

FORT KAMEHAMEHA  
(Fort Kamehameha Historic District, Hickam Field,  
Joint Base Pearl Harbor-Hickam)

HALS No. HI-20

Honolulu County  
Hawaii

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN LANDSCAPES SURVEY  
U.S. Department of the Interior  
National Park Service  
Washington D.C.

## HISTORIC AMERICAN LANDSCAPES SURVEY

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Location	<p>The Fort Kamehameha Historic District is located at the Air Force's Hickam Field within Joint Base Pearl Harbor-Hickam in south-central O'ahu. It is a park-like swath of green between the east side of the entry to Pearl Harbor and the active, industrial airfield of the Air Force base. The district land area encompasses approximately 70 acres at the western end of the original 800-acre Fort Kamehameha.<sup>1</sup></p> <p>City and County of Honolulu, Hawai'i</p> <p>U.S. Geological Survey 7.5 minute topographic map, Pearl Harbor Quadrangle UTM: WGS 84, Meters, Zone 4 North 607244E, 2358507n 607809E, 2358520n 608078E, 2357886n 608072E, 2357500n (Refer to Figures 1, 2, and 3)</p>
Present Owner/ Occupant	United States Navy and Air Force, Joint Base Pearl Harbor-Hickam (JBPHH)
Present Use	Most extant buildings and structures at the Fort Kamehameha Historic District are currently vacant and unused, or are used for a non-historic function, such as storage. The predominant land use within the neighborhood is recreation. The long stretch of sandy beach and the offshore reef and tidal flats are popular for sunbathing, picnicking, strolling, dog play, and fishing. The quiet neighborhood streets, now barricaded from vehicular use, serve as walking and jogging paths, complete with mile markings on the pavement. A multipurpose path extends along the west side of Mamala Bay Drive through the entire district, along which there are historical and environmental interpretive signs. The district also contains an interpretive kiosk and trail segments associated with the Hickam Wetland Management Area.
Significance	Fort Kamehameha Historic District is significant as a coastal defense fort in the newly acquired U.S. territories in the Pacific, particularly for its strategic position at the entrance of Pearl Harbor. From this spot, Fort Kamehameha's system of heavily fortified coastal batteries could protect the developing naval base yard of Pearl Harbor, the Pacific stronghold for the United States' national interest.

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<sup>1</sup> Bouthillier, Katharine and Lisa Anderson, "National Register of Historic Places Registration Form for Fort Kamehameha Historic District," 1993. The Fort Kamehameha Historic District, as mapped in the NR Nomination and on Hickam GIS maps, encompasses a total of about 91 acres, including water. The land area alone is about 67 acres. The NR Nomination states the size as 10.8 acres, which appears to be an error.

Together, the system of coastal batteries and the Army post that supported the fort is representative of other coastal defense fortifications of the same period, but is unique in its response to the Hawaiian environment in terms of setting, design and materials. Fort Kamehameha Historic District is the only coastal fortification in Hawai'i that preserves a portion of the original elements of both the coastal defense system and the accompanying Army post. Fort Kamehameha Historic District embodies the distinctive characteristics of an Endicott/Taft period (1886-1917) coastal fortification distinguished by the Endicott period batteries and the Taft period accessories such as fire control towers, searchlights and general electrification. At the same time, the Fort Kamehameha historic housing lies within the Fort Kamehameha Historic District. Thirty-six officers' quarters were originally constructed by the Army there in 1916 and ca. 1921. The remaining thirty-three quarters are significant for their integration of Craftsman style detailing with regional design to produce buildings with a contemporary look which were well adapted to the Hawaiian tropical climate. Fort Kamehameha was the Coast Artillery fort which guarded the naval base at Pearl Harbor and also was the Army's headquarters for O'ahu's harbor defenses.

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## **PART I: HISTORICAL INFORMATION**

### **A. Physical History**

#### **1. Date(s) of Establishment**

Prior to the building of the U.S. Army coastal fortification that came to be known as Fort Kamehameha, Native Hawaiians lived in small clusters along the coast. Most of Fort Kamehameha was built between 1908 and 1919. The land for the proposed coastal fortification was purchased by the U.S. Army through condemnation proceedings in 1907.<sup>2</sup> Work at the coastal defense site began in 1908, coinciding with the dredging at the Pearl Harbor entrance channel. Fort Kamehameha was officially established as part of the Artillery District of Honolulu in 1909.

#### **2. Designer, Builder, Contractor, Laborers, Suppliers**

The U.S. Army Corps of Engineers was in charge of selecting the locations, purchasing additional lands, siting, designing and constructing the tactical structures of all American coast artillery forts including at Fort Kamehameha.<sup>3</sup> The tactical structures included the batteries, mine facilities, observation stations, plotting rooms and searchlight shelters.

Captain Curtis W. Otwell served as the first District Engineer for Honolulu, U.S. Army Corps of Engineers (1906-08) who was assigned the task of building the coastal fortifications on O‘ahu. Captain Otwell focused on preparing the site at Pearl Harbor for construction of the coast artillery fort during his short tenure. He requested funds from Congress for the first battery and acquired rail to build a railroad to the fort. In addition, he was very involved with the initial dredging of the entrance channel of Pearl Harbor, preparing preliminary estimates on the cost and engineering required to open the channel, while also obtaining permission from the Navy to use the dredging spoils as fill for the marshlands on the Army’s fort site.<sup>4</sup>

Otwell’s successor, Major Eben Eveleth Winslow (1908-11) became Honolulu’s second District Engineer for the U.S. Army Corps of Engineers and continued where Otwell left off. Major Winslow worked his way up to district engineer at Norfolk. He later worked at the Engineering School at Washington Barracks (Washington D.C.), where he was the director of military engineering. He subsequently designed and constructed many of the fortifications on the Hawaiian Islands up until 1911 and designed all of the fortifications in the Panama Canal Zone.<sup>5</sup> At Fort Kamehameha, Major

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<sup>2</sup> Dorrance, William H. *Fort Kamehameha: The Story of the Harbor Defenses of Pearl Harbor*, Shippensburg: White Mane Publishing Company, Inc. 1993, 4.

<sup>3</sup> Berhow, Mark, Joel Eastman and Bolling Smith. “Barracks, Bakeries, and Bowling Alleys: Non-Tactical Structures at American Coast Artillery Forts,” [www.cdsg.org/reprint%20PDFs/CAGarrison.pdf](http://www.cdsg.org/reprint%20PDFs/CAGarrison.pdf). Accessed: January 19, 2011, 507.

<sup>4</sup> Thompson, Erwin. *Pacific Ocean Engineers: History of the U.S. Army Corps of Engineers in the Pacific 1905-1980*, Honolulu: U.S. Army Corps of Engineers, Pacific Ocean Division, 1985, 35.

<sup>5</sup> Winslow, Eben Eveleth. *Notes on Seacoast Fortification Construction*, Washington: Government Printing Office, 1920.

Winslow began by solving infrastructure problems of water and materials. He bought a scow and leased a quarry for material for the construction of the batteries. Major Winslow was active in the siting of the batteries at Fort Kamehameha, and ultimately the design of the fortifications. By the end of his tenure in 1911, Battery Selfridge was complete, work had begun on Battery Hasbrouck, and the Engineer Wharf was completed.

Major William P. Wooten assumed the position of District Engineer for the Corps of Engineers after Major Winslow was reassigned in 1911. Between 1908 and 1913, Majors Winslow and Wooten supervised three Army engineer companies of fifty men per company who were employed in the development of coastal fortifications at Forts DeRussy, Armstrong, Ruger and Kamehameha.<sup>6</sup>

During this period, the U.S. Army Corps of Engineers followed the same general design for coastal forts. Forts were comprised of one or more batteries that held from one to multiple emplacements for guns, howitzers or mortars.<sup>7</sup> The Board of Engineers issued type plans for the design and construction of the battery structures, with each one varying according to the type of cannon it used. No original plans are locally available for Batteries Hasbrouck and Hawkins and other tactical structures within the Fort Kamehameha Historic District.

The U.S. Army Quartermaster Corps was responsible for the siting, design, and construction of the non-tactical structures associated with the coastal fortifications including at Fort Kamehameha.<sup>8</sup> As the Hawaiian Department Quartermaster during the period between 1912 and 1915, Major B. Frank Cheatham directed the design and construction of the non-tactical buildings at Fort Kamehameha as well as at other Army sites on O'ahu, such as at Schofield Barracks. The remaining non-tactical structures within the Fort Kamehameha Historic District include the officers' quarters, tennis courts, chapel, bandstand, flagpole, and ancillary structures. Like the Army Corps of Engineers, the Quartermaster Corps architect's office created standard plans for all types of buildings. However in Hawai'i, these plans were adapted to the tropical environment.

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<sup>6</sup> Knight, G.A. "Scotty." "Battery Randolph and the Transformation of Waikiki," in *Newsletter of the Hawaii Army Museum Society*, Winter & Spring 2010, [www.HIArmyMuseumSoc.org](http://www.HIArmyMuseumSoc.org), p. 13. Accessed on May 30, 2011.

<sup>7</sup> Dorrance, 1993, 8.

<sup>8</sup> Berhow et al., Accessed on March 8, 2011, 507.

### 3. Original and Subsequent Owners, Occupants

Original Occupants: (prehistoric period to the early twentieth century) Native Hawaiians lived in small villages and settlements such as Holokahiki and practiced subsistence living primarily focused on the inland fishponds and access to the Pu‘uloa marine resources.

Subsequent Owners, Occupants: (ca. 1795-1907) The land upon which Fort Kamehameha Historic District now stands was known traditionally as being within the Hālawā *ahupua‘a*. King Kamehameha I awarded this portion of Hālawā to John Young and Isaac Davis, two seamen, for their service as advisors to the King in the late eighteenth century.<sup>9</sup> John Young married two native Hawaiian women of high rank and the land passed down through the Young family eventually to Young’s granddaughter, Emma Na‘ea Rooke, later known as Queen Emma Kaleleonalani. Prior to her death in 1885, Queen Emma chose this location to build a country house.

Subsequent Owners, Occupants: (1907 to current) The U.S. Army purchased the land in 1907 and the U.S. Coast Artillery Corps utilized Fort Kamehameha through 1950, at which time the Coast Artillery Corps was deactivated. The eastern portion of Fort Kamehameha was redeveloped by the Hawai‘i Air National Guard while the western part of the original Fort Kamehameha continued to be owned by the Army and used for military housing. In 1991, a land exchange between the Army and the Air Force placed Fort Kamehameha in the hands of Hickam Air Force Base. Hickam Air Force Base has owned and managed Fort Kamehameha as military housing until a joint base agreement between the Navy and the Air Force in 2010. Fort Kamehameha Historic District is now owned and managed by both the Navy and the Air Force under Joint Base Pearl Harbor-Hickam. The last military families to occupy the housing at Fort Kamehameha vacated in 2008. Currently, there are no resident occupants within the Fort Kamehameha Historic District.

### 4. Periods of Development

#### a. Original Plans and Construction:

Pre-Military Development (pre-1907): Native Hawaiians lived in small settlements such as Holokahiki and practiced subsistence living primarily from inland fishponds and marine resources from the adjacent Pu‘uloa (Figures 4 and 5). Fresh water sources and good agricultural lands were limited in the study area. Habitation was focused on a narrow strip of sand dunes along the shoreline. Inland fishponds were constructed in a pre-existing marshland environment. The unconsolidated sand dunes were used by native peoples as burial grounds. Physical evidence of pre-military activities is no longer visible on the surface.

Military Development (1907-50): Fort Kamehameha Historic District represents part of the larger Fort Kamehameha, a U.S. Army Reservation dedicated to coastal defense from 1907-50. Like many of the other coastal artillery forts constructed in the United States, particularly during the earlier Endicott Period and in the post-Taft period, Fort Kamehameha was designed and constructed in two phases and by two different divisions of the U.S. Army. In the first phase (ca. 1907-14), infrastructure and the tactical structures such as the batteries, ancillary structures, and

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<sup>9</sup> Bouthillier and Anderson, 1993, 2-3.

fire control towers were designed and built by the U.S. Army Corps of Engineers. The second phase (ca. 1913-16) comprised the non-tactical structures including the quarters, barracks, administrative, and operations and recreational structures designed and built by the U.S. Army Quartermaster Corps.

*Phase I: U.S. Army Corps of Engineers, Construction of Fortification (1907-14)*

Though the tactical structures at Fort Kamehameha are known to have been built by 1914, the earliest engineer plan showing the fortification is a 1922 “General Map” (Figure 6). One of first major changes to the landscape at the new fort was the use of fill to prepare the site for construction. Dredging spoils from Pearl Harbor channel widening were used to fill low spots on the reservation. Early infrastructure work included extending the rail line from the existing Oahu Rail and Land Co. (OR&L) line at Watertown (west of Fort Kamehameha) to the Engineer Wharf, built at the western end of the fort. Berms were built through the fishponds, Ke‘oki and Waiaho, and through the marshlands to accommodate the east-west aligned “Engineer Railroad.”

Set back from the shoreline in the middle of the reservation, Battery Selfridge was the first battery built at Fort Kamehameha. Although the battery was completed in 1910, the 12-inch disappearing guns were not tested until 1911. Battery Hasbrouck, completed in 1914, was a 12-inch mortar battery that was situated at the western end of the reservation. Two of the remaining four initial batteries were also completed in 1914, Batteries Jackson and Hawkins. The function of Battery Hawkins, built near the shoreline, was to protect the submarine mine field that could be laid at the mouth of Pearl Harbor to prevent the entry of enemy submarines into the harbor. Mine field equipment was stored in an engineer store house and mine planters store house built near the wharf.

In addition to the batteries, several fire control towers were designed and constructed to the east of Battery Hawkins. These towers were electronically wired to all the batteries and served to accurately guide and aim the weapons.

*Phase II: U.S. Army Quartermaster Corps, Construction of Post (ca. 1913-16)*

Based on available records, including early photographs, the portion of Fort Kamehameha within the eligible historic district was designed ca. 1913-14 when construction began on the permanent, non-tactical buildings of Fort Kamehameha. The earliest plan, a 1919 “Layout of Post, Fort Kamehameha, T.H.” from the Honolulu office of the Constructing Quartermaster, depicted a linear neighborhood of thirty-two officers’ quarters oriented along the shoreline confined by a marsh on the north side and the Pacific ocean to the south (Figure 7). The quarters were bounded by Battery Hasbrouck and the engineer wharf to the west and by Battery Hawkins and the administrative core of buildings at the eastern end. The original Fort Kamehameha encompassed approximately 800 acres of land.

The officers’ quarters were built in the Bungalow/Arts and Crafts style, a house style popular in Hawai‘i at the time of their construction. The single-walled, board-and-batten construction was chosen for its utility in Hawai‘i as well as affordability. The Quartermaster Corps also opted for

the light frame construction over more permanent cement-based houses due to their proximity to the coastal defense batteries and the potential damage that could be sustained during firing of the guns and mortars.<sup>10</sup>

b. Changes and Additions

Construction of Hickam Field

The construction of the adjacent Army Air Corps reservation, Hickam Field, prompted major changes in access to Fort Kamehameha starting in 1935. Access to Fort Kamehameha was rerouted through Hickam Field. Vehicular and railroad circulation routes were realigned to accommodate the runway and parking aprons that were paved over the former access road to Fort Kamehameha.

Coral Bandstand and Chapel

The coral bandstand and the post chapel were constructed as part of the build up to World War II and reflect the Army's attempt to improve the morale of the troops. The "Tudor"-shaped chapel in particular is representative of the Army 700 and 800-series chapels, standard designs utilized during the massive mobilization of cantonment construction just prior to and during the war years.<sup>11</sup> Both structures were situated near the administrative center of the post, at the intersection of Seaman and Gardner Avenues.

World War II and Temporary Construction

The December 7, 1941 Japanese attack on Pearl Harbor spurred construction at Fort Kamehameha, much of it focused on the eastern end of the reservation. Defensive structures, such as the security fence around the reservation and the beach huts fronting the officers' quarters, were temporary in nature and only lasted a few years. A new road spur, Hope Street, was built off of Seamen Avenue and to the east of the officers' housing, and new quarters were added, expanding the officers' housing area. As automobile use increased, shared garages were built between officers' quarters.

Post-War Demolition

Following the deactivation of Fort Kamehameha and other Coastal Artillery forts in 1950, the officers' quarters continued to be used for military housing. The barracks were gone by 1962. Many of the administrative buildings at the core of the post were reused for different purposes such as community support. By 1977, the Post Club, Dispensary, Service Club (former YMCA), and St. Joan's Church, all buildings located near the administrative core, had been razed. The Headquarters building was destroyed in subsequent years leaving open space in what was once the center of Fort Kamehameha.

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<sup>10</sup> "No Cement Gun at Kamehameha: Major Cheatham Makes Some Changes for Pearl Harbor Buildings." *Hawaiian Gazette*, March 11, 1913.

<sup>11</sup> Wasch, Diane Shaw, Perry Bush, Keith Landreth et al., James Glass and Arlene R. Kriv, Ed. "World War II and the U.S. Army Mobilization Program: A History of 700 and 800 Series Cantonment Construction," Legacy Resources Management Program. U.S. Department of Interior, National Park Service, 1991.

