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**Archaeological Monitoring Plan for the
Airport Section (Section 3) of the
Honolulu High-Capacity Transit Corridor Project,
Hālawā and Moanalua Ahupua‘a,
‘Ewa and Honolulu Districts, O‘ahu
TMK Sections [1] 1-1 and 9-9 (Various Plats and Parcels)**

Prepared for
The City and County of Honolulu
and
The Federal Transit Administration

On Behalf of
PB Americas, Inc.

Prepared by
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(Job Code: HALAWA 17)

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Management Summary

Reference	Archaeological Monitoring Plan for the Airport Section (Section 3) of the Honolulu High-Capacity Transit Corridor Project, Hālawā and Moanalua Ahupuaʻa, ʻEwa and Honolulu Districts, Oʻahu Island, TMK Sections [1] 1-1 and 9-9 (Various Plats and Parcels) (Hammatt 2014)
Date	February 2014
Project Number	Cultural Surveys Hawaiʻi, Inc. (CSH) Job Code: HALAWA 17
Project Location	The proposed Honolulu High-Capacity Transit Corridor Project (HHCTCP) extends approximately 20 miles (32 km) from Kapolei in the west to Ala Moana Shopping Center in the east. The focus of this archaeological monitoring plan consists of Construction Section 3 (Airport Section) of the HHCTCP, extending from Kamehameha Highway in the west (just south of Aloha Stadium) to the Middle Street Interchange in the east. The monitoring program area is depicted on a 1998 Honolulu U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle.
Project Funding and Land Jurisdiction	Project funding comes from the Federal Transit Administration (FTA) and the City and County of Honolulu (City). The project area is located on portions of Federal, State, City, and Private land. Federal lands bounded by Radford Drive, Tarawa Drive, and Kamehameha Highway are proposed for the Pearl Harbor Naval Base Station. State lands include portions of the corridor along Kamehameha Highway, North Nimitz Highway, the H-1 Freeway, Aolele Street, and the Honolulu International Airport. City lands include portions of the corridor along Ualena Street and Waiwai Loop. Private lands (privately owned at the present time) are understood to include Harry B. Kronick Trust lands near Kamehameha Highway and Kalaloa Street and private holdings on Waiwai Loop including lands of the John V. Brewer Trust, Chevron USA Inc., International Express, Inc., Queen Bee Limited Partnership, Waiwai Loop Rental Inc., Window World Inc., Watumull Enterprises Ltd., Alert Holdings Group, Inc., and 2676 Waiwai Loop LLC.
Investigation Permit Number	Monitoring will likely be performed under Hawaiʻi State Historic Preservation Division (SHPD) permit No. 14-04 and subsequent annual permits, issued per Hawaiʻi Administrative Rules (HAR) § 13-282.
Agencies	City and County of Honolulu (City), SHPD, Federal Transit Administration (FTA), U.S. Navy, and the Hawaiʻi State Department of Transportation (Airport Division)
Project Description	The HHCTCP's purpose is to provide high-capacity rapid transit in the highly congested east-west transportation corridor between Kapolei and the Ala Moana Center via a fixed guideway rail transit system. In addition to the guideway, the transit system will involve construction of transit stations and ancillary support facilities. The four transit facilities planned for Airport Section (Section 3) are the following: (1) Pearl Harbor Naval Base Station, (2) Honolulu International Airport Station, (3) Lagoon Drive Station, and (4) a "System Site" transit facility 250 m east of the Lagoon

	<p>Drive Station. The project also requires relocation of existing utility lines within the project corridor that conflict with the proposed project design. Minimally, land-disturbing activities will include grading of facility locations and excavations for guideway column foundations, subsurface utility relocation and installation, and station and ancillary facility foundation construction.</p>
Project Acreage	<p>The Airport Section project area consists of an approximately 4.8 mile (7.74 km) segment of the overall 20 miles (32 km) HHCTCP; project engineers estimate the area of direct ground disturbance 9.06 acres (394,504 square feet).</p>
Project Related Ground Disturbance	<p>Direct project-related ground disturbance activities include any areas excavated for the placement of piers to support the elevated structures, foundations for buildings and structures, utility installation or relocation, grading to provide parking, or other construction-related ground disturbance, including preparation of construction staging areas.</p>
Historic Preservation Regulatory Context and Document Purpose	<p>Due to federal (FTA) funding and use of federal (U.S. Navy) lands, this project is a federal undertaking, requiring compliance with Section 106 of the National Historic Preservation Act (NHPA), the National Environmental Policy Act (NEPA), and Section 4(f) of the Department of Transportation Act. Through the Section 106 historic preservation review process, the project's lead federal agency, FTA, has determined that the undertaking will have an adverse effect on historic properties currently listed, or eligible for listing, on the National Register of Historic Places (NRHP). The Hawai'i State Historic Preservation Officer (SHPO) concurred with this undertaking effect determination (refer to the project's Programmatic Agreement (PA for further documentation).</p> <p>To mitigate the undertaking's potential adverse effect, a PA was executed 18 January 2011, with FTA, Hawai'i SHPO, the United States Navy, and the Advisory Council on Historic Preservation as signatories, and the City as an invited signatory. PA Stipulation III requires that an archaeological inventory survey plan (AISP) be prepared and approved by the SHPD for each of the four HHCTCP construction sections.</p> <p>An AISP for the Airport Section (Hammatt and Shideler 2011) was prepared to fulfill PA Stipulation III and was accepted in the SHPD Section 106 review letter of 2 December 2011 (LOG NO: 2011.2167; DOC NO: 1211NN01). The AISP defines the scope of work and details the proposed methods and sampling strategy for this AIS in accordance with the requirements for an AISP stated in HAR § 13-275-5(c).</p>

	<p>Subsequently, consideration was given to an alternate site (Alternate A) for the Honolulu International Airport Station, to be located about 60 m south (<i>makai</i>) of the Honolulu International Airport Station location addressed in the Hammatt and Shideler (2011) AISP. This alternate station site was addressed in an Addendum AISP (Hammatt and Shideler 2013). The Addendum AISP was accepted in the SHPD Section 106 review letter of 1 March 2013 (LOG NO: 2013.1957; DOC NO: 1302SL29).</p> <p>Following the approved AISP (Hammatt and Shideler 2011) as amended in the Addendum AISP (Hammatt and Shideler 2013) the Airport Section AIS investigation was completed. An AIS report (AISR) was prepared in consideration of the <i>Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation</i> and to support the project's PA and Section 106 compliance (Hammatt et al. 2013). This AIS investigation also supported the undertaking's historic preservation review under Hawai'i Revised Statutes (HRS) § 6E-8 and Hawai'i Administrative Rules (HAR) § 13-275 governing procedures for historic preservation review for governmental projects, and § 13-276 governing standards for Archaeological Inventory Surveys and Reports. The Airport Section AISR was accepted in the SHPD Section 106 review letter of 26 August 2013 (LOG NO: 2013.2279, 2013.4326; DOC NO: 1308SL20).</p> <p>Per ongoing consultation with SHPD, it was determined that the Airport Section (Section 3) would be constructed under an archaeological monitoring program as an archaeological cultural resource mitigation measure. Archaeological monitoring is specified in Section III.E.1 of the project's PA as an appropriate form of historic property mitigation. This archaeological monitoring plan fulfills the state requirements for monitoring plans under HAR § 13-279-4 and was written to support the proposed project's historic preservation review under Hawai'i Revised Statutes (HRS) § 6E-8 and HAR § 13-275. This document was prepared in compliance with the <i>Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation</i> and is intended to support the project's PA and Section 106 compliance.</p>
<p>Cultural Resources¹/ Historic Properties² Potentially Affected</p>	<p>This monitoring plan addresses the two historic properties documented during the Airport Section 3 AIS.</p> <p>SIHP # 50-80-13-7420 consists of sections of buried asphalt roadway, likely associated with an early alignment of Kamehameha Highway, or possibly another as-yet unidentified mid-twentieth century road. It was assessed as National- and Hawai'i Register-eligible under Criterion D.</p> <p>SIHP # 50-80-13-7421 consists of buried concrete slabs, a prepared coral pavement, and underlying base course identified as probable remnants of warehouses and/or other infrastructure erected by the military in 1942-1943. It was assessed as National- and Hawai'i Register-eligible under Criterion D.</p>

<p>Recommended Monitoring</p>	<p>The proposed monitoring program will serve as a mitigation measure that facilitates identification, proper documentation, and treatment decisions should previously unidentified archaeological cultural resources, including burials, be encountered. If encountered and if appropriate, these previously unknown archaeological cultural resources will be treated as “post-review discoveries” under 36 CFR 800.13 and HAR § 13-280 (“Procedures for Inadvertent Discoveries During A Project Covered by the Historic Preservation Review Process”). Inadvertent burial discoveries will follow the procedures outlined in Hawaii State burial law (HAR § 13-300-40). Because the project does not involve federal or tribal (Department of Hawaiian Homelands) property, the Native American Graves Protection and Repatriation Act (NAGPRA) will not apply for potentially Native Hawaiian inadvertent burial discoveries.</p> <p>The monitoring program will include all project-related ground-disturbing activities. In addition to project construction activities (e.g. construction of the guideway, transit stations, and ancillary support facilities as well as installation of subsurface utilities), project-related activities include any pre-construction planning and design-related ground-disturbance such as potholing, geotechnical boring, tree relocations, or any other subsurface activities.</p> <p>The monitoring program will consist of both on-site and on-call monitoring. On-site monitoring is recommended for all construction-related ground disturbance activities within areas where known historic properties or potential archaeological cultural resources are located; these areas include the vicinity of Hālawā Stream, Ke‘ehi Lagoon, SIHP # -7420, and SIHP # -7421. On-call monitoring is recommended for all pre-construction ground disturbance activities (i.e project planning and design) along the entire Airport Section, as well as all construction-related ground disturbance activities located outside of the four areas specified above. Any departure from this will only follow consultation with, and written concurrence from, the SHPD.</p> <p>In addition to providing archaeological monitoring coverage of the Airport Section project area, this monitoring plan will serve to ensure that any archaeological investigative work related to construction activity within Section 1 of the HHCTCP is documented within an archaeological monitoring report. While the archaeological inventory survey report for the HHCTCP Section 1 recommended “no further archaeological mitigation measures” for this area, including no monitoring program for Section 1, the potential for subsurface cultural deposits or human skeletal remains was noted and appropriate procedure was delineated as follows: “If in the unlikely event that subsurface cultural deposits or human skeletal remains are encountered during the course of project-related construction activities, all work in the immediate area should stop and the SHPD should be promptly notified” (Hammatt 2010:431). The current monitoring plan will</p>
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	ensure that any archaeological work related to such on-call investigations within Section 1 will be documented and an appropriate archaeological report submitted to the SHPD.
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¹In historic preservation parlance, cultural resources are the physical remains and/or geographic locations that reflect the activity, heritage, and/or beliefs of ethnic groups, local communities, states, and/or nations. Generally, they are at least 50 years old, although there are exceptions, and include buildings and structures; groupings of buildings or structures (historic districts); certain objects; archaeological artifacts, features, sites, and/or deposits; groupings of archaeological sites (archaeological districts); and, in some instances, natural landscape features and/or geographic locations of cultural significance.

² Historic properties, as defined in 36 CFR 800.16, are any prehistoric or historic districts, sites, buildings, structures, or objects included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This includes artifacts, records, and remains that are related to and located within such properties, as well as properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria. Determinations of eligibility are generally made by a federal agency official in consultation with the SHPO. Under federal legislation, a project's (undertaking's) potential effect on historic properties must be evaluated and potentially mitigated. Under Hawai'i State historic preservation legislation, historic properties are defined as any cultural resources that are 50 years old, regardless of their historic/cultural significance under state law, and a project's effect and potential mitigation measures are evaluated based on the project's potential impact to "significant" historic properties (those historic properties determined eligible, based on their integrity and historic/cultural significance in terms of established significance criteria, for inclusion in the Hawai'i Register of Historic Places). Determinations of eligibility to the Hawai'i Register result when a state agency official's historic property "significance assessment" is approved by SHPD, or when SHPD itself makes an eligibility determination for a historic property.

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Section 1 Introduction

1.1 Project Background

Cultural Surveys Hawai‘i, Inc. (CSH) prepared this archaeological monitoring plan (AMP) for the Airport Section (Section 3) of the Honolulu High-Capacity Transit Corridor Project (HHCTCP) for the Honolulu Authority for Rapid Transit (HART) of the City & County of Honolulu (City), and for the Federal Transit Administration (FTA), and on behalf of PB Americas, Inc. (PB). The entire proposed HHCTCP project corridor extends approximately 20 miles (32 km) from East Kapolei in the west to Ala Moana Center in the east. The HHCTCP corridor is divided into four sections. From west to east these are: Section 1, West O‘ahu/Farrington Highway, extending from East Kapolei to approximately Leeward Community College; Section 2, Kamehameha Highway, extending from Leeward Community College to approximately Aloha Stadium; Section 3, Airport, extending from Aloha Stadium to approximately the Middle Street Interchange; and Section 4, City Center, extending from Middle Street to Ala Moana Center.

The HHCTCP’s purpose is to provide high-capacity rapid transit in the highly congested east-west transportation corridor between Kapolei and Ala Moana Center via a fixed guideway rail transit system. FTA and the City will fund the project construction. In addition to the guideway, the project will require construction of transit stations and ancillary support facilities as well as installation of subsurface utilities.

The Airport Section project area extends from the Aloha Stadium Station in the west to approximately the Middle Street Interchange in the east, and is located within the traditional Hawaiian land divisions of Hālawā Ahupua‘a (‘Ewa District) and Moanalua Ahupua‘a (Honolulu District), Island of O‘ahu, Tax Map Key (TMK) [1] 1-1 and 9-9 (Various Plats and Parcels). The Airport Section project area is depicted on a U.S. Geological Survey (USGS) 7.5-minute series topographic map, Pearl Harbor (1999) and Honolulu (1998) quadrangles (Figure 1), on two tax map plats (Figure 2 and Figure 3), and an aerial photograph (Figure 4).

From west to east, the Airport Section begins just south of the Aloha Stadium and extends along Kamehameha Highway. Directly south of Radford Drive, the Pearl Harbor Naval Base Station platform will extend over Kamehameha Highway with an associated section of the station at ground level on the southeast corner of Radford Drive and Kamehameha Highway. From this station, the route continues south on the Kamehameha Highway, passes through the Center Drive intersection, and continues south following the alignment of the H-1 Freeway Viaduct before crossing to the *makai* (seaward) side of Nimitz Highway by Valkenburgh Street. The route continues southeast past Main and Elliott Streets. At Aolele Street the route turns south (*makai*), continuing along the east side of the *mauka/makai* (inland/seaward) trending Aolele Street, curving east at Ala Onaona Street, to the Honolulu International Airport Station, located just northwest of the main Honolulu Airport overseas parking structure. From that station, the route continues east following the alignment of Ala Onaona Street, crossing Pai‘ea Street. Past Aowena Place, the route angles *mauka* to cross from Aolele Street to Ualena Street. The route then follows Ualena Street, crossing Lagoon Drive. The Lagoon Drive Station is immediately east of Lagoon Drive on the south portion of Waiwai Loop (*mauka* and *makai* entrance buildings

are on either side of this portion of Waiwai Loop). From that station, the route continues east on the south side of the south portion of Waiwai Loop, crossing over an area of warehouses to Ke'ehi Lagoon Beach Park. The route angles northeast through Ke'ehi Lagoon Beach Park, *makai* of the tennis courts, and crosses Moanalua Stream *makai* and parallel to Nimitz Highway. In the short stretch between Moanalua Stream and Kalihi Stream, the route crosses *mauka* of Nimitz Highway, joining Kamehameha Highway at the Middle Street intersection where it meets the City Center (Section 4) project area.

The Airport Section project area is primarily located within existing road right-of-ways owned by the State of Hawai'i or the City, including Kamehameha Highway, North Nimitz Highway, Aolele Street, and Ualena Street to the vicinity of Lagoon Drive, then back to Nimitz Highway, then turning to Kamehameha Highway just west of Kalihi Stream. Support facilities along the project corridor are located on adjacent privately owned lands.

Three proposed transit stations are within the Airport Section project area: (1) Pearl Harbor Naval Base Station; (2) Honolulu International Airport Station; and (3) Lagoon Drive Station. In addition, a "System Site" transit facility, located 250 m east of the Lagoon Drive Station, is planned. Project construction will also require relocation of existing utility lines within the project corridor that conflict with the proposed project design. Minimally, land-disturbing activities will include grading of facility locations and excavations for guideway column foundations, subsurface utility relocation and installation, and station and ancillary facility foundation construction.

1.2 Historic Preservation Regulatory Context

Due to federal (FTA) funding and use of federal (U.S. Navy) lands, this project is a federal undertaking as defined in 36 CFR 800.16, requiring compliance with Section 106 of the National Historic Preservation Act (NHPA), the National Environmental Policy Act (NEPA), and Section 4(f) of the Department of Transportation Act. Through the Section 106 historic preservation review process, the project's lead federal agency, FTA, has determined that the undertaking will have an adverse effect on historic properties currently listed, or eligible for listing, on the National Register of Historic Places (NRHP). The Hawai'i State Historic Preservation Officer (SHPO) concurred with this undertaking effect determination.

To mitigate the undertaking's potential adverse effect, a Section 106 Programmatic Agreement (PA) was executed 18 January 2011, with FTA, Hawai'i SHPO, the U.S. Navy, and the Advisory Council on Historic Preservation as signatories, and the City as an invited signatory. PA Stipulation III requires that an archaeological inventory survey plan (AISP) be prepared and approved by the SHPD for each of the four HHCTCP construction sections.

An AISP for the Airport Section project area (Hammatt and Shideler 2011) was prepared to fulfill PA Stipulation III and was approved by the State Historic Preservation Division (SHPD) on 2 December 2011 (LOG NO: 2011.2167; DOC NO: 1211NN01) (see Appendix A). The AISP defines the scope of work and details the proposed methods and sampling strategy for the AIS, in accordance with the requirements for an AISP as stated in Hawai'i Administrative Rules (HAR) § 13-275-5(c).

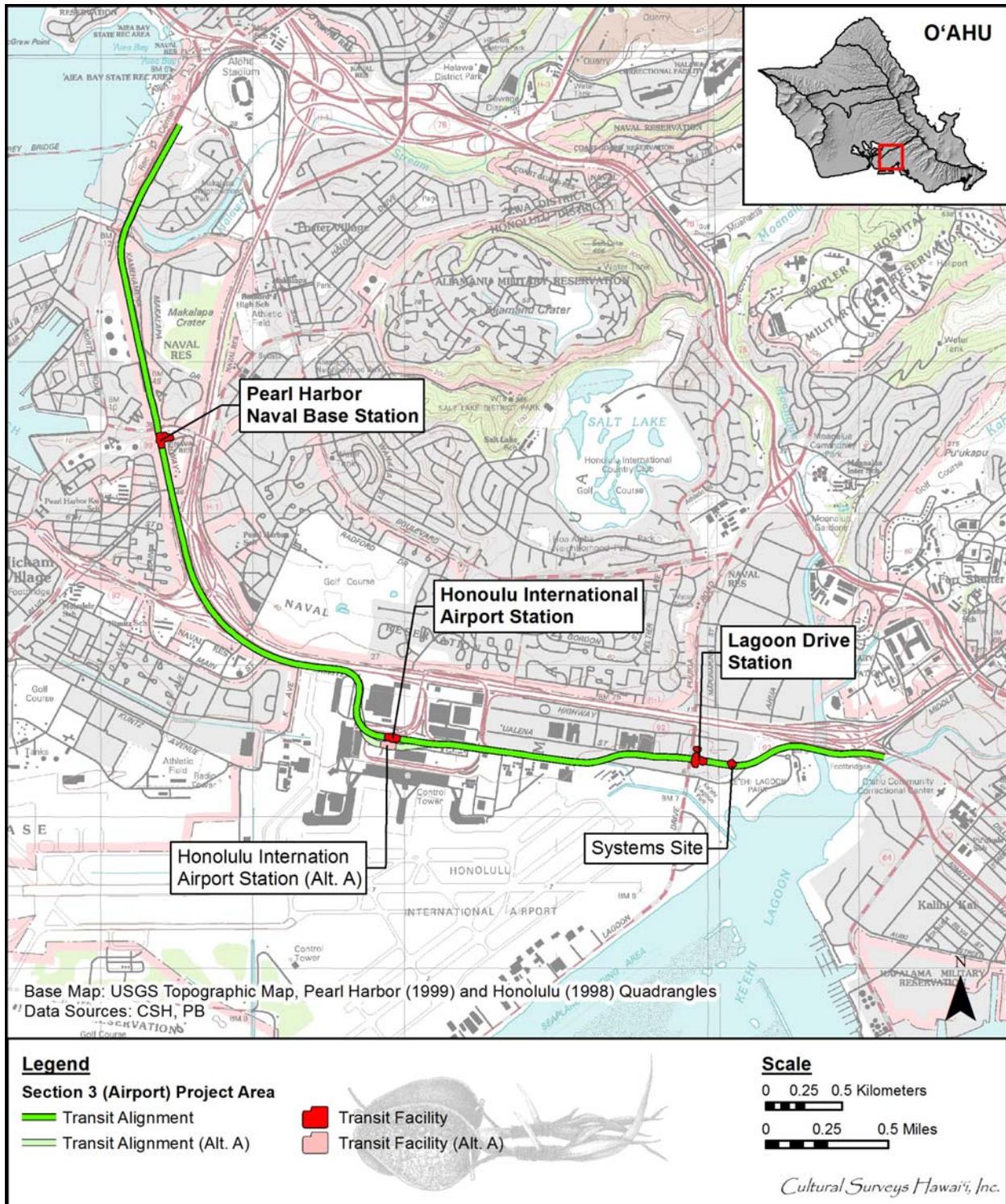


Figure 1. Airport Section (Section 3) project area shown on USGS 7.5-minute series topographic maps, Pearl Harbor (1999) and Honolulu (1998) quadrangles

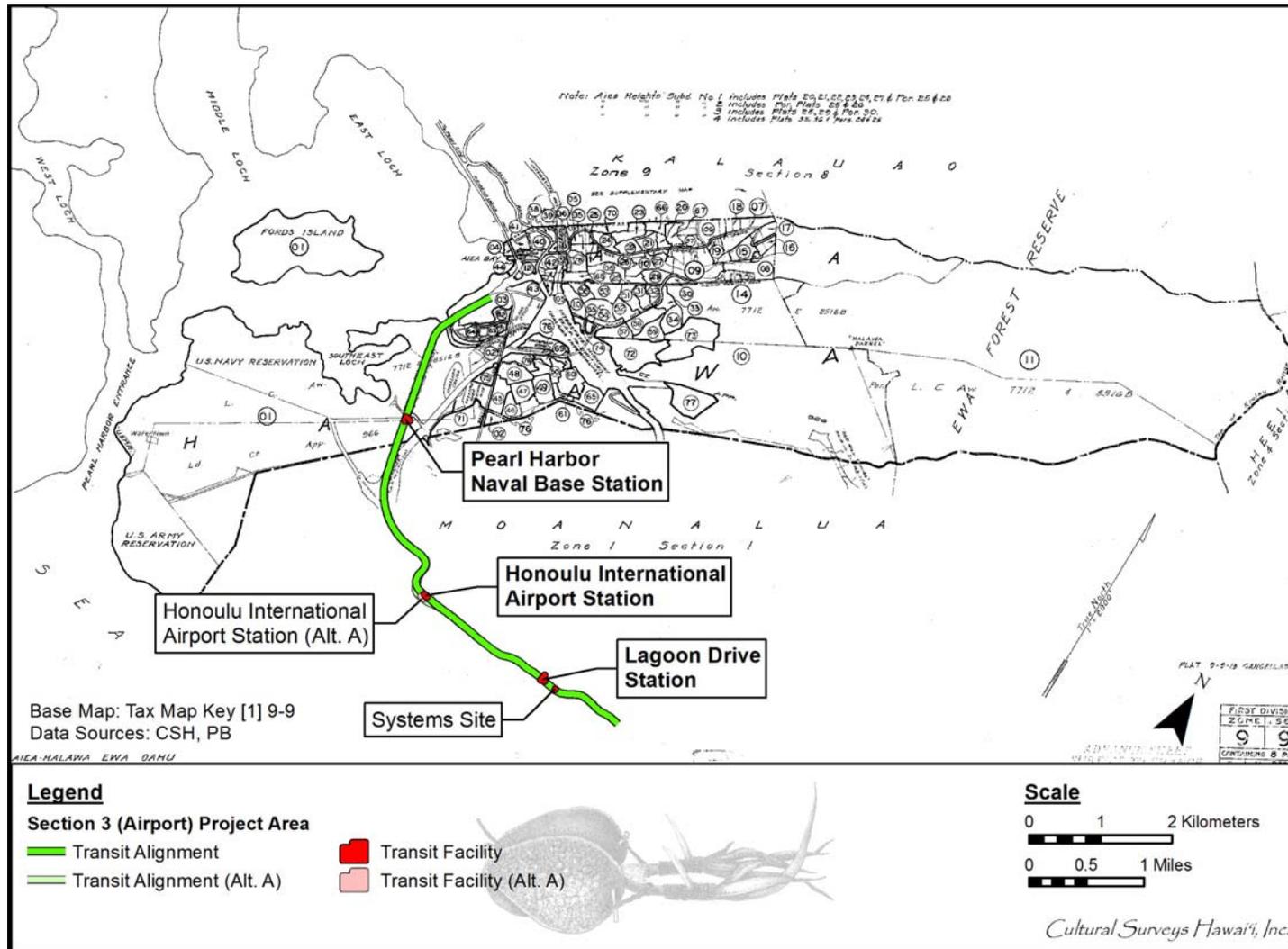


Figure 2. Tax Map Key (TMK) section map [1] 9-9 (Hālawa) showing western portion of Airport Section project area; also shown is project area in TMK Section [1] 1-1 (Moanalua)

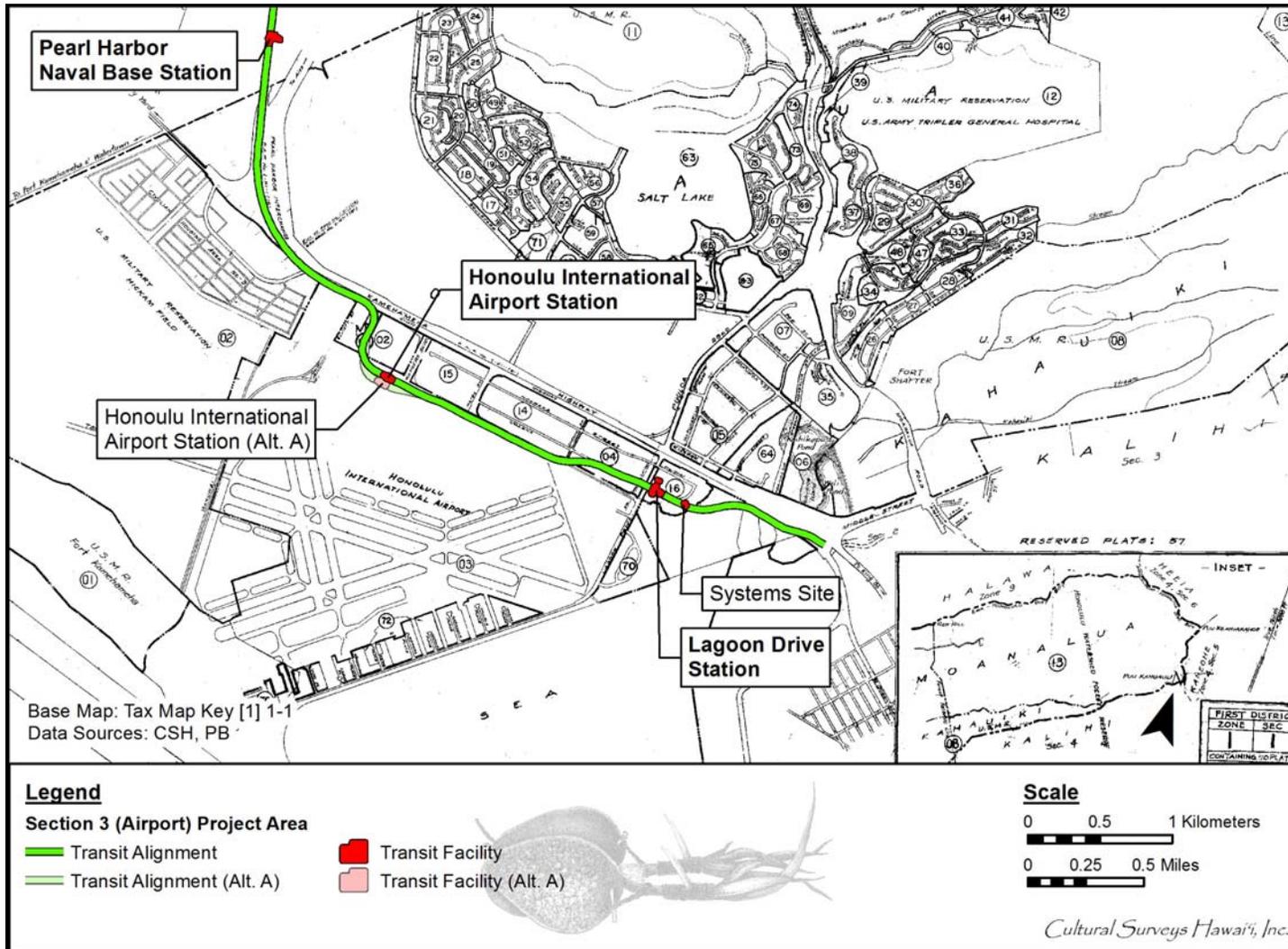


Figure 3. Tax Map Key (TMK) Section map [1] 1-1 showing the eastern portion of the Airport Section project area; also shown is Pearl Harbor Naval Base Station in TMK Section map [1] 9-9

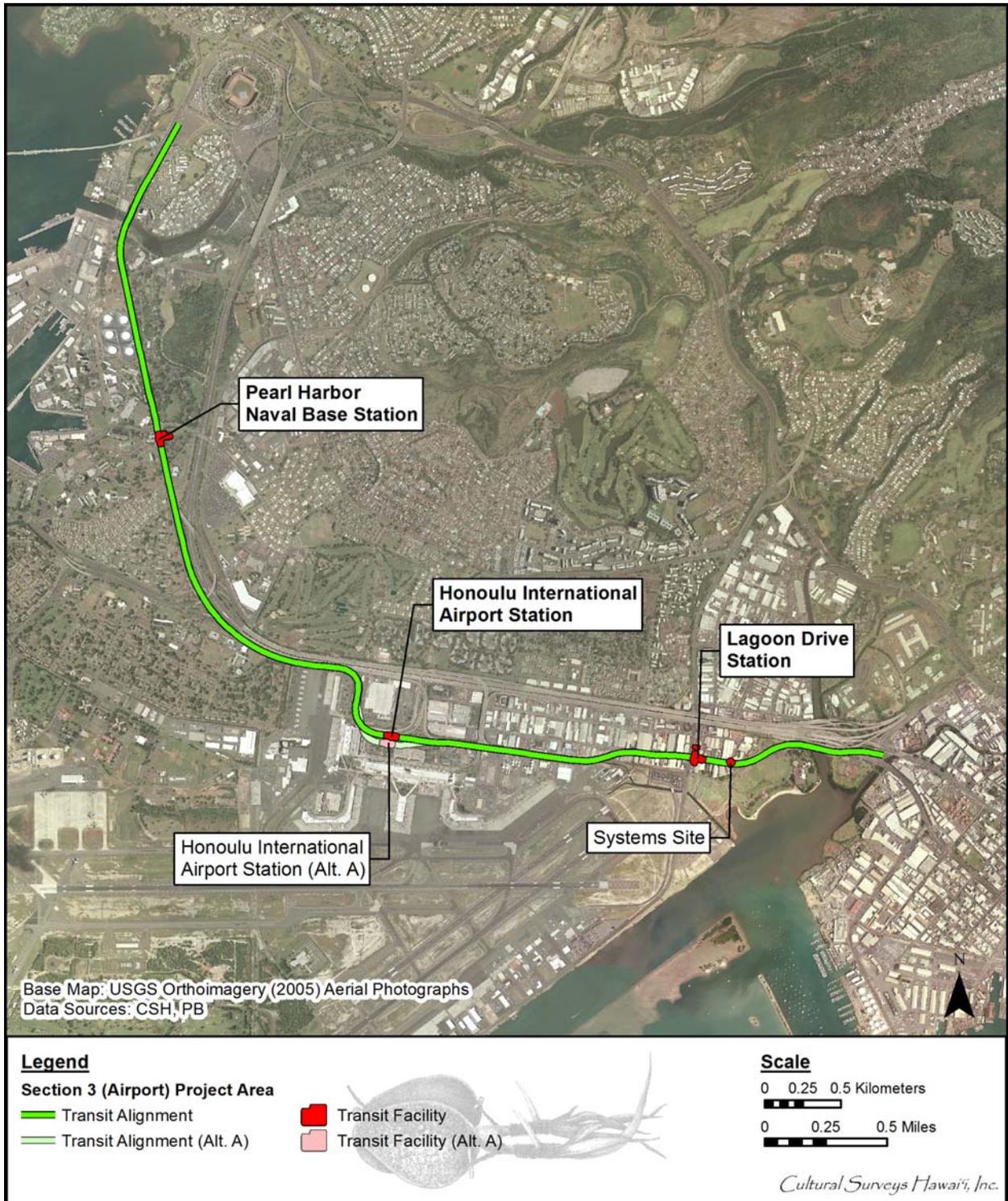


Figure 4. Overlay of the Airport Section corridor and stations on a 2005 aerial photograph of the area (source: USGS Orthoimagery 2005)

Subsequently, consideration was given to a possible alternate site (Alternate A) for the Honolulu International Airport Station, located about 60 m south (*makai*) of the Honolulu International Airport Station location indicated in the AISP (Hammatt and Shideler 2011). This alternate station site was addressed in an Addendum AISP (Hammatt and Shideler 2013). The Addendum AISP was accepted in the SHPD Section 106 review letter of 1 March 2013 (LOG NO: 2013.1957; DOC NO: 1302SL29) (see Appendix A).

Following the approved Airport Section AISP (Hammatt and Shideler 2011) as amended in the Addendum AISP (Hammatt and Shideler 2013), the Airport AIS investigation was completed in November 2012. The AIS report (AISR) was prepared in consideration of the *Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation* and to support the project's PA and Section 106 compliance (Hammatt et al. 2013). The AIS investigation also supported the undertaking's historic preservation review under Hawai'i Revised Statutes (HRS) § 6E-8 and Hawai'i Administrative Rules (HAR) § 13-275 governing procedures for historic preservation review for governmental projects, and Chapter 13-276 governing standards for Archaeological Inventory Surveys and Reports. The AISR was reviewed and accepted by the SHPD on 26 August 2013 (LOG NO: 2013.2279, 2013.4326; DOC NO: 1308SL20) (see Appendix A).

Per ongoing consultation with the SHPD, it was determined that the Airport Section (Section 3) would be constructed under an archaeological monitoring program as an archaeological cultural resource mitigation measure. Archaeological monitoring is specified in Section III.E.1 of the project's PA as an appropriate form of historic property mitigation. This archaeological monitoring plan fulfills the state requirements for monitoring plans under HAR § 13-279-4 and was written to support the proposed project's historic preservation review under Hawai'i Revised Statutes (HRS) § 6E-8 and HAR § 13-275. This document was prepared in compliance with the *Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation* and is intended to support the project's PA and Section 106 compliance.

The Airport Section AIS identified two archaeological historic properties within the project area (see Appendix B). The archaeological monitoring program will provide the opportunity to collect additional information on the two historic properties as well as to serve as a mitigation measure that facilitates identification, proper documentation, and treatment decisions should previously unidentified archaeological cultural resources, including burials, be encountered.

The HHCTCP area of potential effect (APE) for archaeological cultural resources is defined in the HHCTCP Programmatic Agreement (Stipulation II.A.1.) as all areas of direct ground disturbance. For the Airport Section project area, project engineers estimate that the project's area of direct ground disturbance is approximately 9.06 acres.

1.3 Overview of Proposed Project Construction

The design, method of construction, and timeline of the project continue to be refined. This overview of proposed project construction is a synopsis of the information provided in the HHCTCP Final Environmental Impact Statement (FEIS) (USDOT/FTA and C&C/DTS 2010).

1.3.1 Fixed Guideway and Transit Stations

The HHCTCP involves construction of a fixed guideway rail transit system that will consist primarily of elevated structures. The main components of the fixed guideway system are: the elevated guideway structure, guideway foundation columns, and transit stations. The guideway foundation columns generally consist of a single 8-foot diameter column, spaced on average, about every 120 feet, with shorter or longer spans used where needed. Transit stations generally consist of elevated platform structures with ground-level entrance buildings. The subsurface impacts associated with the fixed guideway and transit stations will be primarily associated with excavations for the guideway foundation columns and excavations associated with the construction of ground-level station buildings, including subsurface utilities, elevator shafts, etc.

Two methods will be used to construct the guideway foundations, dictated by structural demands and existing subsurface conditions. Drilled shafts are the preferred foundation excavation method, which involves: drilling with a 6- to 10-foot diameter auger to depths of 50 to 150 feet, installation of a rebar cage in the shaft, and filling the shaft with concrete. Driven-pile foundations will be constructed where lateral loads, geotechnical, or other site conditions prohibit the use of drilled shafts. Construction of driven-pile foundations involves: excavations to accommodate the pile cap; pile driving by striking the pile with a heavy weight, vibrating the pile or jacking the pile into the ground; and forming and casting the pile cap with concrete.

1.3.2 Support Facilities

Ancillary support facilities for the transit system include maintenance and storage facilities and traction power substations. These facilities will be constructed at ground level, adjacent to the transit corridor. Subsurface impacts will include: grading of the facility locations and excavations for building foundations, subsurface utility installation or relocation, and landscaping.

1.3.3 Ancillary Impacts

Project construction will require relocation of existing utility lines within the project corridor that conflict with the proposed project design. The nature and extent of utility relocations in the study area are still being determined but, as shown in Table 1, present estimates are that the vast majority of subsurface impacts will be ancillary impacts (particularly for utility relocation, roadway work and building demolition).

Guideway foundation excavations will extend below the water table, potentially creating significant need for the management of displaced water and/or drilling slurry. It is unclear at this time how wastewater and drilling slurry will be managed. De-watering pits may be excavated to temporarily collect and treat wastewater and drilling slurry prior to reuse or disposal.

Construction staging areas will be needed to provide adequate space for construction equipment, stockpiling and transfer of construction materials, parking, and other construction-related activities. While the use of the proposed ancillary maintenance and storage facility areas and transit stations have been identified as potential staging areas, additional locations may be needed. The locations of additional construction staging areas have not yet been determined. Grading of the construction staging areas may be necessary.

1.3.4 Summary of Subsurface Impacts

While the construction of the “touch down” facilities of the three transit stations and the excavations for the column foundations for the fixed guideway may be the most obvious project-related subsurface impacts, the data available to us is that collectively, these will account for only an estimated 9.05 % of the area of project-related subsurface impacts.

The utility relocations needed for this project are quite substantial. The “dry” utilities including electric and gas line relocations are estimated to account for a third (33%) of the ground disturbance.

The “wet” utility relocations including water, sewer, and storm sewer improvements are anticipated to account for about 20% of the project-related subsurface impacts.

Demolition is anticipated to account for about 10% of project-related subsurface impacts. Existing building demolition will include excavations to remove building foundations and associated utilities and grading of the cleared land surface once demolition is done.

1.4 Environmental Setting

1.4.1 Natural Environment

The Airport Section project area lies at about 40 foot elevation on what has come to be referred to in the archaeological literature as the Hālawa-Moanalua Plain. The plain is largely formed by raised reef limestone shelf overlain by clay alluvium and colluvium eroding down from the lower slopes of the Ko‘olau volcanic range and sediments transported by air and water from various post-erosional volcanic events. Three of these post-erosional volcanic craters lie close to the HHCTCP alignment: (1) Makalapa Crater just south of Hālawa Stream and about 300 m to the east of the alignment along Kamehameha Highway, (2) Āliamanu Crater also just south of Hālawa Stream and about 1.1 km to the east of the alignment along Kamehameha Highway, and (3) Salt Lake (Āliapa‘akai) Crater about 800 meters to the north of the North Nimitz Highway portion of the Airport Section 3 corridor (see Figure 1). These three volcanic events significantly displaced the lower reaches of Moanalua Stream, pushing the stream to the east. Hālawa Stream is effectively the northwest end of the Airport Section project area, entering the East Loch of Pearl Harbor about 250 m west of the HHCTCP alignment along Kamehameha Highway (Macdonald and Abbott 1974:374-5).

1.4.1.1 Overview of Soils

The Airport Section project area traverses mixed Fill Land (FL) as it heads south from the Hālawa Stream crossing (Figure 5). After about 500 m, the Kamehameha Highway alignment forms the effective transition zone between mixed Fill Lands on the *makai* side and Kokokahi very stony clay, 0 to 35 percent slopes (KTKE), lands on the *mauka* side. In the vicinity of Radford Drive are small exposures of Rock Land (rRK) bracketing a small exposure of Hanalei silty clay, 2 to 6 percent slopes (HnB). Most of the central North Nimitz Highway portion of the Airport Section corridor alignment traverses Makalapa clay soils, 6 to 12 percent slopes (MdC). As the alignment heads *makai* and extends east along Aolele Street, it traverses Keaau stony clay, 2 to 6 percent slopes (KmaB), soils with fill land on the *makai* side. In the vicinity of

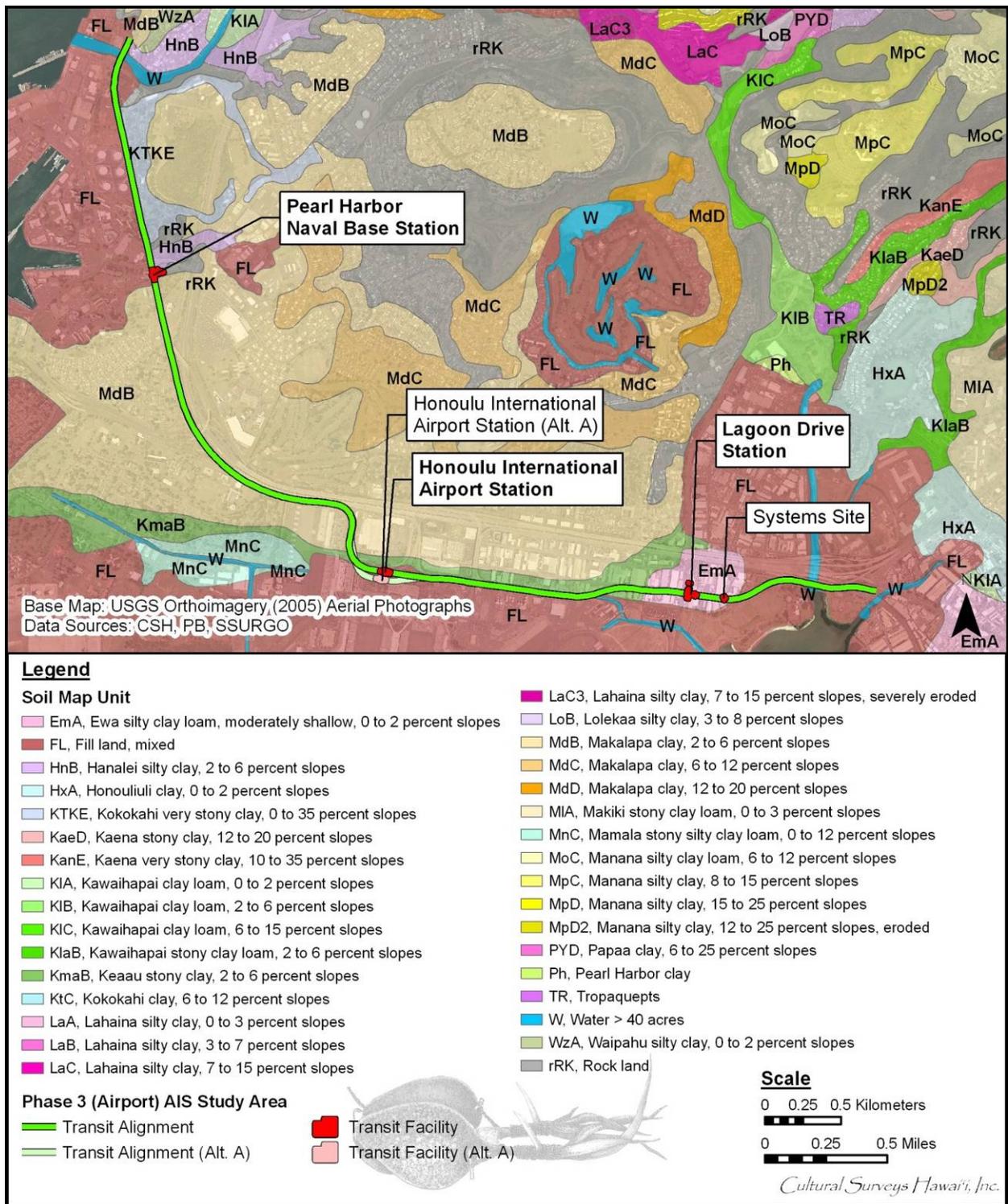


Figure 5. Soils of the Airport Section project area (base map source: USGS Orthoimagery 2005/ data sources: CSH, PB, SSURGO)

Lagoon Drive are Ewa silty clay loam soils, moderately shallow, 0 to 2 percent slopes (EmA). The eastern end of the study area is again mixed Fill Land (Figure 5).

Mixed Fill Land (FL) is common near Pearl Harbor and includes “areas filled with materials dredged from the ocean or hauled from nearby areas, garbage, and general material from other sources” (Foote et al. 1972:31).

Kokokahi very stony clay, 0 to 35 percent slopes (KTKE), consists of moderately well drained soils on talus slopes and alluvial fans developed in colluviums and alluvium derived from basic igneous rock with many stones and boulders on the surface. These soils are used for pasture and home sites (Foote et al. 1972:73).

Rock Land (rRK) is made up of areas where exposed bedrock covers more than 90 percent of the surface. This land type is not suited to farming (Foote et al. 1972:119).

Hanalei silty clay, 2 to 6 percent slopes (HnB), is typically found on stream bottoms and flood plains. Soil runoff is slow and the erosion hazard is slight. This soil is used for sugarcane, taro, and pasture (Foote et al. 1972:38).

Makalapa clay, 6 to 12 percent slopes (MdC), soil is a dark to very dark grayish-brown clay to silty clay loam understood to be derived primarily from volcanic tuff. The permeability and runoff is slow, and erosion hazard is slight, but these soils have a high shrink-swell potential. These soils are associated with urban development and pasture (Foote et al. 1972:87-88).

Keaau stony clay, 2 to 6 percent slopes (KmaB), consists of poorly drained soils on coastal plains developed in alluvium deposited over raised reef limestone or consolidated coral sand with sufficient stones to hinder machine cultivation (Foote et al. 1972:64-65).

Ewa silty clay loam, moderately shallow, 0 to 2 percent slopes (EmA), soil develops in alluvial fans and terraces with a depth to coral limestone of 20 to 50 inches. Runoff is very slow. These lands are used for sugar cane, truck crops, and pasture (Foote et al. 1972:29-30).

Summary of Soils

In general, the soil types of the Airport Section project area are not good agricultural soils. Exceptions are the small patches of Hanalei silty clay and Ewa silty clay loam.

More than 50% of the Airport Section corridor is shown to be fill lands (Figure 5) which suggests both that extensive portions of the former natural land surface may have been close to the water table (or under water) and that these lands have been extensively disturbed by massive grubbing, grading, and fill activities, including historic land reclamation projects.

Fresh Water

The rainfall at the Honolulu International Airport is estimated at 8.0 inches (203 mm) a year (Pacific Disaster Center 2013) which would not support dryland agriculture. Except in the immediate margins of Hālawā Stream, no traditional Hawaiian agriculture would be expected in the Airport Section project area. It is about 5.25 km between the mouth of Hālawā and Moanalua streams making this a particularly dry stretch of O‘ahu’s coast. The low rainfall and distance to streams would have discouraged traditional Hawaiian and early historic habitation.

1.4.2 Built Environment

The Airport Section project area is in an urban landscape of buildings and concrete and asphalt paved surfaces with minimal open or landscaped areas. Nearby undeveloped areas away from streams are mostly in *kiawe* (*Prosopis pallida*) and *koa haole* (*Leucana glauca*) scrub.

