch trips consisted of buses and passenger vans. Throughout the study period, up to 24 percent of the Kualoa Ranch trips were buses and passenger vans.

The proposed improvements to the Kualoa Ranch Driveway are expected to mitigate the traffic impacts of the Kualoa Ranch Improvements, during the weekday peak hour of traffic. Saturday and special event traffic may require temporary traffic control measures to mitigate the traffic impacts on Kamehameha Highway.

TRANSPORTATION ASSESSMENT REPORT UPDATE

FOR THE PROPOSED

KUALOA RANCH IMPROVEMENTS

KA`A`AWA, OAHU, HAWAII

APPENDIX A

TRAFFIC COUNT DATA

The Traffic Management Consultant
1188 Bishop Street, Suite 1907

Honolulu, Hawaii, United States 96813
808-536-0223 tmchawaii@aol.com

Count Name: Kualoa Ranch Kamehameha Hwy
Site Code: Kualoa Ranch
Start Date: 03/15/2018
Page No: 1

Turning Movement Data

Start Time	Eastbound Approach Eastbound				Kamehameha Hwy Northbound				Kamehameha Hwy Southbound					
	Left-Turn	Right-Turn	Peds	App. Total	Left-Turn	Thru	Peds	App. Total	Left-Turn	Thru	Right-Turn	Peds	App. Total	Int. Total
7:15 AM	7	1	0	8	10	57	0	67	0	119	6	0	125	200
7:30 AM	0	5	0	5	13	64	0	77	0	130	8	2	138	220
7:45 AM	4	7	0	11	13	67	0	80	0	108	7	0	115	206
Hourly Total	11	13	0	24	36	188	0	224	0	357	21	2	378	626
8:00 AM	2	2	0	4	20	71	0	91	0	108	3	2	111	206
8:15 AM	1	7	0	8	10	45	0	55	0	118	3	0	121	184
8:30 AM	1	5	0	6	20	97	0	117	0	109	2	0	111	234
8:45 AM	2	5	0	7	21	85	0	106	0	82	9	0	91	204
Hourly Total	6	19	0	25	71	298	0	369	0	417	17	2	434	828
9:00 AM	5	6	0	11	18	55	0	73	0	86	1	0	87	171
9:15 AM	4	9	1	13	14	52	0	66	0	89	3	0	92	171
9:30 AM	1	7	0	8	15	84	0	99	0	111	3	5	114	221
9:45 AM	3	7	0	10	16	83	0	99	0	72	5	2	77	186
Hourly Total	13	29	1	42	63	274	0	337	0	358	12	7	370	749
10:00 AM	4	3	0	7	16	62	0	78	0	84	5	0	89	174
10:15 AM	4	9	1	13	17	101	0	118	0	105	3	0	108	239
10:30 AM	5	8	0	13	10	60	0	70	0	87	8	0	95	178
10:45 AM	6	4	0	10	14	100	0	114	0	91	4	0	95	219
Hourly Total	19	24	1	43	57	323	0	380	0	367	20	0	387	810
11:00 AM	6	9	0	15	12	76	0	88	0	72	3	0	75	178
11:15 AM	6	5	0	11	15	99	0	114	0	76	4	0	80	205
11:30 AM	11	15	2	26	14	117	0	131	1	92	5	2	98	255
11:45 AM	9	5	0	14	19	121	1	140	0	73	6	3	79	233
Hourly Total	32	34	2	66	60	413	1	473	1	313	18	5	332	871
12:00 PM	13	15	0	28	20	102	0	122	0	77	11	2	88	238
12:15 PM	7	11	0	18	15	100	0	115	0	109	4	0	113	246
12:30 PM	10	21	0	31	11	118	0	129	0	76	6	0	82	242
12:45 PM	7	9	0	16	10	102	0	112	0	79	6	1	85	213
Hourly Total	37	56	0	93	56	422	0	478	0	341	27	3	368	939
1:00 PM	6	13	0	19	18	115	0	133	0	76	10	0	86	238
1:15 PM	6	10	0	16	13	100	0	113	0	92	2	5	94	223
1:30 PM	5	7	0	12	16	99	0	115	0	76	7	1	83	210
1:45 PM	6	12	0	18	16	110	0	126	0	76	7	4	83	227
Hourly Total	23	42	0	65	63	424	0	487	0	320	26	10	346	898
2:00 PM	11	13	0	24	19	117	0	136	1	98	7	0	106	266
2:15 PM	8	18	0	26	10	129	3	139	0	104	5	0	109	274
2:30 PM	11	23	1	34	8	116	1	124	0	116	7	0	123	281
2:45 PM	7	20	0	27	8	118	0	126	0	118	7	4	125	278
Hourly Total	37	74	1	111	45	480	4	525	1	436	26	4	463	1099
3:00 PM	7	13	1	20	7	111	0	118	0	68	4	2	72	210
3:15 PM	7	14	0	21	8	139	0	147	0	89	4	1	93	261

3:30 PM	10	16	0	26	12	157	0	169	0	106	6	0	112	307
3:45 PM	15	15	0	30	5	147	0	152	0	104	7	0	111	293
Hourly Total	39	58	1	97	32	554	0	586	0	367	21	3	388	1071
4:00 PM	8	20	0	28	0	141	0	141	0	99	6	0	105	274
4:15 PM	11	16	0	27	3	153	0	156	0	83	6	0	89	272
4:30 PM	8	13	0	21	3	134	0	137	0	72	2	0	74	232
4:45 PM	7	14	0	21	5	140	0	145	0	83	2	0	85	251
Hourly Total	34	63	0	97	11	568	0	579	0	337	16	0	353	1029
5:00 PM	5	12	0	17	2	154	0	156	0	101	2	0	103	276
5:15 PM	5	12	0	17	2	139	0	141	0	102	2	0	104	262
5:30 PM	5	26	0	31	3	130	0	133	0	96	2	0	98	262
5:45 PM	3	4	0	7	0	126	0	126	1	83	0	0	84	217
Hourly Total	18	54	0	72	7	549	0	556	1	382	6	0	389	1017
6:00 PM	5	7	0	12	0	109	0	109	1	85	0	0	86	207
6:15 PM	2	4	0	6	1	112	0	113	0	84	1	0	85	204
6:30 PM	2	2	0	4	0	92	0	92	0	56	0	0	56	152
6:45 PM	0	4	0	4	0	93	0	93	0	72	2	0	74	171
Hourly Total	9	17	0	26	1	406	0	407	1	297	3	0	301	734
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6:00 AM	1	1	0	2	4	37	0	41	0	112	3	0	115	158
6:15 AM	3	0	0	3	2	48	0	50	0	115	2	0	117	170
6:30 AM	2	3	0	5	9	54	0	63	0	117	6	0	123	191
6:45 AM	2	1	0	3	12	37	0	49	0	92	17	0	109	161
Hourly Total	8	5	0	13	27	176	0	203	0	436	28	0	464	680
7:00 AM	1	12	0	13	9	66	0	75	0	116	12	0	128	216
7:15 AM	1	4	0	5	11	64	0	75	0	111	5	0	116	196
7:30 AM	1	4	0	5	14	54	0	68	0	113	8	0	121	194
7:45 AM	4	6	0	10	20	47	0	67	0	119	8	0	127	204
Hourly Total	7	26	0	33	54	231	0	285	0	459	33	0	492	810
8:00 AM	0	5	0	5	27	60	0	87	0	104	8	1	112	204
8:15 AM	5	7	0	12	29	73	0	102	0	108	10	0	118	232
8:30 AM	2	6	0	8	14	55	0	69	0	119	2	1	121	198
8:45 AM	1	7	0	8	19	67	0	86	0	101	5	0	106	200
Hourly Total	8	25	0	33	89	255	0	344	0	432	25	2	457	834
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:00 AM	3	6	0	9	10	47	0	57	1	51	6	0	58	124
7:15 AM	2	5	0	7	10	56	0	66	0	58	4	0	62	135
7:30 AM	1	4	0	5	25	51	0	76	1	91	8	1	100	181
7:45 AM	3	4	0	7	15	60	0	75	0	95	5	0	100	182
Hourly Total	9	19	0	28	60	214	0	274	2	295	23	1	320	622
8:00 AM	1	3	0	4	27	68	0	95	0	73	1	0	74	173
8:15 AM	0	3	0	3	14	65	0	79	0	94	6	0	100	182
8:30 AM	3	8	0	11	15	68	0	83	0	97	5	0	102	196
8:45 AM	1	9	0	10	11	65	0	76	1	81	6	0	88	174
Hourly Total	5	23	0	28	67	266	0	333	1	345	18	0	364	725
9:00 AM	2	8	0	10	9	69	0	78	0	120	2	0	122	210
9:15 AM	1	4	0	5	9	77	0	86	0	115	6	0	121	212
9:30 AM	1	2	0	3	16	76	0	92	0	114	4	0	118	213
9:45 AM	2	3	0	5	20	90	0	110	0	151	6	5	157	272
Hourly Total	6	17	0	23	54	312	0	366	0	500	18	5	518	907
10:00 AM	3	4	0	7	10	99	0	109	0	110	6	0	116	232
10:15 AM	10	9	0	19	20	113	0	133	0	129	4	0	133	285

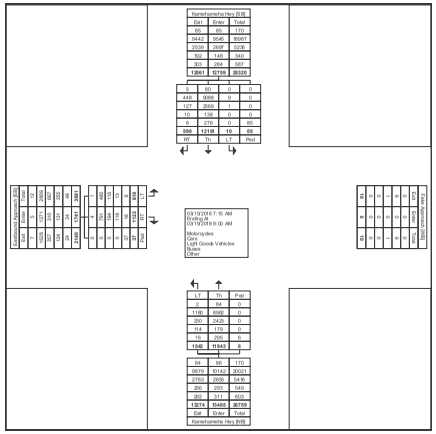
10:30 AM	6	14	0	20	24	115	0	139	0	133	3	0	136	295
10:45 AM	8	10	0	18	22	124	0	146	0	112	2	0	114	278
Hourly Total	27	37	0	64	76	451	0	527	0	484	15	0	499	1090
11:00 AM	3	8	0	11	16	136	0	152	0	103	5	0	108	271
11:15 AM	14	6	0	20	23	145	0	168	1	90	4	0	95	283
11:30 AM	9	15	0	24	21	157	0	178	0	110	4	0	114	316
11:45 AM	7	10	5	17	21	204	0	225	0	106	3	0	109	351
Hourly Total	33	39	5	72	81	642	0	723	1	409	16	0	426	1221
12:00 PM	13	10	2	23	16	171	0	187	0	86	5	3	91	301
12:15 PM	8	14	0	22	13	150	0	163	1	115	4	1	120	305
12:30 PM	12	10	0	22	12	190	0	202	0	121	4	2	125	349
12:45 PM	13	8	6	21	14	191	0	205	0	101	6	0	107	333
Hourly Total	46	42	8	88	55	702	0	757	1	423	19	6	443	1288
1:00 PM	5	9	5	14	10	161	0	171	0	119	7	8	126	311
1:15 PM	9	15	0	24	8	168	0	176	0	105	4	2	109	309
1:30 PM	7	4	2	11	14	180	0	194	0	100	3	2	103	308
1:45 PM	4	7	4	11	20	156	0	176	0	113	4	0	117	304
Hourly Total	25	35	11	60	52	665	0	717	0	437	18	12	455	1232
2:00 PM	11	20	0	31	16	157	0	173	0	101	10	0	111	315
2:15 PM	16	19	0	35	26	160	0	186	0	109	7	0	116	337
2:30 PM	19	24	0	43	21	152	0	173	0	136	14	0	150	366
2:45 PM	10	27	0	37	18	158	0	176	0	102	13	0	115	328
Hourly Total	56	90	0	146	81	627	0	708	0	448	44	0	492	1346
3:00 PM	8	23	0	31	13	175	0	188	0	114	12	0	126	345
3:15 PM	5	17	0	22	22	197	0	219	0	114	5	0	119	360
3:30 PM	13	22	1	35	15	162	0	177	0	140	4	1	144	356
3:45 PM	14	14	4	28	17	135	0	152	0	137	3	3	140	320
Hourly Total	40	76	5	116	67	669	0	736	0	505	24	4	529	1381
4:00 PM	9	17	1	26	21	127	0	148	0	139	8	2	147	321
4:15 PM	7	26	0	33	22	116	0	138	0	143	2	2	145	316
4:30 PM	6	14	0	20	11	140	0	151	0	141	5	0	146	317
4:45 PM	6	17	0	23	7	123	0	130	1	158	6	0	165	318
Hourly Total	28	74	1	102	61	506	0	567	1	581	21	4	603	1272
5:00 PM	4	16	0	20	0	110	0	110	0	126	5	0	131	261
5:15 PM	3	12	0	15	10	115	0	125	0	137	2	0	139	279
5:30 PM	5	23	0	28	7	83	0	90	0	134	1	0	135	253
5:45 PM	3	13	0	16	13	114	0	127	0	128	1	0	129	272
Hourly Total	15	64	0	79	30	422	0	452	0	525	9	0	534	1065
6:00 PM	4	8	0	12	4	98	1	102	0	143	2	0	145	259
6:15 PM	2	5	0	7	4	98	0	102	0	114	2	0	116	225
6:30 PM	1	2	0	3	2	95	0	97	0	112	1	0	113	213
6:45 PM	2	7	0	9	0	77	0	77	0	120	1	0	121	207
Hourly Total	9	22	0	31	10	368	1	378	0	489	6	0	495	904
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6:00 AM	0	0	0	0	3	36	0	39	0	107	2	0	109	148
6:15 AM	1	0	0	1	2	41	0	43	0	86	1	0	87	131
6:30 AM	1	0	0	1	9	47	0	56	0	79	8	0	87	144
6:45 AM	1	3	0	4	14	40	0	54	0	77	18	0	95	153
Hourly Total	3	3	0	6	28	164	0	192	0	349	29	0	378	576
7:00 AM	0	5	0	5	6	37	0	43	0	91	5	2	96	144
7:15 AM	1	6	0	7	14	52	0	66	0	112	4	7	116	189
7:30 AM	0	3	0	3	21	49	0	70	0	91	3	5	94	167

7:45 AM	1	4	0	5	26	48	0	74	0	82	5	0	87	166
Hourly Total	2	18	0	20	67	186	0	253	0	376	17	14	393	666
8:00 AM	5	5	0	10	21	36	0	57	0	89	3	1	92	159
8:15 AM	4	9	0	13	23	45	0	68	0	92	10	0	102	183
8:30 AM	1	5	0	6	26	61	0	87	0	94	6	0	100	193
8:45 AM	3	6	1	9	11	46	0	57	0	91	3	0	94	160
Hourly Total	13	25	1	38	81	188	0	269	0	366	22	1	388	695
Grand Total	618	1123	37	1741	1542	11943	6	13485	10	12151	598	85	12759	27985
Approach %	35.5	64.5	-	-	11.4	88.6	-	-	0.1	95.2	4.7	-	-	-
Total %	2.2	4.0	-	6.2	5.5	42.7	-	48.2	0.0	43.4	2.1	-	45.6	-
Motorcycles	1	4	-	5	2	84	-	86	0	80	5	-	85	176
% Motorcycles	0.2	0.4	-	0.3	0.1	0.7	-	0.6	0.0	0.7	0.8	-	0.7	0.6
Cars	480	791	-	1271	1180	8962	-	10142	9	9088	448	-	9545	20958
% Cars	77.7	70.4	-	73.0	76.5	75.0	-	75.2	90.0	74.8	74.9	-	74.8	74.9
Light Goods Vehicles	116	194	-	310	230	2423	-	2653	1	2569	127	-	2697	5660
% Light Goods Vehicles	18.8	17.3	-	17.8	14.9	20.3	-	19.7	10.0	21.1	21.2	-	21.1	20.2
Buses	13	118	-	131	114	179	-	293	0	138	10	-	148	572
% Buses	2.1	10.5	-	7.5	7.4	1.5	-	2.2	0.0	1.1	1.7	-	1.2	2.0
Single-Unit Trucks	8	13	-	21	14	248	-	262	0	228	6	-	234	517
% Single-Unit Trucks	1.3	1.2	-	1.2	0.9	2.1	-	1.9	0.0	1.9	1.0	-	1.8	1.8
Articulated Trucks	0	3	-	3	2	38	-	40	0	23	2	-	25	68
% Articulated Trucks	0.0	0.3	-	0.2	0.1	0.3	-	0.3	0.0	0.2	0.3	-	0.2	0.2
Bicycles on Road	0	0	-	0	0	9	-	9	0	25	0	-	25	34
% Bicycles on Road	0.0	0.0	-	0.0	0.0	0.1	-	0.1	0.0	0.2	0.0	-	0.2	0.1
Bicycles on Crosswalk	-	-	0	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	0.0	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	37	-	-	-	6	-	-	-	-	85	-	-
% Pedestrians	-	-	100.0	-	-	-	100.0	-	-	-	-	100.0	-	-

The Traffic Management Consultant
1188 Bishop Street, Suite 1907

Honolulu, Hawaii, United States 96813
808-536-0223 tmchawaii@aol.com

Count Name: Kualoa Ranch Kamehameha Hwy
Site Code: Kualoa Ranch
Start Date: 03/15/2018
Page No: 5



Turning Movement Data Plot

The Traffic Management Consultant
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Honolulu, Hawaii, United States 96813
808-536-0223 tmchawaii@aol.com

Count Name: Kualoa Ranch Kamehameha Hwy
Site Code: Kualoa Ranch
Start Date: 03/15/2018

Turning Movement Peak Hour Data (2:00 PM)

Start Time	Eastbound Approach Eastbound				Kamehameha Hwy Northbound				Kamehameha Hwy Southbound					
	Left-Turn	Right-Turn	Peds	App. Total	Left-Turn	Thru	Peds	App. Total	Left-Turn	Thru	Right-Turn	Peds	App. Total	Int. Total
2:00 PM	11	13	0	24	19	117	0	136	1	98	7	0	106	266
2:15 PM	8	18	0	26	10	129	3	139	0	104	5	0	109	274
2:30 PM	11	23	1	34	8	116	1	124	0	116	7	0	123	281
2:45 PM	7	20	0	27	8	118	0	126	0	118	7	4	125	278
Total	37	74	1	111	45	480	4	525	1	436	26	4	463	1099
Approach %	33.3	66.7	-	-	8.6	91.4	-	-	0.2	94.2	5.6	-	-	-
Total %	3.4	6.7	-	10.1	4.1	43.7	-	47.8	0.1	39.7	2.4	-	42.1	-
PHF	0.841	0.804	-	0.816	0.592	0.930	-	0.944	0.250	0.924	0.929	-	0.926	0.978
Motorcycles	1	2	-	3	0	4	-	4	0	4	2	-	6	13
% Motorcycles	2.7	2.7	-	2.7	0.0	0.8	-	0.8	0.0	0.9	7.7	-	1.3	1.2
Cars	31	57	-	88	35	382	-	417	1	299	19	-	319	824
% Cars	83.8	77.0	-	79.3	77.8	79.6	-	79.4	100.0	68.6	73.1	-	68.9	75.0
Light Goods Vehicles	4	7	-	11	6	79	-	85	0	101	4	-	105	201
% Light Goods Vehicles	10.8	9.5	-	9.9	13.3	16.5	-	16.2	0.0	23.2	15.4	-	22.7	18.3
Buses	1	8	-	9	4	8	-	12	0	10	1	-	11	32
% Buses	2.7	10.8	-	8.1	8.9	1.7	-	2.3	0.0	2.3	3.8	-	2.4	2.9
Single-Unit Trucks	0	0	-	0	0	5	-	5	0	19	0	-	19	24
% Single-Unit Trucks	0.0	0.0	-	0.0	0.0	1.0	-	1.0	0.0	4.4	0.0	-	4.1	2.2
Articulated Trucks	0	0	-	0	0	2	-	2	0	0	0	-	0	2
% Articulated Trucks	0.0	0.0	-	0.0	0.0	0.4	-	0.4	0.0	0.0	0.0	-	0.0	0.2
Bicycles on Road	0	0	-	0	0	0	-	0	0	3	0	-	3	3
% Bicycles on Road	0.0	0.0	-	0.0	0.0	0.0	-	0.0	0.0	0.7	0.0	-	0.6	0.3
Bicycles on Crosswalk	-	-	0	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	0.0	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	1	-	-	-	4	-	-	-	-	4	-	-
% Pedestrians	-	-	100.0	-	-	-	100.0	-	-	-	-	100.0	-	-

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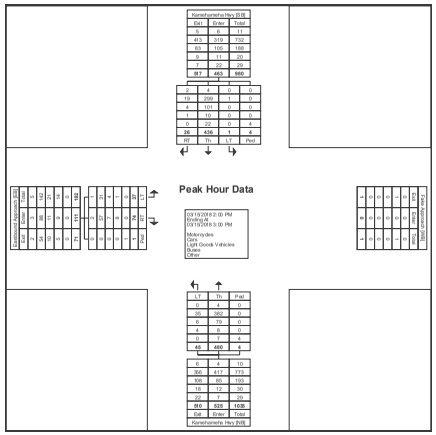
Count Name: Kualoa Ranch Kamehameha Hwy
Site Code: Kualoa Ranch
Start Date: 03/15/2018



Turning Movement Peak Hour Data Plot (2:00 PM)

The Traffic Management Consultant
1188 Bishop Street, Suite 1907

Honolulu, Hawaii, United States 96813
808-536-0223 tmchawaii@aol.com

Count Name: Kualoa Ranch Kamehameha Hwy
Site Code: Kualoa Ranch
Start Date: 03/15/2018

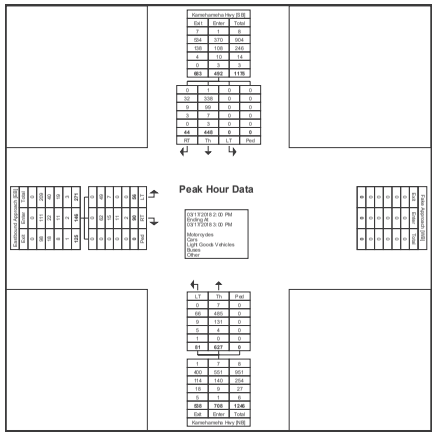
Turning Movement Peak Hour Data (2:00 PM)

Start Time	Eastbound Approach Eastbound				Kamehameha Hwy Northbound				Kamehameha Hwy Southbound					
	Left-Turn	Right-Turn	Peds	App. Total	Left-Turn	Thru	Peds	App. Total	Left-Turn	Thru	Right-Turn	Peds	App. Total	Int. Total
2:00 PM	11	20	0	31	16	157	0	173	0	101	10	0	111	315
2:15 PM	16	19	0	35	26	160	0	186	0	109	7	0	116	337
2:30 PM	19	24	0	43	21	152	0	173	0	136	14	0	150	366
2:45 PM	10	27	0	37	18	158	0	176	0	102	13	0	115	328
Total	56	90	0	146	81	627	0	708	0	448	44	0	492	1346
Approach %	38.4	61.6	-	-	11.4	88.6	-	-	0.0	91.1	8.9	-	-	-
Total %	4.2	6.7	-	10.8	6.0	46.6	-	52.6	0.0	33.3	3.3	-	36.6	-
PHF	0.737	0.833	-	0.849	0.779	0.980	-	0.952	0.000	0.824	0.786	-	0.820	0.919
Motorcycles	0	0	-	0	0	7	-	7	0	1	0	-	1	8
% Motorcycles	0.0	0.0	-	0.0	0.0	1.1	-	1.0	-	0.2	0.0	-	0.2	0.6
Cars	49	62	-	111	66	485	-	551	0	338	32	-	370	1032
% Cars	87.5	68.9	-	76.0	81.5	77.4	-	77.8	-	75.4	72.7	-	75.2	76.7
Light Goods Vehicles	7	15	-	22	9	131	-	140	0	99	9	-	108	270
% Light Goods Vehicles	12.5	16.7	-	15.1	11.1	20.9	-	19.8	-	22.1	20.5	-	22.0	20.1
Buses	0	11	-	11	5	4	-	9	0	7	3	-	10	30
% Buses	0.0	12.2	-	7.5	6.2	0.6	-	1.3	-	1.6	6.8	-	2.0	2.2
Single-Unit Trucks	0	2	-	2	1	0	-	1	0	2	0	-	2	5
% Single-Unit Trucks	0.0	2.2	-	1.4	1.2	0.0	-	0.1	-	0.4	0.0	-	0.4	0.4
Articulated Trucks	0	0	-	0	0	0	-	0	0	1	0	-	1	1
% Articulated Trucks	0.0	0.0	-	0.0	0.0	0.0	-	0.0	-	0.2	0.0	-	0.2	0.1
Bicycles on Road	0	0	-	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	0	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	0	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-

The Traffic Management Consultant
1188 Bishop Street, Suite 1907

Honolulu, Hawaii, United States 96813
808-536-0223 tmchawaii@aol.com

Count Name: Kualoa Ranch Kamehameha Hwy
Site Code: Kualoa Ranch
Start Date: 03/15/2018



Turning Movement Peak Hour Data Plot (2:00 PM)

TRANSPORTATION ASSESSMENT REPORT UPDATE

FOR THE PROPOSED

KUALOA RANCH IMPROVEMENTS

KA`A`AWA, OAHU, HAWAII

APPENDIX B

CAPACITY ANALYSIS WORKSHEETS

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	37	52	65	441	335	27
Future Vol, veh/h	37	52	65	441	335	27
Conflicting Peds, #/hr	1	1	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	17	11	8	7	4
Mvmt Flow	44	44	60	401	466	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	997	476	483	0	-	0
Stage 1	475	-	-	-	-	-
Stage 2	522	-	-	-	-	-
Critical Hdwy	6.43	6.37	4.21	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.453	2.299	-	-	-
Pot Cap-1 Maneuver	269	559	1034	-	-	-
Stage 1	624	-	-	-	-	-
Stage 2	593	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	248	558	1033	-	-	-
Mov Cap-2 Maneuver	248	-	-	-	-	-
Stage 1	577	-	-	-	-	-
Stage 2	592	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19	1.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1033	-	344	-	-
HCM Lane V/C Ratio	0.058	-	0.256	-	-
HCM Control Delay (s)	8.7	0	19	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.2	-	1	-	-

Intersection	
Int Delay, s/veh	6.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	58	90	81	627	448	44
Future Vol, veh/h	58	90	81	627	448	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	14	7	1	2	7
Mvmt Flow	79	96	84	608	542	57

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1347	571	599	0	-	0
Stage 1	571	-	-	-	-	-
Stage 2	776	-	-	-	-	-
Critical Hdwy	6.4	6.34	4.17	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.426	2.263	-	-	-
Pot Cap-1 Maneuver	168	498	954	-	-	-
Stage 1	569	-	-	-	-	-
Stage 2	457	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	146	498	954	-	-	-
Mov Cap-2 Maneuver	146	-	-	-	-	-
Stage 1	493	-	-	-	-	-
Stage 2	457	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	52.6	1.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	954	-	239	-	-
HCM Lane V/C Ratio	0.088	-	0.733	-	-
HCM Control Delay (s)	9.1	0	52.6	-	-
HCM Lane LOS	A	A	F	-	-
HCM 95th %tile Q(veh)	0.3	-	5	-	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	38	54	67	454	345	28
Future Vol, veh/h	38	54	67	454	345	28
Conflicting Peds, #/hr	1	1	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	17	11	8	7	4
Mvmt Flow	45	46	62	413	480	17

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1028	491	498	0	-	0
Stage 1	490	-	-	-	-	-
Stage 2	538	-	-	-	-	-
Critical Hdwy	6.43	6.37	4.21	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.453	2.299	-	-	-
Pot Cap-1 Maneuver	258	548	1021	-	-	-
Stage 1	614	-	-	-	-	-
Stage 2	583	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	237	547	1020	-	-	-
Mov Cap-2 Maneuver	237	-	-	-	-	-
Stage 1	565	-	-	-	-	-
Stage 2	582	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.9	1.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1020	-	332	-	-
HCM Lane V/C Ratio	0.06	-	0.274	-	-
HCM Control Delay (s)	8.8	0	19.9	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.2	-	1.1	-	-

Intersection	
Int Delay, s/veh	7.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	58	93	83	645	461	45
Future Vol, veh/h	58	93	83	645	461	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	14	7	1	2	7
Mvmt Flow	79	100	86	626	558	58

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1385	587	616	0	-	0
Stage 1	587	-	-	-	-	-
Stage 2	798	-	-	-	-	-
Critical Hdwy	6.4	6.34	4.17	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.426	2.263	-	-	-
Pot Cap-1 Maneuver	160	488	940	-	-	-
Stage 1	560	-	-	-	-	-
Stage 2	447	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	138	488	940	-	-	-
Mov Cap-2 Maneuver	138	-	-	-	-	-
Stage 1	482	-	-	-	-	-
Stage 2	447	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	59.7	1.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	940	-	230	-	-
HCM Lane V/C Ratio	0.092	-	0.776	-	-
HCM Control Delay (s)	9.2	0	59.7	-	-
HCM Lane LOS	A	A	F	-	-
HCM 95th %tile Q(veh)	0.3	-	5.6	-	-

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	61	86	107	454	345	45
Future Vol, veh/h	61	86	107	454	345	45
Conflicting Peds, #/hr	1	1	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	17	11	8	7	4
Mvmt Flow	73	73	98	413	480	27

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1105	496	508	0	-	0
Stage 1	495	-	-	-	-	-
Stage 2	610	-	-	-	-	-
Critical Hdwy	6.43	6.37	4.21	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.453	2.299	-	-	-
Pot Cap-1 Maneuver	232	545	1012	-	-	-
Stage 1	611	-	-	-	-	-
Stage 2	540	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	202	544	1011	-	-	-
Mov Cap-2 Maneuver	202	-	-	-	-	-
Stage 1	533	-	-	-	-	-
Stage 2	539	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	28.5	1.7	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1011	-	295	-	-
HCM Lane V/C Ratio	0.097	-	0.494	-	-
HCM Control Delay (s)	8.9	0	28.5	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0.3	-	2.6	-	-

Intersection	
Int Delay, s/veh	55.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	93	149	133	645	461	72
Future Vol, veh/h	93	149	133	645	461	72
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	14	7	1	2	7
Mvmt Flow	126	159	138	626	558	93

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1507	605	651	0	-	0
Stage 1	605	-	-	-	-	-
Stage 2	902	-	-	-	-	-
Critical Hdwy	6.4	6.34	4.17	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.426	2.263	-	-	-
Pot Cap-1 Maneuver	134	476	912	-	-	-
Stage 1	549	-	-	-	-	-
Stage 2	399	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 103	476	912	-	-	-
Mov Cap-2 Maneuver	~ 103	-	-	-	-	-
Stage 1	422	-	-	-	-	-
Stage 2	399	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 323.9	1.7	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	912	-	183	-	-
HCM Lane V/C Ratio	0.152	-	1.562	-	-
HCM Control Delay (s)	9.7	0	$ 323.9	-	-
HCM Lane LOS	A	A	F	-	-
HCM 95th %tile Q(veh)	0.5	-	18.6	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	61	86	107	454	345	45
Future Vol, veh/h	61	86	107	454	345	45
Conflicting Peds, #/hr	1	1	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	17	11	8	7	4
Mvmt Flow	73	73	98	413	480	27

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1105	496	508	0	-	0
Stage 1	495	-	-	-	-	-
Stage 2	610	-	-	-	-	-
Critical Hdwy	6.43	6.37	4.21	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.453	2.299	-	-	-
Pot Cap-1 Maneuver	232	545	1012	-	-	-
Stage 1	611	-	-	-	-	-
Stage 2	540	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	202	544	1011	-	-	-
Mov Cap-2 Maneuver	202	-	-	-	-	-
Stage 1	533	-	-	-	-	-
Stage 2	539	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	22.5	1.7	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1011	-	202	544	-	-
HCM Lane V/C Ratio	0.097	-	0.359	0.134	-	-
HCM Control Delay (s)	8.9	0	32.5	12.6	-	-
HCM Lane LOS	A	A	D	B	-	-
HCM 95th %tile Q(veh)	0.3	-	1.5	0.5	-	-

Intersection	
Int Delay, s/veh	20.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	93	149	133	645	461	72
Future Vol, veh/h	93	149	133	645	461	72
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	14	7	1	2	7
Mvmt Flow	126	159	138	626	558	93

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1507	605	651	0	-	0
Stage 1	605	-	-	-	-	-
Stage 2	902	-	-	-	-	-
Critical Hdwy	6.4	6.34	4.17	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.426	2.263	-	-	-
Pot Cap-1 Maneuver	134	476	912	-	-	-
Stage 1	549	-	-	-	-	-
Stage 2	399	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 103	476	912	-	-	-
Mov Cap-2 Maneuver	~ 103	-	-	-	-	-
Stage 1	422	-	-	-	-	-
Stage 2	399	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	115	1.7	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	912	-	103	476	-	-
HCM Lane V/C Ratio	0.152	-	1.228	0.335	-	-
HCM Control Delay (s)	9.7	0	239.4	16.3	-	-
HCM Lane LOS	A	A	F	C	-	-
HCM 95th %tile Q(veh)	0.5	-	8.5	1.5	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

APPENDIX F
NEIGHBORHOOD BOARD MEETING NOTES

• Print

Kahaluu Neighborhood Board No. 29

Printable Version (copy and paste into browser)
http://www.honolulu.gov/rep/site/nco/nb29/14/29201407min.pdf

DRAFT – REGULAR MEETING MINUTES
WEDNESDAY, JULY 9, 2014
KAHALUU KEY PROJECT

CALL TO ORDER: Chair Pro Tem Flora Obayashi called the meeting to order at 7:00 p.m. **A quorum was established with nine (9) members present.** Note – This 15-member Board requires eight (8) members to establish quorum and to take official Board action.

Board Members Present: Lee Gomes, David Henkin (departed at 7:57 p.m.), Rocky Kaluhiwa (arrived at 7:18 p.m.), Clifford Loo, Amy Luersen, Art Machado, Yvonne Nelson, Flora Obayashi, Lola Jean Tangaro, and Alice Taum.

Board Members Absent: Daniel Bender, Leilehualani Kane, and Ken LeVasseur.

Vacancies: There were two (2) vacancies in Subdistrict 6.