Expansion of the Fort Kamehameha Wastewater Treatment Facility

Located adjacent to and just north of the Fort Kamehameha housing, the plant was enlarged and modified in 1997 near the northwestern edge of Worcester Avenue. Four historic officers' houses were moved to accommodate the new settling tanks. During this process, a burial complex of Native Hawaiian ancestry was exposed. The remains were reburied in a burial vault designed within the Fort Kamehameha Historic District.

Realignment and Renaming of Seamen Avenue

The realignment of Seamen Avenue into Mamala Bay Drive by 2008 altered the original central traffic island by shaving off a portion of land adjacent to the coral bandstand and incorporating the eastern segment of the triangular island. The western segment was retained between Worcester Avenue and Drum Road.

## B. Historic Context<sup>12</sup>

### 1. Pre-Military (prior to 1907)

The history of human occupation in the Hawaiian archipelago began with the arrival of the Polynesians who have been traced back to the Marquesas Islands.<sup>13</sup> Archeological evidence suggests the islands were settled before or by A.D. 600.<sup>14</sup> The period of occupation before the arrival of Captain James Cook in 1778 is generally referred to as the pre-Contact or Prehistoric Period, and the time since is referred to either as the post-Contact or the Historic Period.

Over many centuries, natural processes have shaped the southern coastal plain that forms the shoreline of Pu‘uloa Lagoon (later named Pearl Harbor) on the island of O‘ahu. This shoreline has always held strategic importance, though the nature of its advantage has shifted over time. For the indigenous Hawaiians, Pu‘uloa was a *wahi pana* (storied place) because of the wealth of the marine resources available there, the fishponds and fish traps which lined its many lochs, and the accounts of the works of the gods at this place.<sup>15</sup> As a Hawaiian political center during the thirteenth and fourteenth centuries, the traditional district surrounding Pu‘uloa, ‘Ewa, was also strategically important, although the location of the political center shifted to the east during the late fourteenth century.

In the early to mid-seventeenth century, the *ahupua‘a* land tenure system (land divisions that usually extended from the uplands to the sea) was implemented. All land was owned by the high chief or king of the island, and successive levels of lower ranking individuals were given the right to live on the land, and access its resources at the pleasure of the higher ranking individuals. Numerous *ahupua‘a* extended to the ocean shoreline and lochs of Pu‘uloa. The *ahupua‘a* of Hālawa extended along the eastern side of Pu‘uloa, and Moanalua *ahupua‘a* was east of Hālawa. The boundary between Hālawa and Moanalua was also the boundary between the ‘Ewa and Kona (later Honolulu) Districts (Figure 4). The land that would later become Fort Kamehameha was located at the seaward edge of both *ahupua‘a*, however the Fort Kamehameha Historic District is entirely within Hālawa.

The ‘Ewa District offered “vast and rich resources” and was an area favored for residences by O‘ahu’s early kings. Pu‘uloa Lagoon was one of the major features of the ‘Ewa District. Together

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<sup>12</sup> This historical context narrative draws heavily from previous historical studies and documents prepared for the U.S. Air Force, primarily the Hickam Integrated Cultural Resources Management Plan (primarily J.M. Waller Associates Inc., “Final Integrated Cultural Resources Management Plan 2008-2012 Update for Hickam AFB, Hawai‘i” January 2008).

<sup>13</sup> Kirch 1985 in J.M. Waller, 2008, 2-1.

<sup>14</sup> Spriggs and Anderson 1993; Hunt and Holsen 1991 in J.M. Waller, 2008, 2-1.

<sup>15</sup> Runyon, Rosanna and Hallett Hammatt, “Fort Kamehameha Background Research on Traditional History.” Unpublished report prepared for Helber Hastert and Fee, Planners by Cultural Surveys Hawai‘i, Kailua, Hawai‘i, 2010, 8.

with the vast array of fishponds along its shore, the lagoon provided a bounty of fish and shellfish. The inland area around the lagoon provided edible produce such as yams and bananas, the plants used to produce *kapa* cloth, and the birds whose feathers were used to create capes, helmets, and *lei*.

Both Hālawā and Moanalua *ahupuaʻa* have rich oral traditions that tell not only of important personages of the area, but also provide insight into land use patterns. The earliest known settlements in the area date between 1200 and 1500 A.D.<sup>16</sup> Agricultural land use of the upland slopes and valley floors included extensive taro cultivation, as well as banana, sweet potato, and *ʻawa*. While the valleys were the focus of land-based subsistence activities, a vast array of fishponds were maintained closer to the shore. In addition to fishponds, the lands around Puʻuloa Lagoon and the shoreline area east of the lagoon provided suitable conditions for shallow and deep water fish traps and were home to a variety of shellfish.<sup>17</sup> The majority of the fishponds at Puʻuloa lined the lochs. Although the flat shallow reef that borders the study area would have been suitable for construction of fish traps and ponds, the fishponds documented within and in very near proximity to the study area were inland ponds.<sup>18</sup> Previous archaeological studies date the origins of these inland fishponds to the fourteenth or fifteenth century.<sup>19</sup>

After the arrival of Europeans in Hawaiʻi in the late eighteenth century, the Hawaiian Kingdom underwent radical changes. Following Kamehamehaʻs (I) conquest of Oʻahu in 1795, an increasing number of foreigners were visiting in the Hawaiian Islands. Visitors brought diseases that led to a considerable decline in the Hawaiian population. Western influence also had a dramatic affect on traditional cultural and technology. Most subject to new pressures were the *aliʻi*, those of high status. Western missionaries and entrepreneurs were particularly influential among the Hawaiian elite, some of whom became trusted advisors to Hawaiʻiʻs monarchs. Hawaiʻi was gradually brought into the rapidly expanding global trade network, providing provisions for ships and trade goods for export. Western goods and warfare technology became highly sought after among *aliʻi* and commoners. These trends had profound and permanent effects upon the environment, as well as the traditional Hawaiian political and economic systems.<sup>20</sup>

Within the traditional *ahupuaʻa* system, the king could allot land to individuals to act as chiefs or *konohiki* of the *ahupuaʻa*. After the battle of Nuʻuanu (ca. 1792), King Kamehameha I awarded Hālawā to two of his closest advisors, both foreigners, John Young and Isaac Davis. There was no formal dividing boundary of this land. Upon Isaac Davisʻ death, his half-interest in the *ahupuaʻa* passed to the governor of Oʻahu at the time, Oliver Holmes. John Youngʻs half passed to his own

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<sup>16</sup> Drolet 1992:225 in J.M. Waller, 2008, 2-2.

<sup>17</sup> J.M. Waller, 2008, 2-2.

<sup>18</sup> Runyon and Hammatt, 2010, 15.

<sup>19</sup> Runyon and Hammatt, 2010, 31.

<sup>20</sup> Helber, Hastert and Fee Planners, Inc. "Oahu Integrated Cultural Resource Management Plan," 2008, 4-1.

children and to Isaac Davis' children. The *ahupua'a* of Moanalua, save a small division ('*ili*), was awarded to Kamehameha's uncle, Kame'eiamoku. Upon Kame'eiamoku's death in 1802, his portion passed to his son, Hoapili, who then gave Moanalua to his adopted son, Lot Kapuaiwa, later Kamehameha V.<sup>21</sup>

In 1848, during the reign of Kamehameha III, the *ahupua'a* system of land division was replaced with a western influenced system of individual land ownership. This radical restructuring was called the Māhele (Division). During the Māhele, Isaac Davis' former interest in Hālawa *ahupua'a* was given to the presiding governor of O'ahu, Mataio Kekuanaoa, the father of Ruth Ke'elikolani. At Kekuanaoa's death in 1868, the land passed to Ruth. Ruth had no children, and passed most of her half-interest in Hālawa to her cousin, Bernice Pauahi Bishop. Upon Pauahi Bishop's death in 1885, her half-interest became a part of her estate, later known as the Bishop Estate. At the time of the Māhele, John Young's half-interest in Hālawa was granted to his daughter, Grace Young Rooke. Grace in turn passed the land to her sister, Fanny Young, the biological mother of Queen Emma Kaleleonalani. Emma inherited her mother's half-interest on her death in 1879. Emma's interest in Hālawa became a portion of her estate after her death.

Moanalua *ahupua'a* was retained by Lot Kapuaiwa (Kamehameha V) during the Māhele, though there were numerous *kuleana* awards granted, mostly in the inland areas.<sup>22</sup> Upon Kamehameha V's death in 1872, his Moanalua land passed to Ruth Ke'elikolani, who again, passed it to her cousin Bernice Pauahi Bishop. This land, however, did not become part of the Bishop Estate at Bernice's death, but was willed to her friend Samuel M. Damon, who proceeded to consolidate all the Moanalua lands. At his death in 1924, Moanalua *ahupua'a* was incorporated into the Damon Estate.<sup>23</sup>

Historic maps and accounts indicate that before the twentieth century, the *makai* (seaward) lands of Hālawa and Moanalua, in the vicinity of the study area, were sparsely populated (Figure 5). By 1905, only a small number of homes were mapped along the shoreline, some in clusters labeled "Holokahiki" and "Holokahi" (also referred to as Halekai and Helekahi).<sup>24</sup>

Extreme economic pressure—both foreign and domestic—during the late nineteenth century, led to the decline of traditional subsistence pursuits including aquaculture and traditional agriculture; fishponds fell out of use and into disrepair. Traditional lowland agricultural activities were replaced with new agricultural practices, such as rice and watercress farming. Much of the upland cultivable land around Pearl Harbor was consolidated to support large-scale agricultural production of sugarcane,

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<sup>21</sup> Anderson, Lisa and Katherine Bouthillier. "Assessments and Analysis of Historic Properties at Hickam Air Force Base, Honolulu, Hawai'i for Preparation of a Historic Preservation Plan." Ft. Shafter: U.S. Army Corps of Engineers, Honolulu, Hawai'i, 1996, A-57-A-61.

<sup>22</sup> *kuleana* in this context refers to title or ownership of land as granted during the Māhele, a program adopted by the Hawaiian Kingdom in 1848 to divide land and provide private ownership of land. Generally, commoners were given the opportunity to claim their family lands, or *kuleana*.

<sup>23</sup> Anderson and Bouthillier, 1996, A-17, A-18; A-40 to A-42.

<sup>24</sup> Runyon and Hammatt, 2010, 25.

pineapple, and cattle ranching. These large-scale operations began to exercise political and economic clout in the affairs of the Hawaiian Kingdom eventually leading to the Reciprocity Treaty of 1875 and further disenfranchisement of the Native Hawaiians.

When Queen Lili‘uokalani moved to establish a stronger monarchy, a group of Americans deposed her in January 1893 and established a provisional government. A delegation was sent to Washington in 1894 seeking annexation, but the new President, Grover Cleveland, opposed annexation and tried to restore Queen Lili‘uokalani to the throne. However, spurred by the nationalism associated with the Spanish-American War, the United States eventually annexed Hawai‘i in 1898. Hawai‘i was made a territory in 1900.<sup>25</sup>

## 2. Initial Military Development Period (1907-35)

### a. The History of U.S. Coastal Fortifications

The history of fortification of harbors within the United States mirrors the history of American international conflict and domestic defense policy. The first unified program of harbor defense was initiated by President George Washington in 1794 during a period of international competition for territory and resources, and was called the First American System (1794-1800). This system focused on the acquisition of strategic coastal sites near ports along the Atlantic coast and the batteries constructed were simple open works with earthen parapets.<sup>26</sup> Events leading up to the War of 1812 with Great Britain prompted a second revitalization of coastal defenses, referred to as the Second American System (1804-12). Improvements made during this time period reflect engineering advances such as the replacement of earthen forts with all-masonry structures, casemated gun emplacements, and multiple tiers of guns.<sup>27</sup> Following the War of 1812, a Board of Engineers of Fortifications was appointed and a policy was set forth that created the Third American System (1816-67). The precepts for the Third System were largely based on fortification concepts followed in the Second System: large, permanent, casemated structures that housed multiple tiers of artillery on vertical faces. The first fortifications built on the Pacific Coast were Third American System forts.

By the 1880s, the nation’s system of coastal fortifications was deemed antiquated, particularly in light of major technological advances in weaponry. A joint Army-Navy-civilian board was convened in 1885 by President Cleveland under the direction of Secretary of War, William Endicott. The Endicott Board was to develop recommendations for upgrading the coastal defense system. The outcome of the Endicott Board’s recommendations was a focus on weapons over physical fortifications. The Endicott Period (1885-1905) fortifications included three major armament classes: (1) flat-trajectory weapons mounted on disappearing-type carriages in massive emplacements; (2) heavy armaments that fired 12” mortars, clustered in groups of four with dugout emplacements behind hills or parapets that shielded them from enemy fire; and (3) marine

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<sup>25</sup> J.M. Waller, 2008, 2-2.

<sup>26</sup> Lewis, Emanuel Raymond, *Seacoast Fortifications of the United States: An Introductory History*, (Annapolis, Maryland: Naval Institute Press) 1979, 21-22.

<sup>27</sup> Lewis, 1979, 25-33.

minefields designed to prevent penetration by shallow-draft vessels, supported by an onshore battery of rapid-fire guns.<sup>28</sup> All three of these armament types were incorporated into Fort Kamehameha.

Technological advances at the turn of the twentieth century required a review of the policies regarding coastal fortifications. The Taft Board, under the direction of then Secretary of War, William Howard Taft, was convened in 1905 to carry out this review. The Taft Board Report advised the fortification of newly acquired territories in the Pacific including the Philippines and Guam. The report also recommended securing key areas in which the United States had exclusive rights such as at Pearl Harbor and Honolulu, Hawai‘i, and the Panama Canal. In addition, recommendations were made to install upgraded accessories at the forts including searchlights for nighttime illumination of harbor entrances, general electrification of harbor defense (including communications and powered ammunition handling), and a modern system of aiming for major-caliber guns and mortars.<sup>29</sup>

b. Construction of the Coastal Defense System at Fort Kamehameha

Based on recommendations made by the Taft Board, a chain of coastal defense forts was planned for the island of O‘ahu. A decision was made to place a coastal defense system on the easterly side of the entrance to Pearl Harbor, the main purpose being to defend the developing Pearl Harbor naval shipyard. In 1909, the War Department created the Artillery District Honolulu, comprised of Fort Ruger at Diamond Head, Fort DeRussy at Waikīkī, Fort Armstrong at Honolulu Harbor, and Fort Kamehameha at Pearl Harbor.<sup>30</sup> Between 1911 and 1913, Fort Kamehameha served as a subpost of the Artillery District Headquarters at Fort Ruger. In 1913, Fort Kamehameha became an independent post of the Artillery District.

In 1907, land for the fort was acquired by condemnation proceedings from Queen Emma Kaleleoanalani. An additional 400 acres were purchased from Samuel Damon in 1911, increasing the size of the fort.<sup>31</sup> Quartermaster Captain Tenney, in 1923, compiled a history of Fort Kamehameha based in part on letters received from Commanding Officers who had served at Fort Kamehameha between 1913 and 1916. The extent of Fort Kamehameha at this time period was described as follows:

The fort proper extends from Watertown on the west to ‘Āhua Point on the east, a distance of about three miles. It is approximately three thousand yards from the irregular shore line back

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<sup>28</sup> Lewis, 1979, 70-88.

<sup>29</sup> Lewis, 1979, 89.

<sup>30</sup> Addleman, 1939 *in* Allen and Shideler, “Draft Final Report Intensive Literature Search and Limited Site Inspection for the Purpose of Establishing Battery Hawkins as a Public Observation Battery, O‘ahu Island, Hawai‘i.” Prepared by Odgen Environmental and Energy Services Co., Inc. Honolulu, Hawai‘i, 1999, 18. War Department Government Order 74 created the Artillery District of Honolulu.

<sup>31</sup> Runyon and Hammatt, 2010, 28.

to the northern side of the reservation. A salt marsh bounds the fort on this side except for a small strip of hard ground at the westerly end by means of which entrance to the reservation is affected. The surface of the ground in the fort is sandy, over a foundation of coral. The entire four hundred acres which comprise the reservation are as flat as a floor and about three feet above sea level...<sup>32</sup>

In the first years, the fort was referred to as the “The Reservation at Queen Emma Point” until it was officially named by the U.S. Army in 1909, in honor of Major General Emory Upton, who had served in the Civil War.<sup>33</sup> At the urging of Archibald Cleghorn, a wealthy Honolulu merchant and widower of Princess Miriam Likelike, the fort name was changed to Fort Kamehameha after Hawai‘i’s King Kamehameha I, who had united the islands under one rule.<sup>34</sup>

The Army Corps of Engineers was responsible for the design and construction of the Taft period coastal defense system, and the process began at Fort Kamehameha in 1907 (Figure 6). At this time, Captain Curtis Otwell, the Corps’ District Engineer for the Honolulu District, requested funds to build the first gun battery in the new fort. The fort would require a railroad spur for supplies and personnel from the existing OR&L line at nearby Watertown. Otwell requested funds for the railroad pointing out in his request that the local sugar plantation’s slow season was coming, which would be a good time to install the spur.<sup>35</sup> Because much of the land designated to become Fort Kamehameha was marshy and influenced by seasonal rainfall, in September 1908, the Secretary of the Navy informed the Secretary of War that the Navy would deposit dredged materials from its large-scale Pearl Harbor channel dredging project at Fort Kamehameha.<sup>36</sup>

In addition to organizing a rail system for the growing fort, the Army Corps of Engineers also built an “Engineer Wharf.” This wharf served two purposes. First, it facilitated the transport of a sand and rock supply that was delivered from an off-site quarry to the site via a scow.<sup>37</sup> The wharf may also have been used to transport dredged material from the channel dredging project to the fort as well. Secondly, the coastal defense mission required the construction of a loading

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<sup>32</sup> Tenney, Captain, “History of Fort Kamehameha,” September 24, 1923, 1-2. Manuscript available at the United States Army Museum Hawaii (USAMH).