1.4.3 Land Jurisdiction

Land jurisdiction includes federal, state, city and private lands (Table 1 and Table 2). Federal lands bounded by Radford Drive, Tarawa Drive, and Kamehameha Highway are proposed for the Pearl Harbor Naval Base Station. State lands include portions of the corridor along Kamehameha Highway, North Nimitz Highway, the H-1 Freeway, Aolele Street, and the Honolulu International Airport. City lands include portions of the corridor along Ualena Street and Waiwai Loop.

Table 1. Land Ownership of Non-Right-of-Way Properties in the Airport Section Project Area

TMK	Owner	Type	Location
9-9-003:066	Harry B. Kronick Trust	Private	Kamehameha Hwy. and Kalaloa St.
9-9-002:004	United States of America	Federal	Kamehameha Hwy. - Hālawā Dr. to Radford Dr.
1-1-002:001	U.S. Postal Service	Federal	Nimitz Hwy. and Aolele St.
1-1-002:004	United States of America	Federal	Nimitz Hwy. and Main St.
1-1-003:001	State DOT Airports Division	State	Airport
1-1-003:011	State DOT Airports Division	State	Airport
1-1-003:010	State DOT Airports Division	State	Airport
1-1-003:009	State DOT Airports Division	State	Airport
1-1-004:018	State DOT Airports Division	State	Ualena St.
1-1-004:017	State DOT Airports Division	State	Ualena St.
1-1-004:015	State DOT Airports Division	State	Ualena St.
1-1-004:014	State DOT Airports Division	State	Ualena St.
1-1-004:013	State DOT Airports Division	State	Ualena St.
1-1-004:012	State DOT Airports Division	State	Ualena St.
1-1-016:015	John V. Brewer Trust	Private	Waiwai Loop and Lagoon Dr.
1-1-016:014	Chevron USA Inc.	Private	Waiwai Loop and Lagoon Dr.
1-1-016:016	International Express Inc.	Private	Waiwai Loop
1-1-016:013	Queen Bee Limited Partnership	Private	Waiwai Loop
1-1-016:017	Waiwai Loop Rental Inc.	Private	Waiwai Loop
1-1-016:012	Window World Inc.	Private	Waiwai Loop
1-1-016:007	Watumull Enterprises Ltd.	Private	Waiwai Loop
1-1-016:006	Alert Holdings Group Inc.	Private	Waiwai Loop
1-1-016:005	2676 Waiwai Loop LLC	Private	Waiwai Loop
1-1-003:006	State DOT Airports Division	State	Ke'ehi Lagoon Park
1-1-003:004	State DOT Airports Division	State	Ke'ehi Lagoon Veterans Memorial

TMK	Owner	Type	Location
1-1-003:138	State of Hawai'i	State	Moanalua Stream
1-1-003:003	State DOT Airports Division	State	Nimitz Hwy and Moanalua Stream

Table 2. Land Ownership of the Right-of-Way Properties in the Airport Section Project Area

ROW	Owner
Kamehameha Hwy	State of Hawai'i
H-1 Freeway	State of Hawai'i
N Nimitz Hwy	State of Hawai'i
Aolele St	State of Hawai'i
Ualena St	City and County of Honolulu
Waiwai Loop	City and County of Honolulu

1.5 Traditional and Historical Background

Traditional and historical background research was conducted as part of the Airport Section (Section 3) AISP and AISR. The background research section provided within the Airport AISR, Volume I, is included as Appendix C of this monitoring plan.

1.6 Previous Archaeological Research

Previous archaeological studies were reviewed as part of the Airport Section (Section 3) AISP and AISR. The previous archaeological research section provided within the Airport AISR, Volume I, is included as Appendix D of this monitoring plan.

Section 2 Archaeological Monitoring Provisions

2.1 Introduction

In consultation among the project proponents, FTA and the City, and the SHPD, it was determined that an archaeological monitoring program was warranted as an historic preservation mitigation measure for the HHCTCP Construction Section 3 (Airport Section) project area. According to the Airport Section AIS's historic background research and excavation results (Hammatt et al. 2013), the project area has two known archaeological historic properties and the potential to contain as-yet unidentified archaeological cultural resources, potentially including burials and/or human skeletal remains.

Under Hawai'i State historic preservation legislation, "Archaeological monitoring may be an identification mitigation, or post-mitigation contingency measure. Monitoring shall entail the archaeological observation of, and possible intervention with, on-going activities which may adversely affect historic properties" (HAR § 13-279-3). Under Hawai'i State historic preservation review legislation, there are five potential forms of historic preservation mitigation: A) Preservation; B) Architectural Recordation; C) Archaeological Data Recovery (which includes archaeological monitoring); D) Historical Data Recovery; and E) Ethnographic Documentation (HAR § 13-275-8).

The proposed monitoring program will serve as a mitigation measure that facilitates identification, proper documentation, and treatment decisions should previously unidentified archaeological cultural resources, including burials, be encountered. If encountered and if appropriate, these previously unknown archaeological cultural resources will be treated as "post-review discoveries" under 36 CFR 800.13 and HAR § 13-280 ("Procedures for Inadvertent Discoveries during a Project Covered by the Historic Preservation Review Process"). Inadvertent burial discoveries will follow the procedures outlined in Hawaii State burial law (HAR § 13-300-40). Because the project does not involve federal or tribal (Department of Hawaiian Homelands) property, the Native American Graves Protection and Repatriation Act (NAGPRA) will not apply for potentially Native Hawaiian inadvertent burial discoveries.

The monitoring program will include all project-related ground-disturbing activities. In addition to project construction activities (e.g. utilities excavations, guideway construction), project-related activities include any pre-construction planning and design-related ground-disturbance such as potholing, geotechnical boring, tree relocations, or any other subsurface activities.

The monitoring program will consist of both on-site and on-call monitoring. On-site monitoring is recommended for construction-related ground disturbance activities within areas where known historic properties or potential archaeological cultural resources are located. These areas include the vicinity of Hālawā Stream, Ke'ehi Lagoon, SIHP # -7420, and SIHP # -7421 (Figure 6 to Figure 10 and Table 3). On-site monitoring of these areas will provide the opportunity to collect additional information on the two historic properties that were identified during the Airport Section AIS. On-call monitoring is recommended for all pre-construction ground disturbance activities (i.e project planning and design) in addition to all construction-related ground disturbance activities located outside of the four areas specified above (see

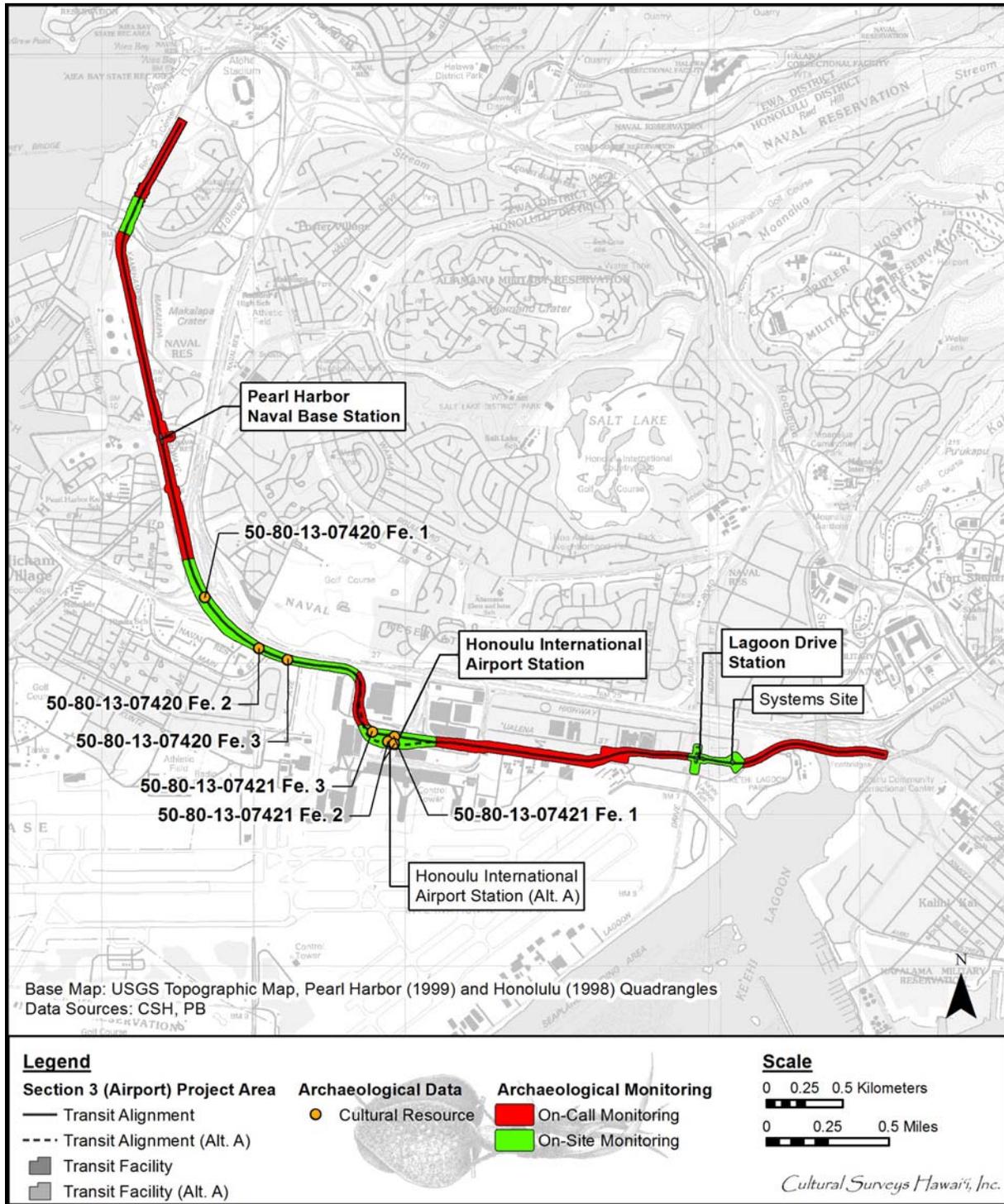


Figure 6. Areas recommended for on-site (green) and on-call (red) archaeological monitoring within the Airport Section (Section 3) project area (Base Map: USGS topographic map, Pearl Harbor (1999) and Honolulu (1998) quadrangles)

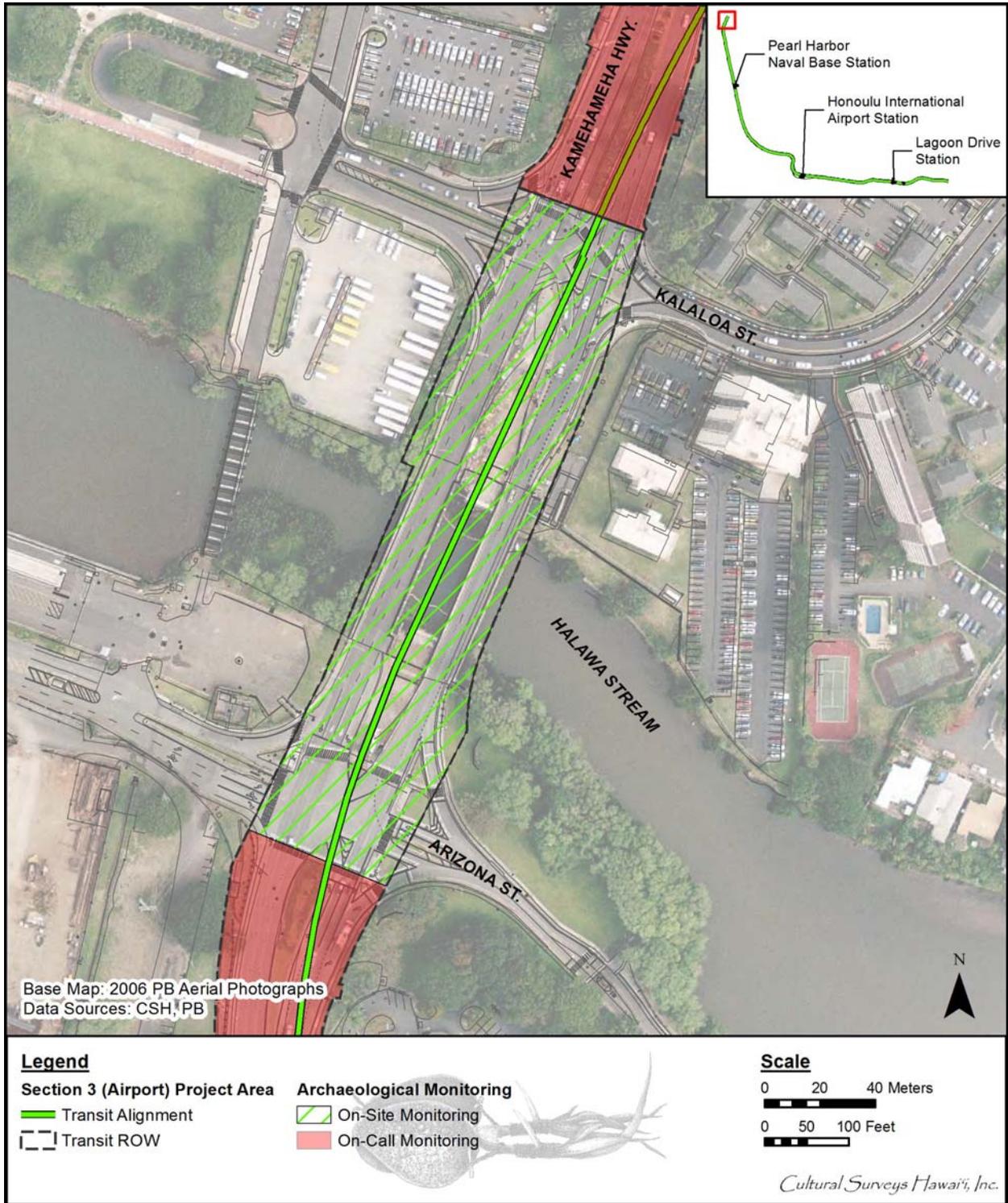


Figure 7. Portion of the Airport Section (Section 3) project area showing the on-site archaeological monitoring area surrounding Hālawā Stream (Base Map: 2006 PB aerial photographs)

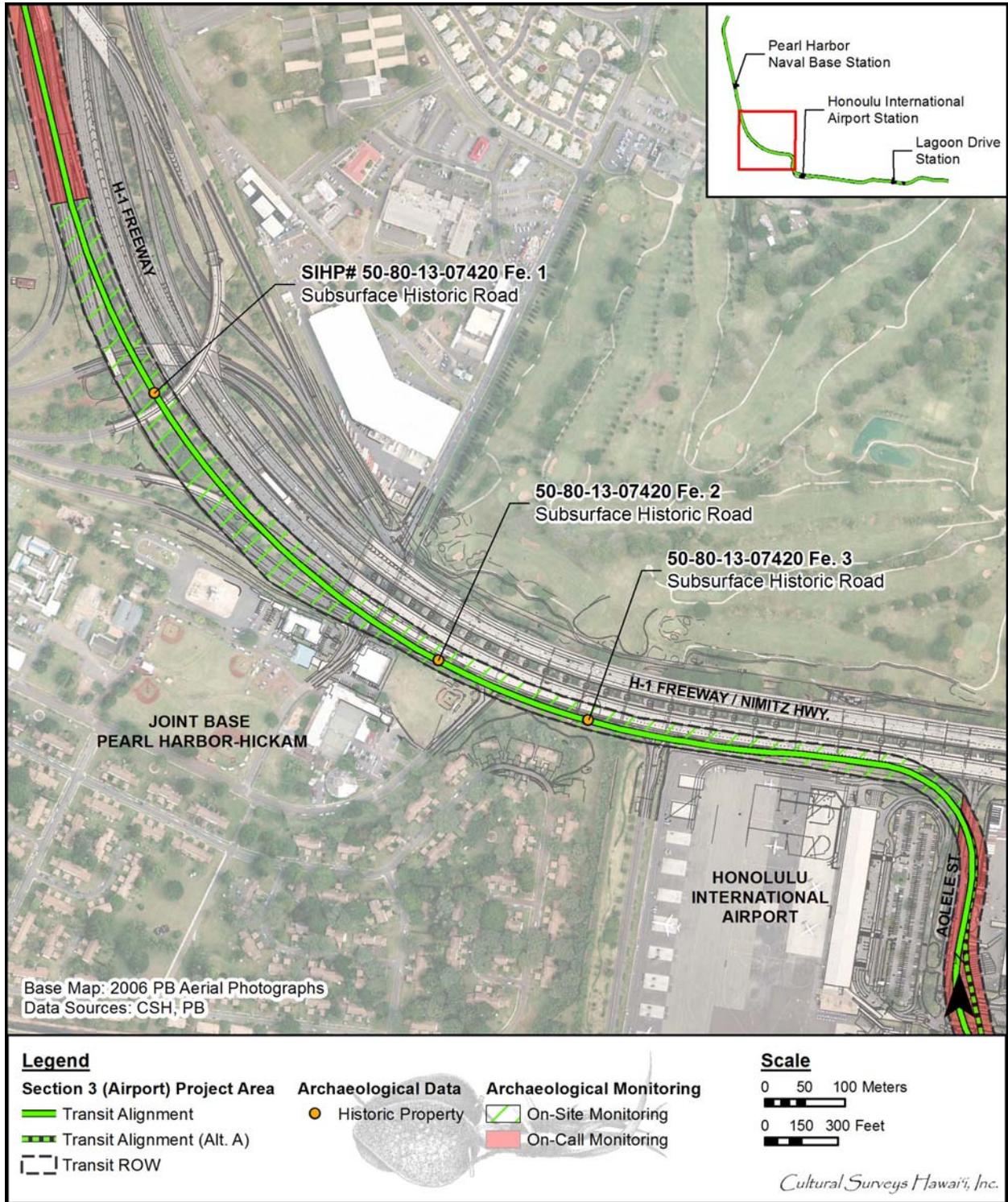


Figure 8. Portion of the Airport Section (Section 3) project area showing the on-site archaeological monitoring area surrounding SIHP # -7420 (Base Map: 2006 PB aerial photographs)

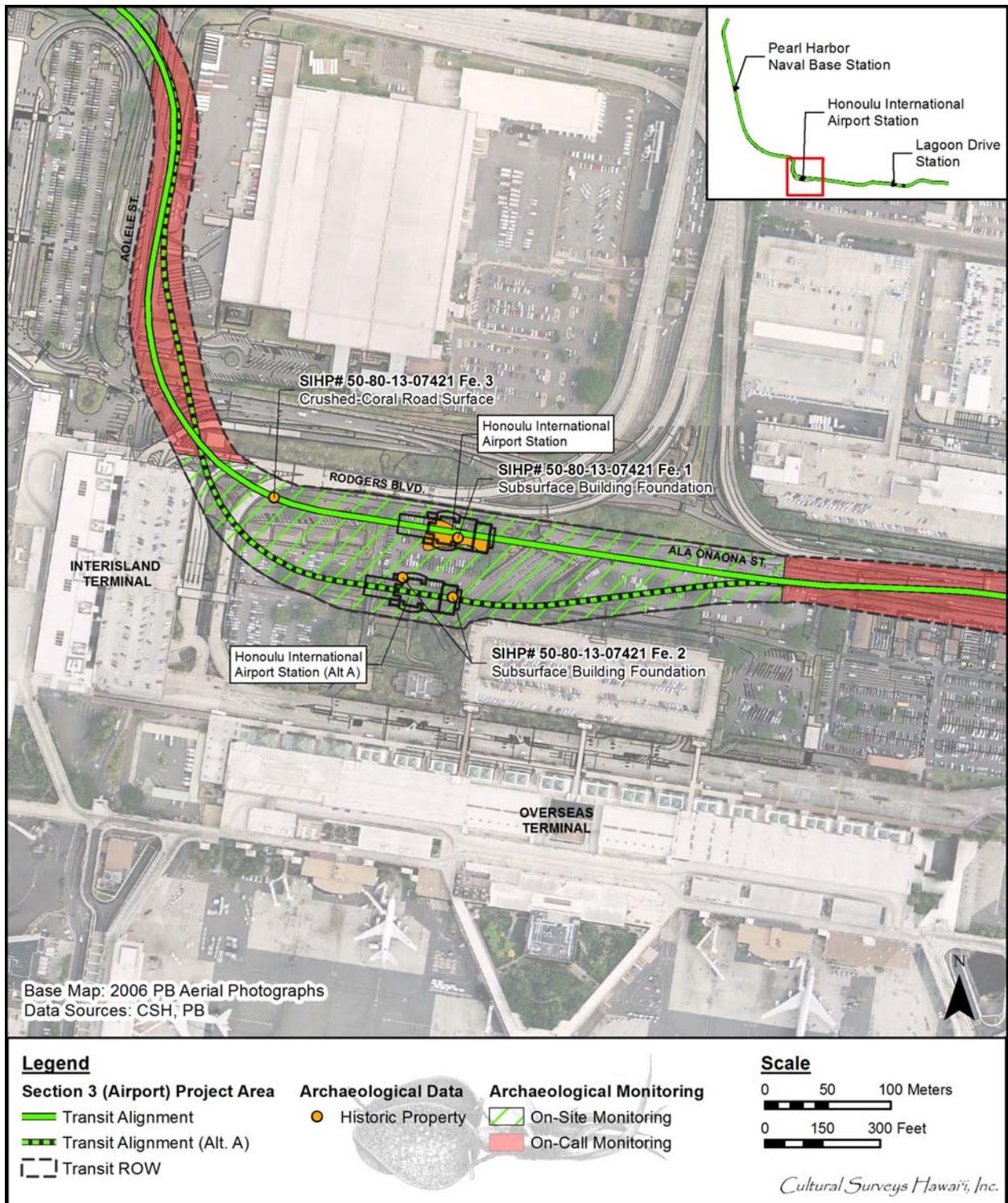


Figure 9. Portion of the Airport Section (Section 3) project area showing the on-site archaeological monitoring area surrounding SIHP # -7421 (Base Map: 2006 PB aerial photographs)

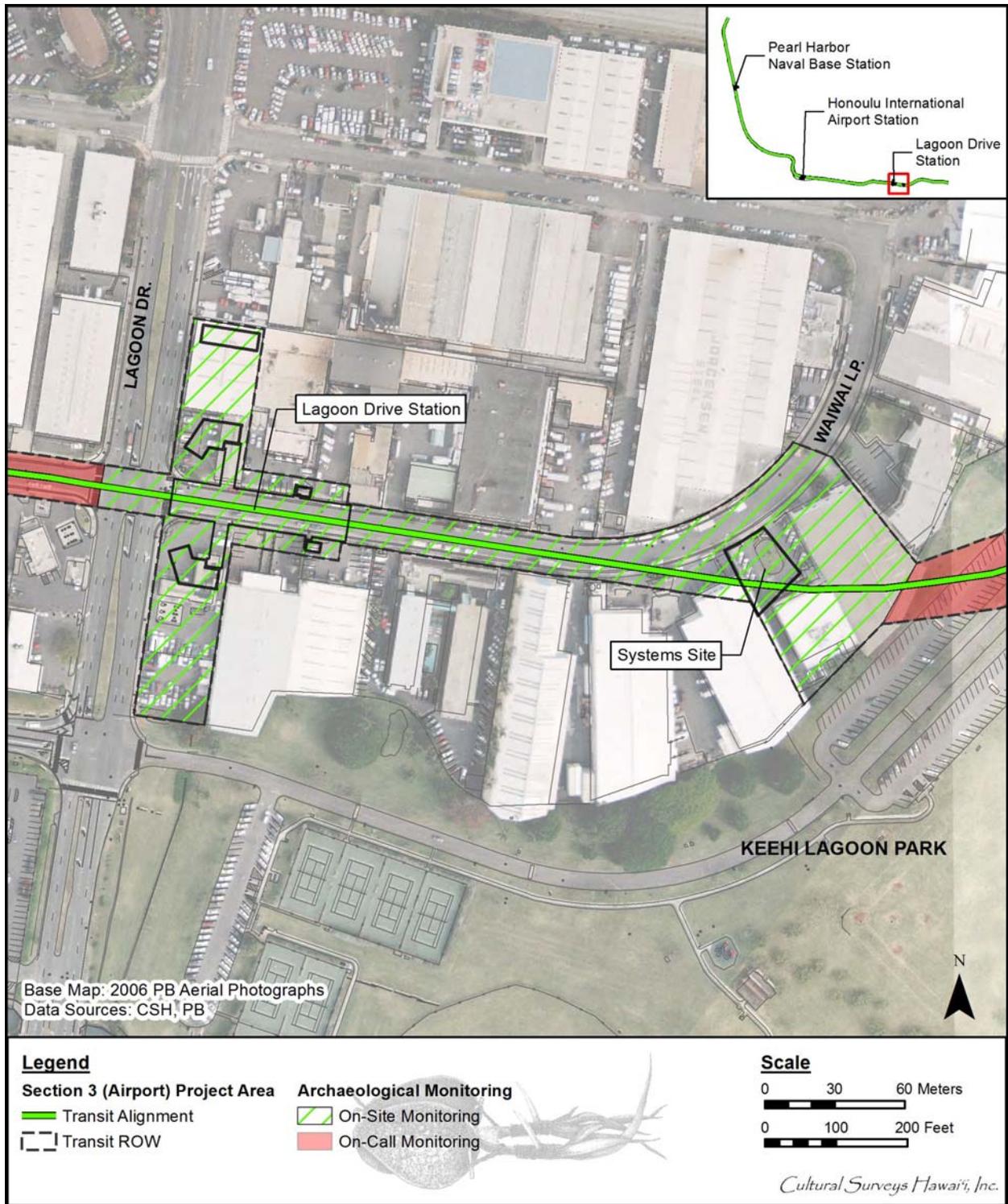


Figure 10. Portion of the Airport Section (Section 3) project area showing the on-site archaeological monitoring area surrounding Ke‘ehi Lagoon (Base Map: 2006 PB aerial photographs)

Table 3. Summary of On-Site Archaeological Monitoring Area by Intersection or Landmark

Location	Target
Kamehameha Highway; Kalaloa Street Intersection to Arizona Street Intersection	Hālawā Stream
H-1/Nimitz Highway; H-1 to Nimitz Highway On-Ramp	SIHP # -7420
Honolulu International Airport Station; Rodgers Boulevard to along Ala Onaona Street	SIHP # -7421
Waiwai Loop; Lagoon Drive to Ke'ehi Lagoon Park	Ke'ehi Lagoon

Figure 6). Any departure from this will only follow consultation with, and written concurrence from, the SHPD.

In addition to providing archaeological monitoring coverage of the Airport Section project area, this monitoring plan will serve to ensure that any archaeological investigative work related to construction activity within Section 1 of the HHCTCP is documented within an archaeological monitoring report. While the archaeological inventory survey report for the HHCTCP Section 1 recommended “no further archaeological mitigation measures” for this area, including no monitoring program for Section 1, the potential for subsurface cultural deposits or human skeletal remains was noted and appropriate procedure was delineated as follows: “If in the unlikely event that subsurface cultural deposits or human skeletal remains are encountered during the course of project-related construction activities, all work in the immediate area should stop and the SHPD should be promptly notified” (Hammatt 2010:431). The current monitoring plan will ensure that any archaeological work related to such on-call investigations within Section 1 will be documented and an appropriate archaeological report submitted to the SHPD.

2.1.1 On-Site Monitoring of Areas within the Project APE

On-site archaeological monitoring is recommended for all construction-related ground disturbance activities within the vicinity of Hālawā Stream, Ke'ehi Lagoon, and the two previously identified historic properties within the project area (SIHP # -7420, and SIHP # -7421). An archaeological monitor will be present during all ground disturbance activities that extend below the current (pre-construction) land surface. The following is a brief description of the on-site monitoring areas, including potential research objectives and methods (listed in geographic order, from west to east).

2.1.1.1 Hālawā Stream Area

The first details about Hawaiian settlement in Hālawā come from explorers' accounts and maps, which indicate the general pattern of coastal residence and agriculture. A quilt of ponded fields of taro (*lo'i kalo*) and fairly dense associated habitations extended west from the western

edge of the Airport Section project area. This dense pattern of occupation began in the immediate vicinity of the mouth of Hālawā Stream and extended westward along the margins of Pearl Harbor with its abundant marine resources, relatively fertile soils, and numerous streams.

While no indication of subsurface habitation or wetland agriculture remnants were identified during the project's AIS, the potential for such findings warrants on-site archaeological monitoring. The research focus for monitoring in the vicinity of Hālawā will be to identify the location and extent of habitation and wetland agricultural localities along Hālawā Stream within the project APE. Once identified and documented, research will focus on establishing a temporal and environmental context for these potential cultural resources through the analysis of collected samples.

Should subsurface habitation remnants of agricultural sediments be encountered during monitoring, archaeologists will document the exposures with plan and/or profile maps, GPS locations, photographs, and sample collection. Habitation remnants may be explored with controlled excavation methodology. Controlled bulk and column samples will be collected from agricultural sediments for potential radiocarbon, pollen, and/or macrobotanical analysis.

2.1.1.2 SIHP # 50-80-13-7420

SIHP # 50-80-13-7420 consists of three buried asphalt road sections, with the asphalt road remnant at T-015 designated as SIHP # 50-80-13-7420 Feature 1, the asphalt road remnant at T-017 designated as SIHP # 50-80-13-7420 Feature 2, and road remnants in T-018 designated as SIHP # 50-80-13-7420 Feature 3 (see Figure 8, Appendix B). The three buried asphalt road sections are likely associated with an early alignment of Kamehameha Highway, or possibly another as-yet unidentified mid-twentieth century road.

The research focus for monitoring in the vicinity of SIHP # -7420 will be to document additional in situ portions of the buried asphalt road surface in an effort to identify the extent and association of the buried surface with a known former roadway.

Should additional features of SIHP # -7420 be encountered during monitoring, archaeologists will document the exposures with plan and/or profile maps, GPS locations, and photographs. The locations of these features will be plotted on historic maps and aerial photographs, and along with additional background research, will be used to interpret potential associations with a known former roadway.

2.1.1.3 SIHP # 50-80-14 -7421

SIHP # 50-80-13-7421 consists of a crushed coral road surface and base course and two sections of buried concrete slabs located at and near the Honolulu International Airport Station and Alternate A Station locations. A *mauka* section of concrete slabs (documented in T-023, T-024, T-025, and T-026 at the Honolulu International Airport Station) is designated as SIHP # 50-80-13-7421 Feature 1, a *makai* section of concrete slabs (documented in T-042 and T-046 located at the Alternate A Station) is designated as SIHP # 50-80-13-7421 Feature 2, and the crushed coral road surface and underlying coral base course (documented in T-021 just 'Ewa of the Honolulu International Airport Station) is designated SIHP # 50-80-13-7421 Feature 3 (see Figure 9, Appendix B). The crushed coral road surface and base course and two sections of

buried concrete slabs were identified as probable remnants of warehouses and/or other infrastructure erected by the military in 1942-1943.

The research focus for monitoring in the vicinity of SIHP # -7421 will be to document additional in situ portions of the buried crushed coral road surface, base course, and sections of concrete slabs in an effort to identify the extent and association of the buried surfaces with a known or documented military infrastructure.

Should additional features of SIHP # -7421 be encountered during monitoring, archaeologists will document the exposures with plan and/or profile maps, GPS locations, and photographs. The locations of these features will be plotted on historic maps and aerial photographs, and along with additional background research, will be used to interpret potential associations with military infrastructure.

2.1.1.4 Ke'ehi Lagoon Area

Ke'ehi Lagoon and the shoreline of Moanalua Ahupua'a was the site of numerous fishponds that were controlled by the *ali'i* (chiefs). Loko Waiaho and Loko Ke'oki were located in the western portion of the Hickam Air Force Base (AFB) lands, while Loko Lelepaua and Loko Ka'ihikapu were about 1.3 km southwest and southeast (respectively) of the Airport Section corridor. Maps of Moanalua produced during the second half of the nineteenth century before substantial alterations to the landscape display the substantial development of the village of Moanalua by the time of Western contact. The Airport Section project alignment extends across modern fill land in the vicinity of the mouth of Moanalua Stream. While the natural mouth of Moanalua Stream was a rich area of Hawaiian settlement, the area today is actually 300 m inland of the present project alignment due to the very substantial land reclamation infilling of what traditionally were coastal shallows.

While no indication of subsurface habitation or wetland agriculture remnants were identified during the project's AIS, the potential for such findings warrants on-site archaeological monitoring. The research focus for monitoring in the vicinity of Ke'ehi Lagoon will be to identify the location and extent of habitation and wetland agricultural localities along within the project APE. Once identified and documented, research will focus on establishing a temporal and environmental context for these potential cultural resources through the analysis of collected samples.

Should subsurface habitation remnants of agricultural sediments be encountered during monitoring, archaeologists will document the exposures with plan and/or profile maps, GPS locations, photographs, and sample collection. Habitation remnants may be explored with controlled excavation methodology. Controlled bulk and column samples will be collected from agricultural sediments for potential radiocarbon, pollen, and/or macrobotanical analysis.

2.1.2 On-Call Monitoring of Areas within the Project APE

On-call archaeological monitoring will consist of two-parts: 1) monitoring of all construction-related ground disturbance activities located within the remaining portion of the Airport Section (i.e. outside the four areas discussed within Section 2.1.1 above); and 2) monitoring of all pre-construction planning and design-related ground disturbance. In the case of construction-related

ground disturbance, on-call monitoring will consist of weekly visits to the construction site to document and assess exposed project stratigraphy. In the case of pre-construction planning and design-related ground disturbance, on-call monitoring will entail archaeological documentation of any potential cultural resources or skeletal remains identified by project contractors during the course of subsurface activities. If potential cultural resources or skeletal remains are encountered, project personnel will cease all work until an archaeological assessment has been completed.

2.2 Monitoring Provisions

Hawai'i State historic preservation legislation governing archeological monitoring programs requires that each monitoring plan discuss eight specific items (HAR § 13-279-4). The monitoring provisions below address those eight requirements in terms of the archaeological monitoring for the construction within the project area.

1. Anticipated Historic Properties:

The project area has the potential for pre-Contact and historic cultural deposits as well as human burials.

2. Locations of Historic Properties:

Historic properties may be encountered anywhere within the project area. Two archaeological historic properties were identified during the Airport Section AIS: SIHP #s -7420 and -7421.

3. Fieldwork:

On-site monitoring is recommended for construction-related ground disturbance activities within four specific areas: the vicinity of Hālawa Stream, Ke'ehi Lagoon, SIHP # -7420, and SIHP # -7421. A qualified archaeologist will monitor all ground disturbance associated with the project's ground disturbance activities. On-call monitoring is recommended for all pre-construction ground disturbance activities (project planning and design) and for construction-related ground disturbance activities outside of the four areas specified for on-site monitoring. Any departure from this will only follow consultation with, and written concurrence from, SHPD.

The monitoring fieldwork will likely encompass the documentation of subsurface archaeological deposits (e.g., trash pits and structural remnants) and will employ current standard archaeological recording techniques. This will include drawing and recording the stratigraphy of excavation profiles where cultural features or artifacts are exposed as well as representative profiles. These exposures will be photographed, located on project area maps, and sampled. Photographs and representative profiles of excavations will be taken even if no historically-significant sites are documented. As appropriate, sampling will include the collection of representative artifacts, bulk sediment samples, and/or the on-site screening of measured volumes of feature fill to determine feature contents.

If human remains are identified, no further work will take place, including no screening of back dirt, no cleaning and/or excavation of the burial area, and no

exploratory work of any kind unless specifically requested by the SHPD. All human skeletal remains that are encountered during construction will be handled in compliance with HRS § 6E-7 and 6E-8 and HAR § 13-300 and in consultation with SHPD.

4. Archaeologist's Role:

The on-site archaeologist will have the authority to stop work immediately in the area of any findings so that documentation can proceed and appropriate treatment can be determined. In addition, the archaeologist will have the authority to slow and/or suspend construction activities in order to insure that the necessary archaeological sampling and recording can take place.

5. Coordination Meeting:

Before work commences on the project, the on-site archaeologist shall hold a coordination meeting to orient the construction crew to the requirements of the archaeological monitoring program. At this meeting the monitor will emphasize his or her authority to temporarily halt construction and that all historic finds, including objects such as bottles, are the property of the landowner and may not be removed from the construction site. At this time it will be made clear that the archaeologist must be on site during all subsurface excavations within the four specified on-site areas.

6. Laboratory work:

Laboratory work will be conducted in accordance of HAR § 13-279-5-(6). Laboratory analysis of non-burial related finds will be tabulated into table form and standard artifact and midden recording will be conducted as follows: artifacts will be documented as to provenience, weight, length, width, type of material, and presumed function. Photographs of representative artifacts will be taken for inclusion into the archaeological monitoring report. Bone and shell midden materials will be sorted down to species, when possible, and then tabulated by provenience.

As appropriate, collected charcoal material obtained within intact cultural deposits will be analyzed for species identification. Charcoal samples ideal for dating analyses will be sent to Beta Analytic, Inc. for radiocarbon dating. If appropriate, artifacts may be sent to the University of Hawai'i-Hilo Geoarchaeology lab for Energy-Dispersive X-ray Fluorescence (EDXRF) analysis in order to identify and possibly geographically locate the source material. All analyzed samples, provenience information, and results will be presented in table form within the archaeological monitoring report.

7. Report Preparation:

One of the primary objectives of the report will be to present a stratigraphic overview of the project area which will allow for predictive assessments of adjacent properties, which may be the subject of future development. The report will contain a section on stratigraphy, description of archaeological findings, monitoring methods, and results of laboratory analyses. The report will address the requirements of a monitoring

report (HAR § 13-279-5). Photographs of excavations will be included in the monitoring report even if no historically-significant sites are documented. Should burial treatment be completed as part of the monitoring effort, a summary of this treatment will be included in the monitoring report. Should burials and/or human remains be identified, then other letters, memos, and/or reports may be requested by the Burial Sites Program.

8. Archiving Materials:

All burial materials will be addressed as per SHPD directives. Materials not associated with burials will be temporarily stored at the contracted archaeologist's facilities until an appropriate curation facility is selected, in consultation with the landowner and the SHPD.

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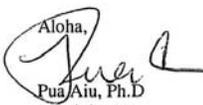
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- 1998 U.S. Geological Survey 7.5 minute topographic map, Honolulu Quad. Available at U.S. Geological Survey Maps/U.S. Department of War Maps, USGS Information Services, Box 25286, Denver, Colorado.
- 1999 U.S. Geological Survey 7.5 minute topographic map, Pearl Harbor Quad. Available at U.S. Geological Survey Maps/U.S. Department of War Maps, USGS Information Services, Box 25286, Denver, Colorado.
- 2005 U.S. Geological Service Orthoimagery, Pearl Harbor and Honolulu Quad (Aerial photograph). Available at U.S. Geological Survey Maps/U.S. Department of War Maps, USGS Information Services, Box 25286, Denver, Colorado.

Appendix A SHPD Acceptance Letters

SHPD Acceptance Letter: HHCTCP Archaeological Inventory Survey Plan (Section 3)

 <p>NEIL ABERCROMBIE GOVERNOR OF HAWAII</p>		<p>WILLIAM J. AILA, JR. CHAIRPERSON BOARD OF LAND AND NATURAL RESOURCES COMMISSION ON WATER RESOURCE MANAGEMENT</p> <p>GUY KAULUKUKUI FIRST DEPUTY</p> <p>WILLIAM M. TAM DEPUTY DIRECTOR - WATER</p> <p>AQUATIC RESOURCES BOATING AND OCEAN RECREATION BUREAU OF CONVEYANCES COMMISSION ON WATER RESOURCE MANAGEMENT CONSERVATION AND COASTAL LANDS CONSERVATION AND RESOURCES ENFORCEMENT ENGINEERING FORESTRY AND WILDLIFE HISTORIC PRESERVATION KAHOOLAWE ISLAND RESERVE COMMISSION LAND STATE PARKS</p>
<p>STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES STATE HISTORIC PRESERVATION DIVISION 601 KAMOKILA BOULEVARD, ROOM 555 KAPOLEI, HAWAII 96707</p>		
<p>December 2, 2011</p>		
<p>Dr. Hallett Hammatt Cultural Surveys Hawaii P.O. Box 1114 Kailua, Hawaii 96734</p>	<p>LOG NO: 2011.2167 DOC NO: 1211NN01 Archaeology</p>	
<p>Dear Dr. Hammatt</p>		
<p>SUBJECT: National Historic Preservation Act (NHPA) Section 106 Review – Archaeological Inventory Survey Plan for the Airport (Phase 3) Construction of the Honolulu High Capacity Transit Corridor Project (HHCTCP) Halawa and Moanalua Ahupua'a, 'Ewa and Honolulu District, Island of O'ahu TMK Sections: (1) 1-1 and 9-9</p>		
<p>Thank you for the opportunity to review this draft plan titled <i>Draft Archaeological Inventory Survey Plan for the Airport (Phase 3) Construction of the Honolulu High Capacity Transit Corridor Project Halawa and Moanalua Ahupua'a, 'Ewa and Honolulu District, Island of O'ahu</i> (Hallett Hammatt, and David Shideler August 2011). This draft was received by SHPD on August 8, 2011. We apologize for the delayed review, and thank you for your patience. This AISP was prepared in compliance with National Historic Preservation Act Section 106 (36CFR800).</p>		
<p>The study area for this AISP extends from Kamehameha Hwy at Kaloloa Drive (just northwest of Halawa Stream) in the west to Kamehameha Hwy. at Middle Street (just west of Kalihi Stream) in the east. According to the HHCTCP Programmatic Agreement (Stipulation II.A.1) the area of potential effect (APE) includes all areas of direct ground disturbance, which is estimated to be 13.87 acres.</p>		
<p>The background section acceptably establishes the ahupua'a settlement pattern and predicts the likely site pattern in the project area. The historical information provided summarizes the history of the post-contact period land uses. The summary of previous archaeological work in the area provides a baseline for the current work. We believe that the field methods that you have described in section 7.0 will adequately identify the historic resources of this project area.</p>		
<p>A total of forty test trenches are proposed within the 9.06 acres project footprint: twenty-four within the footprint of the proposed column foundations that spread throughout the project area, fifteen within the footprints of the three transit stations (Pearl Harbor Naval Base Station; Honolulu International Airport Station; and Lagoon Drive Station) and a single trench in the area of utility relocation within the vicinity of the Pearl Harbor Naval Base Station.</p>		
<p>This plan meets the standards for Archaeological Inventory Survey Plans that are set forth in HAR 13-284-5 (c). Please send one hardcopy of the document, clearly marked FINAL, along with a copy of this review letter and a text-searchable PDF version on CD to the Kapolei SHPD office, attention SHPD Library. Please contact Deona Naboa at Deona.Naboa@hawaii.gov if you have any questions or concerns regarding this letter.</p>		
<p>Aloha,  Pua Aiu, Ph.D Administrator State Historic Preservation Division</p>		

SHPD Acceptance Letter: HHCTCP Addendum Archaeological Inventory Survey Plan (Section 3)

 <p>NEIL ABERCROMBIE GOVERNOR OF HAWAII</p>		<p>WILLIAM J. AHA, JR. CHAIRPERSON BOARD OF LAND AND NATURAL RESOURCES COMMISSIONER OF WATER RESOURCES MANAGEMENT</p> <p>ESTHER KIA'A'INA FIRST DEPUTY</p> <p>WILLIAM M. TAM DEPUTY DIRECTOR - WATER</p> <p>AQUATIC RESOURCES HEALTH AND OCEAN RECREATION BUREAU OF CONSERVATION COMMISSIONER OF WATER RESOURCES MANAGEMENT COASTAL WATER AND COASTAL ZONES CONSERVATION AND RESOURCES IMPROVEMENT DIVISION FORESTRY AND WILDLIFE HISTORIC PRESERVATION KAOIOLAHI ISLAND RESOURCES COMMISSION LAND STATES PARKS</p>
<p>HISTORIC PRESERVATION DIVISION DEPARTMENT OF LAND AND NATURAL RESOURCES</p> <p>601 Kamehaha Boulevard, Suite 555 Kapolei, HI 96806</p>		
<p>March 1, 2013</p>		
<p>Mr. Matt McDermott, Principal Investigator Cultural Surveys Hawai'i, Inc. P.O. Box 1114 Kailua, Hawaii 96734 mmcdermott@culturalsurveys.com</p>		<p>LOG NO: 2013.1957 DOC NO: 1302SL29 Archaeology</p>
<p>Dear Mr. McDermott:</p>		
<p>SUBJECT: Chapter 6E-8 and National Historic Preservation Act (NHPA) Section 106 Review – Addendum to an Archaeological Inventory Survey Plan for the Airport (Phase 3) Construction of the Honolulu High-Capacity Transit Corridor Project Hālawā and Moanalua Ahupua‘a, ‘Ewa and Honolulu District, O‘ahu Island TMK Sections (1) 1-1 and 9-9</p>		
<p>Thank you for the opportunity to review this revised report titled <i>Addendum to an Archaeological Inventory Survey Plan for the Airport (Phase 3) Construction of the Honolulu High-Capacity Transit Corridor Project Hālawā and Moanalua Ahupua‘a, ‘Ewa and Honolulu District, O‘ahu Island TMK Sections (1) 1-1 and 9-9</i> (Hammatt and Shideler, February 2013). Our Kapolei office received this submittal on February 20, 2013.</p>		
<p>The study area for this AISP Addendum extends from Kamehameha Highway at Kaloloa Drive (just northwest of Hālawā Stream) in the west to Kamehameha Highway at Middle Street (just west of Kalihi Stream) in the east. The AISP Addendum study area differs from the study area defined in the AISP approved for the Airport (Phase 3) HART Corridor project (December 2, 2011; Log No. 2011.2167, Doc. No. 1211NN01). The AISP Addendum involves re-location of the airport footprint about 60 m south of the original footprint and re-location of the corridor on either side and through the new airport footprint.</p>		
<p>The revisions made to this document adequately address most of the concerns raised in our prior correspondence (January 31, 2013; Log No. 2012.3655, Doc. No. 1301SL36). This archaeological inventory survey plan meets the requirements of Hawaii Administrative Rule (HAR) §13-284-5. It is accepted by SHPD. Please send one hardcopy of the document, clearly marked FINAL, along with a copy of this review letter and a text-searchable PDF version on CD to the Kapolei SHPD office, attention SHPD Library.</p>		
<p>Please contact Susan A. Lebo at (808) 692-8019 or at Susan.A.Lebo@hawaii.gov if you have any questions regarding this letter.</p>		
<p>Aloha,</p>		
		
<p>Theresa K. Donham Deputy State Historic Preservation Officer</p>		
<p>cc: Paul Cleghorn, Kaka'o, pcleghorn@pacificclearcy.com</p>		

SHPD Acceptance Letter: HHCTCP Archaeological Inventory Survey Report (Section 3)

9/01/04



NEIL ABERCROMBIE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING
601 KAMOKILA BLVD STE 555
KAPOLEI HI 96707

WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ESTHER KIA'AINA
FIRST DEPUTY

WILLIAM M. TAM
DEPUTY DIRECTOR - WATER

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

August 26, 2013

Mr. Matt McDermott
Principle Investigator
Cultural Surveys Hawai'i, Inc.
P.O. Box 1114
Kailua, Hawaii 96734
mmcdermott@culturalsurveys.com

LOG NO: 2013.2279, 2013.4326
DOC NO: 1308SL20
Archaeology

Dear Mr. McDermott:

SUBJECT: Chapter 6E-8 and National Historic Preservation Act (NHPA) Section 106 Review – Archaeological Inventory Survey for the Airport Phase (Construction Phase 3) of the Honolulu High-Capacity Transit Corridor Project Hālawā and Moanalua Ahupua'a, 'Ewa and Honolulu Districts, O'ahu Island
TMK: (1) 1-1 and 9-9 (Various Plats and Parcels)

Thank you for the opportunity to review this report titled *Archaeological Inventory Survey for the Airport Section (Construction Section 3) of the Honolulu High-Capacity Transit Corridor Project Hālawā and Moanalua Ahupua'a, 'Ewa and Honolulu Districts, O'ahu Island TMK Sections [1] 1-1 and 9-9 (Various Plats and Parcels)* (Hammatt et al., August 2013). We received the initial draft on March 4, 2013 and provided initial comments on March 29, 2013 (Log No. 2013.2279, Doc. No. 1303SL24).

