Final

Archaeological Monitoring Plan for City Center (Section 4) of the Honolulu Rail Transit Project, Kalihi, Kapālama, Honolulu, and Waikīkī Ahupuaʻa, Honolulu (Kona) District, Oʻahu TMKs: [1] 1-2, 1-5, 1-7, 2-1, 2-3 (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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Cultural Surveys Hawaiʻi, Inc.
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(Job Code: KALIHI 26)

June 2014

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Management Summary

Reference	Archaeological Monitoring Plan for City Center (Section 4) of the Honolulu High-Capacity Transit Corridor Project, Kalihi, Kapālama, Honolulu, and Waikīkī Ahupua‘a, Honolulu (Kona) District, O‘ahu, TMKs: [1] 1-2, 1-5, 1-7, 2-1, 2-3 (Various Plats and Parcels) (Hammatt 2013)
Date	June 2014
Project Number	Cultural Surveys Hawai‘i, Inc. (CSH) Job Code: KALIHI 26
Project Location	The proposed Honolulu Rail Transit Project (HRTP) extends approximately 32 km (20 miles) from Kapolei in the west to Ala Moana Shopping Center in the east. The focus of this archaeological monitoring plan consists of the entire Construction Section 4 (City Center) of the HRTP, which is an approximately 6.9 km (4.3 miles) segment. The monitoring program area is depicted on the 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 & County of Honolulu (City). The project area, constituting all of the HRTP Section 4 (City Center), is located within existing road rights-of-way owned by the State of Hawai‘i or the City and County of Honolulu, including Dillingham Boulevard, Ka‘aahi Street, Nimitz Highway, Ala Moana Boulevard, Halekauwila Street, Queen Street, and Kona Street. Many of the support facilities along the project corridor are currently located on adjacent privately owned lands.
Investigation Permit Number	Monitoring will likely be performed under Hawai‘i State Historic Preservation Division (SHPD) permit number 14-04, and subsequent annual permits, issued per Hawai‘i Administrative Rules (HAR) §13-13-282.
Agencies	Honolulu Authority for Rapid Transportation (HART) of the City and County of Honolulu; SHPD; FTA
Project Description	The project 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. In addition to the guideway, the project will require construction of transit stations and ancillary support facilities. Nine proposed transit stations are within the City Center AMP project area, including: 1) Middle Street Transit Center Station; 2) Kalihi Station; 3) Kapālama Station; 4) Iwilei Station; 5) Chinatown Station; 6) Downtown Station; 7) Civic Center Station; 8) Kaka‘ako Station; and 9) Ala Moana Center Station. An additional component of the City Center AMP project area is comprised of a utility relocation corridor that extends, from west to east, from Richard Street along Ala Moana Boulevard, up Punchbowl Street, along Pohukaina Street and up Cooke Street to Halekauwila Street, where it merges with the guideway alignment.

Project Acreage	The City Center Construction Section 4 area consists of an approximately 6.9 km (4.3 miles) segment of the overall 32-km (20-mile) HRTP; project engineers estimate the area of direct ground disturbance at approximately 13 acres.
Project Related Ground Disturbance	Direct project-related ground disturbing 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.
Historic Preservation Regulatory Context and Document Purpose	Due to federal (FTA) funding and the use of federal (U.S. Navy) lands (in Section 3), 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. Due to use of Hawai‘i State lands and funding, the HRTP also requires compliance with the Hawai‘i State historic preservation and environmental review process (Hawai‘i Revised Statutes [HRS] §6E-8/HAR §13-13-275 and HRS §343, respectively). Through the Section 106 historic preservation review process, the project’s lead federal agency, FTA, has determined that the project will have an adverse effect on historic properties currently listed, or eligible for listing, on the National Register of Historic Places (National Register). 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). 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 accepted by the SHPD for each of the four HRTP construction sections. An AISP for City Center (Hammatt et al. 2011) was prepared to fulfill PA Stipulation III and was accepted in the SHPD Section 106 review letter of 25 October 2011 (LOG NO: 2011.2379; DOC NO: 1110NN08). 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 stated in HAR §13-13-275-5(c). Subsequently, consideration was given to an alternate site (Alternate A) for the Kaka‘ako Station located approximately 50 m northeast (*mauka*) of the Kaka‘ako Station location addressed in the Hammatt et al. (2011) AISP for City Center. This alternate station site, and associated minor changes to the immediately adjacent guideway alignment, were addressed in an Addendum AISP (Hammatt et al. 2013). The Addendum AISP was accepted in the SHPD Section 106 review letter of 1 March 2013 (LOG

	NO: 2013.1958; DOC NO: 1302SL28). Following the approved City Center AISP (Hammatt et al. 2011), as amended in the City Center AISP Addendum (Hammatt et al. 2013), the City Center AIS investigation was completed. The City Center (Section 4) AIS investigation (Hammatt 2013) identified 19 archaeological historic properties within, or immediately adjacent to, the City Center AIS project area. Its recommended mitigation measures included a data recovery program, an archaeological monitoring program, and a burial treatment plan. The City Center AIS report (AISR) was accepted in the SHPD Section 106 review letter of 26 August 2013 (LOG NO: 2013.2564, 2013.4338; DOC NO: 1308SL21). Subsequently, the HRTP-wide archaeological historic property identification effort, significance evaluations, project effect determination, and mitigation commitments (as described in the four AIS reports, one for each construction section), was accepted in the SHPD Section 106 and HRS §6E-8 review letter of 27 August 2013 (LOG NO: 2013.4987, DOC NO: 1308SL23). Following HRTP City Center AIS fieldwork, an Interim Protection Plan (IPP) for the HRTP was completed (Hammatt and Shideler 2013). The plan addressed interim protection measures for all the archaeological historic properties identified within the four HRTP sections. It stipulates that City Center construction can proceed only after the following conditions have been met for City Center: 1) a data recovery plan has been accepted by SHPD; 2) a data recovery end-of-fieldwork letter is accepted by SHPD; and 3) an archaeological monitoring plan that includes construction buffers for the four City Center burial sites is accepted by the SHPD. The IPP was accepted in the SHPD HRS § 6E-8 review letter of 29 August 2013 (LOG NO: 2013.5066A, DOC NO: 1308PA01). This archaeological monitoring plan fulfills the state requirements for monitoring plans under HAR §13-13-279-4 and was written to support the proposed project’s historic preservation review under HRS §6E-8 and HAR §13-13-275. 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. This plan was prepared in consideration of the project’s final January 2011 PA Stipulation III.E.1 that describes archaeological monitoring programs.
Cultural Resources[1]/ Historic Properties[2] Potentially Affected	This monitoring plan addresses the following 19 historic properties (bold numbers were newly identified during the City Center AIS; test excavations [T-] where these historic properties were documented are listed): SIHP # -2918, a subsurface cultural deposit and human burials, determined significant under Hawai‘i State Historic Property significance criteria “d” and “e” and eligible to the National Register under criterion D; T-226A, T-

	226B, T-226C, T-226D, T-227, and T-227A. SIHP # -2963, a subsurface cultural deposit, subsurface pond sediments, human burials, and animal burials, determined significant under Hawai‘i State Historic Property significance criteria “d” and “e” and eligible to the National Register under criterion D; T-122, T-123, and T-124. SIHP # -5368, the subsurface remnants of Kūwili Fishpond, determined significant under Hawai‘i State Historic Property significance criterion “d” and eligible to the National Register under criterion D; T-088 and T-091 through T-094. SIHP # -5820, a subsurface cultural deposit and human burials, determined significant under Hawai‘i State Historic Property significance criteria “d” and “e” and eligible to the National Register under criterion D; T-141, T-142, T-145, T-146A, T-150, T-151, and T-151A. SIHP # -5966, the subsurface remnants of Kawa Fishpond, determined significant under Hawai‘i State Historic Property significance criterion “d” and eligible to the National Register under criterion D; T-095 within fishpond boundaries but no fishpond sediments observed. SIHP # -6636, a subsurface deposit (Kewalo wetland), determined significant under Hawai‘i State Historic Property significance criteria “a” and “d” and eligible to the National Register under criterion D; T-186 through T-193, T-195, T-196, T-198 through T-200, T-202, T-202A, T-203, T-205, T-207, T-208, T-210 through T-212, T-214, T-219, and T-220. SIHP # -6856, the subsurface remnants of Kolowalu Fishpond, determined significant under Hawai‘i State Historic Property significance criterion “d” and eligible to the National Register under criterion D; T-181 through T-185. SIHP # -7124, subsurface infrastructure remnants, determined significant under Hawai‘i State Historic Property significance criteria “a” and “d” and eligible to the National Register under criterion D; T-132. SIHP # -7189, a subsurface burnt trash deposit, determined significant under Hawai‘i State Historic Property significance criteria “a” and “d” eligible to the National Register under criterion D; T-130, T-132, T-134, T-138, T-140, T-231A, T-232, and T-232A. SIHP # -7190, subsurface salt pan remnants, determined significant under Hawai‘i State Historic Property significance criteria “a” and “d” and eligible to the National Register under criterion D; T-229 and T-230. SIHP # -7193, a subsurface trash deposit, determined significant under Hawai‘i State Historic Property significance criteria “d” and eligible to the National Register under criterion D; T-214. SIHP # -7197, a subsurface cultural deposit and fire pit feature, determined significant under Hawai‘i State Historic Property significance criteria “a”

	and “d” and eligible to the National Register under criterion D. Not observed in the current project’s AIS, but potentially affected by project construction due to close proximity. SIHP # -7425, a subsurface fire feature remnant (interpreted as the remains of a single *imu* or earth oven), determined significant under Hawai‘i State Historic Property significance criterion “d” and eligible to the National Register under criterion D; T-020. SIHP # -7426, a subsurface wetland deposit, determined significant under Hawai‘i State Historic Property significance criterion “d” and eligible to the National Register under criterion D; T-054 through T-082, and T-085. SIHP # -7427, subsurface infrastructure remnants, subsurface cultural deposits, and a human skeletal element, determined significant under Hawai‘i State Historic Property significance criteria “d” and “e” and eligible to the National Register under criterion D; T-096 through T-101, and test bores 1 through 6. SIHP # -7428, a subsurface cultural deposit and historic building foundation, determined significant under Hawai‘i State Historic Property significance criterion “d” and eligible to the National Register under criterion D; T-119, T-119A, T-120, T-120A, T-120B. SIHP # -7429, a subsurface cultural deposit and human skeletal element, determined significant under Hawai‘i State Historic Property significance criteria “d” and “e” and eligible to the National Register under criterion D; T-167, T-168, T-168A, T-168B, T-169, T-170, and T-170A. SIHP # -7430, a subsurface privy remnant, determined significant under Hawai‘i State Historic Property significance criterion “d” and eligible to the National Register under criterion D; T-202. SIHP # -7506, a subsurface incinerated trash deposit, determined significant under Hawai‘i State Historic Property significance criterion “d” and eligible to the National Register under criterion D; T-064, T-066, and T-067.
Recommended Monitoring	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 §13-13-280 (“Procedures for Inadvertent Discoveries During A Project Covered by the Historic Preservation Review Process”). Inadvertent burial discoveries will follow the procedures outlined in Hawai‘i State burial law (HAR §13-13-300-40). Because the City Center (Section 4) 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 also provide the opportunity to collect additional information on the 19 historic properties identified by the City Center Section 4 AIS as well as two potential cultural resources identified by the City Center AIS. Based on the results of the AIS and historic document research, all areas within the City Center (Section 4) project area are recommended for on-site monitoring during project construction. Areas where known historic properties or potential archaeological cultural resources are located are recommended for on-site targeted monitoring. On-site targeted monitoring includes detailed documentation and specialized sample collection and analysis. The on-site monitoring program will also include all pre-construction, project-related ground disturbance within areas of high archaeological potential. These areas include 18 of the above listed historic properties, with the exception of SIHP # -6636, a natural wetland located within Kewalo. Pre-construction ground disturbance activities in these areas necessitating archaeological monitoring may include, but are not limited to, geotechnical boring, potholing, and tree relocations. Those portions of the project area located outside these historic properties will entail a program of on-call monitoring. In the event that City Center project construction commences prior to the O‘ahu Island Burial Council (OIBC) and SHPD acceptance of the City Center burial treatment plan and its implementation, the monitoring program will also oversee interim protection measures for all *iwi kūpuna* (human skeletal remains) finds within the City Center project area. A 25 ft construction buffer zone shall be established for each location of *iwi kūpuna*, within which no construction is permissible, until such time as the archaeological monitoring plan is superseded by an accepted and implemented burial treatment plan.

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

[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 City Center (Section 4) of the Honolulu Rail Transit Project (HRTP) for the Honolulu Authority for Rapid Transportation (HART) of the City and County of Honolulu (City), and for the Federal Transit Administration (FTA), and on behalf of PB Americas, Inc. (PB). The entire proposed HRTP project corridor extends approximately 32 km (20 miles) from East Kapolei in the west to Ala Moana Center in the east. The HRTP 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 (Figure 1).

The HRTP’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 project construction. In addition to the guideway, the project will require construction of transit stations and ancillary support facilities.