<sup>33</sup> Dorrance, 1993, 143; Thompson, Erwin, *Pacific Ocean Engineers: History of the U.S. Army Corps of Engineers in the Pacific 1905-1980*, (Honolulu: U.S. Army Corps of Engineers, Pacific Ocean Division) 1985, 33.; Allen and Shideler, 1999, 17.

<sup>34</sup> Dorrance, 1993, 6.

<sup>35</sup> J.M. Waller, 2008.

<sup>36</sup> Thompson, 1985, 35.

<sup>37</sup> Thompson, 1985, 35. A scow, the *Melanchton*, was used to haul sand and rock to Fort Kamehameha, thus resolving a problem the engineers encountered in transporting the materials from an off-site quarry to the reservation.

wharf and storage facilities for the cables, mines, and anchors associated with the marine mine defense system.

Battery Selfridge, the eastern-most of the initial four batteries, was the first battery to be constructed. Work on Battery Selfridge was most likely begun in 1909, if not earlier. An inspection of the site in January 1910 found “two gun blocks completed and the guns mounted on their disappearing carriages. The work then underway included building the flank walls and loading platforms.”<sup>38</sup> Dignitaries were invited to the first demonstration firing of the completed Battery Selfridge in March 1911.<sup>39</sup> This first battery was named in honor of 1st Lt. Thomas E. Selfridge, who lost his life in an airplane crash in 1908. Battery Selfridge accommodated two 12” disappearing rifles that had an effective range of 15.5 km (9.7 miles)<sup>40</sup> and was “one of the last 12” disappearing gun batteries to be built in American fortifications.”<sup>41</sup>

While Battery Selfridge was being built, construction began on Battery Hasbrouck, at the western end of the fort and closest to the mouth of Pearl Harbor. Completed in 1914, it was named after Brig. Gen. Henry C. Hasbrouck, an artillery officer who served with distinction in the Civil and Modoc Wars. This battery held eight 12” mortars in two pits. Battery Jackson and Battery Hawkins were also completed in 1914, with Battery Hawkins Annex completed the following year. Battery Jackson was built to house two rapid-fire 6” guns on disappearing/shielded pedestal carriages, while Battery Hawkins held two 3” barbette-mounted guns. Battery Hawkins fire would cover the submarine mine field that could be laid at the mouth of Pearl Harbor to prevent the entry of enemy submarines into the harbor. Battery Hawkins Annex stored mines. Each battery had its own independent generator to avoid relying on a single generating unit between them, which would render all batteries useless if one were to be knocked off-line.<sup>42</sup>

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<sup>38</sup> Thompson, 1985, 35.

<sup>39</sup> Dorrance, 1993, 12; Allen and Shideler, 1999, 25. Allen and Shideler report that Battery Selfridge was the first battery to be completed in 1911; J.M. Waller 2008, 3-48 reports that all batteries at Fort Kamehameha, except for Battery Closson, were built between 1913 and 1916. The next page of the same report, p.3-49, claims “Battery Selfridge (Building 3440), built in 1911, is one of the largest batteries, with plan dimensions of 500’ x 90’”. There is some controversy on the completion date of Battery Selfridge.

<sup>40</sup> Allen and Shideler, 1999, 25.

<sup>41</sup> Thompson, 1985, 35.

<sup>42</sup> Dorrance, 1993, 7.

c. Construction and Manning of the Post at Fort Kamehameha

The majority of personnel assigned to Fort Kamehameha were there in support of the coastal artillery. The first troops, the Sixty-eighth and the Seventy-fifth Coast Artillery companies, arrived in Honolulu from San Francisco in January of 1913, and were transported to Fort Kamehameha on the OR&L train. They found a base without living quarters, and their commander, Captain George A. Taylor, directed them to erect tents and temporary shelters. Captain Taylor's wife as well as a 2nd Lieutenant's wife arrived with the troops, and set up housekeeping in a mining casemate until lodging could be constructed. The troops lived in platform tents until the first quarters building, for bachelor officers, was completed. The post headquarters operated out of the western magazine of Battery Hasbrouck until offices were completed. It wasn't until 1916 that thirty-two officers' quarters were completed along the shoreline between Battery Hawkins and Battery Hasbrouck. By 1916, the Army Quartermaster Corps had also built ten barracks buildings, nineteen non-commissioned officers' (NCO) quarters, thirty-two officers' quarters, an administration building, a post exchange, a YMCA building, swimming pools, tennis courts, and many other structures. Growth of the post continued through 1922 with the completion of four new officers' quarters, four new NCO quarters, and additional operations and ancillary structures (Figure 7).

Strained relations between the United States and Japan were fueled by the Alien Land Law passed in California in 1913 as well as events in the First World War. The United States was prompted to take measures to strengthen its Pacific defenses and during much of 1913, personnel, weapons and ammunition and supplies were rerouted through the Pacific. Two new batteries were planned for construction just north of Fort Kamehameha, Batteries Chandler and Barri.<sup>43</sup>

By World War I, advances in gun ranges and technological improvements of turrets with higher firing angles reduced the effectiveness of the disappearing carriages of the fixed batteries that defined the Taft period batteries.<sup>44</sup> New classes of armaments were introduced into the Coast Artillery Corps to augment the deficiencies of the fixed batteries including mobile seacoast artillery and antiaircraft guns.<sup>45</sup> In 1918, four pedestal-mounted M1917, 3" antiaircraft guns were installed near the batteries at Fort Kamehameha as secondary assignments.<sup>46</sup> In 1920, Battery Closson was added to the coastal defense system at Fort Kamehameha. It was named after Brig. Gen. Henry W. Closson and was designed to accommodate the advances in artillery. It contained two 12" guns on barbette carriages, which allowed the guns to be fired at elevation angles up to

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<sup>43</sup> Thompson, 1985, 40-41.

<sup>44</sup> Lewis, 1979, 100.

<sup>45</sup> Lewis, 1979, 101.

<sup>46</sup> Dorrance, 1993, 58.

35 degrees. Located about 6,000' east of Battery Selfridge towards 'Āhua Point, it was sited to have a wide-angle view that included a major portion of the south coast of O'ahu.<sup>47</sup>

The Army utilized Fort Kamehameha to support a number of other divisions over the years in addition to the Coastal Artillery Corps. The first of these to arrive, in July 1913, was a Signal Corps Aviation Station headed by Lieutenant Harold E. Geiger with the purpose of training pilots for Coastal Patrol and cooperation with the Coast Artillery. In addition to Geiger, the station was assigned a Curtiss Aeroplane Company mechanic, George Purington, and twelve enlisted men. The Army had sent the company with little equipment, other than two Curtiss float planes and two canvas hangars, and little funding for essentials like equipment and building materials.

Though Geiger had selected Fort Kamehameha due to its superiority to Schofield Barracks for potential water takeoffs and landings, he found that Fort Kamehameha had drawbacks as well. The two aircraft were stored in hangars near the beach, and had to be loaded onto carts to be pushed over the tidal flats and into the deeper channel. Aside from that inconvenience, Geiger discovered that flights were not possible at any time other than high tide due to shallow reefs between the beach at the fort, and Pearl Harbor's main channel. The planes' construction meant that flights needed to be attempted in times of low wind, which were mainly early in the morning, which often coincided with low tide, making flights impossible. All flying was halted in November 1913, though a wood framed, corrugated metal-roofed and clad hangar was constructed in early December, as well as rail-like tracks between the hangar and the water to more easily move the planes to deeper water. The one aircraft that remained was disassembled in mid-June, and the Signal Corps Aviation Station was abandoned soon thereafter. Though this effort at stationing an aviation school at Fort Kamehameha was not successful, Geiger's experience and suggestions contributed to the success of a future Aero Squadron.<sup>48</sup>

In 1917, the Signal Corps returned to Fort Kamehameha with the Sixth Aero Squadron under the command of Captain John Curry. The squadron had nine N-9 seaplanes at first, and received more subsequently. In May 1918, Major Harold Clark, Jr. made the first interisland flight in Hawai'i, flying from Ford Island to Moloka'i and back in a squadron plane from Fort Kamehameha.<sup>49</sup> The Army purchased Ford Island in 1917 for aviation use, and the Sixth Aero Squadron moved there in November 1918.<sup>50</sup>

In October 1920, the 21st Balloon Company, Army Air Service was assigned to Fort Kamehameha. These hydrogen balloons were used for observation of practice firing of the Coast

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<sup>47</sup> Ames, Karen. "USDI/NPS NRHP Multiple Property Documentation Form, Artillery District of Honolulu, Addition to the thematic district of Battery Closson (Fort Kamehameha)," 1992, F-1.

<sup>48</sup> Chenoweth, Bob, "The Fort Kam Crowd," in *Friends Journal*, Vol. 16, No. 3, Fall 1993, 32-35.

<sup>49</sup> Yates, W. Paul, *Aviation in Hawaii*. (Hawaii: Paradise of the Pacific Press), 1936.

<sup>50</sup> Anderson and Bouthillier, 1996.

Artillery. An observer in the balloon estimated the deviation of each shot fired in relation to the target location. A balloon hangar was constructed near Battery Selfridge to accommodate the balloons, and hydrogen generating equipment was brought to the fort to keep the balloons airborne. The area was determined to be too windy for use of the balloons, and the company was deactivated in July 1922.<sup>51</sup>

In addition to the artillery and aviation units stationed at Fort Kamehameha, the fort was home to two U.S. Army mine laying ships berthed at the pier during the 1920s.<sup>52</sup> Beginning in 1922, the Hawaiian Railway Battalion was based at the fort. This battalion was a mobile unit that used artillery cars originally designed for use in Europe during World War I, and adapted for use on O'ahu's railways. As a result, the cars and guns could be moved around the island on the OR&L railway.<sup>53</sup>

Following Army reorganization in 1924, Batteries Selfridge and Jackson were inactivated and placed on caretaker status.<sup>54</sup> Technological advances and limited personnel made their continued use unfeasible. The focus of the Coastal Artillery Corps was on anti aircraft guns and the mobile artillery. The companies stationed at Fort Kamehameha spent much of their time transporting mobile artillery to railroad sidings or firing spurs around the island including at Fort Weaver, Gilbert siding in 'Ewa, Brown's Camp at Kahe Point, Mā'ili, Wai'anae, Pu'uiki, Hale'iwa, Kahuku, and Lā'ie.<sup>55</sup>

After World War I, the pace of operations at the fort was slowed. The size of the Army had been drastically reduced with the end of the war, and its budget had been reduced proportionately. Fort Kamehameha still had a duty to protect Pearl Harbor, however, so the base remained active. Besides units stationed at Fort Kamehameha itself, the fort was responsible for two sub-posts: Fort Weaver, established in 1923, directly across the Pearl Harbor Channel, and Fort Barrette, established in 1934 on the 'Ewa Plain to the west of Pearl Harbor. Fort Weaver was serviced by artillerymen based at Fort Kamehameha, who ferried across by boat to their duty stations.

By the late 1930s, the Army was beginning to build up its forces in anticipation of the possibility of a war in either Europe or the Pacific. By 1938, Japan was invading parts of the Asian mainland, and the Philippines were at risk from Japanese expansion as well. With the outbreak of

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<sup>51</sup> Dorrance, 1993, 56 and 58.

<sup>52</sup> Anderson, Lisa, and Katherine Bouthillier. "Assessments and Analysis of Historic Properties at the U.S. Air Force Fort Kamehameha (USAFFK), Honolulu, Hawai'i for Preparation of a Cultural Resource Management Plan," Fort Shafter: U.S. Army Corps of Engineers, 1998, 64.

<sup>53</sup> Dorrance, 1993, 70.

<sup>54</sup> Dorrance, 1993, 82. In page 112, Dorrance states that all batteries, Hawkins, Jackson, Selfridge and Hasbrouck, had been inactive and under caretaker status since 1924.

<sup>55</sup> Dorrance, 1993, 74.

World War II in Europe, the United States began to expand its military capabilities throughout the Pacific in earnest.

### 3. World War II (1935-45)

The Depression years were austere years for the Army and the numbers of enlisted men at Fort Kamehameha dwindled from 1,600 at the end of World War I in 1918 to between 650 and 800 men in the years 1935-36.<sup>56</sup> The soldiers spent most of their time in drill routines with their assigned weapons, which were mostly mobile. The rise of airpower during the interwar years (1919-41) and the planning and construction of the adjacent Hickam Field were probably the greatest impetus for change in the mission and physical environment at Fort Kamehameha in the years leading up to and during World War II (Figure 8).

Since the 1920s, the Army and Navy had shared aviation facilities on Ford Island. Overcrowding spurred the Army to select and acquire a new site for an Army airfield by 1935. The location of the new airfield comprised the land between Fort Kamehameha and Pearl Harbor. During this period, the proposed airfield was being utilized as sugar cane fields, Pu'uloa Camp (a sugar plantation village), and Watertown (population about 1,000, mostly employees of the company dredging Pearl Harbor).<sup>57</sup> Hickam Field was dedicated in May 1935 and was named in honor of Lt. Colonel Horace Meek Hickam, a distinguished aviation pioneer who was killed in an aircraft accident in Texas the previous year. Captain Howard B. Nurse was named the construction quartermaster, and he planned, designed, and supervised the construction of Hickam Field.

In the planning of Hickam Field, Fort Kamehameha's position adjacent to the developing airfield was perceived as vital to the protection of not only Pearl Harbor against sea attacks, but also important for the protection of Hickam Field against air attacks.<sup>58</sup> As Hickam Field was built, a number of changes were made at Fort Kamehameha, particularly relating to access into the reservation. Access to Fort Kamehameha was rerouted through Hickam Field. Vehicular and railroad circulation patterns were realigned to accommodate the runway and parking aprons. Railroad passenger service to Honolulu via Watertown was discontinued and 1940s photos indicate bus service was instituted at Fort Kamehameha.<sup>59</sup>

Buildup in anticipation of World War II at Fort Kamehameha took the form of an increase in the authorization for manning the base. By 1940, new equipment was arriving in the islands to replace older, World War I-era equipment that was still in use. Gun crews trained on the Taft-Endicott period coastal batteries under heavily-camouflaged nets, a product of the War Department's protective

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<sup>56</sup> Dorrance, 1993, 50 and 108.

<sup>57</sup> J.M. Waller, 2008.

<sup>58</sup> "An Army Post that was Named for a King" *Paradise of the Pacific*, June 1936.

<sup>59</sup> Dorrance, 1993, 101.

obscurement program that required military reservations to disperse, conceal, or camouflage themselves in preparation for potential aerial attacks.

With the alarm of aerial attack increasing, in the spring of 1941, Army Engineers were instructed to bombproof Battery Closson.<sup>60</sup> The timing of the attack on Pearl Harbor pushed back the casemating of Battery Closson until 1942. The continued concern by the Secretary of War for the protection of Pearl Harbor and the Navy Fleet led to a general alert of an anticipated enemy attack in July 1941. Antiaircraft artillery pieces were deployed (presumably from Fort Kamehameha and/or Fort Shafter) to sites around the island by Fort Kamehameha artillery personnel. However, the alert was cancelled on November 26, 1941, and the equipment was returned to storage.<sup>61</sup>

On December 7, 1941, during the Japanese surprise attack on Pearl Harbor, the fort encountered its only active war experience. Japanese fighter planes flew overhead as they dived to bomb and strafe the adjacent Hickam Field and Pearl Harbor. The fort's antiaircraft guns were credited with successfully shooting down several Japanese airplanes. One Japanese plane was damaged during strafing at Hickam and crashed into the ordnance repair shop in the operations area, killing the pilot along with a number of Fort Kamehameha soldiers.

Passing some of the officers' quarters to his right, on the verge of a stall, HIRANO struck two coconut palms in front of the Fort Kamehameha Ordnance Machine Shop. A group of soldiers from C Battery, 41st Coast Artillery Regiment had gathered on the ramp and in front of the shop. As the HIRANO Zero struck the first coconut palm, the engine and forward fuselage went in one direction as the fuselage spun and struck a second tree. In the process, palm fronds and a portion of the trunk of the first palm became imbedded in the forward fuselage and cockpit along with HIRANO, who was instantly killed. The Zero continued forward and slammed into the loading ramp, the engine separated and the rear fuselage was broken in half and twisted before coming to rest at a ninety-degree angle to the forward section. The engine, with its bent propellers, mowed down one group of soldiers. Other men were struck by the fuselage and/or wings on the ramp or pinned against the building. Many were seriously wounded and four killed outright.<sup>62</sup>

At Fort Kamehameha, seven men were killed in all, at least twelve injured, and the post received a fair amount of damage.<sup>63</sup> The following day, a barbed wire security fence was strung around the fort, and the railroad guns were moved out to cover the flanks of the island.<sup>64</sup>

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<sup>60</sup> Thompson, 1985, 111.