Guests: Art Challacombe (Mayor Kirk Caldwell's Representative), Lieutenant John Vines (Honolulu Police Department), Captain Andy Verke and Captain Warren Faurot (Honolulu Fire Department), Michael Sakata (Council Chair Ernie Martin's Office staff), Barry Usagawa (Board of Water Supply), Representative Richard Fale, Representative George Okuda, Johanna Ho, Tiffany Patricia, and Major Pamela Marshall (Marine Corps Base Hawaii), Shirley Kaluhiwa (Kahalu'u Lions Club), John Morgan (Kualoa Ranch), Mahealani Cypher, Jerry Kaluhiwa (Kaneohe Bay Regional Council), Eldean Kukahiko, Gil Riviere, Rick Towill, K.C. Conners, Shannon West, Marie Samudio, Steve Nagata, Charles Tanouye, Robert Harris, and Neil Baarde (Neighborhood Commission Office staff).

PUBLIC SAFETY REPORT:

Honolulu Fire Department (HFD): Captain Warren Faurot reported the following:

- June 2014 Statistics – In June 2014, there were 6 fires, 37 emergencies, and 11 miscellaneous calls for a total of 53 calls for service.
- Fire Safety Tip – With the keiki on summer break, this is an opportune time to review one's home for potentially dangerous conditions. Take the time to childproof one's home. Check for situations that may cause electrical shock, accidental falls, and poisoning from unsecured medications, cleaning products, or houseplants. Ensure swimming pools are properly fenced and gated. An alarm on the door from the house to the pool can help prevent an unattended keiki from drowning. Keep lighters and matches out of children's reach or in a locked cabinet.

Honolulu Police Department (HPD): Lieutenant John Vines reported the following:

- June 2014 Statistics – There were 7 motor vehicle thefts, 5 burglaries, 12 thefts, and 4 unauthorized entries into motor vehicles (UEMV). Lieutenant Vines noted that a more detailed version of the statistics can be found on www.honolulupd.org. Lieutenant Vines commented there was one (1) accident involving someone on a dirt bike on the Fourth of July.

Questions, comments, and concerns followed: Graffiti Task Force – Samudio asked and Lieutenant Vines responded that HPD does not have any connection with the graffiti task force, but will follow up. Samudio commented that there has been a lot of graffiti by Noriko's and the 7/11 on Kahekili Highway, by the old pump station. Lieutenant Vines suggested that Samudio file an online report.

FILLING OF VACANCIES: No volunteers were noted; this item was deferred until the next meeting.

ELECTION OF OFFICERS:
Henkin moved and Gomes seconded that the Kahalu'u Neighborhood Board No. 29 keep the same officers. The motion was ADOPTED UNANIMOUSLY, 9-0-0 (**AYE**: Gomes, Henkin, Loo, Luersen, Machado, Nelson, Obayashi, Tangaro, and Taum.)

- Chair – Flora Obayashi
- Vice Chair – Amy Luersen
- Secretary – Alice Taum
- Treasurer – Daniel Bender

INFORMATIONAL SESSION:

Marine Corps Base Hawaii (MCBH) – Major Pam Marshall reported the following:

- Rim of the Pacific (RIMPAC) – RIMPAC will be going on through the end of July. For questions on RIMPAC, call 472-0235.
- Keiki Triathlon – The Keiki Triathlon will be held on Saturday, August 9, 2014. More information can be found on the website at MCBShawaii.com.
- Bayfest – Bayfest will be held on Friday, October 17, 2014 and will go until Sunday, October 19, 2014. Fireworks will be displayed on the opening day of Bayfest.

Questions, comments, and concerns that followed:

1. Hovercraft – Luersen asked about the hovercrafts that will be docked and the instructions that they are given. Major Marshall responded that they are instructed by the Department of Environmental Services (ENV) briefs, and commented that they will not be on the bay side, but will be just off the base. The hovercrafts are instructed not to park on ENV coral. Luersen asked if Major Marshall can provide the ENV brief. Major Marshall responded that the briefs are given on the ships when they are en route to Hawaii. Henkin raised concern about Major Marshall's response. Major Marshall apologized and noted that the briefs are not the base's responsibility, but will try to follow up.
2. Waikane Valley – Tanouye asked for an update on the Waikane Valley ordnances. Major Marshall will follow up. Henkin commented saying that the Waikane Valley is an ongoing clean up project. Henkin noted that the Marines are cleaning the impacted area along with the City and County of Honolulu, and the Army.
3. Base Closure – Chair Obayashi commented that Schofield Barracks was on a list for base closure. Major Marshall explained that it is just a list for the Army to do a study for information.

Rocky Kaluhiwa arrived at 7:18 p.m. **A total of ten members were present.**

Kaneohe Bay Regional Council – Jerry Kaluhiwa was present, but noted there was nothing to report.

Board of Water Supply (BWS) – Barry Usagawa reported the following:

- Main Break – There were no water main breaks in Kahalu'u for the month of June 2014. The potable water production as of Saturday, June 7, 2014 was 138 mega gallons per day (MGD). Oahu rainfall was normal with no abnormally dry conditions. Normal water level declines are expected through the season.
- Unthirsty Plant Sale – BWS and friends of the Halawa Xeriscape Garden will be celebrating the 25th anniversaryof the Halawa Xeriscape Garden at the Unthirsty Plant Sale on Saturday, August 2, 2014 from 9:00 a.m. to 3:00 p.m. Proceeds from the event will help support educational programs and classes at the Halawa Xeriscape Garden. For more information, visit boardofwatersupply.com or call 748-5041.
- Summer Water Conservation – With the hot summer months arriving, home water consumption typically rises at this time of the year. BWS would like to remind everyone to be vigilant and avoid wasting water. A few simple tips everyone can do to help are check for property leaks, avoid watering lawns between 9:00 a.m. and 5:00 p.m., and turn off the tap while brushing teeth or shaving. For more information on how to conserve water, visit boardofwatersupply.com.

Questions, comments, and concerns that followed:

1. Waimanalo Reservoir – Tangaro asked about the Waimanalo reservoir and kids making a slide into the reservoir. Usagawa responded that the property belongs to the State Department of Agriculture and will follow up with more information.
2. Nenehiwa Place – Shirley Kaluhiwa raised concern about Nenehiwa Place and how BWS fixed a pipe but did not catch a leak in the pipe, and the water is still running. Usagawa will follow up.

Chair Obayashi took the agenda out of order to Representative George Okuda.

Representative George Okuda – Representative George Okuda introduced himself and noted that he has replaced former Representative Jessica Wooley. Representative Okuda commented that he can be reached at 586-8540 or by email at repokuda@capitol.gov. Henkin responded with congratulations.
Chair Obayashi resumed the order of the agenda.

RESIDENTS'/COMMUNITY CONCERNS: Hiking Trail – Shane Taum raised concern about rubbish on the BWS hiking trail mauka on Waihe'e Road. Taum asked if there was a committee that could help with cleanup. Reppun commented that the Waihe'e community is willing to help clean up the area. Chair Obayashi asked if KEY Project can follow up after the clean up. Loo commented that he noticed some kids taking a hibachi grill on the trail. Loo noted that he confiscated the grill from the kids because it could have caused a fire on the trail.

COMMUNITY PROJECTS

Kualoa Ranch Update – John Morgan reported the following:

- Farm Fair – On the weekend of Friday, July 11, 2014, Kualoa Ranch will be hosting their 3rd annual Farm Fair.
- Agricultural Activities – Normal ranch operations are going well and Kualoa Ranch is trying to do an Environmental Assessment (EA) to obtain a Conditional Use Permit (Cup) in order to build a visitor center.

Questions, comments, and concerns that followed:

1. Environmental Assessment (EA) – Luersen asked if Kualoa Ranch is intending to expand their property or if they are looking for impacts in Ka'a'awa. Morgan responded that they are trying to expand, but not in Ka'a'awa, but in Hakipu'u. Henkin asked when the draft EA will be sent out. Morgan responded hopefully by

the end of the year. Henkin asked if Morgan can give a formal presentation after the EA is sent out. Morgan responded absolutely.
2. Farm Fair – Gil Riviere asked about the hours of the Farm Fair. Morgan responded that the Farm Fair will start at 7:00 a.m. and will end at 7:00 p.m.
3. Movies on Ranch – Jerry Kaluhiwa asked about the movies that are filmed on the ranch. Morgan responded that most of the movies or shows that are filmed on the ranch leave some souvenirs behind and recently Hawaii 5-0 had left a souvenir because they are always going in and out of the ranch.

Kahalu'u Ahupua'a Sign Cultural Marker Removal – Rocky Kaluhiwa and Mahealani Cypher reported that the sign had been taken down and someone had installed boundary markers. At the end of May 2014, the landowner decided to take the sign down and the construction workers said they were removing the sign at the landowners' request. Cypher filed a police report as advised by Chair Obayashi. The Department of Transportation (HDOT) is completing a new site marker on their neighbor's yard. Kaluhiwa commented that she thinks the landowner should be fined because it took her five (5) years to attain the sign. Challacombe offered to follow up with DTS Director, Managing Director and Corporation Counsel.

Kahalu'u Flood Control Lagoon – Charles Tanouye reported that there are sport entities using the lagoon. Tanouye had been hearing complaints about rubbish and the Canoe Club getting hurt while in the water. Tanouye asked if the lagoon will be dredged and when it will happen. Tanouye commented that he is concerned about the health issues and would like someone to address the issue.

Questions, comments, and concerns that followed:

1. Mangrove Growth – Luersen asked Challacombe about the mangrove growth because she has not heard a response yet. Challacombe will follow up. Loo noted that he had made a complaint about the bushes in the same area.
2. Canoe Club – Kaluhiwa raised concern about the Canoe Club getting sores on their legs after being in the water and thinks that the sewer could be getting into the stream. Kaluhiwa suggested asking former Representative Jessica Wooley. Henkin asked Sakata about dredging the lagoon. Sakata responded that it is scheduled for 2020. Machado suggested that the Board keep the issue on the agenda and invite the proper agencies in order to complete the issue. Henkin asked which department should be in charge of the project. Sakata suggested the Department of Design and Construction (DDC). Shannon Wood offered to call someone from the University of Hawaii (UH) from the Biology department to do research. Peter Field commented that the Board should add the upstream landowners because the land is eroding because of the stream. Eldean Kukahiko raised concern about the sores that the kids are getting from the water, and commented that someone should test the water to see if it is safe. Chair Obayashi agreed to write an email to Department of Health to check on the water quality of the lagoon.

Henkin departed the meeting at 7:57 p.m.; **Nine (9) members were present.**

Safety Concerns – **Machado moved and Kaluhiwa seconded to the table the** topic to next month**. The motion was ADOPTED UNANIMOUSLY, 9-0-0.** (**AYE**: Gomes, Kaluhiwa, Loo, Luersen, Machado, Nelson, Obayashi, Tangaro, and Taum.)

School Bus Concerns – Tangaro reported that the parents of the students have been telling her about a shortage of bus drivers and no bus services until Wednesday, July 16, 2014 which is a few days before summer school. Tangaro noted that the bus drivers have left some of the children on the bus, while driving to pick up or drop off other students in other areas. Tangaro noted that there are not enough bus drivers for the system to work correctly. Tangaro noted that she has called Roberts Hawaii and had complained but the receptionist from

Roberts Hawaii just hangs up. Tangaro has put in the complaint and thinks that the drivers should be versatile and commented that the schools do not have enough buses or drivers, even though the regular school year will start in about two (2) weeks. Gomes suggested calling the Department of Education (DOE) the transportation division at 586-0170. Tangaro commented that she has called and no response was given. Chair Obayashi commented that Tangaro should get the names of the parents or have them come to the meeting. Tangaro noted that she has the names of the parents that have complained. Luersen commented that maybe the parents will not be willing to testify and suggested maybe just dates, times, age of the child and circumstances of the complaint, so that none of the children or parents may be attacked or victimized further. Machado raised concern about the issue and asked for answers. Machado commented that maybe if the Board shows concern to the right agencies within the Department of Education (DOE), it could help get answers and fix the problem quicker. Tangaro will provide the details and information to Chair Obayashi to send a letter to appropriate agencies.

Machado moved and Kaluhiwa seconded that the Kahalu'u Neighborhood Board No. 29 send a letter to Mr. James Kauhi of the Department of Education – Student Transportation Division, Mr. Ray L'Heureux of the Department of Education – Assistant Superintendent of Business Services, Mr. Don Horner – Chairman of the Board of Education, and Senator Jill Tokuda about the concerns of the school bus system. The motion was UNANIMOUSLY ADOPTED, 9-0-0. (AYE: Gomes, Kaluhiwa, Loo, Luersen, Machado, Nelson, Obayashi, Tangaro, and Taum.**)**

Tangaro departed the meeting at 8:17 p.m.; **Eight (8) members were present.**

KEY Project Update – John Reppun reported the following:

- KEY Status – KEY projects would like the help of their neighbors and is asking for people to donate to the Become a Friend of KEY project. Reppun noted that there is a half a million in CIP work and he is excited where KEY Project can go, but is also scared of how much help is needed. Councilmember Ernie Martin has helped get funds for the roof. Reppun commented that they would like to modernize KEY Project and will be trying other options because they have a lot of ideas but not enough funding.

Questions, comments, and concerns that followed:

1. Friends of KEY – Taum commented that she received a letter from KEY Project about becoming a Friend of KEY. Reppun responded that the donations received will be paying for the renovations and the general facility use.
2. Capital Improvement Project (CIP) – Chair Obayashi asked how much the CIP that the Governor released for KEY Project. Reppun responded $300,000 for restrooms and noted that the money is with the Department of Labor and Industrial Relations (DLIR) because they are in control of the project.
3. Fundraising – Tanouye noted that he has talked to Pop Warner and the Canoe Club about fundraising. Selling tables at the Koolau Hana Festival was an idea that was brought to Reppun by Tanouye and a few others. Reppun welcomed any ideas of how to help or support KEY project. Reppun noted that KEY Project has a long lease that will expire in 2029. Luersen commented that a mix of funding could help, but will take a while unless KEY Project creates a sustainable plan.

Kahalu'u Candidates Forum and Approval of Expenses – Nelson gave an overview of the entire Candidates Forum and noted that 12 of the candidates accepted and will be at the forum. Ned Busch discussed the format and will serve as moderator. The Board discussed the reimbursements for the banner, crew meals, and for other expenses.

Kaluhiwa moved and Machado seconded that the Kahalu'u Neighborhood Board No. 29 supports the forum and for the expenses for up to $200. The motion was UNANIMOUSLY APPROVED, 8-0-0, (**AYE**: Gomes, Kaluhiwa, Loo, Luersen, Machado, Nelson, Obayashi, and Taum).

Chair Obayashi called for a recess at 8:48 p.m.

Chair Obayashi called the meeting back to order at 8:52 p.m.

REPORTS BY PUBLIC OFFICIALS:

Mayor Kirk Caldwell's Representative: Deputy Director Art Challacombe reported the following:

- Parks – Kualoa Regional Park Wastewater Improvements, 2007, the project went out to bid. Laenani Neighborhood Park Restroom Structural Improvements, the anticipated bid opening date is on Wednesday, October 1, 2014.
- Heeia Bridge – The Department of Facility Maintenance (DFM) responded that current BWS water main project on Heeia Bridge involves contra flow lanes Monday to Friday 8:30 a.m. to 3:30 p.m. and HPD will not allow pothole repairs due to traffic. Road crews will address potholes on Saturday, May 24, 2014 weather and manpower permitting.

Questions, comments, or concerns that followed:

1. Potholes – Machado noted that the potholes on the bridge were patched.
2. Kualoa Beach Park – Kaluhiwa asked if Challacombe could find out about why the Beach Park is charging. Challacombe responded that he made that report already, but will follow up. Kukahiko raised concern about the beach park and how the bathrooms are not well maintained and noted that there is only one (1) faucet that works in the whole park and the security is not good either. Challacombe will follow up.
3. Sea Wall – Ned Busch raised concern about Laenani Park, a sea wall is crumbling on the park side. Challacombe will follow up.
4. City Bus – Samudio asked if there was a shuttle that goes into the Maunawili area. Challacombe responded that there is only bus 55 and bus 65. Samudio asked why bus 65 cannot go further past the loop near Ahuimanu Road. Challacombe responded that Ahuimanu Road will be repaved. Luersen noted that years ago DTS made a proposal for a transit center by the 7-11 store to shuttle people, but is not sure what happened. Challacombe will follow up.

Council Chair Ernie Martin: Michael Sakata reported the following: Budget – Sakata announced that Council Chair Martin and the rest of the Councilmembers have finalized the budget.

Questions, comments, and concerns that followed: Camping – Kaluhiwa commented that she wrote a check for $1000 and their group had less than 150 people. Samudio asked if the money that people are paying to camp is put into the general fund. Sakata responded that the money that is used is put into the general fund.

Councilmember Ikaika Anderson: No representative was present and no report was provided.

Governor Neil Abercrombie's Representative: No representative was present. Chair Obayashi read the report and listed the 15 projects that are in the Kahalu'u area. The Governor released more than $12,941,569 in Capital Improvement Projects (CIP).

Senator Clayton Hee: No representative was present and no report was made available.

Senator Jill Tokuda: Senator Tokuda reported that Senate Bill 2330 Act 85 is now a law. Also, House Bill 2224 Act 93 was signed.

Questions, comments, and concerns that followed:

1. Bus System – Chair Obayashi relayed complaints that the new school bus system is not good and the buses are filthy. Senator Tokuda responded that she understands and will follow up.
2. Invasive Rhinoceros Beetle – Loo raised concern about the rhinoceros beetle attacking the Lulu Palm Tree. Loo noted that he called the State Department to inform them. Senator Tokuda asked if anyone came to inspect the area. Loo responded no. Senator Tokuda will follow up.
3. Kahalu'u Lagoon – Luersen raised a concern about the Kahalu'u Lagoon and noted the concerns about the Canoe Club. Senator Tokuda offered to help if no other agency responds.
4. Donations – K.C. Connors asked if the film industry could start donating to local schools for using parts of the Windward side of the island. Senator Tokuda will follow up.

Representative Richard Fale: No representative was present, but a handout was made available.

BOARD BUSINESS

Treasurer's Report – Chair Obayashi announced that a total of $49.20 was spent for the month of July 2014 with a remaining balance of $190.44. The report was filed.

APPROVAL OF THE MAY 14, 2014 REGULAR MEETING MINUTES: **Machado moved and Kaluhiwa seconded that the Kahaluu Neighborhood Board No. 29 approve the May 14, 2014 Regular Meeting minutes as amended. The motion was ADOPTED by UNANIMOUS CONSENT, 8-0-0;** (**AYE**: Gomes, Kaluhiwa, Loo, Luersen, Machado, Nelson, Obayashi, and Taum).
Amendments were as follows:

- Page 4 – 47-181 Mapele Way Conditional Use Permit – The issue is the ownership of the road.

APPROVAL OF THE JUNE 11, 2014 SPECIAL MEETING MINUTES: **Luersen moved and Nelson seconded that the Kahalu'u Neighborhood Board No. 29 approve of the June 11, 2014 Special Meeting Minutes. The motion was ADOPTED UNANIMOUSLY, 8-0-0** (**AYE**: Gomes, Kaluhiwa, Loo, Luersen, Machado, Nelson, Obayashi, and Taum).

Three (3) Absences – Gomes and Taum apologized for their three (3) absences and explained their absences.
Machado moved and Kaluhiwa seconded that the Kahalu'u Neighborhood Board No. 29 retain Gomes and Taum on the Board. The motion was ADOPTED UNANIMOUSLY, 8-0-0 (AYE: Gomes, Kaluhiwa, Loo, Luersen, Machado, Nelson, Obayashi, and Taum**).**

COMMITTEE REPORTS

Transportation and Safety – Samudio reported that the transportation and safety committee need people who are willing to be trained to become a part of the certified response team. The committee was warned by Civil Defense and is still looking for volunteers. Samudio commented that it is a three (3) day training and can be scheduled around the volunteer's schedule. If anyone would like to join Samudio, feel free to contact her at 239-2212.

Questions, comments, and concerns that followed: Training – Luersen asked about the training. Samudio responded that the training varies depending on the person. Jerry Kaluhiwa commented that it is good to be involved and that they can work with the local three (3) operators union.

Preservation of Hawaiian Heritage – Kaluhiwa reported the following:

- Dinner – On Sunday, August 3, 2014 the Koolaupoko Hawaiian Civic Club will be hosting their distinguished kamaaina dinner at Heeia State Park. The tickets will be $30 each.
- Fun Run – On Saturday, August 9, 2014, there will be a fun run and will start at the Atrium Building and it will cost $5 per entry.
- Cultural Tour – On Saturday, August 16, 2014, the Legends of Koolau glassbottom boat will be hosting cultural tours of Kaneohe Bay.

Military/Civilian Affairs Liaison – Machado reported that the Civilian Military Board will meet every other month, instead of once a month starting July 2014.

ANNOUNCEMENTS:

Parliamentary Training: Chair Obayashi announced that there will be parliamentary training on Saturday, July 19, 2014. The training will be run by Ron Mobley.

Next Regular Meeting: The next Kahaluu Neighborhood Board No. 29 meeting will be on Wednesday, August 13, 2014 at 7:00 p.m. at the KEY Projects.

ADJOURNMENT: The meeting adjourned at 9:58 p.m.

Submitted By: Neil Baarde, Neighborhood Assistant
Reviewed By: Rise Doi, Neighborhood Assistant II
Reviewed and Finalized By: Flora Obayashi, Chairperson

Last Reviewed: January 12, 2015

• Print

Koolauloa Neighborhood Board No. 28

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DRAFT REGULAR MEETING MINUTES
THURSDAY, AUGUST 14, 2014
HAU'ULA ELEMENTARY SCHOOL

CALL TO ORDER: Chair Pro Tem Verla Moore called the meeting to order at 6:00 p.m. **Quorum was established with eleven members present.** Note – This 11-member Board requires six (6) members to establish quorum and take official Board action.

Members Present: Kent Fonoimoana, Burton Greene, Dee Dee Letts, Gaylene Lolofie, Creighton Mattoon, Kela Miller, Kerry Moea`i, Verla Moore, Larry Nihipali, , and Norman Thompson.

Members Absent: Hans Taala

Guests: Lieutenant John Vines and Sergeant Andre Carreira (Honolulu Police Department), Captain Kalu Wolfe (Honolulu Fire Department), Adam LeFebvre (Mayor Kirk Caldwell's representative), Carolyn Unser (First Wind), John Katahira, Joe Kwan, and Russell Kunabe (Department Of Land and Natural Resources), Marven Iseke, Choon James, John Morgan, Mary Rose Cacchione, Fred Erskine, Bill Kearsley, Clyde Tomihana, Kenny Weight, Lynda Weight, Holly Smith, Feki Pouha, Catherine Enos, William Enos, Joe Kwan, John Katahira, Kathryn Heath, Barbara Cushing, Barbara Kahana, Raynae Fonoimoana, Patti Olson, KC Connors, William Jurgerson, Gil Riviere, Tony Borge, Elizabeth Borge, and Neil Baarde (Neighborhood Commission Office).

Vacancies: There were no vacancies at this time.

Election of Officers:
- Chair – Board could not reach a consensus and the item was deferred to the next meeting.
- Vice Chair – Board could not reach a consensus and the item was deferred to the next meeting.
- Treasurer – **Kela Miller was elected as Treasurer.**
- Secretary – **Gaylene Lolofie was elected as Secretary**.

Honolulu Fire Department (HFD) – Captain Kalu Wolfe reported the following:
- July 2014 Fire Statistics: The Ka`a`awa/Hau`ula/Kahuku fire stations responded to 0/0/0 structure fires, 0/0/2 wildland fires, 2/1/2 rubbish fires, 0/0/4 vehicle fires, 24/12/17 medical emergencies, 2/6/2 search and rescues, and 7/5/9 miscellaneous emergencies, respectively. There were no major incidents.
- Fire Safety Tip: HFD investigates reports of smoke to determine if a fire exists. While some fires are authorized under county and state regulations, most are unauthorized. When HFD encounters an unauthorized burn, the Fire Captain will request that the fire be extinguished immediately. If the fire is authorized, the Captain must determine if the fire is safe, properly contained, and not a nuisance to others.

Questions, comments, and concerns followed: Fire Inspection – Nihipali asked about a fire inspection that was done at a Subway restaurant in town. Captain Wolfe responded that inspections are standard and there should be fire extinguishers on the wall and nothing blocking the exits.

Honolulu Police Department (HPD) – Lieutenant John Vines reported the following:

- July 2014 Crime Statistics: Statistics included 6 assaults, 6 motor vehicle thefts (MVT), 11 burglaries, 2 drug offenses, 1 robbery, 21 thefts, and 12 unauthorized entries into motor vehicles (UEMV), for a total of 59 calls for service.

Questions, comments, and concerns followed:
1. Statistics – Letts asked if the assaults statistics included domestic violence. Lieutenant Vines responded that he is assuming it does. Fonoimoana asked if the Kahuku burglary can be separated from the statistics. Lieutenant Vines responded that it can be separated online on the HPD website.
2. Kamehameha Highway – Fonoimoana noted that there is an increasing number of people riding bicycles on Kamehameha Highway and asked if HPD can mitigate the flow of traffic around Kahana Road. Lieutenant Vines responded that if the bicyclists are not violating any laws, HPD cannot cite them, but the bicyclists should be in single file line when riding on roads. Iseki asked if HPD can place barriers on Kamehameha Highway and the Homestead roads. Lieutenant Vines responded that if something is observed HPD can do something, but barriers cannot be placed there.
3. Kahuku Substation – James asked if the old vinyl chairs at the Kahuku Substation have been improved. Lieutenant Vines responded that they are still in the process of improving the substation. Iseki asked if there were any Neighborhood Security Watches (NSW) in the area. Lieutenant Vines will follow up.

APPROVAL OF THE JUNE 12, 2014 REGULAR MEETING MINUTES: **Mattoon moved and Miller seconded to adopt the June 12, 2014 regular meeting minutes as amended. The motion was ADOPTED by UNANIMOUS CONSENT, 11-0-0; (AYE:** Fonoimoana, Greene, Letts, Lolofie, Mattoon, Miller, Moea`i, Moore, Nihipali, Taala, and Thompson.) Amendments as followed:
- Page 2 – Bus Volunteer Program – should read – Greene presented the bus shelter partnership program to the Kahuku Community Association and the Kahaluu Neighborhood Board No. 29 in April 2014.
- Page 2 – Disaster Preparedness Presentation – should read that the activities are significant from July 2013 to July 2015.

APPROVAL OF THE MAY 8, 2014 REGULAR MEETING MINUTES – **Miller moved and Greene seconded to adopt the May 8, 2014 regular meeting minutes. The motion was ADOPTED by UNANIMOUS CONSENT, 11-0-0; (AYE:** Fonoimoana, Greene, Letts, Lolofie, Mattoon, Miller, Moea'i, Moore, Nihipali, Taala, and Thompson.**)**

APPROVAL OF THE APRIL 10, 2014 REGULAR MEETING MINUTES – **Miller moved and Fonoimoana seconded to adopt the April 10, 2014 regular meeting minutes. The motion was ADOPTED by UNANIMOUS CONSENT, 11-0-0; (AYE:** Fonoimoana, Greene, Letts, Lolofie, Mattoon, Miller, Moea'i, Moore, Nihipali, Taala, and Thompson.**)**

TREASURER'S REPORT: Treasurer Miller reported a spending of $2,304.58 for the month of July, leaving a balance of $530.42. The report was filed.

NEW BUSINESS:

Kahuku Community Fund Advisory Committee – Fonoimoana nominated Kerry Moea'i, Miller nominated Larry Nihipali and Mattoon nominated Dee Dee Letts. A resident asked if it is okay to have people from the community be on the committee. Fonoimoana responded that the Board gets to nominate the members and choose a representative. The resident asked if the nominees from the Board and one (1) is no longer on the Board. Chair Moore explained that the members do not need to be on the Board. Fonoimoana clarified the situation and noted that there should be two (2) members nominated by the Kahuku Community Association and two (2) members nominated by the Board. The resident asked if the grants given need to be in Kahuku. Chair Moore responded that she has no knowledge if the grants need to be in Kahuku. Letts commented that the resident should contact the foundation itself for more information. The two (2) members from the Board are Moea'i and Letts.

Kualoa Ranch Environmental Assessment (EA)/Associated Projects – John Morgan reported that the most urgent issue is the Spartan Race that will occur on Saturday, August 16, 2014. Morgan noted that this year there will be some changes in the parking and area for all people to enjoy. Morgan also noted that he would like to expand Kualoa Ranch. The Kualoa Ranch began in 1985 and Morgan is trying to evolve the ranch and applied for a Conditional Use Permit (CUP) special permit. Morgan noted that he has a permit for a zip line that is behind the Ka'a'awa center. Morgan would like to build another center where groups from different organizations or companies can go for a company retreat or other activities. Morgan updated the Board and noted that there are about 230 employees employed at the ranch, and the success that the ranch has seen in the past decades show a diverse agriculture, natural grass fed beef. Morgan noted that the Department of Planning and Permitting (DPP) was concerned about a few issues, but they are trying to address all the situations.

Questions, comments, and concerns that followed:

1. New Facilities – Letts noted that Morgan has been good to work with and asked about the purpose and location of a visitor center. Morgan responded that the new facility will be next to the current building and will be used as a group center that will be mostly used for group meals or activities.
2. Traffic – Moea'i asked about the projected traffic and if there are better ways to advertise the traffic flow. Morgan responded that the signs for the farm fair and the Spartan race were the electronic boards and signs noting when the events are. Morgan also noted that there will be three (3) lanes with two (2) entrances. Moea'i asked about the time line of projected projects or events. Morgan responded that the permitting process may affect the next three (3) years. Lolofie noted that the ranch has good diversity and was surprised that the farm fair traffic was not bad. Lolofie asked how many people per day will attend the Spartan race. Morgan estimated about 3,000 per day. Lolofie asked and Morgan responded that 83 of the employees are mostly full time. Fonoimoana thanked Morgan for his efforts in trying to alleviate the traffic. Chair Moore noted that Morgan got electronic signs and asked if he acquired the signs on his own or if the Department of Transportation Services (DTS) provided the signs. Morgan responded that the promoter Morgan hired acquired it from DTS. James asked if Morgan is presenting to the Board as part of the Environmental Assessment (EA). Morgan responded that presenting to the Board is a part of the process and then the Board will review the presentation. James and Morgan responded that the consultant is Group 70.
3. Farming – Resident Jesse asked Morgan to continue expanding the farm without impacting any housing nearby. Morgan responded that his expansion will not impact any housing. Connors asked if Morgan will continue to grow local agriculture for the front part of the farm. Morgan responded that he is trying to expand the farm in order to feed more people or integrate a Polynesian culture farm by consolidating a few ideas and noted that the tour will go through the agriculture area. Morgan added that with the filming industry coming in and out of the farm, there will be more employees on the farm. Connors asked if that is something Morgan would like the representatives to look into. Morgan responded that DPP has been supportive with his expansion. Connors responded that she has no desire to shut down the film industry on the island but noted that it could help fund the area. Cushing noted that she appreciates Morgan's work. Morgan responded that

he will continue to do his best. Cushing commented that Morgan should update his website about the farm to inform the community of his milestones.

Malaekahana State Recreation Area Improvements – John Katahira reported that there are three (3) plans that could happen depending on the funding that they are given. Katahira commented that in 2009 there were many cesspool violations occurring at the recreation area and gave a brief history of the area. Katahira noted that their current scope if park improvements. Katahira commented that in Plan A, the Kahuku section of Malaekahana, there will be many facilities cleared of all the hazardous materials and will be safe for the public to use and noted that later this year they will start demolishing some buildings. Katahira noted that he has met with the Kahuku Community Association about the project and commented that there will still be a camping area and a beach with a new paved road. Plan B will have the changes of Plan A with a large group use area, buildings, comfort stations, a public pavilion, and a restored version of the cabins that once existed. Katahira noted that it is alright to demolish the buildings in the area because the cabins were deemed unsafe but they are planning to restore the cabins over time. Katahira noted that DLNR is trying not to decrease the density of the area. Plan C is considered the ultimate build-out, it will be the all the plans including a brand new office building with seven (7) restored cabins instead of just the one (1) restored cabin. Katahira noted that regardless of which plan DLNR will choose the next seven (7) steps of the process will be:

1. Five (5) year concessionaire contract, which is pending at the moment
2. The demolition which will take place in the fall of 2014
3. Environmental Assessment (EA), which will be completed by November 2014
4. Design recommended improvements
5. The Department of Land and Natural Resources (DLNR) to develop a funding strategy
6. Construction, which is anticipated as early as 2016
7. The last step is starting a long term contract, which will be around 2020

Katahira noted that if there are any questions, the public can contact Joe Kwan of the Limtiaco Consulting Group at 808-596-7790.

Questions, comments, and concerns that followed:

1. Associations – Chair Moore asked if Kwan or Katahira had met with the Kahuku or Laie associations or the president of each association. Katahira responded that he has met with the president of the Laie Community Asscocation only but that he met with the entire Kahuku Community Association board. Kwan added that he met during the month of July 2014.
2. Responsibility – Fonoimoana noted his thanks for DLNR coming and presenting to the Board and asked who was responsible for the 2009 violations and if the area is still under contract. A DLNR consultant, Russell Kunabe responded that DLNR was informed by the Department of Health (DOH) and the Environmental Protection Agency (EPA) on the sewer systems they were supposed to be highlighted but it was discovered that the preparation was not approved for a large cap. DLNR owns the property and the current owner was notified by the EPA and DOH. Katahira noted that initially they were brought to the Board to correct the violations in order to expedite the violation of the 6-7 large cap cesspool. Katahira noted that two (2) have been fixed, two (2) have been covered, and four (4) are waiting and they are serving in a single dwelling. DOH wanted DLNR to handle the sanitary facilities and have agreed to construct the comfort stations instead.
3. Comfort Stations – Fonoimoana asked if there will be a comfort station in the picnic area when the renovations are complete. Katahira responded that there will be a comfort station just above the picnic area. DLNR will not make any adjustments to the existing parking and there has not been anything proposed for the bottom area of the park. Mattoon asked who is in charge of the draft EA and who the culture consultant for this project is. Katahira responded that the culture consultant is Scientific Consulting Services (SCS).