The City Center (Section 4) project area extends approximately 6.9 km (4.3 miles) from approximately the Middle Street Interchange in the west to Ala Moana Center in the east, within Kalihi, Kapālama, Honolulu, and Waikīkī Ahupua‘a, Honolulu (Kona) District, O‘ahu, Tax Map Keys (TMKs) [1] 1-2, 1-5, 1-7, 2-1, 2-3 (Various Plats and Parcels).

From west to east, the City Center (Section 4) project area begins at the Middle Street Interchange and Kalihi Stream and extends along Dillingham Boulevard through Kalihi and Kapālama to Ka‘aahi Street. From there it crosses Nu‘uanu Stream and continues along Nimitz Highway/Ala Moana Boulevard. From the intersection of Richards Street and Ala Moana Boulevard, it continues along Halekauwila Street to Ward Avenue. At Ward Avenue, it angles *mauka* (inland) across the corner of Ward Avenue and Queen Street. Between Ward Avenue and Kamake‘e Street, it continues *makai* (seaward) of Queen Street. At Kamake‘e Street, it follows the alignment of Queen Street to the intersection with Waimanu Street. There it crosses to Kona Street, which it follows across Pi‘ikoi Street into Ala Moana Center. An additional component of the City Center project area is comprised of a utility relocation corridor that extends, again from west to east, from Richards Street along Ala Moana Boulevard, up Punchbowl Street, along Pohukaina Street, and up Cooke Street to Halekauwila Street, where it merges with the guideway alignment. The City Center (Section 4) project area is depicted on the 1998 Honolulu U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle, on various tax map plats, and an aerial photograph (Figure 2 through Figure 8).

The City Center (Section 4) project area is primarily located within existing road rights-of-way owned by the State of Hawai‘i or the City and County of Honolulu, including Dillingham

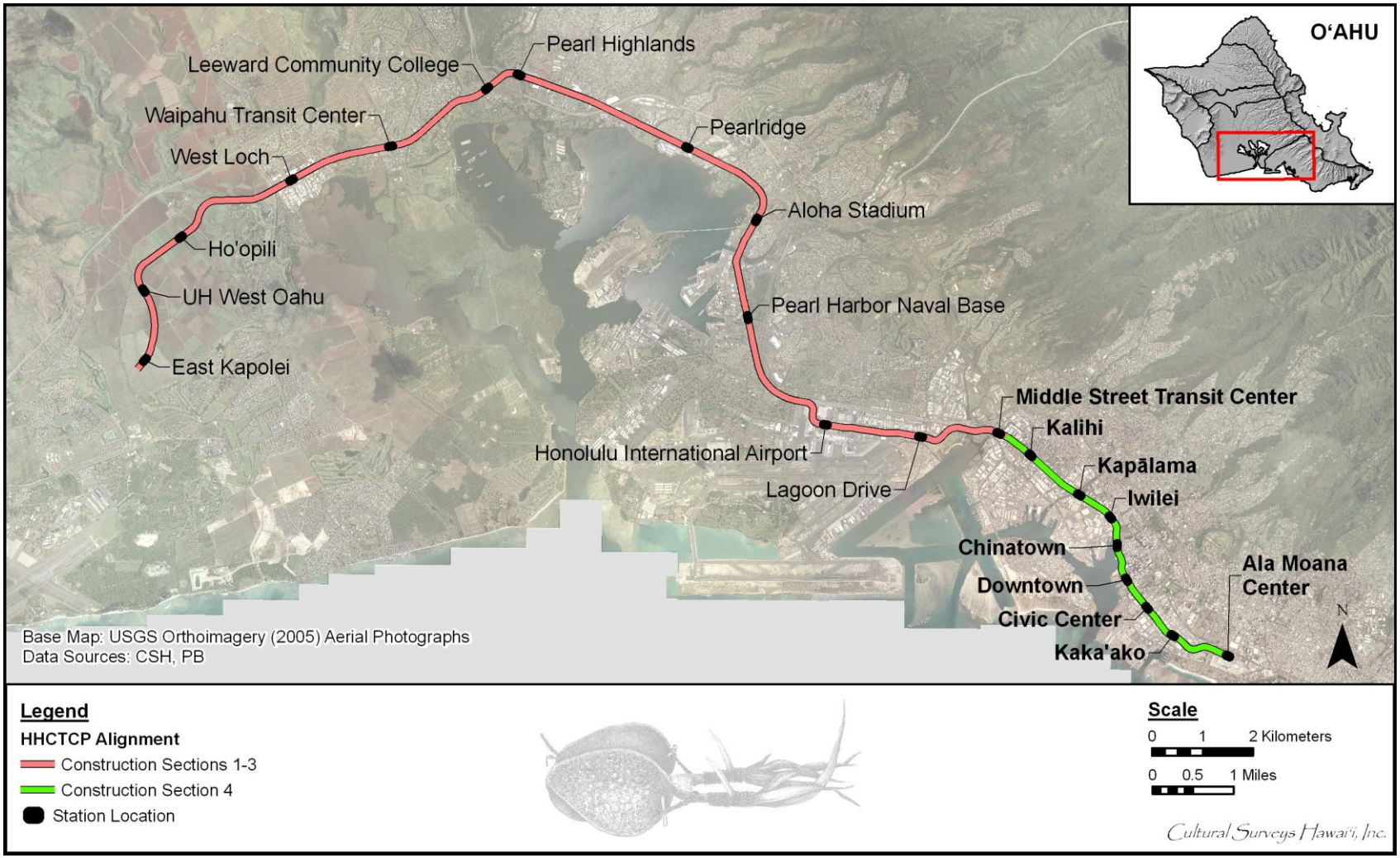

Figure 1. Aerial photograph (source: USGS orthoimagery 2005) showing the entire HRTP corridor, from East Kapolei to Ala Moana Center, including station locations, with the City Center (Section 4) project area called out in green

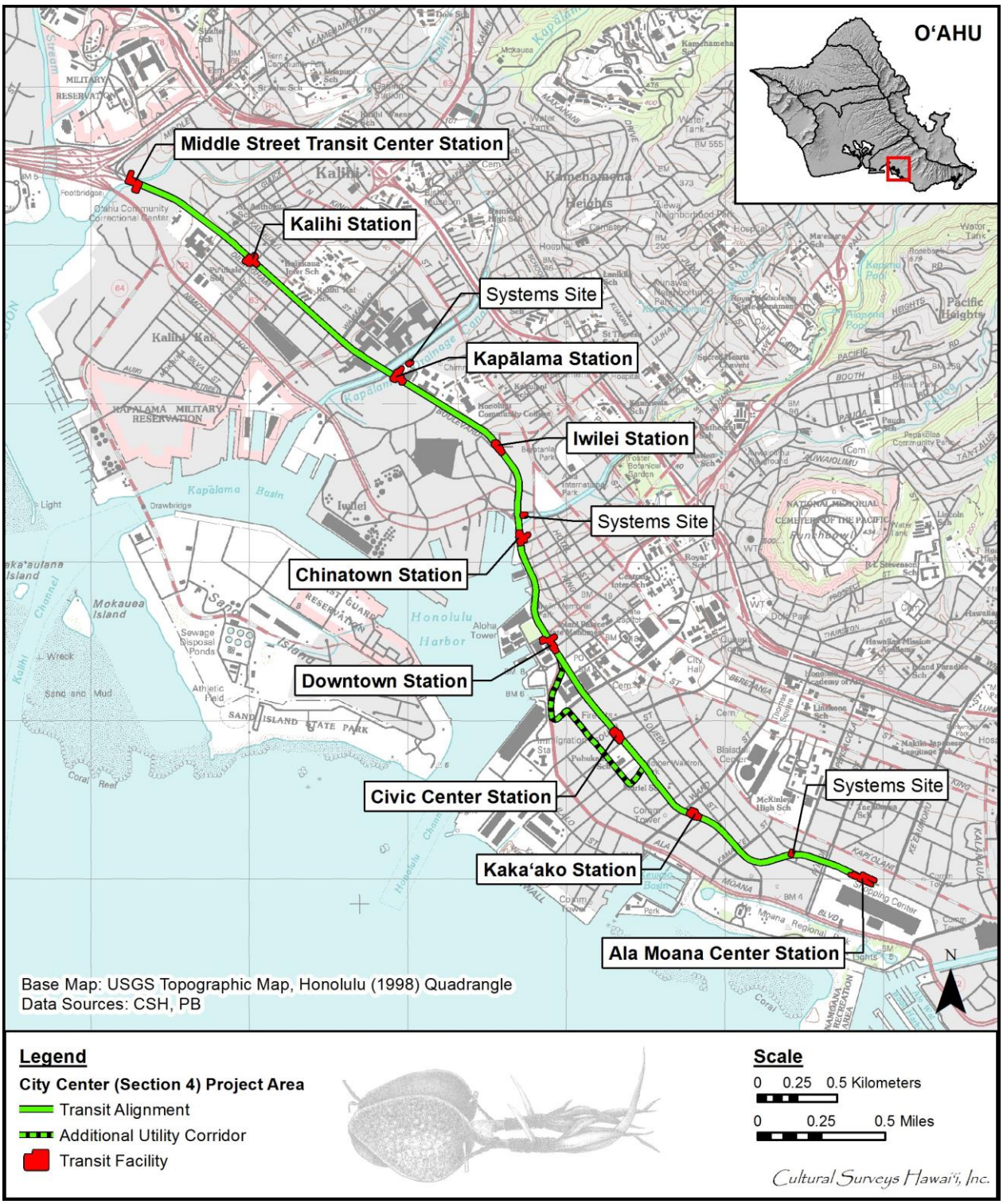

Figure 2. Portion of the 1998 Honolulu USGS 7.5-minute topographic quadrangle showing the City Center (Section 4) alignment and related transit facilities

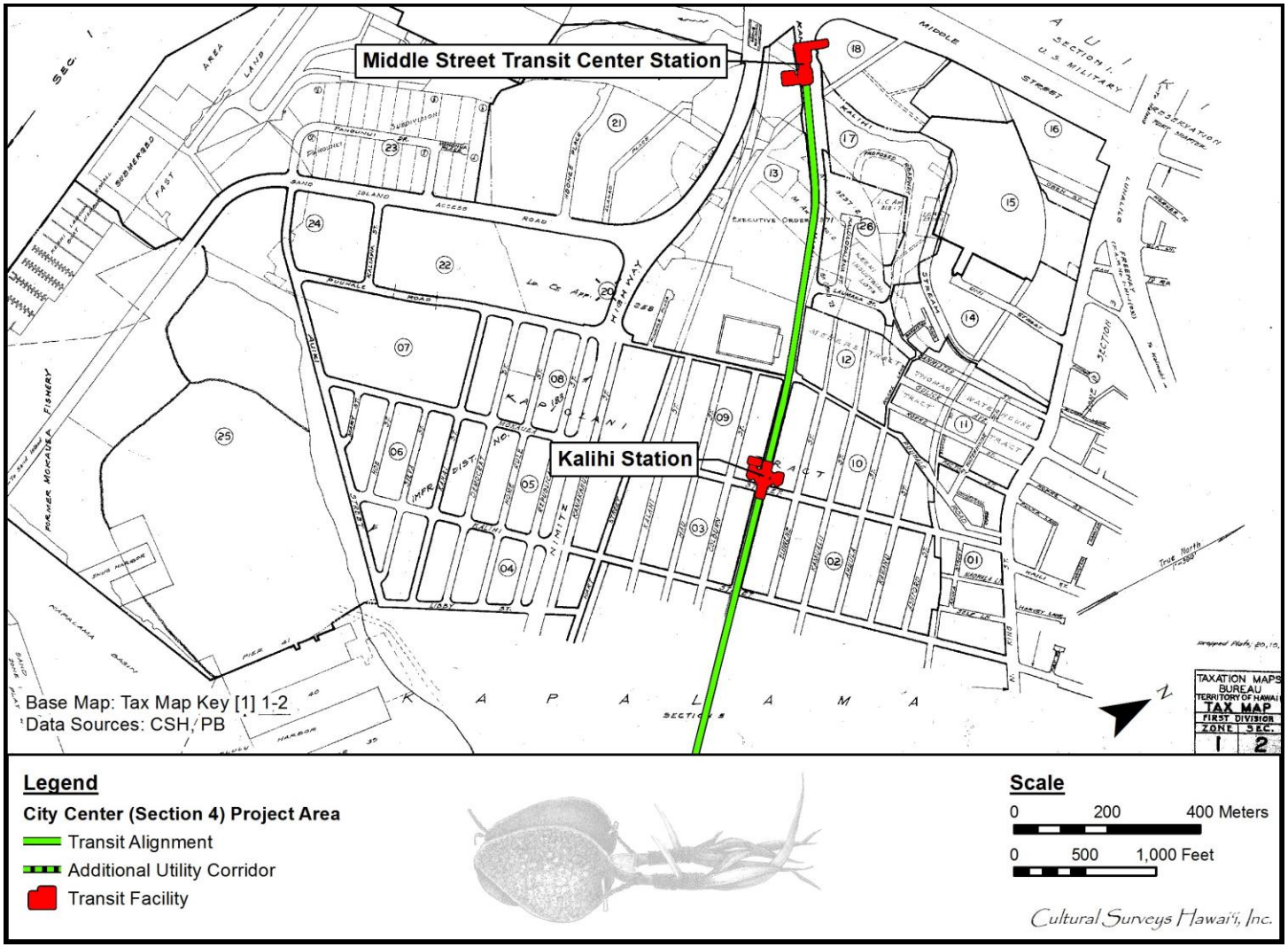

Figure 3. Tax Map Key 1-2 showing the western portion of the City Center (Section 4) project area