<sup>61</sup> Dorrance, 1993, 112.

<sup>62</sup> Lansdale, James F. "The Lost Pearl Harbor Attack Aircraft No.1: The HIRANO Zero from AKAGI," [www.j-aircraft.com/research/jimlansdale/japanese\\_losses\\_ph/Japanese\\_losses\\_Pearl\\_Harbor.htm](http://www.j-aircraft.com/research/jimlansdale/japanese_losses_ph/Japanese_losses_Pearl_Harbor.htm). Accessed March 12, 2011.

<sup>63</sup> Dorrance, 1993, 118.

<sup>64</sup> Dorrance, 1993, 117.

Although the 1941 attack at Pearl Harbor and subsequent perceived threat of further attacks led to the emergency construction of a series of coastal batteries on O‘ahu, none of these was located at Fort Kamehameha.<sup>65</sup> The majority of troops from Fort Kamehameha deployed to battle stations at other locations on O‘ahu. The sole fixed battle station at the fort was the Fort Kamehameha gun park.<sup>66</sup> It is not known if the Taft-Endicott period batteries were used as battle stations during the years of the war.

The Fort Kamehameha garrison increased from a pre-war total of 1,800 personnel to 18,000 in May 1943 and to 25,000 by March 1945. Initially, new recruits were accommodated in tents while they underwent basic training in infantry and artillery skills. Once training for a recruit was complete, the recruits were assigned to one of the batteries.

Throughout the war, the fort continued to serve as coastal defense for Pearl Harbor. The railroad guns were covered with camouflage netting to minimize the chance that they would be attacked from the air. Battery Closson was casemated with the latest technology, after which the guns were no longer able to shoot 360 degrees.<sup>67</sup>

By mid-1942, a large “casual and deployment center” was constructed about one half mile east of the main fort. This was used as a staging location for men shipping out to the Pacific Theater, and later, for demobilization at the close of the war. This major addition, complete with temporary barracks, mess halls, tent areas, terminal sheds, recreation spaces, and post offices, was a reservation in and of itself. At the end of the war, between May and September 1945, the count of men at the fort, including those there on a transient basis, was approximately 37,000.<sup>68</sup>

During the height of the war, the officers’ quarters were reassigned for various uses. Functions that utilized the housing include the telephone crew, transient officers, and the wire crew. The quarters were also used as the Hawaiian Department Pearl Harbor (HDPH) school, officer’s mess, officer’s club, and as a library.<sup>69</sup>

Midway through 1942, United States victories in the Pacific reduced the likelihood of O‘ahu being invaded. Attention shifted away from coastal defense as the threat of invasion receded. As a result of technological advances beginning in the pre-war years and accelerating through World War II, coastal

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<sup>65</sup> Lewis, 1979, 119.

<sup>66</sup> Dorrance, 1993, 120.

<sup>67</sup> Ames, 1992, F-1.

<sup>68</sup> Dorrance, 1993, 125.

<sup>69</sup> Information obtained from Map: U.S. Engineer Office, Honolulu, Air Corps Construction, Hawaiian Department. *Buildings, Utilities and Appurtenances, Fort Kamehameha, Oahu, T.H. General Plan*, File No. F-55/15, April 1942. Source: 15<sup>th</sup> Wing History Office, JBPHH.

artillery had become obsolete. By August 1944, the majority of the batteries at Fort Kamehameha had been inactivated with the remaining batteries charged with caretaking duties.<sup>70</sup>

#### 4. Post World War II (1946-present)

In the years immediately following World War II, there was little new activity within Fort Kamehameha. Thousands of soldiers passed through the fort's casual and deployment center at the end of World War II and through the beginning of 1946. However, by the end of 1946, the center was no longer needed and all its buildings were razed<sup>71</sup> (Figure 9). Fort Kamehameha, as well as the other remaining forts on O'ahu, became subposts of Fort Shafter. Between 1948 and 1950, following a nationwide trend, the battery guns at Fort Kamehameha were removed and scrapped.<sup>72</sup> In January 1950, all the former Coast Artillery posts, including Forts Ruger, DeRussy, Armstrong, Kamehameha, Barrette, and Weaver, were subsumed under one post and later that year, the Coast Artillery was combined with the Army's Field Artillery. Fort Kamehameha was officially deactivated. With no operational mission as an Army fort, the area was used primarily for housing military families in the original officers' quarters, the NCO quarters, and the quarters along Seaman Avenue. Former post administrative buildings were reused for different purposes, particularly for community support activities.

As the Cold War began to heat up in the 1950s, the underutilized land of Fort Kamehameha became a potential asset for the neighboring Hickam Air Force Base, which at the time was developing its Cold War missions. In 1960, the Hawai'i Air National Guard (HIANG) obtained approximately 60 acres at Fort Kamehameha in an exchange for land at Wheeler Field and moved into its new facilities on December 7, 1961.<sup>73</sup> HIANG had been stationed at Hickam since 1947 and continued to be closely aligned with Hickam in carrying out its air defense mission and other Cold War missions after moving into its separate facility.<sup>74</sup> The HIANG complex encompassed acreage between and around Batteries Jackson and Selfridge, and included land to the northeast for a long, narrow taxiway. The existing Army buildings, roads and vegetation in the area, with the exception of the two batteries, were demolished prior to construction of the HIANG complex. HIANG operations continued to expand through the 1960s and by the mid 1970s, the Guard had claimed more space at the old Fort Kamehameha, resulting in the demolition of the NCO quarters to accommodate new facilities.

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<sup>70</sup> Dorrance, 1993, 125.

<sup>71</sup> Dorrance, 1993, 127.

<sup>72</sup> Dorrance, 1993, 127.

<sup>73</sup> OPR:PACAF/HO, "This Week in USAF and PACAF History: 6-10 December 2010," 3. [<http://www.pacaf.af.mil/shared/media/document/AFD-101207-046.pdf>], accessed March 19, 2011; Weitze, Karen, "Hickam Cold War Context, 1946-1989," October 2006, C-30-31, Appendix C in J.M. Waller, 2008.

<sup>74</sup> Weitze, Karen, 2006, Appendix C, in J.M. Waller, 2008.

As part of the redevelopment of the 1960s, Hickam Air Force Base converted the shoreline fronting Battery Selfridge into a recreational area.<sup>75</sup> The western edge of a former seaplane runway dredged as a channel from ‘Āhua Point to Fort Kamehameha became Hickam Harbor. Additional dredging in 1965 produced Hickam Beach Park near Kumumau Canal. In all, the Hickam Recreational Complex extended from the Reef Runway at the Honolulu International Airport to the Fort Kamehameha Housing area and included two beach parks, Honeymoon and Hickam Beach Parks, a restaurant, a small boat harbor, a mooring area, and a water-ski area.<sup>76</sup> The sand and gravel beach seaward of the housing area became known as “Fort Kamehameha Beach” and the reef remnant associated with the beach was referred to as ‘Āhua Reef, a popular fishing and reef walking spot.<sup>77</sup>

Following the passage of the National Historic Preservation Act of 1966, efforts were made to bring attention to the historic sites that remained at Fort Kamehameha. In 1977, Batteries Randolph of Fort DeRussy and Batteries Selfridge, Jackson, Hawkins, Hawkins Annex, and Hasbrouck of Fort Kamehameha were nominated for the National Register of Historic Places (NR) as the “Artillery District of Honolulu.”<sup>78</sup> The batteries of the Artillery District were described as rare examples of permanent coastal fortifications recommended by the Taft Board of 1905 that were built to blend into the landscape and were still under the control of the United States. Battery Closson was added to the Artillery District of Honolulu in a 1992 amendment to the nomination. Built in 1920, Battery Closson was identified as significant as an example of the Roosevelt/Taft era coastal defense battery and as representative of the evolution of the military in Hawai‘i and for its association with American defense during World War II.<sup>79</sup> These initial efforts provided the foundation for the preservation of Battery Randolph in Waikīkī.

The Fort Kamehameha Historic District was determined eligible for listing on the NR in 1984, with an updated nomination written in 1993. The district encompassed the western sector of the original Fort Kamehameha and consisted of two batteries and related structures constructed to defend the entrance of Pearl Harbor, the pier associated with the fort, the former officers’ housing area, the chapel and adjacent coral bandstand, and the archaeological resources associated with Hawaiian use of the area prior to the military.<sup>80</sup> The Fort Kamehameha Historic District was evaluated as significant based on its military significance as representative of the evolution of the military in Hawai‘i with exemplar Taft-period batteries; architectural significance associated with the regionally-

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<sup>75</sup> Clark, John R.K., *Hawai‘i Place Names: Shores, Beaches, and Surf Sites*, (Honolulu: University of Hawai‘i Press) 2002, 99.

<sup>76</sup> Clark, 2002, 99-100.

<sup>77</sup> Clark, John R.K., *Beaches of Oahu* (Honolulu: University of Hawai‘i Press) 2005, 166.

<sup>78</sup> Char, Alvin L. “Artillery District of Honolulu, National Register of Historic Places Inventory—Nomination Form,” April 1977, 1.

<sup>79</sup> Ames, 1992, F-1.

<sup>80</sup> Bouthillier and Anderson, 1993, 1 and 19-20.

based housing designs; archaeological significance associated with the Hawaiian fishponds, Hawaiian utilization of sand dunes as burial areas, and use of area for early historic settlement; historic significance as associated with Queen Emma Kaleleonalani, who had her former residence within the district.

Some of the most visible changes to the historic officers' housing area occurred during expansion of the Fort Kamehameha Sewage Treatment Plant (now known as the Fort Kamehameha Wastewater Treatment Facility). Originally built in 1970, the plant was enlarged and modified in 1997 with new settling tanks near the northwestern edge of Worcester Avenue.<sup>81</sup> Several historic officers' houses were moved to accommodate the new settling tanks. Preliminary site work in the early 1990s inadvertently exposed a large burial complex of Native Hawaiian ancestry dating from the pre-Contact through the post-Contact periods.<sup>82</sup> The remains were reburied in a burial vault built within the Fort Kamehameha Historic District just west of Battery Hasbrouck. Volunteers from the HIANG Chief's Council, in partnership with the HIANG Royal Guard, were established as the caretakers of the burial vault and work with volunteers from Hickam Air Force Base and Native Hawaiian organizations to maintain the site.<sup>83</sup>

The Army continued to manage the family housing at Fort Kamehameha up until 1991 when the Air Force swapped Wheeler Air Force Base in exchange for Fort Kamehameha. The fort became a part of Hickam Air Force Base, now Joint Base Pearl Harbor-Hickam (JBPHH).<sup>84</sup>

Fort Kamehameha housing had been continuously used for military family housing for more than sixty years. In 2008, the last families moved out of Fort Kamehameha housing to comply with the Air Force's regulations relating to runway clear zones and accident potential zones. The majority of the houses fell within the accident potential zone. Post-World War II, the batteries were used for storage and training.

By 2005, the Hickam Wetland Management Area, also known as the High-Value Wetland Reserve Area and popularly referred to as 'Āhua Reef, was established in a portion of the southern end of the Fort Kamehameha Historic District.<sup>85</sup> Over the years, invasive mangrove and pickleweed had taken

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<sup>81</sup> "Sand Island Application, Section I"; an application for wastewater treatment for Region 9, Environmental Protection Agency, n.d. [<http://www.epa.gov/region9/water/npdes/pdf/sand-island/SI-application-secI.pdf>]; accessed March 22, 2011.

<sup>82</sup> Runyon and Hammatt, 2010, 39.

<sup>83</sup> Lee, Robert S.K., "Guard members caring for sacred grounds," Aug 2009 in *Kukailimoku, Hawaii National Guard 154<sup>th</sup> Wing, Hickam AFB, HI*, Vol. 56, No.8.

<sup>84</sup> Anderson and Bouthillier, 1996, 35; Ogden Environmental & Energy Services, Inc., "Cultural Resource Management Plan for Hickam Air Force Base, Halawa and Moanalua Ahupua'a, 'Ewa and Kona Districts, Island of O'ahu, Hawai'i." Prepared for U.S. Army Corps of Engineers, Honolulu, 1998, 15.

<sup>85</sup> J.M. Waller Associates, Inc., "Final Integrated Natural Resources Management Plan 2008-2012 Update for Hickam AFB, Oahu, Bellows AFS, Oahu, Hickam POL Pipeline, Oahu, Kaala, AFS, Oahu, Kokee AFS, Kauai,"

over shorelines areas. Hickam created opportunities for community groups to remove invasive plant species and cultivate native species of coastal plants. These endeavors created habitat for native birds known to utilize the area such as the endemic Hawaiian stilt and the native Pacific golden plover. Interpretive kiosks and signage were placed along an interpretive trail to address various aspects of the local ecosystem.<sup>86</sup>

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December 2007, 10-40.; Dasbach, Jon and Sydnie Hetzel, "Joint Base Pearl Harbor-Hickam celebrates World Wetlands Day," Feb 11, 2011 in *Ho'okele, Pearl Harbor: Hickam News*.

<sup>86</sup> J.M. Waller, 2007, 10-87.

## **PART II: PHYSICAL INFORMATION**

### **A. Landscape Character and Description Summary**

The Fort Kamehameha Historic District is located on the Air Force's Hickam Field within JBPHH in south-central O'ahu. It is a park-like swath of green between the east side of the entry to Pearl Harbor and the active, industrial airfield of the Air Force base. The district land area is approximately 70 acres at the western end of the original 800-acre Fort Kamehameha (by 1911).

The Fort Kamehameha cultural landscape documented in this HALS report includes all land areas of the district and the features thereupon as well as the tidal flats and near-shore environment. The report focuses on the cultural landscape associated with the HALS period of significance, 1908-45, which spans the initial military development through the end of World War II. The district is predominantly a historic military landscape with very limited and nonhistoric uses, within an active military installation. It is a historic designed cultural landscape in that it was "consciously designed or laid out by a...architect, ...engineer...according to design principles..." and "aesthetic values play a significant role in designed landscapes."<sup>87</sup>

Despite considerable changes to the larger landscape (primarily after World War II as a result of demolition and redevelopment), within the delineated historic district, essential features of the historic period remain. These include the prominent boundary formed by the shoreline, the natural features, and a diverse mix of man-made features from the initial development through WWII. Although the district encompasses only a portion of the original installation, collectively – as a result of the organization, layout, circulation, vegetation types and patterns, views and vistas, buildings and structures – the district remains a significant example of a coastal defense fort in the newly acquired U.S. territories in the Pacific.

### **B. Character-defining Features**

The Fort Kamehameha cultural landscape documented in this HALS report is composed of character-defining features that individually or collectively contribute to the landscape's physical appearance as it has evolved over time. Key features of the Fort Kamehameha cultural landscape are discussed in the subsections below, organized by eight landscape characteristics: topography and offshore environment; vegetation; spatial organization and land patterns; circulation; views; buildings and structures; small-scale elements; and archaeological sites.

Physically, there have been incremental, yet significant changes to the Army-established coastal artillery post in the years since the end of World War II. The degree of change varies considerably by geographic area. Of the once 800-acre military reservation, only the approximate 70 acres identified as the Fort Kamehameha Historic District retain integrity to the 1908-1945 period of significance. Within the district, the general character of the historic period is evident – largely due to the presence of key

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<sup>87</sup> Birnbaum, Charles A. "The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes." U.S. Department of the Interior, National Park Service, Washington D.C., 1996: 5

landscape characteristics that exemplify the landscape's overall integrity and serve to unify the collective historic character of the district. These key characteristics are the prominent natural features (sandy shoreline, tidal flats and ocean, and level topography); the distinct spatial organization, accentuated by the building, circulation, and vegetation patterns; and the concentration and high percentage of historic buildings and structures within the district. Within this unified landscape, the extant features –regardless of their condition – contribute to the landscape and help tell the story of Fort Kamehameha from 1908-45.

## **1. Natural Features**

### **a. Topography and Offshore Environment**

Fort Kamehameha is located on the margin of the flat Pearl Harbor Coastal Plain, a relic of a Pleistocene-era coral reef platform. The coastal portions consist of either coral reef or dune beach sand; the inland area is fill land, consisting of dredged and graded coral rubble fill. The ground elevation rises gradually from mean sea level to less than five feet above sea level. The most prominent natural feature of Fort Kamehameha is the shoreline of Mamala Bay and the waters of the bay/Pacific Ocean. The coastline is dominated by a narrow, gently-sloped sandy beach exposed to minimal erosion from wave action due to offshore conditions. The offshore area consists of an extensive shallow reef flat and a deeper reef slope, with dredged channels on either side. The reef is known as the 'Ahua Reef and is made up of less than two percent live hard coral. Tidal change results in exposed sandy areas, particularly off the point near Battery Hawkins, which are popular for beachgoers and their dogs. The shallow waters are also popular for fishing.