4. Funding Strategy – Lolofie asked about the funding strategy. Katahira responded that the project is marked at $2 million, DLNR knows that it is not enough, they realize they could ask legislators on the long term concessionaires for help. Kwan added that option B will be used to provide for other parts of the park. The minimum done will be Plan A, but all of the plans will need requests put in for more funds. It was noted that Malaekahana is top priority.
5. Utilities – Letts asked if the utilities will be ran underground. Katahira responded that the utilities will be ran underground and as the project is going forward, there will be a number of cabins torn down. Katahira assured the Board that the area will look the same. Katahira noted that there are six (6) cabins remaining but they will put all seven (7) back. Fonoimoana asked and Katahira responded that the demolition contractors are integrated and they are based in Halawa. Fonoimoana asked who the applicants are for the request for proposal (RFP). Katahira responded that the selection of review cannot be answered yet because it depends on who the concessionaires are, but noted that he will follow up.
6. Disclosure – Chair Moore disclosed that she and board member Kela Miller are on the Friends of Malaekahana Board and she strongly recommends that the contractors should come from the Koolauloa area. Chair Moore is aware of the problems with infrastructure and asked what kind of new systems will be used. Katahira noted that there will be multiple new systems. Chair Moore noted that the preliminary report said the seven (7) structures will be in sync with the holding capacity and raised concerns that the park may not be large enough to accommodate required holding capacity Katahira responded that the system does not exist yet, but it will be developed. Chair Moore asked if DLNR will be demolishing the wardens' house so the area can be a part of the park. Katahira responded that the entire area will be demolished and re-done. Katahira continued and noted that the five (5) year concessionaire will show where the temporary structures will be and DLNR is currently trying to figure out what will be bought. Chair Moore noted that this area has been in decline for almost 20 years and asked where the State was during that time. Katahira responded that DLNR let the people who were initially running the facility go, and they are hoping to get support from the community.
7. Maintenance – Resident James asked how the wardens' house will be impacted. Katahira noted that the wardens' house will still be open for public use, the bathrooms will be maintained by the concessionaire or DLNR but access to beach will still be there. Resident Heath commented that a lot of people use the area from all over the island, not just the two (2) surrounding communities. Katahira noted that he will look into the draft EA and will follow up. Iseki asked if DLNR will be using all septic tanks or some cesspools. Katahira noted that they will all be septic tanks. A resident commented that in regards to the shoreline management, he does not think that they will let DLNR use septic tanks. Katahira will follow up. Resident Junior commented that he hopes DLNR will consider the number of users there will be for the area. Katahira noted that he will look into the situation with DLNR and DPR. Letts commented that DLNR should look into alternative wastewater programs. Katahira noted that he will look at the federal parts of Haleakala. James asked and Katahira responded that the website is www.TLCGHawaii.com and noted that the materials are not yet on the website. James asked if the concessionaire will be a profit or non-profit organization. Katahira responded that the Friends of Malaekahana have been running the facility and they are a non-profit organization.

GOVERNMENT REPORTS

Mayor Kirk Caldwell's Representative – Adam LeFebvre reported the following:

- Parks – Hauula Community Park reconstruct wastewater systems went to rebid and the anticipated construction start date will be on Thursday, January 1, 2015. Hauula Community Park Softball Field improvements will be sent out to bid on Sunday, September 14, 2014.
- Clarification on Declaring a Seat Vacant – There are three (3) ways a seat may become vacant: 1) The Board declares the seat vacant after three (3) or five (5) absences, 2) The Executive Secretary declares the seat is vacated because the member is no longer eligible, or 3) The member resigns in writing.

- Thomas Square – Back in May 2014, the Division of Urban Forestry (DUF), Department of Parks and Recreation (DPR) announced that the two (2) Benjamin banyan trees located at the top of the stairs directly across from the Honolulu Museum of Art would need to be removed due to infestation of the Lobate Lac Scale. The overall plans for Thomas Square is being prepared by a consultant.
- Grants In Aid (GIA) Funding – The submitted GIA proposals are reviewed and scored by the GIA Advisory Commission and the Commission members independently review and evaluate each of the proposals submitted. The list on GIA proposals that will be recommended for funding are listed in the City's annual Executive Operating Budget. Once the budget passes through the City Council, it goes before the Mayor for approval.
- Housing First in the Koolauloa Area – The City will be expanding the supply of permanent supportive housing options specifically for chronically homeless individuals and families. The City is in the process of locating properties that can acquire and rehabilitate to suit the housing needs of the population. The City is also working with current homeless service providers to provide the case management and wrap around services for the Koolauloa population.
- Transient Vacation Units (TVU) and Bed and Breakfasts (B&B) – TVU and B&B operations are regulated by Land Use Ordinance (LUO) Sections 21-4.110-1 and 21-4.110-2 and, may only operate outside resort districts and precincts with a valid Nonconforming Use Certificate (NUC), which must be renewed every two (2) years. Any TVU or B&B operating outside of a resort district or precinct without a valid NUC is not doing so lawfully, and is subject to enforcement as violation of the LUO.
- Hauula Worklinks Computer Classes – Newman Consulting is an eligible training provider under the Workforce Investment Act (WIA). Participants who are approved by Oahu Worklinks to attend their computer classes receive tuition assistance under WIA. Tuition assistance is provided based on an individualized training plan, not for a whole class. Newman Consulting holds the classes at the site of their school, not at any Oahu Worklinks centers.
- Kualoa Ranch Film Productions – Production expenditures, its economic impact, full time equivalent job numbers and any donations to schools are figures collected by the Department of Business Economic Development and Tourism. If there are any questions, contact the Hawaii Film Office at 808-586-2570.

Questions, comments, and concerns followed:

1. Bus Service – Greene asked about the possibility of using the old buses being shipped off-island for a morning commuter bus on the 55 route because the express route 88 leaves early but does not make any stops in Kaneohe. LeFebvre will follow up.
2. Hauula Civic Center – Greene asked about the status of repairs of the Hauula Civic Center, and asked if the Speed and Handicapped signs can be replaced and noted that the Center is leaking and getting worse.
3. Kahuku District Park Lighting – Fonoimoana asked about the status of repairs to the Kahuku District Park lighting and noted that there are safety issues at the old pavilion in Hauula, and the concrete wall is loose and could injure someone. LeFebvre will follow up.
4. Tax Assessments – Chair Moore asked why her tax assessment doubled following a repainting of one of the rooms in her house and asked if it is normal. Letts noted that California tax law has the taxes remain the same as long as the current owner stays in the house and new taxes would be applied when the new owner moves in. Letts suggested that Honolulu consider a similar tax law.
5. Hauula Beach Park – A resident asked when the Hauula Beach Park will get the picnic tables back. LeFebvre will follow up.
6. TVUs and B&Bs in Koolauloa – Resident Connors asked for the number of TVUs and B&Bs there are registered in the Koolauloa area. LeFebvre will follow up.
7. Housing Funding – A resident asked if some of the Housing First funds can be used for other issues in the Koolauloa area.
8. Worklinks – Connors asked why Worklinks is closed on Mondays and requested that the decision be

reviewed.

9. Kaaawa Park – Nihipali reported that there is a safety issue regarding a dead coconut tree that is about to fall and Nihipali asked for the tree to be removed.

Council Chair Ernie Martin: Mike Sakata provided a handout and reported the following:

- Fiscal Year 2015: With the Fiscal Year beginning, Sakata reported that all three (3) projects have gone into Council for review.
- Residential A Property Tax: Residential A is a class that includes homes valued over $1 million. There is also a one (1) time reduction being done for homeowners and it can be submitted by October 2014 for a compromise.

Questions, comments, and concerns followed:

1. Land Use Violations – Sakata answered for Heath that land use violations are sent to DPP.
2. Tax Assessments – Chair Moore asked if Council can re-look at the tax assessments. Letts commented that the reason the Housing First Initiative failed the first time was because the City sold all the properties at once. James noted that she testified against the tax increase, and commented that she was disappointed because the City needs a paradigm shift and asked where the funds are being wasted. Heath commented that the City recently sold the Chang Foundation and asked if it can be looked into. Sakata will follow up.

Moea'i and Thompson III departed the meeting at 8:04 p.m.; nine (9) members were present.

3. Homeless Initiatives – Connors asked if Sakata can look and see if there can be funds appropriated for a homeless initiative in Hauula. Sakata responded that he will follow up and Connors should call the Film Commission Office for more information on movie productions.

Representative Richard Fale: Representative Fale was not present and no report was provided.

PUBLIC INPUT/COMMUNITY ANNOUNCEMENTS:

Concerns – Heath raised a concern that Chair Moore did not announce the resignation of Larry Nihipali. Heath also raised concern about Thompson III being the Chair of the Planning and Land Use Committee.

First Wind: Carolyn Unser reported that there are three (3) turbines that are not spinning, which will be replaced when the wind conditions get better. Unser noted that the problem is with the pitch bearings.

Questions, comments, and concerns that followed: Repairs – Fonoimoana asked what is needed to complete the repairs. Unser responded that the pitch bearings need to be replaced and it is part of standard repairs.

Responsibilities – Connors asked about the committees on the Board, specifically what each does, what responsibilities the members have, and how can someone be a part of the committee.

Flooding – Resident Borge raised concern about the flooding that occurred on Sunday, July 20, 2014 on Pokiwai Place. The Kalanui Stream off of Homestead Road is the cause of the flooding and would like the issue placed on the agenda for the next meeting. Chair Moore responded that the Hauula Community Association could help, and then have them present to the Board. Borge commented that every time it rains, it causes problems. Borge noted that flood insurance is expensive but should be a priority. Borge hopes that the State agency can come and help fix and then report back to the Board.

Vacancy – Chair Moore announced that Larry Nihipali's seat will be vacant, and if anyone is interested they should come to the next meeting or contact the current board members.

ADJOURNMENT: The meeting adjourned at 8:20 p.m.

Submitted by: Neil Baarde, Neighborhood Assistant
Reviewed by: Rise Doi, Neighborhood Assistant II
Reviewed and approved by: Chair Verla Moore

Last Reviewed: January 12, 2015

KAHALU'U NEIGHBORHOOD BOARD NO. 29
(He'eia Kea, 'Āhuimanu, Kahalu'u, Waihe'e, Ka'alaea, Waiāhole, Waikāne, Hakipu'u, Kualoa)
c/o Neighborhood Commission Office • 925 Dillingham Boulevard, Suite 160 • Honolulu, Hawaii 96817
PHONE (808) 768-3710 • FAX (808) 768-3711 • INTERNET: http://www.honolulu.gov/nco

"LET US NOT EVER HAVE AN UNHAPPY MINORITY; RATHER, LET US BUILD A COMMUNITY CONSENSUS."

REGULAR MEETING MINUTES
WEDNESDAY, JANUARY 10, 2018
KAHALU'U KEY PROJECT

CALL TO ORDER – Chair Flora Obayashi called the meeting to order at 7:01 p.m. **Quorum was established with eight (8) members present**. Note – This 15-member Board requires eight (8) members to establish quorum and to take official Board action. Chair Obayashi introduced the board members and read the rules of speaking.

Board Members Present – Anthony Austin, Daniel Bender (Arrived at 7:07 p.m.), Peter Burns, Ken LeVasseur, Clifford Loo, Art Machado, Rosi Mateinaniu, Flora Obayashi, and Rick Towill.

Board Members Absent – Lee Gomes, Yvonne Nelson, Kealohi Reppun, and Jeannie Wong.

Guests – Lieutenant John Asing, Val Chun, and Jimmy Vance (Honolulu Police Department); 'Aukai Walk (Representative Sean Quinlan); Susan Fernandez (Mayor Kirk Caldwell's Representative); Michael Sakata (Councilmember Ernie Martin's Representative); Francisco Figueiredo (Councilmember Ikaika Anderson's Representative); Tiffany Patrick and Danny Hayes (Marine Corp Base Hawaii); Barry Usagawa (BWS); Sina Pruder (Department of Health); Matt Gonser and Rocky Mould (Office of Climate Change, Sustainability, and Resiliency); John Morgan (Kualoa Ranch); Jeff Overton and Barbara Natale (Group 70); Daniel Kaneshiro (First Assembly of God Church); KC Connors, Ipo Johnson, Polly Yamamoto, Ned Bush, Glenn Lininger, Paul Ferrese, Charlie Tanouye, Marie Samudio, Wen Kim, John Reppun, Lindsay Lininger, Charlotte Lyman, Joe Robinson, Georgia Acevedo, Peter Field, Karen Field, Ben Field, Laura Field, Shannon Teixeia, Wendy Ahsam, Dave Matlock, Garnett Howard, Daniel Lum, Won-Seok Yun, Lucy Salas, Cherie Andrade, Chuck Pearson, Andrea Anixt, Mary Ann Miner, Marie LeVasseur, and Kalae Kukahiko (Residents); Jackson Coley (Neighborhood Commission Office).

ANNOUNCEMENTS – Chair Obayashi reported the following:

- Neighborhood Plan – Testimony and comments regarding revisions to the Neighborhood Plan must be submitted to the Neighborhood Commission Office (NCO) at nco@honolulu.gov by Friday, January 26, 2018.
- Ken Goldstein Resignation – Vice Chair Ken Goldstein resigned from the Kahalu'u Neighborhood Board No. 29. Filling of the new vacancy and election of a vice chair will be performed at the Wednesday, February 14, 2018 regular board meeting.

PUBLIC SAFETY REPORTS
Honolulu Fire Department (HFD) – No representative was present, no report was given.

Honolulu Police Department (HPD) – Lieutenant John Asing reported the following: December 2017 Statistics – There were 0 motor vehicle thefts, 6 burglaries, 14 thefts, and 7 unauthorized entries into motor vehicles (UEMV).

Questions, comments, and concerns followed:

1. Kalohaka Stream Bridge Rubbish – Towill voiced concerns regarding illegal rubbish dumping occurring at the Kalohaka Stream Bridge. Towill provided a letter addressed to a resident recovered from the rubbish at the site. Lieutenant Asing inquired and Towill responded that the rubbish dumping was not witnessed. Lieutenant Asing stated that recovered rubbish could not be used as evidence of culpability as the rubbish owner and rubbish dumper could be different individuals. Lieutenant Asing encouraged collecting video evidence of witnessed rubbish dumping to provide to the HPD. Lieutenant Asing requested and LeVasseur agreed to submit an electronic report to the HPD regarding the issue.

Bender arrived at 7:07 p.m. Nine (9) members present.

2. Abandoned Vehicles – Machado inquired and Lieutenant Asing responded that HPD is involved in the process regarding removal of abandoned vehicles. Lieutenant Asing stated that HPD cannot cite vehicles as abandoned if they are moved within 24 hours of notification. Lieutenant Asing stated that once vehicles

are cited as abandoned the matter is deferred to the Abandoned Vehicle's section and is no longer an HPD matter. Machado provided the location of multiple abandoned vehicles in Kahalu'u and Lieutenant Asing responded that the listed vehicles were not under HPD jurisdiction.

3. Department of Housing and Urban Development (HUD) Homeless Alliance Training – Resident KC Connors inquired about annual HUD Homeless Alliance Training and whether or not an HPD representative would be present at upcoming training for 2018. Lieutenant Asing introduced Community Policing Team (CPT) Officer Jimmy Vance and recommended speaking with Officer Vance.

FILLING OF BOARD VACANCIES
Chair Obayashi announced the Board vacancy for He'eia Hui Iwa 'ili (Sub-District Six). As there were no volunteers or nominations at this time, Chair Obayashi deferred this item.

REPORTS BY ELECTED OFFICIALS
Representative Sean Quinlan – 'Aukai Walk reported the following:

- Opening Day – Opening Day is scheduled for Wednesday, January 17, 2018. Residents are invited to visit Representative Quinlan's office at room No. 304 at the Hawaii State Capitol between 9:00 a.m. and 2:00 p.m.
- Lifeguard Protection Bills – Senate Bill (SB) 562-SD1-HD1 has been introduced to provide protection for lifeguards on duty from lawsuit and increase lifeguard quantity along Hawaii's beaches. Civil Beat statistics indicated that in 2016 lifeguards rescued 28 people, administered first aid 258 times, and provided safety citations and warnings 24,936 times. As of June 2017 406 total lifeguards were hired statewide with 30 working at State beach parks. SB562-SD1-HD1 intends to increase lifeguard quantity in Hawaii and make hiring of lifeguards more feasible.

Questions, comments, and concerns followed: Bill Number – Resident Ipo Johnson inquired and Walk reiterated the bill's number SB562-SD1-HD1.

Mayor Kirk Caldwell's Representative – Susan Fernandez, Department of Community Services (DCS) Deputy Director, reported the following: Summer Fun Applications – The Department of Parks and Recreation's (DPR) Summer College Student Employment Program is recruiting applicants for the 2018 Summer Fun program. College students who want to develop management and programming skills, recreation and child development skills, or enjoy working with children between the ages of five (5) and 13 are encouraged to consider working as a Summer Aide at the 2018 Summer Fun program. The program runs from the end of May 2018 to the end of July 2018. The pay rate is 12 dollars per hour or 14 dollars per hour. Information can be found online at www.honolulu.gov/parks/dprsummerfun or by calling (808) 768-3020.

Questions, comments, and concerns followed:

1. Broken Street Lights – Resident Polly Yamamoto requested street lights repairs on the lower end of Ahuimanu Road. Polly Yamamoto stated that three (3) lights were inoperable including one (1) at a bus stop. Deputy Director Fernandez inquired and resident Yamamoto responded that she had only received an automated response a request was submitted online.
2. Homeless Resources – Resident Connors requested additional resources and manpower be allocated to address homelessness in the areas of Kahalu'u, Kaneohe, Kailua, and Waimanalo. Resident Connors voiced concerns regarding information distributed by Mayor Caldwell's Office failing to address homelessness on the windward side of Oahu. Deputy Director Fernandez responded that she would refer the issue to Executive Director Marc Alexander of the Office of Housing (HOU).
3. Waihe'e Wetland Fines – Loo requested an updated report regarding the ongoing fines associated with the Waihe'e Wetlands and the status on permitting for the no kill shelter planned for the wetland site. Deputy Director Fernandez responded that she would investigate the issue.
4. Department of Planning and Permitting (DPP) Director – Bender inquired when the DPP would obtain a director. Deputy Director Fernandez responded that she was unsure.
5. Kamehameha Highway Repairs – Resident Ned Bush requested an update regarding plans to repair Kamehameha Highway between Haiku Road and the Hygienic Store. Resident Bush voiced concerns regarding the current two (2) year schedule and inquired about expediting the repairs.
6. Representative Attendance – Resident Glenn Lininger inquired whether or not representatives at the board meeting would remain throughout the meeting if an issue arose that pertained to their office. Deputy Director Fernandez responded that she was not immediately departing and encouraged residents to avoid waiting until board meetings to report issues to City and County departments.

7. Kalohaka Stream Bridge – Board Member LeVasseur stated that the Kalohaka Stream Bridge located at the intersection of Mapele Road and Ahilama Road was collapsing and requested repairs be performed.

Councilmember Ernie Martin – Michael Sakata reported the following:

- Bridge Replacement – Sakata clarified that previous discussions regarding bridge replacement pertained to Waiahole Bridge on Kamehameha Highway.
- Real Property Tax Bill – Legislation has introduced a bill regarding real property tax to exempt active military personnel in the United States armed forces. The bill would allow military personnel to be eligible for a 1000 dollar emergency exemption for their property.

Councilmember Ikaika Anderson – Francisco Figueiredo circulated a handout and reported the following:

- Windward Bus Route Changes – The Department of Transportation Services (DTS) along with Oahu Transit Services (OTS) has proposed modifications to TheBus routes servicing Windward Oahu. DTS will discuss these changes at upcoming Windward Neighborhood Board meetings in January 2018 and February 2018 to solicit public input. A survey is available at www.surveymonkey.com/r/WindwardTheBusRoutes to provide residents with an opportunity to voice feedback.

Questions, comments, and concerns followed:

1. Kamehameha Highway – Machado requested specific dates for roadwork and maintenance of Kamehameha Highway. Figueiredo responded that he was unsure and would acquire the information for a future report.
2. Road Lights – Machado inquired about altering the road lights located at the intersection of Kamehameha Highway and Haiku Road. Figueiredo responded that funds were allocated for the project with work beginning in late 2018. Figueiredo clarified that the project will install traffic lights to allow drivers to make left hand turns onto Kamehameha Highway from Haiku Road. Resident Paul Ferrese recommended installing a roundabout at the intersection to mitigate traffic congestion.
3. Homeless Allocations – Resident Connors inquired and Figueiredo confirmed that two (2) million dollars was allocated per Council district to address homelessness. Figueiredo clarified that funds have not been released and current work included surveying homeless individuals to gather information. Figueiredo encouraged residents to volunteer for homeless surveying to assist with information gathering. Austin inquired about what training would be provided for the Windward side of Oahu. Figueiredo responded that he was unsure and would attempt to acquire more information for future reports.

Governor David Ige's Representative – No representative was present, a newsletter was circulated.

Senator Gil Riviere – No representative was present, no report was given.

Senator Jill Tokuda – No representative was present, no report was given.

Representative Jarrett Keohokalole – No representative was present, no report was given.

RESIDENTS' CONCERNS NOT ON THE AGENDA

Kamehameha Highway Repairs – Resident Ned Bush voiced concerns regarding the current two (2) year schedule for repairs to Kamehameha Highway requested that the item be placed on the February 2018 agenda for Kahalu'u Neighborhood Board No. 29. Resident Bush suggested contacting the Kaneohe Neighborhood Board No. 30 to work together in addressing the issue.

Overcrowding – Resident Charlie Tanouye stated that visitor numbers to Oahu had increased from 54,000 per week to 124,000 per week. Resident Tanouye voiced concerns regarding overcrowding in Oahu and the abundance of homeless individuals throughout Oahu.

Hawaii Hazards Awareness and Resiliency Program (HHARP) – Resident Marie Samudio stated that the Department of Defense (DOD) would begin conducting HHARP training at the Kahalu'u KEY Project during the senior breakfasts with a program introduction on Friday, January 12, 2018. Training consists of 10 to 11 free lessons educating residents on the various hazards facing Oahu and how to respond to hazards. Resident Samudio encouraged attending the training to increase community preparedness.

Ahuimanu Road No-Parking Sign – Resident Polly Yamamoto requested that no-parking signs be installed on Ahuimanu Road near the intersection of Ahuimanu Road and Kahekili Highway located by the First Assembly of

God Windward Church. Resident Yamamoto voiced concerns regarding cars encroaching on Ahuimanu Road during Sunday mornings and weekly meeting times obstructing bus service at the intersection's bus stop. Chair Obayashi recommended reporting the issue to Deputy Director Fernandez.

Homeless Count Training Schedule – Resident Connors provided the training dates for the homeless count training. Training is available at the Queen Liliuokalani Children's Center in Kaneohe on Tuesday, January 16, 2018 from 6:30 p.m. to 8:00 p.m. and Monday, January 22, 2018 from 6:30 p.m. to 8:00 p.m.

Commercial Marine Licenses on Kaneohe Bay – LeVasseur inquired about the status of the October 11, 2017 motion to draft a letter to the Department of Land and Natural Resources (DLNR). Chair Obayashi responded that the issue was scheduled to be addressed on the agenda under Section Eight (**VIII**): Board Business; Sub-Section F: OIP Review – DLNR Letter Kaneohe Bay Master Plan/ Hawaii Administrative Rules.

Chair Obayashi called a recess at 7:44 p.m.

Chair Obayashi called the board back to order at 7:48 p.m.

CITY, STATE, AND FEDERAL AGENCY MONTHLY REPORTS

Marine Corps Base Hawaii (MCBH) – Tiffany Patrick, MCBH Community Planning and Liaison Officer, reported the following:

- December 2017 Training – Marine Aircraft Group 24 participated in deployment exercises conducted at Marine Corp Training Area Bellows during December 2017.
- January 2018 Training – The 3rd Marine Regiment along with elements of MCBH's Marine Aircraft Group will participate in an integrated training exercise at 29 Palms California during January 2018. This exercise will enable units to train as a fully forward air-ground task force.
- Helicopter Arrival – MCBH recently received AH-1Z Viper helicopters to replace previously utilized AH-1W Super Cobra helicopters. The AH-1Z Viper will bring additional combat capabilities and quitter operations to MCBH.
- Runway Work – The MCBH runway will be reopening from repairs and upgrades by Saturday, January 13, 2018.
- Community Relations Officer – Patrick introduced Danny Hayes, MCBH Community Relations Officer.
- Commander's Fitness Series – The public is invited to join the Commander's Fitness Series' King of the Hill race on Saturday, February 10, 2018. Information is available online at www.mccshawaii.com/races.

Questions, comments, and concerns followed:

1. Race Date – Austin inquired and Patrick responded that the King of the Hill race will be held on Saturday, February 10, 2018.
2. Friends of Marine Corp Base – Resident Ferrese inquired about the Friends of Marine Corp Base Hawaii program and whether or not the program planned to allow public to surf or fish on MCBH. Patrick clarified that the Friends of Kaneohe Bay program invites the public to utilize on-base services and facilities to generate revenue for MCBH. Patrick stated that supported programs allowed public access to the MCBH bowling alley, officer's club, and golf course. A separate system is available for fishing however surfing is not included.

Kaneohe Bay Regional Council – No report was given.

Board of Water Supply (BWS) – Barry Usagawa reported the following:

- Main Breaks – There were no main breaks reported for the month of December 2017.
- Capital Improvement Program (CIP) Scenarios – As mentioned previously, the BWS is developing a long-term Financial Plan and Water Rate Study. A key element is the 30-Year CIP. With the Water Master Plan the BWS completed in 2016 as its foundation, the CIP identifies the timing and costs of projects needed to keep the water system healthy. Over the past few months, the BWS has evaluated a number of CIP scenarios whose main difference is how much and how fast to replace the 2,100 miles of pipelines. The Water Master Plan recommends replacing about 1% of the system, or 21 miles of pipe, each and every year. Current replacement is about six (6) miles per year. The number of main breaks on Oahu is about the national average for a system of this size. But, if the rate of pipe replacement does not increase, main breaks will increase substantially in the future. At its September, 2017 meeting, the BWS Board provided guidance for pipeline replacement, recommending that the BWS should be "as aggressive as possible without being unrealistic." This means gradually increasing the rate of pipeline replacement to about 21

miles per year over the next decade or so. Paying for this increase, and the impact on customer's water rates, are the subjects of the long-term Financial Plan and Water Rate Study. New water rates will be considered by the Board in the summer of 2018. The soonest new rates would go into effect is 2019. Water rates fund the replacement of Oahu's water infrastructure, as well as day to day maintenance of the system to meet BWS's operational requirements and to ensure system reliability. With full commitment to an open and transparent process, the BWS has been meeting with our Stakeholder Advisory Group since 2015. All of their meetings, and also our Board meetings will be shown on Olelo. Meeting locations, dates and times, are posted on our website at www.boardofwatersupply.com.

- Water Rates and Outreach Process – In the next six (6) months, the BWS Board will be reviewing rate models to determine appropriate rate increases and changes to fees. As part of this process, the BWS is working on a presentation for the Neighborhood Boards and other groups about the Water Rate Study and potential new water rates. If residents would like to schedule a presentation, please contact Keoni Mattos in the BWS's Communications Office at 748-5369. The BWS Board will also be conducting four (4) public hearings on proposed changes to water rates prior to their adoption. The BWS expects these meetings will be held in June 2018.

Questions, comments, and concerns followed:

1. Presentation Length – Chair Obayashi inquired and Usagawa responded that he was unsure regarding the future presentation's length, but he will be back in April or May to present the water rates study.
2. Master Plan Population Growth Projections – Resident Andrea Anixt voiced concerns regarding the Water Master Plan projecting population growth through 2040 of 1500 people for Ko'olauloa and 1500 people for North Shore. Anixt expressed doubt regarding the projection's accuracy and inquired how the BWS accounted for the projected growth rate. Usagawa responded that the information was obtained from the DPP and that both North Shore and Ko'olauloa are projected as low growth areas. Chair Obayashi recommended bringing the issue to the attention of the Ko'olauloa Neighborhood Board No.28.

Department of Health (DOH) Update – Sina Pruder, DOH Wastewater Branch, reported the following:

- DOH updates - Watson Okubo retired in August 2017, so monthly DOH updates will occur as needed.
- Ongoing Testing – Testing continues for brown water seeps with the University of Hawaii and the United States Geological Survey.
- Cesspool Prioritization Report – In December 2017 the DOH was required by the Legislature under Act 125 to conduct a cesspool prioritization report. The report has labeled Kahalu'u a priority one (1) area. The report is available online with a meeting concerning the report will being held at Kahalu'u KEY Project's pavilion area on Friday, January 12, 2018 from 6:00 p.m. to 8:00 p.m.

COMMUNITY PROJECTS OR CONCERNS

Discussion of Oahu's Resilience Strategy by the Office of Climate Change, Sustainability, and Resiliency (CCSR) – Matt Gonser, Coastal and Water Program Manager, and Rocky Mould, Energy Program Manager, circulated a handout, provided a presentation, and reported the following:

- CCSR History – The CCSR was established by Oahu voters in 2016 when supporting Charter Amendment 7. The focus of the Office is to build partnerships between City departments, the State, and private entities to increase sustainability and address climate change in Oahu.
- 100 Resilient Cities (100RC) – 100RC, created by the Rockefeller Foundation, is an organization dedicated to helping cities around the world become more resilient to the physical, social, and economic challenges that are a growing part of the 21st century. From nearly 1200 applicant cities across the globe, Honolulu was selected to be one (1) of 100 cities in the 100 RC network. This network provides funding, technical expertise, and a framework for Honolulu.
- Climate Change – Gonser described the greenhouse effect and how the trapping of heat in the atmosphere has resulted in climate change. Notable climate changes recorded between 2015 to 2016 included rising sea levels, 11 days of record rainfall, 24 days of record heat, and nine (9) months of drought. Hawaii has experienced reduced trade winds, reduced overall rainfall, and increased sea levels.
- Resilience – Gonser defined resilience as the capacity to survive, adapt, and grow no matter what kinds of stresses and shocks Hawaii experiences.
- Oahu Resilience Survey – CCSR performed an active survey to collect public input on how Oahu can become more resilient by determining and addressing what areas residents believe to be most vulnerable in order to shape a Resilience Strategy to guide the CCSR's efforts for the coming years. The survey's results were reported in real time as they were provided and included some of the following highlights from the community.

  - Demographics – Demographics information for the participating board members and residents were collected.
  - Resiliency Rating – Oahu received a general resiliency rating of 4.9 out of 10.
  - Shocks – Hurricane, external economic crises, and rainfall flooding were listed as the top three (3) shocks likely to threaten Oahu's long-term stability.
  - Infrastructure and Agriculture – Concerns regarding a need for stronger infrastructure including agricultural infrastructure were recorded.
  - Stresses – Climate change impacts, cost of living, and lack of affordable housing were listed as the top three (3) stresses likely to threaten Oahu's long-term stability.
  - Concerns – Concerns regarding a need for stronger local agricultural production were recorded.
  - Approval – Approval of local community initiative and support was recorded.
  - Immediate Action Suggestions – Notable immediate action suggestions included improving fresh water production infrastructure and improved roadway infrastructure.
- Additional Resources – Additional resources are available online at www.resilientOAHU.org and by following the CCSR on Facebook, Twitter, and Instagram at ResilientOAHU.

Questions, comments, and concerns followed: Coastline Proposals – A resident inquired about coastline development proposals and whether or not the CCSR would participate in the review of project proposals with a respect to climate change. Gonser responded that, while the CCSR is a new office, they would be participating with other agencies in project proposal processes by recognizing concerns associated with various issues.

Draft Environmental Assessment (EA) for Kualoa Ranch Expansion – John Morgan, Kualoa Ranch President, Jeff Overton, Group 70, and Barbara Natale, Group 70, provided a presentation and reported the following:

- Ranch History – Kualoa Ranch began as a family operation in 1850 and was determined to be unsustainable by 1980. In 1985 Kualoa Ranch obtained a conditional use permit (CUP) and special use permit (SUP) to permit an outdoor recreations operation to build the ranch's business and achieve sustainability. By the 1990s business necessitated shifting from a wide variety of activities to a focus on eco-tours for nature, culture, and agriculture.
- EA – The EA would enable Kualoa Ranch to improve current facilities that cannot accommodate current demand. There are three (3) areas permitted under the 1985 SUP and CUP around Kualoa Ranch. Kualoa Ranch is currently preparing the draft EA to support modifications to the SUP and CUP.
- Proposed Expansions – Proposed expansions include expansions to the visitor's center and parking area, new tour depot areas, two (2) new administrative buildings, a horseback riding stable, a farmer's market venue, and general upgrades to utilities.
- Draft EA – The draft EA contains information regarding the existing environmental conditions, the summarized expansion plan, and information addressing the potential impacts and mitigation of impacts to the environment. The draft EA includes a 30 day agency and public review period during which time testimony regarding the draft EA may be submitted. The draft EA is available online at the State of Hawaii's Office of Environmental Quality Control (OEQC) website. The 30 day comment period expires on Monday, January 22, 2018, after which time the final EA will be submitted for DPP approval.
- Future Steps – Post DPP acceptance of the EA Kualoa Ranch will proceed with their amendments to the CUP and SUP. This is tentatively scheduled to occur during the summer of 2018 during which time Kualoa Ranch intends to return to the Kahalu'u Neighborhood Board No. 29 to provide additional presentations and address comments and questions.

Questions, comments, and concerns followed:

1. Comment Period – Chair Obayashi reiterated testimony submission deadline of Monday, January 22, 2018. Overton responded that testimony received within a minimal timeframe after the deadline might be accepted and responded to.
2. Kualoa Regional Park – Bender stated that the Kualoa Regional Park, across from the Kualoa Ranch on the opposite side of Kamehameha Highway, was suffering from beach erosion and deteriorating infrastructure. Bender inquired whether or not Kualoa Ranch had spoken to the City about assisting with park management. Morgan responded that Kualoa Ranch would be interested in the prospect, however they would need to be approached by the City first.

Chair Obayashi passed the gavel to Bender at 8:38 p.m.

3. Climate Change – Chair Obayashi inquired about climate change affecting the shoreline along Kualoa Ranch and Kualoa Regional Park and requested that concerns regarding climate change be addressed. Morgan responded that, from a resiliency point of view, Kualoa Ranch was most concerned regarding the

direct impact of climate change on the ranch's fishpond area. Morgan stated that the fishpond wall was currently intact and staff were retained to maintain the wall.

Bender returned the gavel to Chair Obayashi at 8:40 p.m.