The Honolulu High-Capacity Transit Corridor Project (HHCTCP or project) includes the use of federal funds and involves lands under several jurisdictions, including Federal, State, City and County of Honolulu, and private. Pursuant to 36 CFR §800.3(a), the proposed project constitutes an undertaking subject to review under Section 106. The project was determined to have an adverse effect on historic properties. A Programmatic Agreement (PA) stipulating mitigation commitments was executed on January 18, 2011 with the Federal Transit Administration (FTA), the Hawaii State Historic Preservation Officer (SHPO), the U.S. Navy, and the Advisory Council on Historic Preservation (ACHP) as signatories, and the City and County of Honolulu (C&C Honolulu) as an invited signatory. The Area of Potential effect for archaeology is defined in the PA as all areas of direct ground disturbance, including utilities. An archaeological inventory survey following HAR Chapter 13-276 was stipulated as a mitigation commitment in the PA.

The Airport Phase 3 archaeological inventory survey (AIS) area is from Kalaloa Drive Station 994+00 in the West to the Middle Street Station (Station 1248+00), a distance of 7.74 kilometers (4.8 miles). The Airport AIS area of potential effect (APE) comprises about 9.06 acres of direct ground disturbance, including three stations. An archaeological inventory survey plan (AISP) was prepared by Cultural Surveys Hawaii, Inc. (Hammatt and Shideler 2011). The AISP was reviewed and accepted by SHPD on December 2, 2011 (Log No. 2011.2167, Doc. No. 1211NN01). An Addendum AISP was subsequently prepared to address a possible alternative site (Alternative A) for the Honolulu International Airport Station (Hammatt and Shideler, 2013). It was reviewed and accepted by SHPD on March 1, 2013 (Log No. 2013.1957, Doc. No. 1302SL29).

The AIS involved a 100 percent surface survey of a heavily developed urban corridor which yielded no surface archaeological cultural resources (historic properties). Subsurface testing involved 47 trench test excavations, of which 40 were proposed in the AISP. The additional 7 were included to address the proposed Alternative A location for the Honolulu Airport Station. The proposed and final locations of some of the trench test excavations differ

Mr. McDermott
August 26, 2013
Page 2

slightly, reflecting decision changes required to address impediments (e.g., utility line locations) and/or safety issues.

Two cultural resources or historic properties were identified. They consist of Site 50-80-13-7420 (buried asphalt roadway) and Site 50-80-13-7421 (buried concrete slabs, coral pavement, and base course sections related to ca. 1942-1943 military infrastructure). Both sites are assessed as National- and Hawaii- Register eligible under Criterion D (information content). The determination for the entire project is an "adverse effect" on historic properties under 36 CFR 800 and "effect with proposed mitigation commitments" under HAR §13-275-7(2). Thus, mitigation recommendations were provided. The recommended mitigation measure identified for this undertaking involves an archaeological monitoring program.

We confirm that the archaeological inventory survey was conducted in accordance with the AISP and Addendum AISP. We provided initial comments on the draft archaeological inventory survey report (Log No. 2013.2279; Doc. No. 1303SL24). This initial, and all subsequent comments, because of their extensive nature were provided directly on the text pages of the report as well as through in-person reviews of specific areas with Cultural Surveys Hawai'i staff.

We concur that Sites 50-80-13-7429 (buried asphalt roadway) and 50-80-17-7421 (buried infrastructure) are significant under National- and Hawaii-Registers of Historic Places Criterion D only, chiefly for their information potential. We also concur with the proposed mitigation recommendation of on-call monitoring as both sites are discontinuous and fragmentary in their extent.

In addition, SHPD received 98 comments from 13 individuals or organizations regarding the Archaeological Inventory Survey (AIS) for the entire HHCTCP corridor. Thirteen of these comments were pertinent to the Airport Phase 3 Section of the HHCTCP AIS. Eleven comments requested additional testing in column locations and utilities and four expressed concern that the AIS overall was premature or not well done in general. SHPD has taken these comments into account and believes, based on background research and previous archaeological studies and the limitations on the ground (i.e. existing utilities), that the Airport Section 3 project corridor has been adequately surveyed. We believe on-call archaeological monitoring will adequately address the inadvertent discovery of historic properties, if any are found.

This revised archaeological inventory survey report meets the minimum requirements specified in the *Secretary of the Interior's Standards for Archeological Documentation* and the requirements set forth in HAR §13-275 and HAR §13-276. It is accepted by SHPD. Please send one hardcopy of the document, clearly marked FINAL, along with a copy of this review letter and a text-searchable PDF version of the report on CD to the Kapolei SHPD office. Please contact Dr. Susan A Lebo at (808) 692-8019 or at Susan.A.Lebo@hawaii.gov if you have any questions regarding this letter.

Aloha,



William J. Aila, Jr.
State Historic Preservation Officer

Appendix B Historic Property Descriptions

The following historic property descriptions are copied from the Airport Section (Section 3) AIS report, Vol. I (Hammatt et al. 2013):

SIHP # 50-80-14-7420

Formal Type:	Road
Number of Features:	3
Functional Interpretation:	Vehicular transportation
Age:	Post-Contact, early to mid-twentieth century
Current Dimensions:	Feature 1 was only observed in T-015, a 3.04 m long by 1.10 m wide excavation. Feature 2 was only observed in T-017, a 3.00 m long by 1.07 m wide excavation. Feature 3 was only observed in T-018, a 3.00 m long by 1.07 m wide excavation.
Location:	Feature 1 was identified in T-015, between the H-1 Freeway (east or <i>mauka</i>) and Makai Frontage Road (west or <i>makai</i>) and Features 2 and 3 were identified in T-017 and T-018 on the <i>makai</i> side of Nimitz Highway
Tax Map Key:	[1] 1-1-010 plat, 1-1-002:004
Land Jurisdiction:	State DOT Airports Division

SIHP # 50-80-13-7420 consists of three buried asphalt road sections, with the asphalt road remnant at T-015 designated as SIHP # 50-80-13-7420 Feature 1, the asphalt road remnant at T-017 designated as SIHP # 50-80-13-7420 Feature 2, and road remnants in T-018 designated as SIHP # 50-80-13-7420 Feature 3 (Figure 1 and Figure 2). Feature 3 consists of asphalt pavement, a concrete slab or curbing, and a coral base course. All three features are interpreted as remnants of an early 20th century (on 1933 map) road system in the area that were buried by subsequently modern development. The geographic extent of these roadway features described here reflects their limited exposure within the Airport Section 3 AIS test excavations. It is likely that similar features may be preserved in untested areas in the vicinity of T-015, T-017, and T-018.

SIHP # 50-80-13-7420 Feature 1

All that was observed of SIHP # 50-80-13-7420 Feature 1 was a buried asphalt pavement encountered at 2.86 mbs (Stratum II) spanning the length and width of T-015. The excavation sidewalls of T-015 were fairly unstable, consisting of unconsolidated fill material with loosely held cobbles and boulders. Because shoring was not possible, the archaeologists could not enter T-015 to more completely document the asphalt roadway surface. The asphalt is at least 0.4-m thick, but because safety concerns necessitated terminating excavation, the overall thickness of

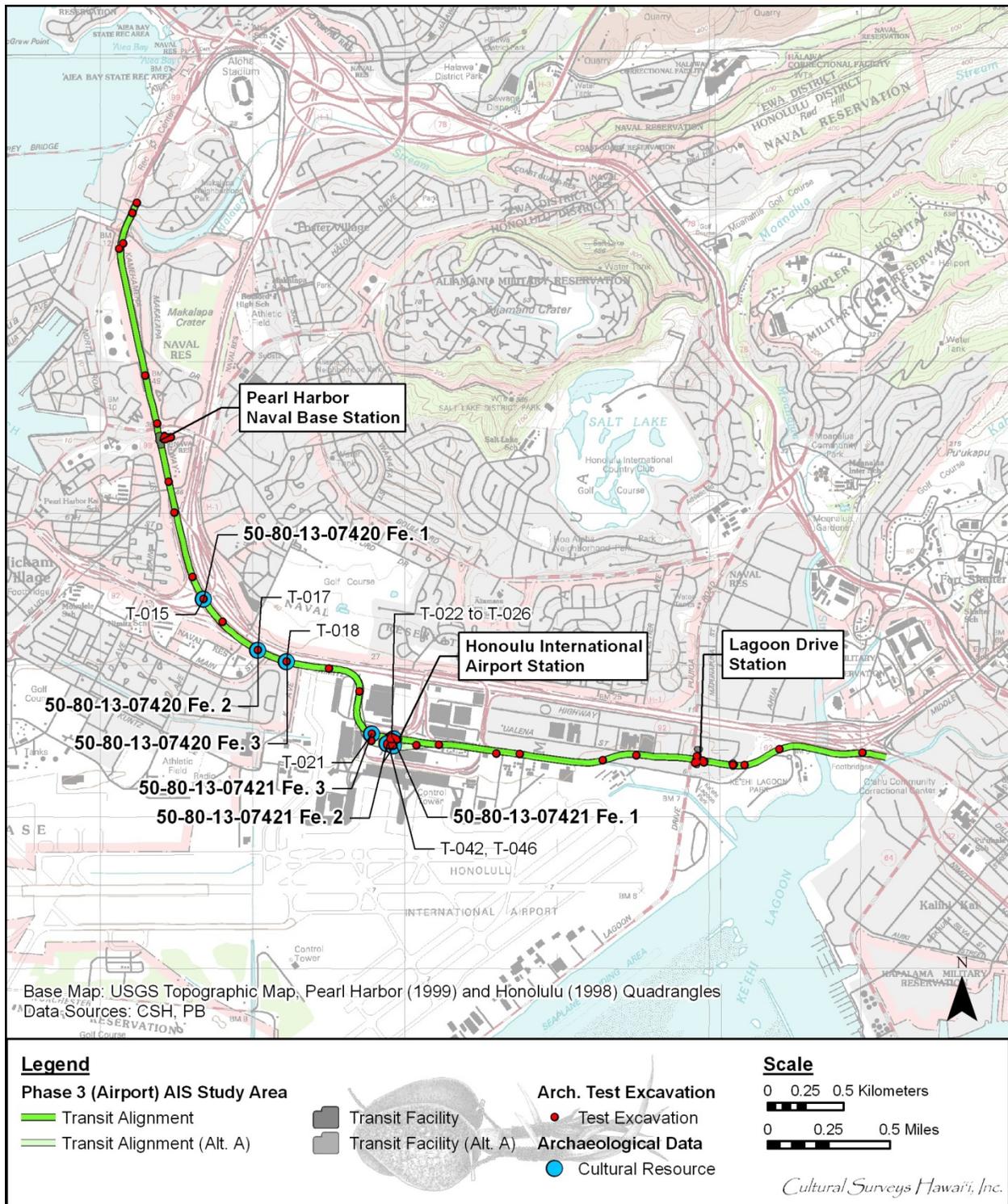


Figure 1. Locations of two archaeological cultural resources (SIHP # 50-80-13-7420 and - 7421) identified in the Airport Section 3 corridor (on 1990s series U.S. Geological Survey maps)

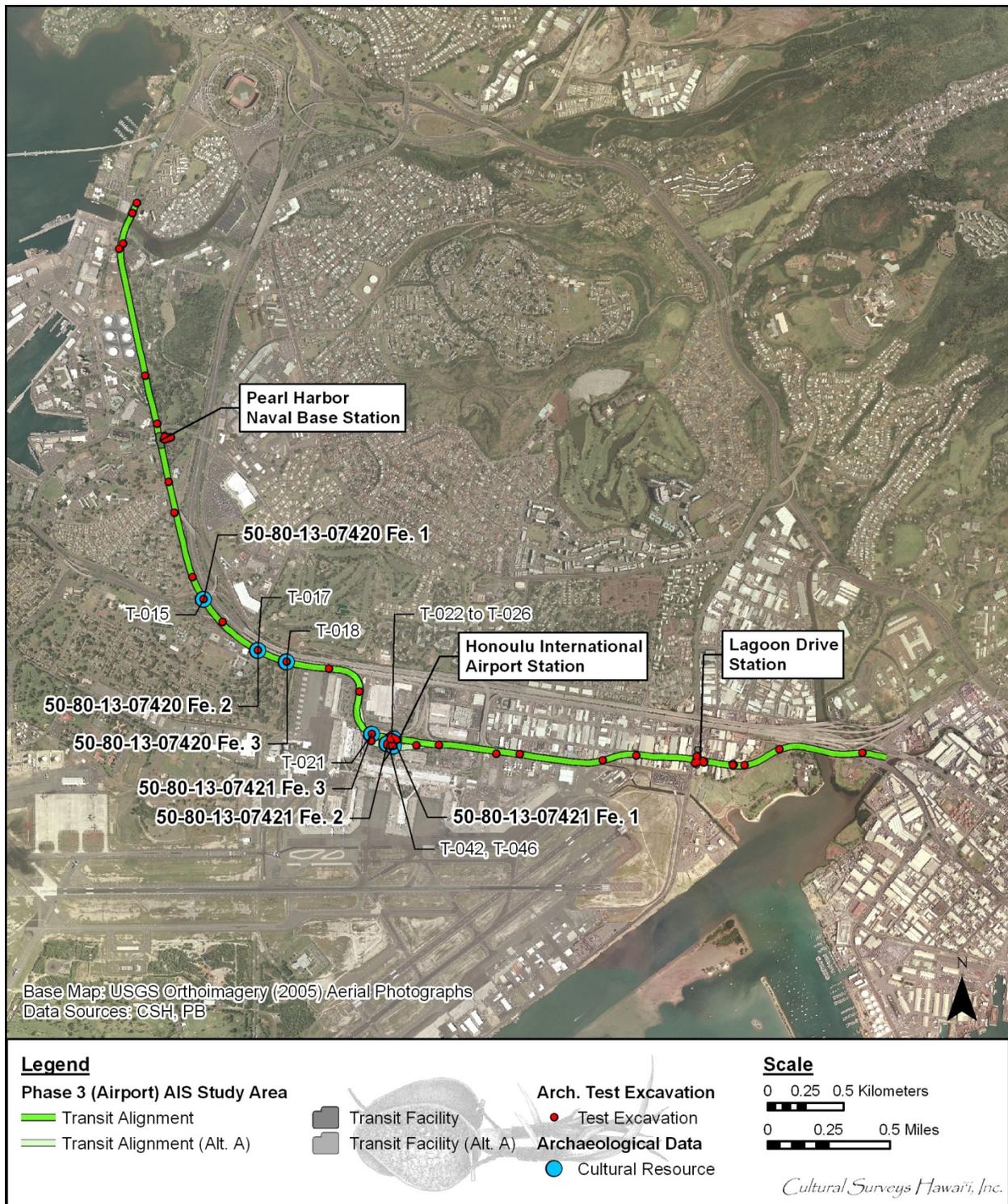


Figure 2. Locations of two archaeological cultural resources (SIHP # 50-80-13-7420 and - 7421) identified in the Airport Section 3 corridor (on a 2005 U.S. Geological Survey Orthophotograph)

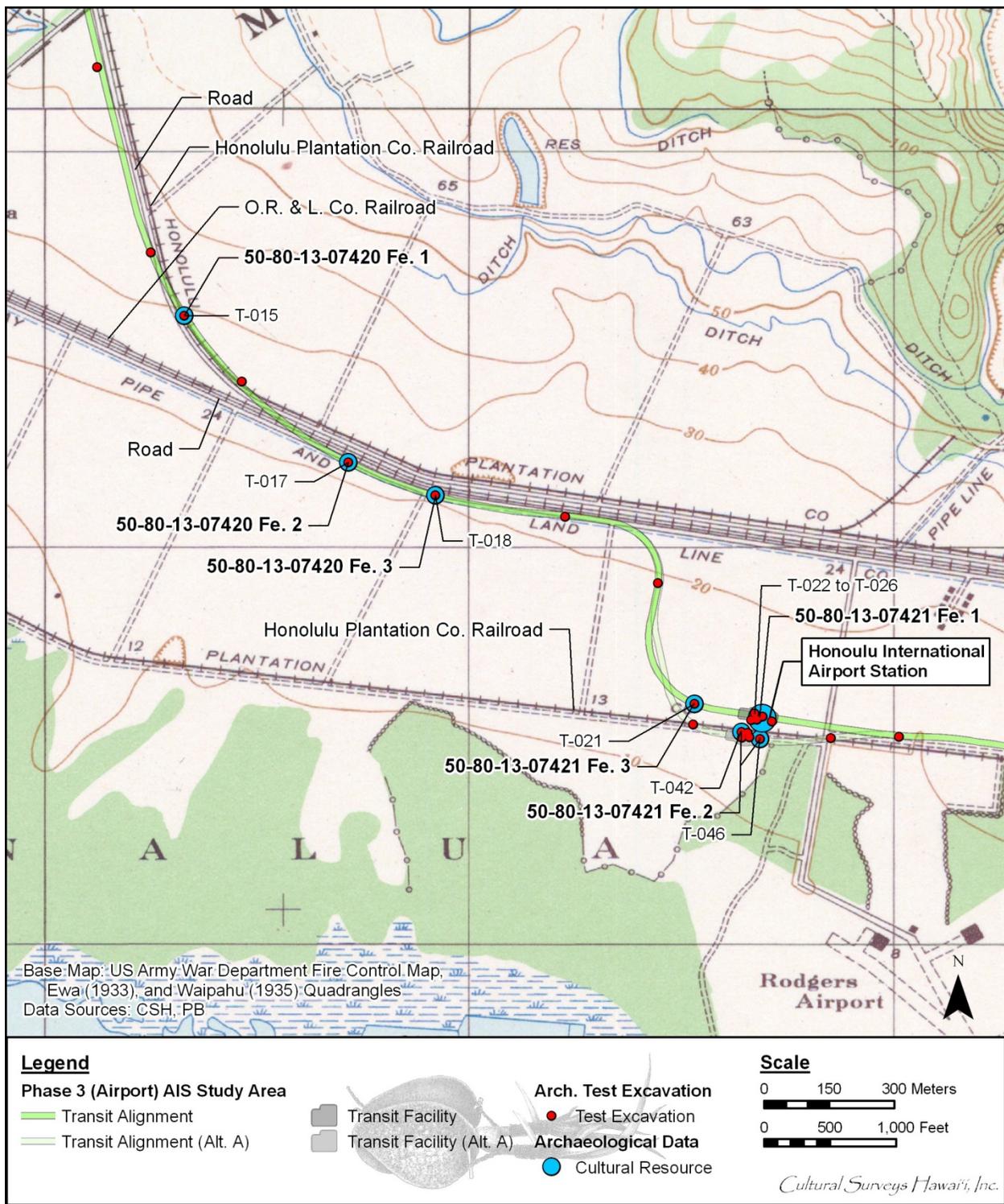


Figure 3. Locations of two archaeological cultural resources (SIHP # 50-80-13-7420 and -7421) identified in the Airport Section 3 corridor (on 1930s series U.S. Army War Department Fire Control)

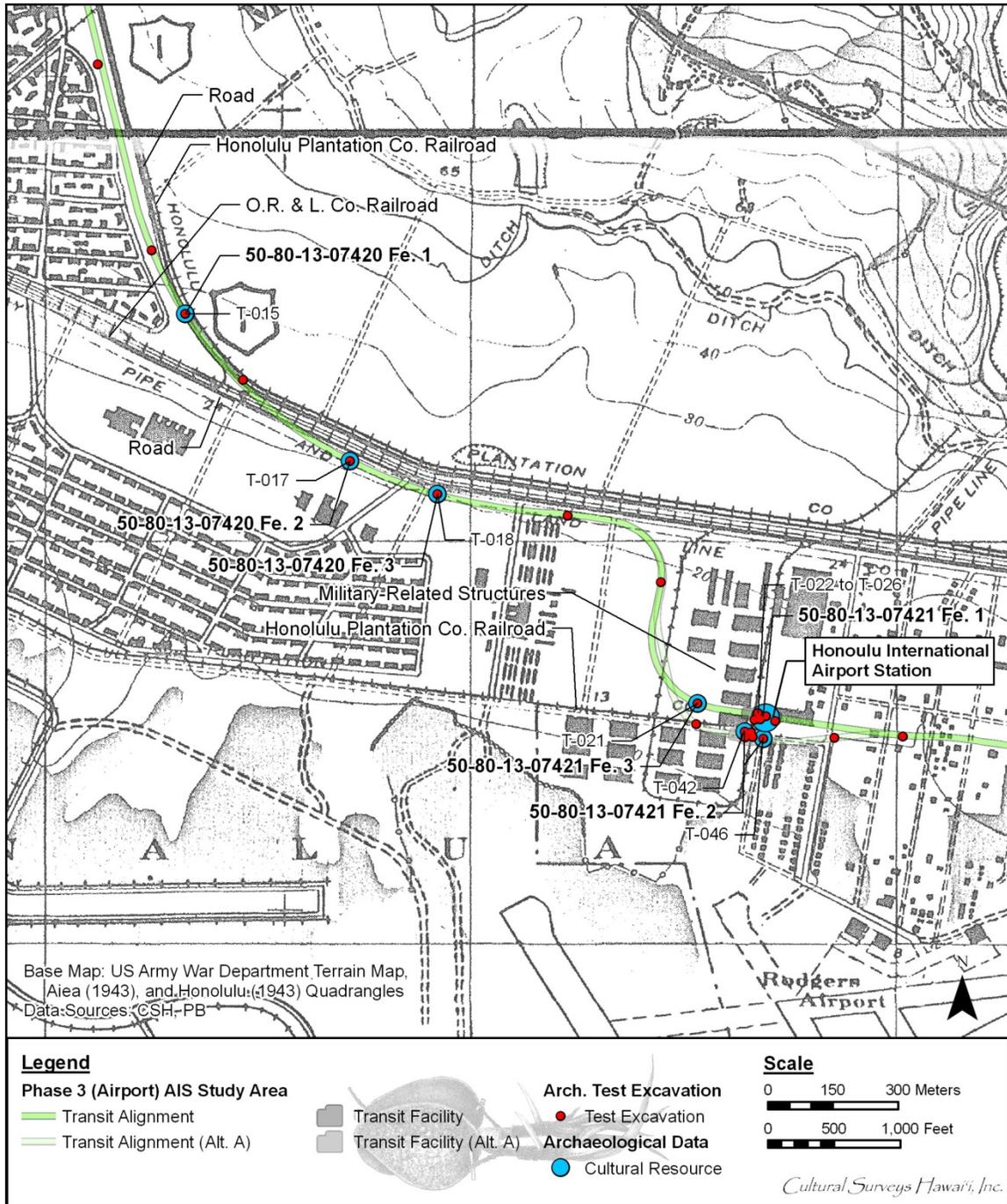


Figure 4. Portion of 1943 map showing warehouse-like structures, concrete slab locations (SIHP # 50-80-13-7421 Features 1 and 2) and coral pavement and base course (SIHP # 50-80-13-7421 Feature 3) within a train loop; note also locations of two asphalt remnants (SIHP # 50-80-13-7420 Features 1 and 2) that pre-date modern Kamehameha Highway

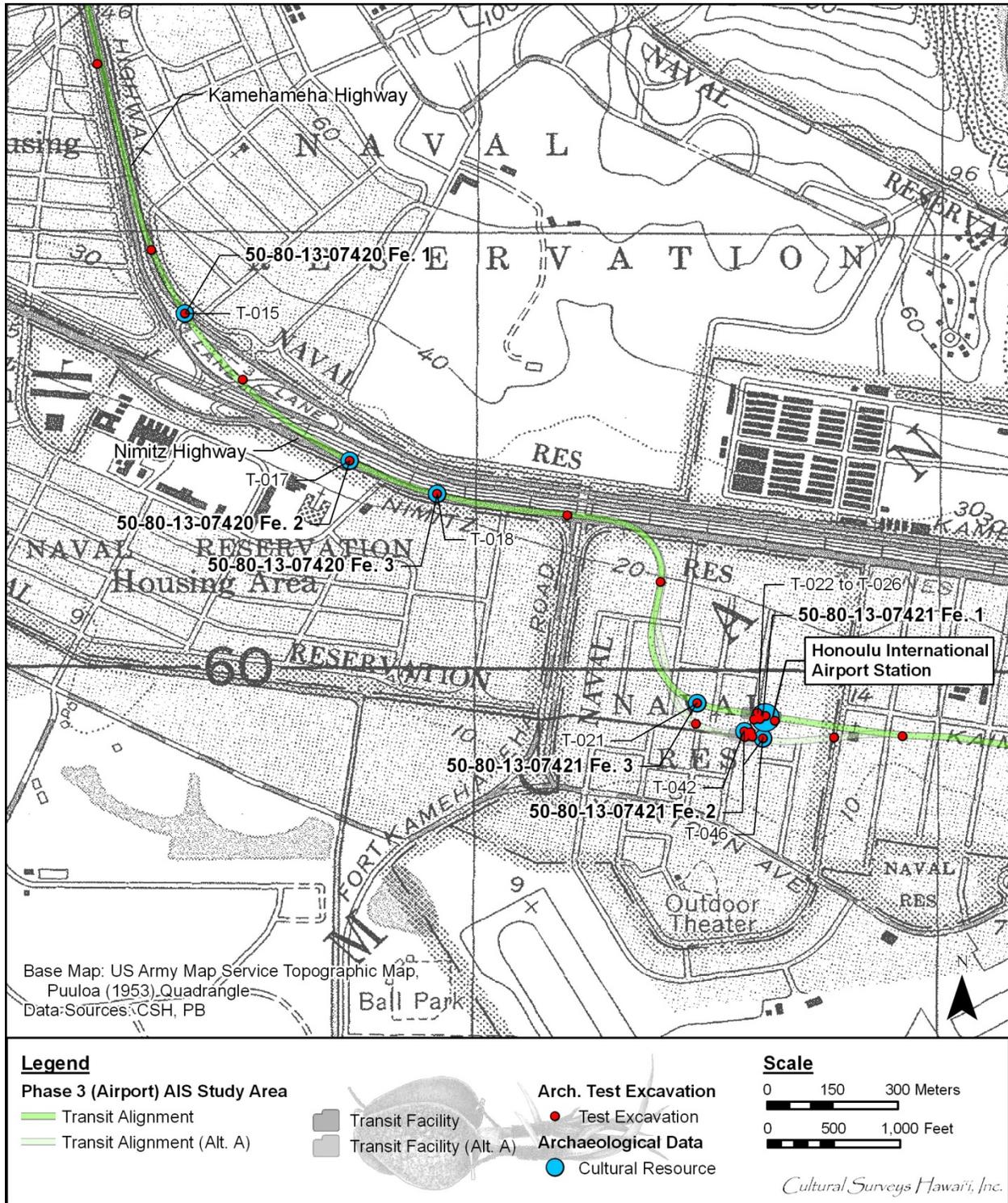


Figure 5. 1953 map showing a road on the *makai* (south) side of the railroad tracks where a buried asphalt pavement (SIHP # 50-80-13-7420 Feature 2) was identified

the asphalt remains unknown. The asphalt's resistance to backhoe excavation indicated it is compact and well made.

A close-up of a 1933 map (see Figure 3) indicates that the buried roadway surface identified in T-015 was a former alignment of what is now Kamehameha Highway that it was constructed immediately adjacent to the *makai* side of the OR&L rail line perhaps circa 1930. Subsequent realignments of Kamehameha Highway appear to have left this former alignment within a landscaped median strip.

By inference from historic maps (see Figure 3 and Figure 4) this stretch of former road may have extended in a northwest/southeast direction (particularly to the southeast) for 100 m or more.

SIHP # 50-80-13-7420 Feature 2

All that was observed of SIHP # 50-80-13-7420 Feature 2 was a buried asphalt pavement at 0.80-0.95 mbs (Stratum IIa) spanning the length and width of T-017. This 0.15-m thick asphalt paving overlays a 0.60-m thick crushed coral roadway base course layer (Stratum IIb). The excavation easily continued through the asphalt suggesting that it was a relatively minor (i.e., not heavily travelled) roadway.

Based on T-017's overlay on historic maps, SIHP # 50-80-13-7420 Feature 2 was located on the seaward side of the OR&L alignment and does not show up on the 1943 map (Figure 4). It does appear to be present on the 1953 map (Figure 5). It is unclear whether this was a minor development of the WWII build-up, but it seems likely that the road was abandoned and covered soon after. Nothing other than a 1940s-early 1950s roadway is indicated.

SIHP # 50-80-13-7420 Feature 3

SIHP # 50-80-13-7420 Feature 3 consists of buried roadway remnants including a concrete curbing section found immediately beneath asphalt paving. This roadway feature was documented in T-018. The overlying asphalt (Stratum IIa) was 0.20 m thick and extended from 0.25 to 0.45 mbs. The underlying concrete curbing (Stratum IIb) was 0.30 m thick and extended from 0.45 to 0.75 mbs. The asphalt extended across the entire trench footprint, but the deeper concrete curbing extended only along the entire length of the southeast sidewall. As with Feature 2 described above, a thick (1.2 m) layer of crushed coral fill (Stratum IIc) had been deposited beneath pavement and curbing, potentially as a roadway base course.

Cleaning and inspection of T-018 revealed that the concrete curbing (Stratum IIb) was smooth and lacked noticeable form scars from when the concrete was poured. The regularity of the poured concrete feature's surface and the lack of form scars indicate that the curbing was installed in a standardized, potentially repetitive manner, and that it was produced by skilled labor. The lack of observed seams in the curbing for the entire 3-m section exposed in the sidewall of T-018 indicates that the curbing was produced in relatively large pours, more on an industrial scale. The concrete curbing was well preserved and unweathered.

A single isolated beer bottle was recovered from Stratum IIc (designated as a component of SIHP # 50-80-13-7420), the crushed coral fill directly beneath the roadway asphalt and concrete curbing. The Regal Amber Brewing Co. bottle was manufactured in San Francisco in 1942, clearly indicating that the thick crushed coral fill layer was deposited in 1942 or later.

That the Feature 3 roadway feature dates to 1942 or later coincides with evidence from historic maps. Based on T-018's overlay on historic maps, SIHP # 50-80-13-7420 Feature 3 was located on the seaward side of the OR&L alignment and does not show up on the 1943 map (Figure 4). It does appear to be present on the 1953 map (Figure 5).

SIHP # 50-80-13-7420 Significance

The identified asphalt pavement and concrete curbing features of SIHP # 50-80-13-7420 are not spectacular archaeological cultural resources. Based on their stratigraphic position, their plotted location in relation to mid-twentieth century roadways shown on historic maps, and the characteristics of the features themselves, they are older than 50 years. They appear to relate to the network of territorial government and military roadways that were developed in the 1930s and 1940s as Kamehameha Highway was constructed and the area was opened up for development.

SIHP # 50-80-13-7420 is an archaeological site; it is buried and not to be confused with surface, in-use, or remnant roadway structures. It maintains integrity of location, design, materials, and potentially of workmanship (if more were to be exposed). It has information to impart related to the geographic distribution/extent, materials, and construction methods of these early- to mid-twentieth century roads. The geographic information can be used to supplement and validate information available from historic maps. Archaeological data on roadway materials and characteristics (such as asphalt thickness and the presence of form scars on poured concrete features) can inform on construction methods.

Accordingly, CSH recommends SIHP # 50-80-13-7420 eligible to the Hawai'i Register of Historic Places and the National Register of Historic Places under Significance Criterion D (has yielded, or is likely to yield, information important for research on prehistory or history). This information has been recorded in T-015, T-017, and T-018 in the form of the geographic locations of these cultural resources, the materials used in their construction, and the construction methods used to create these early- to mid-twentieth century roadways. Potential exists for additional pavements to exist in the vicinity, which may also yield additional information about these roadways.

The historic archaeological remnants of this roadway network are buried and their surroundings have been completely altered by modern development since their time of construction and period of use (for example, the massive construction of the H-1 Viaduct immediately adjacent). Accordingly these features do not maintain the integrity of setting, feeling, and association that might convey the roadways' significance under any other significance criteria of the Hawai'i or National Register of Historic Places.

SIHP # 50-80-13-7421

Formal Type:	Foundations (concrete slabs) and road surface
Number of Features:	3 (Feature 1, <i>mauka</i> section of concrete slabs; Feature 2, a <i>makai</i> section of concrete slabs, and Feature 3, the crushed coral road surface and underlying coral base course)
Functional Interpretation:	Storage and vehicular transportation

Age:	WWII
Current Dimensions:	170 m east/west by 80 m north/south
Location: Excavations	T-021, T-022, T-023, T-024, T-025, T-026, T-042, and T-046
Tax Map Key:	[1] 1-1-003:001
Land Jurisdiction:	State DOT Airports Division

SIHP # 50-80-13-7421 consists of two sections of buried concrete slabs and a crushed coral road surface and base course located at and near the Honolulu International Airport Station and Alternate A Station locations. A *mauka* section of concrete slabs (documented in T-023, T-024, T-025, and T-026 at the Honolulu International Airport Station) is designated as SIHP # 50-80-13-7421 Feature 1, a *makai* section of concrete slabs (documented in T-042 and T-046 located at the Alternate A Station) is designated as SIHP # 50-80-13-7421 Feature 2, and the crushed coral road surface and underlying coral base course (documented in T-021 just *'ewa* of the Honolulu International Airport Station) is designated SIHP # 50-80-13-7421 Feature 3 (see Figure 1 and Figure 2).

A 1943 War Department map (Figure 4) indicates that within the military infrastructure development in 1942-1943, an extensive area of large warehouses was developed in the immediate area of SIHP # 50-80-13-7421. Additionally, a railroad spur line ran south from the OR&L rail line forming a loop in the immediate vicinity of SIHP # 50-80-13-7421. It seems likely that the Features 1 and 2 concrete slabs were prepared, hard surfaces, possibly functioning as receiving aprons, docks, or warehouse foundations, and the Feature 3 crushed coral road with an underlying coral base course likely facilitated the mass movement of large quantities of heavy material and supplies from the rail line spur to the adjacent warehouses. A 1953 Army Mapping Service map (Figure 5) no longer depicts distinct structures. Instead, the area around SIHP # 50-80-13-7421 is shaded, indicating developed lands. It appears that in subsequent years, the concrete slabs and crushed coral road surfaces were abandoned and covered over when (or after) the warehouse buildings were demolished.

SIHP # 50-80-13-7421 Feature 1

SIHP # 50-80-13-7421 Feature 1 is comprised of buried concrete slabs or slab remnants located at varying depths within test excavations T-022, T-023, T-024, T-025, and T-026. In T-023 through T-026, Feature 1 consisted of a concrete slab overlain with a thin red film exposed beneath a modern asphalt parking lot and several underlying layers of fill. In each case, the concrete slabs extended beyond the limits of the excavation area. In T-022, an intact concrete slab was not encountered; however, large concrete slab pieces were documented within the upper portion of Stratum Id, beneath a modern asphalt parking lot and underlying fill layers. The total aerial extent of the slabs (which could be one or more large slabs spanning several trenches or several small slabs spanning one or more trenches) remains unknown. The total estimated area of the Feature 1 concrete slabs is minimally 50 m east/west by 15 m north/south, but it could be significantly greater and/or the shape of the area of the slabs could be irregular.

The buried slabs were encountered at varying depths within each trench. In T-022 the disturbed concrete pieces were encountered at about 0.90 mbs. In T-023 the concrete slab was

encountered between 0.98 and 1.20 mbs. In T-024 the concrete slab was encountered at 1.08 mbs. In T-025 the concrete slab was encountered at 0.90 mbs. In T-026 the concrete slab was encountered at 0.82 mbs. These data indicate that the depth of the in situ concrete slabs decreased slightly from east to west (from T-023 to T-026). In addition, efforts to break through the in situ slabs were unsuccessful, suggesting their thickness is greater than 0.10 m.

SIHP # 50-80-13-7421 Feature 2

SIHP # 50-80-13-7421 Feature 2 is comprised of buried concrete slabs located at varying depths within test excavations T-042 and T-046. In both trenches, a concrete slab was encountered beneath a modern asphalt parking lot surface and several layers of fill. In each case, the concrete slab extended across the base of excavation (note that in T-046, this was a very small portion of the trench). As the concrete slabs appeared to extend beyond the boundaries of the trenches, the total aerial extent of the slabs remains unknown; however, concrete slabs were not encountered in adjacent excavations (T-043, T-044, and T-045) that lie between T-042 and T-046. This suggests that more than one concrete slab is present in this area and forms Feature 2.

In T-042 the concrete slab was encountered at 1.83 mbs. In T-046 the concrete slab was encountered at 2.0 mbs and was busted through using a jackhammer. This revealed that the concrete was 8.0 cm thick and overlay an asphalt pavement that was 0.6 m thick and had an underlying 11.0 cm thick coral and basalt gravel base course deposited atop fill material. The asphalt pavement and underlying base course are included in the designation of SIHP # 50-80-13-7421 Feature 2.

SIHP # 50-80-13-7421 Feature 3

SIHP # 50-80-13-7421 Feature 3 is comprised of a compact crushed coral road surface and underlying coral base course exposed in test excavation T-021. The road surface and base course were encountered beneath fill layers. The road surface ranged in depth from 0.60 to 0.75 mbs and the coral base course measured 40.0 cm in thickness. As the pavement extended beyond the boundaries of the trench, its total aerial extent remains unknown.

SIHP # 50-80-13-7421 Significance

The identified crushed coral road surface and concrete slab features of SIHP # 50-80-13-7421 are modest archaeological cultural resources. Based on their stratigraphic position, their plotted locations in relation to mid-twentieth century roadways shown on historic maps, and the characteristics of the features themselves, they are older than 50 years and appear to relate to the military infrastructure development in 1942-1943. Although these features of SIHP # 50-80-13-7421 were developed in the same general timeframe as SIHP # 50-80-13-7420 Feature 1 (circa 1930) and SIHP # -7420 Feature 2 and Feature 3 (1940s-early 1950s), it seems clear that the crushed coral road surface and concrete slab features of SIHP # 50-80-13-7421 relate directly to WWII activities while the SIHP # 50-80-13-7420 features may relate more to general patterns of increasing development in the 1930s to 1950s.

SIHP # 50-80-13-7421 is an archaeological site; it is buried and not to be confused with surface, in-use, or remnant buildings or structures. It maintains integrity of location, design, materials, and potentially of workmanship (if more were to be exposed). It has information to impart related to the geographic distribution/extent, materials, and construction methods of these mid-twentieth roads. Their geographic distribution supplements and validates information

available from historic maps, and their construction methods and materials contribute to understanding transportation infrastructure development of the area.

Accordingly, CSH recommends SIHP # 50-80-13-7421 eligible to the Hawai'i Register of Historic Places and the National Register of Historic Places under Significance Criterion D (has yielded, or is likely to yield, information important for research on prehistory or history). This information has been recorded in T-021 through T-026, T-042, and T-046, including their geographic locations, and the materials and methods used in their construction. There is potential for obtaining additional information from untested locations within the vicinity.

The historic archaeological remnants of these warehouse structures and associated roadways are buried, and their surroundings have been completely altered by modern development since their time of construction and period of use (e.g., the massive construction of Honolulu International Airport immediately adjacent). Accordingly these features do not maintain the integrity of setting, feeling, and association that might convey their significance under any other significance criteria of the Hawai'i or National Register of Historic Places.

Appendix C Traditional and Historical Background

The following traditional and historical background research is copied from the Airport Section (Section 3) AIS report, Vol. I (Hammatt et al. 2013):

Mythological and Traditional Accounts

This review of mythological and traditional accounts for the Airport Section 3 study area are largely drawn from the AISP (Hammatt and Shideler 2011, Section 2:15-21). Additional mythological and traditional information from other recent studies appears in Appendix A.

The Airport Section 3 corridor traverses most of the width of the traditional Hawaiian land unit or *ahupua'a* of Hālawā, in the traditional district of 'Ewa, and the entire width of Moanalua Ahupua'a, in the traditional district of Kona (Figure 1). Much of the east end of the Airport Section 3 corridor lies on fill lands seaward of the traditional lands of Kahauiki Ahupua'a and Kalihi Ahupua'a. At the extreme east end, the Airport Section 3 corridor leaves these fill lands over former shallow seas and ends in the traditional lands of Kalihi Ahupua'a along the west bank of Kalihi Stream (see depiction at the east side of Figure 1).

Hālawā Ahupua'a

In 1873, S. K. Kuhano wrote about ancient O'ahu land divisions. O'ahu was divided into six *moku* or districts: Kona, 'Ewa, Wai'anae, Waialua, Ko'olauloa and Ko'olaupoko. These *moku* were further divided into 86 *ahupua'a*. Within 'Ewa, there were 12 *ahupua'a*. They were listed as Hālawā, 'Aiea, Kalauao, Waimalu, Waiau, Waimano, Manana, Wai'awa, Waipi'o, Waikele, Hō'ae'ae, and Honouliuli (Kame'eleihiwa 1992:330). Modern maps and land divisions still follow the ancient system and use the same land divisions, with the exception that a distinction is made between North and South Hālawā. This division in the case of Hālawā is due to a land court decision which occurred in 1888 (Bureau of Conveyances 1888, Liber 113:14,17; cited in Klieger 1995:50).

Considering its rich and varied environment of coastal and stream resources, central plains for *lo'i*, and upland forest regions, information regarding pre-Contact and early post-Contact life in Hālawā is limited, especially for the upland sections. The majority of the early historic references speak of the fishponds at Pu'uloa (the Hawaiian name for Pearl Harbor), the coastal resources, and excursions by early visitors to the Pearl River (known variously in Hawaiian as "Wai momi" "Awalau" and "Pu'uloa"; see Sterling and Summers 1978:46). Most early references in the traditional literature are one-line passages that merely mention Hālawā in passing with little attention to detail. People traveled through Hālawā from 'Ewa to Honolulu or vice versa, but most of these travels seem to have taken place inland of the Āliamanu and Salt Lake (Āliapa'akai) craters and well inland of the current study area (Figure 2). Once the trail left the northeast margin of the East Loch of Pearl Harbor, it could have been traversed quickly across the one mile (1.6 km) width of Hālawā Ahupua'a by a traveler heading to Kona District. Perhaps this explains the *'ōlelo no 'eau* (Hawaiian proverb) *'Ike 'ole 'ia aku Hālawā lā; Āina i ka mole o 'Ewa lā*. (Hālawā is not to be seen; 'tis a land at the end of 'Ewa; Fornander 1917:606).

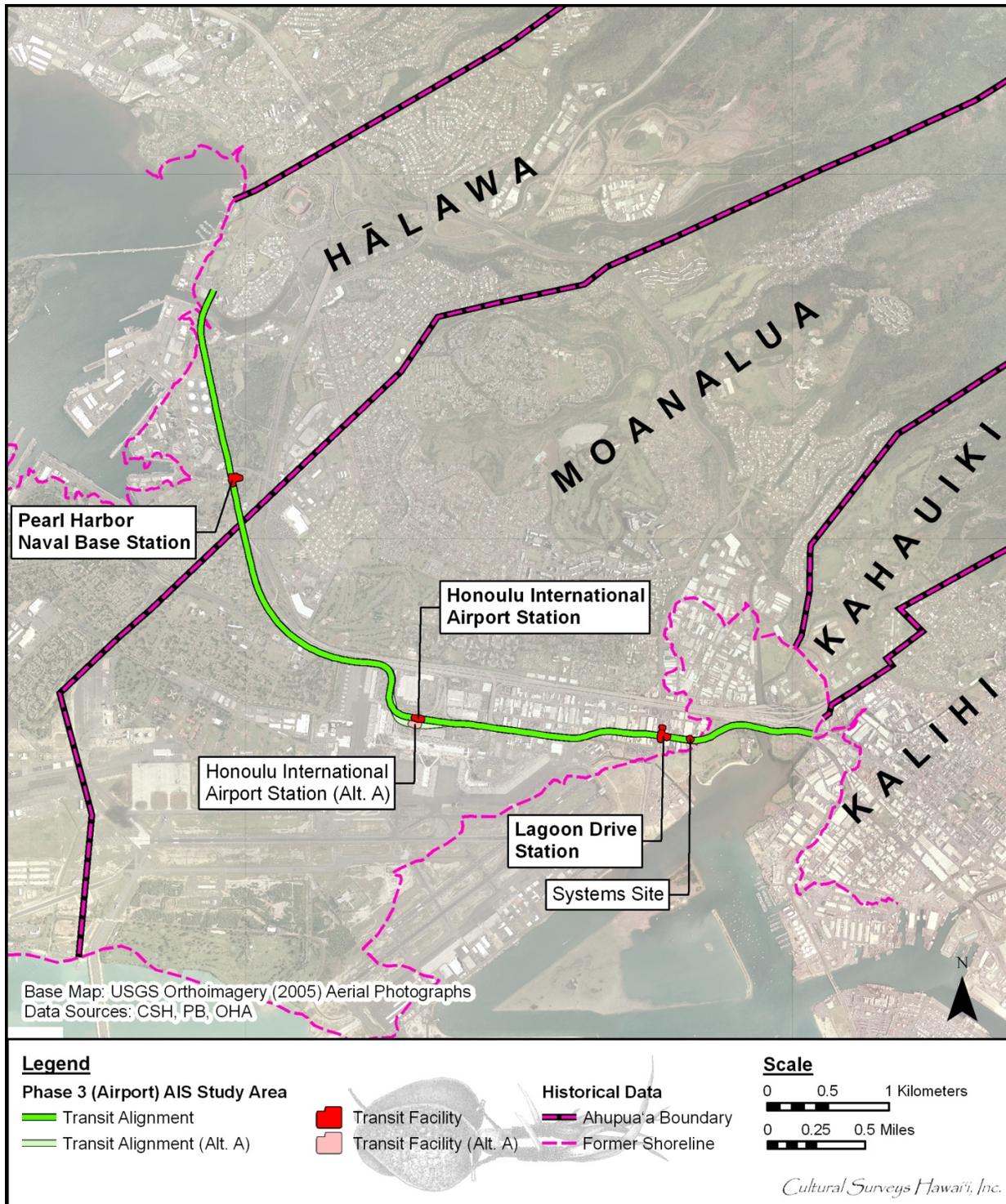


Figure 1. Map of Airport Section 3 archaeological inventory survey study area in relation to the ahupua'a of Hālawa, Moanalua, Kahauiki, and Kalihi. The east end of the Airport Section 3 corridor crosses the filled shallows of a former bay located seaward of Kahauiki Ahupua'a before ending in Kalihi Ahupua'a.

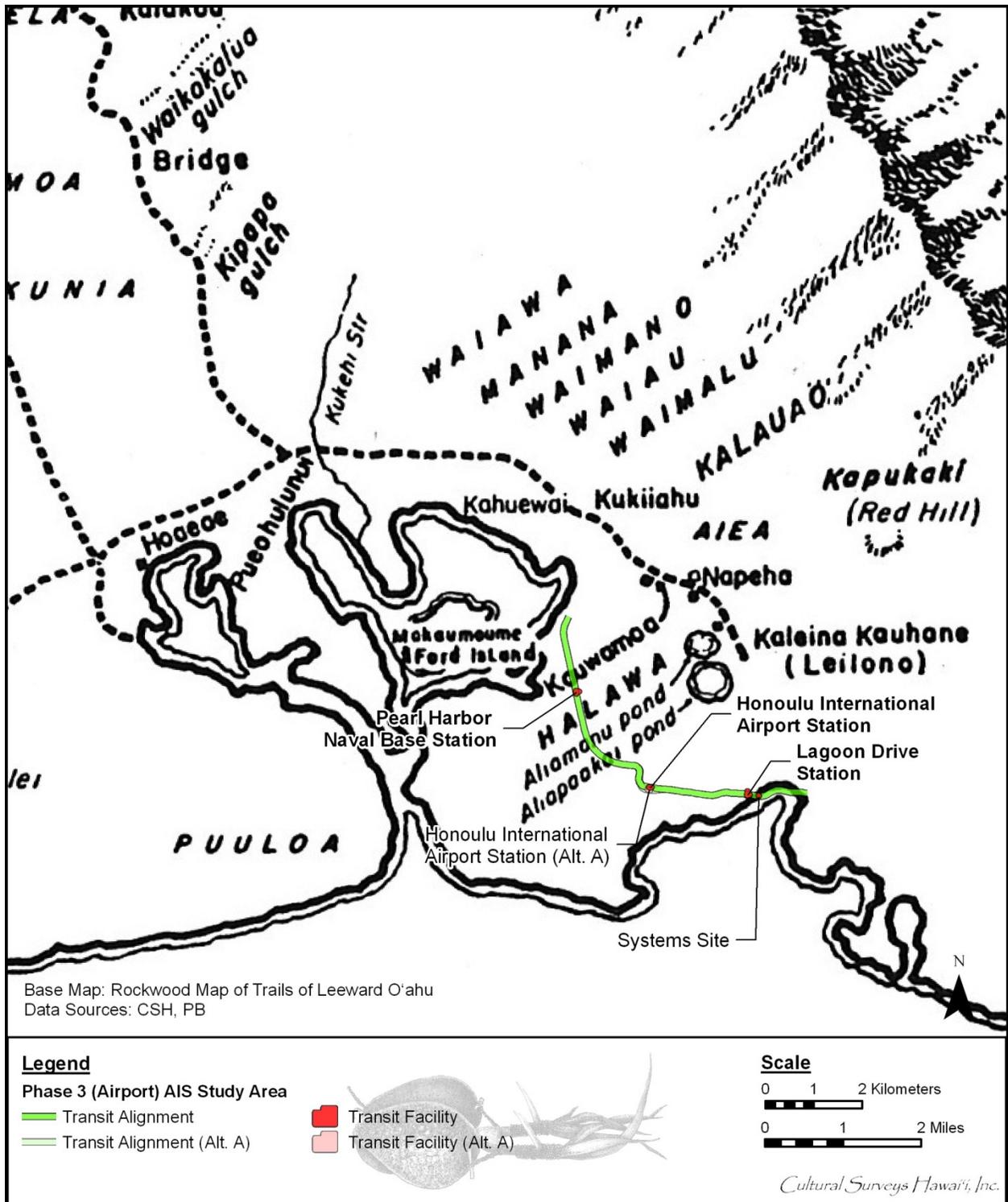


Figure 2. Map of trails and places mentioned by John Papa 'I'i (adapted from Rockwood's map in 'I'i 1959:96)

This may be a reference to the location of Hālawā on the fringes of 'Ewa District in relation to Waipi'o in central 'Ewa, which was the center of politics during pre-Contact times.