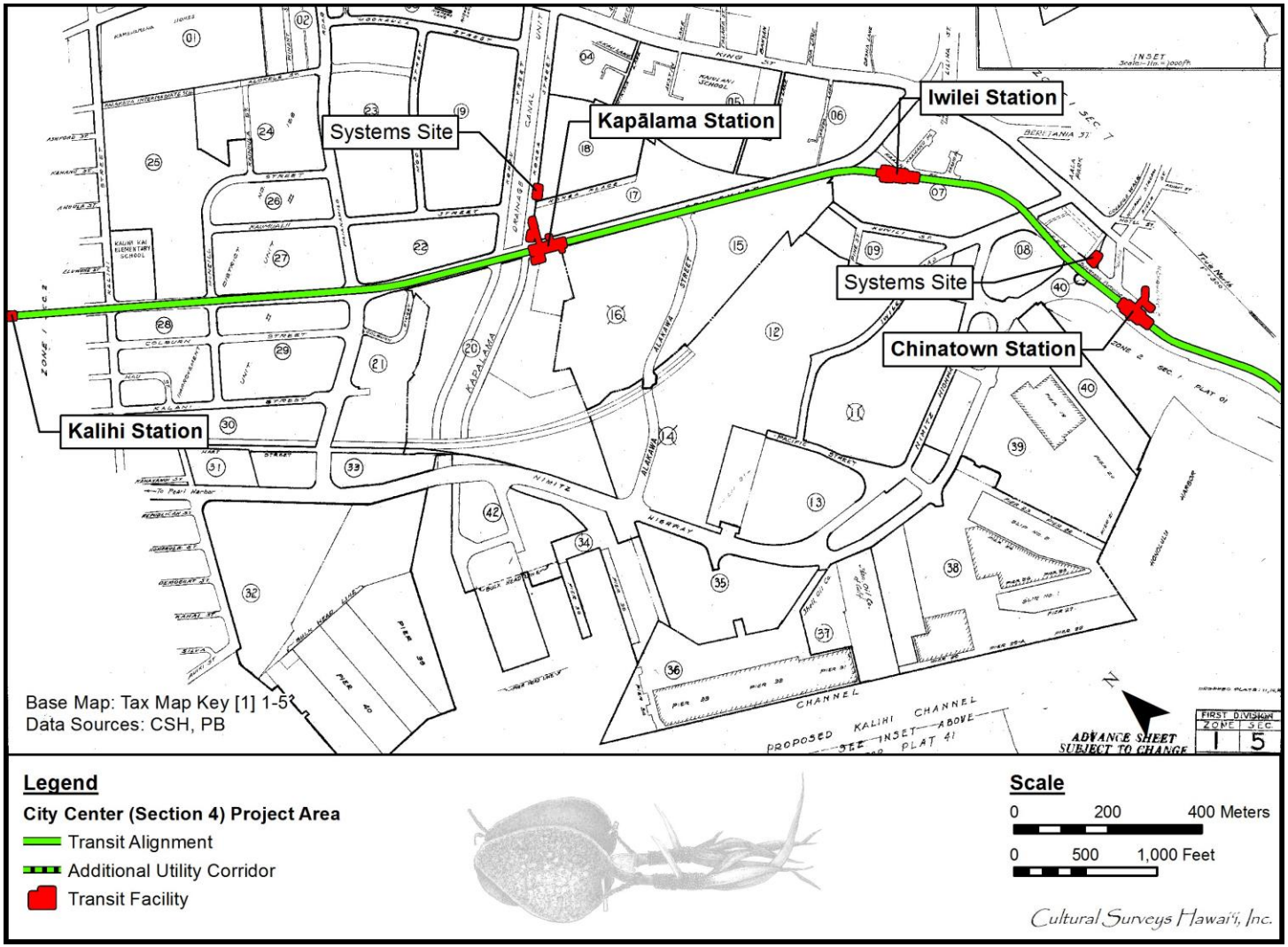

Figure 4. Tax Map Key 1-5 showing the central portion of the City Center (Section 4) project area

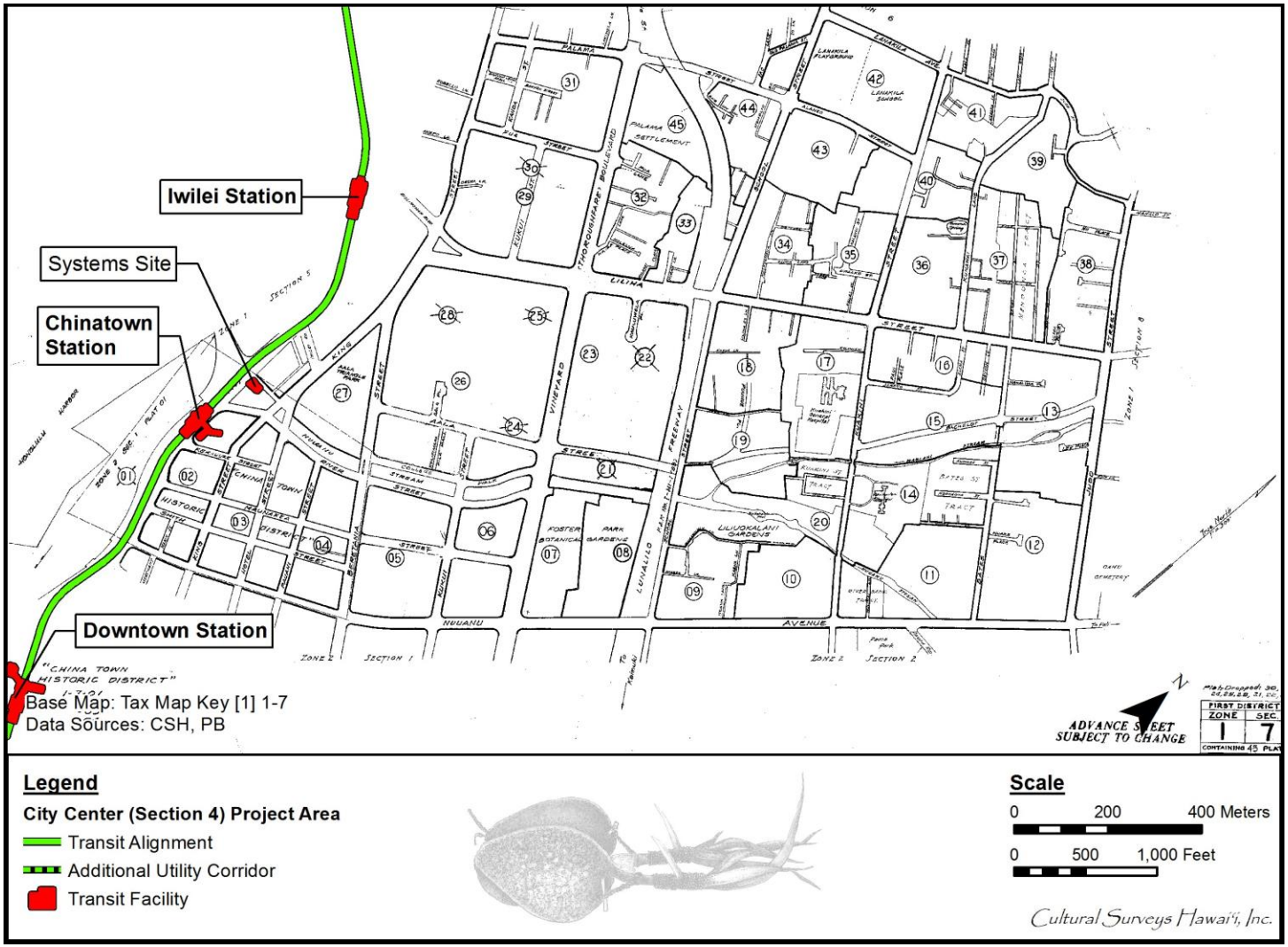

Figure 5. Tax Map Key 1-7 showing the central portion of the City Center (Section 4) project area

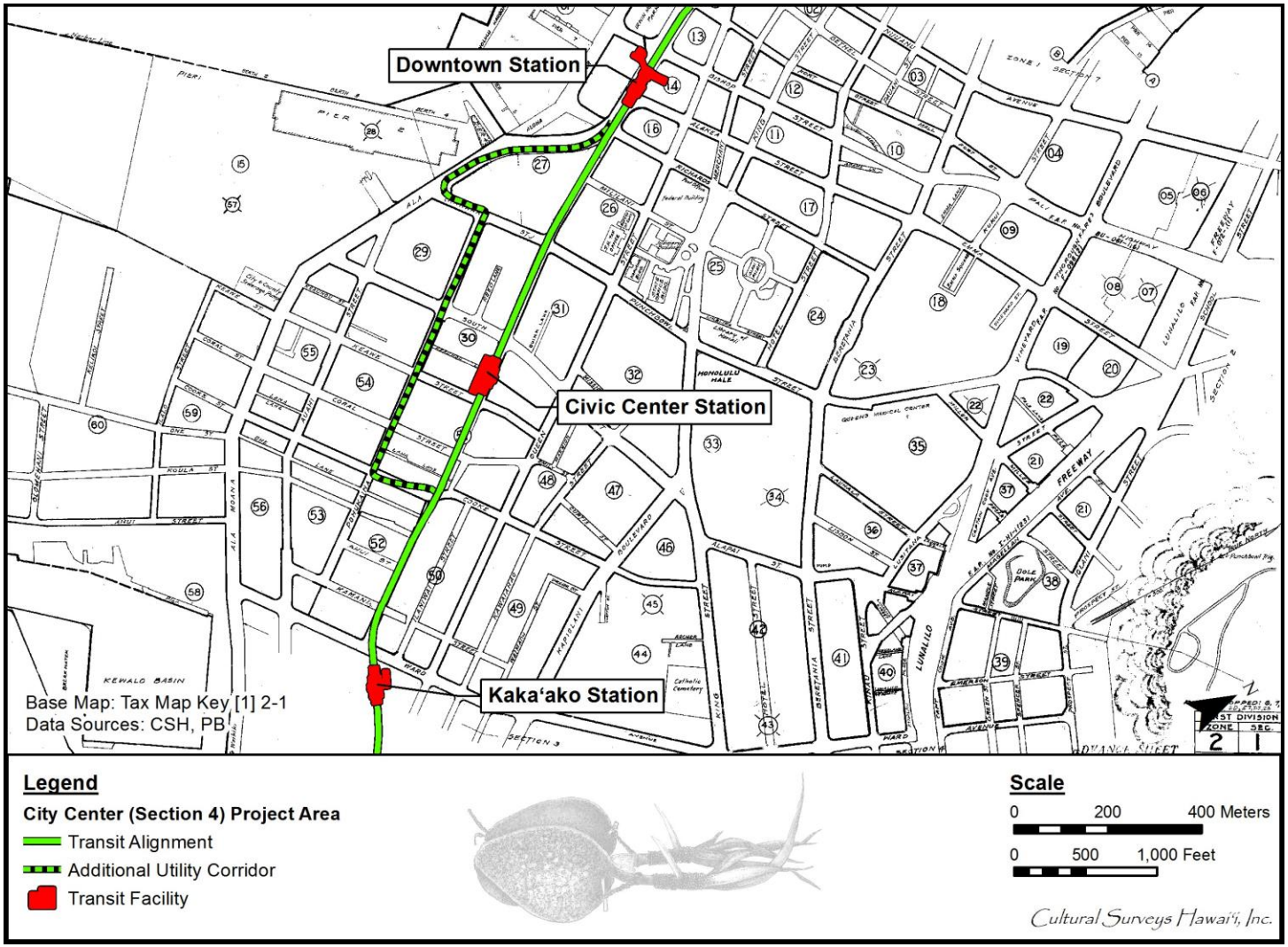

Figure 6. Tax Map Key 2-1 showing the central portion of the City Center (Section 4) project area