4. Road Relocation – Bender voiced concerns regarding the section of Kamehameha Highway between the shoreline and Kualoa Ranch inquired about relocating the road inland to account for climate change and rising tides. Bender suggested consulting with the City to exchange land allowing an inward relocation of the highway. Morgan responded that fortifying and maintaining the current highway placement would be more feasible than relocating the highway.
5. Roundabout Suggestion – Towill suggested relocating the ranch's entrance to be opposite of the park's entrance while installing a roundabout to improve traffic and safety. Morgan responded that he would be open to considering the suggestion. Machado inquired about the ranch's capability to influence the placement of a roundabout in the area. Morgan responded that he was unsure.
6. Visitor Count – Resident Tanouye inquired about the current daily visitor count at Kualoa Ranch. Morgan responded that the current visitor count is between 1,000 and 1,500 people per day.
7. Ranch Wages – Resident Connors inquired about the wages for Kualoa Ranch employees. Morgan responded that Kualoa Ranch offered a wide variety of jobs at competitive wages.
8. Visitor Count Increase – Resident Wen Kim inquired about the projected visitor count increase over 1500, once the expansion project is completed. Morgan responded that expansions were designed to accommodate the current visitor count more effectively and address infrastructure issues and were not designed to increase visitor count. Austin inquired and Morgan responded that while an increase in visitors could occur, he was unable to provide a specific number for projected visitor growth.
9. Extended Hours – Resident Samudio inquired about rumors regarding Kualoa Ranch expanding business hours to 7:30 a.m. to 8:30 p.m. while conducting business seven (7) days per week. Morgan responded that original permitting listed hour extensions, however there were no current plans to extend operating hours or days.
10. Solar Power – Resident Samudio inquired and Morgan responded that Kualoa Ranch did not utilize any significant solar power.
11. Wastewater and Freshwater – Resident Samudio inquired about wastewater and freshwater evaluation in the draft EA. Overton responded that a full infrastructure analysis was performed with the draft EA which determined that wastewater would be handled on-site and that the ranch was meeting or exceeding the standards required for their disposal systems.
12. Community Groups – Resident Samudio requested that alternative fees and services be offered for community groups visiting Kualoa Ranch. Morgan responded that certain community programs and events existed and that new requests for special services would be evaluated independently as received.
13. Traffic Control – Mateinaniu voiced concerns regarding traffic congestion during special events at Kualoa Ranch and inquired about obtaining traffic control officers to improve traffic during events. Morgan responded that traffic plans are submitted to the HPD for events and recommended immediately contacting the ranch if traffic congestion occurs. Mateinaniu voiced concerns regarding the possibility of expansion generating additional visitors and traffic.
14. Extended Comment Period – Resident John Reppun inquired whether or not comments received past the designated comment period could be accepted. Overton responded that the comment period was established by the State and could not be changed. Overton stated that comments would be answered and addressed if they are received after the period, however they may not be included in the draft EA. Resident Reppun recommended organizing additional meetings and discussion with the community.
15. Proposed Resolution – Resident John Reppun provided a resolution proposal to the Kahalu'u Neighborhood Board No. 29 voicing support of the Kualoa Ranch expansions while requesting that the draft EA provide additional information, a comprehensive traffic analysis of Kamehameha Highway be performed, and that ongoing consultation with the board be performed. Morgan responded that the draft EA could not be revised, however Kualoa Ranch would address additional concerns.
16. Pre-Contact Historical Site Impacts – Loo inquired about the expansion's effect on pre-contact historical sites within Kualoa Ranch. Morgan responded that historical site effect was addressed within the draft EA and that no negative effects was expected. Morgan stated that expansions were expected to enhance Kualoa Ranch's cultural preservation efforts.
17. Historical Site Access – Bender inquired about expansions improving public access to pre-contact historical sites i.e. Puakea heiau. Morgan responded that unrestricted public access was unfeasible, however limited access is available. Morgan stated that Kualoa Ranch would prefer to provide controlled access.

18. Conservation Easements – LeVasseur requested additional information regarding conservation easements. Morgan responded that Kualoa Ranch did not possess any conservation easements and that roughly 50% of ranch property existed within a conservation zone.
19. Traffic Study – LeVasseur inquired whether or not Kualoa Ranch could officially support the North Shore Corridor Traffic Study. LeVasseur recommended that Kualoa Ranch locate roadside parking and provide shuttle services to bring visitors onto ranch grounds to mitigate traffic. Morgan responded that events are not organized by Kualoa Ranch and the ranch can only encourage visitors to utilize busses and alternative travel methods to mitigate traffic.
20. Resolution and Special Meeting – Chair Obayashi requested emailing the proposed resolution to all board members and organizing a special meeting to discuss adoption of the resolution to ensure that any motion taken on the resolution could be submitted prior to the draft EA deadline. Machado inquired and Obayashi responded that special meeting notices required filing with the City Clerk no later than seven (7) days prior to the meeting date. LeVasseur inquired and Chair Obayashi responded that the deadline to submit testimony was Monday, January 22, 2018.

Machado moved and LeVasseur seconded the Motion to Hold a Special Meeting to Consider Action on the Proposed Resolution Concerning the Kualoa Ranch Draft Environmental Assessment. Discussion Followed:

1. Meeting Focus – LeVasseur recommended ensuring that any special meeting be kept short and discuss the proposed resolution with no other business.

The motion was not adopted, 7-1-2; (AYE: Burns, LeVasseur, Loo, Machado, Mateinaniu, Obayashi and Towill**; NAY:** Bender**; Abstain:** Austin**).**

Group Living Facility at 47-323 Ahuimanu Road – Chair Obayashi reported that DPP held a special public hearing regarding the Group Living Facility at 47-323 Ahuimanu Road's Conditional Use Permit (CUP) application was held on Tuesday, December 19, 2017. Chair Obayashi reported that DPP intends to render a decision on the CUP application by the end of January 2018. Daniel Kaneshiro, First Assembly of God Church Pastor, circulated a shelter welcome packet.

Questions, comments, and concerns followed:

1. Safety Concerns – Resident Glenn Lininger voiced safety concerns regarding the group living facility.
2. CUP Information – Resident Glenn Lininger inquired about the facility's CUP regarding the permit's duration, possible extensions, and what the CUP entailed. Chair Obayashi encouraged submitting comments and testimony regarding the CUP to the DPP. Chair Obayashi responded that the CUP was valid for an indefinite timespan and would remain attached to the property regardless of property ownership. Resident Lininger inquired and Chair Obayashi responded that the Kahalu'u Neighborhood Board No. 29 was unable to submit testimony due to recessing in December 2017. Chair Obayashi stated that the CUP application was not received until considerable time passed since its filing on Wednesday, November 1, 2017.
3. Clarification of Process: Burns inquired and Chair Obayashi responded that DPP had already approved the Temporary Use Permit and the Special Management Area Permit. The Conditional Use Permit-major (CUP) application is the topic of discussion at present. Although the public hearing was held December 19, 2017, this is the first opportunity the Board has had to consider the matter. It is not known whether DPP will consider the Board's position in their final decision on the CUP major application. The DPP decision may be appealed by filing for a contested case hearing and paying a $400. filing fee.
4. Resolution Proposal – Towill presented a resolution to the Kahalu'u Neighborhood Board No. 29. Towill voiced concerns regarding the breach in trust between the church and community.
5. Testimony Submission Information – Resident Glenn Lininger inquired about where to submit testimony regarding the CUP. Chair Obayashi responded that the testimony submission address was provided on the CUP application and agreed to forward the information outside of the meeting.
6. Resolution Proposal – Chair Obayashi inquired and Towill responded that he lacked resolution copies to distribute to the Board. Austin voiced concerns regarding resolutions not being circulated prior to the meeting and Chair Obayashi requested that future resolution proposals be submitted prior to any meeting for circulation to board members and the community. Towill voiced concerns regarding the limited notice afforded to the Board. A resident requested and Chair Obayashi agreed to read the resolution to the assembly. Burns inquired whether or not a resolution passed by the Kahalu'u Neighborhood Board No. 29 could affect the CUP application. Chair Obayashi responded that the DPP would not render a decision

regarding the CUP application until the end of January 2018 and that testimony could be submitted to the DPP.

Towill moved and Bender seconded the Motion to Adopt Towill's Resolution Regarding the CUP for the Group Living Facility at 47-323 Ahuimanu Road. Discussion followed:

1. Resolution Wording – Austin voiced concerns regarding inconsistent wording within the resolution and stated that the resolution improperly addressed two (2) separate issues.

The motion was not adopted, 4-2-3; (AYE: Bender, Loo, Machado, and Towill**; NAY:** Austin and Burns**; Abstain:** LeVasseur, Mateinaniu and Obayashi**).**

Questions, comments, and concerns resumed:

6. New Resolution Proposal – The Kahalu'u Neighborhood Board No. 29 drafted a new resolution that read:
   a. WHEREAS the First Assembly of God Church made multiple assertions to the Kahalu'u Neighborhood Board and Community members that the use of church property for a group living facility (homeless shelter) was temporary; and
   b. WHEREAS without experience in operating a domes-based, women's and children's group living facility on a small plot of land in very close proximity to residential property, the First Assembly of God admits they are unsure of the possible cumulative impacts to the community and the need to run a prototype before finalizing plans for a permanent shelter operation; and
   c. WHEREAS operation of a 50-person, fiberglass domes-based group living facility will likely have unforeseen impacts on nearby residences from additional noise and lights; and
   d. WHEREAS operation of a homeless shelter for women and children may attract unwanted visitors and loiterers near the property possibly resulting in increased crime and litter, as well as a feeling of loss of safety by residents and people who use the nearby bus stop; and
   e. WHEREAS the cumulative impact of the group living facility -- more noise, lights, litter, and loss of safety -- has the potential to reduce nearby property values; and
   f. WHEREAS a one-year pilot project would provide valuable, experience-based information on ways to address the difficult issue of homelessness and enable input from additional community stakeholders such as schools, public safety departments and public housing authorities.
   g. THEREFORE the Kahalu'u Neighborhood Board opposes approval of a permanent Conditional Use Permit for a 50-person group living facility as proposed by the First Assembly of God on their property on (TMK 4-7-025-008). The Board would support a temporary use of the church property for a one-year test prototype demonstration of the group living facility as described by the First Assembly of God at the Special Meeting of the Board on May 24, 2017. The temporary Conditional Use shall be subject to periodic status presentations to the Board, and a full presentation and review by the Board and a second public hearing not later than January 31, 2019.
   h. THEREFORE, Be it Resolved, the Kahalu'u Neighborhood Board would support a temporary use of the church property as a condition of the Conditional Use Permit for no more than two years from the date of implementation, one year for the research and one year for the test program. Any other use of the First Assembly of God property is not supported by the Kahalu'u Neighborhood Board and the Community we represent at this time.

Towill moved and Bender seconded the Motion to Adopt the Kahalu'u Neighborhood Board No. 29 Resolution Regarding the CUP for the Group Living Facility at 47-323 Ahuimanu Road. The MOTION PASSED by MAJORITY VOTE, 8-0-1; (AYE: Austin, Bender, Burns, LeVasseur, Loo, Machado, Obayashi, and Towill**; NAY:** None**; Abstain:** Mateinaniu**).**

Questions, comments, and concerns resumed:

7. Church Response – Pastor Kaneshiro stated that the church was unaware of the various timeframes associated with the permits required to form the group living facility. Pastor Kaneshiro stated that DPP required the permanent CUP and that the church intended for the group living facility to act only as a 12 month pilot project. Chair Obayashi responded that the community concerns were focused on the CUP's permanent nature and were not directed toward the church or their project.
8. Neighbor Concerns – Resident Glenn Lininger expressed doubt that the church while moving forward with the group living facility considered the community's concerns. Resident Lindsay Lininger voiced concerns about emotional hardship on the community regarding the permanent CUP's effects on local residents.

9. Approval – Mateinaniu voiced approval of the group living facility project and voiced concerns regarding select resident's mannerisms when addressing the issue and Pastor Kaneshiro. Resident KC Connors voiced approval of the project.

Bender moved and Machado seconded the Motion to Postpone All Remaining Agenda Items and Adjourn the Meeting. The MOTION PASSED by UNANIMOUS VOTE, 9-0-0: (AYE: Austin, Bender, Burns, LeVasseur, Loo, Machado, Mateinaniu, Obayashi, and Towill**).**

MEETING ANNOUNCEMENT
The next Kahalu'u Neighborhood Board No. 29 meeting will be Wednesday, February 14, 2018 at 7:00 p.m. at KEY Project. The meetings are broadcast on 'Olelo channel 49 on the fourth Sunday of every month at 6:00 p.m.

Adjournment – The meeting was adjourned at 10:10 p.m.

Submitted by: Jackson Coley, Neighborhood Assistant
Reviewed by: Dylan Whitsell, Public Relations Specialist
Final Review by: Flora Obayashi, Chair

KO'OLAULOA NEIGHBORHOOD BOARD NO. 28

NEIGHBORHOOD COMMISSION • 925 DILLINGHAM BOULEVARD, SUITE 160 • HONOLULU, HAWAII, 96817
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REGULAR MEETING MINUTES
THURSDAY, FEBRUARY 8, 2018
HAU`ULA CIVIC CENTER

CALL TO ORDER: Vice-Chair Moeai called the meeting to order at 6:02 p.m. **Quorum was not established with four (4) members present.** Note – This 11-member Board requires six (6) members to establish quorum and take official Board action.

Members Present: Dee Dee Letts, Cathleen Mattoon, Pane Meatoga III (6:11pm), Kela Miller (6:04pm), Terry Moeai, Verla Moore (6:04pm), Jacob Nihipali (6:35pm), Colman Polvado.

Members Absent: Randall Au, Vanley Auna, Butch Tilley,

Guests: Lieutenant John Asing & Corporal Unga (Honolulu Police Department); Firefighter Downe (Honolulu Fire Department); Mike Sakata & Heidi Tsuneyoshi (Councilmember Ernie Martin's Office); Aukai Walk (Representative Sean Quinlan's Office); Lieutenant Colonel Mike Meumann & Major Pablo Sanchez (U.S. Army); Talia Egami & Kathy Bryant (Senator Schatz's Office); Andrea Anixt (Ka`a`awa Community Association); Judy Pittman (Hau'ula HCA + HELP); Colin (Punalu'u Community Center); John Morgan & Jeff Overton (Kualoa Ranch); Jasper Mills (Mckay Center); Danielle Beirne (Koolauloa HCC/FAC); KC Connors, John Olszowka, Rebekah Walker, Marvin Iseke, Charlene Silva, Ginny Alatasi, Ben Shafer, Ella Siroskey (Community Members); and Harry Cho (Neighborhood Commission Office).

CITY MONTHLY REPORTS

Honolulu Fire Department (HFD) - Firefighter Downe reported the following:

- January 2018 Statistics: There were 5 wild land/brush fires, 4 nuisance fires, 4 activated alarms with no fire, 55 medical services, 1 motor vehicle collision with a pedestrian, 4 motor vehicle collisions, and 2 mountain rescues.
- Fire Safety Tip: The following tips will enable the Honolulu Fire Department to more efficiently assist senior citizens during a medical emergency.
  - Be prepared to provide personal information. The emergency responder will need your name, address, date of birth, and telephone number.
  - Obtain and wear a medical identification bracelet.
  - Have medical history and a list of current medications ready.
  - Provide your advance directives such as: comfort care only-do not resuscitate or provide orders for life-sustaining treatment.
  - Ensure home address is visible and that there is adequate access to your location.

Chair Moore and Board Member Miller entered the meeting at 6:04pm. Quorum was reached with six (6) Board Members present.

Questions, comments and concerns followed:

1. Climbing Rescues: Board Member Polvado asked if there are penalties or fines imposed when mountain climbers are rescued. Firefighter Downe stated that HFD does not impose any fines. However the Honolulu Police Department may.
2. Hauula Fire Station: A Community Member asked for an update on the cost of the Hauula Fire Station. Firefighter Downe stated that he will come back with this information next month.
3. Hauula Fire Station: A Community Member stated the community was not notified of Mayor Caldwell's presence at the ground-breaking ceremony.

Board Member Pane Meatoga entered the meeting at 6:11pm. Seven (7) Board Members present.

Honolulu Police Department (HPD) – Officer Unga reported the following:

- January 2018 Statistics: There were 3 motor vehicle thefts, 4 burglaries, 20 thefts, and 6 unauthorized entries into motor vehicles.
- Climbing Rescues: It was confirmed that when hikers are rescued from illegal locations and trails, they are cited and fined.

Questions, comments and concerns followed - Update on Address: Vice Chair Moeai asked if there was an answer to last month's question regarding why the first responders had trouble finding the Hauula Civic Center. Officer Unga stated that the address is in the system however, the dispatch office is located in Honolulu and the address is incorrect. If respondent does not know the area well, they will send the officer or fire fighter to the general area. Staying on the phone will help because the phone call can be tracked to the exact location. He stated HPD will contact the dispatch office regarding this problem.

US Army Representative - US Army Representative LTC Mike Meumann & MAJ Pablo Sanchez reported the following:

- KTA: Our commanding officer will be hosting a tour of the KTA on Friday, March 2, 2018 from 9:00am to 12:00pm. This will include a tour of the training facility and overview of the natural resources and protected cultural sites. There are ten slots left. Those wishing to join can contact Major Pablo Sanchez.
- Kolekole 10k Run**:** This event will take place at Schofield Barracks on Saturday, March 3, 2018 at 7:00am.
- Noise Complaint Hotline: If you have any issues with the military training area please contact us at 808-656-3487.

Questions, comments, and concerns that followed:

1. Military Convoy: Board Member Miller asked who directs traffic when a military convoy is blocking the streets and stated that it is dangerous for drivers. LTC Meumann stated that safety is their number one issue. He will take this issue back to the department and report back next month.
2. Drum Road: A Community Member asked if Drum Road is open to the public. MAJ Sanchez stated that due to extreme weather, it is not accessible to the public.

APPROVAL OF THE THURSDAY, JANUARY 11, 2018 REGULAR MEETING MINUTES
Board Member Meatoga MOTIONED and Vice Chair Moeai SECONDED the motion to approve the Thursday, January 11, 2018 regular meeting minutes. The motion was PASSED by UNANIMOUS CONSENT, 7-0-0; (Pane Meatoga III, Cathleen Mattoon, Terry Moeai, Dee Dee Letts, Colman Polvado, Verla Moore, and Kela Miller. **AYE**: 7 **NAY**: None. **ABSTAIN**: None).

Treasurer's Report - Board Member and Treasurer Miller reported the following:

- February: The total monthly expenditures for the month of February was $22.95 and the remaining balance is $254.24

COMMITTEE REPORTS:

- Cultural Report: There will be an event held at the Heiau on Saturday, February 10, 2018.
- Transportation: Board Member Meatoga reported there was a miscommunication with the Department of Transportation (DOT) and a representative will not be present tonight.
- Health and Wellness: Board Member Mattoon reported the homeless count was done last week. The training sessions were complicated. The volunteers are trained to ask certain questions however, not many showed up. She thanked Queen Liliuokalani Children's Center for allowing to use their building for a week.

Questions, comments, and concerns that followed - Homelessness: Chair Moore asked how we can get a more accurate count and address this issue. Board Member Mattoon stated that first we need the funds which will determine the services provided. There is only one (1) social worker from Kalihi/Palama that comes once a month. It is not sufficient at the moment and does not make a large impact.

Board Member Nihipali entered the meeting at 6:35pm. Eight (8) Board Members present.

NEW BUSINESS

Overview of Constituent Services & Student Programs – Kathy Bryant, Outreach Representative for US Senator and Intern Talia Egami reported the following:

- Overview: Senator Schatz's Office provides veterans and military services, social security, Medicare, immigrant and nonimmigrant visa services, Internal Revenue Services for taxes, foreclosures, college internships, and Senate youth programs. The Washington DC office number is 202-224-3934 and the Honolulu Office number is 808-523-2061.
- Thank You: A message from Senator Schatz stated that he is pleased and grateful for the community being involved.

Questions, comments, and concerns that followed:

1. Veterans Services: Chair Moore asked how veterans and current military members can access this service and if there's going to be a physical office in the area, as was once proposed for Kahuku?. Bryant stated they can call the office at any time and a representative will assist them. As for the actual office, she will ask the department and report to Chair Moore.
2. Windmills: A Community Member was concerned about the proposal of the windmills being built in Kahuku. It is a great source of alternative energy but is too close to the community, neighborhoods and schools.
3. Public Access: A Community Member stated that she would like Senator Schatz to protect access to public television. Since Olelo is changing channels, residents are required to pay more to access public television broadcasting. Bryant stated that she will take this concern back to the office. Any other concerns can be addressed at the Senate website.

Proposed Kualoa Ranch Expansion – John Morgan & Jeff Overton reported the following:

- Improvements: An environmental assessment was submitted to make improvements and expand the facility. The visitor center is in the process of changing from half retail and half food & beverage to completely food & beverage. The retail store will be separate and decreased in size. Additionally two new office buildings, a new ATV building, and a new horse staple will be built. At the wedding area, a Hawaiian depiction of the Maori Marae will be built as well.

Questions, comments, and concerns that followed:

1. Horse Shows: Board Member Letts asked where the horse shows will be moved to and asked to keep it open to the public. Morgan stated that the location for the horse shows is yet to be determined.
2. Farm to Table: Board Member Letts asked if they will continue their farm to table food events. Morgan stated that they will continue that event. The only places that they sell their products such as oysters, shrimp, and beef are to high-end restaurants on the Island because it improves marketing.
3. Employees: Board Member Polvado asked how many employees currently work on the Ranch. Morgan stated that there are 300 employees.
4. Streets: Board Member Polvado asked if they have any thoughts on expanding their entrance to include a merge lane to allow motorists extra room to get on and off the Kamehameha Highway. Morgan stated that it has been brought up in the past and it is currently not in their improvement plan. This decision is ultimately up to the Department of Transportation (DOT).
5. Marae: Board Member Miller asked where the Marae will be located on the ranch. Morgan stated that it will be at the wedding area near the ex-military area which is now unused.
6. Thank You: Chair Moore thanked Morgan for coming out to the Koolauloa Board Meeting to present and keep updated even though Kualoa is not in the district.
7. Cattle: Chair Moore asked if the farm raised cattle are slaughtered on the ranch. Morgan stated that the cattle are processed at an off-site location near Campbell Industrial Park.
8. Employment: A Community Member asked if Kualoa Ranch will be offering higher income jobs along with the expansion. Morgan stated that in order to offer higher income positions, the business must grow substantially as well.
9. Marae: A Community Member stated that we should not be integrating New Zealand culture into a sacred land such as Kualoa which has a long history in the Hawaiian culture. Morgan apologized for misspeaking and stated that the Marae that will be built is a Hawaiian depiction of the Maori Marae which is a concept that is believed to have originated in Hawaii.
10. Movie: Chair Moore asked if there are any movies being filmed. Morgan stated that there is one movie that is contracted with the ranch called, "Mules", and will begin its pre-production in March 2018.

GOVERNMENT REPORTS

Mayor Kirk Caldwell's Representative - Adam LeFebvre reported the following:

- Updates: 120 City Parks have been repaired and improved around the Island of Oahu. There is currently a pilot for a completely electric city bus and plans to make all City vehicles electric by 2035 in order to reduce the effects of climate change. Climate Change Commission had their first official meeting on Wednesday, February 7, 2018.
- Summer Fun Program: The Department of Parks and Recreation's (DPR) Summer College Student Employment Program is recruiting applicants for the 2018 Summer Fun Program. If you know any college students who want to develop management and programming skills, recreation and child development skills, or who simply enjoys working with children between the ages of five (5) and 13, please encourage them to consider working as a Summer Aide at this year's Summer Fun Program. The program runs from the end of May to the end of July, and the pay rate is $12.00 per hour or $14.00 per hour. For more information and the online application form, please check out DPR's webpage www.honolulu.gov/parks/dprsummerfun or call 808-768-3020.

Questions, comments, and concerns that followed:

1. Abandoned Vehicles: Board Member Meatoga stated that there are currently two Bills that will get rid of abandoned vehicles for 10 days. He asked if it is accurate that the City is losing contractors because of the lack of storage for the cars. LeFebvre stated the city is in the process of finding a lot. Once a storage is found, the abandoned vehicles can be taken care of.
2. Abandoned Vehicles: A Community Member suggested that the city work with local community organizations to find a storage immediately.
3. Abandoned Vehicles: A Community Member asked if there is a conflict between the City retrieving these abandoned vehicles on a State Highway. LeFebvre stated that there is no conflict and that it is the City's responsibility to clean it up. The only current issue is finding a zoned property to store these vehicles.
4. Hauula Fire Station: A Community Member asked why there was no notice to the community about the ground breaking ceremony. LeFebvre stated that it was intended to be for media purposes. He apologized that he did not publicize the event more to the community.
5. Abandoned Vehicles: A Community Member stated that Honolulu Police Department (HPD) was contacted for a non-emergency report regarding an abandoned vehicle being stripped of its parts. LeFebvre stated that they may have been responding to an incident that requires immediate action however he will follow up next month after contacting HPD about this.
6. Kokololio Park: A Community Member stated that the shoreline has eroded near Kokololio Beach Park, and the ironwood roots make it difficult to use the shoreline there.
7. Parking: A Community Member suggested implementing a law for cars registered in each town to pay for overnight parking on the street, including visitors.

District Two (2) City Councilmember Ernie Martin - Mike Sakata reported the following:

- Abandoned Vehicles: It was surveyed that there were over 30 abandoned vehicles along Kamehameha Highway. Funding is proposed to be given by the next fiscal year.
- Hauula Fire Station: The projected date to finish is June 2019 and total amount spent on the new fire station to date is $1,062,198. The individual cost for each category includes $130,000 in construction, $31,970 in inspection, $751,000 in design, and $140,561 in planning.
- Resolutions: Currently in the process of developing a pot-hole maintenance program to repair the roads more consistently.
- Monster Homes: There are no current laws that are against monster homes. However the City Council is in the process of coming up with the best solutions.

Questions, comments, and concerns that followed:

1. Potholes: A Community Member stated that we should be using a more permanent product to repair our potholes because rainfall quickly deteriorates the improvement.
2. Abandoned Cars: A Community Member asked how the City plans to remove abandoned vehicles with people living in them. Sakata stated that the Community Services Department (CSD) may need to do some outreach to get them transitioned into homes.
3. Homelessness: A Community Member stated that a current resident suggested the old fire station be renovated and used as a temporary homeless shelter.

Governor's Representative Mike McCartney – No report was provided.

Senate District 23 Senator Gil Riviere - Senator Gil Riviere reported the following:

- SB 2963: This Bill will authorize a company such as Air BnB to collect General Excise Taxes (GET) and Transient Accommodation Taxes (TAT) and remit them to the State provided that they inform the Department of Taxation and the County Planning Authorities on who are the businesses that they are collecting from. This will help distinguish the homeowners that are operating illegally.
- Hawaii Tourism Authority (HTA): HTA is estimating nine (9) million visitors this year with an $82 million budget. A Bill was proposed last year that as the number approaches nine (9) million, the State will take 15% of the remaining budget to allocate to parks and trails that are used by these visitors. This Bill did not pass. This year, another Bill was proposed that when the number of visitors reaches 10 million, they would take a portion of their budget.
- Abandoned Vehicles: A Bill was proposed to address a $10 fee to any automobiles that enter the State. This money would be put into a fund to subsidize the removal and disposal of abandoned cars.
- Beach Pollution: A Bill was proposed to create funding for the State's Department of Land and Natural Resources (DLNR) to expedite the process of cleaning up the beaches.

Questions, comments, and concerns that followed:

1. SB 2963: Board Member Meatoga asked how the Senate and House of Representatives feels regarding this Bill. Senator Riviere stated that the Senate stands firms with this, but he believes that the House will modify the Bill.
2. Kahana: A Community Member stated that while we focus on this large area, we should not forget about Kahana. There are abandoned houses, vehicles, and an eroding pier that should be improved.

District 47 House Representative Sean Quinlan - Aukai Walk reported the following:

- SB 2323: This Bill establishes procedures for a parent or legal guardian to obtain authorization to home school a child. It requires the complex area superintendent or the complex area superintendent's authorized representative to request child welfare services to conduct a child abuse and neglect history inquiry. It also requires them to provide information to the Department of Education (DOE) to conduct a background check before approving or denying a notification of intent to home school. Lastly, it authorizes a parent or legal guardian to petition the family court if the notification of intent to home school is denied. The Education Committees have scheduled a public hearing on Wednesday, February 14, 2018 in conference room 229.
- SB 2274: This Bill establishes requirements for approval of a notice of intent to home school. It was referred to the Education Committees.
- HB 2244: This Bill establishes protections for home-schooled children. Among other things, it requires the DOE to request the child welfare services staff of the Department of Human Services (DHS) to conduct background checks on all people connected to a proposed home school and authorizes the DHS to conduct these background checks. It provides a process whereby a parent or guardian whose request to home school a child has been denied may petition the family court to determine whether home schooling is appropriate. This Bill was referred to the Education Committees and Health and Human Services Committees.
- Honolulu 311: Please use the Honolulu 311 app to report any problems and receive an answer promptly. There have been multiple reports of abandoned cars and two (2) of them have been removed recently.

PUBLIC INPUT/COMMUNTIY ANNOUNCEMENTS

- Bake Sale: There will be a cookie bake sale for the Kahuku Library in front of the Kahuku High School office on Saturday, February 17, 2018 from 10:00pm to 2:00pm.
- Community Event: There will be a community event this weekend in Hauula that will display all the items found on the property on Homestead Road.

ANNOUNCEMENTS

- Next Meeting: Next meeting is scheduled for Thursday, March 8, 2018, 6:00pm at the Hau`ula Community Center, 54-010 Kukuna Road, Hau`ula.
- 'Olelo Broadcasting: The regular Board Meetings air on the 4th Friday at 9:00pm, and on the 2nd and 4th Sunday at 12:00pm on Channel 49.

ADJOURNMENT: The meeting was adjourned at 8:35pm.

Submitted by: Harry Cho, Neighborhood Assistant
Reviewed by: Robert Whitsell, Public Relations

APPENDIX G
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From the Pacific Business News:
https://www.bizjournals.com/pacific/news/2017/09/11/kualoa-ranch-s-feast-in-the-field-fundraiser-will.html

Kualoa Ranch's 'Feast in the Field' fundraiser will benefit Family Programs Hawaii

Sep 11, 2017, 2:23pm HST

Kualoa Ranch will host a fundraiser for **Family Programs Hawaii** on Oct. 8, with food prepared by Turtle Bay Resort Executive Chef James Aptakin.

GETTY IMAGES
Kualoa Ranch will host a fundraiser for Family Programs Hawaii on Oct. 8, with food prepared by Turtle Bay Resort Executive Chef James Aptakin.

All proceeds from the "Feast in the Field for Children in Foster Care" fundraiser will go to the organization, which provides services to over 4,000 children and families in the foster care system annually, and is celebrating more than 30 years in Hawaii.

Chef Aptakin will be helped by the Kapiolani Community College's Culinary Arts Program.

Award-winning singer and Hawaii Island native Kimié Miner will perform at the farm-to-table event as well, before her album release on Oct. 13.

"I worked with foster children when I lived on Big Island," Miner said in a statement. "I was a babysitter for many years and worked with at-risk youth and special needs children. I saw the struggles they dealt with moving from house to house and being separated from their families."

Katie Murar
Reporter
Pacific Business News

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Celebrate a one-of-a-kind Valentine's Day At Kualoa Ranch

Published: Tuesday, February 14th 2017, 9:44 am HST
Updated: Tuesday, February 14th 2017, 10:32 am HST

KAAAWA,OAHU (HawaiiNewsNow) - This Valentine's Day, join Kualoa Ranch for a one-of-a-kind evening featuring the acclaimed Robert Cazimero in addition to a prix fixe 5-course dinner and wine pairing by chefs Luis Castro and Lawrence Lau, previously at renown restaurant Morimoto Waikiki. The outdoor dinner event themed, Ahupua'a-to-Table will be held on Tuesday, February 14, 2017 with seating at 5:30 p.m. at Kualoa's Hale Nanea.

Chef Luis Castro's inspiration for the evening's menu showcases an assortment of Kualoa grown produce, seafood and beef. The evening's wine pairings will be from the Gerard Bertrand selection, Kualoa liliko`i Leche de Tigre with Xicaru Mezcal, 2015 Palacio de Fefinanes Albarino, 2015 Tercos Bonarda and for dessert, a cocktail Lillet Blanc with Kualoa citrus.

"Kualoa is a very special place that sits on three ahupa`a's," said Chef Luis Castro. "Through each of the ahupa`a's on Kualoa, you find can yourself immersed in the lush mountains or down to the bountiful sea. The menu I created will help connect the guests that evening with a journey through Kualoa's ahupa`a's."

In addition to the dinner experience, guests will also take a tour of Moli`i, an 800-year old ancient Hawaiian fishpond, which is listed on the National Register of Historic Places, and visit the private Secret Island Beach.

Advance reservations are required. The event is $100 per person. Casual aloha attire is recommended. To make a reservation, call (808) 756-9999 or for more information, visit www.kualoa.com.

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Outstanding in the Field

Kualoa Ranch Aquaculture Farm

January 11th, 2017

Kualoa Ranch Aquaculture Farm
Wednesday, January 11th @ 2pm
$220

Outstanding in the Field

Ed Kenney first welcomed OITF to Hawaii in 2012 at beautiful MA' O Organic Farm on Oahu's West Side. Since then we've returned each winter to both Oahu and neighboring islands. We are grateful for Ed's original warm welcome and so pleased with the annual aloha! This year we'll set our table at Kualoa Ranch Aquaculture Farm on the eastern side of the island, where they are doing some fascinatingly delicious (and scenic) work with freshwater aquaculture in their Moli'i fishponds. We'll see and learn.

Kaipo heats up a dish, a hearty plate of rib eye beef, sourced from Kualoa.
PHOTO BY AARON YOSHINO/HAWAI'I MAGAZINE

Kualoa Ranch's new food tour brings the table to the farm

Kualoa Ranch is more than just ATV rides and ziplines. Now, with the addition of a new, on-site tasting excursion, it's giving visitors a full-on tour of its grounds.

BY CHRISTINE HITT NOV 15, 2016

(http://www.addthis.com/bookmark.php?v=300)
(http://www.addthis.com/bookmark.php?v=300)
(http://www.addthis.com/bookmark.php?v=300)

We're standing in Hakipuu Valley on the east side of Oahu with large fishing nets strewn across our left shoulders.