A fourteenth century account speaks of the reign of Mā'ili-kūkahi, an *ali'i kapu* (sacred chief) who was born at Kūkaniloko in Wahiawā around the fourteenth century A.D. (Pukui et al. 1974:113). After consenting to become *mō'ī* (king) at the age of 29, Mā'ili-kūkahi was taken by the chiefs to live at Waikīkī. The story tells us that he was probably one of the first chiefs to live there. Up until this time, the chiefs had always lived at Waialua and 'Ewa. Under his reign, the land divisions were reorganized and redefined. In reference to the productivity of the land and the population (including at Hālawā) during Mā'ili-kūkahi's reign, Kamakau writes:

In the time of Mā'ili-kūkahi, the land was full of people. From the brow, lae, of Kulihemo to the brow of Maunauna in 'Ewa, from the brow of Maunauna to the brow of Pu'ukea [Pu'u Ku'ua] the land was full of chiefs and people. From Kānewai to Halemano in Wai'alua, from Halemano to Paupali, from Paupali to Hālawā in 'Ewa the land was filled with chiefs and people. (Kamakau 1991:55)

Oral tradition tells us that Hālawā was the home of Papa, where she lived in the uplands with her parents, Kahakauakoko and Kūkalani'ehu. Papa is known for her generative role as the "earth mother." Together with her husband, Wākea, they were the progenitors of the Hawaiian race. The Hale o Papa *heiau* (pre-Christian place of worship) and ritual, which is the female component of the ancient *luakini* (large *heiau* where ruling chiefs prayed and human sacrifices were offered) ritual, probably takes its name from her. The Hale o Papa was the *heiau* for the female deities. Only chiefesses of the highest ranks were allowed to enter and partake of the specially dedicated foods (Valeri 1985:245; 'Ī'ī 1959:39; Kamakau 1961:179, 380).

Mention is made of the travels of Kamapua'a (the famous pig-god) through Hālawā and of the cave, Keanapua'a, where he slept (Kame'eiehiwa 1996:131).

In the name chant for Kaumuali'i, reference is made to "*ka ea nō mai Hālawā a Honouliuli*" (the whirlwind which blows from Hālawā to Honouliuli) (Fornander 1920, Vol. VI:475).

In traditional lore, Hālawā was one of several places noted and remembered for its '*awa* (*Piper methysticum* the source of a narcotic drink) (Fornander 1919, Vol. V:610). One account tells us that the first '*awa* plant was brought to Hawai'i by Oilikūkaheana from Kahiki (Tahiti) and planted on Kaua'i. He brought it to Hawai'i for use in fishing. [The use of '*awa* as an offering to a shark guardian by fishermen is noted in Handy and Handy 1972:192.] Mō'īkehā brought some '*awa* plants with him to O'ahu and planted them at Hālawā. When they grew, he mentioned it to Oilikūkaheana, who told him that the name of these '*awa* plants was Paholei. Mō'īkehā forgot the name and later, when the plants were much larger, he went to 'Ewa and told her about the plants. 'Ewa sent Mō'īkehā to get some plants. 'Ewa said:

Let me first eat of this plant, and should I die, do not plant it for it would be valueless; but should I not die, then we will be rich." When 'Ewa ate it she became drunk and was intoxicated all day. When she awoke she called the plant "awa"; from thence forward this plant was called '*awa*, the awa of Kaumaka'eha, the chief (Fornander 1919, Vol. V:608).

On the 12th of December, 1794 the decisive battle of Kūki'iahu took place at Kalauao (lit. the multitude of clouds), about a mile (1.6 km) northwest of the Airport Section 3 study area. It was there that the O'ahu ruling chief Kalanikūpule defeated and killed the invader Ka'eokūlani. It is said that the dead bodies were gathered up and taken to Pa'aiau where they were piled in a great heap. Among the piled-up bodies was Kahulunui'ka'aumoku, daughter of Kū'ohu, a Kaua'i *kahuna* who had been slain with Ka'eokūlani. Late at night, an owl woke her up by flying over and beating its wings on her head. The owl flew *makai* and she crawled after it until reaching the sea. She then swam to the other side at 'Aiea, where the owl appeared once more and led her up to the mountains in Hālawā valley. There, she took shelter in a cave and fell into an unconscious sleep. The owl flew to a former *kahu* (caretaker) of hers who "knew the country well around Hālawā." This *kahu* brought her food and nursed her back to health (Kamakau 1961:169-70).

During the construction of the H-3 freeway, Mālama o Hālawā protesters used this story as basis for claiming Hālawā's importance to women. They maintained that Hālawā was an important and special healing site for women in times past and that it was also home of the protective 'aumakua (guardian), the *pueo* (owl) (Omandam 1997).

The following *mo'olelo* are accounts regarding people and events that took place in or near Hālawā. These accounts have been preserved through the oral and written record of times long past.

Leilono - a supernatural breadfruit tree ('Ulu o Leiwalo) whose branches appeared through a hole in the ground. This hole was said to be the entrance whereby wandering spirits could enter the afterworld of Milu (*pō pau 'ole*), the *ao kuewa* or realm of wandering spirits, or the *ao 'aumakua* (ancestral spirit realm). The tree had two branches which were deceiving to look at, one on the east side of the tree and one on the west side. If a spirit climbed onto the west branch, it would wither and break off and he would plunge into the realm of Milu. If a spirit climbed onto the branch on the east, he would be able to see the 'aumākua realm and receive help from his ancestors. This hole is described as being round and about two feet wide, on a piece of *pāhoehoe* lava. Leilono is in the neighboring district of Moanalua. However, very specific boundaries are given for it. Kamakau says it was:

close to the rock Kapūkakī and easterly of it . . . directly in line with the burial mound of Āliamanu and facing toward the right side of the North Star....The boundaries of Leilono were Kapapakōlea on the east, [with] a huge caterpillar (*pe'elua nui*) called Koleana as its eastern watchman, and the pool Napeha on the west, with a mo'ō the watchman there. If the soul was afraid of these watchmen and retreated, it was urged on by the 'aumakua spirits, then it would go forward again and be guided to the 'aumakua realm. If a soul coming from the Ālia (Āliapa'akai) side was afraid of the caterpillar, whose head peered over the hill Kapapakōlea, and who blocked the way, it would wander about close to the stream by the harness shop. This was not the government road (*alanui aupuni*) of former times, but was a trail customarily used by "those of Kauhila'ele" [figuratively, the common people; the *la'ele*, old taro leaves, as contrasted with the *liko*, the new and choicer leaves — that is, the chiefs]. It was said that if a wandering soul entered within these boundaries it would die by leaping into the

pō pau 'ole; but if they were found by helpful 'aumākua souls, some wandering souls were saved. Those who had no such help perished in the pō pau 'ole of Milu. (Kamakau 1964:48-49)

The Napeha pool referred to above as a boundary of Leilono was about 1.5 km northeast of the Airport Section 3 study area. We know of no subsequent reference to “the burial mound of Āliamanu” but Āliamanu Crater lies about 1.7 km to the northeast.

Nāpēhā - a pool and resting place where people went diving. So named because Kūali'i stopped and bent over the pool to take a drink. The name means “bend over breath” (‘Ī‘ī 1959:95). Sterling and Summers (1978:10) give the literal meaning as “out of breath.” Also, see Pukui et al. (1974:163) and Pukui and Elbert (1986:262) for variations in diacritical markings.

Kauwamoa - a diving place where people liked to gather. It was said that Pe‘ape‘a (son of Kamehamehanui of Maui) liked to dive from a favorite spot which was five to ten fathoms above the pool (‘Ī‘ī 1959:95).

Waikahi Heiau - Site 105. The location was described by McAllister (1933:103) as being “on the flat area on the mountain side of the road where the two gulches of Hālawā meet. According to Thrum (1906:36), the size was about 80 square feet, it was a *po‘okanaka* (sacrificial *heiau*), and Manuokao was the kahuna. In 1933, McAllister reported the area was entirely planted in cane and no remains whatsoever could be seen (McAllister 1933:103).

Waipao Heiau - Site 106. McAllister lists the location as being “near the mouth of Kamananui Gulch, Hālawā.” He goes on to say:

The structure was on a narrow flat at the entrance of a small ravine running into the north wall of the gulch. The heiau was destroyed a few years ago when there was an attempt to plant cane on this land, and the lines of stones which follow the old furrows are all that remain. My Hawaiian informant told me that the surrounding caves were formerly used as places of burial (McAllister 1933:103).

Kūnānā Pond - said to be at the base of Hālawā stream and was at one time connected with Kūāhūa Island. It was named after Kūānānā (child of Nānā) who liked to fish there. She was the mother of Ka‘ahupahau, the shark guardian of Pu‘uloa (Sterling and Summers 1978:10).

Keanapua‘a Point - (lit. the pig’s cave) so named because Kamapua‘a, the legendary pig-god slept in the cave overnight. It is near the beach in Hālawā opposite Waipi‘o Peninsula (Sterling and Summers 1978:10).

Kamapua‘a (Story of) - upon awaking, after spending the night at Keanapua‘a, Kamapua‘a urinated in the ocean. This is the reason the fish at Pu‘uloa have such a strong smell (Sterling and Summers 1978:10).

Kahuawai - a small waterfall on Kalauao stream which was a favorite resting place exclusively for chiefs. It was also called Kahuewai (the water gourd) (Pukui et al. 1974:66). It was also referred to by ‘Ī‘ī (1959:20) as “a land with two points” because the fish they were carrying (as food) were stiff and bent like hog tusks by the time they reached this resting spot.

Moanalua Ahupua'a

The Airport Section 3 area traverses the seaward portion of Moanalua Ahupua'a, the westernmost of the traditional Hawaiian land divisions (*ahupua'a*) of the traditional Kona District (*Kona Moku*). There are numerous references to Moanalua in the traditional literature (see compilation of background material on Moanalua in Sterling and Summers 1978:328-338, Damon 1971, and Maly and Maly 2012) which may provide preliminary clues to the character of life - including patterns of settlement and land usage - within the *ahupua'a* of Moanalua during pre-western contact times.

The nineteenth-century Hawaiian archivist and historian Samuel Kamakau mentions Moanalua in an account of the *mo'olelo* (legend) surrounding the arrival of the gods Kū and Lono to the Hawaiian Islands:

Kū and Lono are spoken of in the *mo'olelo* of the *lono-pūhā* practitioners and of the medical *kāhuna* as having come from Kahiki [Tahiti]. They landed first on Kaua'i, and from there they spread forth.

In the *mo'olelo* of Pele *mā*, it says that they first landed at Kalihi on Kaua'i and from there went to Ka'ena Point on O'ahu and at Moana-lua left the salt pond. Then they went to Ka-uha-kō on Moloka'i, to 'Aleamai in Hāna, Maui, and then went to live at Kīlauea in Puna and Ka'ū on Hawai'i (Kamakau 1991:112).

Another tradition associates the creation of Āliapa'akai (Salt Lake) and the nearby adjacent Āliamanu Crater with the goddess Pele:

...[Pele] left Kauai and went to O'ahu, to a place near Honolulu, to Moanalua, a beautiful suburb. There she dug a fire pit. The earth, or rather the eruption of lava, was forced up into a hill which later bore the name Ke-alia-manu (The Bird White Like a Salt Bed or The White Bird). The crater which she dug filled up with salt water and was named Ke-alia-paa-kai (The White Bed of Salt, or Salt Lake). (Westervelt 1987:40)

Near Āliapa'akai and Āliamanu was Leilono, an entrance to the nether world:

Leilono at Moanalua, O'ahu, was close to the rock Kapukaki and easterly of it (*a ma ka na'e aku*), directly in line with the burial mound of Aliamanu and facing toward the right side of the north Star (*a huli i ka 'ao'ao 'akau o ka Hokupa'a*). On the bank of the old trail there was a flat bed of pahoehoe lava, and on it there was a circular place about two feet in circumference. This was the entrance to go down. . . (*ka puka o Leilono*)...(Kamakau 1964:48)

Additional legendary personages associated with Moanalua include the "cannibal dog-man Kaupe who overthrew the government of Ka-hānai-a-ke-akua ("Reared by the gods") and ruled the land from Nu'uānu to the sea" (Beckwith 1970:345). Another legend tells of a father and son who "flee and hide under a rock at Moanalua while Kaupe goes on to look for them on Hawai'i" (Beckwith 1970:345). Other traditions identify Moanalua with historical personages including the most prominent Hawaiian *ali'i* (royalty).

Samuel Kamakau recounts the story of a Maui chief:

named Kalai-koa who lived at Moanalua built a long house and named it Kauwalua and, perhaps in order to make his name famous, had it filled with the bones of persons stripped, bound, and set up inside the house and all around the outside enclosure of the house. The bones of Elani, Kona-manu, and Ka-laki-o'o-nui were bundled up and placed beside the entrance. The house stood at Lapakea on the slope into Moanalua on the upper side of the old road. Eyewitnesses said, 'It was a terrible and gruesome sight. The bones were stripped, bundled together, and the skulls set upon each bundle so that, seen from a distance, it looked like a company of living men.' (Kamakau 1961:138-139)

The existence of the "house of bones" into the nineteenth century is confirmed in accounts by early western visitors to Moanalua and its conjectured location (about 2 km northwest of the Lagoon Drive Station) was recorded by McAllister as an archaeological site (Site 85) during the first archaeological survey of O'ahu during the early 1930s.

Historic Background

This historic background review for the Airport Section 3 study area is largely drawn from the AISP (Hammatt and Shideler 2011, Section 3: 22-53). Additional historical information from other recent studies appears in Appendix A. Also transcripts and photocopies of Land Commission Awards (LCAs) data for the vicinity of the Airport Section 3 study area appear in Appendix B.

Hālawā Ahupua'a

Early Historic Period

Captain Cook first sighted O'ahu on January 18, 1778 but did not make a landing. Shortly after the death of Captain Cook, O'ahu had its first contact with foreigners when *HMS Resolution* and *HMS Discovery* landed at Waimea Bay on February 27, 1779. It was not until 1786 that the next contact with foreign ships was made when *HMS King George* under Captain Portlock and *HMS Queen Charlotte* under Captain Dixon touched at Wai'ālae Bay for four days to take on provisions (Portlock 1789:69-76).

Our first details about Hawaiian settlement in Hālawā come from explorers' accounts and maps such as Otto von Kotzebue's O'ahu map of 1817 (Figure 3). While this early survey map should be understood as rather schematic, it indicates the general pattern of coastal residence and agriculture. A quilt of ponded fields of taro (*lo'i kalo*) and fairly dense associated habitations extend west from the western edge of the Airport Section 3 study area. This dense pattern of occupation began in the immediate vicinity of the mouth of Hālawā Stream and extended westward along the margins of Pearl Harbor with its abundant marine resources, relatively fertile soils, and numerous streams. In contrast is the relative lack of habitation and agriculture along the majority of the Airport Section 3 corridor. The post-erosional volcanic land forms of Makalapa, Āliamanu Crater, and Salt Lake (Āliapa'akai) Crater effectively pushed Hālawā Stream to the northwest and Moanalua Stream to the southeast, leaving most of the Airport

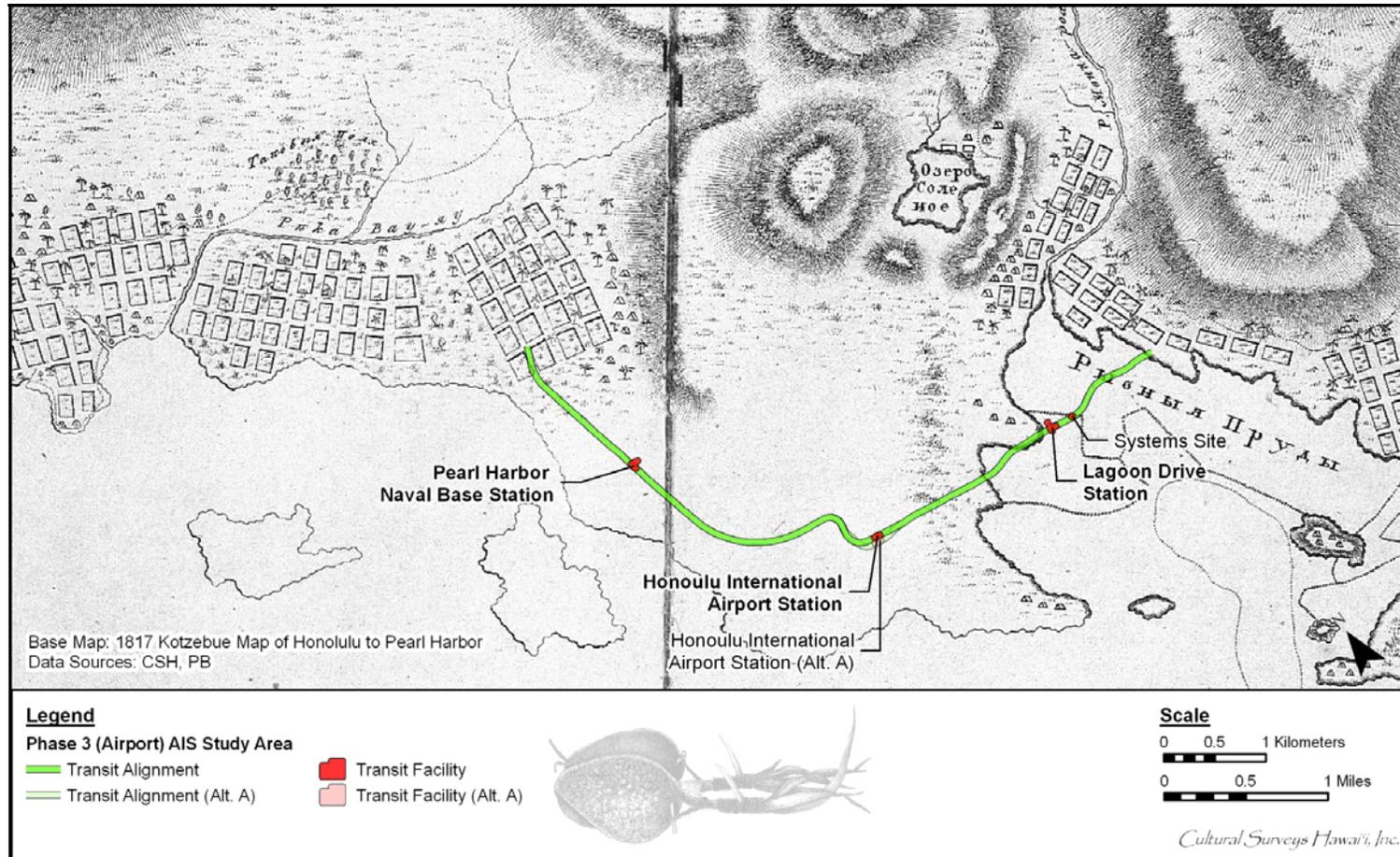


Figure 3. Otto von Kotzebue map of 1817 identifies Salt Lake (“Озеро Соленое”), Mauna-Roa (Moanalua) River (“P. Моуна-роа”), and fish ponds (“Рыбные Пруды”) along the shoreline of Moanalua Ahupua‘a; also note an abundance of *lo‘i kalo* (irrigated taro fields) in the lowlands of Moanalua east of Āliapa‘akai (Salt Lake), spreading out from Moanalua Stream and from the fishponds at the former shore (although this early survey is a general schematic; the relative lack of habitation along the Airport Section 3 corridor is noteworthy)

Section 3 corridor without surface water. Traditional patterns of life focused further inland where rainfall was higher and adjacent to the main trail from Kona to 'Ewa (see Figure 2).

The population of the islands of Hawai'i at Contact has been conservatively estimated to be between 100,000 on the low end, and up to 400,000 (Schmitt 1977), but some recent estimates of population have been as high as 800,000-1,000,000 (Stannard 1989, Kame'eleihiwa 1992). In the 1820s, both William Ellis and C. S. Stewart estimate the population of O'ahu to be about 20,000 (Ellis 1969:19; Stewart 1970:26). It is not clear how they arrived at these figures. Ellis writes the following about the Hawaiian population:

Compared with those of other islands, the inhabitants may be termed numerous. They were estimated by their discoverers at 400,000. There is reason to believe this was somewhat above the actual population at that time, though traces of deserted villages and numerous enclosures, formerly cultivated but now abandoned, are everywhere to be met with. At present it does not exceed 130,000 or 150,000 [for the Hawaiian Islands collectively], of which 85,000 inhabit the island of Hawai'i. (Ellis 1969:23).

Sometime after Kamehameha conquered O'ahu in the battle of Nu'uano in 1795, he gave his most trusted foreign advisors, Isaac Davis and John Young, some lands as a reward for their loyal service to him. As part of this award, each one received half of the *ahupua'a* of Hālawā. As was the usual custom at the time, the king divided the land among his chiefs who supported him throughout his conquests of the islands (Klieger 1995:31, 36).

The missionaries are credited with the taking of the first census in 1831-32. However, there was no uniformity among the different stations and the census totals cover fairly large geographical areas. In addition, information was not necessarily broken down into smaller *ahupua'a* and no distinctions were made among sex, age, birth, and death rates (Schmitt 1973:1).

The 1831-32 census for O'ahu was 29,755, with Honolulu being the most heavily concentrated area with 13,344 people. The 'Ewa district was the third largest with a count of 4,015 (Schmitt 1977:8-9). In this census, Hālawā was combined with 'Aiea. The census shows there were 163 males, 134 females, 72 male children and 35 female children; with a total count of 404 for the two *ahupua'a* (Schmitt 1977:19). The reasonable inference is that these *ahupua'a* were fairly well-populated but not densely populated in comparison to the other *ahupua'a* of 'Ewa at the time.

There are no separate population figures given for Hālawā until the 1835-36 census. At that time, there were 104 males, 102 females, 48 male children, 29 female children; with a total count of 283 for the *ahupua'a*. The total for 'Ewa was 3,423; a decrease of 592 (seemingly a decline of 14.7% over 4 years) from the first census figures.

In 1839, for the purposes of tax assessment, a law was passed to take an official government census which was to be carried out by the tax officers in the various districts. This was to have been done in 1840, but was not actually carried out. In 1846, a new law was enacted giving the responsibility of the computations to school officials. A count was undertaken in 1849, however, the results are suspected to be under reported. It was not until 1850 that a more systematic and accurate census was conducted (Schmitt 1977:3).

These lesser chiefs (Young and Davis) were allowed to work the land as long as they lived. But, as was the traditional custom, upon their death the land reverted back to the *ali'i nui* or

paramount chief. This rule held true even for these two most faithful advisors. John Young tried to make his lands inheritable by requesting that his children, and those of Isaac Davis whom he adopted, be allowed to retain the lands given to him by the king upon his death. Specifically, he attempted to will Hālawā to his daughter, Grace Kama'iku'i. His will states:

. . . in behalf of my deceased friend Isaac Davis and for his children as he died without will, the King Kamehameha gave me all the said Isaac Davises [Davis'] lands to take care of them and his children until the children came of age, and now they are come of age so I think it right to leave my last wishes and will that the King, Ka'ahumanu, Adams and Rooke and all the Chiefs will let Isaac Davises children keep their father's lands that King Kamehameha gave to him as a reward for assisting the King in his wars in conquering the islands of Hawai'i, Maui, Molokai, and O'ahu, and which we have an undoubted right to leave to our children, which I hope in God our young king will fulfill the wishes of his honored father. My own lands, I wish my children to enjoy as I have done, likewise my wife . . . (Claim: #595 F.R. 67-72 V2).

Kamehameha III refused to honor Young's request upon his death (Kame'eleihiwa 1992:59-60). However, in the Māhele, John Young's children were allowed to keep lands as *'āina ho'olina* or inherited lands. Lilikalā Kame'eleihiwa (1992:59-60) notes that in all of the *Buke Māhele*, these were the only lands given under this designation.

The Māhele

The Organic Acts of 1845 and 1846 initiated the process of the Māhele – the division of Hawaiian lands – which introduced private property into Hawaiian society. In 1848, the crown and the *ali'i* (royalty) received their land titles. *Kuleana* awards for individual parcels within the *ahupua'a* were subsequently granted beginning in 1850. These awards were presented to tenants – native Hawaiians, naturalized foreigners, non-Hawaiians born in the islands, or long-term resident foreigners who could prove occupancy on the parcels before 1845. The *kuleana* LCA for Hālawā Ahupua'a are described in Table 1.

It is clear that circa 1850 there was a relatively tight focus of Hālawā Ahupua'a settlement and agriculture a little more than a kilometer upstream of where the present study corridor crosses Hālawā Stream (Figure 4 and Figure 5). This likely was a general pattern extending back in time for centuries with Hālawā habitation focused well inland. All of the land claims were inland of the present Airport Section 3 study area. There were no *kuleana* LCA claims on the coastal plains of Hālawā Ahupua'a except in the immediate vicinity of Hālawā Stream. However, it should be noted that an unnamed settlement, annotated as "Settlement 1840" on an Anderson and Bouthillier (1996) map (see Figure 13) just southwest of the area that would become known as Watertown in the Pearl Harbor entrance attests to settlement also being present near the coast along the margins of the Pearl Harbor entrance and the East Loch of Pearl Harbor.

The only two Hālawā Ahupua'a claims were associated with Land Commission Awards 2131 and 2043. Kanihoali'i, and his heir Kaukiwaa were claimants for LCA No. 2131 (see Appendix B). LCA No. 2131 consisted of two distinct pieces: a *lo'i kalo* and *kula* adjoining in the *'ili* of Kamau and 2d, a fish pond on the sea shore which is a *lihi 'āina* of the said *'ili 'āina* Kamau. It appears it was the Pu'uone Kalokoloa fishpond parcel of LCA No. 2131 that abutted the east side

Table 1. *Kuleana* Land Commission Awards for Hālawā and Kalihi Ahupua'a (adapted from Klieger 1995:63)

LCA #	Claimant	General Location	Assoc. Place Names	Land Use
1983	Hapule (Kapule)	N. of Hālawā Stream, just <i>mauka</i> of corridor	Kawahanaena Mo'ō'āina Kawahanaena 'Ili	eight <i>lo'i</i> , one <i>kula</i> , house, one <i>pu'uone</i> (seven <i>lo'i</i> , one <i>kula</i>)
1996	Naea	N. of Hālawā Stream, km. <i>mauka</i> of corridor	Kulina Mo'ō'āina, Kulina (Kulena) 'Ili	three <i>lo'i</i> , house (<i>kula</i>)
2016	Makakane	N. of Hālawā Stream, km. <i>mauka</i> of corridor	(Kamalanai 'Ili)	two <i>lo'i</i> , one <i>kula</i>
2042	Kauohilo	N. of Hālawā Stream, km. <i>mauka</i> of corridor	Keaupuni Mo'ō'āina, Kula, Keaupuni 'Ili	three <i>lo'i</i> (three <i>lo'i</i> , one <i>kula</i>)
2043	Kawaha	N. of Hālawā Stream, km. <i>mauka</i> of corridor- but Loko Kunana claim was west of Hālawā Stream	Kunana Mo'ō'āina and Kaulailoa Pu'uone, Kunana (Kaunana) 'Ili	three <i>lo'i</i> , one <i>kula</i> , one pond (four <i>lo'i</i> , one <i>kula</i> , one pond)
2044	Kaupali	N. of Hālawā Stream, km. <i>mauka</i> of corridor	Pamuku Mo'ō'āina, (Pamuku 'Ili)	four <i>lo'i</i> (four <i>lo'i</i> , one <i>kula</i>)
2047	Kekio	N. of Hālawā Stream, km. <i>mauka</i> of corridor	Kaihuamo'o Mo'ō'āina and Kula, Kaehuamo'o or Kaihuamo'o 'Ili	1.5 <i>lo'i</i> , one <i>kula</i> , house
2048	Kauhalu	N. of Hālawā Stream, km. <i>mauka</i> of corridor	Palahalaha Mo'ō'āina, Kunana 'Ili	four <i>lo'i</i> , one <i>kula</i> , house (five <i>lo'i</i> , two <i>kula</i>)
2055	Kahawai-olaa	N. of Hālawā Stream, km. <i>mauka</i> of corridor	Kahaia Mo'ō'āina, Kunana (Kahaia) 'Ili	six <i>lo'i</i> (six <i>lo'i</i> , two <i>kula</i>)
2057	Keawe (1)	N. of Hālawā Stream, km. <i>mauka</i> of corridor	Pamuku Mo'ō'āina, Kunana 'Ili	four <i>lo'i</i> , one houselot (four <i>lo'i</i> , two <i>kula</i>)
2059 n/a	Kaninauali'i	?	-	[dead in 1846]
2091 n/a	Kelohanui	?	-	six+ <i>lo'i</i> , one <i>kula</i> , one houselot
2096	Kenui	N. of Hālawā Stream, km. <i>mauka</i> of corridor	Kuaimano Mo'ō'āina, Kulina (Kuaimano) 'Ili	four <i>lo'i</i> , one <i>kula</i> , house

LCA #	Claimant	General Location	Assoc. Place Names	Land Use
2131	Kanihoali'i	N. of Hālawā Stream, just <i>mauka</i> of corridor and N. of Hālawā Stream, 1 km. <i>mauka</i>	Kalokoloa Pu'uone, Kamau 'Ili	one <i>lo'i</i> , two <i>pu'uone</i> , one <i>kula</i> , one houselot
2137	Keawe (2)	N. of Hālawā Stream, km. <i>mauka</i> of corridor	Kamo'oiki Mo'o'āina and houselot, (Kamo'oiki) 'Ili	two <i>lo'i</i> , one houselot (three <i>lo'i</i> , one <i>kula</i>)
2139	Kinilau	N. of Hālawā Stream, km. <i>mauka</i> of corridor	Hanakapua'a Mo'o'āina, Kulina 'Ili	four <i>lo'i</i> , one <i>kula</i> , house (three <i>lo'i</i> , one <i>kula</i>)
2155	Pua'ali'ili'i	S. of Hālawā Stream, km. <i>mauka</i> of corridor	Kalo'iiki 'Ili	8.3 <i>lo'i</i> , one <i>kula</i> (nine <i>lo'i</i> , one <i>kula</i>)
2156	Opunui	S. of Hālawā Stream, km. <i>mauka</i> of corridor	Konohikilehulehu Mo'o'āina and Piomoewai Kula and houselot, Kalo'iiki 'Ili	3.3 <i>lo'i</i> , one <i>kula</i> one houselot (four <i>lo'i</i> one houselot)
2157	Kanakaoaki	N. of Hālawā Stream, km. <i>mauka</i> of corridor	Kulina 'Ili Kia 'Ili	four <i>lo'i</i> , six <i>lo'i</i> one <i>kula</i>
9330 n/a	Ka'auku'u	?	Muliwai (Makali'i) 'Ili	one <i>kula</i> (entire <i>'ili</i>)
9331 n/a	Pulao	?	Muliwai Mo'o'āina, Muliwai 'Ili	one <i>lo'i</i>
9332	Kaheana	N. of Hālawā Stream, just <i>mauka</i> of corridor	Kaihuamo'o Mo'o'āina, Kulina 'Ili	two <i>lo'i</i> , one <i>kula</i> (1/2 <i>lo'i</i>)
9332B	Kealohanui	N. of Hālawā Stream, km. <i>mauka</i> of corridor	Kumu'ula Mo'o'āina, Kia (Kumu'ula) 'Ili	four <i>lo'i</i>
9332C n/a	Kekoanui	?	Peahinaia 'Ili	one <i>lo'i</i>
10498	Nahinu	Kalihi Ahupua'a	-	Six <i>pō'alima</i> [land worked for the <i>ali'i</i>] <i>kalo</i> patches and one pasture.
818	George Beckley	Kalihi Ahupua'a	Kaliheawa	One farm with the fishing grounds

*n/a denotes not awarded; and ? denotes no information provided

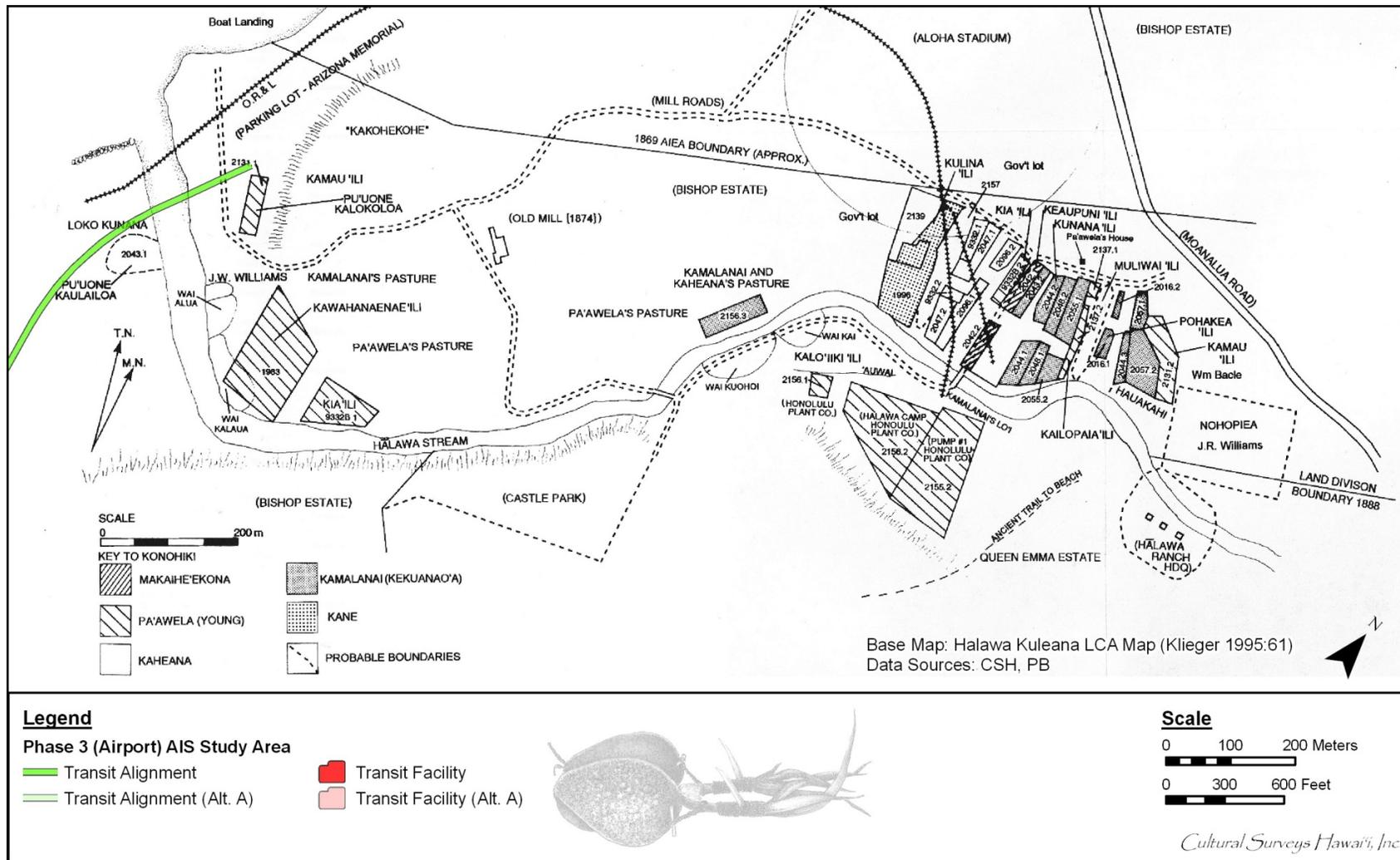


Figure 4. *Kuleana* Land Commission Awards along lower Hālawā Stream (adapted from Klieger 1995:61) including locations of Pu'oune Kalokoloa Fishpond (LCA 2131) near the north end of the Airport Section 3 corridor (Note: LCA shapes were often simplified into quadrilaterals during surveying)

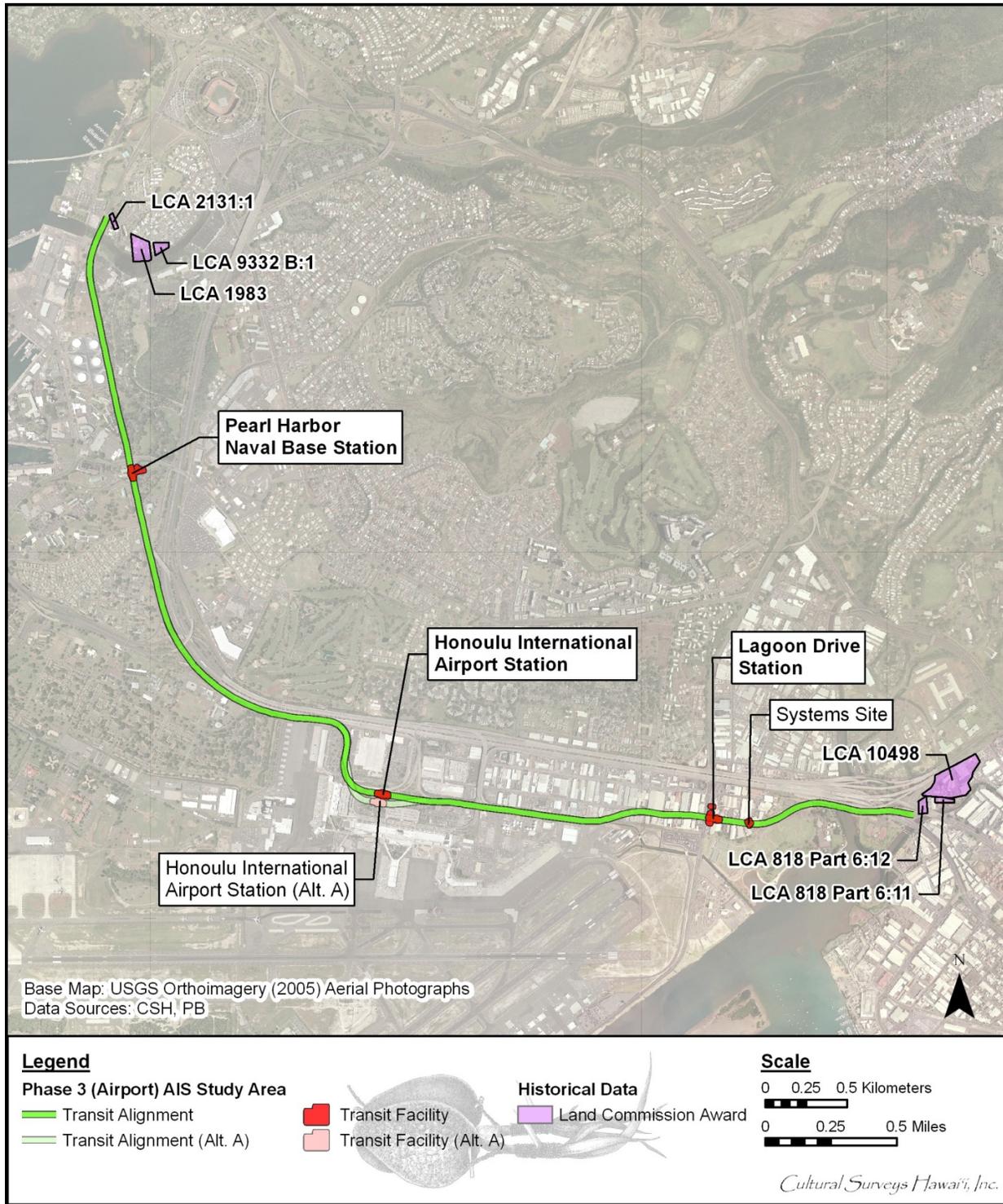


Figure 5. Overlay of *Kuleana* Land Commission Awards near the Airport Section 3 study area in Hālawā Ahupuaʻa on 2005 USGS Aerial photograph (the LCAs at upper left are in Hālawā Ahupuaʻa and the LCAs at the lower right are in Kalihi Ahupuaʻa)

of the north end of the present study area, just northeast of Hālawa Stream (see Figure 4 and Figure 5) and that the *lo'i* and *kula* claim was 1,400 m inland in Kamau 'Ili near Moanalua Road (see Figure 4).

Kawaha was the claimant to LCA 2043 (see Appendix B for more details) that included a fish pond that Klieger (1995:61) located on the southwest side of the mouth of Hālawa Stream just inland of the Airport Section 3 corridor and associates with the name "Pu'uone Kaulaloa" (see Figure 4).

Oliver Holmes passed away in 1825. If he had indeed received Isaac Davis' Hālawa lands, they were probably returned to Liholiho (Kamehameha II) who redistributed them after Holmes' death. Holmes' children did not claim any Hālawa lands in the Māhele, although his son, George Holmes was awarded a piece of land in Honolulu (LCA 1045). It is this period from 1825 to 1848 that is most unclear. Subsequently, Kekūanaō'a ended up with Davis' Hālawa portion at the end of the Māhele and Grace Kama'iku'i Young Rooke (John Young's daughter) retained the John Young portion. Isaac Davis' portion of Hālawa passed from Kekūanaō'a to Ruth Ke'elekōlani and on to Bernice Pauahi Bishop. Upon Ruth's death, her lands became part of the Bishop Estate Trust (Klieger 1995:38-40, 44, 46).

In 1848, Hālawa Ahupua'a was awarded jointly to Grace Kama'iku'i Young Rooke and Kekūanaō'a (LCA #s 8516B and 7712) (Klieger 1995:41).

In 1852, Kekūanaō'a wrote a letter to the Minister of Interior requesting that a list of the *kapu* (forbidden) fish for Victoria Kamāmalu's lands on O'ahu be published in the newspaper. The *kapu* fish for Hālawa was the *'anae* or full-sized mullet (Kekūanaō'a, 1852: August 12).

In 1862 the Mataio Kekūanaō'a and Kama'iku'i Rooke (John Young's daughter) leased a portion of the *ahupua'a* of Hālawa to a Manuel Paiko of Honolulu for the purpose of cattle ranching (Bureau of Land Conveyance 1862, Liber 9:174-179).

In 1866, Kama'iku'i willed to her sister, Fanny Na'ea, her interest in her portion of Hālawa (Klieger 1995:40).

In 1879, Fanny gave her interest of Hālawa to her daughter, Emma Kaleleonālani Na'ea Rooke, Queen of Kamehameha IV, by way of a deed (Klieger 1995:48), which stated:

. . . the undivided ½ interest of and in to the Ahupua'a of Hālawa situate in 'Ewa, Island of O'ahu, and more fully described in Royal Patent 6717 to Grace Kamaikui and being the same premises devised to me the said Fanny Young Kaleleonālani by the said Grace Kamikui. (Bureau of Land Conveyance 1879, Liber 59:285)

Fanny died one year later in 1880. A listing of *konohiki* ("Headman of an *ahupua'a* land division under the chief" – Pukui and Elbert 1986:153) lands on the island of O'ahu reflects the joint tenancy of Hālawa. Both Ruth Ke'elikōlani and Queen Emma are listed as owners. The document also lists the lands on O'ahu that abut the ocean, including the length and whether the land is a lagoon, reef or open sea. The length of the land abutting the sea at Hālawa is 8.52 miles and it is listed as being a reef and a lagoon (Interior Department Letters 1878-1879). Five years

later, Queen Emma died in 1885, leaving no heirs. All of her lands became part of the Queen Emma Trust (Klieger 1995:48-49).

Between 1848 and 1888 there seems to have been dispute over the joint tenancy of Hālawā between the families of Kekūanaō‘a and Young (Klieger 1995:43). In 1888, after a new survey was completed, Sanford B. Dole settled the matter by giving the northern portion of Hālawā to the Bishop Estate and the southern portion, including the current study area to the Queen Emma Trust (see “Queen Emma Estate” on Figure 7) (Klieger 1995:50). From this time on, the boundaries have been distinct and the two portions recognized independently of each other.

Mid- to late-1800s

From early visitor descriptions of Hālawā and ‘Ewa, one can already begin to see that by the 1820s the demographics and landscape had changed considerably. Where once the area was heavily populated and highly productive, by the 1820s to population had dwindled and there were fewer villages and areas under cultivation.

By 1850, three years after the Māhele, the census for O‘ahu was 25,440, a decline of 14.5% over eighteen years. This population decline has been attributed to several factors including disease, high infant mortality, and low fertility rates due to sexually transmitted diseases (Schmitt 1973:15). The decline also is probably due to people moving away from rural areas and closer to Kou (Honolulu), which was the center of trade and economic activity. On the island of O‘ahu, a decrease in the population statistics is seen almost yearly until 1884, when the figures show an increase from then on into the twentieth century (Schmitt 1977:11). The increase is probably related in part to the growth of the sugar industry and the imported labor that was needed to work the plantations.

The first Chinese laborers arrived in Hawai‘i in 1852 under contract to work on sugar plantations. As the demand for *kalo* declined and importation of Chinese laborers to the west coast of California and Hawai‘i increased, a market for rice developed. *Lo‘i* lands were ideal for growing rice, and as these lands lay in disuse and became more available, the Chinese farmers snatched them up. Most of the land was “near sea level--undrained areas at the mouths of streams: lowlands, which could be reclaimed without great expense” (Coulter and Chun 1937:11). The Royal Hawaiian Agricultural Society encouraged rice as a new crop. The first rice harvest occurred in 1862. By the mid-1860s, much of the *lo‘i* on O‘ahu had been transformed into rice fields. By 1892, there were about 117 acres of land planted in rice in the lowlands of Hālawā (Coulter and Chun 1937:21).

In many *ahupua‘a*, the lands that were not claimed by *kuleana* claimants were leased out to entrepreneurs who started ranching and sugar plantations on a large scale (Klieger 1995:71). Such was the case with Hālawā. In 1862, Kama‘iku‘i Rooke and Mataio Kekūanaō‘a leased much of Hālawā (including the current study area) to a Manuel Paiko, a Portuguese rancher (Klieger 1995:76). The lease document reads that the boundaries begin at “a small brook which forms the boundary between Hālawā and Moanalua” and continue “along the ridge of the mountain bordered on the north by ‘Aiea and Kalauao, and on the west by Ko‘olau, to the top of a peak called Aloheo; which forms the boundary between Moanalua and Hālawā.” The leased area consisted of about 10,000 acres. However, excluded from the lease was the “sea, the lagoons, the fish and all ponds, the enclosed *kalo* lands, all *kuleana* awarded by the Land

Commission, and so much of the *kula* lands adjoining the pond Ka Waiaho.” The lease was taken out for fifteen years with a rent of \$500 per year (Bureau of Land Conveyance, Liber 9:174-179). Manuel Paiko took on a business partner, James Dowsett of ‘Ulupalakua Ranch fame. By 1870, their herd consisted of 1,400 head (Bureau of Land Conveyance, Liber 29:239).

James Dowsett and another partner, J. R. Williams, tried unsuccessfully to raise sugar. Due to lack of a railroad to haul cane and the mill burning down three times, they gave up trying to raise sugar in 1875. Altogether, about 100 acres had been planted in cane (Condé and Best 1973:327).