Many of the natural features of the district have changed little since pre-Contact and pre-development periods. Prior to contact with Western civilization, the area on the east side of the entrance to Pu'uoloa Lagoon was characterized by the broad shallow reef – dry at low tide – paralleling the shoreline, the expansive Pacific Ocean beyond, and the fairly flat topography of the coastal sand dunes and inland marshes and fishponds. The proximity to the ocean waters and the entrance to Pearl Harbor were ideal for coastal defense and protection of the developing naval shipyard. Modifications to the natural terrain, namely the infill of marshlands and fishponds beginning in 1908 with dredge material from Pearl Harbor channel, were made early in the period of significance to ready the site for construction of the fort. The natural offshore conditions and the gently curving, sandy shoreline remain, except for the mangrove wetland on accreted lands, which established naturally after World War II along the shoreline south of Battery Hawkins.

The lack of natural topographic variation is a character-defining feature of the district, and a condition that makes the man-made features more prominent. The earth-covered batteries and related structures are large, isolated mounds within the landscape. Low (about four feet high), narrow berms were created along Mamala Bay Drive, north of Worchester, as a means of visually and physically defining the edge of the streetscape.

b. Vegetation

The historic integrity of existing vegetation in the Fort Kamehameha district is directly related to the degree of demolition or redevelopment in a given area since the end of World War II.

Prior to military acquisition, the natural vegetation on the plain east of the Pu‘uloa Lagoon most likely consisted of low lying native dune vegetation on the coastal dunes and native grasses and sedges within marshlands and surrounding the fishponds. The early site work associated with construction of the batteries and the post (1907-16) removed much of the natural vegetation, with little replacement. Initially, following construction, the earth-covered defensive structures were planted with short-growing vegetation (grass) for camouflage that would not impede visibility from the firing stations. However, as the batteries became obsolete in the 1920s, they were gradually surrounded with dense *kiawe* (*Prosopis pallida*), which, by World War II, largely covered the structures. Due to lack of use and maintenance, this is the current state as well. Although the grass and *kiawe* overgrowth does not reflect the initial design intent for the structures, it was the prominent vegetative covering through most of the period of significance and is a contributing feature of the district.

Early landscaping projects were undertaken by some of the officials stationed at the fort, including transplanting *kiawe* trees from nearby Watertown.<sup>88</sup> However, by 1920, designed and managed landscaping had been planted throughout much of the post, particularly within the housing and administration areas and along roadways. Even as early as the mid-1920s, the post was considered a beautiful place by virtue of its vegetation. “Large numbers of trees and shrubs have been transplanted, with the result that Fort Kamehameha is known as one of the most beautiful posts in the islands.”<sup>89</sup>

The designed landscape in the relatively undisturbed, former housing area retains considerable integrity and is an important feature of the historic setting of Fort Kamehameha. The vegetation planting patterns surviving from the period of significance are the more significant contributing features to the cultural landscape. The open and spacious front and side lawns of the houses, linear rows of canopy trees parallel to the street, parallel grass strip between the street and sidewalks, canopy trees in side yards aligned with the front face of the houses, irregularly-spaced coconut palms, and ornamental foundation plantings have been defining elements of the cultural landscape since the initial development. Collectively, they unify the neighborhood and the adjacent shoreline open space.

In addition to the historic vegetation patterns, the current palette of trees and palms is consistent with original vegetation. Comparison of historic photos and plans with existing conditions indicates that many of the large tree species in the neighborhood are historic, particularly monkeypods (*Samanea saman*), banyans (*Ficus benjamina*), *kiawe*, African tulip (*Spathodea*

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<sup>88</sup> Letter from O.H. Schrader, Major C.A.C. DOL. To Captain Tenney, October 25, 1923. Letter available at the U.S. Army Museum Hawai‘i.

<sup>89</sup> Mossman, Captain. “History of Fort Kamehameha.” Manuscript available at the U.S. Army Museum Hawai‘i, January 17, 1924, no page number.

*campanulata*), and some coconut palms (*Cocos nucifera*). Although there are missing specimens and several with declining health, the broad canopies of the extant mature trees continue the initial desired effect of shade and comfort in the neighborhood. The species of original foundation plantings are not known, and they have been individualized by residents over time. While they still reflect a simple and tropical plant palette, they are sparse and irregular and show signs of age and declining health due to reduced minimal maintenance since the units were vacated. The most common foundation plants are hibiscus (*Hibiscus spp.*), panax (*Polyscias guilfoylei*), spider lily (*Crinum asiaticum*), croton (*Codiaeum variegatum*), dracaena (*Dracaena spp.*) and bougainvillea (*Bougainvillea spp.*). Remnant privacy hedges in side yards are nonhistoric additions to the landscape.

The vegetation in the open space between the houses and the shoreline also retains integrity with its large mowed lawn and irregular clusters of trees and palms. Although currently more overgrown than during the period of significance, the area remains open and grassy with a relatively dense canopy of planted and naturalized *kiawe* and coconut palms that contributes to the cultural landscape.

By the late 1930s, the access road into Fort Kamehameha (north of Hope Street) was lined with closely-spaced palm trees (about 15' apart) on both sides. However, when the road was improved with sidewalks and realigned in the 1980s-90s, it was landscaped with the heavy trunk date palms (possibly *Phoenix canariensis*), evenly spaced about 40'-50' apart, within 40'-wide lawns on both sides, which exist today. South of Hope Street, Mamala Bay Drive is bordered by open lawns and plantings that are not reflective of the historic conditions or design intent.

Post-war demolition and redevelopment along and west of Mamala Bay Drive have largely erased historic vegetation from the landscape, with a few exceptions. A row of mature coconut palms is extant along the east and north sides of the chapel, although younger palms have been added along the street. Similar to its historic setting, the chapel and adjacent bandstand are surrounded by open lawn, with shrub plantings only around the base of the bandstand. Along the north side of Nelson Avenue there is a remnant windbreak of tall ironwood trees (*Casuarina equisetifolia*) that dates to the period of significance.

Large, historically open areas within the district have been overtaken by dense *kiawe* and/or mangrove (*Rhizophora mangle*) vegetation since the end of the war, and are not contributing to the historic district. These include the shoreline area south of Battery Hawkins, the former World War II temporary encampment site between the houses and Battery Hasbrouck, and the south side of the pier.

## **2. Spatial Organization and Land Patterns**

The spatial organization and land patterns within the Fort Kamehameha district are largely a reflection of the military functional requirements of the fort's first mission: strategic artillery defense for Pearl Harbor. Since its initial designed layout, the fort was strongly influenced by the shoreline, a characteristic that is very evident yet today. The defensive structures were sited and oriented with

respect to ocean and harbor entrance. Early development of the post was also confined to the sand flats/sand dunes along the waterfront and generally avoided the inland marshes. This resulted in a narrow, linear layout with most facilities concentrated along a central roadway that paralleled the natural shoreline. The early layout of the post also reflected relationships among land uses, and supported live-work proximity. The facilities were clustered by function or activity, with the post administration and support uses in the center, officers' housing on the west end, and barracks and operations facilities to the east.

There have been relatively few changes within the former housing area since the end of World War II, and it retains its historic spatial character. The neighborhood location, layout, house designs, and spatial relationships are character-defining features that reflect how hierarchy of military position influenced the layout, and all contribute to the district's significance. The officers had the scenic waterfront location and generous open space along the shoreline as well as around the houses, all of which still exist. The four largest units (which served the higher-ranking officers) remain clustered in the center of neighborhood. Although some houses have been relocated within the neighborhood, the spatial relationships between the houses and the historic uniform front yard setback of about 30' from the street have been maintained. Similarly, the original, designed, curvilinear pattern shared and emphasized by the shoreline, rows of houses, front yard setbacks, rows of canopy trees, sidewalks, planting strips, and the Worcester Avenue alignment remains intact. The neighborhood has a high degree of spatial integrity.

The shoreline frontage of the district is a major spatial feature. Between Battery Hawkins and the pier, it has an open park-like character, with managed lawn and widely-spaced clusters of trees and palms. Most of the frontage is about 100' wide, but is closer to 250' wide at the south end near Battery Hawkins.

Beyond the neighborhood, however, the spatial character has changed considerably over time. Dense vegetation has overtaken areas historically open or developed, such as the land between Battery Hasbrouck and the houses, and the area south of Battery Hawkins – some of which was formerly ocean. The realignment of Mamala Bay Drive and redevelopment of the area east of it eliminated the historic grid road and building patterns. The current open nature of the lands around the flagpole is a result of the demolition of major buildings once associated with the heart of the post. Only the chapel and bandstand remain.

### **3. Circulation**

Circulation is a defining characteristic that contributes to the historic district's significance as a cultural landscape. Despite modifications to circulation elements since the end of World War II, the extant roadways and walkways retain considerable integrity.

#### **a. Vehicular**

The existing roadways that traverse the district were some of the earliest circulation features at Fort Kamehameha, in place during the initial construction of the post. The main entry road (originally 24'-wide coral) extended south from the fort's main gate, considerably inland, to the

flag pole and central, triangular-shaped intersection at the heart of the post. From this location, roads diverged west (through the officers' housing area) and east (to barracks and operations). The main road that continued in both directions through the post (later named Worchester Avenue) was documented as a 20'-wide asphalt macadam road. Worchester curved through the housing area, following the natural shoreline. Early photos (1913-15) show this main shoreline road was lined with a narrow grass planting strip (uncurbed) and concrete sidewalks on each side. By the 1920s, concrete curbs had been added. Secondary roads, including the service roads behind the officers' quarters, were generally 10'-14'-wide compacted coral with grass shoulders. By 1942, existing and new streets were identified with names, including Seaman Avenue (the entry road), Worchester Avenue, Beach Road, Hope Street, Gardner Avenue, and Nelson Avenue. Most roads were paved by this time.

Today the roads in the housing area (Worchester Avenue, Beach Road, Drum Road and Hope Street) have retained their original location, linear and parallel pattern, width, and edge treatment (curb or grass). While the original surface materials were coral or macadam, all have been converted to asphalt. Concrete has been a consistent curb material on Worchester. Barricades presently restrict vehicular traffic from all roads, although Beach Road and Worchester are commonly used by pedestrians. Pavement associated with former carports along Beach and Drum Roads remain (although the carports along Beach Road were post-war structures).

The primary access road to Fort Kamehameha (once Seaman Avenue, now Mamala Bay Drive) retains its historic alignment and width north of Gardner Avenue, where it originally terminated at the flagpole and triangular traffic island. The extension of this road ca. 1990s incorporated the eastern road segment of the original traffic island, but created a new roadway beyond Worchester Avenue. This curvilinear road, together with post-war demolition and redevelopment, significantly changed the circulation pattern east and south of Mamala Bay Drive and Battery Hawkins. While segments of the original roads (Worchester and Gardner avenues) remain on east side of Mamala Bay Drive, the historic grid pattern that was characteristic of the eastern side of the fort no longer exists due to post war development.

There is a narrow asphalt segment in front of battery Hawkins that was formerly part of Nelson Avenue when it was a through street; however the west side of Nelson Avenue was realigned as part of Mamala Bay Drive construction.

On the northwestern edge of the district, the World War II-era "Kam Road" that accessed the pier was realigned ca. 1997 as part of the treatment plant expansion. The road was moved about 150 feet east and the name "Seaman Avenue" was reassigned to this road.

b. Pedestrian

The post was designed as a live-work environment, and pedestrian circulation was an important component of the initial layout and design. Within the Fort Kamehameha district, 4-5'-wide concrete sidewalks lined both sides of Worchester Avenue, the house-front side of Hope Street, the south side of Gardner Avenue, and surrounded the central traffic island. Each house had a

front entry walk (3-4' wide) from its entry stoop to the street and a narrower rear walk (30" wide) to the service drive behind the unit. Two-foot-wide concrete walks provided access to the bandstand and chapel.

The current pedestrian circulation features in the district are consistent with the historic conditions. The extant sidewalks retain original locations, patterns, widths, and materials, and are character-defining and contributing features. Within the neighborhood, these include the concrete walkways along Worcester Avenue and Hope Street fronting the houses, and the network of narrow sidewalks linking the front and back entries of the houses with the adjacent streets. Most concrete walks are in relatively good condition, although there is some buckling and uplifting due to large tree roots. Some sections of historic walks have been replaced with new concrete.

East of Mamala Bay Drive, historic sidewalks remain along the north side of Worcester Avenue and the south side of Gardner Avenue, and the distinctive 2'-wide walks are extant around the bandstand and chapel. The original sidewalk to former front steps of chapel still exists beneath the non-historic wooden ramp that was added for accessibility.

There is a remnant concrete walkway in front of Battery Hawkins, as well as a narrow walk, formerly associated with the radio station activity, extending from Fac. 3360 to the trapezoidal seawall ruin.

Sidewalks constructed after 1945 do not contribute to the historic character of the district, nor do they, on their own, significantly detract from the character. These include the multi-use path along Mamala Bay Drive, the new walk between beach road and former water tank (Bldg. 3365), and, with one exception, a few narrow walks between Beach Road and shoreline.

c. Rail and Waterborne Circulation

Initial construction of the fort required a railroad spur for supplies and personnel from the existing OR&L line at nearby plantation town of Watertown (located about 1,500 feet northwest of the fort). The spur initially terminated near the Battery Hasbrouck site, but by at least 1919, an additional rail line traversed east-west across the northern part of Fort Kamehameha (inland of the historic district area), and extended onto the wharf. By 1942, the spurs to Battery Hasbrouck and onto the pier/wharf were no longer shown on maps of the fort, although the inland track remained until rail was phased out at Hickam Field after World War II.

In addition to organizing a rail system for the growing fort, the Army Corps of Engineers also built an "Engineer Wharf" near Battery Hasbrouck, which served two purposes. First, it facilitated the transport of sand and rock that was delivered from an offsite quarry to the site, and it may also have been used to transport dredged material from the channel dredging project to the fort. Secondly, the coastal defense mission required the construction of a loading wharf and storage facilities for the cables, mines, and anchors associated with the marine mine defense system. Improvements were made to the wharf during World War II, including the addition of concrete side walls, paving, and end docks. After the war, the "engineer wharf" was referred to

as “Kam Pier” on a 1950 map; however it is unclear when active use of the pier for waterborne circulation ended, possibly in the 1960s-70s.

Another feature to accommodate waterborne circulation was added by 1939. A trapezoid-shaped seawall with a short pier extended seaward from the shoreline south of Battery Hawkins.

Both rail and water were important modes of transportation throughout the Fort Kamehameha period of significance, however neither is used today. There is no remnant of former rail lines. Only the pier and seawall ruins are extant features today, and are discussed under “Buildings and Structures.”

#### **4. Views and Vistas**

Views and vistas were an integral aspect of the initial layout of Fort Kamehameha. The Pacific Ocean and Pearl Harbor entrance channel are prominent features, visible from most areas of the district, consistent with the initial Fort Kamehameha siting and design intent. The location and orientation of the batteries and houses were greatly influenced by visual connections with the ocean and channel, although for different reasons (defense versus aesthetics). Today, breathtaking views from the sandy shoreline across the tidal flats and bay toward the Pearl Harbor entrance channel and the Wai‘anae Mountain range beyond are likely very similar as they were in the early to mid-twentieth century.

The officers’ quarters were located along the shoreline, and those on the inland side of Worcester Avenue were intentionally sited to have views to the ocean through the side yards of the waterfront houses. Ocean views from the houses remain largely intact and contribute to the historic character of the neighborhood, although some are obscured by shoreline vegetation.

Worcester Avenue provides contributing linear vistas in the neighborhood that capture the historic, mirror-image streetscape of original landscape features, including the houses, front yards, sidewalks and planting strip, street trees, and the roadway.

The tall flagpole was a visual focal point in the heart of the post since at least 1919, most prominent from the access road as one approached Fort Kamehameha from the main gate. Although the original circulation patterns and initial post buildings around the flagpole no longer exist nor retain integrity, the historic flagpole remains in its original location. It continues to be a visual focal point within the district, particularly the vista from Mamala Bay Drive as one approaches from the north.

Although the batteries themselves are the largest structures in the district, they are not visually dominant within the landscape due to their setback from main roads and the camouflage-effect of their dark color and/or the earth and vegetation covering (except entry side).

#### **5. Buildings and Structures**

The extant historic buildings and structures within the Fort Kamehameha Historic District are categorized and described below according to the feature’s type of construction or function.

Descriptions focus on the external architectural elements, patterns, and materials that visually and spatially contribute to the cultural landscape. More detailed information on architectural character-defining features – internal and external – may be found in various reports, including but not limited to the Fort Kamehameha Historic District NR Nomination, Artillery District of Honolulu NR Nomination, Hickam Integrated Cultural Resources Management Plan, and Historic American Building Survey documents for the officers' housing.

a. Coastal Batteries and Related Defensive Structures

Two of the five extant batteries associated with Fort Kamehameha are within the Fort Kamehameha Historic District: Batteries Hasbrouck and Hawkins, completed in 1914. Both batteries, as well as two related defensive structures, Battery Hawkins Annex (completed in 1915) and Building 3360 (completed ca. 1921), retain their original construction of reinforced concrete with earth or sand berms covering three sides and some or all of the roof areas. The structures have undergone very little modification since the end of the war due to their limited use once the original functions were obsolete. Each structure had an individual design and a variety of interior rooms for different purposes, and reflected fortification guidelines set forth by the Taft Board. As per the original design intent, only the entrance side of each structure is entirely visible from the exterior. Doors into the batteries are of heavy steel, usually riveted, and windows or ventilation openings are covered with steel bars or heavy screen. Metal gun mounts and mortar firing pits are still visible, but the weapons once located there were removed after World War II. The structures are largely intact and in relatively good condition, however concrete is spalling and cracking in many locations, there is some rust on steel elements, and earthen berms are overgrown with vegetation. None is currently in use.