Our tour guide, Kaipo, is telling us to fling this large web of material into the air toward the bucket sitting on the ground several feet away. I swing my body back to build momentum, then launch the net into the air and, amazingly, it opens wide into a large circle and lands perfectly around my target. It's beginner's luck (I've never done this before) but now I'm hooked. I retrieve the net and hoist it over me once more to go again.

Near an earthen pond, we learn how to throw a fishing net.
Photo: Aaron Yoshino/HAWAI'I Magazine

I'm on Kualoa Ranch's new tour, the Taste of Kualoa, and we're at our first stop—standing next to shrimp and tilapia ponds. It's a tour of the ranch's 4,000-acre grounds, where we get to eat food reaped right from the farm. Right now, we're eating—you guessed it—tilapia patties and giant shrimp, which are so surprisingly large they could probably pass for baby lobsters. While the ranch sources them from Florida as babies, both the tilapia and shrimp are developed together in 7 acres of earthen ponds and harvested daily.

In a nearby pavilion, Kaipo doubles as our chef, whipping up smoothies blended with papayas and bananas grown on the grounds. Simultaneously, he fries the fish patties and shrimp on the portable stove he brought out of the Mercedes luxury tour van he's been chauffeuring us around in. The tilapia he prepares are incredibly tasty, and change the negative perceptions a few in our group previously

The large shrimp farmed at Kualoa; tilapia cakes.
Photo: Aaron Yoshino/HAWAI'I Magazine

Kualoa Ranch has long been known for its popular zipline, horseback and ATV tours through its lush valley of Kaaawa, a backdrop for many movies, including "50 First Dates" and "Jurassic Park." What most people miss on these tours, though, is it's also a fully operational, working ranch with 600 head of cattle and a thriving, diverse farming complex.

"Everybody kind of knows us as either 'Jurassic Park' or ATV and horseback," says Taylor Kellerman, Kualoa Ranch's director of diversified agriculture. "But, probably the coolest part about this place is that we have a huge agricultural presence that's very diversified."

Kellerman was part of the committee that created the concept for the tasting tour, but he says the spark really was initiated by John Morgan, the president and owner of Kualoa Ranch. Morgan is a descendant of the Judd family, who purchased their first parcels of land here in 1850 from King

Raw oysters, freshly picked.
Photo: Aaron Yoshino/HAWAI'I Magazine

"He's really had this amazing vision, and he asked us what we thought would be the best way to go about it," says Kellerman of Morgan on the tasting tour.

The oyster shack, which is the next part of the tour we're shuttled off to, is right on Kualoa's large fishpond, which holds around 50,000 oysters at a time. The guide explains how they're cultivated and shucks them right in front of us, before giving us a few to try. The ranch's oysters are brinier than we expected—a welcome surprise. It's a quick, but fun stop at the beautiful location, then we're back in the Mercedes with Kaipo.

He drives us to our third and final stop. At a large kitchen, there are five wooden, prop cows standing in front of the building. Kaipo teaches us how to rope one of them—a fun activity I happen to catch on to again. While Kaipo takes out the cooking burners and makes another meal, my colleagues and I take turns "herding" the stationary animals, seeing who can lasso the most before Kaipo finishes cooking up our next tasting.

This time, he's making rib eye beef tips and a plate of grilled root vegetables. We've been eating throughout the tour, and I'm beginning to get full, but the smell of the meat is hard to turn down. The casualness of the space, as well as the entire tour, is what I like best. The whole excursion and its many stops feels intimate (the tour maxes at 12 people) and it takes you all throughout the ranch, where you'll run into workers actually tending to the land and will occasionally overhear questions you have and stop by to answer them.

"There's nothing like talking to the person who does it every day," Kellerman says of the interactions you get to experience while on the tour. "It adds to the authenticity of it even more."

Taste of Kualoa Tour • Adults $109.95; $119.95 during high season (June through August). Children $89.95; $99.95 during high season. Kualoa Ranch, 49560 Kamehameha Hwy., Kāne'ohe, O'ahu, (808) 237-7321, kualoa.com (http://kualoa.com).

(http://www.addthis.com/bookmark.php?v=300)

Clockwise, from left: Kalpo Lau-Chai, a guide, demonstrates lassoing during the Taste of Kualoa tour. Participants find it takes skill and concentration when they try it themselves. Visitors try their hand at fishnet throwing. Tilapia cakes, hot from the pan, get a drizzle of aioli and are served alongside shrimp grown at Kualoa.

Tour offers taste of Kualoa fishponds, gardens, ranch

HAWAII'S BACKYARD

CHERYL CHEE TSUTSUMI

Kualoa private nature reserve and ranch is taking the concept of farm-to-fork dining one step further — literally.

On the 2-1/2-hour Taste of Kualoa tour, visitors go on short walks to get firsthand looks at the aquaculture, agriculture and ranching operations of the 4,000-acre property, which traces its beginnings to 1850 and encompasses three lush valleys on Oahu's Windward side. Hands-on activities, "talk story" time with the people who are doing the work, and tastings of fresh seafood, beef and produce prepared by the guide on-site add to the experience.

"Taste of Kualoa was developed as a team effort," said John Morgan, Kualoa's president, owner and sixth-generation descendant of the original landowner, Dr. Gerrit P. Judd, a trusted adviser of King Kamehameha III. "We're an agriculture-based company that evolved into a visitor attraction, so we wanted to offer a tour that goes back to our roots, pun intended. It gives guests a glimpse of all of our valleys and generous samples of the delicious products that we grow."

The tour begins at the visitor center in Kualoa Valley. From there it's a five-minute drive to the first stop: nine earthen ponds, which were built in the 1970s on the makai (ocean) side of Hakipuu Valley. Lessees, including the University of Hawaii at Manoa, used the ponds for research and commercial seafood production until 2010, when Kualoa took over operations.

Shrimp and tilapia are being cultivated in the ponds, which occupy half of the 10-acre parcel. "Kamaaina used to think of tilapia as a rubbish fish, but that perception is changing," Morgan said. "It's appearing on the menus of upscale restaurants, and our tilapia is high-quality, with a mild flavor and moist, tender flesh."

IT TAKES more than a year for the tilapia to grow to the marketable size of 2 pounds and five months for the shrimp to reach the desirable weight of 20 grams (three-fourths of an ounce). After participants practice throwing nets like the Hawaiians of old did to catch fish (it's a lot trickier than it looks), they savor tilapia cakes with aioli, grilled pesto shrimp and coconut-and-papaya smoothies — a hint of the delectables to come.

Dating back 800 to 1,000 years, 125-acre Molii Fishpond in Hakipuu Valley is the next stop. The Hawaiians were the only people in Polynesia to practice walled aquaculture, and when European explorers arrived in the late 1700s, there were more than 400 fishponds throughout the islands.

The concept was simple: Small fish entered the ponds through openings in the makaha (sluice gates), fed on algae and grew too big to return to the ocean. Thus, the ponds provided a ready source of food.

Today only about 40 traditional fishponds statewide are in restorable condition; of those, just seven have intact walls and working makaha. With three working makaha and 4,000 feet of double rock walls, Molii is an archaeological treasure that's on both the state and national registers of historic places and home to barracuda, oio (bonefish), pualu (surgeonfish), papio (young trevally), toau (blacktail snapper) and oysters.

KUALOA

"We started experimenting with oysters in 2010 to filter phytoplankton that had accumulated in the pond," Morgan said. "One oyster can filter 50 gallons of phytoplankton every day. Oysters have become a great success story for us: They provide an ecological benefit, and they're a delicious commercial product that's in high demand."

Buoys mark the 20 acres of the pond reserved for oyster production; suspended there are 200 1-by-4-foot baskets containing 100,000 oysters in various stages of growth. After they're harvested, the oysters go through a 48-hour purging process that yields meat with a clean flavor and smooth texture.

GUESTS watch the guide deftly shuck oysters, then try them with cocktail, ponzu and Sriracha sauces. For many people all the oysters need is a squirt of lemon juice: they're that one!

From Molii the tour goes to Kaaawa Valley, where Kualoa's ranching and agricultural operations are based. Thriving on 20 acres of orchards and gardens are 36 varieties of fruits and vegetables, including avocado, papaya, mango, apple banana, taro, tomato, eggplant and kale.

About half of Kualoa's 500 head of Charolais and Black Angus cattle roam Kaaawa Valley, and it's not unusual to find some lazing right beside the road that the tour van traverses. They're solely grass-fed without the use of artificial hormones, antibiotics or steroids, which results in beef with less fat and more antioxidant vitamins and heart-healthy omega-3 fatty acids than beef from grain-fed cattle.

Grilled beef chunks on a rosemary skewer, sauteed mixed vegetables, and strawberry-and-apple-banana smoothies are offered after participants learn how cattle are roped and test their own lassoing skills.

"Our vision is to be a good steward by preserving, protecting and enhancing the environment while developing recreational activities and agricultural enterprises that are compatible with it," Morgan said. "Taste of Kualoa immerses guests in real, sustainable agricultural operations where they learn where and how food is produced and meet the people who are charged with that responsibility. The tour's name says it all: You'll enjoy a taste of Kualoa's beauty and the amazing bounty that the land shares with us."

———

Cheryl Chee Tsutsumi is a Honolulu-based freelance writer whose travel features for the Star-Advertiser have won several Society of American Travel Writers awards.

IF YOU GO . . .

Taste of Kualoa

- **Address:** Kualoa, 49-560 Kamehameha Highway, Oahu
- **Offered:** Daily at 9 a.m. and 1 p.m.
- **Price:** $109.95 for adults and $89.95 for children ages 3-12 ($119.95 and $99.95, respectively, during high season from June through August). Kamaaina rates are $99.95 for adults and $79.95 for keiki.
- **Phone:** 237-7321
- **Email:** reservation@kualoa.com
- **Website:** kualoa.com
- **Notes:** Wear cool, comfortable clothing; a hat or visor; sturdy walking shoes; and a liberal dose of sunscreen. Trail rides, all-terrain vehicles, zip lining, a catamaran, movie sites, jungle/nature and ancient fishpond/garden tours are among Kualoa's other diversions. Kualoa's beef, oysters, shrimp, eggs and seasonal produce are available for purchase in the visitor center.

From the Pacific Business News:
http://www.bizjournals.com/pacific/news/2016/09/22/leaders-in-activities-finalists.html

Leaders in Activities Finalists

Leaders in Activities Finalists: Hawaiian Legacy Tours, Kualoa Ranch & Private Nature Reserve, Wet'n'Wild Hawaii

Sep 22, 2016, 9:00pm HST

The finalists for the 2016 Pineapple Awards Leaders in Activities category are Hawaiian Legacy Tours, **Kualoa Ranch** & Private Nature Reserve and Wet'n'Wild Hawaii.

Pineapple Awards 2016 Leaders in Activities Finalists

Read about each company below.

Hawaiian Legacy Tours

Jeffrey Dunster, CEO
Address: 91 Coelho Way, Honolulu, HI 96817
Phone: 808-595-8847
Website: hawaiianlegacytours.com

This ecotour company is an innovative branch off the HLH, or Hawaiian Legacy Hardwoods, tree. That company was a finalist for innovative company of the year in PBN's Business Leadership Hawaii awards for its unique business model.

Founded by Jeffrey Dunster and Darrell Fox, HLH is a sustainable forest company and certified B-Corp that farms highly prized native timber such as koa by reforesting large tracts of the Big Island. A fourth of its trees are harvested for use while the other three-fourths will be never be cut down.

In 2013, HLH launched Hawaiian Legacy Tours to further capitalize on the idea of affordable reforestation. Visitors pay for the experience, helping to add to the landscape they traveled to see with tour packages that end with them planting trees of their own.

On tours that start at $110, including the $60 price for planting a legacy tree, visitors depart from the Hawaiian Legacy Tours visitor center in Umikoa Village to look at the remaining old growth endemic koa forests that still survive from before this area on the slopes of Mauna Kea was deforested for ranching. Then visitors plant their own trees, dedicated to someone if they wish or as a memorial with a custom inscription.

Participants are given a certificate of sponsorship with details about their tree's unique RFID number and GPS coordinates, which encourages repeat visitation to the Legacy Forest to see how it's coming along.

As a result of its business model, Dunster has said to PBN, "We've been able to put in a forest with zero debt. We're trying to do it in perpetuity."

The tour program received plaudits almost immediately. After just 10 months in operation, it was named Eco-Tour Operator of the Year by the Hawaii Ecotourism Association.
— *A. Kam Napier*

Kualoa Ranch & Private Nature Reserve

John Morgan, President
Address: 49-560 Kamehameha Highway, Kaneohe, HI 96744

Phone: 808-748-3219
Website: kualoa.com

A high-tech zipline is one of the biggest attractions to be added during John Morgan's reign as president of the Kualoa Ranch & Private Nature Reserve.

The seven-station zipline is the first in the U.S. to be 100 percent sustainable. It uses water catchments and solar panels to power Wi-Fi, electrical and photo-relay systems.

The new Kaiaulu Koolau project is a free informational resource with videos, photos and information that connects local residents and visitors alike with artisans and practitioners to help keep Hawaiian traditions alive.

In 2015, Kualoa's Education Department hosted more than 14,000 keiki from across Oahu and thousands more children from China, Japan, Korea and the Mainland with a mission of instilling in them the importance of preservation, conservation and sustainability. Students learn first-hand about the Hawaiian ahupuaa system of managing lands from mauka to makai. Sessions include hands-on lessons in erosion control, sediment management, water quality and ocean acidification.

Kualoa's new farm-to-table Taste of Kualoa tour showcases many of the farm products being raised there.

Kualoa's workplace-mentoring program in partnership with Big Brothers Big Sisters Hawaii pairs students from Kaaawa Elementary with Kualoa Ranch employees who mentor students about environmental stewardship.

The ranch recently started a 4-H Club chapter to teach children how to raise and sell their own livestock at the Hawaii State Farm Fair held each year at Kualoa. It is also active in stream-restoration projects and in the movement to make Hawaii a certified Blue Zone community as part of the Blue Zones project.
— *James Prichard*

Wet'n'Wild Hawaii

Jerry Pupillo, General Manager
Address: 400 Farrington Highway, Kapolei, HI 96707
Phone: 808-674-9283
Website: wetnwildhawaii.com

The numbers at Wet'n'Wild Hawaii say a lot about Jerry Pupillo's performance as the general manager of the state's first and only waterpark, a position he has held since April 2014.

Annual revenue is up 8 percent over the previous year; in-park growth has increased nearly 30 percent; and tour and travel group attendance has risen 5 percent. In addition, both CheapFlights.com and StarPulse have ranked Wet'n'Wild Hawaii as a top 10 U.S. waterpark. The Travel Channel recently dubbed it as one of the nation's best.

One of the waterpark's biggest months was in May 2015, when it marked its 16th year in business, welcomed its 5 millionth local guest and opened its first new attraction in six years, the Waimea Whirl.

Wet'n'Wild Hawaii prides itself on offering an authentic Hawaii experience to its visitors. All of its attractions have local place names, and the waterpark is filled with Island-inspired backdrops, native plants and petroglyphs. The average guest mix is 70 percent local resident and 30 percent tourist.

Pupillo and his staff also believe in giving back to the community. In the last 18 months, Wet'n'Wild Hawaii has made $300,000 in charitable donations and given $1,227,000 in free admission to nonprofit causes, community groups and local families. Workers also take part in community events away from the waterpark.

Wet'n'Wild is also a United Cerebral Palsy Association of Hawaii drop-off location. Pupillo is a past president of the UCPA board of directors and the waterpark's assistant general manager, Scott Loos, is a current member of the board.
— *James Prichard*

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Fanta-Sea Part II: Day trip

By Nadine Kam
August 30th, 2016

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PHOTOS BY NADINE KAM / nkam@staradvertiser.com

We are so far-removed from the source of our food that seeing a living Pacific white shrimp was a thrill to those on The Royal Hawaiian Hotel's Fanta-Sea Table farm tour to Kualoa Ranch's Moli'i Fishpond. A few wanted to hold them in the air to get a good look at them.

The introduction of oysters to Kualoa Ranch's Moli'i Fishpond started in 2008 as an experiment in controlling the excessive growth of invasive algae to create a healthier environment for its food fish. They had already tried adding more herbivore fish, but these were too easily cannibalized by the pond's carnivorous barracuda, ulua and

toau.

The oysters not only did their job, they flourished and presented the opportunity to become another sustainable source of food for our isolated islands. The ranch was cerfified to sell shellfish two-and-a-half years ago, and today, visitors to the property can buy Miyagis or Kumamotos on site, or if we're lucky, we can spot them on the menus of Oahu's farm-to-table restaurants.

During Part II of The Royal Hawaiian Hotel's "Fanta-Sea Table" event initiated by executive chef Colin Hazama, that took place Aug. 21, participants who a night earlier had enjoyed feasting on the oysters and other products from Kualoa Ranch and its fishponds, took a bus ride to the country to visit the source of the sumptuous meal prepared by Hazama at Azure restaurant, with the help of Azure sous chef Colin Sato.

Pacific white shrimp fished out of Kualoa Ranch's shrimp ponds.

Oysters are removed from their cages and given a "spa day," where their shells are cleaned of algae and barnacles to keep them attractive for market.

Fishpond ki 'ai (guardians) Kui'ipo McCarty and Ikaika Velez took us out on the 153-acre fishpond to visit the oyster cages, placed on the water's surface, where they do nothing but get fat quickly feeding on algae drawn to the surface by sunlight. The ranch doesn't interfere with this natural balance—in place for 800 to 1,000 years according to carbon dating—putting no other food or additives into the water.

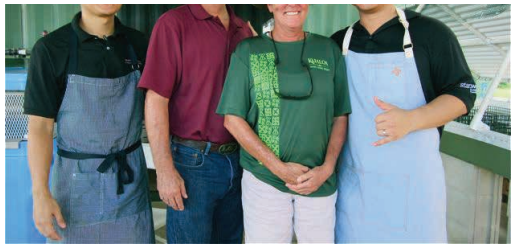
Due to the plentiful algae, the oysters grow to market size for dining on the half shell in about nine months, whereas this would take a year to two in Washington and Oregon, which still supply most of the oysters we eat in our restaurants. The flavor of the Kualoa oysters is mild and clean, due to the ranch's process of letting the oysters fast in nutrient-free water and poop days before going to market. Velez said that prior to using this state-mandated practice, the oysters had a more fishy flavor reflecting the pond environment.

Ikaika Velez shows oyster cages that are tied to posts in the fishpond, allowing the oysters to feed and grow in the natural environment. The tumbling action of gentle waves helps smooth the oyster shells so they don't have the sharp, jagged edges of bottom growers.

It was amazing to see the work being done, and learn about the interrelationships between all the flora and fauna that comprise the pond ecosystem. As a fisherman and outdoorsman, Hazama has been a longtime proponent of maintaining the balance between man and nature, and events such as this are a reminder that all of our actions have an impact on the planet.

Over the two days, I learned more about the invasive species we consider trash fish, a self-fulfilling prophecy in which we refuse to eat them just because we are told they are rubbish fish and assume they taste bad or are somehow unclean. Toau is one of them, but the blacktail snapper from Tahiti is as moist and delicious as any snapper, and they are plentiful in the fishpond, where they wreak havoc on native populations. We could keep them in check by eating them, but there is no demand because most people paying restaurant dollars will opt for the familiar rather than take a chance on the unknown. Events like this raise awareness and lead us to commercial realities, like the fish being cast as rubbish by commercial fishermen who can't make money off of catching them.

Following the boat ride on the fishpond and tour of the shrimp facilities, we sat down for another wonderful lunch by the two Colins, this time with a "Down by the Kualoa Bayou" theme inspired by Louisiana cuisine. Here's a look at the day:



Fanta-Sea Table creator chef Colin Hazama, right, with, from left, his chef collaborator Colin Sato, 6th generation Kualoa Ranch co-owner David Morgan and Ku'uipo McCarty, who runs the seafood program on the ranch.

A view of the fishpond, where fry enter from the ocean through sluice gates, get fat on algae, and are unable to escape back to the ocean.

The next Fanta-Sea Table events will take place Oct. 21 and 22; and Dec. 16 and 17. Following the weekend's dinner, people were signing up on the spot for the Oct. 21 dinner featuring Kahuku sea asparagus and Kona Cold lobsters. Hazama will team with chef Nathan Tasato to present a meal at Azure restaurant featuring chilled Kona mussels and clam brushchetta, Hawaii kampachi carpaccio, white bouillabaisse with tea-smoked Kualoa shrimp and Kona Cold shellfish, fricasee of Kona Cold lobster, Moroccan-spiced Niihau lamb loin and Kona Abalone brulée, and dessert of a local citrus bar.

The next-day excursion will be to Kahuku Sea Asparagus, followed by lunch. The cost is $150 or dinner; $180 with wine pairing; $250 for dinner (no wine) and farm tour; and $280 for dinner with wine pairing and tour.

———————

For reservations for the next event, call the Starwood Waikiki Dining Desk at (808) 921-4600.

After hours in the sun on a boat and touring the shrimp ponds, we were happy to enjoy refreshments including this Kula strawberry and lavender lemonade. Those so inclined could add a splash of Pau Maui vodka.

Before lunch, Azure sous chef Colin Sato presented a demonstration on how to make a Kualoa shrimp salad with Ho Farms smoked tomato medley, charred Ewa sweet corn, and Wailea heart of palm remoulade.

Ku'uipo McCarty with a portrait of longtime Moli'i Fishpond caretaker, the late George Uyemura. You can learn more about this remarkable man at oceanicinstitute.org/pdfs/Keeper_Molii_Pond_a25705.pdf

Hazama also presented a demonstration on how to shuck an oyster. He's able to shuck 150 in 25 minutes. Don't try to break his record, at risk of injuring yourself.

Being on the water inspired the chefs to take their cue from Louisiana bayou fare, so one of the lunch dishes we enjoyed was Kualoa Ranch oyster po' boys with 'Nalo Farms herbs, yuzu kosho mustard aioli, and Maui onion fennel.

Sato also created an outstanding Jidori chicken gumbo with Ho Farms okra, housemade Portuguese sausage, grilled shishito peppers and optional crispy chicken cracklings.

Hazama's Forbidden Dirty Rice with blackened spice, lup cheong and Mari's Garden Tokyo Negi.

Jasmine rice dusted fried green tomatoes with charred Maui onion ranch and crispy pipikaula.

———

Nadine Kam is Style Editor and staff restaurant critic at the Honolulu Star-Advertiser; her food coverage in print in Wednesday's Crave section. Contact her via email at nkam@staradvertiser.com and follow her on Twitter, Instagram and Rebel Mouse.

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Fanta-Sea Part I: Night at Azure

By Nadine Kam
August 29th, 2016

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PHOTOS BY NADINE KAM / nkam@staradvertiser.com

An ice display showcased fish from Kualoa Ranch's Moli'i Fishpond that was featured during the latest Fanta-Sea Table collaboration dinner at Azure restaurant in the Royal Hawaiian Hotel.

While at the Sheraton Waikiki, chef Colin Hazama's reverence for the work that farmers do to sustain us, led to the start of his Table to Farm dinner series. Now, as executive chef of The Royal Hawaiian, a Luxury Collection Resort, he has introduced the combination dinner-farm tour concept via "Fanta-Sea," this time focusing on an epicurean journey by sea.

The most recent two-day event started with a chef's dinner on Aug. 26 at Azure restaurant, followed by an Aug. 27 excursion to Kualoa Ranch's Moli'i Fishpond for a tour and gourmet lunch. Both meals were presented by Hazama and Azure sous chef Colin Sato.

At the heart of the meal was Kualoa's farm-fresh oysters, Pacific white shrimp, toau, and 100 percent grass-fed beef.

The toau was a revelation on two levels. First, the blacktail snapper is delicious. The reason we don't hear more about it is because it's an invasive species deemed a rubbish fish because it doesn't have commercial value as long as people don't know about it.

A pre-dinner small bite of verjus glazed Kualoa oyster with Wailua tomato water, pickled Kunia watermelon rind and serrano pepper. Pairing: Nicolas Feuillate Brut NV.

Another small bite of Kualoa shrimp.

It also provides a cautionary tale about nature's delicate balance and how man's shortsighted ideas for improving on nature can yield unexpected results and wreak havoc on a fragile environment.

The species was introduced from Tahiti in 1956, with the idea that the tasty, delicate white fish could become a cash crop. But it is a carnivorous night-feeding fish that fed on the fishpond's day-feeding herbivores, including more popular eating fish such as the mullet, whose populations have plummeted.

Old timers would say that we should not try to improve on nature, but we must accept and adjust to what the land and sea give us. At the moment, it seems to be telling us to eat more of what we consider to be rubbish fish such as toau and ta'ape. But it is a hard sell. Because of the cost of going out to eat, no one wants to take a chance on the unknown. So we continue to order the fish we recognize: ahi, onaga, opakapaka, opah.

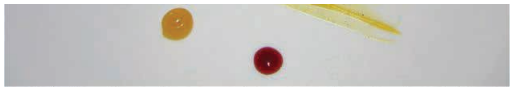
Educational cuisine programs such as Fanta-Sea go a long way in introducing new ways to think about the food we eat and the impact of our choices.

First course of charred Kualoa Shrimp with Ho Farms Market radish, 'Nalo Farms mizuna puree, yuzu kosho, and Naked Cow Dairy brown butter dashi. Pairing: Henriot Blanc de Blanc NV.

A dish of Hot & Cold Oio (Hawaiian bone fish) included lomi oio tartare, pickled Kualoa ogo, Wailea Ag garlic-ulu chips, Mari's Garden ginger-watercress puree, and a crispy shiso wrapped oio tempura with local red onion preserve, Kualoa papaya mustard and young coconut-avocado mousse. Pairing: Veuve Clicqout Rose NV.

Crispy Toau was served with Ewa corn pudding, Ho Farms summer ragout, seared Samoan crab dumpling, and Mari's Garden negi pistou. Pairing: Bouchard Beaune de Chateau Blanc Chardonnay, 2013.

Kualoa Ranch Slow Cooked Ribeye with prickly ash, Pacific oyster and Hamakua mushroom stuffing, spiced Ho Farms butternut squash purée, Mari's Garden smoked melted Tokyo negi and marjoram-cognac essence. Pairing: Red Schooner Voyage Malbec 2013 by the Wagner Family.



Dessert by executive pastry chef Carolyn Portuondo was Wailea Ag Vanilla Kaffir Lime Semifreddo with a mac nut feuilltine crust, Kualoa Sunrise papaya and candied hibiscus reduction. Pairing: Pattrick Bottex Bugey Cerdon NV.

Next: Day 2 field trip!

———

Nadine Kam is Style Editor and staff restaurant critic at the Honolulu Star-Advertiser; her food coverage in print in Wednesday's Crave section. Contact her via email at nkam@staradvertiser.com and follow her on Twitter, Instagram and Rebel Mouse.

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Hundreds gather for annual farm fair at Kualoa Ranch

Published: Saturday, July 9th 2016, 4:38 pm HST
Updated: Saturday, July 9th 2016, 4:38 pm HST

By Janelle Guerrero-Miguel
HNN Summer Intern

HONOLULU (HawaiiNewsNow) - Hundreds came out Saturday for the 54th annual Hawaii State Farm Fair.

The fair at Kualoa Ranch will also run Sunday, from 9 a.m. to 5 p.m.

Kids and students are free, while general admission is $5.

Among the fair's attractions:

- The 4-B livestock tent features goats, chickens, lamb and more.
- A hands-on exhibit that teaches kids what a day on the farm looks like.
- Horse rides and other attractions.
- A farmers market and plant sale.

Oh, and food. Lots of food.

The Hawaii State Farm Fair is sponsored by the Hawaii Farm Bureau and the Department of Agriculture.

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Farm meets fork at Kualoa Ranch

Honolulu Star-Advertiser 4 Nov 2015

Expect an exceptional farm-to-fork meal at the Huakaʻi Mauka dinner to benefit Hui o Koʻolaupoko, a watershed management group for the region from Makapuu to Kualoa.

The event, 3 to 8 p.m. Nov. 14 at Kualoa Ranch, will feature a meal using bounty from the area's ahupuaa (mountain-to-sea land division) by chefs Mark "Gooch" Noguchi of the Pili Group and Kealoha Domingo of NuiKealoha.

Jeep tours of restoration work at Kualoa will run before dinner.

Tickets: $75; visit huihawaii.org/fundraiser.

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Shucking the Limitations of Hawaiʻi's Aquaculture Industry with Oysters

BY JOSEPH BENNINGTON-CASTRO | October 2015

VIDEO | Oyster Farming in a Hawaiian Fishpond, Featuring Kuʻuipo McCarty

It's a slightly overcast Monday afternoon in September, and we are slowly riding along in a 25-foot sea-foam-green boat. Its motor is barely audible over the breeze as it carries us across a portion of the 125-acre Moli'i fishpond at Kualoa Ranch on the windward (eastern) side of O'ahu.

A few minutes later, we reach our destination some 150 yards from the dock.

"I'm returning these oysters," Ku'uipo McCarty announces as she prepares to lower an approximately 4-foot tall wire cylinder into the brackish pond. The cylinder houses about 150 market-sized oysters, which have been to retail but weren't sold. "We call them recycles, or resuscitations, or reincarnations, because they are still alive but they have gaped a little bit and have been in the refrigerator for five days."

After spending a month in the fishpond, recuperating and hanging out with tens of thousands of other oysters, the recycles will get a second chance to complete their life cycle – in the guts of hungry Hawai'i residents and visitors.

Here at the Moli'i fishpond, the first farm to sell certified grown-to-maturity oysters in Hawai'i in nearly three decades, sustainability and conservation are ideals held dear. For instance, oysters that perish before making it to the market still serve an important role as pothole fillers.

"We made 'oyster island' right over there," says McCarty's assistant Moani Heimuli. "Oyster island and oyster lane."

Ku'uipo McCarty (front) and her assistant Moani Heimuli (back) offload several oyster-filled baskets from their boat. After being washed with freshwater, these oysters will dry out over night – a treatment that helps kill a parasitic worm that bores into the oysters' shells.

"It's reclaimed land," adds McCarty, who's in charge of the day-to-day operations of Kualoa Ranch's oyster farm. Even McCarty herself, who doesn't have a background in marine science but has been with the ranch for 27 years, is a kind of testament to these ideals.

From captain to oyster farm manager

A Hawai'i resident all her life, McCarty, a seemingly inexhaustible woman with an equally boundless sense of humor, grew up in the ahupua'a (division of land stretching from mountaintop to ocean) of Hakipu'u, which encompasses Kualoa Ranch and the Moli'i fishpond. "When I was two years old, I grew up looking at the cowboys on the ranch and wishing I could be a cowgirl," McCarty recalls.

Fortunately for her, McCarty's wish eventually came true.

McCarty began her journey with Kualoa Ranch – which would culminate with her running the oyster farm – in 1988 as a Hobie Cat captain in the ranch's tourism department. She then moved on to develop and run the ranch's therapeutic horsemanship program, utilizing her associate's degree in occupational therapy from the University of Hawai'i. In this position, she served the disabled community of O'ahu for 20 years, while simultaneously working for the ranch's education department for about 18 years, she says.

In the mid-2000s, Kualoa Ranch owner John Morgan approached Bruce Anderson, former Hawai'i state health director and current administrator of the Department of Land and Natural Resources Division of Aquatic Resources, to help revitalize the Moli'i fishpond and control the excessive growth of invasive algae, which would otherwise harm the pond's harvestable herbivorous fish. After a failed attempt at controlling the algae with more

herbivores – the pond's carnivorous barracuda and ulua (giant trevally) ate them too quickly for the fish to have any real effect on the algae – Anderson began experimenting with raising oysters.

Given McCarty's long personal history in the region and work history with the ranch, Morgan asked her to help care for the pond and assist with the shellfish program. McCarty agreed, and volunteered her time to help Anderson and learn everything she could from him about oyster farming.

"Our process started in 2008, beginning with doing some research and development on whether the oysters did grow in the fishpond, how quickly they grew, and what type of culture system would be best for Moli'i pond," McCarty says. "We grew out 35,000 of them, and we were very successful."

Created by the oyster farms "founding father" Bruce Anderson, this oyster basket contains a PVC tube that's periodically rolled to prevent the oysters from sticking to each other and to remove feces.

Busy with other duties, Anderson, whom McCarty fondly refers to as the oyster farm's "founding father," eventually handed over the project to her. And for a time, McCarty handled the oysters on her own, before getting two assistants – Heimuli and Ikaika Velez.

"I've worked hard for 27 years to be given the opportunity to do it," McCarty says. "It's just by working for a private company that acknowledges loyalty and hard work and interests, and facilitates the growth of their employees."

"She's really a go-getter," says Alan Everson, NOAA Fisheries' aquaculture coordinator for the Pacific Islands Region. "She's the reason it can happen, it's because of her energy. If it were another person, they probably would have given up."

But just what does it take to raise oysters in a loko i'a, or Hawaiian fishpond?

From spat to market-size

The Moli'i fishpond has been in production since ancient Hawaiians built it 800 years ago, McCarty says, adding that it doesn't need restoration like numerous other fishponds in Hawai'i.

Like other loko i'a, Moli'i fishpond contains brackish water – a mixture of seawater and freshwater from a clean watershed. Separating the ocean from the pond is a permeable, mortar-free wall of hand-laid rocks that were passed hand-to-hand.

The fishpond was designed to be sustainable and self-recruiting, able to draw in and trap herbivorous fish with grated sluice gates. Attracted to algae-filled water, baby fish from the ocean would swim into the pond, and then grow up and become too large to get back out through the gate. This system, which keeps predatory fish populations to a minimum, allowed ancient Hawaiians to maintain large stocks of herbivorous fish.

However, carnivorous fish that people introduced to the fishpond in modern times threw off Moli'i's delicate ecological balance, allowing algae to bloom. But this bountiful vegetative food source, coupled with Hawai'i's naturally warm temperatures, also made the fishpond an ideal home for oysters.

The oyster-growing process begins with 6-millimeter oyster spat (larvae), which Kualoa Ranch gets from a hatchery on the Big Island several times a year in batches of 50,000 to 75,000. McCarty and her assistants transfer the oysters into a 5 mm mesh-lined wire cylinder that holds a PVC tube – an apparatus that Anderson built.

There are several benefits to this design, McCarty says. For one thing, the PVC tube keeps the cylinder afloat, decreasing the predation on the oysters while discouraging disease by keeping the bivalves out of the mud. The system also decreases labor costs by making it easier to clean and roll the oysters, compared with traditional methods of growing oysters in bags.