Maps from the late 1800s (Figure 6 and Figure 7) indicate the current study area was relatively undeveloped and was probably in cattle pasture leased by Manuel Paiko.

An 1873 Lyons map of Pearl Lochs (Figure 6) shows the lay of the land at the north end of the Airport Section 3 study area at that time. At the extreme north end of the Airport Section 3 area is a road connecting the short-lived Dowsett and Williams Halawa Mill with a boat landing that was presumably used for the exporting of sugar prior to the railroad connection. The immediate vicinity of where the project corridor crosses Hālawa Stream is shown as “mud flat”. There is no evidence of any active fishpond or cultivation in this immediate area at that time. Active cultivation is indicated in the area just north of the southern bend of Hālawa Stream about 200 m upstream from the project corridor (modern Kamehameha Highway). This is consistent with the Klieger (1995:61) reconstruction showing that the focus of agricultural activity was *mauka* of the project corridor (see Figure 4). Notably several fishponds in the general vicinity are clearly indicated in a manner suggesting they were still active but the locations of the former Pu‘uone Kalokoloa Fishpond and Pu‘uone Kaulailoa Fishpond, previously bracketing the mouth of Hālawa Stream are identified as “mudflats” (see Figure 4). While the project corridor for a kilometer south of Hālawa Stream is shown without any indication of human activity, the 1873 Lyons map (Figure 6) shows details in the immediate vicinity of the Pearl Harbor Naval Base Station. There is a notable small gulch in this immediate area that is named (what appears to be) “Kailalewai”. A trail is shown as crossing the project corridor just north of the Pearl Harbor Naval Base Station in this immediate area. The corridor to the south is shown without any indication of human activity.

The development of the O‘ahu Railway along the coast of Hālawa (see Figure 7) in the 1890s opened up the Hālawa lands to commercial sugarcane production. The Beasley map of 1899 shows no development along the project corridor other than the O‘ahu Railway. The development of a Pu‘uloa train stop (probably a small “camp”) is shown about 800 m southwest of the Pearl Harbor Naval Base Station. The “Halawa Station” is indicated by a small circle on the rail line just north of the mouth of Hālawa Stream west of the project corridor.

Modern Land Use

At the end of the nineteenth century, the Honolulu Sugar Company (re-named the Honolulu Plantation Company by 1906; Figure 8) began leasing portions of Moanalua for sugar cane cultivation. By the mid-1930s, the company had more than 23 thousand acres of land leased, having expanded significantly up the coastal plain to the north inland of the East Loch of Pearl Harbor (see Figure 12). Sugar cane planting extended quite far seaward, but there is reason to believe the small coastal floodplain of Hālawa Stream was in rice production circa 1900 (Figure 8). The extent of early sugar cane cultivation in the area just south of Hālawa Stream is not

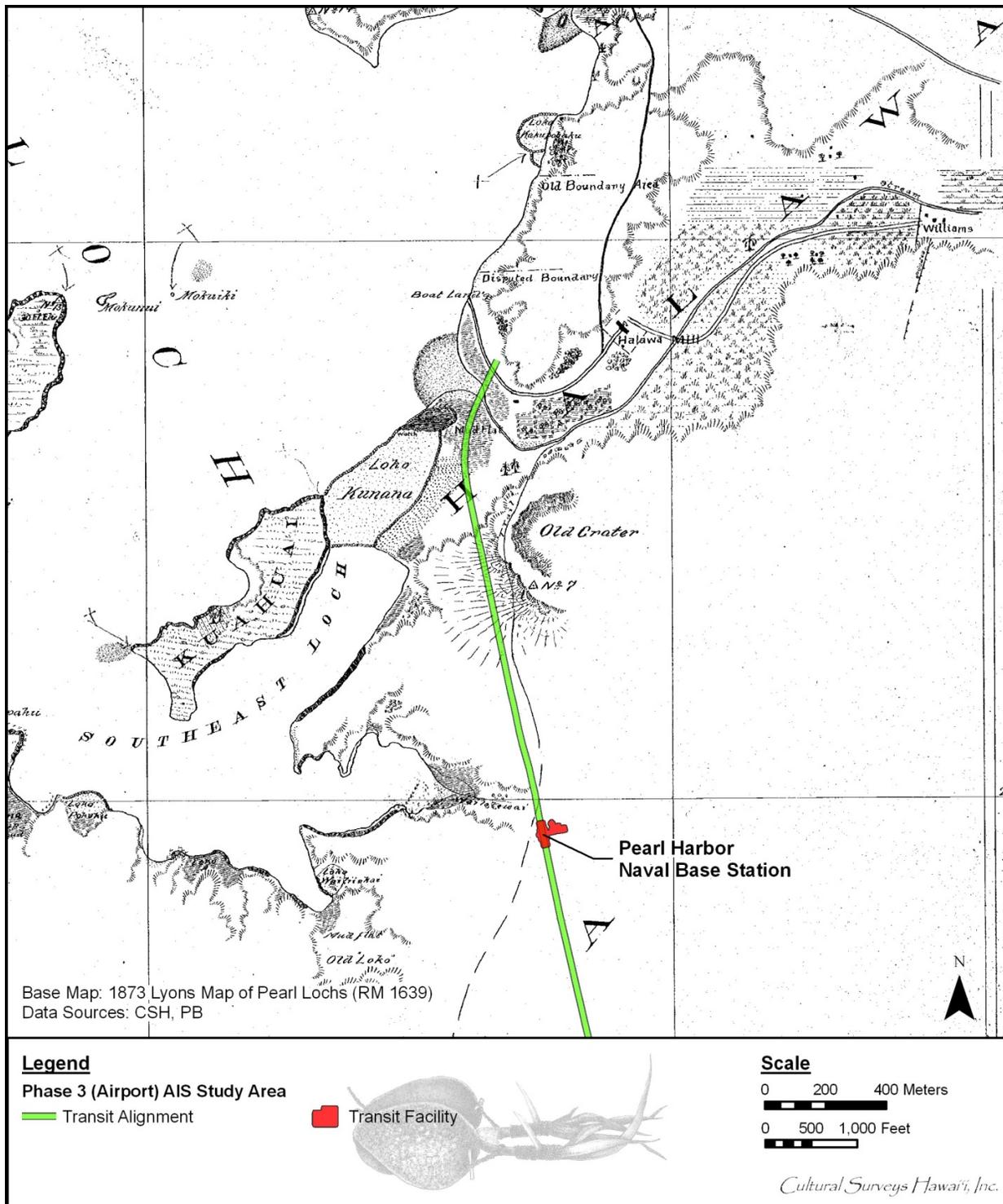


Figure 6. Overlay of Airport Section 3 study area on 1873 Lyons map of Pearl Lochs (Note: a trail is shown crossing the project corridor near the Pearl Harbor Naval Base Station at a crossing swale that appears to show a small water course flowing into the small Wailolowai Fishpond)

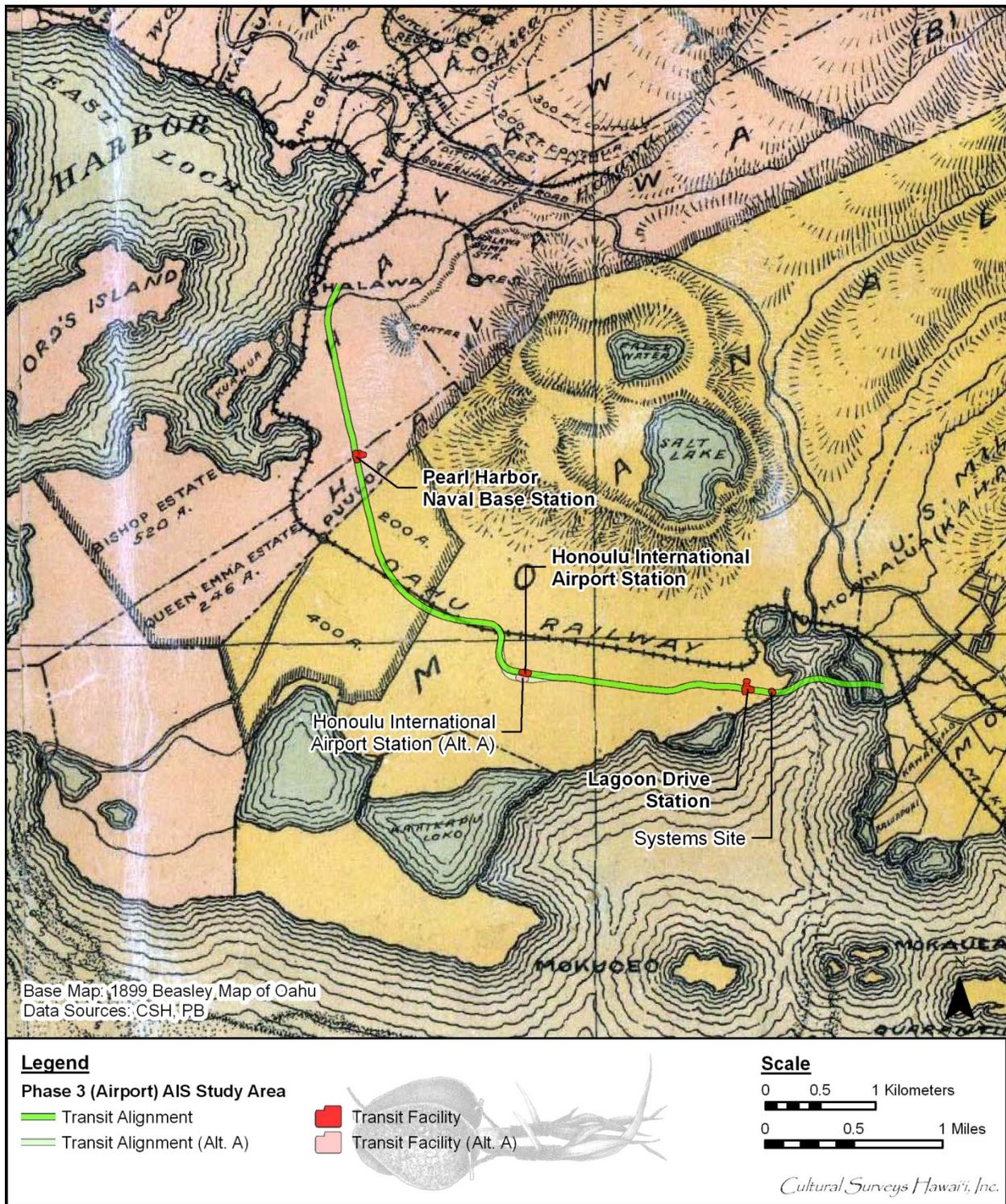


Figure 7. Overlay of the Airport Section 3 study area on 1899 Beasley map of O‘ahu

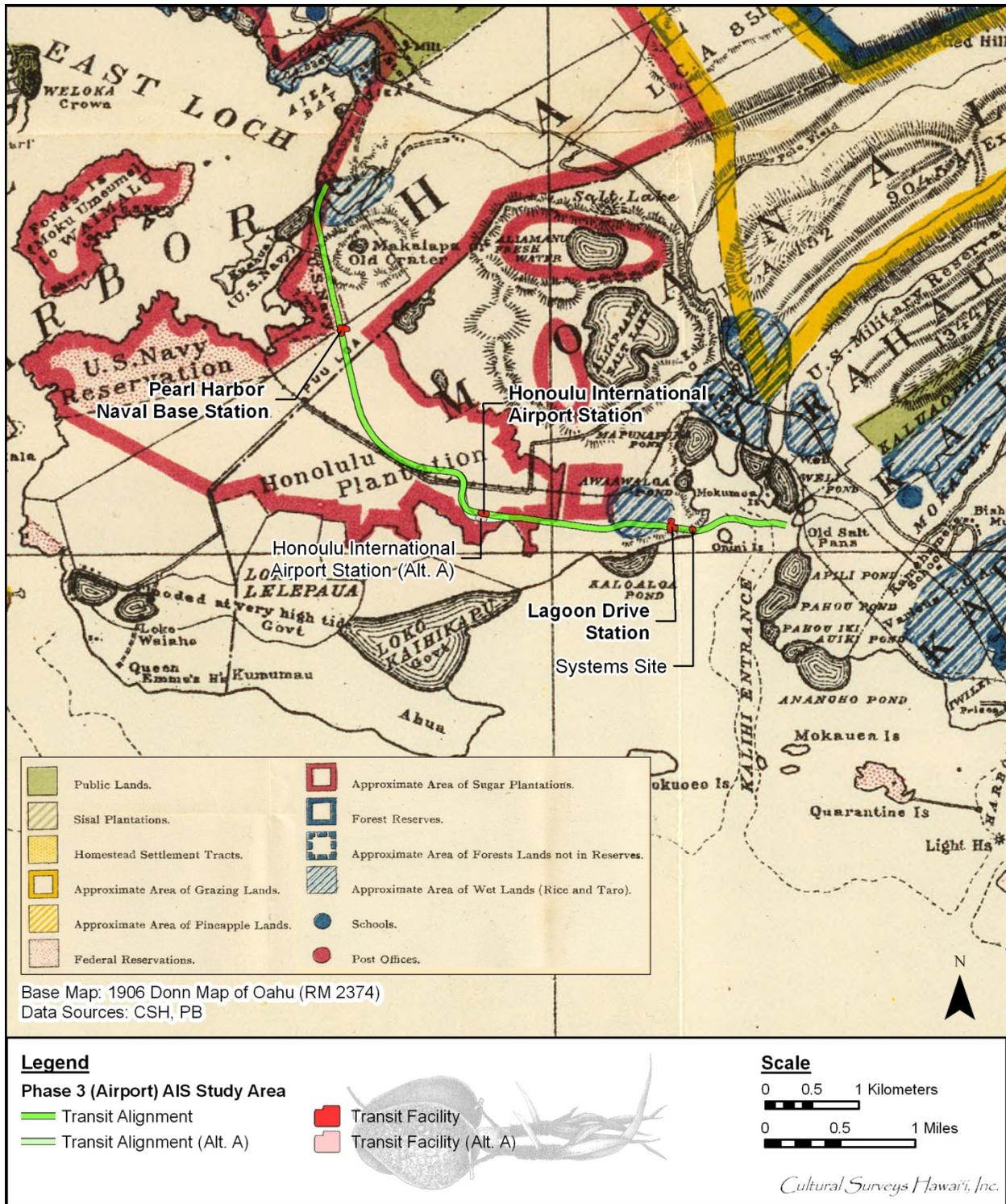


Figure 8. Overlay of the Airport Section 3 study area on the 1906 Donn Map of Oahu (Note: extensive “Approximate Area of Sugar Plantations” and two “Approximate Areas of Wetlands” along project corridor)

altogether clear, but a 1919 map (Figure 9) shows a sugar cultivation symbol (faintly) on the southwest slope of Makalapa Crater near the present study area. A sugar plantation community developed at Puuloa Camp near Puuloa Station on the O'ahu Railway and Land Company (OR&L) alignment on the Hālawā/Moanalua Ahupua'a boundary (about 400 m west of the project corridor) in the early 1900s (see Figure 7 to Figure 9). Another new Hālawā Ahupua'a community called Watertown developed adjacent to the east side of the Pearl Harbor entrance (see Figure 13).

Historic maps show the development of Honolulu plantation in the vicinity of the Airport Section 3 study area. The Donn 1906 map of Oahu (see Figure 8) appears to show the Honolulu Plantation fields including the majority of the northwest and central portions of the present study area. No other development is indicated in the vicinity, other than the OR&L railroad and Pu'uloa Camp. The new OR&L railroad runs very close to the eastern margin of Pearl Harbor, seawards of the project corridor for most of its route across Hālawā Ahupua'a. There is also an area of wetland rice and taro cultivation near the project corridor, within the bottom lands near the mouth of Hālawā Stream, and another just west of the Lagoon Drive Station in Moanalua Ahupua'a.

The 1919 U.S War Department map (see Figure 9), the 1933 U.S. Army War Department map (Figure 11), and the circa 1935 Honolulu Plantation map (Figure 12) show a *makai/mauka* trending Honolulu Plantation Company railroad extending inland just south of Makalapa Crater; it crosses the project corridor just south of the Pearl Harbor Naval Base Station (Conde and Best 1973:331). These maps otherwise indicate little development near the project corridor in Hālawā Ahupua'a.

The 1919 U.S War Department map (see Figure 9), the 1933 U.S. Army War Department map (Figure 11), and the circa 1935 Honolulu Plantation map (Figure 12) show a *makai/mauka* trending Honolulu Plantation Company railroad extending inland just south of Makalapa Crater; it crosses the project corridor just south of the Pearl Harbor Naval Base Station (Conde and Best 1973:331). These maps otherwise indicate little development near the project corridor in Hālawā Ahupua'a.

A Taylor Honolulu Sugar Company Property map of 1925 (Figure 10) shows that the northern end of the Airport Section 3 project corridor, just north of Hālawā Stream, was at the southern end of sugar cane "Field 2". The "Halawa Station" on the OR&L is called out on this 1925 map just north of Hālawā Stream, west of the north end of the Airport Section 3 study area. "Land condemned for Naval Station" is shown adjacent to the west (*makai*) side of the Airport Section 3 corridor west of Makalapa Crater.

The circa 1935 Honolulu Plantation map (Figure 12) and the Composite Site Map prepared by Anderson and Bouthillier (1996, Figure 13) corroborates that most of the Airport Section 3 project corridor in Hālawā Ahupua'a was in sugar cane fields for many decades and that the cultural features were well to the south, including Watertown (Hālawā Ahupua'a), Puuloa Camp (on the Hālawā/Moanalua Ahupua'a boundary) and Lelepaua Pond, Ka'ihikapu Pond and the 1930s salt works (Moanalua Ahupua'a). The Anderson and Bouthillier map (1996, Figure 13) assigned a "low probability" for archaeological and historical resources to most of the lands traversed by the Airport Section 3 corridor because of the many decades this region was under

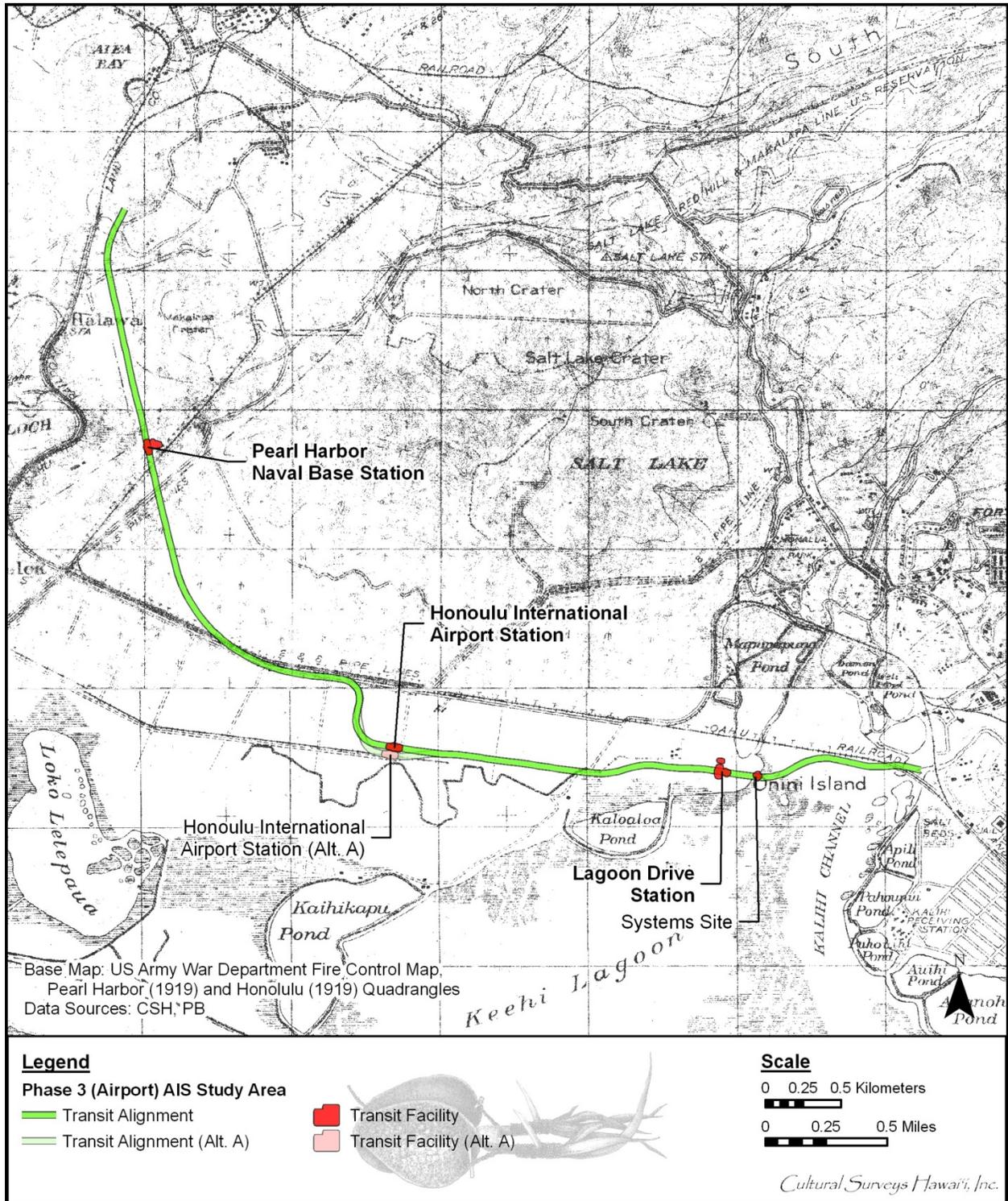


Figure 9. Overlay of Airport Section 3 study area on 1919 U.S. Army War Department Fire Control map of Pearl Harbor and Honolulu quadrangle maps

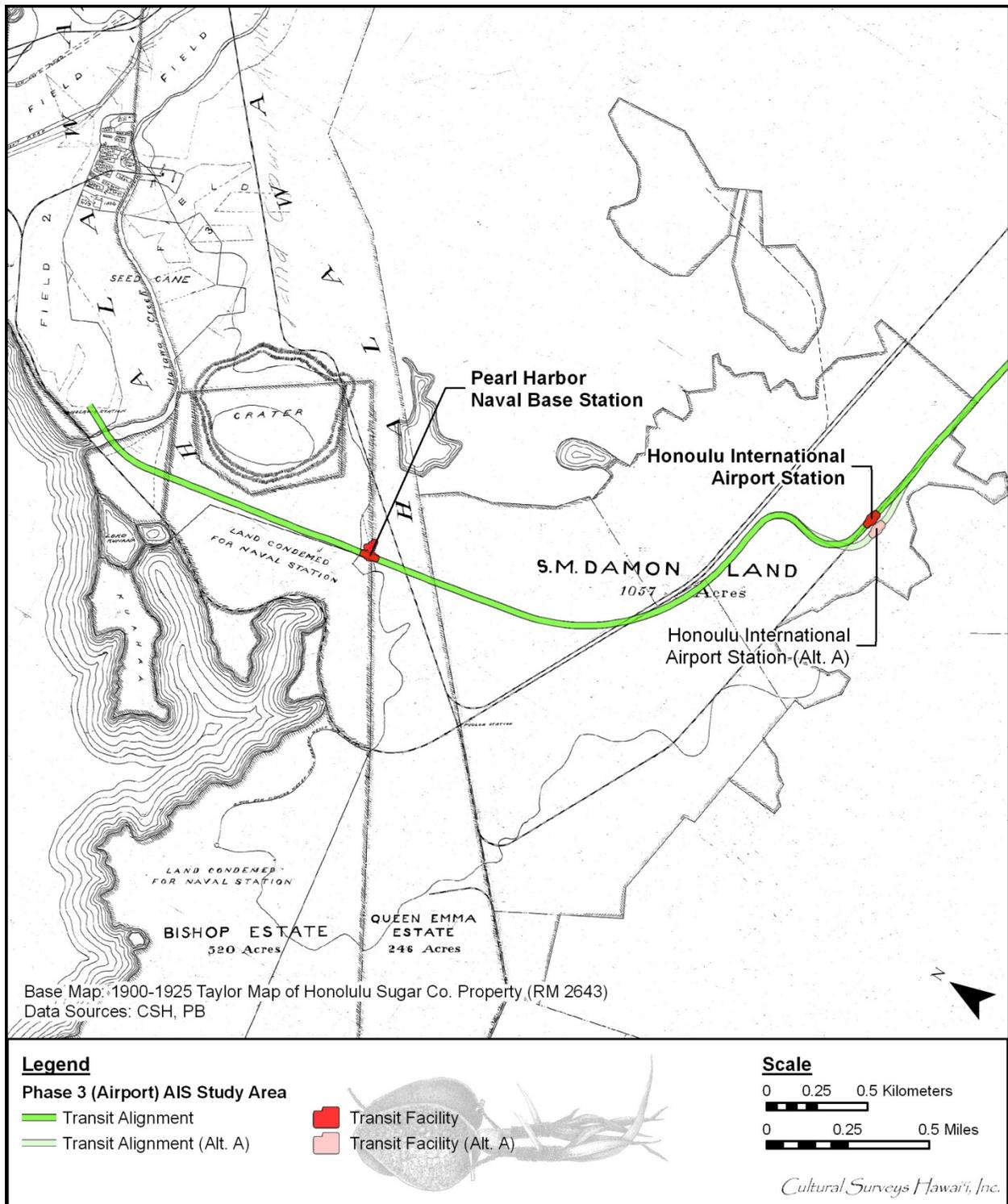


Figure 10. Overlay of Airport Section 3 study area on 1925 Taylor Honolulu Sugar Company Property map

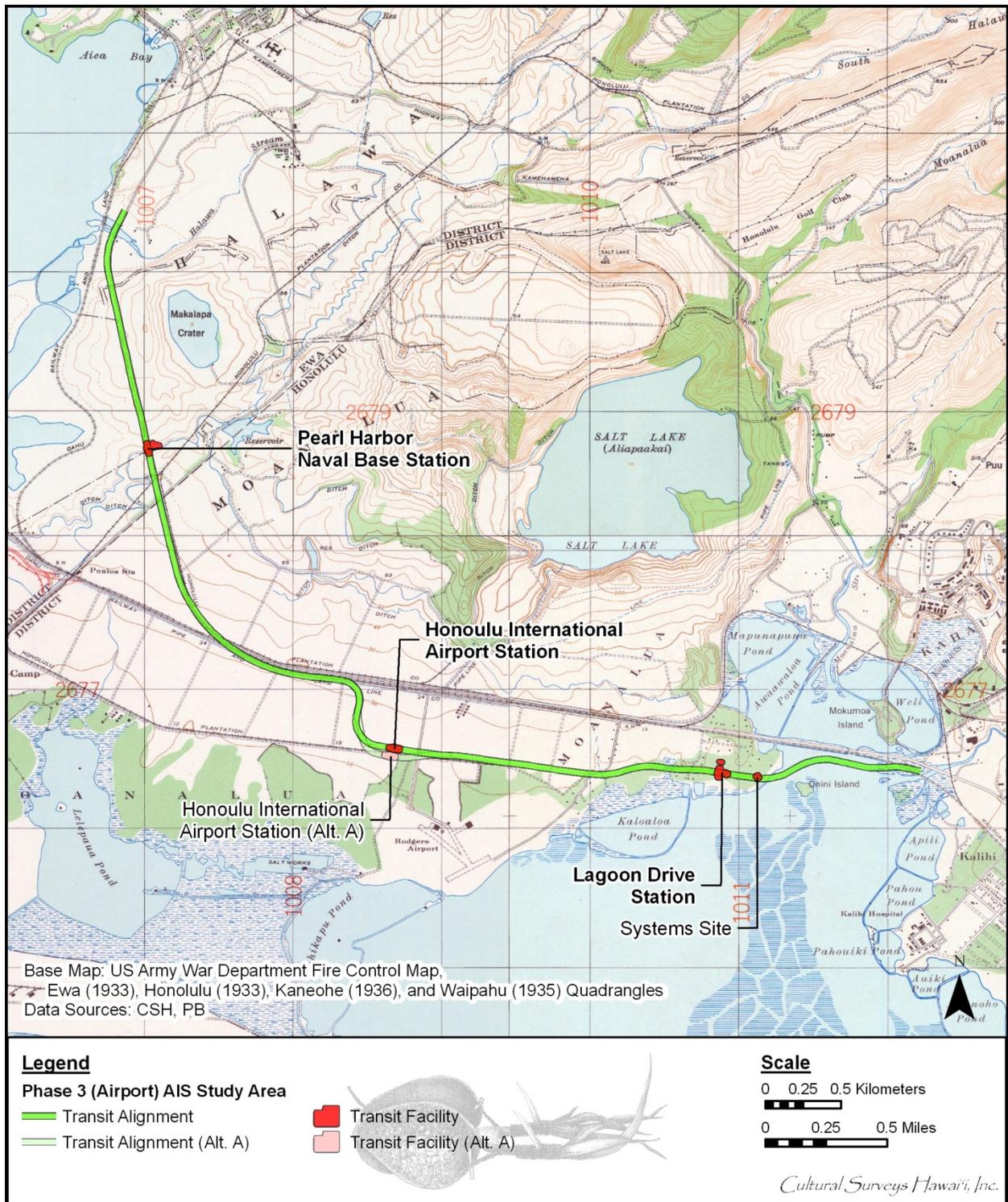


Figure 11. Overlay of Airport Section 3 study area on 1933 U.S. Army War Department Fire Control map

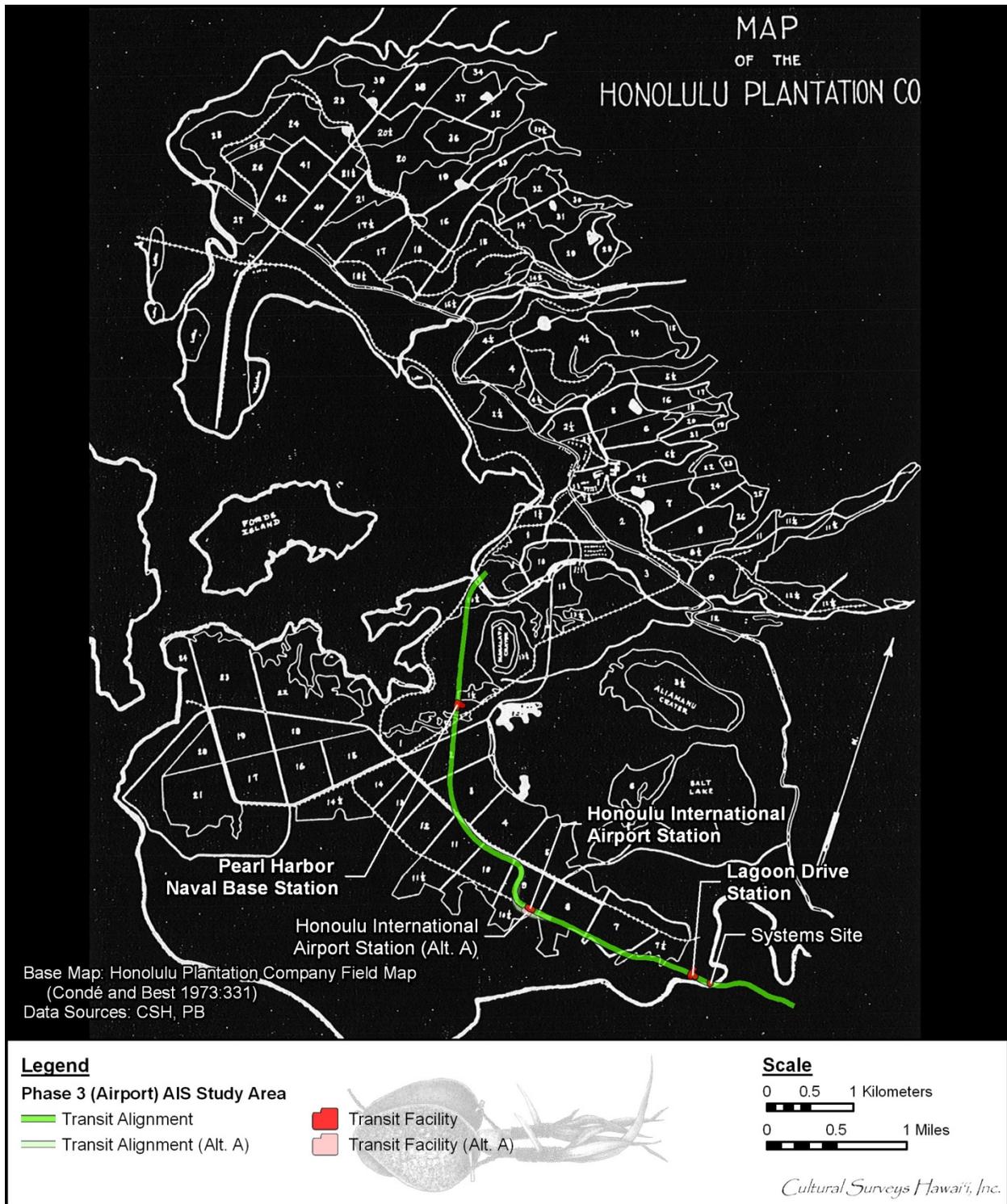


Figure 12. Overlay of the Airport Section 3 study area on circa 1935 Honolulu Plantation Field map (Condé and Best 1973:331)

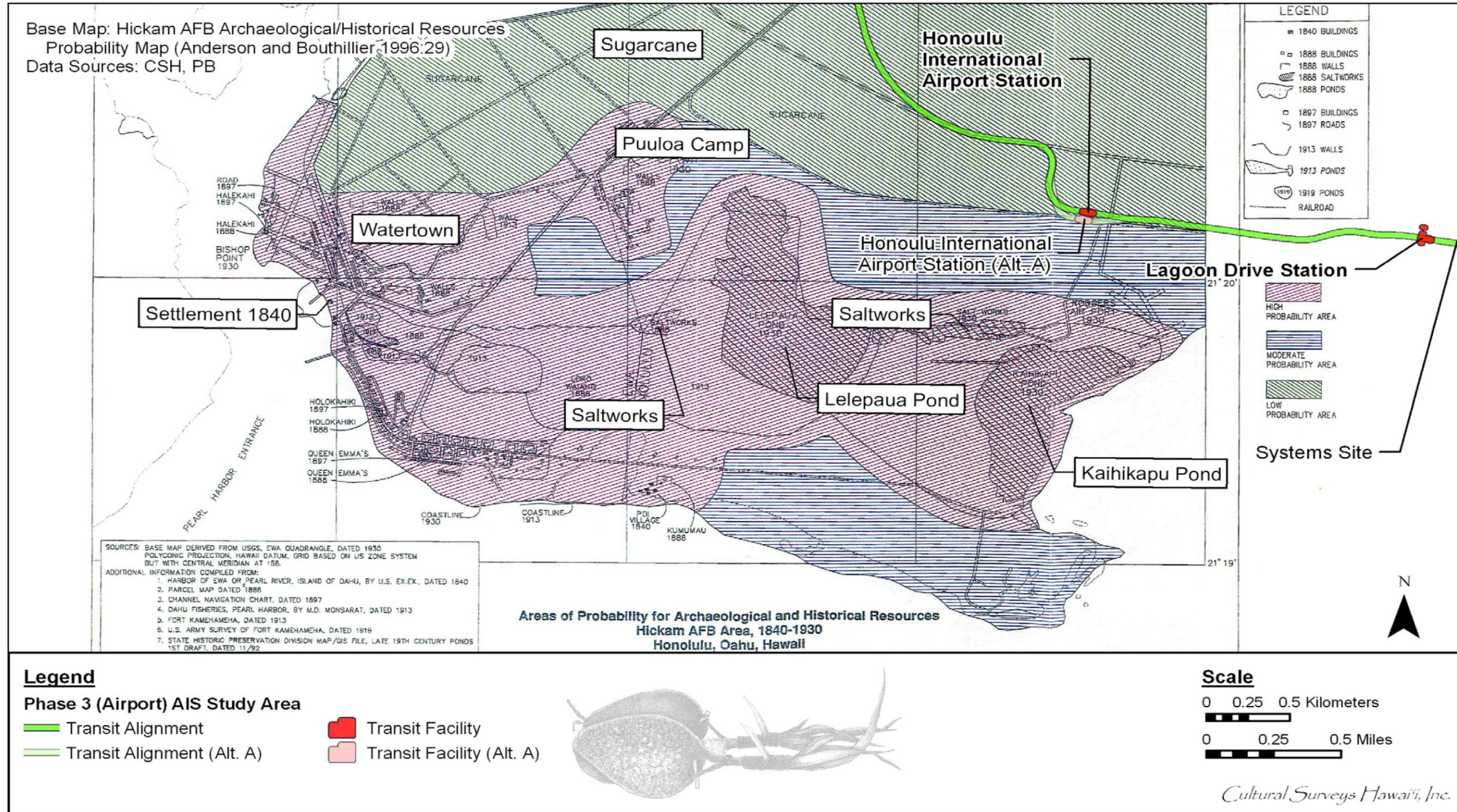


Figure 13. Overlay of Airport Section 3 study area on Composite Site Map 1840-1930 (adapted from Anderson and Bouthillier 1996:29) showing the project corridor and cultural resources of the greater Hickam area including Watertown (Hālawa Ahupua‘a), Puuloa Camp (on the Hālawa/Moanalua Ahupua‘a boundary), Waiaho Pond, Lelepaua Pond, Ka‘ihikapu Pond, the 1930s salt works (all in Moanalua Ahupua‘a), as well as the identified Areas of Probability for Archaeological and Historical Resources

sugar cane cultivation as well as the distance of this area from the coast and from known cultural loci such as fishponds and Pu'uloa Camp.

Pearl Harbor had been the focus of American interests in the Hawaiian Islands for many decades prior to annexation. Improvement of the Pearl Harbor entrance was a major concern following annexation in 1898, with an eye on the need to establish a coaling station for American warships travelling to the Philippines and beyond. Some 429 acres were purchased from Queen Emma Kaleleonalani for \$28,285 which allowed for the development of Fort Upton (changed to Fort Kamehameha in 1909). An additional 400 acres were purchased from the Damons in 1911 (Watanabe 1991).

In 1908, the Navy undertook the dredging of the Pearl Harbor channel that was blocked by a shallow sand bar that had greatly restricted earlier development efforts. Much of the fill from this and later dredging efforts was used to fill in low-lying lands. Five separate coastal defense batteries were built (including Battery Selfridge and Battery Hawkins). The Fort Kamehameha post housed Hawai'i's first aviation unit in 1917-1918. The population of the base remained about 1800 until World War II (Watanabe, 1991).

In the 1930s, an Army Air Corps airfield was established to the west of Rodgers Airport. The Hickam Air Force Base (AFB) web site offers the following brief history of this military base's early development:

In 1934, the Army Air Corps saw the need for another airfield in Hawai'i and assigned the Quartermaster Corps the job of constructing a modern airdrome from tangled brush and sugar cane fields adjacent to Pearl Harbor on the island of O'ahu. The site consisted of 2,200 acres of ancient coral reef, covered by a thin layer of soil, located between O'ahu's Waianae and Koolau mountain ranges, with the Pearl Harbor channel and naval reservation marking its western and northern boundaries, John Rodgers Airport to the east, and Fort Kamehameha on the south. The new airfield was dedicated May 31, 1935 and named in honor of Lt. Col. Horace Meek Hickam, a distinguished aviation pioneer killed Nov. 5, 1934, at Fort Crockett in Galveston, Texas.

Hickam AFB now consists of 2,850 acres of land and facilities valued at more than \$444 million (Hickam Air Force Base 2008.)

The 1943 U.S. War Department map, Aiea Quadrangle (Figure 14), shows the extant Kamehameha Highway and substantial residential development recently constructed on both sides of the highway within Hālawa Ahupua'a. The 1953 U.S. Army Mapping Service map, Honolulu Quadrangle (Figure 15), shows the western portion of the Airport Section 3 project corridor in Hālawa Ahupua'a much as it is today.

Moanalua Ahupua'a

Early Historic Period

Early European visitor records indicate that in the late 1700s a sizeable Hawaiian population resided in Moanalua Ahupua'a. Settlement concentrated around the fertile bottom lands of the Moanalua Stream area on the east side of the ahupua'a. The physiography of Moanalua provided

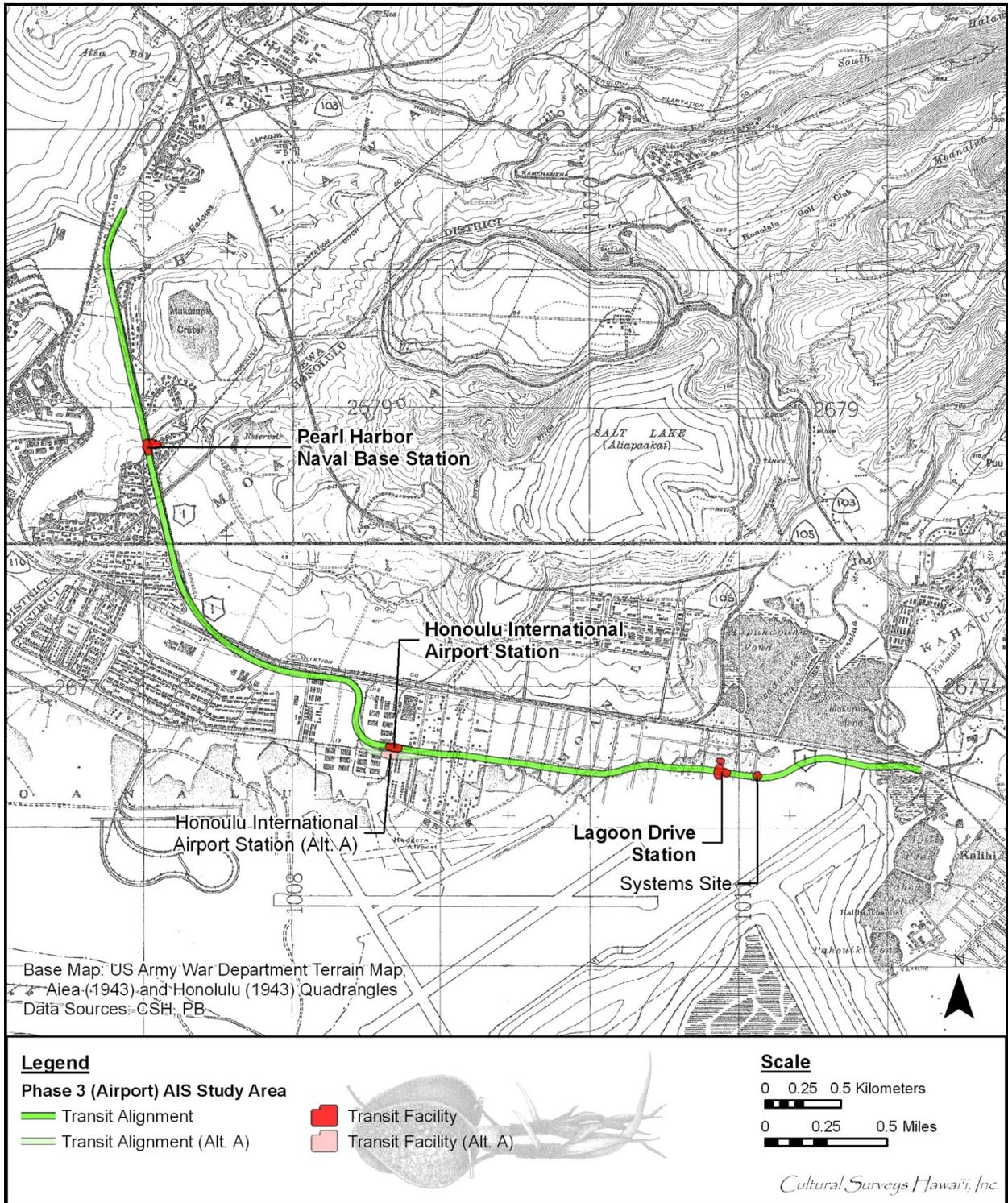


Figure 14. Overlay of the Airport Section 3 study area on 1943 U.S. Army War Department Terrain map of the Aiea quadrangle

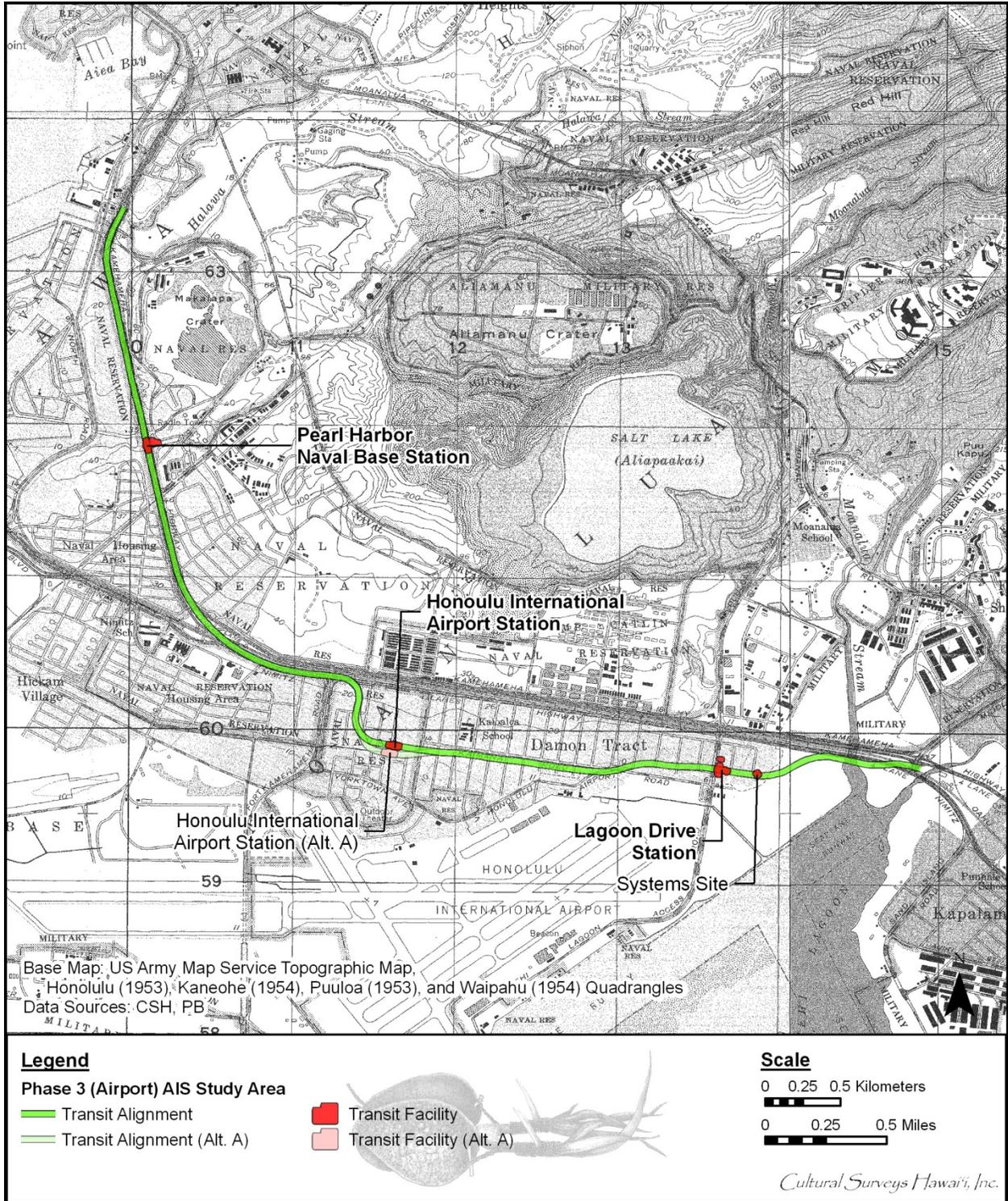


Figure 15. Overlay of Airport Section 3 study area on 1953 US Army Mapping Service Topographic map of Aiea quadrangle Honolulu (1953), Kāneʻohe (1954), Puuloa (1953) and Waipahu (1954) quadrangles, showing study area

a rich environment for sustenance and building materials; this richness is documented in the botanical survey by Bishop and Herbst (1970) which included recording of 197 endemic and indigenous plant species within the *ahupua'a*. The landscape created by streams deeply cutting into the Ko'olau volcano and the embayment created by offshore reefs provided a broad zone of rich alluvium, Hawaiians created an irrigated system of pond field taro gardens fringed with embankments outlining the fields on which were grown bananas and sugar cane. The stream water that supported the fields fed into the shallow bay and distributed organic nutrients that attracted large fish populations into the bay. This environment supported construction of fishponds that allow balanced exploitation and management of these resources.