Battery Hasbrouck (Building 3318) is a two-level concrete structure, with three magazine sections, firing pits on the lower level, and the plotting room on the upper level. It has a total plan area of approximately 1 acre (470' x 100'), not including the berms; yet is hardly noticeable from the adjacent housing area due to the dense *kiawe* and grass vegetation on the berms. Both of the open firing pits, one on each side of the central magazine, retain four metal rings on the floor where the mortars were positioned, as well as maneuvering rings set into the walls of the pits. The firing pits have stairways on the ocean side that lead to the upper level. From the small, centrally located plotting room there are angled projections on each side hanging over the inland (north) side of the firing pits. The concrete of the battery is painted black. The original linseed oil or lampblack concrete finish remains at a section of parapet retaining wall in the western firing pit and at a portion of the bridge/plotting room overhang above this pit. There are large outdoor lighting fixtures at the firing pits.

Battery Hawkins (Building 3361), the smaller, single-level battery, is about 34' x 182' in plan, not including the berms, with 23'-long wing walls at either end of the structure. Only the north facade is entirely visible from the exterior, and it is painted flat black. Originally planted with low-growing grasses, the surrounding berms have long been overgrown with dense vegetation, including large *kiawe* trees. Concrete stairs on both sides of the north side lead to the roof level, where, although overgrown with vegetation, the two firing pits are still visible. Gun mount

remnants with steel bolts are extant at the two gun positions, as well as the original maneuvering rings installed to aid in arranging the mortars. From each gun position, a ramp leads to the central battery commander's observation station where a concrete circular mount with bolts is extant. Originally, all of the stairs and ramps had metal pipe railings; only some fittings remain. The name "Battery Hawkins" is incised into the rear wall below the observation station.

The Battery Hawkins Annex (Building 3366) is located about 300' northwest of Battery Hawkins, originally built for additional mine storage. It is a one-story, rectangular-plan concrete structure, roughly 13' x 23', with a reinforced concrete roof with a slight overhang. It is surrounded on three sides by a reinforced concrete revetment wall, built three feet away from the structure, which retains the densely vegetated protective berm. There is a double steel door on the exposed, north side, and wing walls extend approximately 33' from the corners.

Building 3360, initially a fire control and plotting station for nearby Battery Hawkins, is about 500' to the southeast of Hawkins and now appears long unused. The structure is banked with earth on three sides. Its exposed portions include a section with two entries, each one flanked by a tapering concrete retaining wall. Each door has been secured by pieces of pierced steel planking (also referred to as Marsden mat) that was developed just prior to World War II for the rapid construction of airfields and landing strips in areas of soft terrain. Pieces of this matting create a cage-like space in front of the doorways. Another exposed portion of the structure is located on the side opposite the entries where there is a narrow observation slit.

b. Fort Kamehameha Officers' Quarters

Thirty-three of the original (1916 and 21) thirty-six bungalow/Craftsman style officers' quarters are extant in the study area. They were built from plans prepared by the Army's Office of Constructing Quartermaster in Honolulu. The two housing designs reflected a conscious response to the regional architecture styles and to the tropical environment of the site. The one-story board-and-batten, single-wall style was common to the plantation housing of Hawai'i at the turn of the century. The pitched roof, with wood shingles, open courtyards, and large screened areas were design adaptations made by the Army for tropical living. Local materials such as lava rock and canec (a sugarcane byproduct) were incorporated into the designs. The four larger quarters (3329, 3330, 3348, and 3349) housed the higher ranking Field Officers. Located in the center of the neighborhood, they incorporated a larger U-shaped plan with a central recessed main entrance and four bedrooms. The smaller quarters were for Company Officers and had a U-shaped floor plan with a corner entry and three bedrooms. These units are 3320, 3321, 3323-3327, 3330-3333, 3335-3337, 3339-3341, 3343-3347, 3352-3355, and 3357-3359. Four of the smaller units have been relocated within the neighborhood.

The front facade of each house is set on an unreinforced lava-rock front wall foundation, which has small arched openings. The remaining exterior walls are supported on lava rock piers, and posts on footing stones are at the interior. The front façade also has decorative pilasters with diagonal lattice strips of wood that form a multi-diamond pattern. Each house's front entry is reached by four concrete steps that are flanked by lava rock and concrete cheek walls with

concrete caps. The entry is protected by an extended section of the roof that has decorative cut rafter tails and is supported by knee-braced brackets. Most houses still have the original house number sign near the front and/or back entry.

Apart from a few modernizations and fenestration changes from their original design, the former officers' quarters are almost entirely intact. The hip roofs with louvered gablet vents now have composition shingles covering the original wood shingles. The main entry doors, originally screen doors, were replaced with solid wood doors or wood doors with glazing; and some of the double-hung windows and screened openings were replaced with jalousie windows. Original screened entry *lanai* (porch) and screened hallways along the interior courtyard now usually have louvered windows and often plywood. The lattice that originally covered the building foundation has been removed at some houses. On the rear of many houses, ad-hoc sheds, lean-tos and roofs have been built for extra storage, shelter and work spaces; however these are easily removable. The present exterior paint scheme is a monochromatic light tan with limited areas of dark brown trim/accent. Originally the exterior walls were painted a dark color with prominent white trim.

Generally, the houses are in fair condition, but they have deteriorated considerably since being vacated in 2008 due to lack of maintenance. One roof appears to have been crushed by a falling tree. The most apparent damage to the structures is from termites, lack of adequate moisture protection, and many have fallen prey to vandalism, resulting in broken doors and windows, theft of historic windows, graffiti, and accumulation of dirt and rubbish.

c. Utility Structures

Several utility-related buildings remain intact and in good condition, and have experienced few modifications to their exteriors. As such, all contribute to the historic character of the Fort Kamehameha landscape, even though some may not individually meet National Register criteria.

The water storage tank (Building 3365), built in 1922, is extant near the shoreline, between Battery Hawkins and the Annex. It is a cylindrical single-story structure with a domed concrete roof. An entry door has been added on the west side to accommodate re-use for storage.

There are several utility support structures that are notable for their uniformity of design. Former sewage pump station structures along Beach Road (Buildings 3351 and 3342) and the electrical substation building (Building 3375) along Mamala Bay Drive are small, simple concrete structures that have been integral features of the fort since 1916. A 1940s electrical switching station (Building 3319) that likely serviced Battery Hasbrouck retains its flat roof, metal riveted double doors and other metal-plate-covered openings. Only Building 3378, an electrical substation building dating to 1947, does not directly contribute to the cultural landscape due to its distant location on Nelson Avenue.

d. Other Structures

The Fort Kamehameha chapel (Building 3373) and bandstand (Building 3372) retain considerable integrity to their original late-1930s construction. The chapel design is a standard plan seen at

other Hawai'i Army installations. Built ca. 1939, the 27'-tall structure, with Douglas-fir-plywood-sheathed, "Tudor"-shaped frames, is topped with a steeple with a bronze finial. Its foundation includes a concrete curb wall and intermediate concrete piers. The building has asphalt shingles on the main roof and steeple roof, and horizontal shiplap exterior siding. The double-hung windows have obscure patterned glass, some clear, but mostly amber colored. Changes to the chapel include replacement of the original front stairs with a wood ramp and landing and the use of the same paint colors as the houses (light tan with dark brown trim). Although the chapel is no longer used, the air conditioning units remain in most windows.<sup>90</sup>

The ca. 1937-39 coral bandstand was constructed of cut-coral blocks with concrete steps and deck in the heart of the fort, near the flagpole. The bandstand retains its 23'-square cut-coral-block base, with the roughly square blocks set with dark gray mortar. There is a rectangular planter projecting from each corner of the concrete deck surface, which is about 3'-7" above grade. A metal pipe railing extends around the edge of the deck and on the sides of the concrete steps. All materials remain the same, but the wood elements have been painted light tan and the metal railings are dark brown. The octagonal roof is a replacement built in the 1990s. This double-pitched roof is supported by eight wood posts and terminates with a metal finial.<sup>91</sup>

Extending offshore at the west end of the district, the Fort Kamehameha Pier (Facility 15200) and four World War II-era concrete defensive structures atop the pier have not been modified since the end of the war, but are in poor condition. Nevertheless, these are important features that contribute to the story and landscape of Fort Kamehameha. The original pier (ca.1913) and World War II-era additions of concrete side walls, paving, and end dock sections are in a deteriorated condition, with collapsed walls and deck sections. Some of the concrete posts at the end of the pier are inscribed "6-18-44,"<sup>92</sup> and many have fallen over and are lying in the water or on the pier itself. Large iron cleats are extant along the outer, northern edge. The entire pier is overgrown with kiawe scrub, and dense mangrove is growing along its southern edge. Although fenced off, it is frequently used for fishing. Four World War II-era concrete structures remain on the pier, but are not on the Navy's base map and do not have facility numbers. The structure on the pier end has a concrete slab and concrete wall about 3' high on the three outer sides. The other three structures are grouped about half-way out, about 250' from the base of the pier, on the east side. The box-shaped ammunition storage building is about 6' square and 7' tall, with a metal louvered door. Another structure, which possibly protected a large anti-aircraft gun, is a 3-foot-high U-shaped wall, enclosing an area approximately 15' x 20' feet. The other structure has partial-height walls on three sides with a concrete roof slab, and probably served to protect armed men shooting into the harbor.

Another contributing waterfront feature is the concrete seawall ruin that once defined the World War II-era trapezoidal wharf (southeast of Battery Hawkins) and delineates the historic shoreline in an area now overtaken by mangrove at the east end of the district.

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<sup>90</sup> J.M. Waller, 2008, 3-40.

<sup>91</sup> J.M. Waller, 2008, 3-41.

<sup>92</sup> Bouthillier and Anderson, 1993, 5.

The existing tennis courts seaward of the Battery Hawkins Annex are in the same location as the original tennis court that was one of the initial recreational facilities within the post. While the materials and size of courts today do not have historic integrity, the tennis courts do contribute to the historic spatial character and land use of the district.

There are a variety of non-historic structures in the district, such as the temporary buildings near the chapel, patios and seawalls in the housing area, playground equipment, the interpretive kiosk for the wetland, and concrete storm water outfall. A burial reinterment structure (approximately 50'x70') was built in the 1990s as a resting place for the Native Hawaiian remains inadvertently discovered during expansion of the wastewater treatment plant. The 2'-tall lava rock platform is located at the northern end of Worchester Avenue. A small marker identifies the structure and asks that visitors respect the solemnity of the site by keeping out of the area.

## **6. Small-scale Elements**

According to available photographic and graphic documentation, the study area contained various small-scale elements during the period of significance. These included utilitarian features such as fire hydrants and electric street lights along Worchester Avenue in the officers' housing area, clothesline poles, drainage and sewer manholes, overhead power lines along service roads, hose bibs, wire fencing around the batteries, artillery ornaments, and site furnishings such as benches near the chapel and administration building. After the war, cycles of redevelopment, deterioration, and modernization brought about changes in the style and/or placement of most utilitarian elements.

The original electrical lamp poles that once lined Worchester Avenue and other main roads have been replaced with tall, modern steel streetlights along the avenue and Mamala Bay Drive. Power lines are still overhead on wooden poles along Beach Road, Drum Road, and Hope Street (behind the units) with light fixtures mounted on the poles. A few original manhole covers remain scattered around the site that are contributing features, including one in front of Quarters 3333 cast with "Signal Corps USA." Comparison of 1945 drawings with current conditions indicates that the row of "water faucets" down the center of the waterfront open space in 1945 was in about the same location as the existing row of hose bib risers used for irrigation, and that fire hydrants were historically on the south side of Worchester Avenue in the housing area, whereas today they are on the north side of the street. However, two fire hydrants on Hope Street are in the same location as in 1945. The 1945 drawings also show two small "power house" structures along Beach Road. Today, above-ground electrical panels and modern metal boxes appear to be in these locations behind Quarters 3340 and between 3355 and 3357, however it is unknown whether any historic materials are extant.

There is minimal fencing within the district today, and what does exist is not historic or contributing. The housing area retains the character-defining openness of the yards and common areas. There is some remnant wire fencing around portions of Battery Hasbrouck. A chain link fence/gate has been installed to restrict access at the base of the pier, a wood privacy fence was added between Quarters 3359 and Mamala Bay Drive, and some wood lattice screens exist around back patios.

Several remnant concrete slabs exist in the shoreline open space, some of which are vestiges from the 1940s, possibly waterfront patios. Two slabs in particular – behind Quarters 3344 and 3346 – have 1944 and 1945 dates, respectively, etched into the concrete and are contributing features of the historic landscape. Behind Quarters 3349, a single iron rail is partially exposed between Beach Road and the shoreline, however its date of origin and purpose are unknown. Its location does not correspond to known former rail alignments.

In the rear yards of the houses, especially in the courtyards, there is a diverse mix of non-historic, non-contributing patios, many of which engulf the narrow, original concrete walkways to the rear doorway. A few back yards along Beach Road still have clothesline poles from the period of significance, which are contributing small-scale elements.

Outside of the housing area, along Mamala Bay Drive, the original post flagpole remains in the same location as a visual focal point as one approaches the district from the north. Although the concrete base and the character of the space and circulation around the pole have changed significantly, the pole itself is a key contributing feature of the historic district. Wood and concrete benches, of the same design that were in the courtyards of the “Big Barracks” (Building 1102) at Hickam Field just before the December 7<sup>th</sup> attack, were common in public spaces such as around the Fort Kamehameha administration building and on the grounds of the service club across from the chapel. These are no longer extant, nor have they been replaced in their historic locations.

In addition to those mentioned above, other contemporary small-scale features within Fort Kamehameha Historic District include bollards, site furnishings such as picnic tables, trash receptacles and metal benches, memorials, utility features, decorative landscape elements such as brick edging around planting beds, and various directional, regulatory, informational, and interpretive signs. These are generally in good conditions; however they do not contribute to the cultural landscape’s significance.

## **7. Archaeological Sites**

The soils within Fort Kamehameha have largely been disturbed. However numerous past archaeological studies have encountered the presence of pre-Contact Native Hawaiian human burials and remnants of cultural layers within and in the near vicinity of the Fort Kamehameha Historic District.

There are no archaeological resources within Fort Kamehameha Historic District that are listed on the NR. However, three known sites have been placed on the Hawai‘i Register. State Inventory of Historic Properties (SIHP) #50-80-13-4499 is the Fort Kamehameha Burial Area, which revealed pre-Contact and historic period artifacts, pit features, and burials. Burials removed from this site are now in the reinterment structure at the north end of Worchester Avenue. SIHP #50-80-13-5325 is a habitation (midden) site, possibly associated with pre-Contact settlement of Holokahiki.

SIHP #50-80-13-6406 is a subsurface, pre-Contact cultural deposit that included the remains of a hearth.<sup>93</sup> All SIHP sites are considered potentially eligible for the NR and all are managed by the Air Force/Navy as if they are eligible for listing in the NR.<sup>94</sup> Burials uncovered to date from the coastal dunes at Fort Kamehameha indicate that there is a potential for more burials in this location. Therefore, the northern half of the housing area (including the shoreline) and the land surrounding Battery Hasbrouck have been identified as “Archaeological High Probability Areas.”<sup>95</sup> The undeveloped land southeast of the Mamala Bay Drive/Nelson Avenue intersection is a “Medium Probability Area” (possible former location of Queen Emma’s house).

While these are significant cultural features, they predate military-era period of significance (1908-45) established for this HALS Report. There are no visible historic features in the landscape associated with them.

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<sup>93</sup> Hickam Air Force Base, Hawai‘i, 15<sup>th</sup> Airlift Wing, “Draft Environmental Assessment, Alternatives for the Disposition of Fort Kamehameha Historic District Buildings and Structures.” 2009, 3-18.

<sup>94</sup> J.M. Waller, 2008, 3-15.

<sup>95</sup> J.M. Waller, 2008, 3-72.

### **PART III: SOURCES OF INFORMATION**

#### **A. Drawings and Plans**

The following lists several plans and maps used during the historical documentation and analysis of this HALS. Not every source is cited in the text, however every source was used in some way during the HALS documentation effort.

Office of Constructing Quartermaster, Honolulu, T.H. "Layout of Post, Fort Kamehameha, T.H." also "U.S. Army 1919 Survey Map of Fort Kamehameha." 1919.

Office of the Civil Engineer, Headquarters 15<sup>th</sup> Air Base Wing (PACAF) Hickam Air Force Base, Hawaii. "Basic Layout Plan, Hickam Air Force Base, Hawaii". April 1985.