The team places the oysters, in their cylinder baskets, out into the pond in an area specified by the Department of Health (this makes it easier for the department to conduct their safety tests, McCarty says). Every day, they roll the PVC pipe in the water, preventing the spat from sticking to each other or the cylinder while also helping to remove feces. They also give the oysters a thirty-minute freshwater bath once a week.

Once the oysters get big enough, McCarty and her staff move them into the next cylinder, which has a half-inch mesh liner. Different for each oyster, this growth period can take anywhere from three weeks to three months, McCarty says.

The oysters will stay in this cylinder for another two to three months, and continue to get rolled once a week. The team also removes the baskets from the pond, gives them a freshwater bath, and allows them to dry out overnight each week.

This weekly drying treatment – devised through research and consultation with scientists and experts, including Everson – helps kill *Polydora*, a parasitic worm that bores through the oysters' shell. While the worms don't kill the oysters, they do create blisters on the inside of the shells. "And if you didn't know how to shuck and you accidentally hit it, it would sour the oyster," McCarty explains.

Eventually, the oysters will move on to a liner-free basket, which has wire with an inch-sized spacing, until they're ready for harvest.

For the harvest, the team takes the oysters out of their basket and lines them up neatly on a table, allowing them to see if any of the bivalves have died and should be added to oyster island and oyster lane. Those that survived are placed in a 200-gallon depuration tank, which recirculates artificial seawater and sanitizes it with UV light, for 48 hours. This important step empties out the oysters' guts, making them safer for consumption by preventing the transmission of any feces-borne illnesses that have travelled down from the watershed and into the oysters. The oysters are then sent off to retail.

"She's been doing an excellent job with a limited amount of resources," comments Everson. "You can see how labor intensive [the process] is."

"Because of the magic of the Moli'i fishpond – the prolific amount of phytoplankton and our warm temperatures – we can get a harvestable-sized oyster from a 6-mm spat to a lovely half-shell size in six to seven months," McCarty says. This is just a fraction of the time it takes to grow oysters on the mainland.

All of Moli'i fishpond's bivalves are sterile Pacific oysters (*Crassostrea gigas*). "We grow a specific variety called a triploid," says McCarty, who can seamlessly switch from pidgin (Hawaiian creole) to academic speech. "It is bred in hatcheries by crossing a diploid, which is a regular breeding oyster that has two sets of chromosomes, with a tetraploid, which has four sets of chromosomes and naturally occurs in nature but is rare."

Raising only sterile oysters keeps the population in check, allowing the bivalves to clean up the fishpond but not take all the food (algae) away from Moli'i's herbivorous fish, which McCarty, Heimuli, and Velez also harvest for the ranch. In this way, the team can keep a sustainable supply of both oysters and fish.

Breeding the oysters is "very similar to taking a donkey and a horse and making a mule," McCarty says. "They are hardworking but they're sterile."

From ecology to economy

With only a small patch of algae – no bigger than the oyster-harvesting boat – left on the surface of Moli'i fishpond, the oysters' ecological benefits are obvious. The bivalves effectively take up microalgae, preventing them from forming dense mats on the water surface. In years past, McCarty notes, the algae would cover an average of 15 to 35 percent of the pond, and at worst the entire fishpond.

The oysters at the Moli'i fishpond help control the growth of algae, which can sometimes cover the whole pond. Thanks to the bivalves, this small algae patch is all that's left.

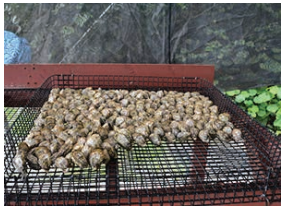
Though the oysters were primarily envisioned as ecological tools, Kualoa Ranch recognized the mollusks' economic benefits early on. In order to sell raw oysters to the public, however, the fishpond would need to meet certain safety regulations put in place by the U.S. Food and Drug Administration.

Interestingly, when Kualoa Ranch first began raising oysters, the Hawai'i State Department of Health was not up to the task of certifying farms for shellfish production. The department's laboratory and food safety program underwent an intense federal recertification and training process.

In early 2014, after 18 months of water quality tests, Moli'i fishpond became one the first operations to receive state certification to market shellfish in some 27 years. "We follow Department of Health guidelines and we will be tested into perpetuity," McCarty says.

After receiving state certification, McCarty began selling Kualoa Ranch's oysters at the ranch's Visitor Center, and then to individual restaurants soon after. She estimates that she now sells about 1,500 oysters a week – this money goes to the ranch, which solely funds the oyster farm project at Moli'i fishpond. By comparison, Hawai'i imports an estimated 400,000 oysters a month, she says.

Oyster farming could become a multimillion-dollar industry in the near future if other fishponds across the Hawaiian Islands take after Kualoa Ranch's lead. "We're hoping that slowly more people will come on board and start to," Everson says. "There's a chance to expand the aquaculture industry."



As part of the harvesting process, Ku'uipo McCarty and her assistants neatly lay out the oysters on a tray, allowing them to easily pick out those that have perished.

Other fishponds, including He'eia fishpond on O'ahu, are looking into raising and selling triploid oysters, but none have been certified yet. Moli'i is, in a sense, lucky in that it has a very clean watershed, which keeps the amount of fecal contamination that gets into the oysters relatively low, Everson says. Longer depuration times or more sophisticated depuration techniques are likely required for various other fishponds to obtain certification, he says.

Importantly, depuration not only makes consumption safer, but also improves the oysters' taste. Everson rates the oysters as some of the best he's ever had, a sentiment shared by both long-time oyster lovers and the newly converted.

"Our biggest joy is to provide a quality product, home-grown in Hawai'i, to our local consumer," McCarty says. "And many of the people have said that it is a sin to cook or even put anything on our oysters because they're that delicious."

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至福のひとくち

長年の努力が実り、ハワイ産カキがついに食卓へ

文＝ドーン・サザード　翻訳＝チャンバーズ厚子　写真＝ライアン・フォーリー

店頭に並んだ途端、売り切れ

水辺の作業場で、クウイポ・マッカーティさんは薬味を用意していた。ホットソースとカクテルソース、そしてカットレモンもある。アシスタントのイカイカ・ヴェレーズさんがタンクから12個のカキを引き上げ、殻を開け、カウンターに並べた。その向こうには、午後の陽射しに照らされたモリイ養魚池とカネオへ湾の水面が広がる。目の前には、キラキラと輝く殻に載ったトロリと光るプリプリのカキがある。それはとても印象的な光景だった。私は薬味には目もくれず殻をつかみ、冷えたカキを口の中にすべらせた。

私にとってカキは、思い出のシーンとつながっていることが多い。アナポリスのスパクリークでの一夜、カラッと揚がった衣に、リカーと呼ばれる汁がシミ出ないうちにほおばったカキフライ。凍てつくような冬の日、マンハッタンのグランド・セントラル駅地下のオイスターバーで食べたアツアツのカキのシチュー。しかし、これまで食べたどこのカキよりも、このクアロア牧場のモリイ養魚池で育った生の太平洋産のカキほど、さっぱりとして美味しいものはなかった。それは良質のカキすべてにいえるように、わずかに塩気があり、身がしまり、新鮮でかすかな甘味があった。

熱烈なカキのファンは地元産を好むようだ。大西洋岸では、ブルーポイントやチェサピークのような大きな肉付きの良いものがもてはやされる。また、ニューイングランドではレタスのような風味のベロンズカキに人気が集まる。かつてこの地域のカキはブリタニーの特産品だったが、現在ではメインとノヴァスコーシアに移っている。西海岸では、小さくて甘味があり、よく「禾の実風味」と表現されるクマモトが好まれている。しかし、どのオイスターにもわずかながら欠点がある。ヨウ素や銅、あるいはアーモンドの苦味に含まれるシアン化合物に似た雑味がわずかに感じられるのだ。ところがモリイ養魚池のカキにはそのいずれもなく、完全無欠だった。

ハワイの海産物というと、誰でもアヒ（マグロ）やマヒマヒ（シイラ）を思い浮かべるが、カキを挙げる人はおそらくいないだろう。しかし、その常識が今まさにくつがえされようとしている。マッカーティさんとヴェレーズさんは、このハワイの新しい産業の先駆者だ。ここまで来るのは長い道のりだった。2人が勤めるクアロア牧場では、6年の歳月をかけて800年の歴史のあるモリイ養魚池の一部をカキの養殖場に転用した。ここで育ったカキが一般の人の口に入るようになったのはごく最近のことだ。私が訪ねた日の朝、マッカーティさんは牧場のビジターセンターにある店に576個のオイスターを運び込んだが、2時間で売り切れた。その翌日マッカーティさんは、ウインドワードモールで開かれるファーマーズマーケットで2000個売り出す予定だった。たとえ1個1ドルだとしても、すぐに売り切れることは間違いなかった。クアロア牧場にとっても、私のようなハワイのカキ愛好家にとっても、新しい時代の幕開けと言えるだろう。

前ページ、オアフ島カネオへ湾で育ったパシフィックオイスター。プリプリの身とさっぱりとした味が特長だ。マーケットに並ぶと、またたく間に完売する。写真上、小型モーターボートでヘエイア養魚池へ向かうケリイ・コツベテイさん。下、クアロア牧場のモリイ養魚場で、カキが1カ所に集まらないようネットの筒を回転させるイカイカ・ヴェレーズさん。どちらも古代の養魚場を使ってカキを養殖している。

パールハーバーの由来

カキの養殖自体は非常にシンプルだ。まずスパットと呼ばれる子ガキを、浮いているネットの筒に詰め込み、養魚池の水底のくいに8本から10本の紐でつないでおく。あとは定期的に誰かが小舟で見回り、子ガキが一カ所に集まらないように筒を回転させたり、岸辺まで牽引したりすればよい。子ガキは養魚池の滋養豊かな水の中でどんどん成長し、短期間で大きくなる。養魚池に入れる時の子ガキは5～6ミリの大きさしかないが、6カ月ほどで5センチから6センチに育ち、市場に出せるサイズになる。成長する過程ですし詰め状態になるのを防ぐため、子ガキは新しい筒に移し替えられる。最終段階になると1本の筒の中には成長したカキがおよそ150個入っている状態になる。現時点で収穫できるカキはおよそ2万8000個あるという。

ハワイはこれまでカキと無縁だったわけではない。原産のものもあることはあるが、小さすぎて売り物には適さない。かつてオアフ島中央部のプウロア湾には真珠貝が棲息しており、英語でパールハーバーと命名される由来となった。だが、ジェームス・クックの来島から50年もしないうちに姿を消した。1800年代中期に、チェサピーク湾産のものがパールハーバーとカネオへ湾に持ち込まれたが、これも死に絶えた。1930年代になって日本のクロチョウ貝が紹介された。1938年の1年間だけで21トンが収穫されたが、乱獲によってほぼ絶滅した。それでもダイバーがカネオへ湾のサンゴ礁で、わずかに群生しているのを今でも見つけることがある。

太平洋産のカキはラテン語名にちなんでギガと呼ばれている。このカキは1906年頃にカネオへ湾に持ち込まれてから、長

い間生存していた。湾の東端にあるワイカルア養魚場で養殖されていたともいう。太平洋産のカキは虚弱で、特に子ガキの頃に天敵から保護しないと生き残れない。そのため繁殖し過ぎて自然環境を脅かす心配がなく、ハワイにとってはむしろ望ましかった。しかし、ギガが初めてハワイに紹介されてから100年以上経った今、カネオへ湾でこの種を見かけることはめったにない。

温暖化転じて機会到来

では、最近になって何が変わったのだろうか。どうやら最大の変化は、マリア・ホーズという研究者が起こしているようだ。

ホーズさんはハワイ大学ヒロ校のPACRC（太平洋養殖・沿岸資源センター）の創立者で、海洋生物の養殖活動を指揮している。言わばハワイの初期産業を育成する助産師のような役割を果たす人だ。PACRCの施設内のタンクでは、養殖として有望なマレット（ボラ）、オパカパカ（フエダイ）などが群れをなして泳いでいる。しかし今、研究の大部分はカキの養殖に向けられている。ホーズさんは技術面での支援だけでなく、別の種類を試すための資金を集めたりしている。さらに地元の養殖業者とアメリカ本土の大手生産者を結び、本土から専門家を招いて繁殖や遺伝学などの知識を提供している。

もう一つの変化として、ハワイの業者が子ガキを入手しやすくなったことがあげられる。カキを育てることは比較的やさしいかもしれないが、子ガキを育てるのは難しい。それがハワイの養殖業者にとっての最大の問題となっていた。ある程度はホーズさんが提供しているが、ローカルの養殖業者が子ガキを育てるのは複雑すぎて手に負えない。ところが世の中とは良くしたもので、気候の変動がハワイでのカキの養殖に追い風となった。「海洋酸性化率が世界中で一番高いのが米国の西海岸です。この地域では、大規模なカキ養殖場や子ガキを供給している孵化場がいっぺんに災害を被る可能性があります」とホーズさんは言う。そこで全損を避けるため、グースポイント・オイスターやテイラー・シェルフィッシュのような西海岸最大手の生産者数社が動いた。生育期間が長く、酸性度の少ないハワイの海に注目し、孵化場を建設しはじめたのだ。彼らは年間に数億という子ガキをここから西海岸の養殖業者に送っている。そして、ほんの片手間という感じで、地元の養殖池が必要としている子ガキの大部分を供給するようになった。

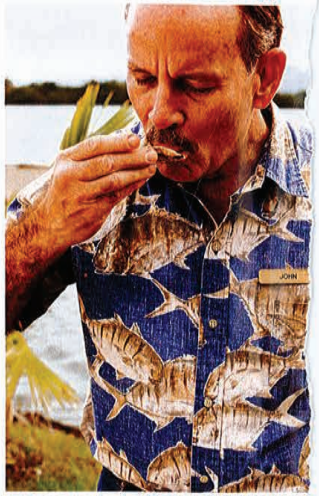
「ハワイの生産者が一度に必要としている子ガキは、たかだか2万個で、テイラー社のような大企業にとっては無に等しい数です。なにしろバケツ一杯に100万個の子ガキが入るんですから」とホーズさんは言う。この2万個の子ガキこそは、新鮮なローカルのカキを所望するファンにとって何よりの貴重品なのだ。

古代の養魚池を活用

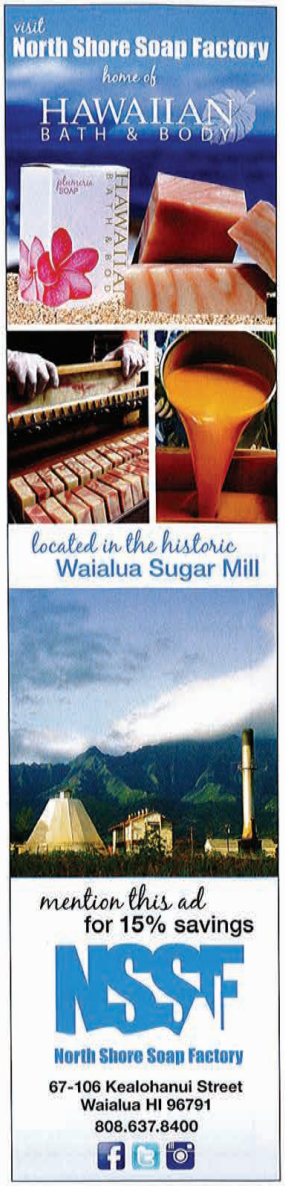
カキは、ハワイの養魚池の保護にあたる人たちにとっても重要な存在だ。そう語るのはアイナモモナ、パエパエ・オ・ヘエイアの責任者、ケリイ・コツベティさんだ。彼はカネオへ湾にあるヘエイア養魚池で自給自足を甦らせようとしている。養魚池を使って家族と地域社会を支える持続可能な収入を生み出すことを目指しているのだ。

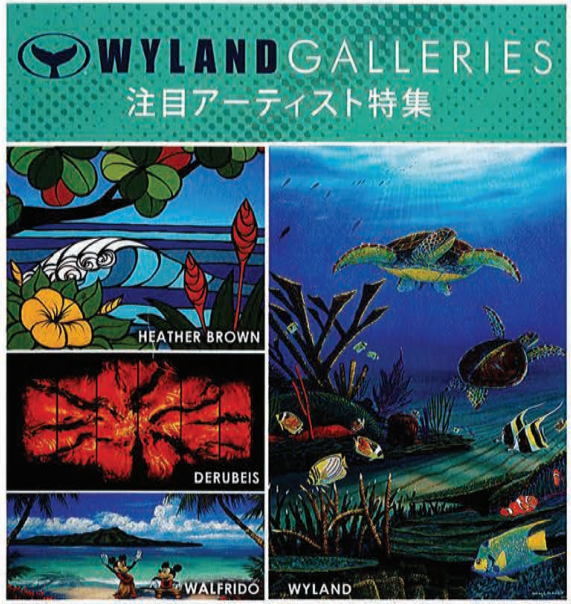
「養魚池では数万個のカキの養殖を試みてきました。失敗も沢山しましたが、それでも何千個か収穫できました」とコツベティさんは言う。

ハワイのカキ市場のためにホーズさんが行っている各種のプロジェクトはどれも有望だ。将来は年間2000万ドルの純益も夢ではないと彼女はみている。クアロアでの初の収穫に示された需要は、間違いなく大きな消費市場があることを示唆している。ハワイ育ちのカキを2つ、3つと口に運びながら、私はこれまでの人生で殻から直接食べた多くのカキを思い起こした。だが、どれ1つとして、クアロアのあっさりしたギガに太刀打ちできるものはなかった。今後養魚池がどんなに大量のカキを生産しようと、簡単に手に入る状態にはならないだろう。帰宅途中、車からクアロアの店に電話をし、カキの注文をした。HH



モリイ養魚池で育てたカキを試食するクアロア牧場の経営責任者、ジョン・モーガンさん。「今のところ牧場内のマーケットで販売しているだけですが、地元のレストランメニューに載る日もそう遠くはないでしょう」と熱く語る。





PERMABLITZ HAWAII
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PERMABLITZ HI *Hawaii's Edible Revolution*

Regenerative Agriculture Workshop at Kualoa Ranch a success

November 17, 2014 by permablitzhi | Leave a comment

APCRD and Permablitz Hawaii hosted Darren J. Doherty* at Kualoa Ranch for a 2-day workshop Regenerative Agriculture Workshop exploring the Regrarians** platform and approach to the emboldening world we are working towards, be it for lifestyle or professional farmers, urban gardeners and anybody interested and active in positive living, enterprise or landscape development pursuits.

SEARCH

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Students explored each of the Regrarian 'Regen 10' design elements: Climate, Geography, Water, Access, Forestry, Buildings, SubDivision, Soils, PolyMarketing & Energy via interactive presentations, workgroups, field exercises & demonstrations at Kualoa Ranch and learned how to design viable agricultural enterprises which regenerate soils, restore biodiversity, and ethically stewards its natural resources.

The Hawaii Center for Food Safety sponsored 8 scholarships for ranchers and farmers to attend, including 5 who attended from the neighbor islands.

Keyline farming on the beach w/ Darren Doherty #RegrariansHI #RegenerativeAgriculture

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From the Pacific Business News:
http://www.bizjournals.com/pacific/blog/2014/09/hawaii-ecotourism-association-awards-tour-operator.html

Hawaii Ecotourism Association awards tour operator of the year

Sep 17, 2014, 5:32pm HST **Updated: Sep 18, 2014, 3:05pm HST**

JASON UBAY

Hawaii Ecotourism Association named Hawaiian Legacy Tours its tour operator of the year at a luncheon on Wednesday. From left: Chris Barzman, owner of Barzman Consulting; Richard Lindberg, director of corporate partnershps, Hawaiian Legacy Hardwoods; and Darrell Fox, co-founder, Hawaiian Legacy Hardwoods.

Hawaii Ecotourism Association named Hawaiian Legacy Tours, a company that takes guests on a tour of Hawaiian Legacy Hardwoods' forest and helps guest plant a koa tree on the Big Island, as its tour operator of the year at a luncheon Wednesday at the Hilton Waikiki Beach Hotel.

HEA also awarded the 2014 Ecotour Guides of the Year to Kaiulani Manuwai-Oiph of Kailua Sailboards & Kayaks, Jason Lee of Maui Kayak Adventures, Denver Leaman of Body Glove Cruises and Erik Storm of VolcanoDiscovery Hawaii.

HEA's Travel Writter of the Year award went to Kyle Ellison, author of Moon Maui Guidebook.

In addition, 17 tour operators received HEA's Sustainable Tourism Certification for 2014-2015. The certification process ensures tour operators' accountability for the impact their business may have on the natural and cultural resources of Hawaii. The certification process involves applications from the tour operator and an independent, third-party review. The companies are:

Atlantis Adventures
Big Island Divers
Bike Hawaii
Fair Wind Cruises
Hawaii Forest & Trail
Hawaiian Legacy Tours
Hawaiian Paddle Sports
Holokai Kayak & Snorkel Adventure
Kailua Sailboards and Kayaks
Ko Olina Ocean Adventures
Kualoa Ranch
Maui Kayak Adventures
Pacific Islands Institute
Pacific Whale Foundation
Trilogy Excursions

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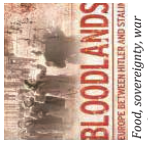

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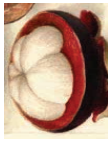

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Contact Farmers & Friends at:
farmersandfriendseditor@gmail.com

Peter Merriman:

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Hawai'i's Original Chef Locavore

In 2007, the Oxford American Dictionary added *locavore* to its pages, describing the idea of eating food locally produced rather than food shipped long distances.

But the concept had its beginnings in Hawai'i in 1988 when Peter Merriman opened Merriman's restaurant in Waimea on Hawai'i Island. He just might have been Hawai'i's original chef locavore.

All About Oysters

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An Essay on the Half-Shell

I began to entertain the idea that we could grow oysters in Hawai'i if we created the right growing conditions. I knew oysters grew well in the cold waters of the Pacific Northwest, but was unsure whether they would prosper in the relatively warm waters around Hawai'i. I subsequently began basic research on the subject, and found no good reason why they wouldn't do well.

Crisis in the orange groves

Special Report — First, the good news. The bacterium that causes "orange greening" is not present in Hawai'i, though we do have the tiny Asian psyllid fly that transmits the disease. The bad news? The devastation of Florida's citrus industry has raised the price of oranges, limes, lemons and grapefruit. That refreshing glass of orange juice we love in the morning is in real jeopardy. For a report on the Florida citrus crisis and what's being done about it, see page 28.

All about oysters
… and a bit more

an essay on the half-shell

By Bruce Anderson, Ph.D.

Oyster stands in Fulton Market, NYC drawn by Alfred R. Waud (1828-1891): Library of Congress Prints & Photographs Division

Introduction

Eating a raw oyster for the first time is in some ways like having sex for the first time: It's exciting and feels good — some would say even tastes good — and it is somewhat risky. A freshly shucked oyster is essentially alive, and dies going down your throat into your stomach. It has a smooth texture, briny flavor, and smells like the sea. Some people love them; others, like my daughter, find them disgusting. Many have no opinion because they have never tried one.

Oysters were once the most popular seafood in the United States. In the early 1900s, trainloads of oysters were routinely delivered to restaurants and oyster bars in Chicago, San Francisco, Boston, New York and other big cities. They can be prepared in countless ways: fried, put in soup or stews, and of course served raw on the half shell. In an era when cold storage was at a premium, oysters traveled well. They can survive for a week or more in cool, damp environments and they can be transported long distances by boat, train or, nowadays, by plane.

However, as cities outgrew aging infrastructure and sewage contaminated near-shore waters, outbreaks of illness associated with oyster consumption grew more frequent. Other factors — chemical discharges, siltation, and other forms of polluted runoff — destroyed their growing areas, which also led to their decline.n the 1930s and '40s, oysters developed a bad reputation. Growing up in Hawai'i in the 1950s, I don't remember even seeing oysters unless they

(*continued next page*)

were thoroughly cooked. I didn't even know they came from a shell. It wasn't until I got to graduate school that I had a chance to try a raw oyster. It was a bit of a letdown. I felt much the way my daughter does. Now, I look forward to the opportunity to have a few. It's an acquired taste.

Over the past few decades, oysters have made a comeback, in no small part due to the Clean Water Act and other measures to improve water quality along our shorelines. The proliferation of brew pubs and oyster bars helped, too. I wonder sometimes whether there might also be some perverse thrill in eating a raw oyster and, perhaps, flirting with death, or the hope of some romantic encounter.

In any event, Hawaii now imports close to 400,000 oysters every month. Oyster production in the islands is rebounding, as well.

History of Pearl and Oyster Farming in Hawai'i

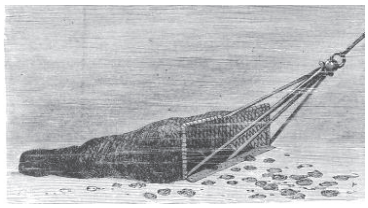
Ancient Hawaiians called Pearl Harbor "Wai Momi," which means "the River of Pearls." However, it wasn't pearls that were attractive to the Hawaiians. This was an estuary rich in wildlife. It provided an abundant supply of food, including fish, birds, crabs and other invertebrates—including oysters. The oyster that flourished in Pearl Harbor in ancient times was a small species (*Pinctada radiata*), which grows to only about two inches. Hawaiians ate them raw or cooked. The shells were used for prized fishhooks. The sheen from the almost iridescent hooks attracted fish like nothing else in those times. The shells were also used for for scrapers to make cloth and rope, and for the eyes of god images.

The oysters themselves were called "i'a hamau leo," meaning "sea creature that silences the voice." This name came from a taboo that forbade people from talking while they were collecting oysters. It's unclear why they got their name—oysters certainly couldn't flee from their pursuers—or whether early Hawaiians valued the pearls, called "momi."

Early Hawaiians did not use oyster pearls, or at least no record of such use exists. Pearls were probably discarded in ancient times. No pearls have been found in archeological digs, nor does evidence suggest they were used as ornaments. They are never mentioned in chants or hulas, either. Nevertheless, it did not take long for Native Hawaiians to appreciate their value after the Europeans arrived.

Captain Cook landed in Hawaii in 1778, and others western explorers and merchants soon followed. Before long they came to appreciate the abundance of oysters in Pearl Harbor. In 1788, King Kamehameha declared all of Pearl Harbor's oysters to be his, and prohibited oyster fishing upon pain of death. By 1812 the pearl trade was a valuable monopoly for Kamehameha. In 1818, Peter Corney, an early Oahu settler, wrote, "There are many divers employed here diving for the pearl oysters, which are found in great plenty, and we saved them much trouble and labor by presenting the king with an oyster dredge."

That dredge likely accelerated the end of the oysters in Pearl Harbor. By the 1840s, most were indeed gone. Upland deforestation and livestock



Early oyster dredge at work

overgrazing caused massive runoffs of debris into streams, depositing silt into Pearl Harbor's estuary. For many decades thereafter, the smothered state of oyster beds precluded any hope of recovery. These little oysters remain rare today.

Subsequently, other oyster species were planted in Pearl Harbor and in Kaneohe Bay, in attempts to revive the pearl trade. The first plantings, in 1866 and later in the 1920s, were a different species: the American oyster (*Crassostrea virginica),* which remains in Pearl Harbor today. Dr. Alison Kay, a malacologist and professor at the University of Hawai'i, estimated that there were at one time 150,000 square yards of (*C. virginica)* oyster beds in Pearl Harbor, with an estimated 35 million oysters.

In the early 1970s, most remaining oysters in Pearl Harbor suddenly died. At the time, ecologists explained this sudden mortality as the result of disease, pollution, and sedimentation, the same problems that decimated the Hawaiian Oyster. I would speculate that naval vessels, with their new copper and antifouling paints, also contributed to their demise. A mere few

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parts per trillion of copper and tributaltin in water can kill a barnacle…or an oyster.

The good news is that Pearl Harbor's oysters are making a comeback. The American oyster (*C. virginica*) is now common in West Loch along with another introduced species, the Australian oyster (*Saccostrea cucullata)*. The bad news is that it will be a long time before these oysters are safe to eat. Studies in Kaneohe Bay have found high levels of lead, copper, chromium and zinc in oyster tissues near stream mouths. Dieldrin and chlordane levels, much higher than those in the East and Gulf Coasts of the United States, have also been found to exceed the Environmental Protection Agency's screening levels. These chemicals were extensively used for ground termite control in Hawai'i, and have a half-life of over 100 years in soils and water. It is unlikely that oysters from any Hawai'i bays or estuaries which are now jeopardized will be safe to eat for decades to come.

A New Threat to Oysters—Global Warming

We blame global warming on just about everything, but few oyster growers will dispute the fact that it is a serious threat to their livelihood. Scientists for years have warned that excess carbon dioxide from the burning of fossil fuels eventually would be taken up by marine waters and begin lowering the pH of the world's oceans. It's happening, and it is happening quickly.

The ocean chemistry is changing, and decades earlier than anyone predicted. Oceanographers are still learning how those changes ultimately may impact marine life, but they have already found that the less-alkaline seawater causes sea urchin larvae to change shape, makes squid more lethargic and prompts clown fish to race toward rather than away from predators. Not a good strategy for most prey. Other species are affected, too.

Oysters are probably one of the first species impacted. They're like the canary in the coal-mine. The cold water that wells up along the Northwest coast of the U.S. during north winds, usually during the spring and summer months, is naturally richer in carbon dioxide than most ocean surface water and, consequently, the waters have a lower pH than most other areas.

Oyster larvae require a very specific pH level to be able to extract calcium from the water for their shells. Around 2005, oyster hatcheries along the West Coast began seeing large die-offs of oysters during these spring and summer months. During these periods, oceanographers were observing increased acidification of the West Coast's ocean water and the pH shift was just enough to cause oyster larvae to die. Once the oysters make it past the larval stage they can survive acidic conditions. But, producing larval oyster is a complex task and no oyster farm will survive long if they can't restock with oysters.

Oysters haven't reproduced on their own in many oyster growing areas in Washington State, for example, since 2005. Every grower now relies on hatchery-produced larvae. Other oyster growing areas in Oregon and California have also been impacted. Some hatcheries, such as Taylor Shellfish hatchery on the Hood Canal, have have started tracking breezes because the heavy north winds draw water from the deep that tends to be more damaging. They pump ocean water for their hatcheries only when conditions are ideal. They now use expensive carbon-dioxide monitors to time the uptake of water into their growing tanks. Taylor has even begun a series of experiments to add sodium carbonate — similar to baking soda — to its hatchery waters to counteract the increasingly acidity of ocean water. The problem is only going to get worse.

With Every Crisis is an Opportunity

As acidification of ocean water threatens oyster farms along the Pacific Coast, a new opportunity has arisen for Hawai'i. At least two major oyster producers in the Pacific Northwest have moved their hatchery operations to Hawai'i. Although oceans around the world are being impacted by acidification, Hawai'i doesn't experience the same upwelling events and, as a result, acidification doesn't appear to be a problem — at least not yet.

Today, there are a total of four businesses in Hawai'i producing oyster seed for growers on the Mainland. Two are located in Kona at the Natural Energy Laboratory of Hawai'i Authority (NELHA). One has a hatchery in Hawaiian Paradise Park, near Pahoa on Hawai'i Island. A fourth operates on Molokai.

Taylor Farms was the first to establish a hatchery in Hawai'i. As they recognized the problem and the difficulty of dealing with oyster depletion

(*continued next page*)

on the West Coast, they built their hatchery as an attempt to manage around the problem. Taylor Shellfish is the largest producer of farmed shellfish in the United States. They employ nearly 500 people, and own or lease 11,000 acres of tidelands along the Washington coast and British Columbia. While they maintain a hatchery on the West coast, most of their oyster seed now comes from Hawai'i.

Dave Nesbit, the owner of Goose Point Oysters in Willapa Bay, Washington, also saw an opportunity in Hawaii. In 2009, after 34 years rearing shellfish, he found that oysters in the area were no longer reproducing naturally. Oyster larvae were also dying in nearby hatcheries. He was afraid that if he didn't do something, his business would just slowly die. So, he spent three years building a new hatchery in Hawaiian Paradise Park. Hawaiian Shellfish, as he calls the business now, became operational about a year ago.

Dave currently employs six people at his hatchery — including three Hawai'i residents with aquaculture degrees from U.H. Hilo. Salt water is pumped from a well almost a mile from the ocean into tanks where larvae are raised. While the energy to pump the water is a major expense, Hawai'i's warmer water allows him to raise larvae without heating the water, which hatcheries on the mainland must do. The requirement for oyster larvae is water around 75 degrees, and springtime water temperatures around West Coast hatcheries run in the 50s. So, hatcheries there need oil-fired boilers to bring the water to that temperature. Hawai'i growers can exploit that major advantage.

Both Taylor Shellfish and Hawaiian Shellfish supply their farms and other Washington growers year-round with billions of Hawai'i oysters annually. Shipping larvae back to the mainland U.S. is also a relatively cheap. About 50 million larvae can fit into a container the size of a wine glass. The only requirement is that they be kept moist and cool, so shipping is not a major factor.

After larvae are produced, the next step is to grow oysters to edible maturity. Unfortunately, although coastal waters around the Hawaiian Islands are perfect for hatcheries, they do not support rapid growth. We basically live in the middle of an ocean desert. Although we don't suffer the upwelling of carbon dioxide, neither do we enjoy the natural upwelling of nutrient-rich water found along the U.S. mainland coast. Consequently, concentrations of microalgae and phytoplankton, which oysters eat, are very low. Nevertheless, select places do remain in Hawai'i where one indeed finds calm, nutrient-rich water: ancient Hawaiian fishponds.

Molii Pond

When I was at Oceanic Institute, John Morgan of Kualoa Ranch asked me to help manage Molii

(*continued next page*)

Aerial view of Molii Pond

Makaha at Molii Pond

Rancher John Morgan, predator control expert

Pond, the largest and arguably the oldest fishpond in Hawai'i. Molii Pond is approximately 120 acres in size, and probably over 800 years old. It boasts an incredible amount of decayed organic matter, algae and other organisms, accumulated on the pond bottom over those centuries. We stocked the 120-acre pond with hundreds of thousands of moi (Pacific Threadfin) fingerlings, and introduced other species of fish to try to find one that would thrive in the pond. None made it, likely due to the many larger predators, mostly ulua and barracuda. Our smaller fish were eaten before they had a chance to establish.