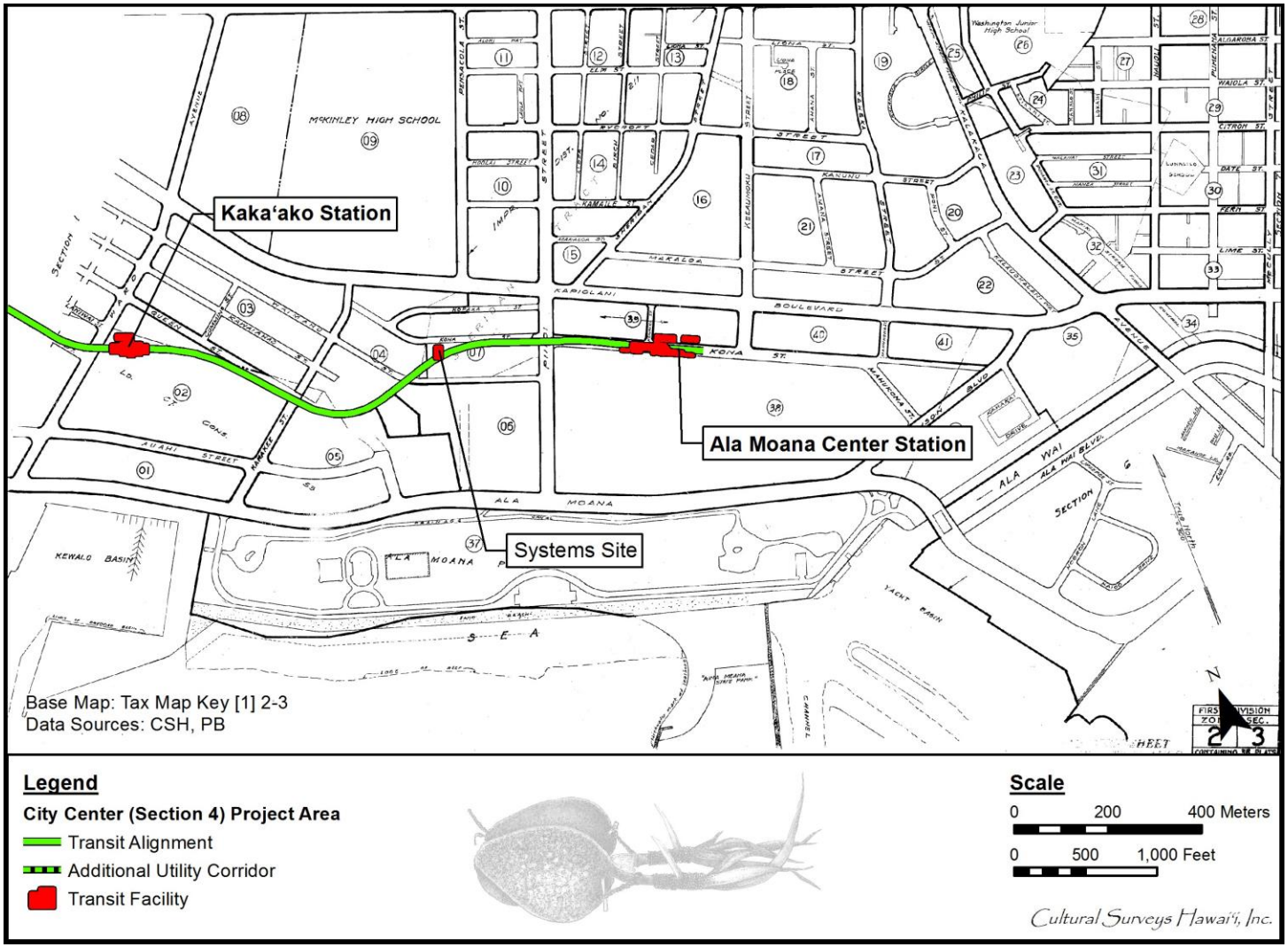

Figure 7. Tax Map Key 2-3 showing the eastern portion of the City Center (Section 4) project area

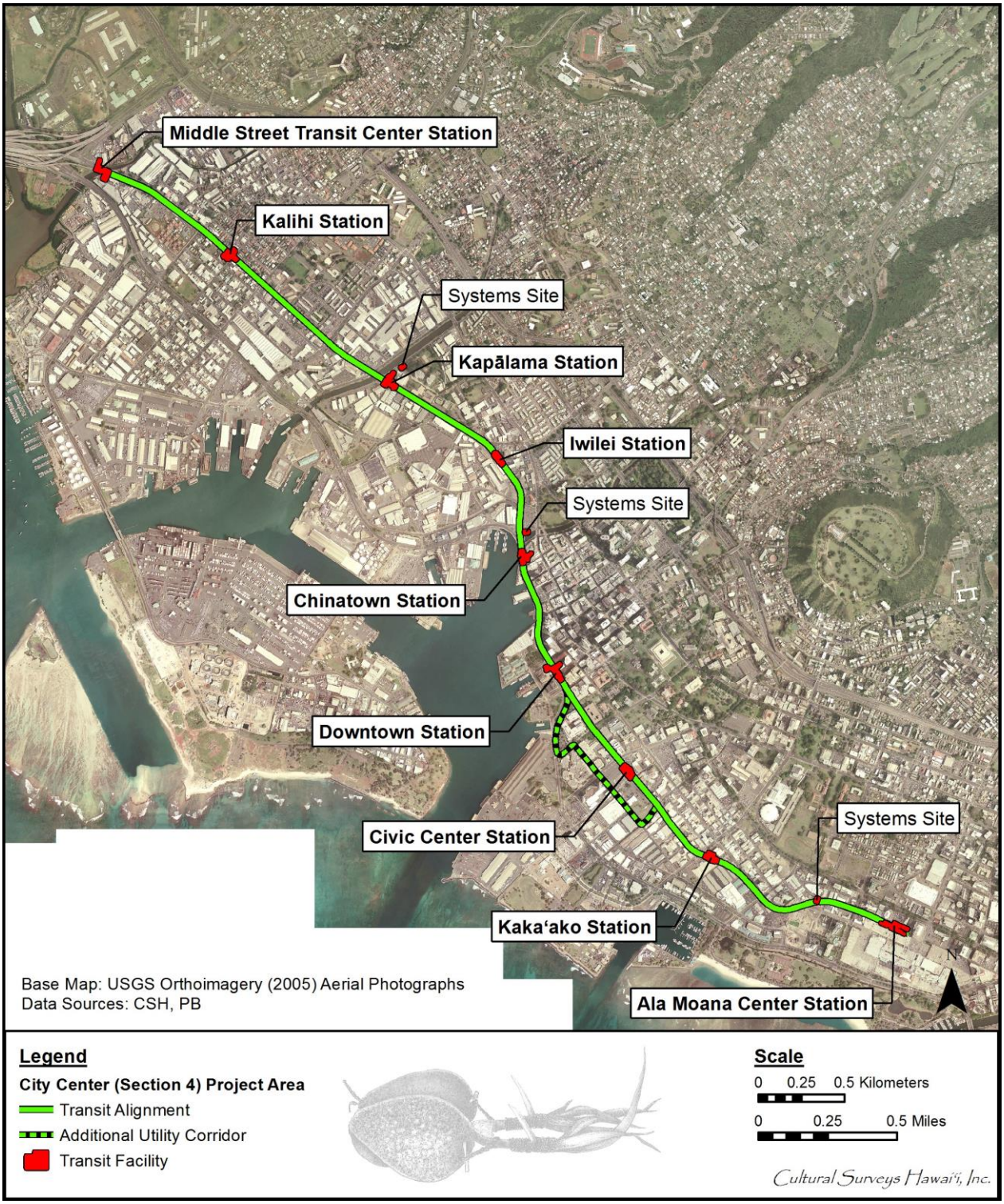

Figure 8. Aerial photograph (source: USGS orthoimagery 2005) showing the City Center (Section 4) project area

Boulevard, Ka‘aahi Street, Nimitz Highway, Ala Moana Boulevard, Halekauwila Street, Queen Street, and Kona Street. Many of the support facilities along the project corridor are located on adjacent privately owned lands.

Nine proposed transit stations are within the City Center (Section 4) project area: Middle Street, Kalihi, Kapālama, Iwilei, Chinatown, Downtown, Civic Center, Kaka‘ako, and Ala Moana Center. Additionally, there are three system sites (smaller alignment infrastructure related to the guideway’s power supply) (refer to Figure 2 through Figure 8). Project construction will also require relocation of existing utility lines within the project corridor that conflict with the project design. Minimally, land disturbing activities will include grading of facility locations and excavations for guideway column foundations, subsurface utility relocation and installation, and construction of foundations for stations and ancillary facilities.

1.2 Historic Preservation Regulatory Context and Document Purpose

Due to federal (FTA) funding, and use of U.S. Navy lands (in HRTP Section 3—Airport), 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. Due to use of Hawai‘i State lands and funding, the HRTP also requires compliance with the Hawai‘i State historic preservation and environmental review process (Hawai‘i Revised Statutes [HRS] §6E-8/Hawai‘i Administrative Rules [HAR] §13-13-275 and HRS §343, respectively).

Through the Section 106 historic preservation review process, the project’s lead federal agency, FTA, has determined that the project will have an adverse effect on historic properties currently listed, or eligible for listing, on the National Register of Historic Places (National Register). 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 on 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 accepted by the State Historic Preservation Division (SHPD) for each of the four HRTP construction sections.

An AISP for City Center (Hammatt et al. 2011) was prepared to fulfill PA Stipulation III and was accepted in the SHPD Section 106 review letter of 25 October 2011 (LOG NO: 2011.2379; DOC NO: 1110NN08) (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 in HAR §13-13-275-5(c).

Subsequently, consideration was given to an alternate site (Alternate A) for the Kaka‘ako Station located approximately 50 m northeast (*mauka*) of the Kaka‘ako Station location addressed in the AISP for City Center (Hammatt et al. 2011). This alternate station site, and associated minor changes to the immediately adjacent guideway alignment, were addressed in an Addendum AISP (Hammatt et al. 2013). The Addendum AISP was accepted in the SHPD HRS

§6E-8 and Section 106 review letter of 1 March 2013 (LOG NO: 2013.1958; DOC NO: 1302SL28) (see Appendix A).

Following the approved City Center AISP (Hammatt et al. 2011), as amended in the City Center AISP Addendum (Hammatt et al. 2013), the City Center AIS investigation was completed in January 2013. The AIS report (AISR) (Hammatt 2013) 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. The AIS investigation also supports the project's historic preservation review under HRS §6E-8 and HAR §13-13-275 governing procedures for historic preservation review for governmental projects, and HAR §13-13-276 governing standards for archaeological inventory surveys and reports. The AISR was reviewed and accepted by the SHPD on 26 August 2013 (LOG NO: 2013.2564, 2013.4338; DOC NO: 1308SL21) (see Appendix A).

Following HAR §13-13-300 and HRS §6E-43, human skeletal remains identified during the AIS were treated in consultation among the SHPD, the City, the O‘ahu Island Burial Council (OIBC), and cultural descendants from the area. A *Consultation Protocol for Iwi Kūpuna Discovery During the Archaeological Inventory Survey for the City Center (Construction Section 4) of the HHCTCP* (Hammatt 2011) (reviewed and approved by FTA, per the project's PA requirements) was developed during the preparation of the City Center AISP to facilitate consultation regarding the treatment of identified human skeletal remains. This consultation protocol (Hammatt 2011) was implemented during the City Center AIS fieldwork.

The SHPD accepted the AIS investigations for the first three sections of the HRTP (Sections 1–3) (see Appendix A). CSH completed an AIS of HRTP Section 1 (extending east from the East Kapolei Station to approximately Leeward Community College) in February 2010. The Section 1 AISR (Hammatt 2010) was reviewed and accepted by the SHPD on 19 April 2010 (LOG NO: 2010.1749; DOC NO: 1004MV01). CSH completed an AIS of HRTP Section 2 (extending east from Leeward Community College to approximately Aloha Stadium) in May 2012. The Section 2 AISR (Sroat, Thurman, and McDermott 2012) was reviewed and accepted in the SHPD Section 106 review of 23 May 2012 (LOG NO: 2012.1449; DOC NO: 1205NN23). A supplemental Section 2 AISR (Sroat et al. 2013) addressing the Pearlridge Station was reviewed and accepted in the SHPD HRS §6E-8 and Section 106 review of 27 August 2013 (LOG NO: 2013.4527; DOC NO: 1308SL22). CSH completed an AIS for HRTP Section 3 (extending from Aloha Stadium to Middle Street) in November 2012. The Section 3 AISR (Hammatt et al. 2013) was reviewed and accepted in the SHPD HRS §6E-8 and Section 106 review letter of 26 August 2013 (LOG NO: 2013.2279, 2013.4326; DOC NO: 1308SL20). Following the completion and the SHPD acceptance of all four AIS reports addressing all four sections of the HRTP, the SHPD provided an acceptance letter on 27 August 2013 for the project's AIS in its entirety, the archaeological inventory survey for the entire HRTP (LOG NO: 2013.4987; DOC NO: 1308SL23) (see Appendix A).

The HRTP area of potential effect (APE) for archaeological cultural resources is defined in the HRTP PA (Stipulation III.A.1) as all areas of direct ground disturbance. For the City Center (Section 4) project area, project engineers estimate that the project's area of direct ground disturbance is approximately 13 acres.

Nineteen archaeological historic properties were identified during the City Center (Section 4) AIS (see Appendix B), either within or immediately adjacent to the project area. The City Center AIS (Hammatt 2013) represents a good faith effort to identify, document, make National Register and Hawai‘i Register of Historic Places (Hawai‘i Register) eligibility recommendations, and provide mitigation recommendations for the project area’s archaeological historic properties. Due to the inherent limitations of any AIS sampling strategy, however, it is possible that additional archaeological cultural resources or features may be uncovered during construction of the City Center section. Accordingly, the City Center AISR recommended a program of archaeological monitoring as an appropriate form of historic property mitigation during project construction. Archaeological monitoring is specified in Section III.E.1 of the project’s PA as an appropriate form of historic property mitigation. The City Center AISR’s recommended mitigation measures also included a data recovery program and a burial treatment plan.