Department of the Navy, Naval Facilities Engineering Command, Pacific Division, Pearl Harbor Hawaii. "Fort Kamehameha Sanitary Sewer Map". Submitted 10/05/74, Approved 01/24/80. (Source: G. O'Donnell 'Fort Kamehameha Box')

Department of the Air Force, Directorate of Engineering and Services DCS/LEE-Washington, D.C. "Pacific Air Forces Comprehensive plan, Soil Boring Plan, Hickam Air Force Base Oahu, Hawaii". January 1977. (Source: G. O'Donnell 'Fort Kamehameha Box')

U.S. Engineer Office, Honolulu, T.H. Air Corps Construction, Hawaiian Department. "Buildings, Utilities and Appurtenances Fort Kamehameha, Oahu, T.H. General Plan" File No. F-55/15, April 1942. (Source: Drafting/Geointegration, JBPHH)

U.S. Engineer Office, Honolulu, T.H. "Railroad Systems, Harbor Defenses of Pearl Harbor, Fort Weaver, Fort Kamehameha & Fort Barrette, Oahu, T.H." February 3, 1942. File No. F-71/14. (Source: Historical Archives Collection (US Air Force), 15<sup>th</sup> Wing History Office, Joint Base Pearl Harbor-Hickam, Hawai'i)

Army Port & Service Command, CBU. "Fort Kamehameha, Oahu, T.H. Plot Plan". Drawn by K. Morita; Traced by P. Oasa. 15 February 1946. Drawing No. C-76. (Source: Historical Archives Collection (US Air Force), 15<sup>th</sup> Wing History Office, Joint Base Pearl Harbor-Hickam, Hawai'i)

U.S. Engineer Office, Honolulu, T.H. "Seacoast Defenses, Hawaiian Department Eight Inch R.R. Gun Positions Ft. Kamehameha, Oahu, T.H. Camouflaging". March 1942. File No. F-13/91. (Source: Historical Archives Collection (US Air Force), 15<sup>th</sup> Wing History Office, Joint Base Pearl Harbor-Hickam, Hawai'i)

"Fort Kamehameha Military Reservation." 1978. (Source: Drafting/Geo-integration, JBPHH)

C.J. Lyons and M.D. Monsarrat, "Halawa Ewa, Oahu." 1888. Registered Map 1687. (Source: Hawai'i State Survey Office)

C.J Lyons and M.D. Monsarrat, "Map of Moanalua and Kahauiki, Kona Oahu." n.d. Registered Map: 1511. (Source: Hawai'i State Survey Office)

Coast and Geodetic Survey, "Pearl Harbor Island of Oahu Hawaiian Islands." 1905. Registered Map 2335. (Source: Hawai'i State Survey Office)

U.S.N. "Mouth and Bar, Ewa or Pearl River, Island of Oahu, Hawaiian Group." 1873. Registered Maps 0421 and 0915. (Source: Hawai'i State Survey Office)

U.S.N. "Pearl Lochs and Puuloa Entrance, Ewa, Oahu." 1873. Registered Map 1639. (Source: Hawai'i State Survey Office)

"Pearl River." n.d. Registered Map 0741. (Source: Hawai'i State Survey Office)

## **B. Photograph and Map Collections**

Drafting/Geointegration, Joint Base Pearl Harbor-Hickam, 647 Civil Eng Squadron, JBPHH, Hawai'i has the largest collection of maps related to Fort Kamehameha.

Historic Archives Collection, U.S. Air Force; 15<sup>th</sup> Wing History Office, Joint Base Pearl Harbor-Hickam, Hawai'i has many historic maps and photographs of Fort Kamehameha. Some of the maps are duplicates of the originals located at Drafting/Geointegration JBPHH, listed above.

U.S. Army Museum Hawai'i, Honolulu, Hawai'i has an extensive photograph collection of Fort Kamehameha including copies of private photo collections of figures who once worked and lived at Fort Kamehameha.

The Hawai'i State Survey Office, Department of Accounting and General Services, State of Hawai'i is the repository for all maps initiated by first the Kingdom of Hawai'i, then the Territory of Hawai'i and finally in 1959, by the State of Hawai'i. The earlier maps of the Pearl Harbor area and vicinity are located here.

The State of Hawai'i, Department of Transportation, Airports Division hosts a website with easy access to photos pertaining to the history of aviation in Hawai'i. Although "Hawaii Aviation: An Archive of Historic Photos and Facts" (<http://hawaii.gov/hawaiiaviation/>) documents the history of aviation in Hawai'i, the 1930s photos showing the growth of the adjacent Hickam Air Force Base sometimes depict the Fort Kamehameha area as well. In addition, there are a few photos of the observation balloons deployed at Fort Kamehameha in the 1920s.

Bishop Museum, Honolulu, Hawai'i.

University of Hawai'i, Manoa, MAGIS.

## **C. Bibliography**

Addleman, Lt. William C. "History of the United States Army in Hawaii, 1849 to 1939." Division Headquarters Detachment Hawaiian Division, Schofield Barracks, Territory of Hawaii. Typescript report at Schofield Tropic Lightning Museum and Sgt. Yano Library, Schofield Barracks, Hawai'i, 1939.

- Allen and Shideler. "Draft Final Report Intensive Literature Search and Limited Site Inspection for the Purpose of Establishing Battery Hawkins as a Public Observation Battery, O'ahu Island, Hawai'i." Prepared by Odgen Environmental and Energy Services Co., Inc. Honolulu, Hawai'i, 1999.
- Ames, Karen. "USDI/NPS NRHP Multiple Property Documentation Form, Artillery District of Honolulu, Addition to the thematic district of Battery Closson (Fort Kamehameha)." 1992.
- "An Army Post that was Named for a King." *Paradise of the Pacific*, (June 1936).
- Anderson, Lisa and Katharine Bouthillier. "Assessment and Analysis of Historic Properties at Hickam Air Force Base, Honolulu, Hawai'i for Preparation of a Historic Preservation Plan." Honolulu, Hawai'i, 1996.
- "Assessments and Analysis of Historic Properties at the U.S. Air Force Fort Kamehameha (USAFFK), Honolulu, Hawai'i for Preparation of a Cultural Resource Management Plan." Fort Shafter: U.S. Army Corps of Engineers, 1998.
- "Army Housing Contract to R.E. Woolley." *Star Bulletin*, March 7, 1941.
- Belt Collins Hawaii and Mason Architects, Inc. "Historic Context Study of Historic Military Family Housing." 2001.
- Berhow, Mark, Joel Eastman and Bolling Smith. "Barracks, Bakeries, and Bowling Alleys: Non-Tactical Structures at American Coast Artillery Forts," [www.cdsg.org/reprint%20PDFs/CAgarrison.pdf](http://www.cdsg.org/reprint%20PDFs/CAgarrison.pdf) Accessed: January 19, 2011.
- Birnbaum, Charles A. "The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes." U.S. Department of the Interior, National Park Service, Washington D.C., 1996
- Bonnell, Henry. "Rails of Yesteryear." Manuscript available at Historical Archives Collection (U.S. Air Force), 15<sup>th</sup> Wing History Office, Joint Base Pearl Harbor-Hickam, Hawaii, n.d.
- Bouthillier, Katharine and Lisa Anderson. "National Register of Historic Places Registration Form for Fort Kamehameha Historic District." Honolulu, Hawai'i, 1993.
- Bryan's Sectional Maps of O'ahu*, 1998; *Bryan's Sectional Maps of O'ahu*, 2008.
- Char, Alvin L. "Artillery District of Honolulu, National Register of Historic Places Inventory—Nomination Form." April 1977.
- Chenoweth, Bob, "The Fort Kam Crowd," *Friends Journal* 16, no. 3, (Fall 1993).
- Clark, John R.K. *Hawai'i Place Names: Shores, Beaches, and Surf Sites*. Honolulu: University of Hawai'i Press, 2002.
- Beaches of Oahu*. Honolulu: University of Hawai'i Press, 2005.

- Dasbach, Jon and Sydnie Hetzel. "Joint Base Pearl Harbor-Hickam celebrates World Wetlands Day." *Ho'okele, Pearl Harbor: Hickam News*, (Feb 11, 2011).
- Dorrance, William H., *Fort Kamehameha: The Story of the Harbor Defenses of Pearl Harbor*, Shippensburg: The White Mane Publishing Company, Inc., 1993.
- Drolet, Robert. "Phase I Archaeological Subsurface Testing and Data Recovery at Fort Kamehameha Wastewater Treatment Plant Pearl Harbor, Oahu, Hawaii." Prepared for Department of the Navy, 1992.
- "From Cane Fields and "Watertown" .... to Hickam Field." Manuscript available at Historical Archives Collection (U.S. Air Force), 15<sup>th</sup> Wing History Office, Joint Base Pearl Harbor-Hickam, Hawaii, n.d.
- Helber Hastert & Fee, Planners, Inc. "Commander, Navy Region Hawaii, O'ahu Integrated Cultural Resource Management Plan." October 2008.
- "Fort Kamehameha Historic District Cultural Landscape Report." August 2013.
- Hickam Air Force Base, Hawai'i, 15<sup>th</sup> Airlift Wing. "Draft Environmental Assessment, Alternatives for the Disposition of Fort Kamehameha Historic District Buildings and Structures." 2009.
- Hunt, TL and RM Holsen. "An early radiocarbon chronology for the Hawaiian Islands: a preliminary analysis." *Asian Perspectives* 30(1): 147-61, 1991.
- J.M. Waller Associates, Inc. with Mason Architects, Inc. "Building Preservation Plan of Selected Historic Homes for Hickam Air Force Base." December 2003.
- J.M. Waller Associates, Inc. "Final Integrated Natural Resources Management Plan 2008-2012 Update for Hickam AFB, Oahu, Bellows AFS, Oahu, Hickam POL Pipeline, Oahu, Kaala, AFS, Oahu, Kokee AFS, Kauai." December 2007.
- "Final Integrated Cultural Resources Management Plan 2008-2012 Update for Hickam AFB, Hawai'i." January 2008.
- Kirch, Patrick Vinton. *Feathered Gods and Fishhooks: An Introduction to Hawaiian Archaeology and Prehistory*. Honolulu: University of Hawai'i Press, 1985.
- Knight, G.A. "Scotty." "Battery Randolph and the Transformation of Waikiki," in *Newsletter of the Hawaii Army Museum Society*, Winter & Spring 2010, [www.HIArmyMuseumSoc.org](http://www.HIArmyMuseumSoc.org), Accessed on May 30, 2011.
- Lansdale, James F. "The Lost Pearl Harbor Attack Aircraft No.1: The HIRANO Zero from AKAGI." [[www.j-aircraft.com/research/jimlansdale/japanese\\_losses\\_ph/Japanese\\_losses\\_Pearl\\_Harbor.htm](http://www.j-aircraft.com/research/jimlansdale/japanese_losses_ph/Japanese_losses_Pearl_Harbor.htm)], Accessed March 12, 2011.
- Lee, Robert S.K., "Guard members caring for sacred grounds." *Kukailimoku, Hawaii National Guard 154<sup>th</sup> Wing, Hickam AFB, HI 56*, no.8, (Aug 2009).

Lewis, Emanuel Raymond. *Seacoast Fortifications of the United States: An Introductory History*. Annapolis: Naval Institute Press, 1979.

McAllister, J. Gilbert. *Archaeology of Oahu*. Honolulu: Bishop Museum, 1933.

McElroy, Windy K. "Archaeological Monitoring of the Communication Line Installation at Hickam Air Force Base, O'ahu, Hawai'i." prepared by T.S. Dye & Colleagues, Archaeologists, Inc. Honolulu, Hawai'i, September 2003.

Mossman, Captain. "History of Fort Kamehameha." Manuscript available at the United States Army Museum Hawai'i (USAMH), January 17, 1924.

"No Cement Gun at Kamehameha: Major Cheatham Makes Some Changes for Pearl Harbor Buildings." *Hawaiian Gazette*, March 11, 1913.

Ogden Environmental & Energy Services, Inc. "Cultural Resource Management Plan for Hickam Air Force Base, Halawa and Moanalua Ahupua'a, 'Ewa and Kona Districts, Island of O'ahu, Hawai'i." Prepared for U.S. Army Corps of Engineers, Honolulu, 1998.

O.H. Schrader to Tenney, 25 October 1923, Letter available at the United States Army Museum Hawai'i (USAMH).

OPR:PACAF/HO. "This Week in USAF and PACAF History: 6-10 December 2010." [<http://www.pacaf.af.mil/shared/media/document/AFD-101207-046.pdf>], accessed March 19, 2011.

Redington, Laurence. *Honolulu Star Bulletin*. February 1, 1913.

Runyon, Rosanna and Hallett Hammatt, "Fort Kamehameha Background Research on Traditional History." Unpublished report prepared for Helber, Hastert and Fee, Planners by Cultural Surveys Hawai'i, Kailua, Hawai'i, 2010.

"Sand Island Application, Section I." Application for wastewater treatment for Region 9, Environmental Protection Agency, n.d. [<http://www.epa.gov/region9/water/npdes/pdf/sand-island/SI-application-secI.pdf>]; accessed March 22, 2011.

Smith, Bolling. "Quartermaster Buildings: Records and Plans." *The Coast Defense Journal* 16, no. 2, (May 2002).

Spriggs, Matthew and Atholl Anderson. "Late colonization of East Polynesia." *Antiquity* 67:200-17, 1993.

Sterling, Elspeth P. and Catharine C. Summers. *Sites of Oahu*. Honolulu: Bishop Museum, 1978.

Tenney, Captain. "History of Fort Kamehameha." Manuscript available at the United States Army Museum Hawai'i (USAMH), September 24, 1923.

Thompson, Erwin. *Pacific Ocean Engineers: History of the U.S. Army Corps of Engineers in the Pacific 1905-1980*. Honolulu: U.S. Army Corps of Engineers, Pacific Ocean Division, 1985.

Wasch, Diane Shaw, Perry Bush, Keith Landreth et al., James Glass and Arlene R. Kriv, Ed. "World War II and the U.S. Army Mobilization Program: A History of 700 and 800 Series Cantonment Construction." Legacy Resources Management Program. U.S. Department of Interior, National Park Service, 1991.

Weitze, Karen. "Hickam Cold War Context, 1946-1989." October 2006, Appendix C in J.M. Waller Associates, Inc. "Final Integrated Cultural Resources Management Plan 2008-2012 Update for Hickam AFB, Hawaii." January 2008.

Winslow, Eben Eveleth. *Notes on Seacoast Fortification Construction*, Washington: Government Printing Office, 1920.

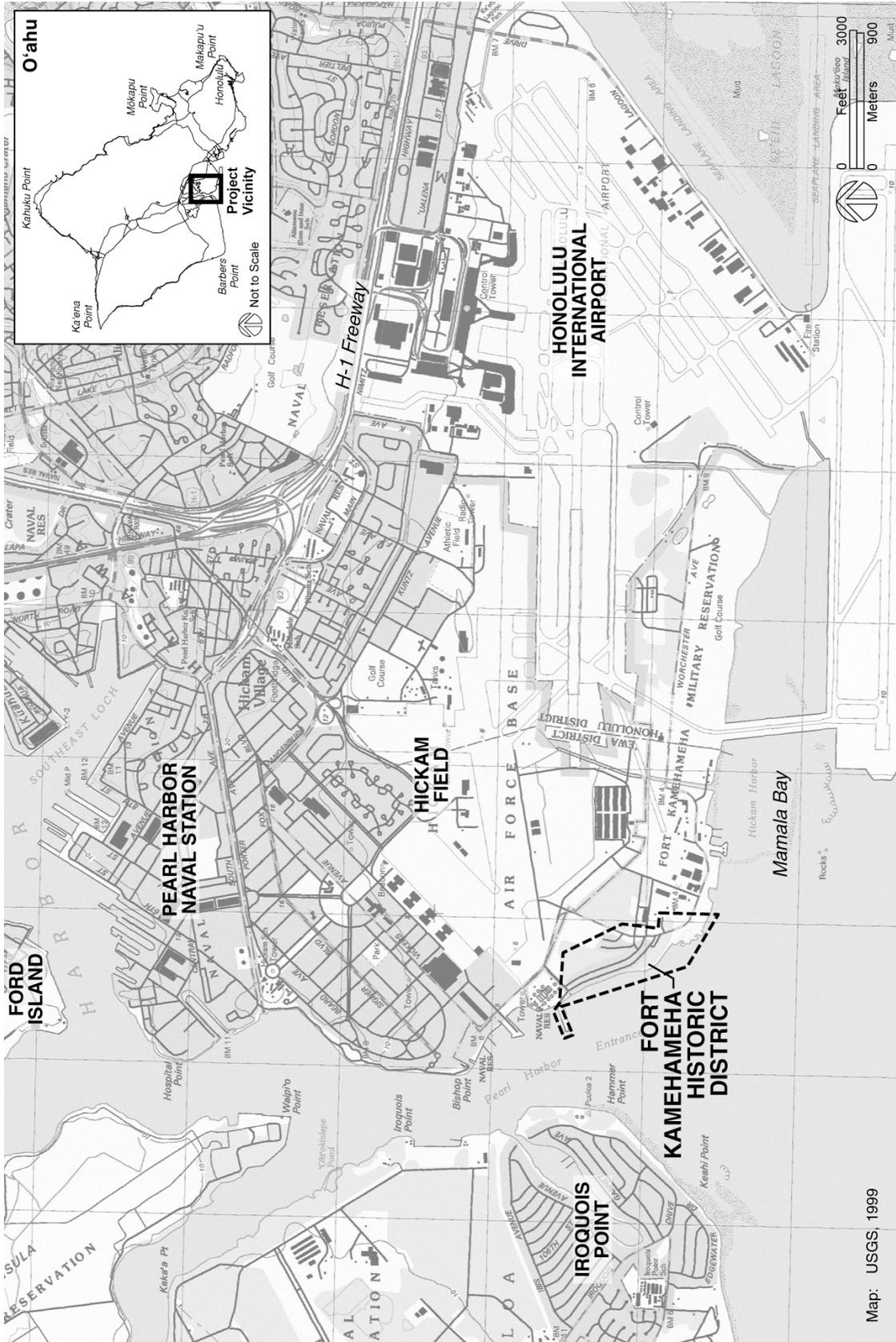
Yates, W. Paul. *Aviation in Hawaii*. Hawaii: Paradise of the Pacific Press, 1936.