The navigator Otto von Kotzebue, in the employ of the Russian navy, visited Honolulu in November and December 1816. Kotzebue decided "to undertake a little excursion on foot [in order to survey the coast] to the river called Pearl River by the English [known variously in Hawaiian as "Wai momi" "Awalau" and "Pu'uloa"; see Sterling and Summers 1978:46], lying half a day's journey to the west of Gana-Rura [Honolulu]." Kotzebue and two shipmates set out on December 8, 1816:

On our way, we met now sugar plantations, now taro fields, now scattered huts; and so, without noticing it, we covered the five miles to the large village of Mauna-Roa [i.e. Moanalua - the Russians had misheard the name and thought it the same as Mauna Loa on the island of Hawai'i], situated in a delightful valley on a mountain slope. From here, there winds to the sea a fast-flowing river of the same name. It is visible at a great distance and wanders through the mountains and cliffs in the most picturesque fashion. In front of the village, consisting of pretty little reed huts, one encounters two groves, one of coconut palms, the other of breadfruit. We passed through these little groves, to take a rest on the hill lying immediately behind (Barratt 1988:232).

On the hill where Kotzebue and his companions stopped, "a general view of Honolulu Harbour opened up to us. Our compass was set up and I took a number of angles with my sextant" (Barratt 1988:232). The following year, 1817, Kotzebue drew a map of the south coast of O'ahu. The map (see Figure 3) identifies Salt Lake ("Озеро Соленое"), Mauna-Roa (Moanalua) River ("Р. Моина-роа"), and fish ponds ("Рыбные Пруды") along the shoreline of Moanalua. The map also shows a profusion of taro *lo'i* (irrigated fields) in the lowlands of Moanalua below Āliapa'akai (Salt Lake), spreading out from Moanalua Stream and stretching back from the fishponds at what was then the shore. The Kotzebue map is quite early (reflecting the area in 1816) and should be understood more as a detailed sketch than as a surveyed map.

Āliapa'akai itself would have provided a valuable resource to the Hawaiians of Moanalua before and after western contact. The missionary William Ellis presents this description of Salt Lake in the 1820s:

About six miles to the west of Honoruru, and nearly as far from the village of Eva, on the Pearl river, there is a singular natural curiosity - a small circular lake, situated at a short distance from the sea shore, so impregnated with salt, that twice in the year the natives take out between two and three hundred barrels of fine clear, hard, crystalized salt: this lake is not only an interesting natural curiosity,

but an important appendage to the island. It belongs to the king, and is not only useful in curing large quantities of fish, but furnishes a valuable article of commerce; quantities of it having been sent for sale to Kamtschatka, and used in curing seal skins at the different islands to which the natives have sent their vessels for that purpose, or sold in the islands to Russian vessels, from the settlements on the north-west coast of America. (Ellis 1969:18-19)

The trade in salt dwindled by the mid-nineteenth century and, as a visitor of that time noted, the salt in the lake had "almost wholly disappeared" (Bates 1854:102).

The grove of coconut palms at Moanalua mentioned by Kotzebue was described in more detail by a visitor of the 1830s:

But to return to the little valley, about three miles from Honolulu on the road to Ewa over. . . On looking down, you behold a large grove of cocconut trees, some of which give evidence of having been blown upon with no ordinary breath; appearing to have been nearly prostrated when about twenty feet high, they again shot up in a perpendicular direction and now present the curious phenomenon of living trees, the upper half of whose trunks are almost at right angles from the lower. It is a little remarkable that the surrounding trees on every side are perfectly straight. (Hall 1839:97)

Maps of Moanalua produced during the second half of the nineteenth century – i.e. before substantial alterations to the landscape – display the substantial development by the Hawaiians of the "large village" (Kotzebue) of Moanalua by the time of western contact. A map (ca. 1890s) by M.D. Monsarrat and C.J. Lyons (Figure 16) shows the expanse of fishponds that extended along the shores of Moanalua and the adjacent *ahupua'a* of Kahauiki and Kalihi.

It should be noted, however, that the present Airport Section 3 project alignment does not appear to cross any of these fishponds (Figure 16 and Figure 17). Furthermore, the present project alignment extends across modern fill land in the vicinity of the mouth of Moanalua Stream. While the natural mouth of Moanalua Stream was a rich area of Hawaiian settlement, the area today is actually 300 m inland of the present project alignment (Figure 18) due to the very substantial land reclamation infilling of what traditionally were coastal shallows (compare Figure 11 and Figure 12 that show the shoreline now extended 500 m outward).

In 1826, ten years after Kotzebue observed the "large village" of Moanalua, Hiram Paulding, a naval officer following the same route from Honolulu to Pearl River, recorded that "the country was thinly inhabited. We met with no considerable village or rich valley (Paulding 1970:205).

The diminished population that Paulding observed in Moanalua likely reflects the same changes that took place throughout the Hawaiian Islands during the years following western contact. The population of Moanalua at the time of the first large-scale census by American missionaries in 1835-36 totaled 625 and included 234 adult females, 252 adult males, 48 female children, and 91 male children (Schmitt 1973:19). These figures tragically reflect the decimation of the native population by western-introduced diseases and the upsetting of traditional social patterns by the influx of western commercial ideals.

The work of Anderson and Bouthillier (1996) documents two coastal communities in the Hālawā-Moanalua coastal plain: an unnamed settlement (annotated as "Settlement 1840") just

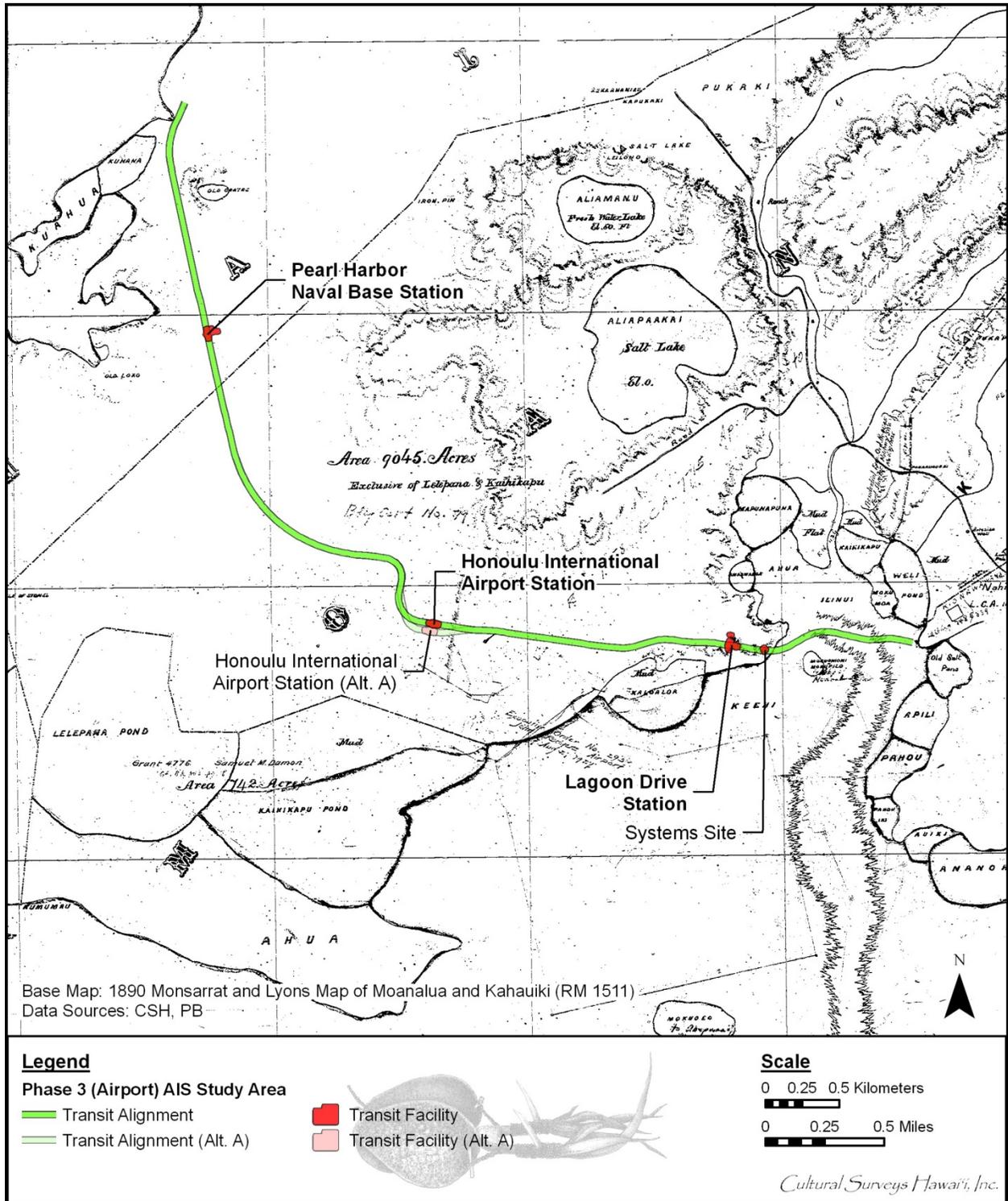


Figure 16. Overlay of Airport Section 3 study area on 1890 Monsarrat and Lyons Moanalua and Kahauiki map (RM 1511). Note the former open water east of the Lagoon Drive Station

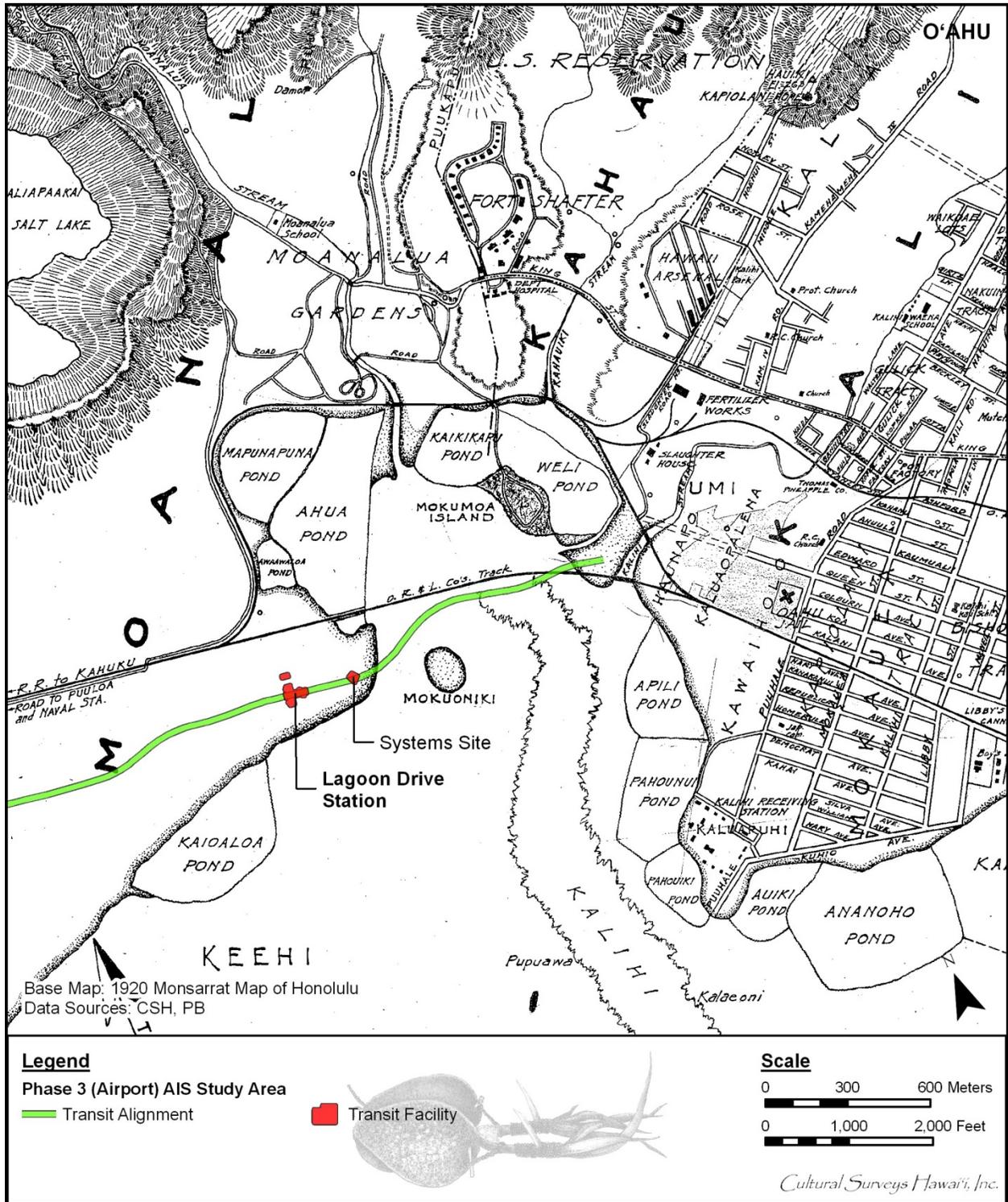


Figure 17. Overlay of the Airport Section 3 study area on 1920 Monsarrat Honolulu District Map. Note the former open water east of the Lagoon Drive Station

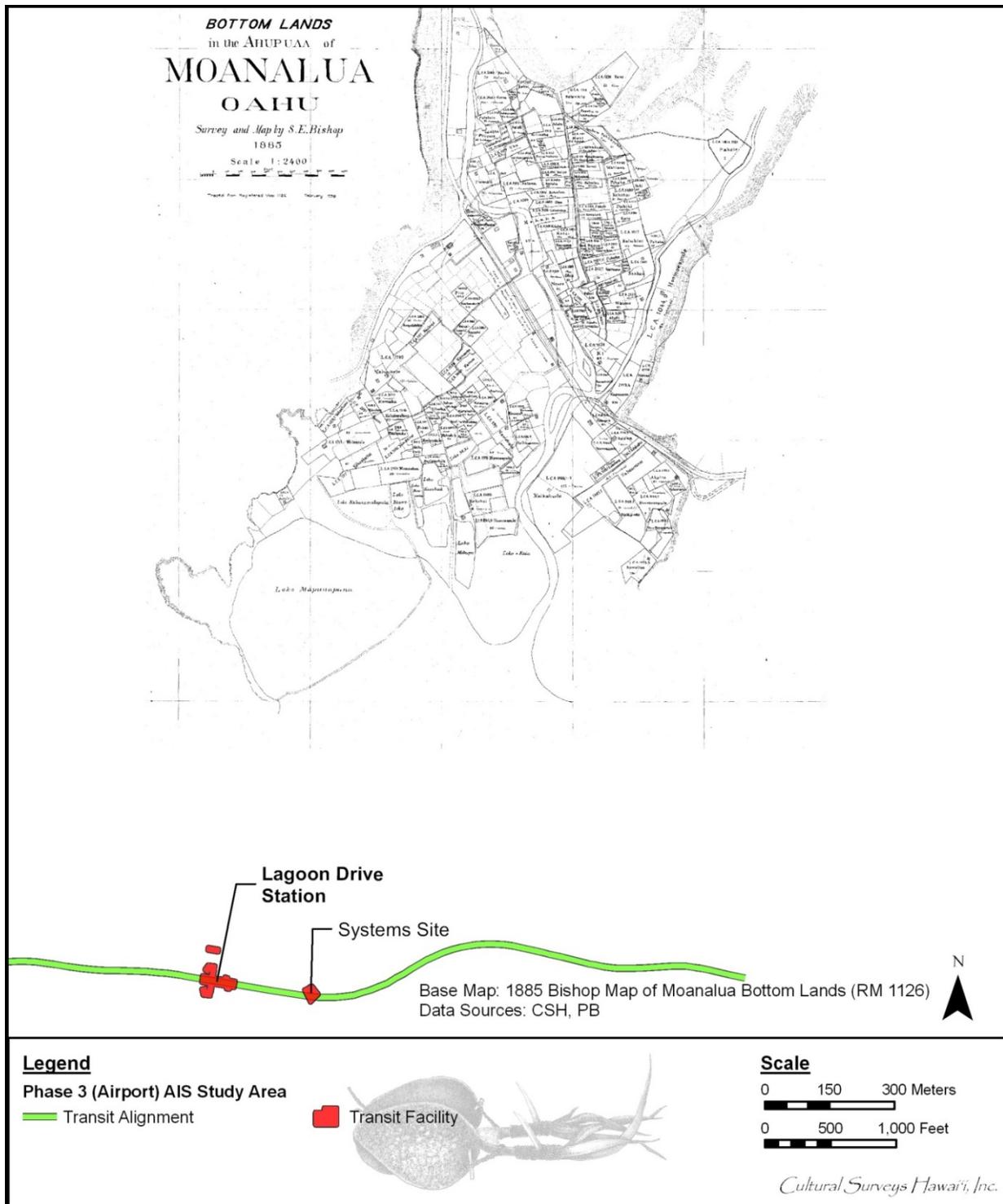


Figure 18. Overlay of Airport Section 3 study area on 1885 Map of the Bottom Lands (RM 1126) in the Ahupua‘a of Moanalua by S.E. Bishop, showing the extensive network of *lo‘i* and LCAs in lower Moanalua (Note: the project corridor is built on fill lands well seaward of the former Moanalua Stream mouth)

southwest of the area that would become known as Watertown in the Pearl Harbor entrance (it is unclear if there was any continuity between the 1840 settlement and “Watertown” of the 1930s), and another community known as “Poi Village” on the southwest coast of the Airport Section 3 study area (Figure 2). These are assumed to have been traditional Hawaiian fishing villages. It seems probable that settlement closer to the study corridor was effectively prevented by the low-lying marshy ground in the vicinity.

Fishponds of Moanalua

The fishponds along the shoreline of Moanalua - *loko kuapā* that were controlled by the *ali'i* - are another resource that must have greatly increased the productivity of the area. The fishponds of the Hālawā-Moanalua Plain are summarized in Table 2.

Loko Waiaho and Loko Ke'oki were located in the western portion of the Hickam AFB lands, while Loko Lelepaua and Loko Ka'ihikapu were about 1.3 km southwest and southeast (respectively) of the Airport Section 3 corridor.

Apple and Kikuchi (1975:2) discuss the impact that such fishponds would have had on the general population of an area:

Accessibility to these ponds and their products was limited to the elite minority of the native population - the chiefs and priests. Prehistoric ponds and pond products appear to have been taboo to the vast majority of Hawaiians and to have yielded them no direct benefit. However, indirect public benefit came from ownership by the chiefs of exclusive food sources. Royal fishponds...insured less demand on the commoners' food production resources. Every fish taken from a royal fishpond left its counterpart in the natural habitat available to lesser chiefs and commoners.

The fishponds of Moanalua, although not necessarily representing beneficial resources for the commoners, can be seen as evidence of a thriving chiefly class in the *ahupua'a*.

The Māhele

At the Māhele in 1848, the *ahupua'a* of Moanalua was granted to Lot Kamehameha (later Kamehameha V) with fee simple title to native tenants. Subsequently, Land Commission Awards (LCAs) were granted to 101 commoners for parcels they were actively cultivating or residing on. The Land Commission Awards were heavily concentrated well *mauka* of the Airport Section 3 corridor in the “bottom lands” along Moanalua Stream and two tributaries (see Figure 18). No commoner land commission awards are known in the vicinity of the corridor (although George Beckley's claim for LCA 818 (in Kalihi) is not far removed (see Figure 5). It was common for the *ali'i* and/or their *konohiki* (overseers) to retain fishponds and unique cultural resources such as the coastline at the mouth of Pearl Harbor.

Mid- to late-1800s

Upon the death of King Kamehameha V in 1872, Princess Ruth Ke'elikōlani received the *ahupua'a*. When Princess Ruth died in 1883, the land transferred to Princess Bernice Pauahi Bishop. A codicil of Princess Bernice's will granted Moanalua to Samuel M. Damon upon her death in 1884. Damon and his heirs began buying up the *kuleana* lands of the *ahupua'a*. Damon

Table 2. Fishponds (*Loko*) of the Hālawā-Moanalua Plain

Name	Source	Site Number 50-80-13-	Area (acres)	Construction Features	Relationship to Project Alignment
Mapunapuna (Moanalua)	McAllister (1933:93)	78	40	Wall mostly of coral 1600 feet long, 10 feet wide, 1 foot above water on inside, 2.5 feet high outside, 4 <i>mākāhā</i>	600 m inland of Lagoon Drive Station
Keawamalia (Moanalua)	McAllister (1933:93)	78	“small”	Surrounded by earth embankments	600 m + inland of Lagoon Drive Station (adjoins Mapunapuna Pond on <i>mauka</i> side)
Awawaloa (Moanalua)	McAllister (1933:93)	79	8.8	Coral rock wall 900 feet long, 2 <i>mākāhā</i>	400 m inland of Lagoon Drive Station
Kaloalua (Kailoalua) (Moanalua)	McAllister (1933:93)	80	36	Semicircular wall of coral 2700 feet long, 6 feet wide, 3 feet high, 3 <i>mākāhā</i>	200 m S of project alignment west of Lagoon Drive Station
Ka‘ihikapu (Moanalua)	McAllister (1933:93)	81	258	Coral wall 4500 feet long, 3-8 feet in width, 3 feet high with 3 <i>mākāhā</i>	800 m S of Airport Station
Lelepaua (Moanalua)	McAllister (1933:93)	82	332	Earthen and coral embankments 10 feet or more wide	1000 m SE of project alignment west of Airport Station
Āliapa‘akai (Moanalua)	McAllister (1933:93-94)	83		Natural “Salt Lake”	1400 m N of Project alignment Lagoon Drive Station
Waiaho (Moanalua)	McAllister (1933:101)	94	32	Coral and sand walls and 5 <i>mākāhā</i>	2 km SW of the Project alignment (east side of entrance to Pearl Harbor)
Ke‘oki (Hālawā)	McAllister (1933:101)	95	-	Narrow wall of coral, rock and sand	3 km SW of the project alignment (east side of entrance to Pearl Harbor)
Papiolua (Hālawā)	McAllister (1933:101)	96	1	wall 150 feet long, 4 feet wide and high, no <i>mākāhā</i>	3 km west of the project alignment (east side of entrance to Pearl Harbor)

Name	Source	Site Number 50-80-13-	Area (acres)	Construction Features	Relationship to Project Alignment
Loko-a-Manō (Loko Amana) (Hālawā)	McAllister (1933:102)	97	-	-	1.5 km west of Pearl Harbor Naval Base Station at South East Loch
Loko Pōhaku (Hālawā)	McAllister (1933:102)	98	2.5	-	1.5 km west of Pearl Harbor Naval Base Station at South East Loch
Wailolokai (Hālawā)	McAllister (1933:102)	99	Very small	-	450 m west of Pearl Harbor Naval Base Station at South East Loch
Wailolowai (Hālawā)	McAllister (1933:102)	100	-	-	450 m west of Pearl Harbor Naval Base Station at South East Loch
Makalapa Crater (Hālawā)	McAllister (1933:102)	101	-	Lake within crater	300 m E of project alignment N of Pearl Harbor Naval Base Station
Loko Kunana (Hālawā)	McAllister (1933:102)	102	25	Kuahua Island forms one side, walls from shore to island are 1800 feet and 1950 feet long, approx. 5 feet wide and 3 feet high	On the south side of the mouth of Hālawā Stream 200 m west of the project alignment
Loko Muliwai (Hālawā)	McAllister (1933:102)	102	4	Wall 500 feet long with 1 <i>mākāhā</i>	On the south side of the mouth of Hālawā Stream 200 m west of the project alignment
Wai Alua (Hālawā)	Klieger 1995:61	-	-	N side of Hālawā Stream	120 m inland at N side of Hālawā Stream
Wai Kalaua (Hālawā)	Klieger 1995:61	-	-	N side of Hālawā Stream	180 m inland at N side of Hālawā Stream
Wai Kuohoi (Hālawā)	Klieger 1995:61	-	-	S side of Hālawā Stream	700 m inland at S side of Hālawā Stream

Name	Source	Site Number 50-80-13-	Area (acres)	Construction Features	Relationship to Project Alignment
Wai Kai (Hālawa)	Klieger 1995:61	-	-	S side of Hālawa Stream	800 m inland at S side of Hālawa Stream
Āhua Pond	McAllister (1933:93)	-	-	Adjacent to Awaawaloa Pond	150 m inland of Lagoon Drive Station
Kaikikapu Pond	McAllister (1933:91)	-	20	Formerly connected to Weli Pond, 900 ft long wall from Mokumoa Island to Moanalua	400 m inland E of Lagoon Drive Station

kept much of Moanalua in pasture, with portions leased to rice, sugar and banana growers (Anderson et. al. 1996:A61).

In the late 1800s, there were a number of developments in the Moanalua coastal plain that were not well documented (see Anderson and Bouthillier 1996 for discussion). Starting from the east side of Pearl Harbor entrance and moving to the east, these included the coastal communities of Holokahi, Queen Emma's property, Poi Village, and Kumumau (see Figure 13). These were all on the coast. None were close to the Airport Section 3 corridor. In fact, the 1890 Monsarrat and Lyons map (see Figure 16) shows no development in the project vicinity other than fishponds.

1900s

At the end of the nineteenth century, the Honolulu Sugar Company (later Honolulu Plantation Company) began leasing portions of Moanalua for sugar cane cultivation. Extensive sugar cane planting extended seaward into the Airport Section 3 corridor area (see Figure 12). It appears that a Honolulu Plantation Company railroad line crossed east-west *makai* of the present study area by 1906 and the OR&L ran east-west just to the north (at the Nimitz alignment, see Figure 9). A sugar plantation community developed at Pu'uloa Camp circa 1930, and another community called Watertown developed adjacent to the east side of Pearl Harbor entrance. A map of the Honolulu Plantation Company lands dating circa 1935 (see Figure 12) indicates that the Moanalua portion of the study area was in commercial sugar cane Fields Nos. 2, 3, 7, 7 ½, and 8 to 11 (much of the Hālawā portion of the Airport Section 3 corridor traversed sugar cane Field No. 1).

The 1933 U.S. War Department Fire Control map notes the presence of a salt works between Lelepaua Pond and Ka'ihikapu Pond (see Figure 11 and Figure 13). Rodgers Airport (which was to become the Honolulu International Airport) is understood to have been begun in 1930 (see Figure 11). Pearl Harbor had been the focus of American interests in the Hawaiian Islands for many decades prior to annexation in 1898. Improving Pearl Harbor entrance was a major concern following annexation with an eye on the need to establish a coaling station for American warships running to the Philippines and beyond. Some 429 acres were purchased from Queen Emma Kaleleonālani for \$28,285 and developed as Fort Upton (changed to Fort Kamehameha in 1909) (Watanabe 1991). An additional 400 acres were purchased from the Damons in 1911. In 1908, the Navy dredged Pearl Harbor channel, which was blocked by a shallow sand bar that restricted earlier development efforts (Watanabe 1991). Much of the fill from this and later dredging efforts was used to fill in low-lying lands. Five separate coastal defense batteries were built including Battery Selfridge and Battery Hawkins. The Fort Kamehameha post housed Hawai'i's first aviation unit in 1917-1918. The population of the base remained about 1,800 until World War II (Watanabe 1991).

The substantial fill activities and airport construction, especially those dating to 1942-1943, are readily apparent in a comparison of the 1933 (see Figure 11) and 1943 (see Figure 14) maps. Fill activities had expanded the shoreline over 500 m southeast from the Honolulu International Airport Station. The infilled lands in the vicinity of the project corridor were rapidly developed with roads and elongated warehouse-like buildings.

Nearly the entire eastern-most kilometer of the Airport Section 3 corridor lies on lands that were infilled as part of a large reclamation project dating circa 1942-1943. In addition, the 1953 U.S. Army Mapping Service Topographic map of Aiea quadrangle (see Figure 15), shows further urban and light industrial development in the corridor vicinity largely associated with the expansion of Honolulu International Airport and Hickam AFB. Following statehood, the lands of Moanalua were greatly developed for residential and light industrial uses. By 1978 (Figure 19), the development of the Airport Section 3 corridor vicinity appeared much as it does today.

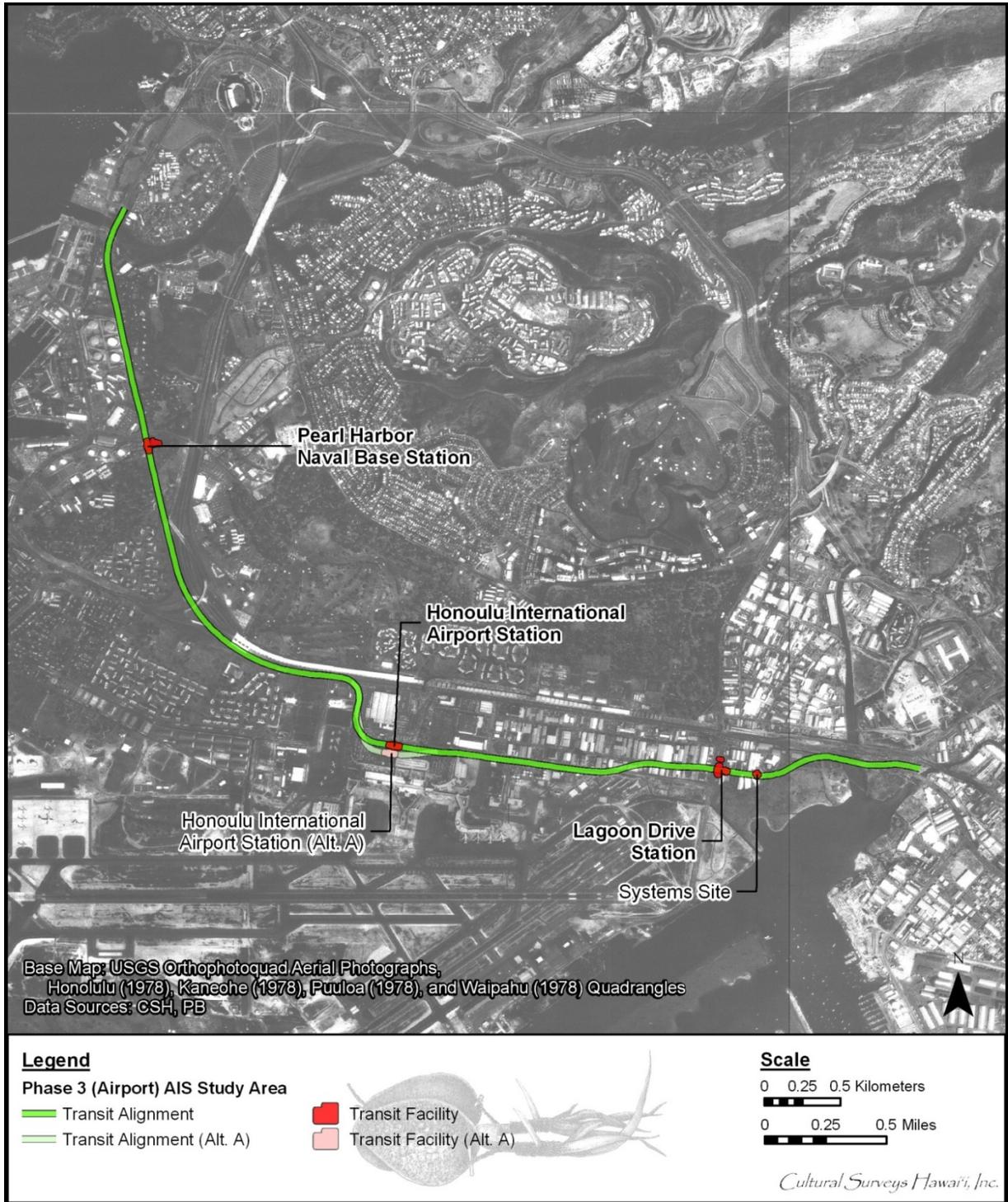


Figure 19. Overlay of Airport Section 3 study area on 1978 U.S. Geological Survey orthophotograph showing the Pearl Harbor Naval Base Station and Honolulu International Airport area

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Appendix D Previous Archaeological Research

The following previous archaeological research is copied from the Airport Section (Section 3) AIS report, Vol. I (Hammatt et al. 2013):

This section provides an overview of previous archaeological studies and identified historic properties (cultural resources) relevant to the Airport Section 3 corridor. These studies and historic properties are organized into the four following groupings: (1) Hālawā Ahupua‘a Archaeological Studies excluding the former Hickam and Fort Kamehameha lands and the H-3 corridor (Section 4.1), (2) H-3 Highway Archaeological Studies in Hālawā Valley (Section 4.2), (3) Joint Base Pearl Harbor-Hickam Archaeological Studies in Hālawā and Moanalua Ahupua‘a (Section 4.3), and (4) Moanalua Ahupua‘a (Section 4.4).

Hālawā Ahupua‘a Archaeological Studies Excluding the Former Hickam and Fort Kamehameha Lands and the H-3 Corridor

Early Archaeological Research at Hālawā

The first recorded sites at Hālawā were documented during the pioneering attempt at a comprehensive survey of archaeological sites on the island of O‘ahu by J. Gilbert McAllister of the Bishop Museum in the 1930s.

McAllister (1933:101-102) recorded 10 sites (nine coastal fishponds and Ford Island – known to the Hawaiians as Moku‘ume‘ume) within Hālawā Ahupua‘a, giving their approximate locations and describing their conditions at the time of the survey (Figure 1). The sites include the following:

Site 94. Loko Waiaho

Loko Waiaho, known as Queen Emma’s pond, was located near Watertown. The walls were of coral and sand, 6.5 feet wide, 2 feet high, with five outlets (*mākāhā*). It covered an area of 32 acres. (McAllister 1933:101)

The former Loko Waiaho lies near the east side of the entrance to Pearl Harbor, about 2.1 miles (3.4 km) southwest of the nearest point of the Airport Section 3 study area.

Site 95. Loko Ke‘oki

Loko Ke‘oki was a pond near the present site of Watertown in Hālawā. It had narrow wall of coral rock and sand. It has been filled in. (McAllister 1933:101)

The former Loko Ke‘oki also lies near the east side of the entrance to Pearl Harbor, about 2.1 miles (3.4 km) southwest of the nearest point of the Airport Section 3 study area.

Site 96. Papiolua Fishpond

Papiolua fishpond was located in Hālawā opposite the tip of Waipi'o Peninsula. It was a small pond, about 1 acre in area with a wall 150 feet long, 4 feet wide and high. There were no outlet gates (*mākāhā*). (McAllister 1933:101)

The former Papiolua fishpond lies on the east side of the entry channel into Pearl Harbor, about 2.0 miles (3.2 km) west of the nearest point of the Airport Section 3 study area.

Site 97. Loko-a-Mano or Loko Amana

Loko-a-Mano or Loko Amana, filled in before 1900, was located at the present site of the Navy yard. (McAllister 1933:102)

Loko-a-Mano lies on the south side of the Southeast Loch of Pearl Harbor, about 1.1 miles (1.8 km) west of the nearest point of the Airport Section 3 study area.

Site 98. Loko Pōhaku

Loko Pōhaku was a small pond of 2.5 acres at the present site of the Navy yard. (McAllister 1933:102)

Loko Pōhaku lies on the south side of the Southeast Loch of Pearl Harbor, about 1.0 miles (1.6 km) west of the nearest point of the Airport Section 3 study area.

Site 99. Waiolokai Fishpond

Waiolokai fishpond was another very small pond at Hālawā. (McAllister 1933:102)

Waiolokai fishpond lies on the southeast side of the Southeast Loch of Pearl Harbor, about 0.4 miles (640 m) west of the nearest point of the Airport Section 3 study area.

Site 100. Waiolowai Fishpond

Possibly the site of Waiolowai fishpond. (McAllister 1933:102)

Waiolowai fishpond lies on the southeast side of the Southeast Loch of Pearl Harbor, about 0.4 miles (640 m) west of the nearest point of the Airport Section 3 study area.

Site 101. Makalapa Crater

Makalapa Crater, now being used for a freshwater pond. Believed to be recent. (McAllister 1933:102)

Makalapa Crater lies adjacent to the east side of the Airport Section 3 study area, just south of Hālawā Stream (the crater rim is about 300 m east of the Kamehameha Highway alignment).

Site 102. Loko Kunana and Loko Muliwai, between Hālawā and Kuahua Island.

Kunana has been partly filled in but was formerly 25 acres in extent. Kuahua island forms one side and the opposing wall is formed Hālawā. The two walls running between the land and the island are 1800 feet and 1950 feet long, about 5 feet wide, and 3 feet high. Loko muliwai is only 4 acres in extent, a portion of which has been filled. Its wall is 500 feet long with one outlet (*mākāhā*). (McAllister 1933:102)

Loko Kunana and Loko Muliwai lie adjacent to the east side of the East Loch of Pearl Harbor, just south of Hālawā Stream a quarter mile (400 m) west of the nearest point of the Airport Section 3 study area.

Site 103. Moku‘ume‘ume Island (Ford Island), Pearl Harbor [Note some sources place Moku‘ume‘ume within Waimalu Ahupua‘a]

Moku‘ume‘ume Island is said to have obtained its name “Isle of Strife” from the fact that among former chiefs it was the center of contention over certain fishing rights. It was visited in 1819 by Peter Corney, who gives the following information:

Mr. Manning [Manini] had an island in Pearl River...it is about two miles in circumference, having a large cave in the center...Only one family resides there...One evening after supper the man gave us an account of a singular affair, which occurred to him when he first got charge of the island. He was one night awakened by some person calling him by name, and telling him to attend to what he said; he looked up and was much terrified on beholding the pale form of the late King Pereoranee [Peleiōholani] before him, who told him as he valued his life so must he perform what he enjoined; which was to go to the cave, where he would find his bones with the bones of several great chiefs; he was to take them from thence and convey them to a place of safety, out of the reach of a chief Tereacoo [Kaleioku], who would come the next day with a party to search the island for the bones of the king and chiefs, to make points for their arrows to shoot rats with...

The next day, according to the prediction, the chief came and searched the island; the man told him that as the island and all that was on it belonged to a white man of whom Tameameah [Kamehameha] was very fond, he ought not to come there to search for bones, when there were too many on the main island. The chief took no notice, but searched and took several bundles of bones with him, though not those of the king and chiefs. Tereacoo departed, and on the ensuing night the deceased king and many chiefs appeared to the man, and thanked him for what he had done, assuring him that the white men would protect him and that he should one day become a great man...The next morning I went round the island, which seems as though it had been kept for a burial place, for I saw hundreds of bundles

of human bones, wrapped carefully in cloth, and laid in the crevices of the rocks.
(McAllister 1933:102)

Moku'ume'ume Island (Ford Island) lies in Pearl Harbor, about 1.8 km west of the nearest point of the Airport Section 3 study area.

The nearest of these sites to the current study area is Makalapa Crater at a distance of 300 m west, and again McAllister (based on his 1931 fieldwork) did not believe that pond was of any great antiquity. Bishop Museum records (Sterling and Summers 1978:47) assert that Makalapa Crater was "swampy and overgrown" in July 1957 suggesting it was not an actively maintained fishpond at that time.

Other Archaeological Studies in Hālawā Ahupua'a

Table 1 and Figure 2 list additional archaeological studies in Hālawā Ahupua'a excluding the studies at Hickam AFB and the work for the H-3 project.

Cluff (1970) of the DLNR reported on an archaeological survey of the proposed Hālawā Interchange with the H-1 Freeway. The impetus for the archaeological survey arose from concerns of the community members who described numerous graves within the area, including family graves. As the majority of the study area encompassed previous cane field lands, the survey concentrated along the immediate vicinity of Saratoga Drive. Eight sites were identified, including historic grave structures and one stone house platform. Residents of the area also noted that a *heiau* was known to have been in the vicinity. Cluff identified a possible *heiau* structure and conducted subsurface excavations; however, the function of the structure remained indeterminate.

Ayres (1971) reported on an archaeological survey and excavations in Kamana-Nui valley, Moanalua, and South Hālawā Valley. The South Hālawā portion of the study area consisted of a 500 ft.-wide strip along the valley bottom, beginning about 550 m (1800 ft.) WSW of Hālawā jail and running ENE 2.25 km (1.4 miles) to end 122 meters (400 ft.) south of the Hawaiian Electric Company (HECO) substation. Forty-eight sites were recorded within the survey area: 16 agricultural terraces, 7 house platforms, 2 walled house structures, 4 caves, 2 small agricultural clearings, 3 walls, 3 mounds, 1 c-shaped structure, 9 historic sites (i.e., paved road with stone curbing, animals pens, and a well), and 1 stream diversion feature. Limited test excavations were carried out due to the unexpected number of sites found and time constraints.

Barrera (1971) conducted an archaeological site survey in South Hālawā Valley for the proposed Honolulu Stadium. There were no significant finds, but accounts indicated unmarked graves were present along Saratoga Drive.

In October, 1971, David Denison and Arthur Foreman conducted a Phase II archaeological investigation based on Ayres' recommendations. Of the 48 sites Ayres (1971) located, 20 were recommended for mapping and excavation. Sixteen of the 48 sites were noted to be concentrated in a small area bounded by Hālawā Stream and a major side stream. This well-watered area just south of the present HECO substation studied by Ayres (1971) and Denison and Foreman (1971) appears to have been a focus of habitation, ritual activity, and burial in pre-Contact Hālawā Ahupua'a.

Table 1. Other Archaeological Studies in Hālawā Ahupua‘a excluding Joint Base Pearl Harbor-Hickam and H-3 Hālawā Studies

Source	Type of Investigation	General Location	Findings
Cluff 1970	Archaeological Survey	Hālawā Interchange with H-1 Freeway	Survey focused around vicinity of Saratoga Drive. Surface survey identified one possible <i>heiau</i> , one historic house platform, a stone wall, and several burial structures (two family plots, three mounds, one concrete enclosure). Subsurface excavations of the possible <i>heiau</i> structure were inconclusive.
Ayres 1971	Archaeological Survey and Excavations	South Hālawā Valley	Identified 48 sites consisting of 16 agricultural terraces, seven house platforms, two walled house structures, four caves, two agricultural clearings, three walls, three mounds, one C-shape, nine historic sites, and one stream diversion.
Barrera 1971	Archaeological Site Survey	Proposed Honolulu Stadium	No finds, but notes accounts of unmarked graves along Saratoga Drive.
Denison and Foreman 1971	Archaeological Investigations	South Hālawā Valley	Includes site descriptions of 20 sites noted by Ayres (1971) consisting of seven platforms, six terraces or terrace systems, two mounds, two walled house sites, and three caves.
Avery et al. 1994	Paleo-environmental Reconstruction Monitoring	Adjacent to the mouth of Hālawā Stream and Waiau-Makalapa along Kamehameha Highway	No cultural materials were observed, but presented results of pollen analysis.
Hammatt and Winieski 1994	Archaeological Reconnaissance Survey	SE of Aloha Stadium	No significant finds; notes major impact of commercial sugar cultivation.
Dye 1999	Archaeological Resources Survey	Kamehameha Highway at Hālawā Bridge	No significant finds; major twentieth century landscape modifications to vicinity noted.
McGuire et al. 1999	Archaeological Assessment	South Hālawā Valley	Re-examined certain previously identified sites and newly reports six sites incl. -5737 a burial cave, -5738 a terrace complex, -5739 a C-shape enclosure, -5740 a rectangular enclosure, -5741 a habitation and agricultural site complex, and -5742 a round enclosure.

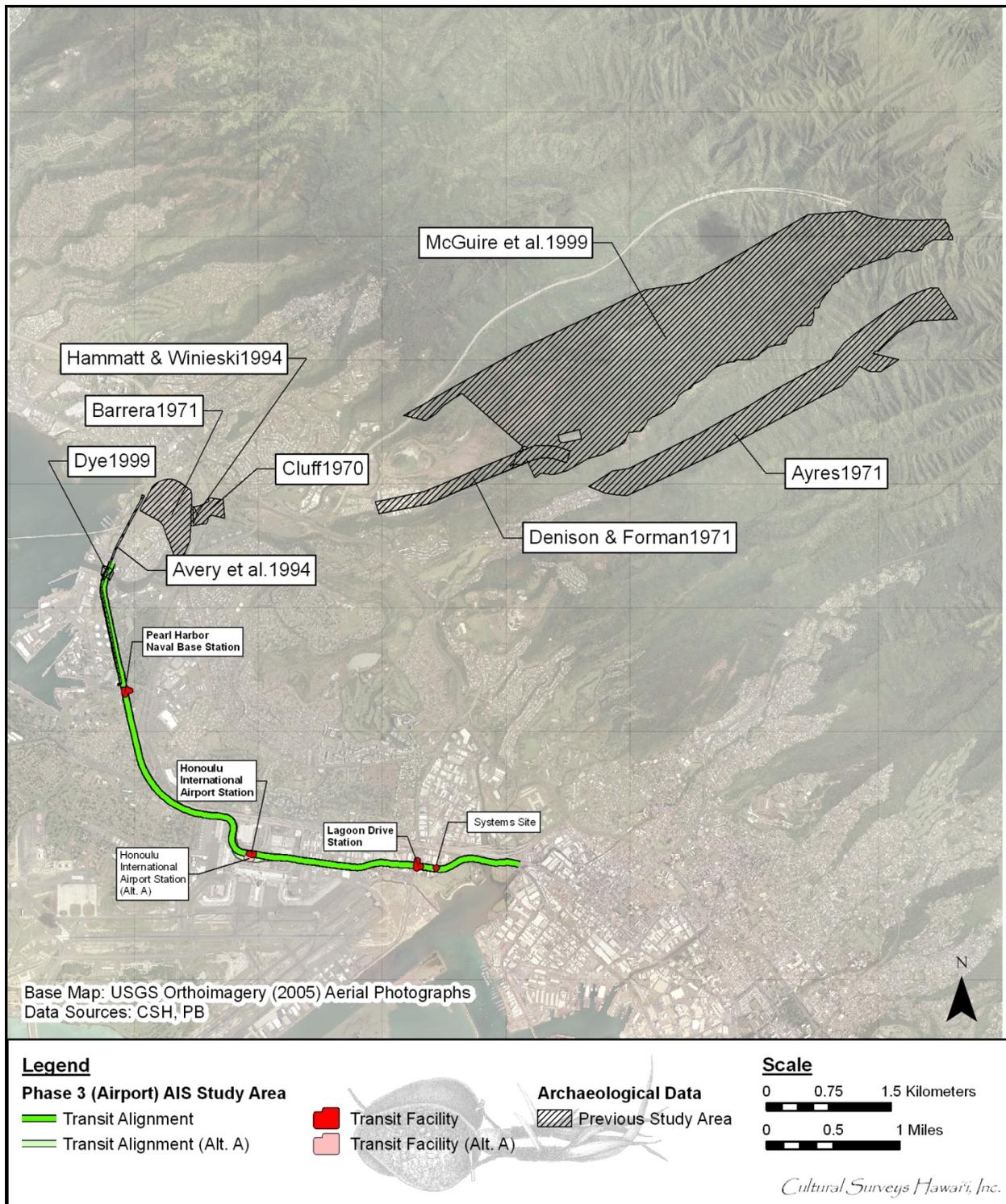


Figure 2. Other Archaeological Studies in Hālawā Ahupua‘a excluding Joint Base Pearl Harbor-Hickam and H-3 Hālawā Studies

Avery et al. (1994) reported on a paleoenvironmental reconstruction adjacent to the mouth of Hālawā Stream in a monitoring report of the Waiau-Makalapa No. 2 138 KV Overhead Lines (Phase II) project that ran along Kamehameha Highway from Aloha Stadium to Makalapa, 1.3 kilometers west of the current study area.

In 1994, CSH conducted a reconnaissance survey for a proposed Hālawā Well just southeast of the Aloha Stadium but identified no sites, noting that all evidence of earlier activity was probably eradicated by commercial sugarcane cultivation (Hammatt and Winieski 1994).

Anderson (1995) of Ogden Environmental and Energy Services Company, Inc. reported on monitoring of a sewer installation project (MILCON P-115) within Kuahua Peninsula, Naval Submarine Base. Fishpond deposits associated with Wailolowai Fishpond (SIHP # 50-80-13-100) were identified.