It wasn't until I visited Taylor Farm's facilities in Sheldon, Washington, that I considered oysters. We were on an excursion one day with other members of the National Aquaculture Association, I had eaten more oysters than ever before in my life, and I began to entertain the idea that we could grow oysters in Hawai'i if we created the right growing conditions. I knew oysters grew well in the cold waters of the Pacific Northwest, but was unsure whether they would prosper in the relatively warm waters around Hawai'i. I subsequently began basic research on the subject, and found no good reason they wouldn't do well.

Through Bill Dewey, the V.P. for Government Relations at Taylor Shellfish, I ordered the first batch of oyster "spat" or seed as it is commonly called. Imagine my surprise when I learned their hatchery was at the NELHA facility on the Big Island!

For about $250, I ordered 35,000 oysters – the smallest amount Dewey would sell. The oysters I bought for Molii were Pacific Oysters (*Crassostrea gigas),* reputedly tough and tolerant of a variety of growing conditions. Native to Asia, they were introduced to North America in the early 1900s, and are now the most cultured oyster variety in the world. In fact, most of the oysters served in oyster bars along the West Coast and in France are Pacific Oysters.

My spat arrived by FedEx in a small Styrofoam cooler just big enough for a six-pack of beer. When I opened the container, the oysters were balled up into a "spat bag" with the mesh size similar to that of a woman's stocking. They could have been sent in a Band Aid box. I felt gypped! I couldn't believe so many oysters were in such a small bag. I took them to the pond anyway, and put the spat bag with the oysters into an "aqua purse" which I had previously purchased from Taylor.

The aqua purse is a triangular shaped piece of molded plastic, about 3 feet long with small holes to let water circulate. It opens like a purse. I was clueless as to what to do with the oysters next, except to agitate them frequently so they wouldn't clump together as they grew. They did start to grow—very rapidly. The rest was to be an experiment. (*continued next page*)

I knew I would need to thin the oysters out as they grew, but I had no idea how fast they would grow. I had ordered 12 aqua purses initially, thinking that would be enough. After several weeks, I quickly ordered 50 more. Within three months all the purses were filled with oysters. I strung them along a line between floats in the pond. However, they got so heavy as they grew that they sunk to the bottom, where large Samoan Crabs and other predators tried to eat them. So, I braced up the lines with poles. As the oysters grew and their aqua purses got heavier, they became progressively more difficult to shake and agitate. In only 6 months I was relieved to find the oysters 3-4 inches across: an ideal size for raw, shucked products. I ate some, and gave the rest away to friends for various events. I even kept some for my wedding. Everyone loved them, and I must admit they were delicious! I was hooked.

I ordered another 35,000 from Taylor the next year, but this time I knew I needed to find a more efficient way to grow them out in the pond. On a long flight to Australia, my wife Debbie and I came up with a design for a wire mesh cylinder with plastic caps that could be spun around a cylindrical float. The oysters would be placed inside the cylinder, and would tumble like clothes in a dryer. When we returned from Australia, I constructed a few cylinders. The design worked beautifully; we had eliminated the arduous task of lifting and shaking the aqua purses. Over the next grow-out trial, we refined the float system by putting in removable liners with smaller mesh so the oysters could be raised to market size with minimal effort. Today, we have approximately 200 "Anderson Floats" in Molii Pond. Traditional methods of cultivation would probably have worked well enough, but it's been fun devising better solutions. Sometimes it's helpful to glide unconstrained past the knowledge of common techniques.

Dr. Bruce Anderson and the "Anderson Float"

To date, five grow-out trials have been completed in Molii Pond to consistently produce market-sized (3-4 inch) oysters in six or seven months. That is an amazing growth rate. It takes oysters 2-3 years to grow to that size in Pacific Northwest waters.

Growth rates are so fast here because Hawai'i has a year-round "growing season." Oysters are filter feeders, and live off phytoplankton and microalgae suspended in the water column. In the Pacific Northwest, oysters only grow in the warm summer months when there is a lot of phytoplankton and other organic matter in the water. The rest of the year they are dormant. Hawaiian fishponds provide ideal growing environments. The sun and warm water, combined with the high levels of nutrients found in most fish ponds, stimulate and support the growth of

(*continued next page*)

microalgae and phytoplankton, which oysters filter out and eat. In addition to providing a rich growing environment, fishpond walls protect oysters from rough seas and predators, especially those poaching with two feet.

We knew we could grow oysters successfully here. There were, however, several obstacles to selling them. Perhaps the most significant challenge was to get State approval of the growing area. The State shellfish sanitation branch of the Department of Health had become dormant: not surprising, as nobody had attempted to propagate oysters in Hawai'i since Tap Prior abandoned his attempts in the 1970s.

I met with State Department of Health staff and FDA officials in Seattle several times over the next two years to get their support in reestablishing the program. Fortunately, FDA staff in Seattle were eager to come to Hawai'i, particularly in December and January, to show the DOH staff how to conduct sanitary surveys, which involve water testing and surveillance for possible sources of pollution. Perhaps the biggest obstacle was arranging for training laboratory staff to conduct analytical surveys of coliform bacteria. These bacteria are commonly used to indicate the presence of potential pathogens in water.

To make a long story short, it took two years to get Molii Pond certified as a shellfish growing area, but we prevailed. Last summer the Pond was conditionally certified. In addition to Molii Pond, another certified aquaculture facility is now growing clams in Kekaha, Kauai.

Molii Pond was "conditionally certified" due to high levels of coliform bacteria during periods of heavy rainfall. Fecal coliform bacteria, from the bowels of birds and other animals that live around the pond, do not pose a human health risk. They do, however, cause regulatory standards to be exceeded occasionally, particularly during the wet winter months. Consequently, a mandatory "depuration facility" was constructed to allow oyster to purge themselves of any bacteria that might linger in their gut. The depuration facility is simply a large plastic tank with a UV filter and a pump to recirculate the water. Oysters from the pond are immersed in the tank for 48 hours before sales are allowed. A single oyster filters approximately 5 gallons of water per day. So, it doesn't take long for oysters to flush themselves out, for absolute guarantees against any harmful pathogens. The source water used in our depuration tank was tested too, and found to be free of bacteria.

A marriage made in heaven: Bruce and Debbie Anderson displaying a harvest of fresh oysters

Next Steps

So, what do you get when you combine Hawai'i's warm water and sunshine with plenty of algae? You get a high-quality oyster, rich in carbohydrates and sporting firm white flesh. These are called "fat oysters" by those in the know. Oysters grown in different places will have a slightly different taste, like wines. The oysters grown in Molii pond have a very sweet start and a salty finish—qualities considered desirable by oyster lovers worldwide.

Debbie and I have taken coolers filled with oysters to some of the best restaurants in Hawai'i, Chef Mavro's and Hoku's at the Kahala. After trying our oysters, the chefs pledged to buy as many as we could produce. Kualoa Ranch will sell Hawai'i-grown oysters within the next few months, if all goes as planned. These will be

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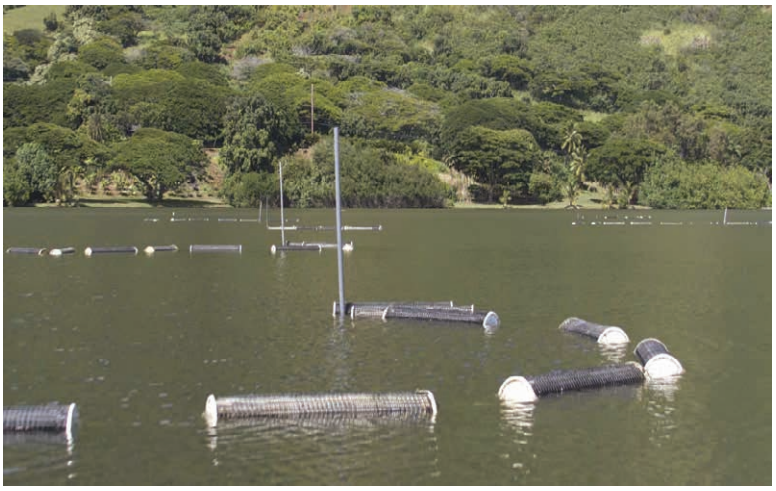

Oyster floats in Molii Pond

Top: Mesh insert | Bottom: First harvest

the first oysters to be grown in Hawai'i in at least 20 years.

What is the future for oysters in Hawai'i?

Hawai'i is already home to an essential part of the U.S. oyster industry—still a well-kept secret. I would go so far as to say that the majority of oysters sold in oyster bars and seafood restaurants on the West Coast come from Hawai'i. As other growers on the mainland U.S. wrestle with the impacts of climate change, I expect they, too, will come to depend on oyster seed from Hawai'i.

Oysters grown in Molii Pond and other Hawaiian fishponds would certainly be in high demand in local restaurants. Although the opportunities for growing oysters in Hawai'i are limited to estuaries, fishponds and other enclosed water bodies with high nutrient levels, we should keep in mind that there are hundreds old fishponds in Hawai'i. Unfortunately, many old fishponds have been lost to development, and very few have been restored or maintained as productive ponds. Many have been overgrown or damaged by storms to the point where they are almost unrecognizable today.

Nevertheless, we could grow enough oysters here to meet local demands.

In the not too distant future, we might even see Hawai'i-grown oysters on the menu at Grand Central Station in New York City and other well-known oyster bars. It's not a stretch to think that we may be able to select oysters from different growing areas in Islands, each with its own unique flavor. What a wonderful marketing tool for Hawai'i!

As a side benefit, oysters also help to clean and filter water anywhere they are grown. They remove

(*continued next page*)

excessive nutrients, and filter out phytoplankton, improving light penetration for native seaweeds and other bottom-dwelling organisms. Before most were exploited, oysters in the Chesapeake Bay could filter all the water in the bay in 3 to 5 days. Today, with less than one percent of the bay's original oysters, it takes about a year. Oysters are now being reintroduced to both Boston Harbor and the Chesapeake Bay to help clarify water and reduce the frequency and magnitude of algal blooms from agricultural and urban runoff. The jury is still out as to whether these efforts are effective, but anecdotal evidence suggests they are helping. To re-establish oyster populations where human activity has compromised water quality would certainly be beneficial. I would not advocate for planting oysters in the Ala Wai Canal, but efforts to restore oyster beds in Pearl Harbor and Kaneohe Bay could help to improve water quality everywhere.

Conclusion

Oyster seed production is already a thriving and growing industry in Hawai'i. The production of local oysters for consumption could also become a welcome niche industry. In addition to being a draw for local restaurants, Hawai'i-grown oysters provide a wonderful marketing opportunity for tourism. They may help to encourage the restoration of Hawaiian fishponds and make them profitable, or at least help to cover maintenance costs. I believe we are on the cusp of an exciting new industry in Hawai'i. It has been fun and rewarding to be part of it. ■

Bruce Anderson, Ph.D., retired from the State of Hawai'i in December 2013 after serving as President and Chief Executive Officer of Hawai`i Health Systems Corporation. He was previously Director of Health of the State Department of Health and Deputy Director for Environmental Health. As President of Oceanic Institute, on Oahu, he led a team of over 70 scientists, researchers and support staff in developing and transferring new aquaculture technologies to the private sector. He continues to address health and environmental concerns through his consulting business, Bruce Anderson Consulting, LLC. Born and raised in Hawai`i, Bruce attended Punahou School on Oahu, Colorado College, and received his Master's in Public Health from Yale University and a Ph.D. in biomedical sciences from the University of Hawai`i. He enjoys saltwater fly fishing, hiking, riding horses and gardening with his wife, Debbie, on their ranch on the Big Island.

Paper originally presented by Bruce S. Anderson, Ph.D. to the Social Science Association on December 2, 2013.

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Why We're Excited About Hawaii-grown Oysters from Kualoa Ranch

LOVE ON THE HALF SHELL.

BY MARTHA CHENG
PUBLISHED: 2014-07-16 06:00 AM

KUUIPO MCCARTY AND VELEZ CLEAN THE OYSTERS FOR MARKET.
PHOTOS: ELYSE BUTLER MALLAMS

I love oysters the same way I love the ocean. There's something romantic and wild about both that I've never been able to get enough of. Early in my life, I decided I never wanted to live away from the ocean. It was after a summer spent in Houston, when I looked out of the 20th-floor lab where I worked and saw only flat land with no water at all. A friend drove me to the ocean after work, to Galveston, an hour away. We watched the moon rise over the water, the first time I realized that the moon rose like the sun. It threw a beam of light all along the still ocean to our feet. We stayed at the beach until sunrise. Despite the romance of it all, we hardly touched. We just sat together, our hands only a few grains of sand apart. Maybe that's why every ocean moonrise after that feels like longing.

I grew up in the San Francisco Bay Area, where you could always see the ocean. I went to college near Boston, where the sea infiltrated the land in rivers. For my Peace Corps assignment, I was placed on an island 11 miles wide.

And now, Honolulu.

Every place I go, I order the local oyster. For me, being near the ocean has always meant tasting the ocean. And never can I taste it more clearly than in an oyster.

No dining experience has ever or will ever come close to the transcendent thrill of shucking and eating oysters at the edge of the ocean, next to where they are pulled out of the water. I have gone with a dozen people and ordered them by the hundreds, yes, the hundreds. I have gone with just one other person, shucked a few dozen, camped nearby and then shucked a few dozen more for breakfast.

In less rustic settings, I find nothing more beautiful than oysters on the half shell, cupped in the very water they grew in, arranged on a metal platter of crushed ice. The tableau is so common that I know I'm not the only one who thinks this.

But when I came to Hawaii, I stopped eating oysters. More often than not, they were old, they weren't handled properly, they weren't cold enough, they were shucked sloppily, with bits of shell in them. And that's if you could even get them.

That is changing.

When BLT Steak opened five years ago, the upscale steakhouse introduced Honolulu's first raw seafood bar, offering three to four varieties of oysters.

"I sell more and more oysters every year," says Johan Svensson, the chef at BLT Steak. Honolulu's growing appetite is evidenced by the increasing number of places serving them, from The Pig and the Lady to Bevy, offering the town's only dollar-oyster happy hour.

IKAIKA VELEZ HAULS IN OYSTERS. KUALOA RANCH GROWS ITS OYSTERS IN CYLINDERS THAT ARE ROLLED DAILY TO PROMOTE A CUPPED OYSTER SHELL.

And, most exciting of all, Hawaii is now producing its own oysters. Earlier this year, Kualoa Ranch started selling the first locally grown oysters in decades. (Thirty years ago, *Life Magazine*-designated "Frontiersman of the Sea" Tap Pryor—the same Tap Pryor who founded Sea Life Park—grew oysters for the table, but he grew them on land. Which seems as wrong to me as raising cattle on a boat.) It's about time because, for years, Hawaii has been a nursery for oysters destined for the Mainland.

As with most farming, both on land and in the sea, farmers buy seed. In the case of oysters, the seed comes from oyster hatcheries. Three of America's largest hatcheries have operations in Hawaii, growing oyster larvae to seed—each barely larger than a grain of sand—then shipping them to the Mainland to become adults. These hatcheries—Taylor Shellfish, Coast Seafood, Goosepoint Oysters—started moving some of their operations to the Big Island years ago, when they found that ocean acidification on the West Coast prevented the larvae from settling down and growing up.

It was only a matter of time before someone figured out how to raise the adults here. And it turns out oysters love Hawaii's ancient fishponds. Both Kualoa Ranch and Paepae o Heeia are currently growing oysters in their nutrient-rich fishponds, but Kualoa's are the first to be certified by the Hawaii Department of Health. Ironically, the flow of water in the ahupua'a system, from the mountains to the sea, a system that in its entirety fed the Hawaiians, is the very reason the Department of Health currently deems Heeia's oysters unfit for consumption. "We're at the bottom of a watershed with a lot of homes, and some of it goes into the fishpond," says Keli'i Kotubetey of Paepae o Heeia. It's not a dealbreaker, though. "We'll just have to plan the growing around seasonal variations and make sure we harvest at the right times."

Water runoff doesn't affect Kualoa Ranch's Molii fishpond as much, but even so, after leaving the pond, Kualoa oysters spend some time in a saltwater tank to purge. Currently, Kualoa harvests about 4,000 oysters a month. Compare that to the 400,000 oysters Hawaii imports in a month, according to Maria Haws, a professor of aquaculture at UH Hilo, and the market opportunity for growers seems to be, well, their oyster. Since these bivalves grow well and quickly—they take almost half the time to mature here as they do in the Pacific Northwest—Haws thinks Hawaii could easily grow as many oysters as we import. I think it just makes sense—oysters require little maintenance and inputs; they keep our waters healthy; and they give fishponds a viable economic business.

And how do Hawaii oysters taste? They are distinctly savory and kelpy. Is that good? Some say oysters that grow slower in colder waters have a finer flavor. Others say you prefer oysters from the water you grew up swimming in. I say the best oyster is the freshest one, one that tastes of the sea, whether it's the cold, foggy Pacific of my childhood or the sunny one of my adulthood, hinting at surf and ancient fishponds.

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Oysters from Kualoa Ranch

honolulumagazine.com/Honolulu-Magazine/Biting-Commentary/March-2014/Oysters-from-Kualoa-Ranch/

By Martha Cheng

Published: 2014.03.20 02:53 PM

Oysters harvested at Kualoa Ranch

Get your oyster shuckers ready. For the first time in almost 30 years, locally grown oysters are for sale in Hawaii. Recently, Kualoa Ranch harvested 42 dozen oysters from its fishpond and, within three hours, sold them all.

Growing oysters for consumption has been a four-year-long project for Kualoa Ranch. A lot of that time was spent waiting for the Department of Health to build its shellfish certification lab and train staff on standards—basically, it had to be certified itself before it could certify the shellfish.

The standards for raising shellfish are particularly stringent because oysters are “one of the few things you eat raw and alive,” says Kuuipo McCarty, who runs the oyster operations at Kualoa Ranch. Which makes oysters an excellent candidate for local production—of all the food I’d want as straight from the source as possible, oysters top my list. No one wants to eat a dead (or even just a little old) oyster raw.

Also, it just makes sense. Hawaii already supplies many West Coast oyster farms with oyster babies (technical term: seed). Years ago, because of ocean acidification in the West Coast, some oyster hatcheries moved to the Big Island to grow baby oysters and then ship them to the Mainland, where they come to market weight. (Sound familiar? It’s somewhat like Hawaii’s cattle production—raised here, fattened there.)

The fishpond at Kualoa Ranch currently holds about 27,000 oysters in various stages of growth. For this year, Kualoa hopes to harvest about 1,000 a week.

But while cattle in Mainland feedlots fatten faster than grass-fed beef raised here, oysters actually grow more quickly in Hawaii, thanks to the temperate weather. Kualoa Ranch’s oysters come to market size in about seven months, whereas on the Mainland, it can take 18 months to three years. Right now, Kualoa Ranch is using an oyster developed for West Coast waters, but researchers at UH Hilo hope to develop a strain even better suited to Hawaii, and perhaps even try out the beloved Kumamoto oyster, a small oyster favored for its creamy and mild taste.

But for now, the medium-sized Pacific oysters Kualoa Ranch are just fine—clean-tasting thanks to time spent in a saltwater tank to purge, firm and briny with a slight minerally finish. At the moment, the oysters are only available at the ranch store for $15 a dozen.

*Kualoa Ranch, **kualoa.com**, 237-7321*

for the first time Wednesday that

Matsuda, interim executive director of the Connector, told

lion in federal grants. About half of that money has been spent or committed and the remainder ex-

Before this year, Connector officials had said the agency would be self-sustaining primarily based on

House Finance Committee, said

Please see **CONNECTOR**, *A9*

Kualoa Ranch visitor Abbie Vee samples an oyster.

KUALOA RANCH

Shuck 'em up!

The future "looks very bright" for locally grown oysters

By Allison Schaefers
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Ku'uipo McCarty and her assistant Ikaika Velez were grinning ear-to-ear on Monday as they pulled mesh cylinders full of Pacific oysters out of the 800-year-old Moli'i Fishpond at Kualoa Ranch.

The oysters, which were grown in the nutrient-rich ancient Hawaiian fishpond for about seven months, hit the local market that afternoon as the first state-certified commercial harvest in decades. Kualoa Ranch, which has been test-growing oysters for about four years, obtained the permit on Feb. 20 allowing them to sell oysters in their visitor center, at farmers markets, and to local restaurants and retailers.

They hope to play a role in turning oyster farming into a multimillion-dollar industry for Hawaii, which annually imports about 400,000 oysters from the mainland and Asia.

"We pulled 500 oysters from the pond this morning," said McCarty, the 27-year ranch employee who is spearheading its oyster program. "It's a very exciting day."

Growing oysters, which are endemic to Hawaii, has long been seen as a business with great potential for the

Please see **OYSTERS**, *A10*

ACTUAL SIZE

CRAIG T. KOJIMA / CKOJIMA@STARADVERTISER.COM

Ikaika Velez, oyster-farming assistant, pulls a cylinder float filled with harvest-ready oysters out of the 800-year-old Moli'i Fishpond. Kualoa Ranch is converting the ancient Hawaiian fishpond into one of the state's first commercial oyster farms. Floats fill about a tenth of the fishpond, where the oysters feed off the natural microalgae and phytoplankton.

GROWING OYSTERS

ACTUAL SIZE

2 weeks old

Kualoa Ranch buys 35,000 Pacific oyster seeds from Taylor Shellfish Farms in Kona. Students at the University of Hawaii at Hilo grow them in their nursery at the Pacific Aquaculture and Coastal Resources Center. The oysters grow rapidly, doubling in size during the first 14 days.

1-2 months old

The oysters are moved to Kualoa Ranch, where they spend three days in mesh spat bags. When the oysters are 6 millimeters in diameter or above, they are put in lined floats, which protect them from predators like Samoan crabs. The oysters are separated weekly based on size.

CRAIG T. KOJIMA / CKOJIMA@STARADVERTISER.COM

OYSTERS: Isles' climate enhances mollusks' growth

Continued from **A1**

state. Hawaii's Department of Health, seeing an increased interest from farmers, recently recertified its lab that is responsible for making sure shellfish growers meet U.S. Food and Drug Administration requirements for the highly regulated industry.

"We've got a newly created program and the future of it looks very bright," said the department's Peter Oshiro. "I think locally grown Hawaiian oysters will be a huge draw. I'm sure that all of our local restaurants have been waiting for a product of this kind."

Maria Haws, director of the Pacific Aquaculture and Coastal Resources Center at the University of Hawaii at Hilo, said she expects oysters are expected to make a significant contribution to the ranch's agricultural diversity.

"We've got about 28,000 oysters growing out there and if we could get it, we'd put more seed out today," he said, adding that the mollusks will supplement the ranch's farming of produce, saltwater shrimp, tilapia and Malaysian prawns.

While Kualoa Ranch's oyster farm is the first to be certified by the state's new program, Haws said other farmers are not far behind. She also expects similar ventures will be attractive to Hawaii entrepreneurs with access to seawater, through a well, a fishpond, or an offshore lease.

"People in Hawaii have objected to offshore fish farming, but oysters don't pollute," Haws said. "Most of the water pollution in Hawaii is nutrient-rich and oysters help clean that up."

Since oysters are a part of a healthy ecosystem, Haws said, the Nature Conservancy and state agencies around the country are spending money to get them into the water.

"The beauty in this case is that they

awarded the first state permit to farm clams in more than 20 years, he said.

"The clams have been excellent," Turner said. "We don't have nearly enough to meet the demand. Right now, we're at about 150 pounds a week in production, but we hope to get to 1,000 pounds per week."

Turner said clams and oysters, which feed off shrimp-farming byprod-

Kualoa Ranch President John Morgan overlooked a bivalve depuration tank. After live oysters are harvested, they are put into sterile seawater for 48 hours to clear

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Did this: Outstanding in the Field

FEBRUARY 4, 2014 BY MELISSA CHANG

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ture in place, Hawaii could see a more than $20-million-a-year shellfish industry emerge in the next five to 10 years.

"I think my estimate may be conservative since that's about what Rhode Island does," Haws added. "The U.S. shellfish industry is over $1 billion and in Washington state alone it produces about $150 million."

With its permitting in place, Kualoa Ranch is off and running. John Morgan, the ranch's president, said oyster farming is potentially the most significant agricultural venture for Kualoa since 2011 when it started retailing its grass-fed Kualoa beef online and at its visitor center.

The ranch, which occupies 4,000 acres along Oahu's northeastern coast, has been involved in the cattle business since the 1870s. Morgan is a descendant of Dr. Gerrit Judd, who bought the first 622 acres of the ranch from King Kamehameha III in 1850.

"Our goal is to increase our product line and grow a wide variety of things," Morgan said. "It's our belief that the land should be productive and sustainable. It's tough to make money in a Hawaiian fishpond with the traditional fish like native green-striped mullet and/or awa. This is an adaptive reuse of a Hawaiian fishpond that adds to Hawaii's food security."

David Morgan, John's brother and the ranch's agricultural director, said while producing a crop," she said.

Haws and her students are closely involved with the burgeoning oyster-farming movement in Hawaii, which is already the oyster hatchery capital of the U.S. since the waters here are less acidic than on the mainland.

"Farming oysters would be a natural extension of our hatcheries businesses," she said. "We're still doing research, but the Pacific oysters grow well and we think we could also grow the smaller, endemic Hawaiian oysters."

Haws' students nursed the Pacific oyster seeds that Kualoa planted in its fishpond. They've also done oyster farming trials with the operators of the He'ela fishpond in Kaneohe.

"The research was really promising. Because of our climate, we could bring the oysters to market in about nine months, where it would have taken three or four years on the mainland," she said, adding that Keawanui Fishpond in Molokai also has oysters in the water and is finishing its water sampling.

Likewise, Sunrise Capitol Inc., which does business as Kauai Shrimp, is considering growing Japanese Kumamoto oysters, said Mike Turner, the company's director of sales and marketing.

"There are a lot of moving parts, but we think that we could produce these oysters in about a year to a year and a half," Turner said. "We've already had tremendous success farming clams and we think oysters are certainly something that we could do, too."

Last May, Sunrise Capitol was

"There's no question that if we could produce more product using the same energy and the same feed, we would be even more successful," he said. "We think basically all of the shellfish that we produce will be consumed in the state."

Chef Chai Chaowasaree, owner and chef of Singha Thai Cuisine in Waikiki and Chef Chai at Pacifica Honolulu, agrees that demand in Hawaii is strong for fresh, tasty shellfish.

"We sell a lot of oysters," Chaowasaree said. "I'm looking forward to trying a Hawaii-grown oyster. If they are good, I think they will be very popular. Tourists and locals always like anything from Hawaii since it's fresher and better for our environment."

Tourists Abbie Vee and Cheri Squires, of Santa Clara, Calif., raved about Kualoa Ranch's oysters, which they sampled raw on Monday.

"They don't need any condiments," said Vee, who went back for seconds. "They taste just like the ocean."

Squires, who ordinarily dislikes raw oysters, said she enjoyed Kualoa's oysters.

"Your oysters are going to be very popular," she said. "They were way better than the ones that I've tried from the farms near San Francisco Bay."

5½ months old

The oysters are living in groups of about 150 per float. The pond's nutrient-rich waters and abundant sunlight fuel their growth. The floats rotate in the water so that the oysters do not stick together. One-third of the float stays out of the water to cut down on algae and seaweed growth.

7 months old

The 28,000 remaining oysters are ready for market. On the U.S. mainland, it would take 18 to 30 months to grow to the optimal 2.36 inches; however, Hawaii's climate provides a year-round growing season.

28,000

Number of live oysters that Kualoa Ranch is ready to bring to market

2

Number of oyster farm employees at Kualoa Ranch

$20M

Estimated size of Hawaii's oyster industry in the next five to 10 years

Ku'ulpo McCarty, who oversees the ranch's oyster farm, gazes with pride on Hawaii's first batch of commercially harvested oysters in decades. Kualoa Ranch plans to acquire new stock as its first batch is sold for $1 each.

tem. The process reduces the chance that bacteria can be transmitted. Top, Ikalka Velez pulled out a wire mesh cylinder that houses the oysters as they grow.

An outstanding dinner … in the field at Kualoa Ranch

You've heard of the farm-to-table movement, but have you ever had dinner right on the farm, where your food is sourced? **Outstanding in the Field** is a national roving dinner adventure that honors the people — both farmers and chefs — who bring food to the table.

It started in 1998 with a series of "farmer dinners" at Gabriella Cafe in Santa Cruz, CA owned by chef/artist Jim Denevan. He invited several of the restaurant's regular producers to dinner and featured dishes where the ingredients came straight from their farm. When the first farmer stood and addressed the guests with "this came from my farm," the diners eagerly listened to the stories and had greater appreciation for their food. Denevan's brother Bill was one of those farmers, and took the dinners to the next level by having it set on a long table right on the farm.

Every dinner is different, but if you go to one of these events you are given a tour of the farm, followed by a five-course meal paired with wine. The ingredients are all local — sometimes sourced within inches of your table — and prepared by a local chef. The menu is unique, so it's not likely you'll have this same meal ever again, and you have the opportunity to sit with the farmers who raised the food. The long table in an open field provides a gorgeous setting for dinner, and there's always a plan B in case of rain.

This past weekend, there was a dinner at Ma'o Organic Farms featuring Ed Kenney from town, and one at **Kualoa Ranch** featuring Mark Noguchi of the Pili Group. I don't know how the other dinner was, but ours at Kualoa — where "Jurassic Park" was filmed — was in a spectacular setting framed by mountains. Our chefs included Chris Okuhara of Miso and Ale and Lee Anne Wong of Top Chef fame. Dave Power from The Feral Pig on Kauai and Dave Newman of Pint & Jigger created the featured cocktails for the evening.

Don't angst about what to wear as there was a wide range of attire at this dinner. They do recommend you wear good shoes, since it is a dirt field and there is uneven ground, gravel, and sometimes mud puddles.

Outstanding in the Field

◄ Back Picture 1 of 42 Next ►

A quick Noguchi family portrait before dinner: Mr. and Mrs. Noguchi, Mark, and Mitch. Mark was the featured chef at this Outstanding in the Field event.

These were just some of my photos from the evening. To see the entire collection, **click here.**

Mahalo to Edible Hawaiian Islands magazine for inviting me to this memorable and beautiful dinner. If you would like to participate in the next one, there is one on Maui tomorrow, February 5, at Kupa'a Organic Farms featuring chef **Ravi Kapur**. **Click here** for information and reservations.

On Saturday, February 8, the dinner is on Hawaii Island at the Big Island Abalone Farm featuring chef Edwin Goto. **Click here** for information and reservations.

If you miss these dinners, keep checking the website, as they will probably come back next year.

Leah Scafe from Outstanding in the Field, who brought this year's dinners to Hawaii.

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Kualoa Ranch Recognized

Kualoa Ranch was one of seven select cattle operations from across the country to be recognized as a 2013 regional Environmental Stewardship Award Program (ESAP) winner at the 2014 National Cattlemen's Beef Association (NCBA) Annual Convention and Trade Show held recently in Nashville, Tennesse. Kualoa Ranch received top honors for the region covering California, Nevada, Arizona, Utah and Hawai'i.

ESAP, now in its 23rd year, recognizes beef producers who make environmental stewardship a priority, while also improving production and profitability on their farms and ranches. "We couldn't be more proud and honored to be a part of this innovative and resourceful group of land stewards who are committed to protecting the environment and creating a better tomorrow for our future generations," said Kualoa President John Morgan. "Like the other award recipients and countless ranches across the country, we have worked hard to create an environmentally conscious, yet profitable ranch. We are grateful for this award that acknowledges our commitment."

Kualoa's vision is to be a role model as stewards of the land by preserving, protecting, and enhancing its natural beauty and culture, while developing educational, recreational, and agricultural enterprises, compatible with the environment and maximizing economic return. Throughout the years, Kualoa Ranch, a family-owned business, has evolved to encompass many different aspects, including a prosperous cattle ranch, thriving agriculture, and a successful outdoor recreational enterprise.

One of O'ahu's most historically significant destinations, Kualoa Ranch has been in the Morgan Family for over 160 years. Thirty years ago, it was a five-employee cattle ranch that dabbled in horticulture. While cattle ranching and diversified agriculture remain the dominant uses of the land, outdoor recreation, tours and related ancillary services have provided much needed economic diversification and stability.

Involved in cattle ranching since the 1870s, Kualoa just recently began serving and retailing its own beef. Today, there are about 500 heads of cattle that graze on 1,500 acres of pasture.

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JET SETTING

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RANTS RAVES

Kualoa Ranch Now Sells Grass-Fed Beef

OCTOBER 8, 2011 | BY 1 COMMENT

You are here: Home / Around Town / Kualoa Ranch Now Sells Grass-Fed Beef

Lately, I've been buying grass-fed beef when possible and just found out that Kualoa Ranch sells 100% grass-fed beef. This is awesome because Kualoa is only about 10 minutes away from my house, we get to eat a healthier product, and also help support this local east side ranch.

PHOTO COURTESY OF WWW.KUALOA.COM

Kualoa Ranch cattle are raised on a 4,000 acre property and free to roam a 1,500 acre pasture. The herd is primarily made up of a cross between Angus, Brangus, and Hereford stock. The grass-fed cattle produces leaner cuts of meat, which is lower in fat. The production process takes place completely in Hawai'i. The cattle are slaughtered at an FDA inspected slaughterhouse in Campbell Industrial Park and processed at Wong's Meat Market.

To buy some meat, all you have to do is stop by Kualoa Ranch's restaurant. Kualoa offers ribeye, t-bone, teri beef, and ground beef. The meat is available on a first come first serve basis. You can even go online ahead of time and reserve your meat.

The last time I went to Kualoa I picked up a portion of ground beef, sold in a 2 pound pack for only $8.00. This price is cheaper than the grass-fed ground beef that I buy at Safeway or Costco. In the past couple weeks I made two great batches of Bolognese sauce and have to say I loved the quality and taste of the meat. Grass-fed does have less fat and can be on the tougher side, but a with the help of a longer simmer, my meat sauce was tender and delicious.

The next time I take the beagles to Kualoa park, I will be stopping by the Ranch to see what other cuts of beef are available for me to buy. It's nice to see "fresh farm, direct to customer" beef is available in my neighborhood.

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Hawaii News| Top News

First Lady shows off Hawaii's beauty and food at Kualoa lunch

Susan Essoyan
November 13, 2011

CINDY ELLEN RUSSELL / CRUSSELL@STARADVERTISER.COM
Tim Mathieson, significant other of the Prime Minister of Australia presented First Lady Michelle Obama with a photograph before a lunch at Kualoa Ranch today.