This plan describes the archaeological monitoring program for the HRTP City Center (Section 4). This archaeological monitoring plan was designed to fulfill the state requirements for monitoring plans under HAR §13-13-279-4 and to support the proposed project’s historic preservation review under HRS §6E-8 and HAR §13-13-275. Additionally, 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.

This archaeological monitoring plan was also designed to work in tandem with the project’s interim protection plan (IPP) (CSH and HART 2013), which was reviewed and approved in the SHPD HRS §6E-8 review letter of 29 August 2013 (LOG NO: 2013.5066A; DOC NO: 1308PA01) (see Appendix A). The IPP specifies the conditions necessary for HRTP construction to begin in each of the four HRTP sections, ensuring that appropriate mitigation measures have been established and/or completed prior to construction. The IPP stipulates that project construction within City Center (Section 4) may commence only following the SHPD acceptance of a City Center data recovery plan, a data recovery end-of-fieldwork letter, and an archaeological monitoring plan. The IPP further specifies interim protection measures for all *iwi kūpuna* (human skeletal remains) that must be taken should City Center project construction commence prior to OIBC and SHPD acceptance of the City Center burial treatment plan (BTP).

It is currently anticipated that an accepted and implemented City Center BTP will be in place before City Center construction begins. In the unlikely event that that is not the case, per the IPP, the locations of all AIS and subsequent data recovery *iwi kūpuna* finds will be protected by 25 ft construction buffer zones. Within these 25 ft buffer zones no construction will be permissible until this monitoring plan is superseded by an accepted and implemented City Center burial treatment plan.

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 Construction Approach of the HHCTCP Final Environmental Impact Statement (FEIS) (USDOT/FTA and C&C/DTS 2010). (Note this is the same overview that was included in the SHPD approved City Center AISP [Hammatt et al. 2011].)

1.3.1 Fixed Guideway and Transit Stations

The HRTP 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-ft diameter column spaced, on average, about every 120 ft, 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 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-ft diameter auger to depths of 50 to 150 ft; 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. On figures these ancillary support facilities are called out as system sites.

1.3.3 Ancillary Impacts

Project construction will require relocation of existing utility lines within the project corridor that conflict with the project design. The nature and extent of utility relocations, based on preliminary engineering, are shown in Table 1. Current estimates are that the vast majority of subsurface impacts will be ancillary (particularly for utility relocation, roadway widening, and building demolition, refer to Table 1).

Guideway foundation excavations will extend below the water table, potentially creating significant need for the management of displaced water and/or drilling slurry. Dewatering 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. The proposed ancillary maintenance and storage facility area and transit stations have been identified as potential staging areas. Grading of the construction staging areas may be necessary.

1.3.4 Summary of Subsurface Impacts

While construction of the “touch down” facilities of the transit stations (the portions of the mostly elevated transit stations that are at ground/street level) and the excavations for the column foundations for the fixed guideway may be the most obvious project-related subsurface impacts, according to available data (Table 1) collectively these will only account for an estimated 3.9% of the area of project-related subsurface impacts.

Table 1. Summary of Total Area of Disturbance Anticipated for Different Aspects of City Center Construction (Estimated 604,289 sq ft Total)

Components	Area (sq ft)	Percent of Project-related Ground Disturbance
Utilities (wet)	86,597	14.33
Utilities (dry)	280,210	46.37
Traction power substation	20,916	3.46
Fiber optic cables	20,100	3.33
Building demolition	68,851	11.39
Roadway widening	103,410	17.11
Traffic signals	1,179	0.20
Stations	11,222	1.86
Columns	11,804	1.95

The utility relocations needed for this project are considerable. The “dry” utilities, including electric and gas line relocations, are estimated to account for nearly half (46.4%) of the project-related subsurface impacts. The “wet” utility relocations, including water, sewer, and storm sewer improvements, are anticipated to account for approximately 14% of the project-related subsurface impacts. Road widening work will largely occur on the *makai* side of Dillingham Boulevard and this is anticipated to account for approximately 17% of the project-related subsurface impacts. Because of the medial placement of column foundations along much of the Dillingham Boulevard alignment, the thoroughfare will effectively become largely divided with the *makai* lanes needing to be widened approximately 10 ft farther *makai* (the actual extent of the widening will vary).

Current plans call for demolition of existing buildings in a number of areas, including Iwilei, between the intersection of Queen and Waimanu Streets, and the vicinity of the intersection of Pensacola and Kona Streets. Demolition is anticipated to account for approximately 11% 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 City Center (Section 4) project area is situated along the low-lying coastal flats immediately inland of Kapālama Basin, Honolulu Harbor, and Kewalo Basin, generally within 1 km of the shoreline. The project area traverses Kalihi Stream, Kapālama Stream, and Nu‘uanu Stream. Elevations in the project area range from approximately 1 to 7 m (3 to 24 ft) above mean sea level. The project area receives an average of approximately 23 to 39 inches of annual rainfall (Giambelluca et al. 1986). As the City Center (Section 4) project area traverses a predominantly urban landscape, vegetation in the project area and immediate vicinity consists primarily of introduced (non-indigenous) landscaping trees, shrubs, and ground covers. According to U.S. Department of Agriculture (USDA) soil survey data (Figure 9), sediment types in the project area include exclusively: Fill Land (FL) and ‘Ewa Silty Clay Loam (EmA) (Foote et al. 1972).

Fill Land is described as follows:

> This land type occurs mostly near Pearl Harbor and in Honolulu, adjacent to the ocean. It consists of areas filled with material dredged from the ocean or hauled from nearby areas, garbage, and general material from other sources. Included in mapping were a few areas that have been excavated. This land type is used for urban development including airports, housing areas, and industrial facilities. [Foote et al. 1972:31]

‘Ewa Silty Clay Loam soils are described as follows:

> This soil occurs on alluvial fans and terraces . . . Permeability is moderate. Runoff is slow, and the erosion hazard is slight . . . The depth to coral limestone or gravelly alluvium ranges from 50 to more than 60 inches. In some areas cobble stones and stones occur on the surface and in the surface layer. This soil is used for sugarcane, truck crops and pasture. [Foote et al. 1972:29–3]

1.4.2 Built Environment

The City Center (Section 4) project area traverses a predominantly urban environment, through the neighborhoods of Kalihi, Kapālama, Iwilei, Chinatown, Downtown Honolulu, and Kaka‘ako. The centerline of the project alignment is generally within the median or shoulder of various roads and highways, including Kamehameha Highway, Dillingham Boulevard, Ka‘aahi Street, Nimitz Highway, Halekauwila Street, Queen Street, and Kona Street. Parcels bordering the roads and highways include a mix of commercial, industrial, and residential developments. Large developments in the vicinity of the project area include Honolulu Community College, the Aloha Tower Marketplace, and Ala Moana Center. Dillingham Boulevard, Nimitz Highway/Ala Moana Boulevard, and Halekauwila Street are major utility corridors with abundant subsurface and overhead utilities including gas, water, electric, sewer, storm drain, telephone, and other communications.

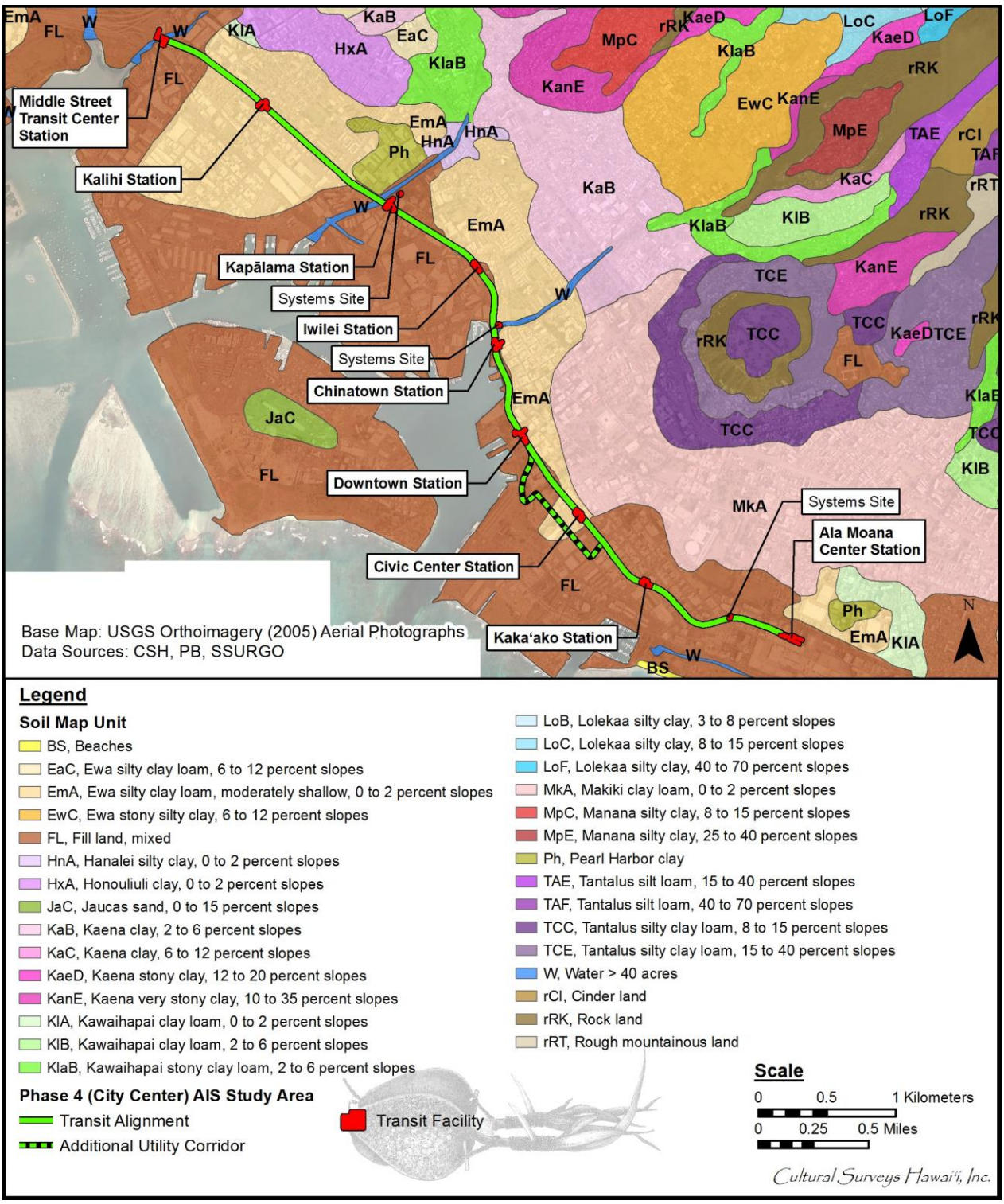

Figure 9. Aerial photograph (source: USGS orthoimagery 2005) with overlay of the *Soil Survey of Hawaii* (Foote et al. 1972), showing USDA soil types in the vicinity of the City Center project area

1.5 Traditional and Historical Background

Traditional and historical background research was conducted as part of the City Center (Section 4) AISP and AISR. The background research section provided within the City Center AISR,Volume II (Hammatt 2013), is included as Appendix D of this monitoring plan.

1.6 Previous Archaeological Research

Previous archaeological studies were reviewed as part of the City Center (Section 4) AISP and AISR. The previous archaeological research section provided within the City Center AISR, Volume II (Hammatt 2013), is included as Appendix E of this monitoring plan.

1.7 Consultation

Following the completion of the City Center AIS fieldwork, a series of burial treatment consultation meetings was held with the City Center Section’s recognized cultural descendants. While specifically addressing burial treatment decisions, these discussions also touched upon issues relevant to the City Center monitoring program. At the 17 April 2013 and 15 May 2013 meetings, it was agreed by all recognized cultural descendants present that permanent treatment of all *iwi kūpuna* will also provide the necessary buffer zone during project construction. This buffer zone will consist of the 2 by 3 ft precast concrete slab overlying each area of *iwi*; no additional buffer zones will be needed. It should be noted, however, that this discussion was predicated on the assumption that the permanent burial treatment would be completed prior to the start of construction.

At the 5 June 2013 burial treatment consultation meeting for cultural descendants, the issue of design-related ground disturbance was discussed (i.e., geotech testing and potholing). Concern was raised regarding protecting *iwi* during this process and whether any human remains found during this process would be regarded as “inadvertent discoveries” or “previously identified.”