In 1999, CSH conducted an archaeological reconnaissance and assessment of a portion of South Hālawā Valley. The purpose of this reconnaissance and assessment was to address concerns associated with the probable increased public access to these lands following the opening of the H-3 access road to the public, as well as possible recreational educational use (i.e., guided hikes, educational walks) of these lands by the Queen Emma Foundation (McGuire et al. 1999). The study area consisted of about 1,728 acres, including the main drainage of South Hālawā Stream and a major tributary gulch to the north of South Hālawā Stream. Particular attention was given to the relatively flat bottom lands of South Hālawā Stream and the less steep portions of the major tributaries of South Hālawā Stream, which were understood as the areas most likely to be impacted by the proposed activities of the Queen Emma Foundation. The cliff face on the west side of the valley, which was known to contain burial caves, was also explored for the possibility of both previously reported and unreported burial caves. Selected sites within the study area, which had previously been identified in earlier surveys, were re-identified to check on the current condition and status of these sites. As the nature of the project was reconnaissance and assessment, sites were identified, photographed, and mapped. No testing, excavation, or data recovery was performed. Six sites were newly identified including SIHP # 50-80-13-5737 (burial cave), 50-80-13-5738 (terrace complex), 50-80-13-5739 (C-shape enclosure), 50-80-13-5740 (rectangular enclosure), 50-80-13-5741 (habitation and agricultural site complex), and 50-80-13-5742 (round enclosure).

H-3 Archaeological Studies in Hālawā Valley

The Bernice Pauahi Bishop Museum's H-3 archaeological work included extensive studies of North Hālawā Valley and several preliminary study of South Hālawā Valley that occurred in the early 1970s (Table 2 and Figure 3).

Oshima (1976) conducted an archaeological reconnaissance survey and identified seven sites within the proposed path of the H-3 freeway. A Phase I survey of these seven sites was recommended. The report concluded that North Hālawā valley was used primarily for agriculture during the pre-Contact and early post-Contact periods.

Sinoto (1976) conducted an archaeological reconnaissance survey through a portion of South Hālawā valley for Parsons Brinckerhoff-Hirota Associates. At the time, portions of South Hālawā were being considered as an alternate route for the H-3 freeway. Prior to this, all

Table 2. Archaeological Studies of the H-3 Corridor

Source	Type of Investigation	General Location	Findings
Crozier 1972	Archaeological Survey	H-3 Highway Corridor in the South Hālawā Valley	Restoration work at two <i>heiau</i> and excavations at a residential and agricultural site, and a large residential enclosure.
Oshima 1976	Archaeological Reconnaissance Survey	Portions of North Hālawā Valley	Identified seven sites within the proposed path of the H-3 freeway.
Sinoto 1976	Archaeological Reconnaissance Survey	Three-mile portion of east section of (South) Hālawā Valley	Identified pre-Contact (a wall, a house platform, three circular walled enclosures, and agricultural terraces) and post-Contact sites (a charcoal oven and earthen terraces).
Dye 1977	Archaeological Survey of Oshima (1976) sites	Floor and lower slopes of North Hālawā Valley from the Board of Water Supply pumping station to the back of the valley	No pre-Contact surface features found. All sites found were relatively late and no further archaeological work was recommended.
Bishop Museum 1992	Preliminary Summary of Sites	North Hālawā Valley	Discussion of two sites (Sites 50-80-10-2137 and -2010) interpreted by some as a <i>heiau luakini</i> and a <i>Hale o Papa</i> .
Hartzell et al. 2003	Archaeological Inventory Survey	H-3 North Hālawā corridor	Summarizes Bishop Museum work conducted between 1987 and 1993 describing 70 archaeological sites.

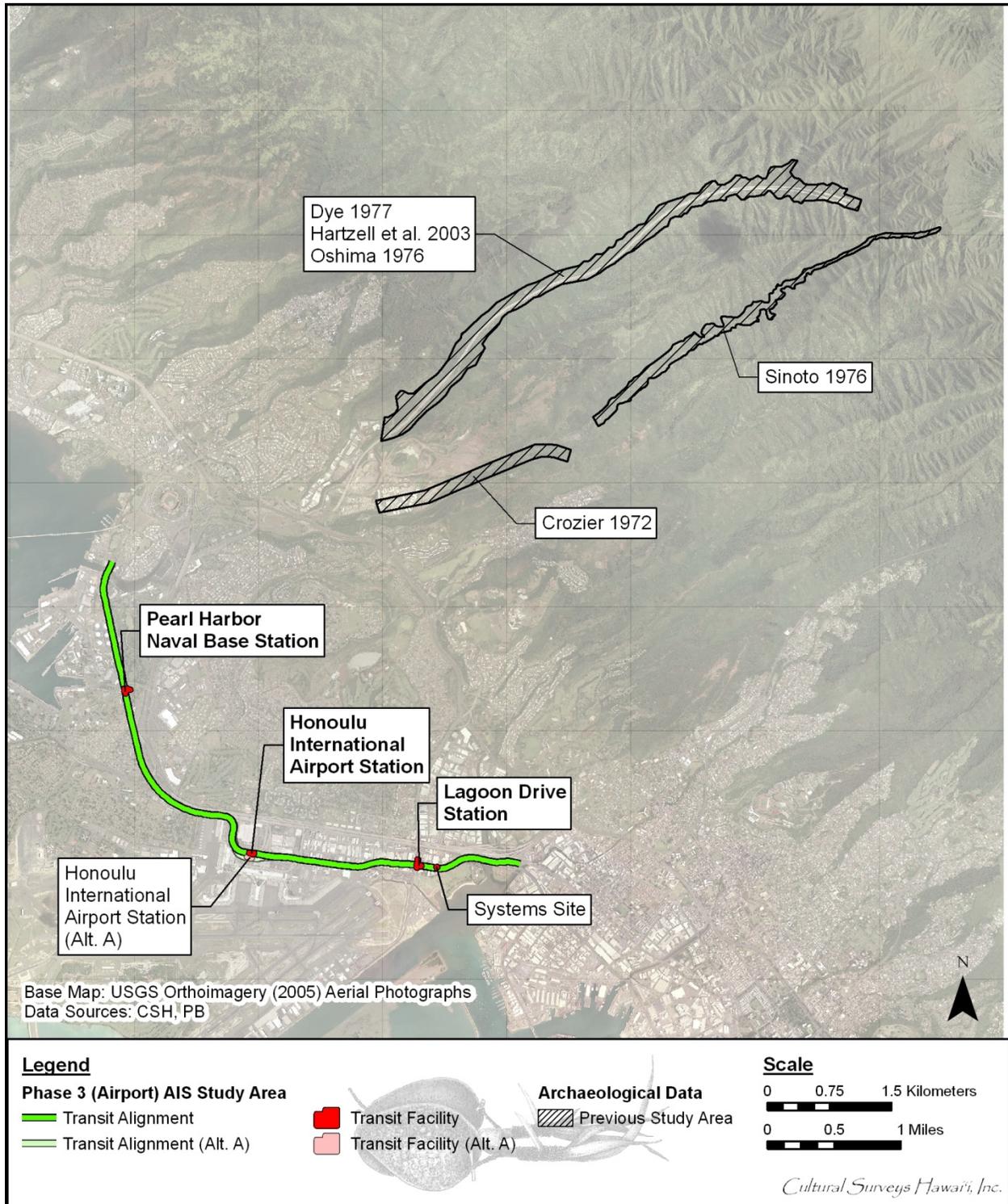


Figure 3. Previous archaeological studies in Hālawā Valley of the H-3 Corridor

previous archaeological studies had been contained to the lower valley portions ending at the HECO sub-station. The Sinoto survey area was a 3-mile portion of the valley, which started at the aforementioned sub-station and ended at about the 2000 ft. elevation near the valley head. Findings concluded that the majority of the sites occurred along the valley floor and the flood plain area, and bordered the stream. Both pre-historic and historic sites were identified during this survey. The prehistoric sites consisted of a wall, a house platform, three circular walled enclosures, and agricultural terraces. The historic sites included a charcoal oven and earthen terraces (Sinoto 1976:2-4). As this project was only a reconnaissance survey, sites were merely identified and no further work was done. Recommendations were made for a Phase I intensive survey including. Sinoto concluded that the individual sites were not unique in and of themselves, but maintained that when viewed as a whole agricultural complex, the sites do have research potential (Sinoto 1976:4).

Dye (1977) conducted a Phase I survey of the sites described by Oshima (1976). The survey area included the floor and lower slopes of North Hālawā Valley, from the Board of Water Supply pumping station to the back of the valley at the base of the Ko'olau range. No pre-Contact surface features were found, and all sites were determined to be post-Contact. Four caves were explored in the northwest wall of the lower valley. Midden and historic refuse were found in only one cave. No caves were located in the southeast wall of the valley. The report concluded that there were no pre-Contact surface features found. All sites found were relatively late and no further archaeological work was recommended.

The "Imu, Adzes, and Upland Agriculture" archaeological inventory survey report (Hartzell et al. 2003) summarizes Bishop Museum work at 70 archaeological sites along the H-3 North Hālawā corridor conducted between 1987 and 1993. The sites were widely distributed in the lower, middle, and upper valley and spanned the past seven hundred years. The AIS work recorded over 2,000 features and 1,000 test units.

Hartzell et al. (2003:351-354) summarize *ahupua'a*-wide patterning for Hālawā as follows:

- Use of the coastal region was well under way by A.D. 1200s or 1300s, but that it is likely that use of the upper valleys of North Hālawā and South Hālawā was relatively incidental in the period prior to A.D. 1200;
- Agricultural use and at least one early habitation in North Hālawā Valley was indicated in the A.D. 1200s or 1300s;
- After about A.D. 1500 archaeological data from North Hālawā Valley appear to document a considerable increase in the use of the upper valley for dryland agriculture and for habitation;
- Sometime prior to the late 1700s, two major *heiau* were constructed in the lower valley;
- By the mid-1800s North Hālawā Valley and likely, South Hālawā Valley as well, had few inhabitants and little emphasis on agricultural pursuits. "The exact timing of the virtual abandonment of the upper valleys of the *ahupua'a* is not known; it occurred either during the very late pre-Contact or very early post-Contact period." (Hartzell et al. 2003:353). Settlement in the mid-1800s was almost exclusively in the lower (coastal) valley; and

- Subsequently activities in the H-3 project area were largely focused on grazing, Chinese rice growing, and large scale commercial sugar cultivation.

As a generalization, the conclusion was that North Hālawā Valley exhibited “about the same general patterning with respect to the pre-Contact period” as indicated by studies in other large valley systems of O‘ahu such as Kahana, Anahulu, Mākaha, Moanalua, and south Hālawā (Hartzell et al. 2003:360).

Joint Base Pearl Harbor-Hickam (JPBHH) Archaeological Studies in Hālawā and Moanalua Ahupua‘a

The former Hickam AFB (now part of Joint Base Pearl Harbor–Hickam) lies adjacent to the southwest of the Airport Section 3 corridor. The former Hickam AFB straddles the *ahupua‘a* of Hālawā and Moanalua and has been the subject of about 100 archaeological studies. Table 3 provides a summary of archaeological studies at Joint Base Pearl Harbor-Hickam, and Figure 4 through Figure 7 show the location of many of these studies. Due to the number of archaeological studies, they are portrayed chronologically. Figure 4 shows studies prior to 1997, Figure 5 shows studies between 1997 and 1998, Figure 6 shows studies between 2000 and 2002 and Figure 7 shows studies post-2002.

Particular concern was generated for the greater Hickam area by the discovery of at least 87 burials at Fort Kamehameha. It now appears that the area of burials was fairly localized and far from the Airport Section 3 corridor. An important and relatively early study was the Anderson and Bouthillier (1996) work, which attempted a synthesis of historical and archaeological documentation and produced an archaeological/historical resources sensitivity map for the base. As can be seen from Figure 8, there have only been three areas at the JBPBH in which sites have been found (shown as “a,” “b,” and “c”). Two of these designated sites lie nearly 4 km to the southwest on the eastern margin of the entrance to Pearl Harbor in an area intensively used in traditional Hawaiian times. The nearest designated site (shown as locale “c” on Figure 8) was within 3 km of the Airport Section 3 corridor and consisted of three pit features designated as SIHP # 50-80-13-6406 (Desilets 2002a). While finds were limited to thermally-altered limestone, charcoal, and very sparse quantities of midden, the carbon dating ranges obtained of AD 1478-1664 and AD 1306-1452 include the earliest reported date for JBPBH. This appears to be the only site designated in the eastern half of the JBPBH.

A more recent CSH archaeological investigation (Yucha and Hammatt 2008) involved six geo-technical test borings in 22 acres of undeveloped land at the Honolulu International Airport along the property border with JBPBH and southwest of the footprint for the Honolulu International Airport Station Facility. No cultural deposits were encountered.

A consideration of the results of the many archaeological studies that have taken place at Hickam AFB since Anderson and Bouthillier (1996) produced their sensitivity map suggests that the designation of a large area of inland east Hickam AFB as of high archaeological sensitivity might not be accurate. At the time of the creation of the Anderson and Bouthillier (1996) sensitivity map, there had not been a single archaeological study east of the present western reef runway taxi approach, which is to say there had not been a single archaeological study within two kilometers of the present study area. There is now a great deal known about the likelihood of

Table 3. Previous Archaeological Studies at Joint Base Pearl Harbor-Hickam including Fort Kamehameha (coastal Hālawā and Moanalua Ahupua'a)

Source	Type of Investigation	General Location	Findings
Cobb 1905	Fisheries Inventory	Archipelago-wide	Fishponds in Hālawā were noted to include: Kunana (25 acres, partly filled), Pōhaku (2.5 acres, partly filled), Waiaho (32 acres), name not known (five acres, partly filled). Fishponds in Moanalua include: Lelepaua (332 acres, mostly filled up), and Kaihikapu (258 acres).
Stokes 1909	Study of Walled Fish Traps	Pearl Harbor	Located former fish trap at Bishop Point
McAllister 1933	Archaeological Survey	O'ahu Island	Site 81. Kaihikapu Fishpond; Site 82. Lelepaua, a large inland fishpond at Moanalua, Site 94. Loko Waiaho, known as Queen Emma's pond, Site 95. Loko Ke'oki was a pond near Watertown; Site 96. Papiolua Fishpond in Hālawā
Hammatt et al. 1986	Archaeological Subsurface Testing	Fort Kamehameha	Gleyed soils were interpreted as fishpond sediments dating to A.D. 1340-1650. Cultural materials included a possible pearl shell fishhook, three polished basalt beads or sinkers, and various historic artifacts.
Watanabe 1986	Archaeological Site Survey and Subsurface Testing	Fort Kamehameha	Concrete foundations, walkways, roadway, ammunition storage bunkers, air raid shelter and dump piles were located. Testing identified sediments from embayed ponds and marsh environment.
Hammatt and Borthwick 1987a	Archaeological Subsurface Testing	Fort Kamehameha	No significant finds
Hammatt and Borthwick 1987b	Archaeological Subsurface Testing	Fort Kamehameha	No significant finds

Source	Type of Investigation	General Location	Findings
Hammatt and Borthwick 1987c	Archaeological Subsurface Testing	Fort Kamehameha	Only historic materials dating to the 1920s and 1930s
Hammatt and Borthwick 1987d	Archaeological Subsurface Testing	Fort Kamehameha	Fishpond sediments; no cultural materials
Hammatt et al. 1988	Archaeological Monitoring	Fort Kamehameha	Gleyed soils were interpreted as fishpond sediments dating to A.D. 1385-1655.
Streck and Watanabe 1988	Recovery of Human Remains	Quarters # 14, Fort Kamehameha	Excavation of one adult and three juveniles
Shun and Schilz 1991	Subsurface Archaeological Survey	Wastewater Treatment Plant, Fort Kamehameha	Single adult human burial, an adze perform, and a polished adze, documented pond sediments
Watanabe 1991	Archaeological Site Survey and Subsurface Testing	Fort Kamehameha	No significant finds
Drolet 1992 (finalized as Drolet and Schilz 1996)	Phase I Archaeological Subsurface Testing and Data Recovery	Wastewater Treatment Plant, Fort Kamehameha	Component I: single human burial, seven pit features and cultural materials dating to A.D. 1200 to 1550, Component II: Nine human burials dating to A.D. 1450-1900, and Component III: post-1900 historic materials
Drolet and Schilz 1992 (finalized as Drolet and Schilz 1996)	Emergency Data Recovery Project	Fort Kamehameha	Documented cultural deposits and 11 burials
Drolet 1993 (finalized as Drolet 1999a)	Phase II Archaeological Subsurface Testing and Data Recovery	Fort Kamehameha	SIHP # 50-80-13-4499 assigned, Component II: 17 human burials and two animal burials, Component IIIa: nineteenth-century glass and ceramic wares, and Component IIIb: post-1900 historic materials

Source	Type of Investigation	General Location	Findings
Denham and Cleghorn 1994	Archaeological Inventory Survey and Limited Subsurface Testing	Hickam AFB	Minimal finds (mid-twentieth century features associated with military housing)
Williams 1994	Subsurface Testing	Pearl Harbor NAVBASE, Kunana and Wailolowai Fishponds	Kunana Fishpond core indicated fishpond sediments; radiocarbon analysis dated pond construction between AD 1200 to AD 1400
Anderson and Schilz 1995	Archaeological Monitoring	Pearl Harbor Naval Submarine Base	Identified fishpond deposits associated with Wailolowai Fishpond (SIHP # 50-80-13-0100)
Erkelens 1995	Archaeological Study	Proposed Ford Island Golf Park and Saratoga Boulevard relocation, Ford Island Bridge Project	Discusses reconnaissance of the Hālawā terminus and subsurface testing at 8 locations on Ford Island. Disturbance to the entire Hālawā portion of the study area was indicated.
Eulberg 1995	Inadvertent Discovery	Battery Hasbrouck	Inadvertent discovery of human left hip bone within Battery sand berm
Lawrence and Spear 1995	Archaeological Monitoring and Sampling	Hickam AFB	Minimal finds
Anderson and Bouthillier 1996	Assessment and Analysis of Historic Properties	Hickam AFB	Preparation of a historic preservation plan providing a synthesis of prior studies
Drolet and Schilz 1996	Phase I Archaeological Subsurface Testing and Data Recovery	Fort Kamehameha Wastewater Treatment Plant, Pearl Harbor	Work up of cultural deposits and burials first described in Drolet and Schilz (1992)
Athens et al. 1997	Paleo-environmental Coring	Loko Ka'ihikapu, TRACON Expansion, Hickam AFB	Inconclusive data regarding presence of prehistoric fishpond sediments

Source	Type of Investigation	General Location	Findings
Drolet and Schilz 1997 (finalized as Drolet 1999b)	Phase III Archaeological Monitoring and Data Recovery	Wastewater Treatment Plant, Fort Kamehameha	Further describes previous components identified during Phase I and Phase II, Component I: double midden pit; Component II: 13 human burials within ten graves and two animal burials; Component III: nineteenth century occupation dated A.D. 1810-1900; and Component IV: historic trash pits
Athens and Magnuson 1998	Archaeological Subsurface Survey	Hickam AFB	No cultural finds; pollen analysis results presented
Tomonari-Tuggle 1998	Archival Background Research	Honolulu International Airport Post Office	Research indicated that the project area and vicinity was likely not used in any intensive way during the pre-Contact era.
Athens and Ward 1999a	Paleo-environmental Coring Report	Ka'ihikapu Fishpond, Honolulu International Airport	SIHP # 50-80-13-81 fishpond research; found no sediments from pre-Contact Polynesian period
Athens and Ward 1999b	Paleo-environmental Coring Report	Loko Lelepaua, Hickam AFB	Investigated fishponds identified by Carlson (1999)
Drolet 1999a	Phase II Archaeological Subsurface Testing and Data Recovery Report	Wastewater Treatment Plant at Fort Kamehameha	Not found in SHPD library
Drolet 1999b	Phase III Archaeological Monitoring and Data Recovery Report	Wastewater Treatment Plant, Fort Kamehameha	Not found in SHPD library
Robins et al. 1999	Monitoring and Sampling During Construction Excavations	Hickam AFB	Dates Lelepaua Fishpond (SIHP # 50-80-13-82) to late thirteenth to mid-fifteenth centuries; presents C14 and pollen data
Wolforth and Rechtman 1999	Archaeological Monitoring	Wastewater Treatment Plant, Fort Kamehameha	Document not reviewed—understood to report no significant finds

Source	Type of Investigation	General Location	Findings
Athens et al. 2000	Archaeological and Historical Studies	Ancient Hawaiian Fishponds of Pearl Harbor on U.S. Navy Land	Includes dating analysis for several fishponds (Loko Pōhaku, Loko Wailokai, Loko Wailolowai, Loko Muliwai, Loko Kunana) in the vicinity
Carlson 2000	Archaeological Monitoring	Hickam AFB	Identified sediments of two traditional Hawaiian fishponds; Ka'ihikapu Fishpond and Lelepaua Fishpond
Cochrane and Athens 2000	Archaeological Monitoring	Magazine Loch	Work did not penetrate beneath historic fill
Erkelens 2000	Archaeological Monitoring	Hickam AFB and Pearl City Peninsula	No significant finds
Desilets 2000	Addendum Archaeological Monitoring	Fort Kamehameha	Identified probable fishpond sediments associated with Lelepaua Fishpond
Magnuson 2000	Archaeological Monitoring	Hickam AFB	One focus of work was noted to be at Lelepaua Pond
Athens et al. 2001	Paleo-environmental Coring	Hickam AFB	Investigations of Lelepaua Fishpond found no intact evidence for fishpond sediments at this location
Buffum and Davis 2001	Archaeological Monitoring	Hickam AFB	No significant finds
Carlson 2001	Archaeological Monitoring	Hickam AFB	No significant finds; possible fishpond sediments discussed
Curtis 2001a	Emergency Replacement of Two Utility Poles	Hickam AFB	Possible fishpond remnants noted
Curtis 2001b	Field Check	Hickam AFB	No significant finds
Dega and Davis 2001	Archaeological Monitoring	Base Civil Engineer Maintenance Complex, Fort Kamehameha	Identified one historic pit feature containing fuel drum
Drolet 2001	Phase IV Archaeological Monitoring, Testing and Data Recovery	Wastewater Treatment Plant, Fort Kamehameha	Not found in SHPD library
Magnuson 2001	Archaeological Monitoring	Hickam AFB	No significant finds

Source	Type of Investigation	General Location	Findings
Roberts 2001	Archaeological Monitoring	Hickam AFB	No significant finds
Athens 2002	Paleo-environmental Investigations	Pearl Harbor Shipyard	Core samples identified natural wetland and fishpond sediment, with transition date estimated at A.D. 1299-1407
Dega et al. 2002	Archaeological Monitoring and Sampling	Hickam AFB	Investigations at Ka'ihikapu fishpond, but concluded there was substantial sediment mixing
Desilets 2002a	Archaeological Monitoring	Hickam AFB	No significant finds
Desilets 2002b	Archaeological Monitoring	Hickam AFB	Not found in SHPD library
Grant 2002	Archaeological Monitoring	Hickam AFB	No significant finds
McGhee and Curtis 2002a	Archaeological Monitoring and Sampling	Fort Kamehameha Historic District	Minimal finds (historic artifacts)
McGhee and Curtis 2002b	Archaeological Monitoring	Hickam AFB	No significant finds
McGhee and Curtis 2002c	Archaeological Monitoring	Hickam AFB	No significant finds
Roberts 2002a	Archaeological Monitoring	Signer Boulevard, Hickam AFB	No significant finds
Roberts 2002b	Archaeological Pre-construction Investigation	Fort Kamehameha	No significant finds
Roberts and Bower 2002a	Archaeological Monitoring	Hickam AFB	No significant finds
Roberts and Bower 2002b	Archaeological Monitoring	Hickam AFB	No significant finds
Roberts et al. 2002	Archaeological Monitoring	Hickam AFB	No significant finds
Roberts and Roberts 2002	Pre-construction Archaeological Investigation	Bishop Point Naval Station	A possible pre-Contact lens (SIHP # 50-80-13-5972) identified; reported two C14 dates

Source	Type of Investigation	General Location	Findings
Roberts and West 2002a	Archaeological Monitoring	Hickam AFB	No significant finds
Roberts and West 2002b	Archaeological Monitoring	Hickam AFB	No significant finds
Borthwick et al. 2003	Monitoring for Geotechnical Sampling	Hickam AFB	No significant finds
Desilets 2003	Archaeological Monitoring	Hickam AFB	Monitored 38 UST sites. Data indicated this area was once a wetland marsh environment. One site (SIHP # -3440) documented: an early 1900s steel fuel tank associated with Coastal Battery Selfridge (SIHP # -1600)
Magnuson 2003	Archaeological Monitoring	Hickam AFB	No significant finds
McElroy 2003	Archaeological Monitoring	Hickam AFB	Minimal finds (late 1800s and early 1900s Watertown artifacts)
McGhee and Curtis 2003a	Archaeological Monitoring	Hickam AFB	No significant finds
McGhee and Curtis 2003b	Archaeological Monitoring Report	Hickam AFB	No significant finds
Ogg and Dega 2003	Archaeological Monitoring and Sampling	Hickam AFB	No significant finds
Davis and O'Rourke 2004	Archaeological Investigations	Hickam AFB	Identified a cultural layer (SIHP # 50-80-13-6692) containing numerous post hole and pit features
Dye 2004	Archaeological Survey	Hickam AFB	No significant finds (1930s Hickam artifacts)
Pantaleo 2004	Archaeological Monitoring	Hickam AFB	Document not reviewed— understood to report no significant finds
DeBaker and Roberts 2004	Archaeological Monitoring	Fort Kamehameha	No significant finds
DeBaker and Brown 2005	Archaeological Inventory Survey	Fort Kamehameha	Document not reviewed— understood to report no significant finds
DeBaker and Peterson 2005	Archaeological Monitoring and Data Recovery	Hickam AFB	Comments on previously-identified SIHP # 50-80-123-6692 reported in Davis and O'Rourke (2004) but no new finds

Source	Type of Investigation	General Location	Findings
DeBaker et al. 2005	Archaeological Monitoring and Sampling	Bishop point, Fort Kamehameha, and Hickam AFB	Minimal finds (twentieth century artifacts associated with Watertown Village)
Grant 2005	Archaeological Monitoring	Hickam AFB	Disturbed or re-deposited cultural material (midden, organic rich lenses) observed
Jourdane and Dye 2005	Archaeological Monitoring	Hickam AFB	No significant finds
Putzi and Dye 2005a	Archaeological Monitoring	Hickam AFB	Describes SIHP # 50-80-13-6761 a retaining wall related to Water Town (1908-1935)
Putzi and Dye 2005b	Archaeological Monitoring	Hickam AFB	Describes a T-shaped trestle but no other historic sites
Putzi and Dye 2005c	Archaeological Monitoring	Hickam AFB	No significant finds
Shun and Shaw 2005	Archaeological Monitoring	Hickam AFB	No significant finds
Tome and Spear 2005	Archaeological Monitoring	Pearl Harbor	Identified two subsurface features consisting of early- to mid-twentieth century artifacts associated with early history of Watertown and Hickam AFB; Traditional artifacts were recovered out of context
Jourdane and Dye 2006	Archaeological Monitoring Report	Hickam AFB	Monitoring at 13 locales identified no traditional Hawaiian cultural materials or significant finds
McElroy et al. 2006	Archaeological Monitoring and Investigation	Hickam AFB	Deposits associated with fish ponds
Petrey and McDermott 2008	Archaeological Monitoring	Māmala Substation	No significant finds
Yucha and Hammatt 2008	Archaeological Monitoring	Honolulu International Airport	No cultural deposits were identified. The project area's subsurface deposits appeared to be intact near the present water table at depths between 1-3 m below the modern ground surface.

Source	Type of Investigation	General Location	Findings
Carson et al. 2009	Archaeological Monitoring	Bishop Point	No significant finds
Kennedy and Moore 2009	Archaeological Monitoring	Hickam AFB	Several glass bottles from the early to mid-twentieth century are reported
Department of the Navy 2011	Archaeological Assessment	Joint Base Pearl Harbor-Hickam	No significant finds
Lebo et al. 2012	Archaeological Monitoring	Fort Kamehameha (27 locales)	Seven subsurface features dating to the early twentieth century

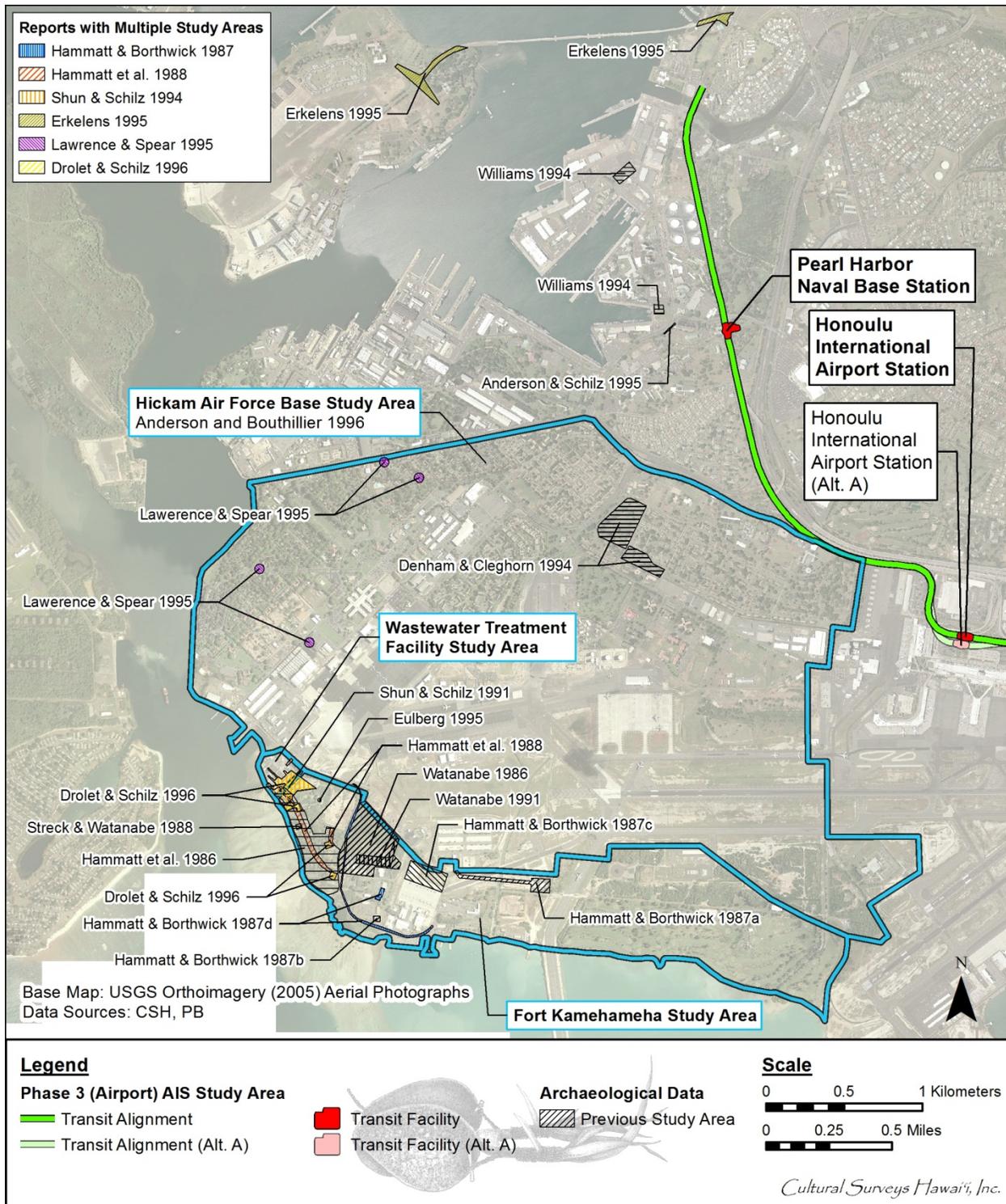


Figure 4. Previous archaeological studies (pre-1997) at Joint Base Pearl Harbor-Hickam (coastal Hālawā and Moanalua Ahupua‘a)

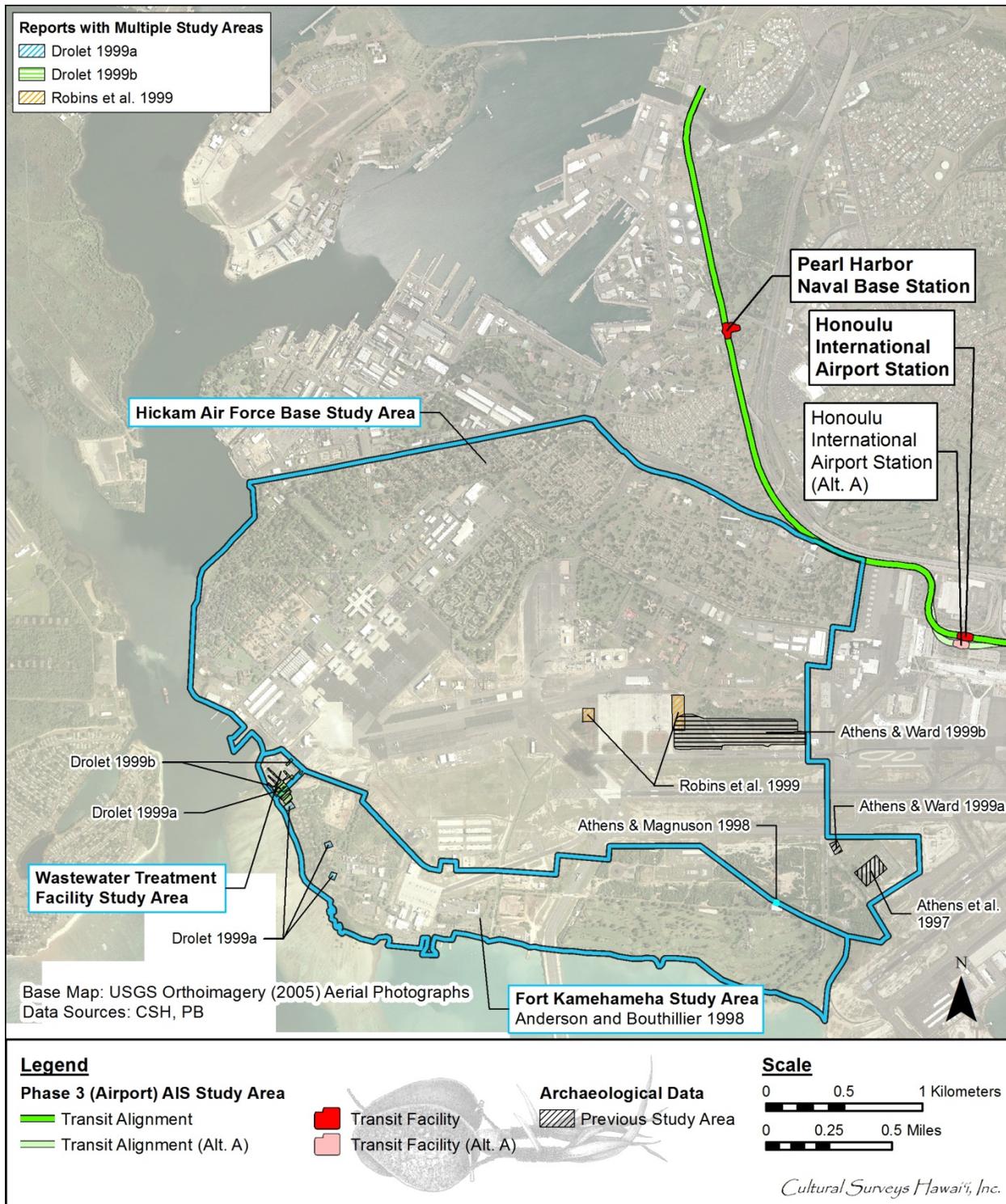


Figure 5. Previous archaeological studies (1997 to 1999) at Joint Base Pearl Harbor-Hickam (coastal Hālawā and Moanalua Ahupua‘a)

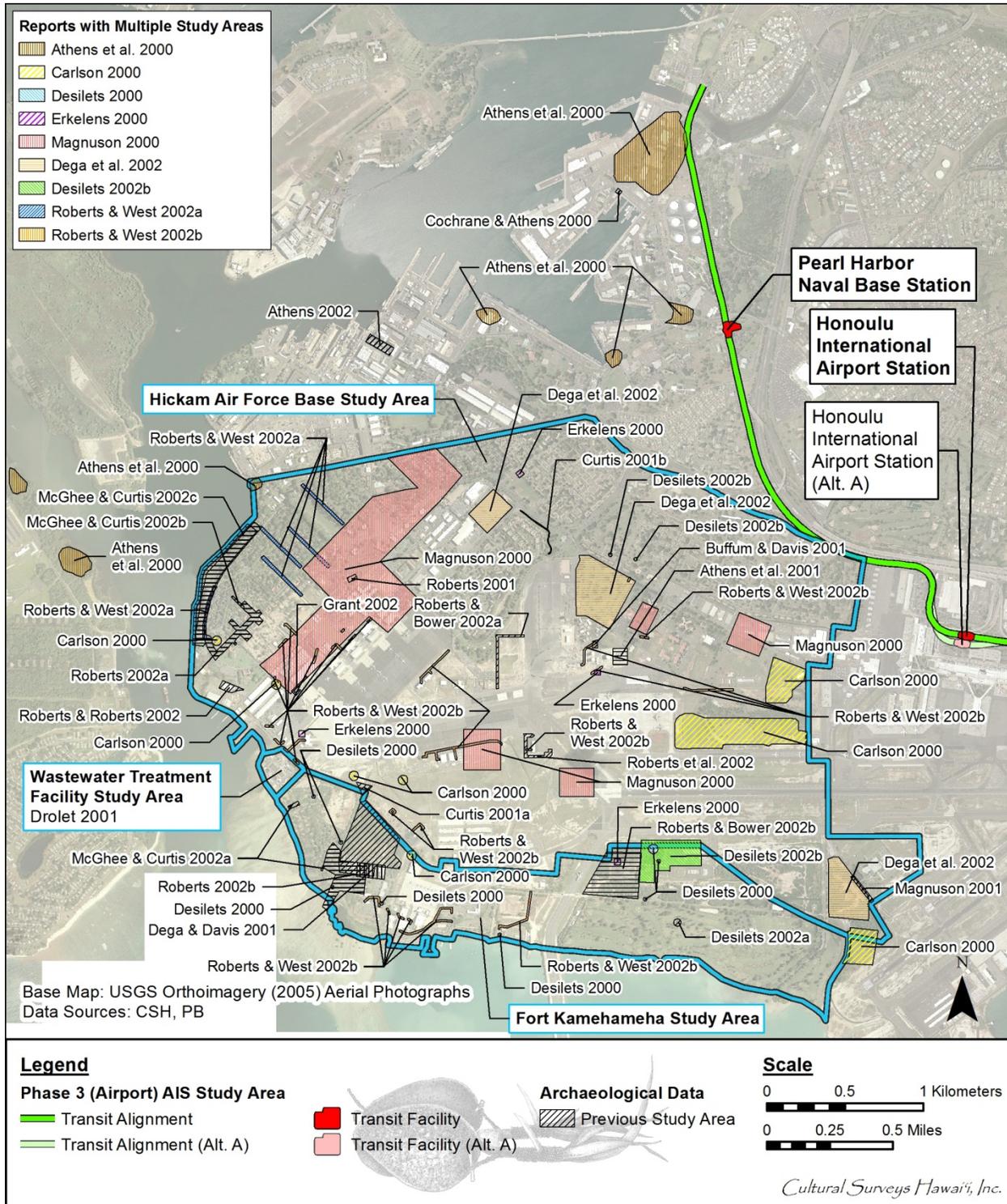


Figure 6. Previous archaeological studies (2000 to 2002) at Joint Base Pearl Harbor-Hickam (coastal Hālawā and Moanalua Ahupua‘a)

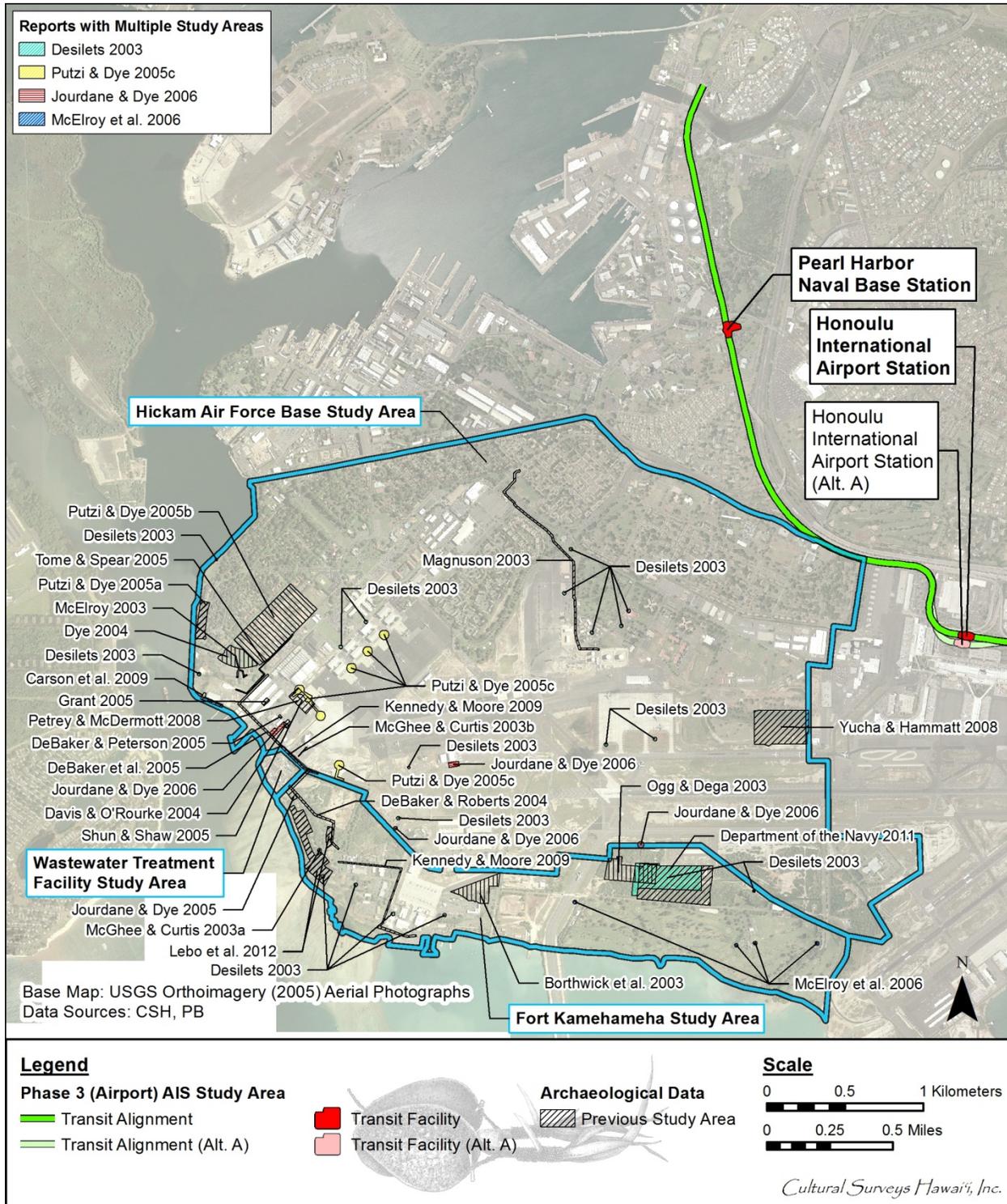


Figure 7. Previous archaeological studies (post-2002) at Joint Base Pearl Harbor-Hickam (coastal Hālawā and Moanalua Ahupua‘a)

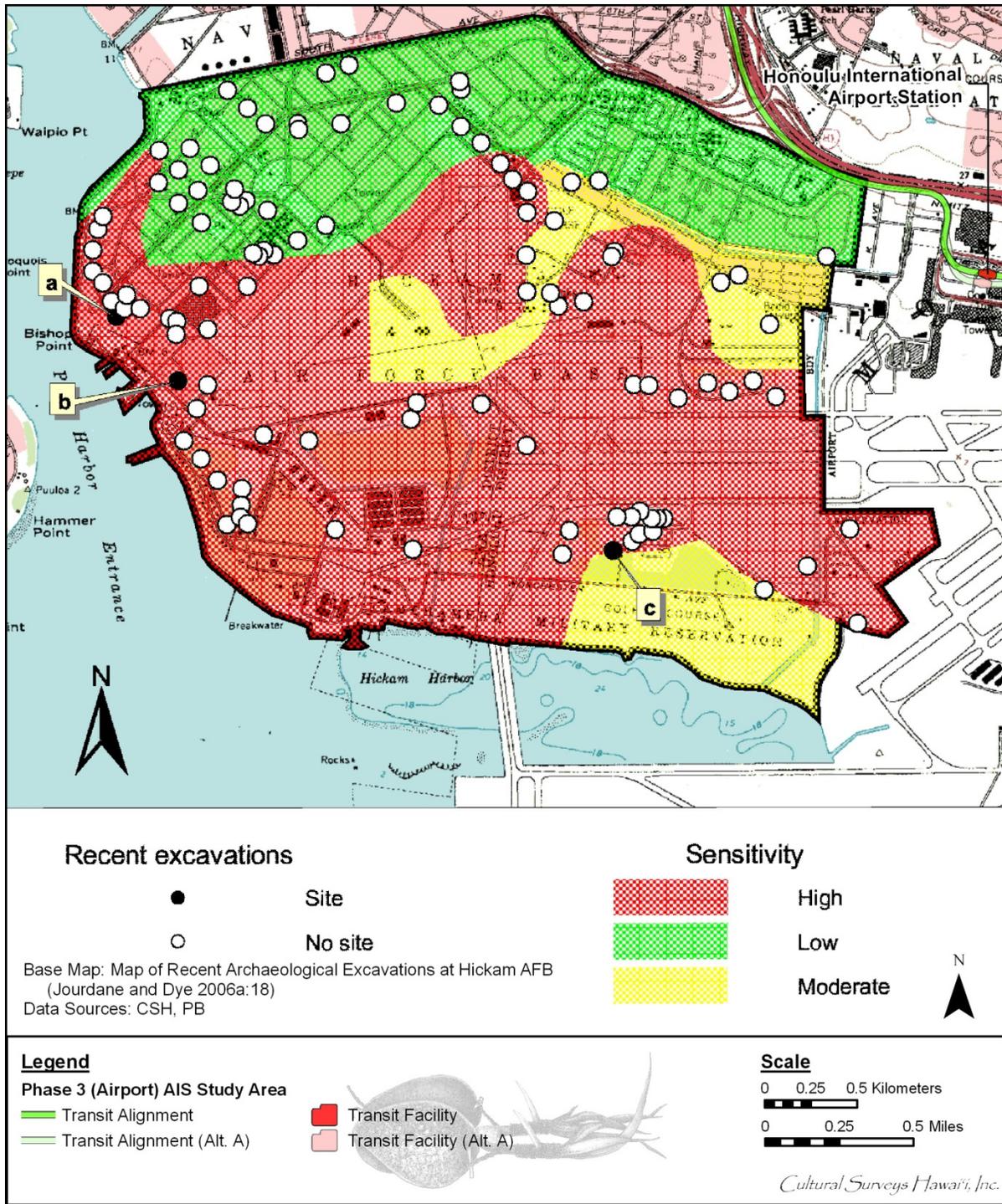


Figure 8. Map showing the only three areas (labeled a, b, and c) exhibiting evidence of archaeological sites based on over 100 archaeological investigations at Hickam AFB.

significant subsurface deposits within inland Hickam, which appears to be rather low.

Archaeological Studies in Moanalua Ahupua‘a

Archaeological studies in Moanalua Ahupua‘a include the seminal work conducted by J. Gilbert McAllister in the 1930s and a small number of studies dating between 1970 and 2010. These studies primarily yielded information about pre-and/or early post-Contact traditional Hawaiian activities and land use within the Ahupua‘a.

McAllister's 1930 Bishop Museum Study

J. Gilbert McAllister recorded 19 "sites" (designated consecutively from Site 76 to Site 93, also including a Site 77-A) within the *ahupua'a*. He provided their approximate locations (Figure 9 and Figure 10) and described their conditions at the time of his survey; the locations of Sites 92 and 93 are not shown in McAllister's work and are therefore not represented in the figures. These properties include several features noted in the previous section of this report; note: quotation marks within McAllister's accounts are further indented.

Site 76. Oven (*imu*)

Moanalua Gardens (McAllister 1933:91-92) [McAllister places this about 900 m *mauka* of the Airport Section 3 corridor, see Figure 9].