#### **PART IV: PROJECT INFORMATION**

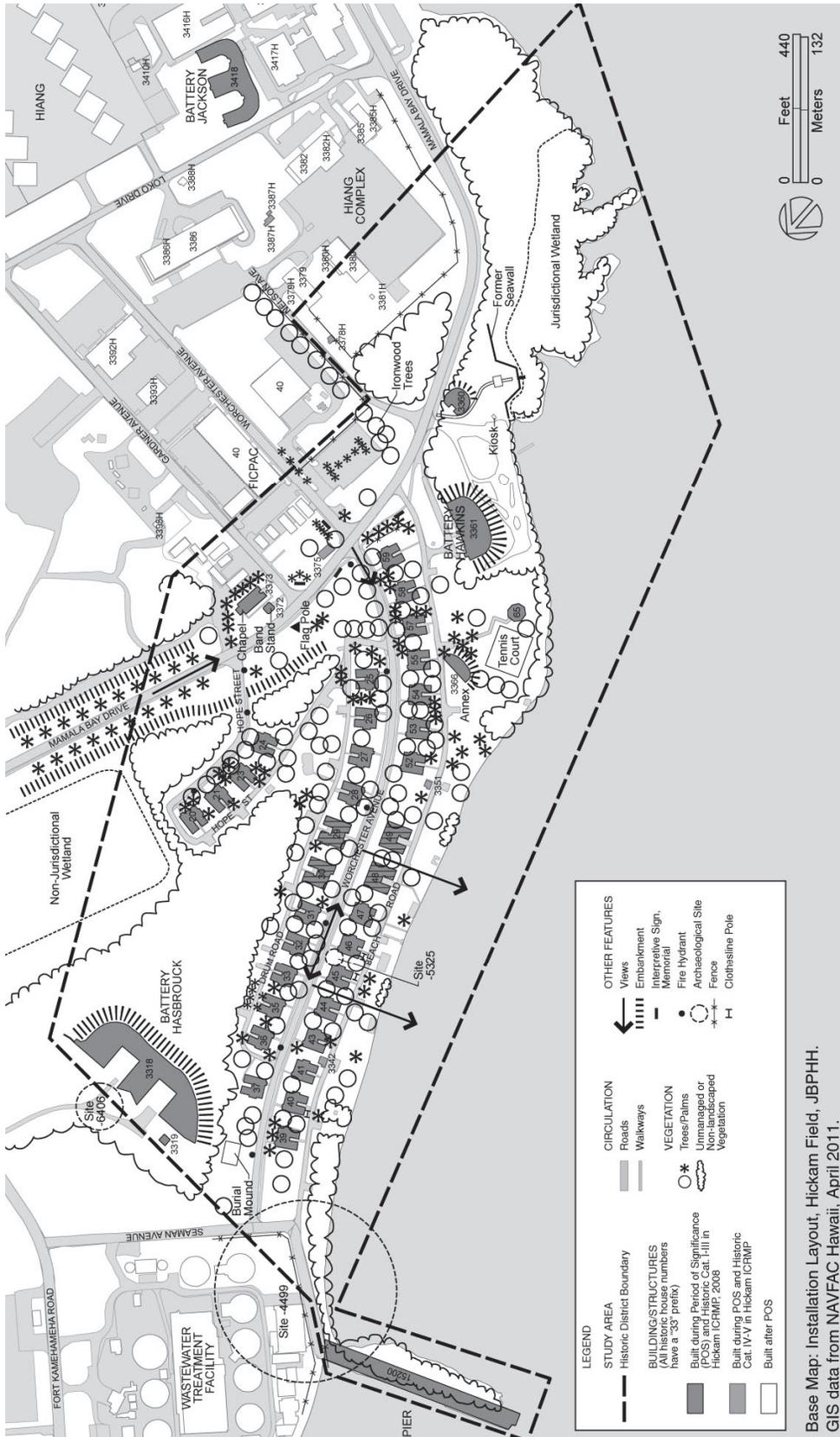
This HALS documentation was initiated as part of the 647<sup>th</sup> Air Base Group's compliance program to complete cultural resources management and mitigations for Fort Kamehameha Historic District at Hickam Field. Due to Joint Basing, the effort was completed by the Navy through NAVFAC Hawaii EV-5, Joint Base Pearl Harbor-Hickam. This work was performed under Section 110 of the National Historic Preservation Act of 1966, as amended, and Air Force Instruction 32-7065, *Cultural Resources Management*. The report was researched and written by Wendie McAllaster and Tina Bushnell, Helber Hastert & Fee, Planners Inc., 733 Bishop Street, Honolulu, Hawai'i 96813 in May 2011-August 2012. The large-format photographs were taken on August 29, 2011, by David Franzen of Franzen Photography, Kailua, Hawai'i.

The HALS and HABS were prepared under contract with Cultural Surveys Hawai'i Inc., Kailua, Hawai'i, for the Department of the Army, U.S. Army Engineer District, Honolulu, Fort Shafter, Hawai'i.

Figure 1: Location Map  
(Source: USGS 1999)



**Figure 2: Site Plan of Fort Kamehameha Historic District**  
 (Source: See map)



**Figure 3: 2008 Aerial Photo of Fort Kamehameha Historic District**  
(Source: USGS 2008)





**Figure 5: Pre-Military Period – Entrance to Pu‘uloa**  
 (Source: See map)

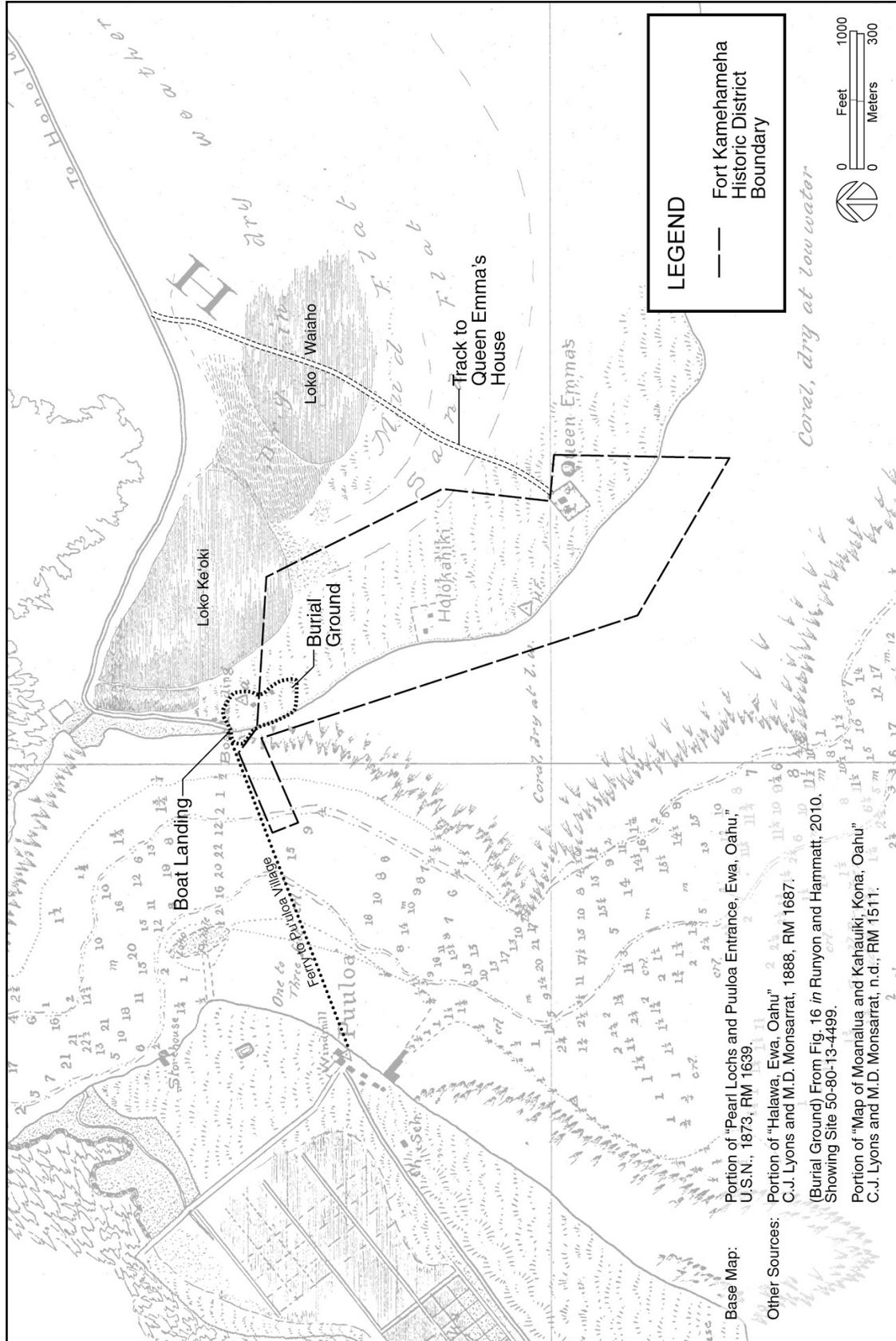
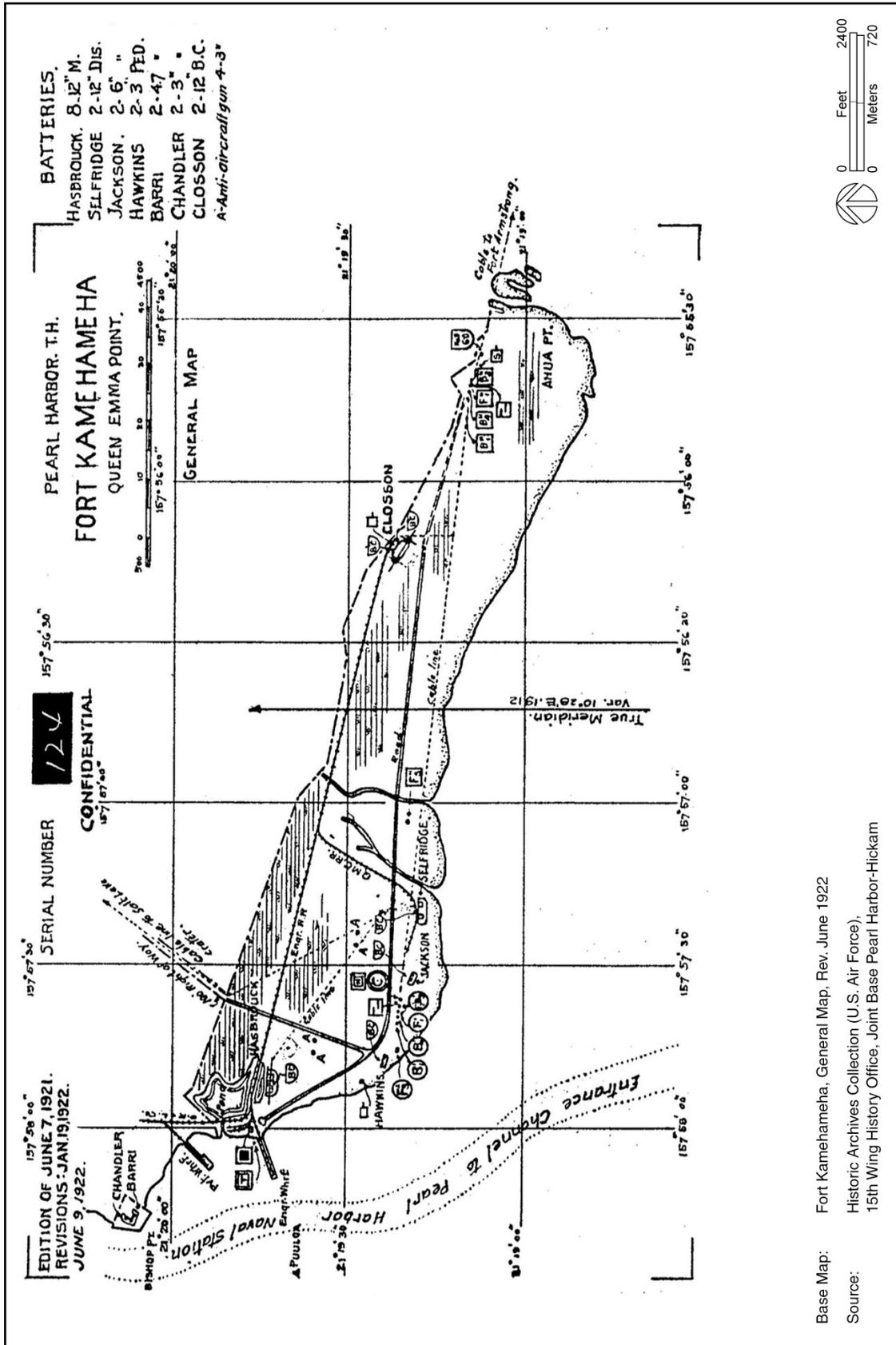


Figure 6: 1922 Map of Fort Kamehameha Batteries  
 (Source: See map)



Base Map: Fort Kamehameha, General Map, Rev. June 1922  
 Source: Historic Archives Collection (U.S. Air Force),  
 15th Wing History Office, Joint Base Pearl Harbor-Hickam



**Figure 8: Fort Kamehameha General Plan, 1942**  
(Source: Drafting/Geo Integration, Joint Base Pearl Harbor-Hickam)

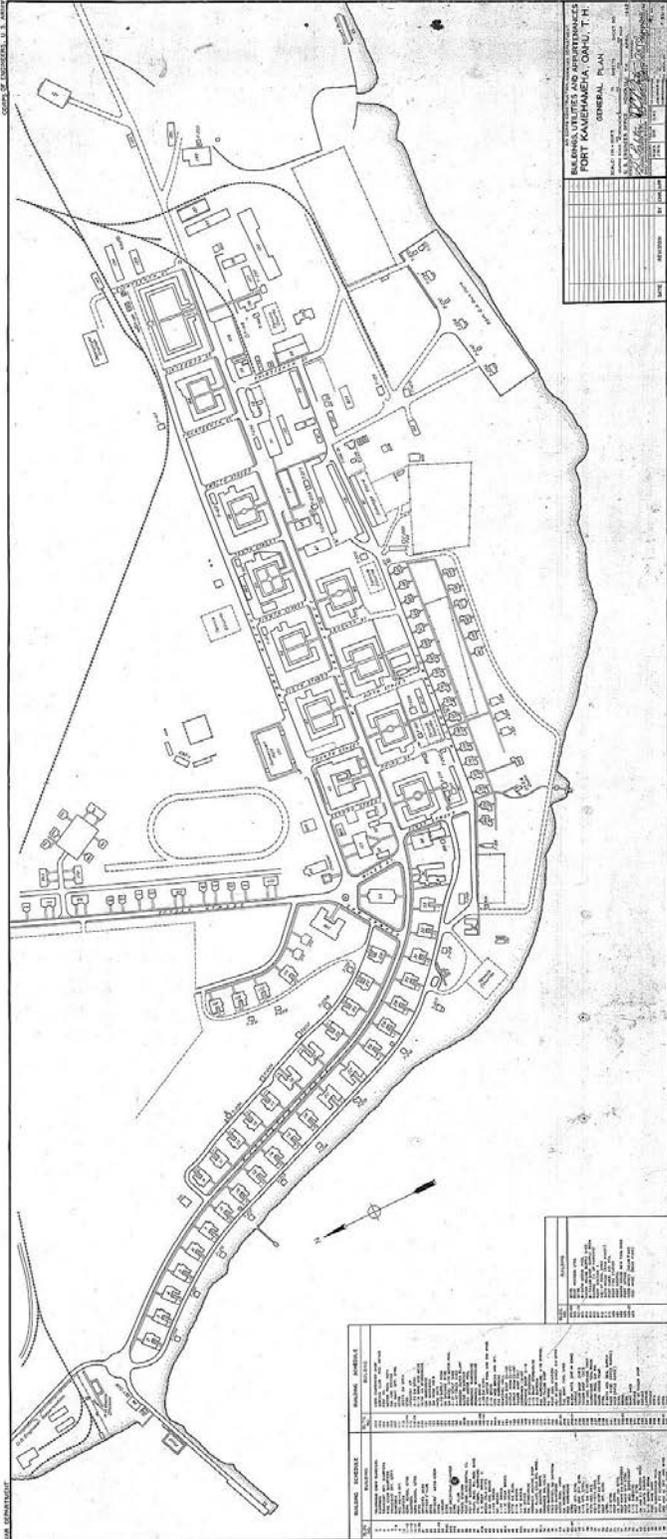


Figure 9: Post-War Fort Kamehameha, 1962  
(Source: See map)