At the 5 September 2013 burial treatment consultation meeting for cultural descendants, Matt McDermott of CSH outlined the proposed archaeological monitoring plan for the City Center project area. It was explained that the monitoring plan recommends on-site monitoring of the entire City Center section, with 21 specified “target” areas where intensive monitoring and data collection is prescribed. These target areas consist of the 19 historic properties identified in the AIS report and two areas of potential cultural resources noted in the report. Mr. McDermott also explained that the monitoring plan specifies interim protection measures for all *iwi kūpuna* during project construction. In particular, the AMP establishes a 25 ft buffer zone around each location of *iwi kūpuna*, within which no construction may take place, until such time as the burial treatment plan is finalized and implemented. Cultural descendants expressed agreement with the provisions of the monitoring plan. Some however expressed concern that all construction firms working in the City Center project area need to be culturally sensitive and aware of the protective measures. HART CEO, Dan Grabauskas, assured the cultural descendants that the winning bidders for construction work will be strongly briefed on cultural issues, cultural sensitivity, and the specific protection measures in place and that a cultural sensitivity training seminar will be held for all construction crew. Cultural descendants also expressed concern that the 25 ft buffer

zone around the *iwi kūpuna* should apply to all City or State projects in the area of the *iwi kūpuna* finds, and not just the HRTP.

Consultation regarding the provisions of the archaeological monitoring plan for City Center project area was also pursued with the SHPD. In addition to concurring with the general monitoring provisions outlined by Mr. McDermott at the 5 September 2013 cultural descendants meeting, Dr. Lebo requested in a 24 January 2014 email and follow-up discussion, that the monitoring plan include not only the monitoring of ground-disturbing activities during construction, but all project-related subsurface activities, including design and planning activities (e.g., geotechnical borings, potholing), removal of historic stone curbs, relocation of kamani trees, and any as yet unspecified ground disturbing activities.

Section 2 Archaeological Monitoring Provisions

In consultation with the project proponents, FTA, the City, and the SHPD, it was determined that an archaeological monitoring program was warranted as an historic preservation mitigation measure for the HRTP City Center (Section 4) project area. According to the City Center (Section 4) AIS's historic background research and excavation results (Hammatt 2013), the project area has 19 known archaeological historic properties within, or immediately adjacent to, the project area, and the potential to contain as yet unidentified archaeological cultural resources, potentially including burials and/or human skeletal remains (see Appendices B and C).

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 §13-13-279-3). Under Hawai‘i State historic preservation review legislation, there are five potential forms of historic preservation mitigation: 1) preservation, 2) architectural recordation, 3) archaeological data recovery (which includes archaeological monitoring), 4) historical data recovery; and 5) ethnographic documentation (HAR §13-13-275-8).

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 §13-13-280 ("Procedures for Inadvertent Discoveries During a Project Covered by the Historic Preservation Review Process"). Inadvertent discoveries of human skeletal remains will follow the procedures outlined in Hawai‘i State burial law (HAR §13-13-300-40). Because the City Center section of 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 also provide the opportunity to collect additional data from the City Center's 19 documented historic properties. The archaeological monitoring program is intended to serve as a research-directed monitoring program which will allow archaeologists to study and record, collect samples, and perform detailed sample analysis that may further refine the characteristics, function, age of use, and geographic extent of the 19 identified historic properties within the City Center (Section 4) project area (Figure 10).

Based on the results of the AIS and historic document research, all areas within the City Center (Section 4) project area are recommended for on-site monitoring during project construction. In addition, it is recommended that the monitoring program include on-site monitoring of all pre-construction, project-related ground disturbance within areas of high archaeological potential. These areas include 18 of the above listed historic properties, with the exception of SIHP # -6636, a natural wetland located within Kewalo. Pre-construction ground disturbance activities necessitating archaeological monitoring may include, but are not limited to, geotechnical boring, potholing, and tree relocations.

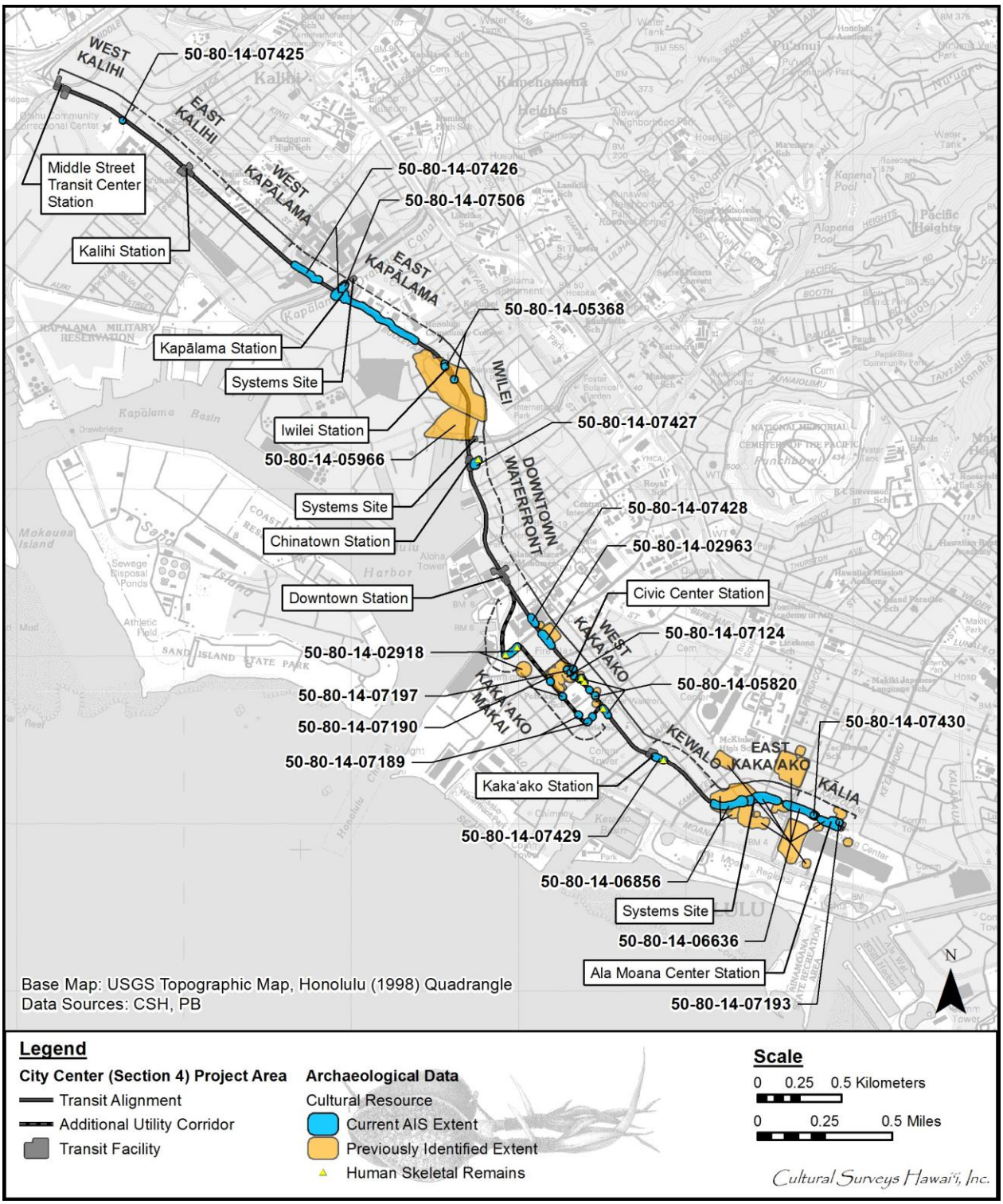

Figure 10. Archaeological historic properties identified within, or immediately adjacent to, the City Center project area (base map: USGS 1998)

The proposed monitoring program is also designed to work in tandem with the project's interim protection plan (CSH and HART 2013). The IPP specifies the conditions necessary for HRTP construction to begin in each of the four HRTP sections, including the need for the City Center (Section 4) archaeological monitoring plan to detail the interim protection measures during project construction for the seven locations of *iwi kūpuna* finds, until such time as the burial treatment plan has been accepted by the OIBC and SHPD and its measures implemented.

2.1 Interim Protection Plan (IPP) Provisions

The HRTP's interim protection plan was designed to provide interim protection measures prior to and during project construction and thus to allow for the restart of HRTP project construction. The IPP prohibits all HRTP construction work within the City Center (Section 4) project area prior to the SHPD acceptance of the City Center (Section 4) data recovery plan, data recovery end-of-fieldwork letter, and archaeological monitoring plan. The IPP further stipulates that the AMP shall provide construction buffers for the *iwi kūpuna* finds within the City Center (Section 4) project area in the event that a burial treatment plan has not yet been approved by the OIBC and the SHPD prior to review and acceptance of the end-of-fieldwork letter and the monitoring plan.

2.2 Monitoring Plan Provisions

2.2.1 Interim Protection Plan Implementation

It is currently anticipated that an approved and implemented City Center BTP will be in place before construction commences. In the unlikely event that that is not the case, in accordance with the IPP, this AMP provides for construction buffer zones around each of the seven locations of Native Hawaiian human skeletal remains within the City Center project area until such time as the BTP has been approved by the OIBC and the SHPD and its provisions implemented. The protected *iwi kūpuna* are located within four archaeological historic properties (SIHP #s -2918, within T-226E, T-226F, T-226C and T-227A; -5820, within T-141, T-142, and T-150; -7427, within T-096; and -7429, within T-170).

The construction buffer zones shall consist of a 25-ft diameter boundary surrounding each location of *iwi kūpuna* within which no project construction is permissible (Figure 11 through Figure 14). Prior to project construction, the parameters of the buffer zones and avoidance instructions must be placed on all pertinent construction plans and specifications. In addition, a pre-construction briefing of the hired construction firm will be given which explains the sites to be protected and specifies the boundaries of the construction buffer zones.

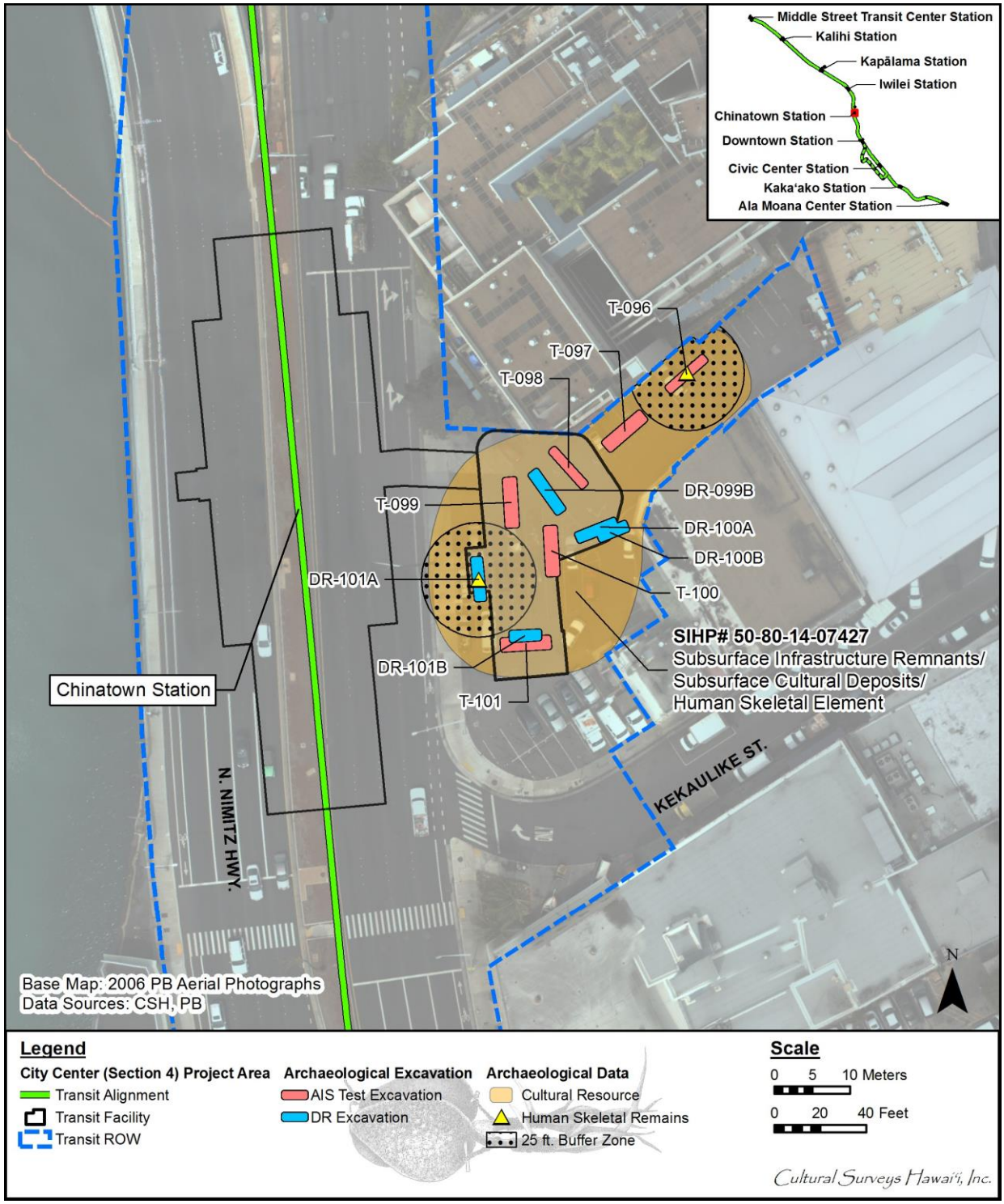

Figure 11. Aerial photograph showing the 25 ft construction buffer zone surrounding the *iwi kūpuna* located within SIHP # -7427 (within Test Excavation 96, identified during the City Center AIS; and within T-101A, identified during the ongoing City Center data recovery fieldwork)