A story is told by Namakahelu relating to an old *imu* which was once in the Moanalua gardens at the present site of the Damon "Chinese House":

When Kamahalolaniālii was the chief of Moanalua, there lived in his district a very handsome youth called Keliikanakaole. Because of his graceful and stately bearing and his fine physique, the women were very fond of him and coveted his favors. This made Kamahalolaniālii exceedingly jealous and, as time went on and the youth became more popular, the chief determined to rid himself of a mere commoner who excelled him in so many qualities and even dimmed his prestige among the ladies. For months Kamahalolaniālii had the youth closely watched to discover some misdemeanor however slight, as an excuse for putting him to death. But the youth's conduct was impeccable. In exasperation Kamahalolaniālii determined upon some other action, deciding upon some trial at which Keliikanakaole would be certain to fail. He went to Paeli, a man of superior mental ability who lived up in the mountains of Moanalua Valley, and asked for a riddle which would be very difficult to answer. He did not tell him for what purpose he would use this conundrum. Shortly after, Kamahalolaniālii called a gathering of men to which Keliikanakaole was invited. His purpose, of course, was to present his riddle, which he ostensibly wanted everyone to try, offering a reward to any man who could find the answer within a certain number of months. He commanded of Keliikanakaole that he

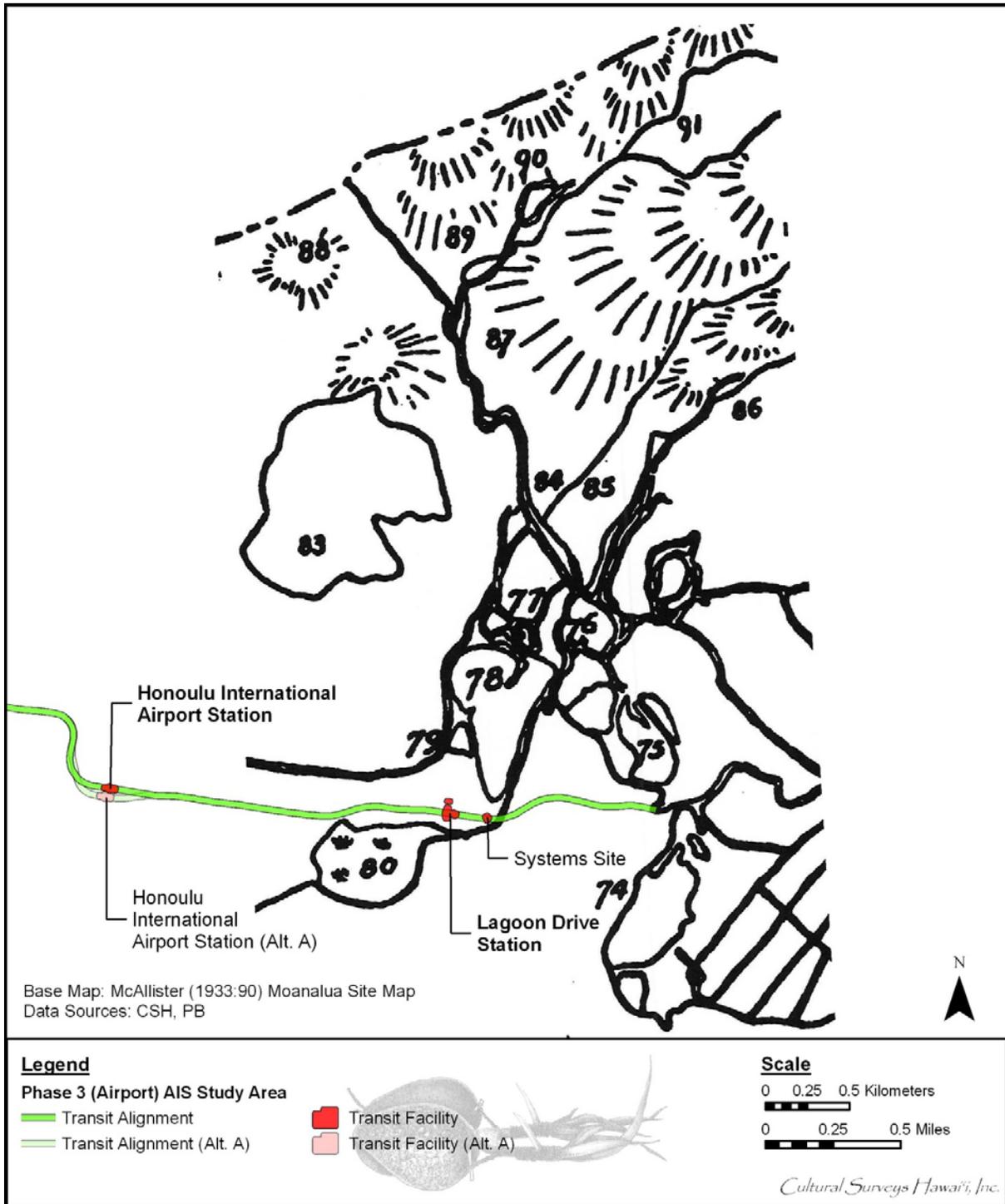


Figure 9. Overlay of Airport Section 3 project corridor on McAllister’s (1933:90) Map of Moanalua Valley showing location of (his) Sites 74-80 and 83-91 (note that Site 77 is listed in McAllister 1933:92 as “Poki, an apparition”; therefore, the Site 77 in the figure most likely corresponds to Site 77-A, Wakaina Heiau)

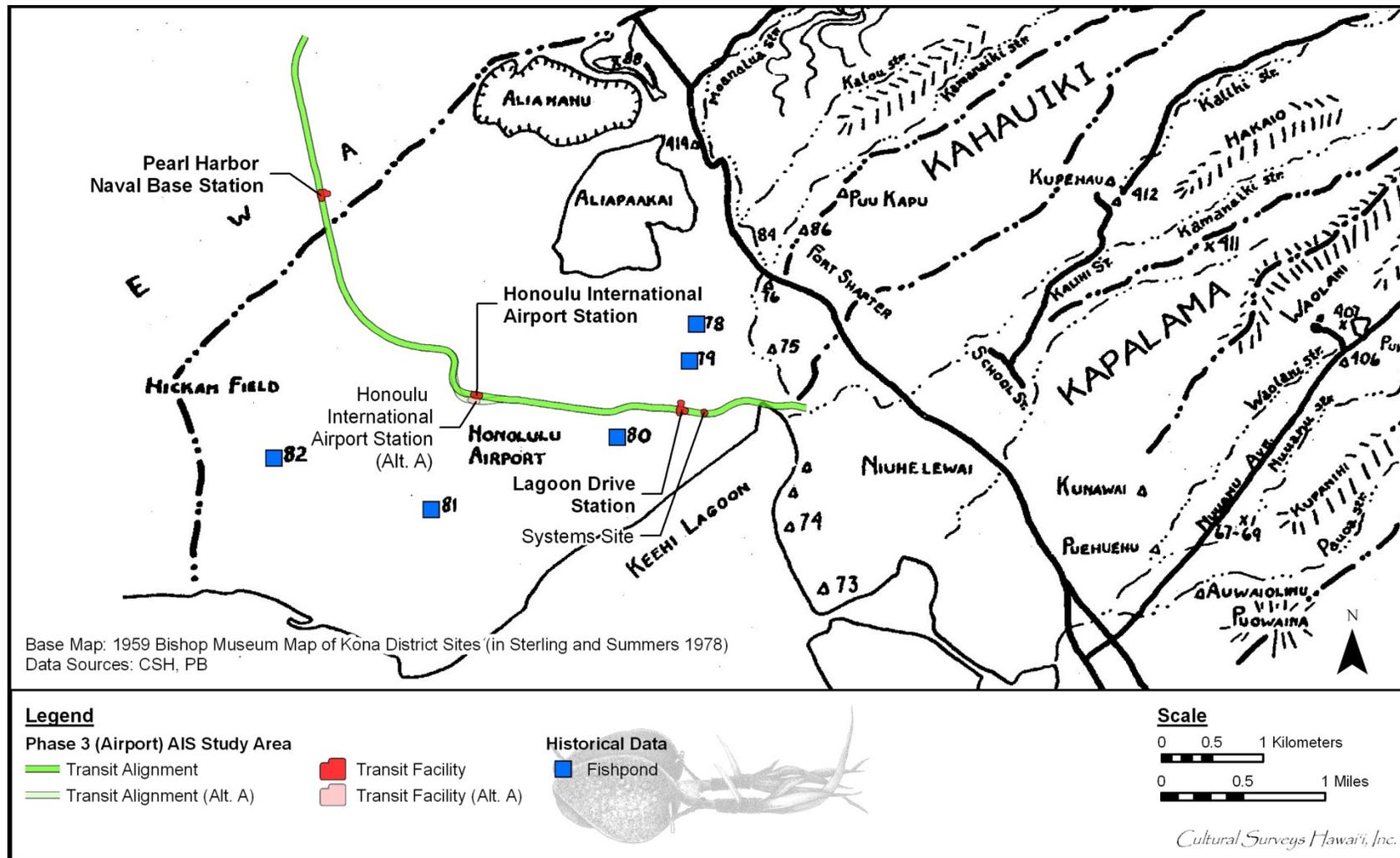


Figure 10. 1959 Bishop Museum site location map (adapted from Sterling and Summers) showing the Māpunapuna Fishpond (Site 78), Awaawaloa Fishpond (Site 79), Kaloaloo Fishpond (Site 80), Ka‘ihikapu Fishpond (Site 81), and the Lelepaua Fishpond (Site 82)

discover the answer, or forfeit his life, which would be taken by roasting in a red-hot *imu*. If he did learn the answer, then the chief would forfeit his own life. He then began to recite the riddle:

<i>Ku au ekahi helu ana oukou</i>	First month you count one
<i>Ku au elua helu ana oukou</i>	Second month you count two
<i>Ku au ekolu helu ana oukou</i>	Third month you count three
<i>Ku au eha helu ana oukou</i>	Fourth month you count four
<i>Ku au elima helu ana oukou</i>	Fifth month you count five
<i>Ku au eono helu ana oukou</i>	Sixth month you count six
<i>Ku au ehiku helu ana oukou</i>	Seventh month you count seven
<i>Ku au ewalu helu ana o Ukou</i>	Eighth month you count eight
<i>Ku au eiwa helu ana oukou</i>	Ninth month you count nine
<i>Puni ka umi.</i>	Tenth month is the end.
<i>Papahi ke aloha i kuu manawa,</i>	Then love flutters at my temple,
<i>Kiei e ka la o lala e.</i>	As the sun peeps there below.
<i>A Hala a'e na la e ino</i>	After the hard days are past
<i>Manini au la a holo.</i>	It grows and runs.

When Keliikanakaole heard this he became very sad, for the riddle appeared very difficult to him. He began inquiring of everyone he met for the answer. From Moanalua he went all around O'ahu, but no one could give him a suggestion. When the allotted time was nearly at an end he returned to Moanalua. He was so disconsolate that he cared for neither food nor sleep and only brooded upon the fate that was in store for him. The people felt sorry for him and resented the arbitrary manner in which the chief was attempting to dispose of him. His plight was learned by Paeli, and he sent for the young man to come and eat with him. Paeli felt that the chief had deceived him and he determined to save Keliikanakaole's life. The youth came but would not eat of the tempting food prepared. Why eat now when on the morrow he must die? Then Paeli told him to eat and drink and when they had finished, he would give him the answer to the riddle. Keliikanakaole was overjoyed and could hardly wait till the end of his meal for the answer which he had sought for so many months. After telling him, Paeli also warned him not to go near Kamahalolani, for he did not think that

the chief could be trusted. When the time came for the answer to be delivered, Keliikanakaole climbed to a near-by hill in view of the chief and people who had gathered. Kamahalolaniālii was so certain of his success that the *imu* had been prepared and was red-hot. From his distance on the hill Keliikanakaole went through the movements of the riddle. As he recited the first ten lines he remained perfectly still, which represented a life from conception to the point of birth. He then lay on the ground and as he said, "Then love flutters at my temple, as the sun peeps there below" he writhed in agony to indicate labor pains. While reciting "After the hard days are past," he imitated movements of nursing and caring for a child. During the last line he expanded and stretched himself and feigned running.

The whole performance indicated the development of a life from pregnancy to youth. At the conclusion, Kamahalolaniālii was greatly enraged, but he called to Keliikanakaole to come and receive his reward. But Paeli had warned the young man to flee if the chief called him. Immediately Kamahalolaniālii commanded his men to follow and seize Keliikanakaole and put him to death. The young man ran to the shore where the chief's own fisherman, knowing of Keliikanakaole's predicament and sympathizing with him, hid him in a cave. When the warriors who were following the youth came to the old fisherman and asked if he had seen a young man who was running away, he replied that no one had come his way. Keliikanakaole remained in hiding until the death of Kamahalolaniālii some time afterward.

Site 77. Poki, an apparition

Poki, an apparition not peculiar to Moanalua but which has been seen in many places on the island. The most vivid description, however, was from a European living in Moanalua. [McAllister's (1933:92). "Site 77" appears to designate "an apparition not peculiar to Moanalua."]

He saw Poki and, as he told me of the vision, I had not the slightest doubt but that he had seen it. It happened many years ago as he was returning from Honolulu on horseback. The moon had just risen, flooding the tops of ridges with light, which emphasized the blackness of valleys. He had just passed Fort Shafter and was beginning the descent into Moanalua when, with a sudden jerk, his horse stopped and stood trembling. In the distance arose the wailing of dogs. Glancing about, the rider saw coming off the ridge to his right a pale form. As he watched, it left the ridge and passed over the dark valley. It was a shapeless, white form, a mist, convulsed with movement, but slowly and stately moving over the invisible treetops, clear and distinct against the black silhouette of the Koolau Range. As the apparition passed over the settlement,

there preceded it the whimpering and wailing dogs, but in its path there followed a deathly stillness. Even after it was lost to sight, its presence could be followed by the ever attendant wailing. The rider, being an educated and intelligent gentleman, gives the following explanation at which he shrugs his shoulders and smiles. There is much loose dirt on the eastern ridge above Moanalua. The apparition may have been a small whirlwind illuminated by the rising moon. When asked, Namakaheleu rebuked me with, "Poki was seen many places on the island."

Site 77-A. Wakaina Heiau

Wakaina Heiau on the land of Umimua, Moanalua. (McAllister 1933:93) [McAllister probably intended to locate this *heiau* on his Moanalua site location map as his Site 77, see Figure 9; about 1 km *mauka* of the Airport Section 3 project corridor].

Site 78. Mapunapuna fishpond

Mapunapuna fishpond Moanalua (McAllister 1933:93) [McAllister places this about 600 m *mauka* of the Airport Section 3 project corridor, see Figure 9].

The pond is 40 acres in area with a wall 1600 feet long. The wall, 10 feet wide, 1 foot above the water on the inside, and 2.5 feet high outside, is almost straight, enclosing a small inlet. There are now four outlets (*makaha*). The wall is principally of coral. Adjoining it on the landward side and near the Damons' house is a small pond said to have been called Keawamalia. It is surrounded by earth embankments.

Site 79. Awaawaloa fishpond

Awaawaloa fishpond, Moanalua (McAllister 1933:93) [McAllister places this about 400 m *mauka* of the Airport Section 3 project corridor, see Figure 9].

A small 8.8-acre pond with a coral rock wall 900 feet long. There are now two outlets (*makaha*). The wall is broken. The adjoining pond, known as Ahua, is said to be recent.

Site 80. Kaloalua fishpond

Kaloalua fishpond, Moanalua (McAllister 1933:93) [McAllister places this about 200 m *makai* of the Airport Section 3 project corridor, see Figure 9].

The pond is 36 acres in area with a semicircular wall 2700 feet long. The walls are of coral, 6 feet wide and 3 feet high. There are three outlets (*makaha*).

Site 81. Kaihikapu fishpond

Kaihikapu fishpond, Moanalua. (McAllister 1933:93) [McAllister places this about 1 km *makai* of the Airport Section 3 project corridor, see Figure 10].

This pond, which is 258 acres in area, with a coral wall 4500 feet in length, 3 to 8 feet in width, and 3 feet high, and three outlets (*makaha*), was built by Kaihikapu-a-Manuia. In the vicinity there were apparently salt pans, for when Captain Brown ran short of salt, he was directed "to the saltponds at Kaihikapu" by Kalanikupule. While the crew was obtaining salt, Captains Brown and Gardner were killed by a party of Hawaiians under Kalanikupule and Kamohomoho.

Site 82. Lelepaua fishpond

Lelepaua, a large inland fishpond, in Moanalua. (McAllister 1933:93) [McAllister places this about 1.5 km *makai* of the Airport Section 3 project corridor, see Figure 10].

It is "332 acres, mostly filled," according to Cobb. The walls were coral and earth embankment, 10 feet or more wide. The pond was built by Kaihikapu-a-Manuia, and according to Dibble was the place at which Captain Brown obtained salt.

Site 83. Aliapaakai (Salt Lake)

Aliapaakai (Salt Lake), Moanalua (McAllister 1933:93-94) [about 1,400 m *mauka* of the Airport Section 3 project corridor, see Figure 9].

Fornander (1917) describes this as the place at which Pele once thought to make her home:

Upon their arrival at O'ahu, Pele and Hiiaka took up their abode in Kealiapaakai, at Moanalua" where they dug down into the ground and made a home. On coming from Kauai they brought some red dirt and some salt with them and deposited these things in their new home. Because of this fact these places were given the names of Kealiapaakai and Kealiamanu. Upon finding that the place was too shallow they went to settle at Leahi.

In Kalawela's lamentation for Kahahana, Thrum makes the annotation: "Alia, a salt pond, was the place where the souls of the dead were supposed to descend to the nether world." This may be confused with 'the place mentioned by Kamakau near Kapukaki. (See Sites 88, 186):

According to Jarves [1872:7] it was thought to have a hole in the center "... five to six fathoms in circumference which, as no bottom has been found to it, is supposed to connect with the ocean. Through this the lake is slightly affected by

the tides." Wilkes reported, however, that "No fathomless hole was to be found, and no greater depth than eighteen inches."

In the vicinity of Aliapaakai, Kotzebue [1821:343] observed "several tapa plantations; a tree, of the bark of which the cloth of this country is manufactured."

Site 84. Namakalele, "Flying Eyes"

Namakalele, "Flying Eyes," a small land section in Moanalua (McAllister 1933:94-95) [McAllister places this about 1,800 m *mauka* of the Airport Section 3 project corridor, see Figure 10].

Here Keawe and his wife Keanahaki lived happily many years ago. Daily he went to the mountains cutting wood, gathering plants, and doing other chores. As soon as he could he hurried home and then out to the sea to fish. His whole day was filled in and he had little time for his family, which was steadily increasing. This routine life continued until after the birth of his sixth child. Then one day his wife said, "While you go to the mountains, I will fish." Keawe agreed and then went to the mountains as usual, and Keanahaki started for the sea. On her way she felt peculiar and realized that another self was coming to her. Halfway down she stopped and chanted, asking that the lower portion of her body be made stationary while the upper portion went to the sea to fish. She then continued to the shore, where she stood and again chanted. Telling her right eye to fly to the sea and bring certain fish, then to her left eye to fly in another direction and catch other fish. After some time, she called to her right eye to return. It fluttered back, bringing many fish. Later the left eye returned bringing more fish. These she divided into portions for her husband, children, and herself. Then she not only ate her share, but continued eating until only one fish remained. This she took home. When her husband saw this small catch he naturally was disappointed. "Was this all you were able to catch?" he inquired of her. "Yes," she 'replied. For many consecutive times Keanahaki returned with only one fish, which greatly dissatisfied Keawe. He reasoned that a person could not continually have such bad luck. Then he learned from a friend that his wife was no normal being. She had unusual 'powers, he was told. As she stood by the shore, her eyes out at sea caught the fish. If Keawe would gather leaves from the *ipuawaawa* vine, he would be able to catch and preserve the eyes of his wife, should he follow and watch her when she went fishing. So one day Keawe pretended to go to the mountains as usual, but he waited and watched for his wife to go fishing. When she did, he followed her. As soon as Keanahaki got to the shore she again chanted for

her right eye to fly over the sea and fish for certain fish and for her left eye to fly in another direction and bring in other fish. Keawe watching her was astounded. He came very close to his wife, but she could not see him, for her eyes were gone. When she called to her eyes to return he caught them as they flew back with the fish. Carefully he wrapped each eye in some leaves of the *ipuawaawa*. Then he gathered the fish and went home, while his wife stood on the shore calling for her eyes and wondering why they did not return. When Keawe reached his grass hut, his children gathered round and were proud of the catch father had brought in. He left them admiring the fish and went to the hut to hide the eyes. He did not know that the smallest child, the sixth, had noticed the small bundle and followed and watched his father place it on a high ledge. In the meantime Keanahaki, waiting on the beach for her eyes to return, became suspicious of what had occurred. Stumbling and groping, she slowly found her way home. There her six children gathered around. She asked them if their father had returned "Did he bring anything with him?" Yes, they replied, "a large mess of fish." "Didn't he have anything else? A small bundle that he didn't open?" No five of them had seen nothing more; but the smallest told his mother that he had seen his father with a small bundle wrapped in leaves and watched him place it on a high ledge. "Show me where," the mother said, and the youngster led her to the place. After groping about Keanahaki found and restored her eyes to their sockets. That is why this place is known as Namakalele.

Site 85. Kaulua or Kauwalua "House of Bones"

Kaulua or Kauwalua "House of Bones (McAllister 1933:95-96) [McAllister places this about 1,800 m *mauka* of the Airport Section 3 project corridor, see Figure 9].

Kaulua or Kauwalua in Moanalua has received attention from a number of writers, probably because of the unusual and bizarre nature of a "house of bones" which was 'located at Lapakea in Moanalua Valley. It is a small land on the plateau between Puukapu and Puu o Ma'ō, Inland of the highway. According to my informant, Namakahelu:

Kaulua was constructed by Kalalakoā (Kalaikoa) when he was chief of Moanalua. He was in the habit of stationing himself at a prominent place along the roadway, probably not far from Puukapu, and waylaying travelers. After overpowering them in hand-to hand combat, he would kill them and remove the long bones with which he was constructing a fence around his grass hut. This continued for many years, and the people were in great fear of

him and would go many miles out of their way, frequently traveling by canoe, rather than pass his house. When this fence had almost been completed except for one more set of bones, there arose a warrior, by name Kaluailalawa. He gathered together a large group of people and expressed his intention of attempting to kill Kalalakoā. The people went with him to the foot of Puukapu where they remained while he climbed to the top of the hill where Kalalakoā was watching. As Kaluailalawa neared the chief, he told him that he had come to fight. "It means death," Kalalakoā replied. "Then let me rest and get my breath" said Kaluailalawa, to which the other agreed. After an interval, Kalalakoā again warned the warrior that the outcome meant death, but Kaluailalawa lunged forward and tripped the chief toppling him over and throwing himself upon him and killing him. The people who were watching below sent up a mighty cheer.

The portion of the account dealing with Kaluailalawa as given by Namakahelu differs from all other records. Fornander writes as follows:

Fearfully did Kahekili avenge the death of Hueu on the revolted O'ahu chiefs....It is related that one of the Maui chiefs, named Kalaikoā, caused the bones of the slain to be scrapped and cleaned, and that the quantity collected was so great that he built a house for himself, the walls of which were laid up entirely of the skeletons of the slain. The skulls of Elani, Konamanu, and Kalakioonui adorned the portals of this horrible house. The house was called "Kauwalua," and was situated at Lapakea in Moanalua, as one passes by the old upper road to Ewa. The site is still pointed out but the bones have received burial.

The following account was obtained by Stokes:

Kalaikoā was chief of the district, lived right by the old highway where it crossed the cliff, and occupied himself by waylaying the travelers and killing them for the purpose of getting their bones to build a fence around his house. He was secure from reprisals, as he had a strong body of soldiers at his call. After killing his victims he extracted the long arm and leg bones and planted them upright in the ground to make a low palisade. Retribution overtook the bloodthirsty chief, for when he had the fence completed, except for the bones of one man, he died, and his bones were used to fill the gap. -

[The fence was] composed of the leg and arm bones placed erect in the ground as close together as the fingers when relaxed. They were not tied. There was a single line of fence, making a square

enclosure, one side of which was 50 feet (paced). In this enclosure was a large stone platform on which the grass house had stood, but there was no house standing when he [Mr. Stokes' informant] first saw the place. Well outside the enclosure, 60 feet to the south, was a small house, built entirely of stone, into which the remaining portions of the murdered bodies were put. He had seen the house there himself. The house was not an *imu* but of proper house shape, large enough for the body of a man. The road passed between this and the fence. This house the old man spoke of as a "heiau" dedicated to the war god Kaili. It had walls three feet high and four feet wide, with a pitched roof of stone and a door facing the bone fence. Outside the door was a stone pavement, where the priests gathered.

Corney visited this site in 1818 on his way from Honolulu to Pearl Harbor:

In my tour with Mr. Manning (Manini), we visited the ruin of a large stone house, or fort, which had formerly belonged to a great chief; it had a double fence of human bones around it; these were the bones of his enemies killed in the war before the islands were visited by Europeans. The bones of this great chief are said to be still in the house; the natives are afraid to go near it; preferring to go a round of five or six miles to passing it.

Nothing at present remains of this site, though the possible burial place of the bones from the fence is still in evidence (See Site 88).

Site 86. Probable Heiau

Probable Heiau, Moanalua district (McAllister 1933:96) [McAllister places this about 2 km *mauka* of the Airport Section 3 project corridor, see Figure 9].

Located on the side of the ridge facing the stream in the valley, a northwest direction, is a small heiau with practically an open terrace, for there is only one wall 3-5 feet high and wide which delimits a portion of the southwest side. The terrace is almost entirely rock-paved, and toward the center of the back is an area which appears as if it might have been the foundation for some structure with a slight terrace surrounding it. The slope in back is rather steep, with several convenient shelters which bear evidence in the form of bits of mats and broken gourds of having been frequented and probably used as habitations.

Site 87. Burial cave

Burial cave, Moanalua Valley (McAllister 1933:96) [McAllister places this about 2.5 km *mauka* of the Airport Section 3 project corridor, see Figure 9].

On the cliff northeast of the highway just before turning into the road which leads to the golf club is a burial cave. The mouth was at one time closed with a facing of stones, but has since been opened and the cave looted, the fragmentary remains of skeletons being scattered within. The remains of two coffins near the entrance indicate post-European use of the site. A half-dozen people can comfortably seat themselves within the chamber. No old burials were evident.

Site 88. Terrace facings

Terrace facings, Moanalua Valley (McAllister 1933:97-98) [McAllister places this about 3 km *mauka* of the Airport Section 3 project corridor, see Figure 9].

On the north side of the rather level top of Puukapu, or Kapukaki, are a great many stones which appear to have been the facing of a terrace 115 feet long and probably 30 to 40 feet wide. This stone facing on the north is now greatly disturbed but the remains are sufficient to indicate its former regularity. It is 10 feet wide and 5 feet high, with a number of square depressions side by side, not more than 1 to 2 feet deep, and averaging 5 feet across. South of the terrace is the rather precipitous slope into Aliamanu, a crater-like depression with Aliapaakai (Salt Lake) adjoining farther south. The survey triangulation station is just west of the terrace. The structure is so old that Mr. Douglas Damon was unable to discover the significance of the site from the Hawaiians. Only one of those of whom I inquired had knowledge of the place and she, Namakahelu, told me that here the bones which had formed the fence of Kaulua (Site 85) were buried.

Macrae undoubtedly visited this site May 18, 1825. He makes the following notation:

By 4 P. M. we gained the summit of a high hill thickly covered with tufts of long grass. It lies within three miles of Hanarura. There is a burying ground of the natives at the top which was formerly where the chiefs of high rank had a morai [heiau]. At the bottom toward the sea, there is a circular salt pond [Aliapaakai], nearly two miles in circumference, surrounded by low conical hills.”

The location and features of the site lead me to believe it was a heiau. Namakahelu knows it as a burying ground. Macrae describes it as an old heiau used as a place of burial, which may explain the disturbed condition of the stones. When the bones were removed from Kaulua (Site 85) this old heiau terrace was probably thought to be a suitable and logical place for burial.

Kamakau speaks of "The burial mound of Aliamanu, which may possibly be this same site. In the vicinity of Kapukaki was an entrance to the nether world [Site 186]."

Another reference to this same site was made by Lyons:

"One (*ahupua'a*) near Honolulu may still be seen on the north external slope of the crater of Salt Lake. This, besides marking the boundary of Halawa and Moanalua, marked also the limits of the Kona and 'Ewa districts."

Site 89. Pu'u o ma'o

Pu'u o ma'o stone with figures in relief (McAllister 1933:98) [McAllister places this location about 3 km *mauka* of the Airport Section 3 project corridor, see Figure 9].

Puu o ma'o, the cliff forming the eastern side of Moanalua Valley. This site on Puu o ma'o is the approximate place where a stone with figures in relief was found several years ago, at a depth of several feet. The stone is now in the Damon gardens before the house occupied by Kamehameha IV and Kamehameha V. The figures have been described in great detail by Stokes:

The stone is an irregularly shaped piece of rather finely cellular basalt, measuring 31 inches long, 21 wide and 17.5 thick, the face of which has been carefully worn down by hammering ... leaving the representations of two human figures in relief ... The measurement from head to foot [of the figure on the right] is 11.8 inches ... The hand has only three fingers.

The height of the relief of the figure on the right, which is the most distinct, averages about 1 inch. The other figure measures 10.2 inches from head to foot. It is believed that the figures are of Hawaiian conception, but they resemble neither the carved wooden images nor the petroglyphs. They are unique in presenting a profile view, in the squatting position of the figures, and in the detail of the limbs.

Site 90. Paliuli Heiau

Paliuli Heiau, on the north side of Moanalua Valley about 1 mile above Salt Lake (McAllister 1933:98-99) [McAllister places this about 3.2 km *mauka* of the Airport Section 3 project corridor, see Figure 9].

Only two portions of the heiau are now discernible. One is a small elevated terrace which is divided by a line of flat stones placed upright on their long sides. The back of this area was similarly marked off. No trace of stepping can now be found on the front of the long slope. Some 30 feet back and above this terrace is a

bluff 10 to 20 feet high with a cave at its foot. This was formerly used as a place of burial, according to Douglas Damon, but as the contents were gradually being carried away and the bodies subject to the disrespect of curio hunters, the remains were burned some years ago. A wall begins near the upper terrace and continues along the side of the hill for some distance. It not only has the appearance of recent construction, but does not seem to form a part of the heiau.

The second portion is a lower terrace; a part of the front side still shows evidence of having been evenly faced and stepped. A portion of a tibia was seen imbedded between the rocks about one foot deep. Upon further examination, a crushed skull which was wedged between the rocks 1.5 feet deep was seen a few feet from the tibia. Both appear to have been placed at the time or before the building of the terrace. It is possible that this terrace suggested a good burial ground to the Hawaiian after the heiau fell into disuse in missionary times, as in Sites 293, 329, 371. If this happened, a large number of stones were removed and then replaced so as to appear undisturbed.

There were probably other features of the site, for many stones had been removed before Mr. Damon could stop a workman whom he found dislodging stones on the heiau. These stones were not replaced but were evenly piled in circles a few hundred feet below the site.

Site 91. Koalua Heiau

Koalua Heiau, Honolulu side of Moanalua Valley, about halfway up the Side of the ridge (McAllister 1933:99). [McAllister places this about 3.6 km *mauka* of the Airport Section 3 project corridor, see Figure 9]

The front of the terrace is visible from the road in the valley. The entire structure is about 93 feet front by 50 feet wide, built of the rather rough lava rocks found in the vicinity. It appears to have been but a single main terrace, with step-like ledging in front, two smaller areas on either side, and one or possibly two small terraces, which probably formed the oracle tower site, in the back-center against the steep slope. The large stone just north of the main terrace may or may not have had any connection, though the stone paving which surrounded it, except in front, would indicate that it had a function. The heiau was undoubtedly approached by an incline which zigzagged up the front. The slope back of the terrace is steep and in places precipitous.

Site 92. Waiola pool

Waiola pool, Halawa side of Moanalua Valley above the mountain home of Mr. Douglas Damon (McAllister 1933:99). [The location of this site is not known]

The pool is said to have medicinal qualities. The old Hawaiians came here to bathe when they were recuperating from illness.

Site 93. Pōhaku ka lua hine Petroglyph Bolder

Toward the head of Moanalua Valley by the side of the stream on the land known as Kahalelauki is a stone 11 feet by 8.7 feet by 3 feet high, which is known by the name of Pohaku ka lua hine (McAllister 1933:100-101). [The location of this site is not known.] The current tradition regarding the stone follows:

During the consecration of a heiau in Moanalua Valley, a small child cried. Now, noise made by man or animal during such tapu periods meant instant death for the offender. The grandmother, desiring to protect the child, ran with it up the valley and hid behind this rock. Men were sent out in search, but were unable to find them. After the elapse of the tapu period of a few days, the woman and the child were safe and returned to their home. Namakahelu, the oldest living kamaaina of Moanalua Valley, is of the opinion that this is a recent story. The stone, she says, was sacred, an akua, with at least two forms of which she knows. As a stone it was known as Laupo, and as a bird it was known as Laea. Offerings were placed before it. On the top and sides were a number of petroglyphs, probably many more formerly than now, for there are a number of indistinct depressions which may or may not be artificial. Portions of the konane board which was on a flat portion of the upper side, have been badly weathered.

The *konane* board measures 22 by 27 inches, with 90 holes, 9 rows on the short side and 10 on the other. Aside from the board there are 22 carvings that are sufficiently distinct to form definite patterns. Nearly all are human figures. Aside from those shown, there are many depressions scarring the face of the rock which are not definitely limited and may be natural. Some were undoubtedly artificial, but continued weathering has obliterated distinct features ...

In summary, the 19 "sites" McAllister recorded at Moanalua (Sites 76-93 and 77A) consist of:

- five fishponds (named Mapunapuna, Site 78; Awaawaloa, Site 79; Kaloalua, Site 80; Kaihikapu, Site 81; and Lelepaua, Site 82);
- five storied places (including a legendary *imu*, Site 76; Āliapa‘akai or Salt Lake, Site 83; a land section associated with the "Flying Eyes," Site 84; the "House of Bones," Site 85; and a medicinal pool, Site 92);
- an apparition of no specific provenience (Site 77);
- a burial cave (Site 87);
- an area of terraces (Site 88);

- two rock carving sites (Site 89, the location of an unusual relief carving and Site 93, the famous Pōhaku ka luahine petroglyph boulder of Moanalua Valley); and
- four *heiau* – (Wakaina, Site 77-A; Paliuli, Site 90; Koalua, Site 91; and an unnamed “probable” *heiau*; Site 86).

By the 1970s, all traces of the named *heiau* had been lost; T. Stell Newman writes:

A search was made in 1970 for Paliuli, Koalua, and Umi Mua (or Wakaina) *heiau* by B. Jean Martin and myself as part of the Statewide Inventory effort. Working from a copy of the original McAllister base map (not the simple drawing in the published volume), we determined McAllister's locations for Paliuli and Koalua *heiau* and made a field check at these two locations. The location of Paliuli is now covered by residences and no trace of the *heiau* remains. Although the major part of a day was spent searching the hillside where McAllister plotted Koalua *heiau*, no trace of it was found. It was probably destroyed by the old, now abandoned, road that winds up the mountain side. Ms. Martin and I also thoroughly checked the area where the *heiau* at Umi Mua was said to have been located after being shown the spot by Frances Damon Holt - without finding a trace of it. (Newman et al. 1973: 23)

None of the cultural resources recorded by McAllister are in the immediate vicinity of the Airport Section 3 corridor (see Figure 9). Instead, they are generally situated at lower elevations along the coastal plain and along the flat bottoms of the two major valleys – Kamana-nui and Kamana-iki – of the *ahupua'a*.

However, one property – a burial cave (Site 87) – is located to the south of the junction of Moanalua Road and Ala Aolani Road, near the base of Tripler Ridge:

On the cliff northeast of the highway just before turning into the road which leads to the golf club is a burial cave. The mouth was at one time closed with a facing of stones, but has since been opened and the cave looted, the fragmentary remains of skeletons being scattered within. The remains of two coffins near the entrance indicate post-European use of the site. A half-dozen people can comfortably seat themselves within the chamber. No old burials were evident. (McAllister 1933: 96)

Studies Conducted Between 1970 and 1994

Eight studies conducted more recently, between 1970 and 1994, provide information about pre-and/or early post-Contact traditional Hawaiian land use relevant to the Airport Section 3 study area (Figure 11). They are summarized in Table 4 and described in chronological order below. These studies include archaeological reconnaissance, archaeological inventory survey, and archaeological monitoring, as well as paleo-environmental coring, and archival and cultural resources studies.

Table 4. Other Archaeological Studies in Moanalua Ahupua'a excluding Joint Base Pearl Harbor-Hickam and Fort Kamehameha (see Table 3)

Source	Type of Investigation	General Location	Findings
Ayres 1971	Archaeological Inventory Survey	Kamana-Nui Valley	Recorded 57 archaeological cultural resources including terraces, a pre-Christian shrine, house platforms, and two petroglyph rocks
Rosendahl 1977	Archaeological Reconnaissance	Tripler Army Medical Center	Recorded two historical properties, Moanalua Complex (SIHP # 50-80-13-9504), Moanalua Terraces (SIHP # 50-80-13-9505)
Barrera 1979	Archaeological Reconnaissance	Salt Lake District Park	Possibly relocated a previously identified rockshelter indicated on a SHPD map (# 50-80-13-500). Survey incomplete due to difficult terrain
Connolly 1980	Archaeological Reconnaissance	Salt Lake District Park	Identified one overhang shelter with human burial remnants (# 50-80-13-3992)
Davis and Kaschko 1980	Archaeological Investigation Proposal	Moanalua Road and Ala Aolani Road	Described possible traditional Hawaiian functions of burial cave, Site 87; Paul Cleghorn (personal communication July 2013) relates that they ran at least one fieldschool
Hammatt and Chiogiogi 1994	Archaeological Assessment	Tripler Army Medical Center	Previously-identified SIHP # 50-80-13-9504 and SIHP # 50-80-13-9505 were relocated
Hurst and Williams 1994	Archaeological Surface Survey	Tripler Army Medical Center	No significant finds
Walden and Collins 2011	Archaeological Assessment	H-1 and Nimitz Highway/ Kamehameha Hwy.	No excavation attempted; no historic properties found

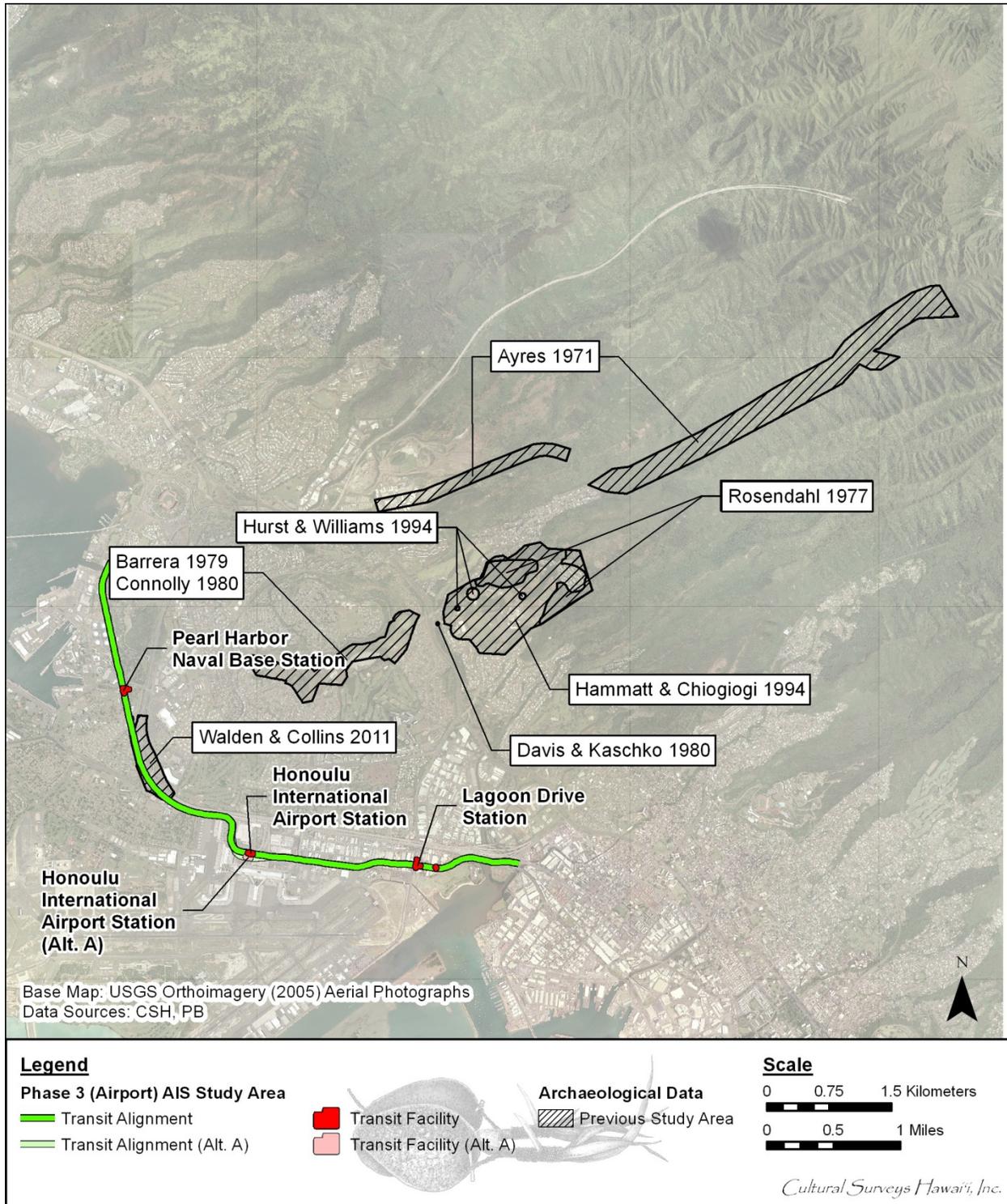


Figure 11. Other archaeological studies in Moanalua Ahupua‘a excluding Joint Base Pearl Harbor-Hickam and Fort Kamehameha

Ayers 1971

The possible pre-Contact settlement and the archaeological resources extant within the upland areas of Moanalua would become a special concern during the 1960s and 70s, when Kamana-nui Valley - the westernmost of the two major valleys of Moanalua - was proposed as a route for the H-3 Interstate Highway. The floor of Kamana-nui Valley was surveyed in 1970 by archaeologists from the Bishop Museum (Ayers 1971). The survey located 57 archaeological cultural resources, including terraces, a pre-Christian shrine, house platforms, and two petroglyph rocks. The survey report concluded that “utilization of Kamana-nui Valley by prehistoric populations was limited but does show evidence of having been of greater significance than was previously thought” and “both agricultural and residential units were developed in this valley” (Ayers 1971:35). Further:

It is believed that the terraces in the upper portion of Kamana-nui Valley represent a time period when the local population reached a high level indicate attempts by individuals or family groups to delineate clearly their agricultural tracts. (Ayers 1971:33)

Rosendahl 1977

Two historic properties have been documented within the Tripler Army Medical Center (TAMC) property. Both historic properties were recorded during an archaeological reconnaissance survey conducted by archaeologists from the Bishop Museum on November 10, 1976 (Rosendahl 1977). The TAMC study was a portion of a survey project that included:

...all lands owned or controlled by the Army within the State of Hawai'i, [comprising] 34 individual installations totaling 174,237.16 acres...Because the overall study area was far more than could be adequately surveyed in full, individual installations were survey-sampled. Areas to be sampled were selected on the basis of literature search and aerial photograph analysis. (Rosendahl 1977:1-i)

Of the total 367.17 acres comprising the TAMC, about 202 acres were deemed to have potential for having archaeological features – the excluded acreage having been “modified to such an extent that it could no longer possibly have [surface] sites” (Rosendahl 1977:1-11) – and the actual survey-sampled area consisted of 36.7 acres. The two historic properties are located in the broad gully on the northwest side of the TAMC, below the gymnasium building and the enlisted men's barracks.

SIHP # 50-80-14-9504 is called the “Moanalua Complex” and is described as comprising a small, crude platform of stacked stone and piles of stones from clearing activities. SIHP # 50-80-14-9505 is called “Moanalua Terraces” and is described as consisting of crude retaining walls defining terraces and possibly a house platform. Both historic properties were evaluated as being in poor condition and their age (i.e., whether pre-Contact or historic) was not determined. Rosendahl (1977) argues that “although the sites are of minimal potential for research and/or interpretation, they are suggestive of patterns of past human occupation in this dry environment.” The sites are therefore recommended as historic properties, and should be preserved if possible.

Barrera 1979 and Connelly 1980

Between 1979 and 1980 two archaeological reconnaissance surveys were conducted at the proposed Salt Lake Regional/District Park. In 1979, a survey by Chiniago Inc. possibly relocated a previously-identified rockshelter, SIHP # 50-80-13-500, described as follows:

First, the feature which we found is located further upslope than [Site 50-80-13-500] is indicated on the State map, and second, the presence of quantities of recent trash obscures the original floor of the site, thus making a determination of the presence or absence of archaeological materials impossible. (Barrera 1979)

The survey was not completed due to the presence of steep cliffs and thick vegetation (Barrera 1979).

In 1980, Archaeological Research Associates conducted an additional archaeological reconnaissance survey of the area and identified one site of archaeological significance (SIHP # 50-80-13-3992) described as:

...an overhang shelter possibly utilized as a temporary habitation site--as evidenced by several pieces of oyster shell found on the floor surface. The shelter was also used as a burial site, as a human (possibly juvenile) tooth, and several pieces of bone were seen in the shallow (about 30 cm. thick) grey silt deposit that covered the floor of the shelter with human burial remnants. (Connolly 1980)

Davis and Kaschko 1980

In 1980, McAllister's site 87 (burial cave) was further studied. Bertell D. Davis and M.W. Kaschko suggest that it "functioned primarily in the context of people and goods moving back and forth between the coastal and upper valley areas." They further state:

What the nature of this seaward-landward traveling may have been is not certain. Early in the settlement period it may have involved only intermittent treks from the coastal settlement back into the upper valleys to gather wild forest products. Later travel may then have become more regular as settlement extended further and further into the valleys. But whether these upland residences represent short-term or long-term occupation remains a question. (Davis and Kaschko 1980:8-9)

Hammatt and Chiogioji 1994

In 1994, an archaeological assessment of the TAMC property was conducted by Cultural Surveys Hawai'i (Hammatt and Chiogioji 1994). The previously-identified SIHP #s 50-80-14-9504 and 50-80-14-9505 were relocated and documented with formal historic property descriptions, scale drawings, and photographs.

Hurst and Williams 1994

Portions of the TAMC were later investigated by archaeologists from Ogden Environmental and Energy Services Co. during an archaeological surface survey of areas for a proposed VA Medical Regional Office Center (Hurst and Williams 1994). These sites included:

...the proposed Parking Garage, Center for Aging, Reproduction/Administration Facility; and the DPW Entomology Shop areas. These areas were selected as the most likely areas to contain surface archaeological sites or evidence for subsurface deposits. (Hurst and Williams 1994:1)

No surface historic properties or evidence of possible subsurface deposits were observed. The archaeologists recommended archeological monitoring during initial vegetation clearing and grading of one area:

Of the various project components, only the area proposed for the new parking garage appears to have favorable conditions for intact subsurface cultural deposits, and even there the potential is very low. The potential for subsurface deposits in the parking garage area is assumed to be somewhat more favorable than other areas in TAMC because the parking garage will be built within a small gully that does not have any structures within it. If remains are present, they are likely to be isolated earth ovens, firepits, charcoal concentrations, or lithic debris. No surface remains were located in the gully, but a dirt road had been recently graded into the gully and the material pushed down the slope, possibly burying surface remains. The area of the gully above the road was also examined, however, and no remains were present; this makes it highly unlikely that any surface features were buried by material pushed from the road. (Hurst and Williams 1994:18)

Walden and Collins 2011

Pacific Consulting Services (Walden and Collins 2011) carried out an archaeological assessment in support of installation of certain communication infrastructure alongside a 4,000 ft stretch of the H-1 freeway.

A reconnaissance survey was undertaken at the intersections of Valkenburgh Street and Nimitz Highway, Center Drive and Kamehameha Highway, and along portions of the H-1 Freeway where poles and pull boxes are proposed. These areas were briefly examined for surface structures and cultural materials (Walden and Collins 2011:17)

No excavation was attempted. No historic properties were found (Walden and Collins 2011:17).

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