On a lush bluff overlooking palm-fringed Kaneohe Bay, first lady Michelle Obama welcomed the spouses of Pacific leaders to a luncheon at Kualoa Ranch today, showcasing Hawaii's natural beauty as well as its bounty.

She greeted each of the first ladies and one "first man," individually, reaching out with both hands to clasp theirs, embracing and posing for pictures before joining them under a white pavilion.

In opening remarks, Obama touched on her fondness for the islands and how it is the perfect spot for a gathering focused on Asia-Pacific Economic Cooperation.

"This state has a very special place in my heart," she told her guests. "As many of you know, my husband was born and raised here... Our family has the privilege of coming here, the burden," she added with a smile, "of coming back here every year and that's really one of the reasons why I married Barack."

"He has always talked about how growing up in this place has shaped his character. He is a very calm and focused individual...Hawaii is an incredibly diverse place, it's home to people of all different cultures... There is a special spirit here, a spirit of openness and tolerance."

"In many ways, Hawaii is really the perfect place for this APEC summit."

The first lady then introduced Chef Ed Kenney of Town restaurant and two youth from MA'O Organic Farms in Waianae, Kuuleilani Samson and Manny Miles, whom he said had harvested the produce featured on the menu. He said that 90 percent of the produce served had been grown at MA'O.

On the menu were: MA'O organic farm beets, arugula and Clementine with Naked Cow Dairy Feta & Pistachio. Fresh fish with limu vinaigrette, organic root vegetables, pa'i'ai, Meyer Lemon tart and fresh fruit from MA'O Organic Farms

Kenney said the fish had been caught the day before off Heeia, and since they didn't know what they would get, its name wasn't on the printed menu.

The Honolulu Boy Choir was set to entertain after the guests eat.

The scenery at the 4,000-acre Kualoa Ranch is a magnet for filmmakers, and the lunch was served on a hillside at the base of the Paliku Cliffs, overlooking the sparkling bay and the distinctive emerald cone of Mokoli'i Island.

The family-owned cattle ranch, bought from King Kamehameha III in 1850, has managed to thrive by offering a range of outdoor recreation and cultural activities in tune with its environment. Visitors may tour an 800-year-old Hawaiian fishpond, ride horseback and take tours of movie sites including "Jurassic Park" and "Lost."

After the luncheon, the ranch will dedicate a garden of native and endemic Hawaiian trees to the first lady, in a ceremony closed to the press.

Asked what hosting the event meant to Kualoa Ranch, its president, John Morgan, told reporters:

"This is huge. This is really wonderful. This is a world stage. To be able to showcase Hawaii through Kualoa Ranch is mind-boggling, actually."

The spouses attending were:

Mr. Tim Mathieson, significant other of the Prime Minister of Australia

Mrs. Lauren Harper, spouse of the Prime Minister of Canada

Mrs. Selina Tsang, spouse of the Chief Executive of Hong Kong

Mrs. Kristiani Herawati, First Lady of Indonesia

Mrs. Kim Yoon-ok, First Lady of Republic of Korea

Datin Sri Rosmah Mansor, spouse of the Prime Minister of Malaysia

Ms. Lynda May Babao, spouse of the Prime Minister of Papua New Guinea

Mrs. Nadine Heredia, First Lady of Peru

Mrs. Fang-Yui Lien, spouse of the Representative of Chinese Taipei

Madam Mai Thi Hanh, First Lady of Vietnam

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HOME ON THE RANGE

The lore and legacy of the Hawaiian *paniolo*

By Lavonne Leong

An hour north of Honolulu, just past the surf town of Hale'iwa, the Kamehameha Highway narrows to a country road, and the "Seven Mile Miracle" begins: a long stretch of golden sand and ideal surf conditions that has helped make the island of O'ahu famous around the world. To my west, as I drive north, lies a string of legendary beaches, including Laniākea; 'Ehukai, which offers views of the famed Banzai Pipeline reef break; and Sunset. It's sun, sand and waves all the way—Hawai'i as everyone envisions it.

Today, though, I signal right and turn inland, onto a bumpy dirt road that leads toward the rolling hills and pastures of Kawailoa Ranch, into the heart of a Hawai'i few visitors ever see. Yet the story of the *paniolo*—Hawaiian cowboy—is deeply ingrained in the history of the islands.

A sign nailed to a coconut-tree stump reads, *E komo mai. Pani ke puka*: "Come on in, and close the gate." It's the day of the O'ahu district finals for the Hawai'i High School Rodeo Association, and anticipation runs high. Beyond the gate, framed by plumeria and hibiscus, are row upon row of trailers and beautifully groomed horses. Kathy Rita, district president of the HHSRA, greets me and offers me a strip of sweet, chewy dried mango—the perfect Hawaiian snack.

A paniolo on horseback demonstrates his roping skills at the Big Island's Parker Ranch, one of the oldest and largest cattle operations in the United States.

As we talk in the makeshift shade of the announcer's stand, the contest unfolds. Many of the competitors got their start in rodeo as young as age 5, participating in scaled-down events such as goat tying and roping pretend steers. As high schoolers, they skillfully compete in classic rodeo events, such as breakaway roping and barrel racing. Today's winners will take home coveted rodeo belt buckles and earn spots at the state finals in Waimea on the Big Island—the birthplace of ranching in Hawai'i. At the state finals, prizes include places at the National High School Rodeo Association finals in Gillette, Wyoming, and a chance to win big-money college scholarships.

Rita's 20-year-old son, Levi, and 19-year-old daughter, Shelby, have been among the competitors at the national finals; her sons Jake, 17, and Wyatt, 15, have also competed on the youth rodeo circuit. In 2009, Levi and his teammate, Jordan Gomes, had one of the finals' fastest team-roping times—an impressive 7.1 seconds.

Many of the kids who participate in the HHSRA are from multigeneration ranching families, remarks Rita, but not all. She points out a teenager in a Western-cut, aloha-print shirt whose blond braids fly behind her as she urges her galloping horse down the final stretch of the barrel race. She came from a surfing family, says Rita, but as a child, decided to "cross the road" that divides the beach from the inland hills to join the children in the North Shore's rodeo community.

Around us, families swirl by in a sea of cowboy hats, boots and jangling spurs, while country-western music plays through the loudspeakers. Despite the Western influence, this event is also unmistakably Hawaiian. The salt breeze from the beach less than

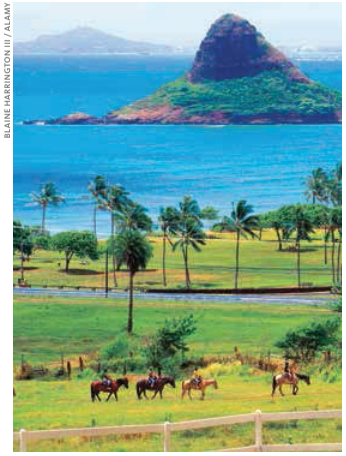
COURTESY HAWAII TOURISM JAPAN (PIT); OPPOSITE: DANA EDMUNDS / PHOTOLIBRARY

Set against the lush Ko'olau Range, O'ahu's Kualoa Ranch has been a shooting location for Hollywood productions such as *Lost* and *Jurassic Park*.

RON DAHLQUIST / PHOTOLIBRARY

Above: A paniolo rounds up cattle at Maui's Haleakala Ranch, on the slopes of the massive dormant volcano Haleakalā.

Below: Guests can ride horses while enjoying views of Kāne'ohe Bay and Mokoli'i Island while visiting O'ahu's Kualoa Ranch.



BLAINE HARRINGTON III / ALAMY

a mile away cools my skin. Kids swing on the hanging roots of an old banyan tree. And the names on the rodeo roster—Ka'apana, Shintaku, Akoi—are of an island heritage.

Events such as this are one way the paniolo culture of hard work, riding, roping and livestock care is passed along to the next generation. Whole families pitch in, as Rita's sons Levi and Jake are doing today. Levi—who now runs cattle on a 300-acre farm—corrals runaway cows between rounds as Jake drives a tractor around the ring, smoothing the churned ground in preparation for the next event. Rita's father, a former dairyman, is also in attendance.

While some of the day's contestants will attend college on rodeo scholarships, many others will enter ranch work, particularly on the neighboring islands. On Maui, Ulupalakua Ranch and Haleakala Ranch, both on the slopes of the massive dormant volcano Haleakalā, are working cattle operations of 20,000 and 30,000 acres, respectively. The Big Island, the largest of the Hawaiian Isles, boasts ranches that are even larger: At 130,000 acres, Parker Ranch is one of the oldest and largest cattle operations in the United States.

Reflecting on her children's success on the rodeo circuit, Rita says she hopes many other competitors from Hawai'i will do just as well, or even better. "It's been a hundred years since Ikua Purdy," she tells me, referring to one of the most celebrated paniolo of all. "It's everybody's goal to take one more national title home."

Ikua Purdy found fame in 1908, when Big Island rancher Eben Low—recognizing that Hawaiian cowboys could ride, rope and wrestle steers with the best of them—took Purdy and two other paniolo to Cheyenne, Wyoming, to compete in the World Steer Roping Championship. They were the first group from Hawai'i to make the long, expensive journey. Wearing flower *lei* on their hats and riding borrowed horses, the three paniolo were considered curiosities until Purdy entered the ring and handily broke the world steer-roping record with a time of 56 seconds. One of his fellow paniolo, Archie Ka'au'a, secured third place in the contest. Purdy and the others returned to Hawai'i to huge acclaim.

The 45 students riding in the youth rodeo finals have high hopes for earning prestigious prizes of their own. Each is also carrying on a Hawaiian tradition made possible by an event that took place about a decade before the American West was even a twinkle in the eyes of Lewis and Clark.

COURTESY: ANNA RANCH HERITAGE CENTER (2); SADDLE PHOTO: KENDALE PHOTOGRAPHY

THE EMERGENCE OF THE PANIOLO

The paniolo story begins in the Kingdom of Hawai'i, where in 1793 British captain George Vancouver presented a gift of several longhorn cattle to King Kamehameha I while visiting the Big Island. The king placed a *kapu* (taboo) on the seasick animals to give them a chance to recuperate and reproduce; no person was to harm them. By the time the kapu was lifted many years later, the cattle had proliferated, becoming a serious nuisance as they uprooted gardens and trampled fields with impunity.

By around 1830, the cattle had been brought to other populated Hawaiian Islands, as had horses, which first arrived in the islands in 1803. Around that time, King Kamehameha III, hearing of the prowess of the Mexican *vaqueros* (cowboys), invited three of them to make the journey from Mexico to teach the islanders their ranching skills. Hawaiians called them *paniolo* (a Hawaiianization of the word *español*) and took to the discipline at once, says Billy Bergin, a historian and veterinarian, and founder of the Paniolo Preservation Society. "Hawaiians are natural athletes. They learned fast, and it pleased their Mexican teachers to no end," he says.

Hawai'i's ranching landscape, however, was very different from Mexico's. Ranches could stretch from the beach into the mountains, to an elevation of thousands of feet. On the Big Island, the landscape was dotted with *kīpuka*—areas of fertile grassland surrounded by rugged, newly laid lava. The paniolo adapted the skills they learned from the vaqueros to suit the needs of a string of tropical islands and their rich culture. For instance, to be transported between islands, cattle had to be led into the sea and swum on and off ships, part of a practice known as *hō'au pipi*. And until a couple of genera-

JOCK GOODMAN / JOCKSHOTSHOTS.COM

Clockwise from top: At the scenic Anna Ranch Heritage Center on the Big Island, visitors can learn about the paniolo life by touring a ranch house filled with artifacts such as traditional *noho lio* saddles (pictured). Student Corinna Silveira, a member of HHSRA, participates in the barrel-racing event at a rodeo held in April at the Big Island's Parker Ranch.

"A lot of these rock walls you see from that period were built to keep cattle out, not to keep cattle in," says Kay Kammerzell, executive director of the Big Island's Anna Ranch Heritage Center. Hunting the cattle for food was common after the kapu was lifted, but "it became clear," says Kammerzell, "that something needed to be done other than running after them on foot."

COURTESY THE PANIOLO PRESERVATION SOCIETY

Right: Ikua Purdy, one of Hawai'i's most legendary paniolo, found fame in 1908 when he broke the world steer-roping record in Cheyenne, Wyoming.

Opposite: A historical photograph of Anna Leialoha Lindsey Perry-Fiske, who was raised in the island-ranching lifestyle of the early 20th century, as a *pā'ū* rider in a parade.

tions ago, the clearing of wild cattle dominated the ranching experience. Cattle clearing—the process of hunting wild cattle to make way for more domestic strains—was one of the riskiest things a cowboy could do, involving the pursuit of an angry, horned animal over uneven ground before roping it and tying it to the nearest tree.

Paniolo such as Ikua Purdy practiced their fast-roping skills not just for the rodeo ring, but out of everyday necessity. Uniquely Hawaiian rodeo events still held today—such as *po'o waiū*, in which a steer is roped and then secured to a post—came into practice during this era.

A specialized Hawaiian saddle called the *noho lio* was modified to withstand conditions including humidity, saltwater, sea-level heat and upland chill. Flower lei appeared in hatbands and around horses' necks, particularly for special occasions. Eventually, in some areas, the lariat and the surfboard were sights almost equally common. Victorian travel writer Isabella Bird recalled seeing "surfboards, paddles, saddles, lassos, spurs, gear, and bundles of *ti* leaves" lying on the floor of a Big Island home.

Living largely outdoors, the paniolo shared a spirit of camaraderie. They often raised their families in housing provided by the ranches at which they worked, and supplemented their incomes with fishing, says sixth-generation Hawaiian rancher Robby Hind. "After work, they'd go down and 'throw net,' or fish. The sea was such a part of everybody's life in Kona [on the Big Island]."

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These families passed Hawaiian traditions and language down through the generations.

"When I was a kid," recalls Hind, "all the cowboys spoke Hawaiian. They would be talking in Hawaiian, then talking in English. Nobody else, when I was growing up, spoke Hawaiian—it was only on the ranch."

In her memoir of a childhood on a Maui ranch, early-20th century writer Armine von Tempski fondly recalled the paniolo of olden times: "Men with spurs at their heels, knives in their leggings and flowers in their hats. Men who spoke with great outdoor voices which filled the kitchen with rolling Hawaiian words and booming Hawaiian laughter."

Pā'ū Riders

Though paniolo were mostly men, Hawaiian horsewomen were equally accomplished in the saddle—and they knew it, according to Kay Kammerzell of the Anna Ranch Heritage Center. "The Hawaiian women didn't want anything to do with riding sidesaddle," says Kammerzell. "They wanted to be able to do as the guys did, to steer and ride fast." When their enthusiasm for riding astride collided with the age's prim 19th century sensibilities, the *pā'ū*—a flowing, split skirt created by wrapping and draping almost a dozen yards of material—was born. At first made from practical cotton and donned to cover the legs and keep dresses clean, the pā'ū evolved into an elegant garment in colors that often represented the riders' island of origin or allegiance: pink for Maui, red for the Big Island, purple for Kaua'i and a golden orange for O'ahu.

Victorian travel writer Isabella Bird wrote of the "graceful and exciting spectacle" of Hawaiian pā'ū riders on a festive but ordinary Saturday afternoon: "The women seemed perfectly at home in their gay, brass-bossed, high-peaked saddles, flying along astride, barefooted, with their orange and scarlet riding dresses streaming on each side beyond their horses' tails ... while the men were hardly less gay, with fresh flowers round their jaunty hats, and the vermilion-coloured blossoms of the *ohia* round their throats."

Paniolo and pā'ū riders, says Billy Bergin of the Paniolo Preservation Society, are "male and female components of cowboy life."

Pā'ū riding is serious business among Hawai'i's horsewomen. Today, elegant pā'ū riders and their garlanded horses are a favorite part of parades across the state. Honolulu is a great place to see regal pā'ū riders. The Aloha Festivals Floral Parade, being held this year on September 24, and the King Kamehameha Celebration Floral Parade each June are two of the city's most popular parades. —*L.L.*

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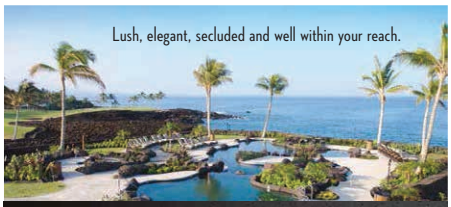

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PANIOLO TODAY

You don't have to go far to see and hear evidence of Hawai'i's paniolo heritage. It's all around, from the *pipi kaula* (dried beef) found at authentic *lū'au* to the magnificently draped and garlanded *pā'ū* riders who participate in the islands' many civic parades. The signature sounds of contemporary Hawaiian music wouldn't be the same if the first Mexican vaqueros hadn't brought with them Spanish guitars and the songs of the open range. Local legend has it that when the vaqueros returned home, they left their guitars behind. The paniolo are said to have retuned them, to create the distinctively sweet and complex sound of the slack-key guitar.

> Kammerzell says that many natural landmarks—which paniolo once used to guide themselves home after a long day of clearing cattle—have both practical and spiritual significance.

Today, when you see wide-open, rolling land in Hawai'i, there's a good chance there is, or once was, a ranch on it—from Kualoa Ranch on bustling O'ahu to the thousands of acres ranched on the Big Island and Maui.

There are fewer ranches today than in the past. Corn, a source of cattle feed, must be shipped from the mainland and is vulnerable to spikes in both commodities prices and fuel costs. Even at surviving ranches, the widespread use of ATVs and other updated ranching methods means there are fewer cowboys.

However, horses remain an integral part of ranch life in Hawai'i: Even relatively young ranch operations, such as the Galimba family's Kuahiwi Ranch—which they founded on the Big Island in 1993—

Experience the Paniolo Lifestyle

There are plenty of ways for visitors to learn more about the paniolo. They include the following:

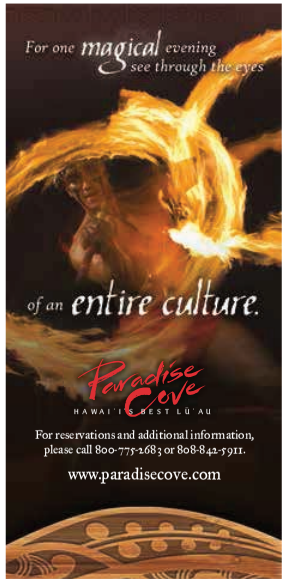
Moseying into town. From the moment you set foot there, it's clear that Waimea on the Big Island and Makawao on Maui are paniolo towns. You'll see men in cowboy hats, boots and Western shirts, and hear talk of rodeos and riding. Waimea is the gateway to Kohala, the region where the paniolo got their start.

Going riding. Paniolo Adventures (www.panioloadventures.com) takes visitors on horseback rides through the breathtaking landscape of Ponoholo Ranch, a working Big Island cattle ranch that stretches from the mountains to the sea. Other places to ride horses are Parker Ranch on the Big Island (www.parkerranch.com), Gunstock Ranch on O'ahu (www.gunstockranch.com) and Princeville Ranch on Kaua'i (www.princevilleranch.com).

Exploring history. Learn about the paniolo life at Anna Ranch Heritage Center (www.annaranch.org), on 110 acres in Waimea on the Big Island. Tour the ranch house, filled with artifacts and antiques from the paniolo heyday, and gardens that are maintained as Anna Leialoha Lindsey Perry-Fiske, the "first lady of ranching," once had them. An on-site saddlemaker and blacksmith provide demonstrations.

Visiting a ranch. Many Hawai'i ranches that run cattle have also branched out. Stop in at Ulupalakua Ranch (www.ulupalakuaranch.com), order a locally farmed elk burger from the grill and sample the sparkling pineapple wine. At Kualoa Ranch on O'ahu (www.kualoa.com), ride on horseback across the same open countryside that has served as a backdrop for Hollywood productions from *Lost* to *Jurassic Park*.

Seeing a rodeo. Professional and youth rodeos are held on every major island. The largest are Makawao Rodeo on Maui, which runs over the Fourth of July weekend; Kaua'i's Waimea Round-Up Rodeo & Town Celebration, which happens in February and celebrates that island's rich paniolo past; and the Kona Stampede on the Big Island, which takes place every March. Please visit www.thecowboycalendar.com for more information. —*L.L.*



DAVID L. MOORE, O'AHU / ALAMY

Pā'ū riders are a highlight of O'ahu's annual King Kamehameha Day Parade.

use horses extensively to manage cattle and cover terrain not suitable for an ATV.

"Where we are, there's a lot of rock," explains rancher Michelle Galimba. "Horses are a lot more nimble, and a lot more subtle. They'll know their job. I have this old gray horse—he'll just look at a cow and give it stink-eye, and that cow will get back in line," she laughs.

Billy Bergin of the Paniolo Preservation Society notes that old-time paniolo skills are experiencing "something of a renaissance," including a renewed interest in traditional materials—such as rawhide rather than nylon for roping. Galimba has also noticed an influx of young cowboys seeking work at local ranches—a development she attributes to the public's growing respect for farming and locally sourced foods.

The older generation of paniolo has much to pass on, she continues. "You learn a certain way of interacting with the environment from the older folks. There's a certain body of knowledge that will get transferred through 'talk story.' Like my father. He's been around forever here, so he would say, 'If it doesn't rain by this date, we're in trouble.'"

"There's a real connection to the land," agrees Kammerzell of the Anna Ranch Heritage Center, who says that many natural landmarks—which paniolo once used to guide themselves home after a long day of clearing cattle—have both practical and spiritual significance.

"When I've listened to some of the local cowboys talk about their fathers and their grandfathers, and how they were cowboys—we're talking generations of paniolo. They know the name of every *pu'u* (hill), every stream, every gulch. Today, we look up and say, 'Oh, a hill. That would be a perfect place to build a house with a great view.' Over here in Waimea, they have such a connection to the pu'u, it would be devastating to see them developed. They are part of the landscape, the viewscape, the history."

Like the workdays of their forefathers, the days of modern paniolo are filled with physical tasks that require skill. Galimba recounts a recent day spent rounding up cattle on horseback, all because "somebody left the gate open. All the cattle that we had carefully separated into the small ones and the big ones, they got mixed up together," she says with a smile.

Oops. I recall the sign on the coconut stump at the youth rodeo, asking all comers to *pani ke puka*. Did I remember to close the gate? Yes, I think with relief. I did. ▲▲

Lavonne Leong writes from Honolulu, where she lives with her husband and children.

GETTING THERE

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Business

Kualoa Ranch to market beef

By Allison Schaefers
January 3, 2011

JAMM AQUINO / JAQUINO@STARADVERTISER.COM
While agriculture and land stewardship remain a focus at Kualoa Ranch, tourism has provided needed economic diversification. Here, Kualoa Ranch President John Morgan walks through one of the ranch's horse stables.

Despite Oahu's down economy and challenging visitor market, Kualoa Ranch is beefing up their operations — literally.

Kualoa, which occupies 4,000 acres along Oahu's northeastern coast and just celebrated its 160th year, has been involved in cattle ranching since the 1870s. The ranch, which is often used as a movie backdrop, also provides recreational activities including ATV tours, horseback rides, ocean voyaging and hula lessons as well as tours of its 800-year-old Molii Fishpond, gardens, movie sites and remote valley.

Kualoa already serves cafe patrons its own ranch-grown, grass-fed beef. But, starting in mid-2011, it will begin retailing the raw product as Kualoa Beef online and at its visitor center, said John Morgan, Kualoa Ranch's president. Morgan is a descendant of Dr. Gerrit Judd, who bought the first 622 acres of the ranch from King Kamehameha III in 1850.

ADVERTISING

Replay

"Business expansion is always something that we are looking at," Morgan said. "We are trying to make everybody aware of the history and the importance of the ranch's mission while at the same time trying to be as profitable as possible. We want to run this like a regular corporation that gets returns on equity."

Business growth is vital to stewardship of the ranch lands as well as keeping them in the family, he said.

In 1971 the City and County of Honolulu condemned 155 acres of Kualoa Ranch and turned it into Kualoa Regional Park, Morgan said.

"I grew up in a home on those lands," he said.

Since then two other attempts have been made to condemn other portions of the ranch, he said. The family has fought additional condemnation by turning the ranch into a destination attraction and an economic engine, Morgan said.

"We've learned that it's very important to share this land," he said. "When I was growing up, the attitude of my grandmother and great-aunt was that this is our property and everyone stay out. They were gracious people, with a very different approach."

While agriculture and stewardship of the land remain the key focus for the Morgan family, tourism and retail have provided needed economic diversification, he said. Last year, profitability enabled the ranch to offer community programs for about 14,000 people.

"We knew that an agricultural operation with under 4,000 acres with hardly any income and profits was not sustainable," Morgan said. "We needed to develop business with the prospect of growing."

A decade after the Judd family purchased Kualoa, it became home to Oahu's first sugar mill, which operated there from 1863 until it went bankrupt and closed in 1871. Soon after, the family began its cattle ranching operations. Over time they added acreage in Hakipuu and Kaaawa. Today about 500 head of cattle graze on roughly 1,500 acres of pasture. The herd is mostly made up of Angus, Brangus and Hereford stock.

"Going back to the beginning, every person in every generation who had the influence had this real devotion to the property and preserving the property," Morgan said. "Maximum financial return was not as important as preservation of the land. We are very fortunate that even the next generation feels that way."

But while it is an "honor to be part of such an illustrious legacy," Morgan said past successes and failures "show how far the most recent generation needs to plan ahead."

The ranch's entry into tourism in 1985 provided a good start, he said. But business struggled after the Asian financial crisis and after Sept. 11, 2001, Morgan said.

"We lost a lot of money," he said.

With the opening of a visitor center in 2004 and a shift back to tours that focused on nature and culture, the ranch gained market share, Morgan said.

The ranch was appealing enough to get honeymooners Maxine and Daniel Viola out of their room and into two tours. The Perth, Australia, couple recently took the ranch's movie tour and then decided to book an ATV tour to explore it more.

"We recognized most of the sites from the movies. It was really quite lovely," said Maxine Viola.

The couple said attractions like Kualoa enhanced their trip.

"It had a real island feel," Daniel Viola said.

Newer tours showcase Kualoa's importance to native Hawaiians and its spectacular natural beauty, Morgan said. Formerly the residence of a ruling chief, Kualoa was once a training ground where royalty were instructed in war, history and social traditions, he said. The early Hawaiians cultivated taro on the ranch's Hakipuu Valley lands, he said. They also harvested food from Molii Fishpond, considered one of the state's largest and most preserved fishponds.

By focusing on the ranch's strongest aspects, "we never saw the most recent downturn," he said.

The move into beef retailing will be the most significant business change since the Morgan family opened up their private ranch to visitors some 25 years ago, he said.

"We think we can make money at it. It's a great brand builder," Morgan said. "The local market is very important to us, and the more ways that we can reach them, the better it is for us."

The ranch also expects to tap into the growing "locavore" movement, which encourages consumption of nearby food sources, said Valerie King, the ranch's marketing director.

"Sustainability has become a very popular concept," she said.

Prices will retail for a slight premium over beef that is imported to the isles, Morgan said.

In addition, Kualoa will expand its other agricultural enterprises: its film presence and its tourist offerings, he said.

"We are hoping to make progress in 2011 rehabilitating some of our diversified (agricultural) lands that have gone fallow," Morgan said. "We will resurrect 100 acres over the next 10 years and are looking at selling tropical fruit in the future. Only about 2,000 of the ranch's acres currently are used for agriculture."

Kualoa also will introduce two new higher-end tourism products next year. The Royal Experience, an intimate, private half-day tour for guests who want to see otherwise off-limit parts of the ranch, will retail for $169. Another tour, the Kualoa Sunset Experience, will open the ranch for the first time to evening visitors. Tours, which will retail for $99, will include dinner and open-air entertainment.

The ranch, which has been featured in films from the 1961 Elvis Presley hit "Blue Hawaii" to the more recent "Jurassic Park," "Pearl Harbor" and "50 First Dates," will continue to consider opportunities that allow it to share its beauty with a broader audience. It was also a setting for television's "Lost" and continues to welcome "Hawaii Five-0" TV crews, Morgan said.

"There is mana (power) in the lands of Kualoa, and it is felt by those who come here," he said. "My family and everyone who has had a hand in maintaining Kualoa and sharing its mana are honored to be a part of such an extraordinary place."

A historic time line of Kualoa Ranch

1828: Dr. Gerrit Judd leaves New England to become a medical missionary in Hawaii.
1842: Dr. Gerrit Judd renounces his U.S. citizenship and becomes a full-time adviser to King Kamehameha III.
1850: King Kamehameha III sells Kualoa, 622 acres of land including Mokolii island (Chinaman's Hat), to Judd for $1,300.

1860: Judd's son, Charles H. Judd, purchases an additional 2,000 acres in Kaaawa.
1863: Charles Judd and his brother-in-law Samuel Wilder buy Kualoa and start a sugar plantation.
1871: Insufficient rainfall contributes to poor sugar plantation yields, and Oahu's first sugar plantation closes.
1880: Charles Judd purchases most of the lands of Hakipuu from Queen Kalama's land holdings.
1927: Julie Judd Swanzy, Charles Judd's daughter, buys out her siblings and becomes sole owner of Kualoa.
1941: The U.S. military takes over most of Kualoa, building a coastal artillery defense battery and an airstrip.
1946: The town of Kaaawa is created out of old pastures and farm lots. About 200 residential lots are leased.
1961: Kualoa makes its Hollywood debut in "Blue Hawaii."
1971: The City and County of Honolulu, under Mayor Frank Fasi, condemns 155 acres of Kualoa, including Mokolii island, to create Kualoa Regional Park.
1976: Kualoa starts offering horseback rides to the public and leases out land for the development of an aquaculture facility in Hakipuu.
1985: Kualoa expands its outdoor recreational activity business beyond horseback rides. Other visitor activities include ATV rides, property tours, scuba diving, windsurfing, personal-watercraft and catamaran rides, shooting and helicopter rides.
1986: Kualoa offers educational programs to the public. As many as 14,000 kids a year benefit.
1989: Israel Kamakawiwo'ole and Steel Pulse give the ranch's first outdoor concert.
1995: A professional mountain bike race is held in Kaaawa Valley.
2004: Kualoa builds its first visitor center and narrows its visitor offerings to five narrated tours, horseback rides and ATV rides.
2010: Kualoa Ranch begins serving Kualoa beef to visitor center cafe patrons.
2011: Kualoa Beef will be sold online. The first evening tours will start, and a more expensive behind-the-scenes tour will begin. The ranch will begin rehabilitating fallow lands and intends to eventually sell tropical fruit.
Source: Kualoa Ranch

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Hawaiian cattle ranch faces same challenges as here

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2009-08-14T00:00:00Z Hawaiian cattle ranch faces same challenges as hereBy TERRI ADAMS, The Prairie Star The Prairie Star

August 14, 2009 12:00 am • By TERRI ADAMS, The Prairie Star

(0) Comments

OAHU, HAWAII - With the ocean lapping at their front door and jungled mountains guarding their back door, few working cattle ranches can compete with the beauty found on the Kualoa Ranch on the island of Oahu in Hawaii.

David Morgan is a sixth generation owner of the ranch whose Angus and Brangus cattle carry the 33 brand.

“It used to be when you drove from Honolulu to here, we were the 33rd cattle ranch you passed. Now we are the first one you come to,” Morgan said.

Morgan's great-great-great grandfather, Dr. Gerrit P. Judd, came to the Hawaiian Islands in 1828 with a group of missionaries. He never left, eventually becoming one of the first immigrants to be fluent in the native language and becoming a personal friend and advisor to the Hawaiian King Kamehameha III.

Judd purchased 650 acres of land from the king at the base of the Kualoa Mountains and Kualoa Ranch was born.

Judd's son purchased the adjoining 3,350 acres to bring the property to its present day size.

During the Civil War they tried growing sugarcane on the ranch but that failed and they abandoned that practice, turning to cattle ranching instead.

Cattle were first brought to the island in the late 1700s as a gift to King Kamehameha I. He was told they were special animals and to take care of them. The king placed the cattle under his personal protection and turned them loose in the jungles. For the next 40 years the cattle multiplied on the island unmolested by islanders.

Then the California Gold Rush hit and islanders realized they had another type of gold on their island - fresh butter. It could be made, shipped and sold in California for a great profit.

Since the islanders didn't know how to capture and milk the wild cows, they brought in cowboys from Mexico. The Spanish cowboys called themselves españolos, which the native Hawaiians pronounced paniolo. This is now the Hawaiian word for cowboy. Across the scattered islands of Hawaii a paniolo's job, their methods and their equipment are all as unique as their name and environment.

To milk the wild cows during the California Gold Rush, paniolos would find a v-shaped tree in the forest, cut down one of the branches of the v and then rope a wild cow by the horns. When the cow charged the horse and rider, they would outrun her to the tree, cast the rope over the cut branch and dally her tight to the trunk.

By securing her hind legs, they were able to milk her and turn the milk into butter for sale in California. The cowboys also used this roping technique to capture wild cattle for slaughter.

Because the roping method was so dangerous to both horse and rider, they began to transport a lot of the captured cattle to corrals and used them for breeding, giving birth to the first domestic herds on the islands. Today the ancient roping method they once used, called po'o wai u, is preserved as an event unique to Hawaiian rodeo competitions.

While paniolos still rope cattle today, they mostly use ATVs to move their cattle.

On O'ahu the average temperature is 80 degrees and rainfall on the ranch can range from 40-80 inches each year.

In that heat and humidity, Brangus cattle do best and make up most of the ranch's cow-calf operation, although they do have a few Texas longhorn cattle on the ranch, leftovers from a film.

“I think it's funny that for 200 years we have been trying to get rid of big-horned, skinny cows and these are the first cows everyone sees when they come to the ranch,” laughed Morgan.

The gentle longhorns are popular with the tourists but do not depict the ranch's main herds.

Because of the steep mountain range that bisects the ranch, the Kualoa Ranch has two different cattle herds. They are allowed to graze all year long on the lush, nutrient-rich grasses that grow thick on the island. The bulls are in pasture year-round and are moved back and forth between the two herds, which are separated by the undulating mountains that resemble the ribcage of an ancient beast. Island lore says a great dragon died in the ocean and its ribcage formed the island of O'ahu.

Because the bulls are moved back and forth between the herds, there are two distinct calving seasons, one in July and the other in January. That also gives Kualoa paniolos two different weaning times each year. The calves are weaned when they reach 450 to 500 pounds.

No hay or grain is grown on the island - all must be imported making the cost prohibitive.