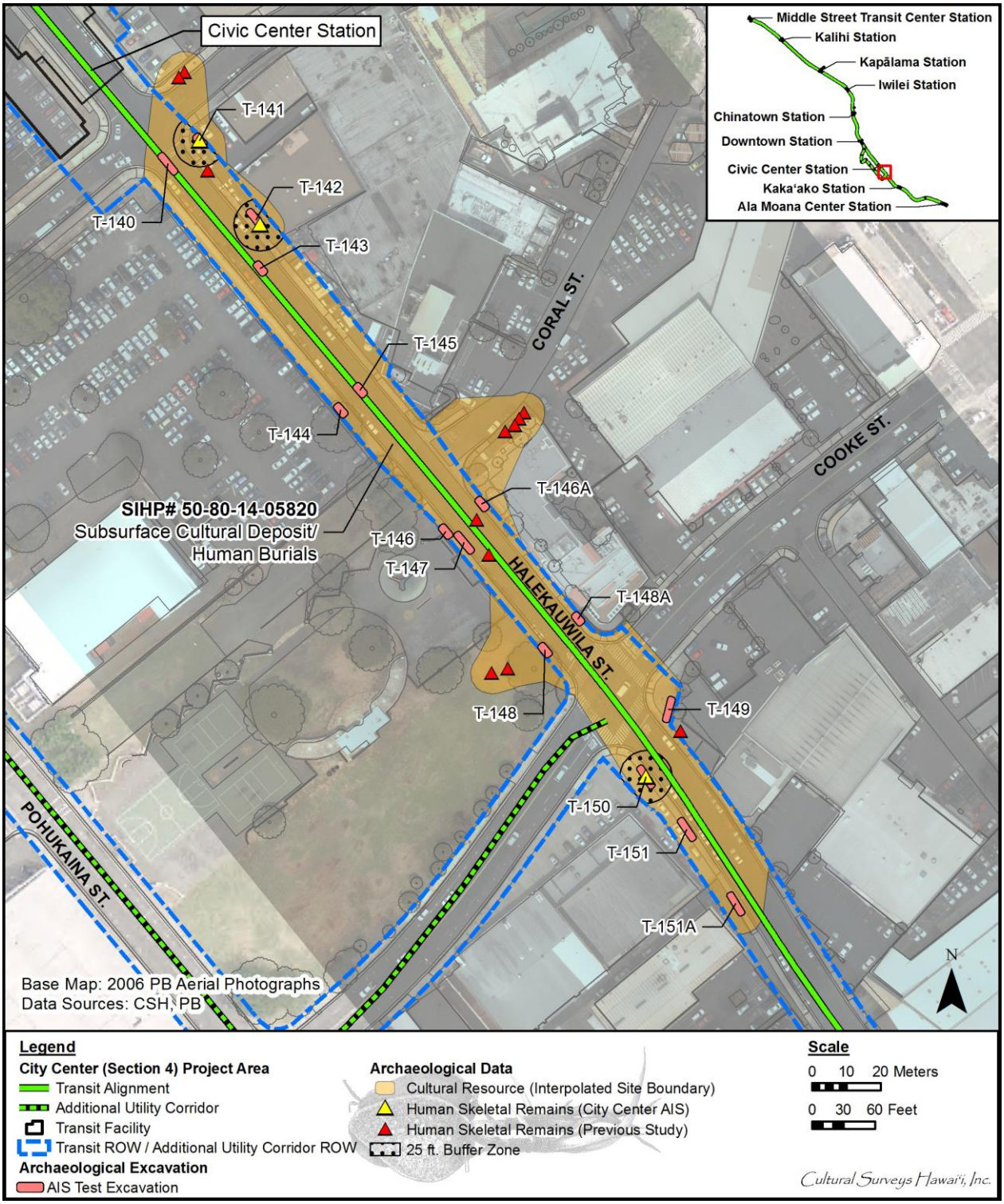

Figure 12. Aerial photograph showing the 25 ft construction buffer zones surrounding the *iwi kūpuna* located within SIHP # -5820 (Test Excavations 141, 142, and 150)

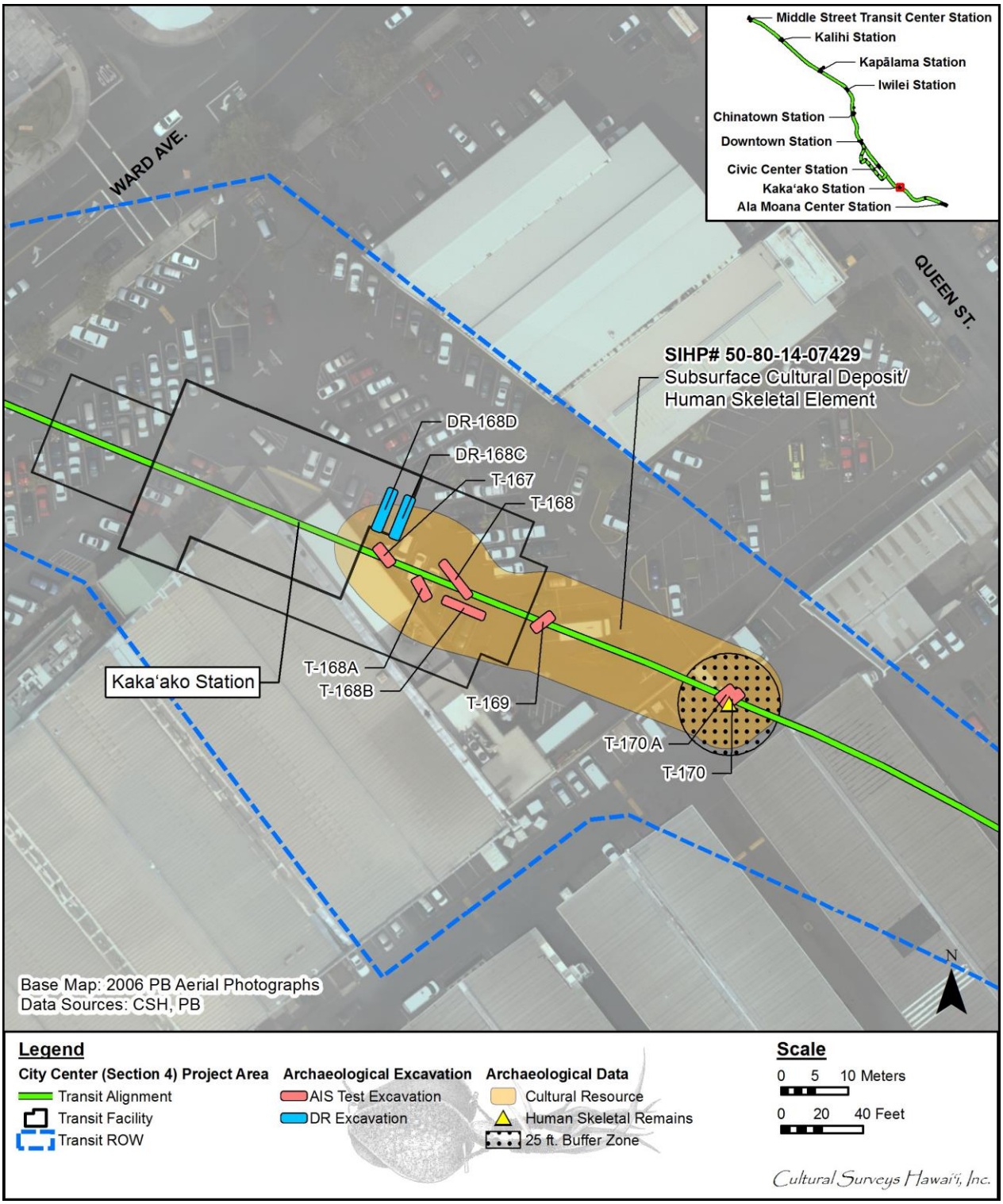

Figure 13. Aerial photograph showing the 25 ft construction buffer zone surrounding the *iwi kūpuna* located within SIHP # -7429 (Test Excavation 170)

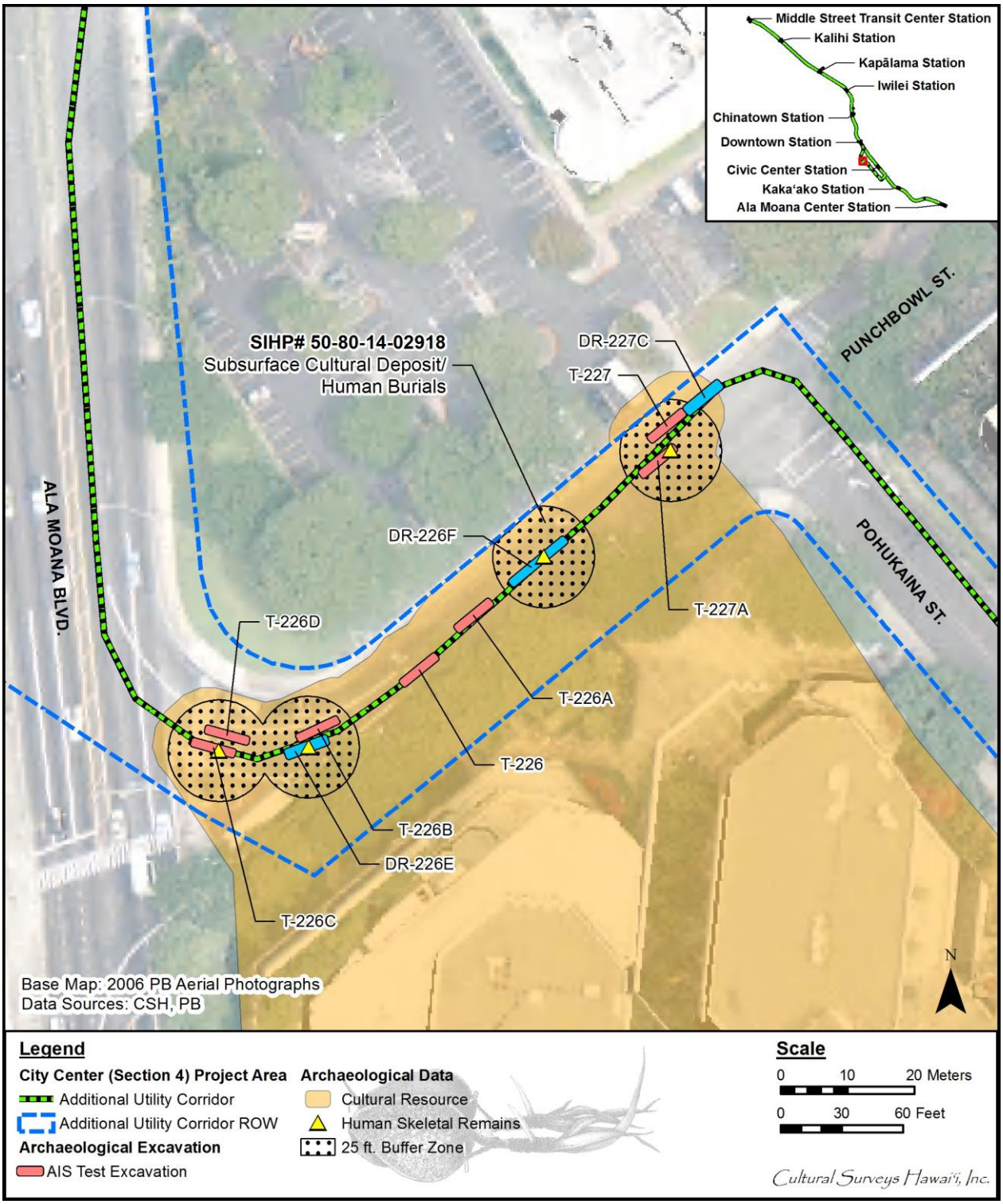

Figure 14. Aerial photograph showing the 25 ft construction buffer zones surrounding the *iwi kūpuna* located within SIHP # -2918 (Test Excavations 226C and 227A, identified during the City Center AIS, and within DR-226E and 226F, identified during the ongoing City Center data recovery fieldwork)

Once project construction has commenced, interim protection measures for the *iwi kūpuna* will include:

1. On-site, pre-construction meeting with the construction firm work force;
2. Flagging the perimeter of the buffer zone;
3. Erecting barriers (such as plastic fencing) along the buffer zone;
4. On-site archaeological monitoring to ensure that no ground disturbance activities occur within the buffer zones; and
5. Interaction of archaeological monitors with project cultural monitors during construction.

2.2.2 Monitoring Plan Objectives and Components

Based on background research and the results of the City Center AIS (Hammatt 2013), CSH recommends an archaeological monitoring program involving the following approach: 1) on-site monitoring of all pre-construction, design and planning-related ground disturbance activities within areas of high archaeological potential and on-call monitoring of the remaining areas during pre-construction activities; 2) on-site monitoring during project construction for all areas within the project’s APE; and 3) on-site targeted monitoring for specific areas that contain known historic properties and/or that have a high potential for yielding intact cultural deposits (Figure 15 through Figure 20 and Table 2).

2.2.3 Monitoring of Pre-Construction Ground Disturbance Activities

On-site archaeological monitoring is recommended for all pre-construction, design and planning-related ground disturbance within areas of high archaeological potential. These areas include 18 of the 19 identified historic properties, with the exception of SIHP # -6636, a natural wetland located within Kewalo. Pre-construction ground disturbance activities necessitating archaeological monitoring may include, but are not limited to, geotechnical boring, potholing, and tree relocations. Those portions of the project area located outside these historic properties will entail a program of on-call monitoring.

2.2.4 On-Site Monitoring of Areas within Project APE During Construction

On-site archaeological monitoring is recommended for all areas within the City Center (Section 4) project’s APE (refer to Figure 15) during project construction. An archaeological monitor will be present during all ground disturbance activities that extend below the current (pre-construction) land surface.

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 encountered during construction will be handled in compliance with HRS §6E-43 and HAR §13-13-300 and in consultation with the SHPD.

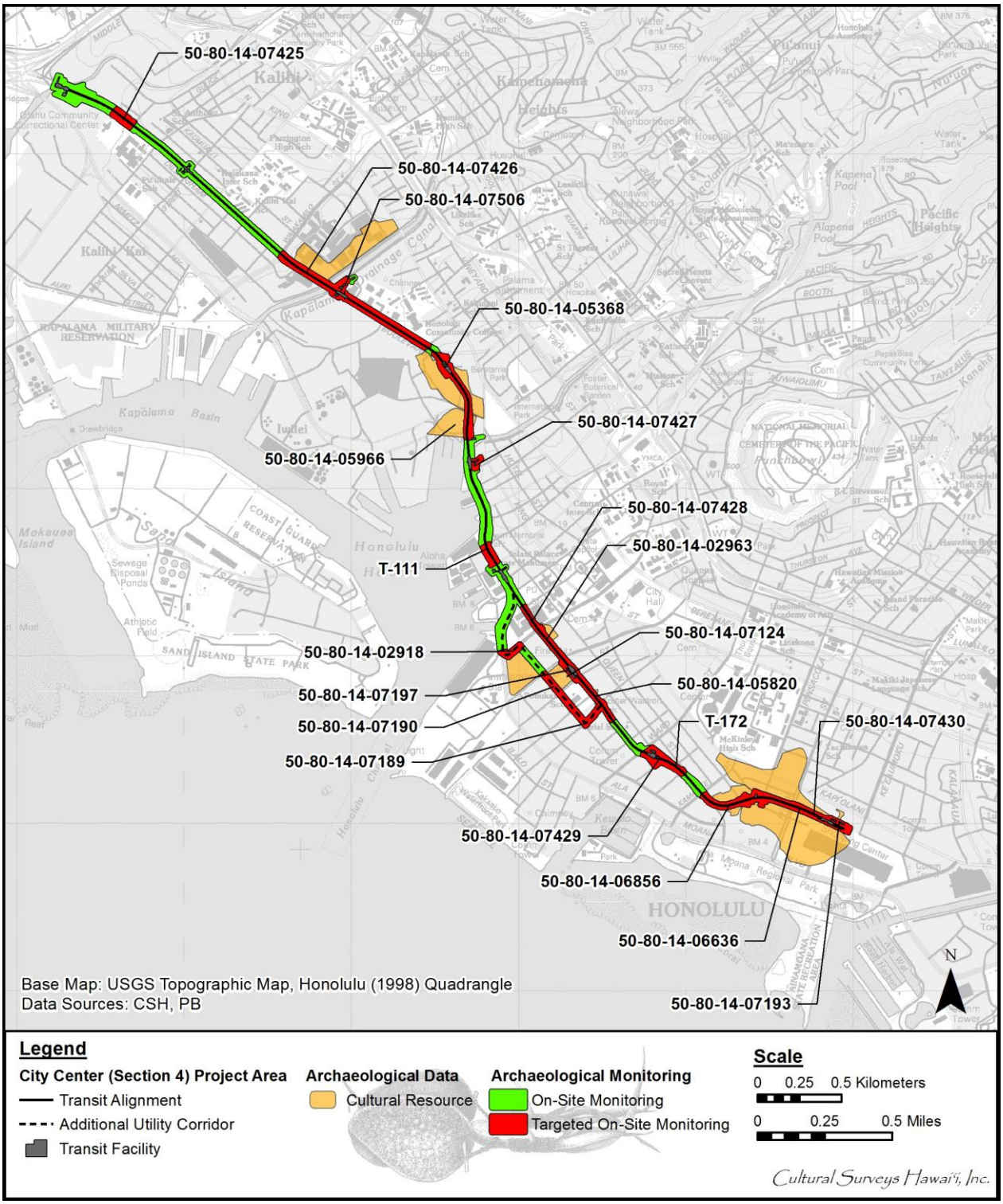

Figure 15. Areas recommended for on-site (green) and targeted on-site (red) archaeological monitoring within the City Center project area (base map: USGS 1998)

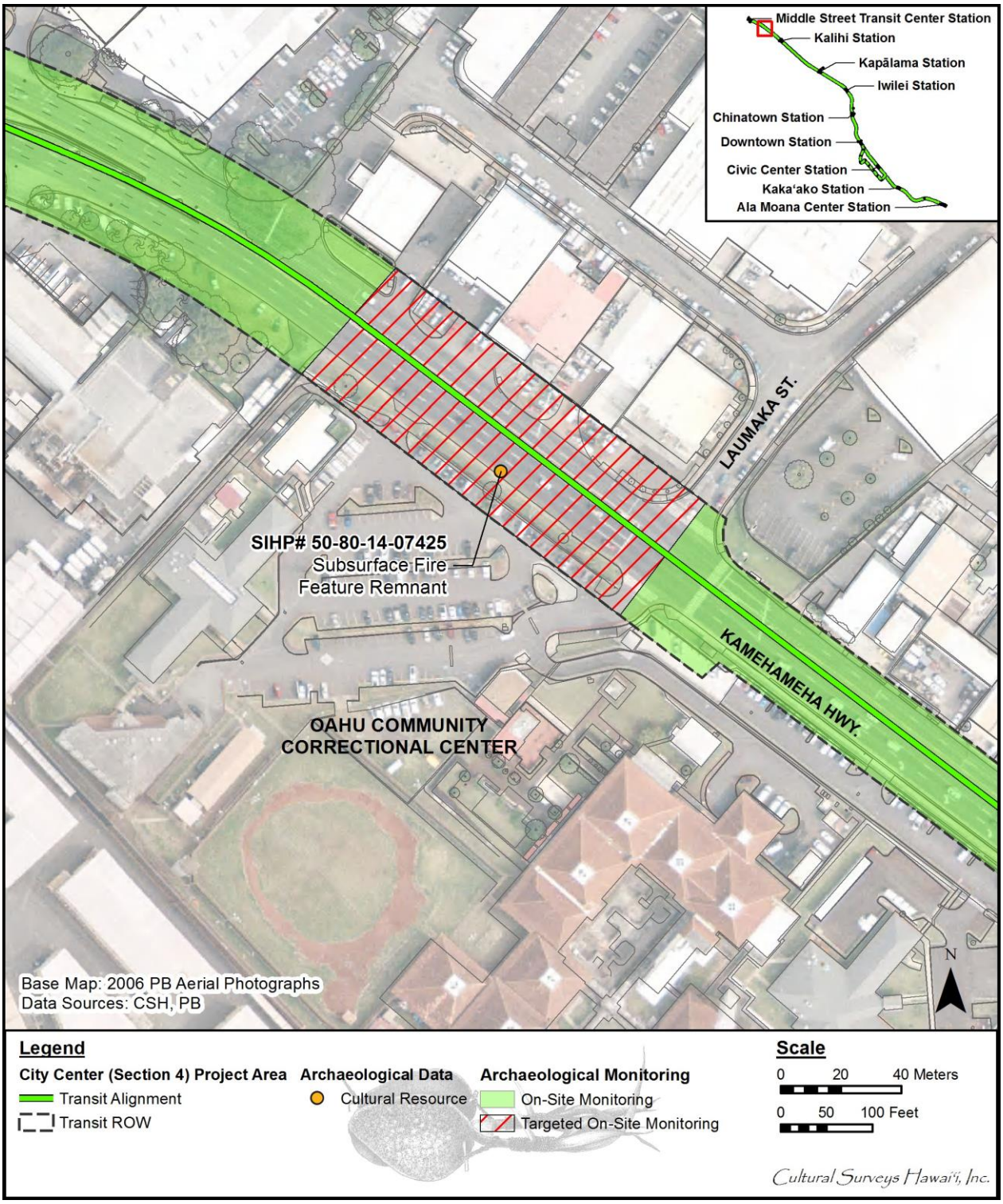

Figure 16. Portion of the City Center project area showing the targeted on-site archaeological monitoring area surrounding SIHP # -7425 (base map: PB 2006)

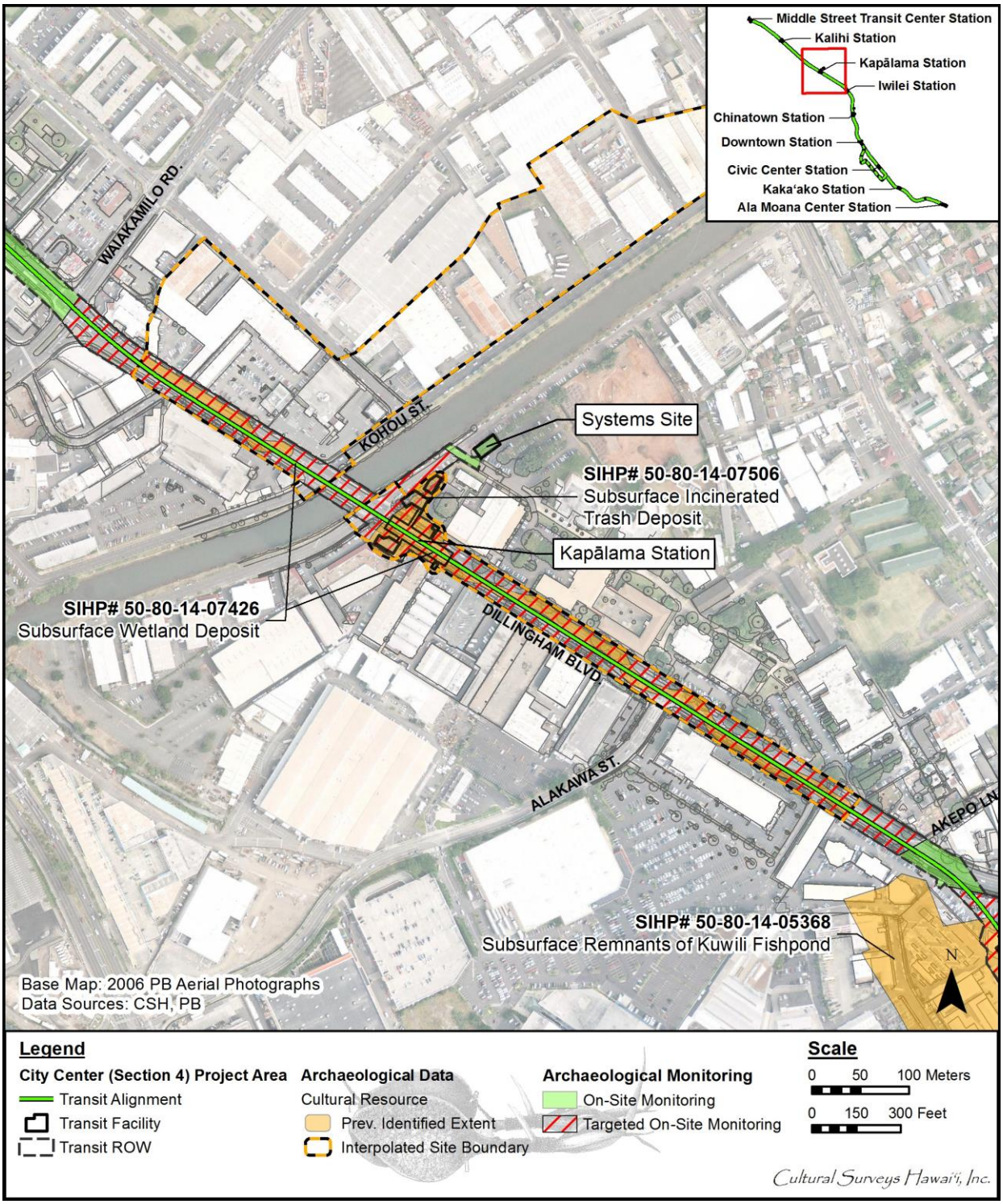

Figure 17. Portion of the City Center project area showing the targeted on-site archaeological monitoring area surrounding SIHP #s -7426 and 7506 (base map: PB 2006)

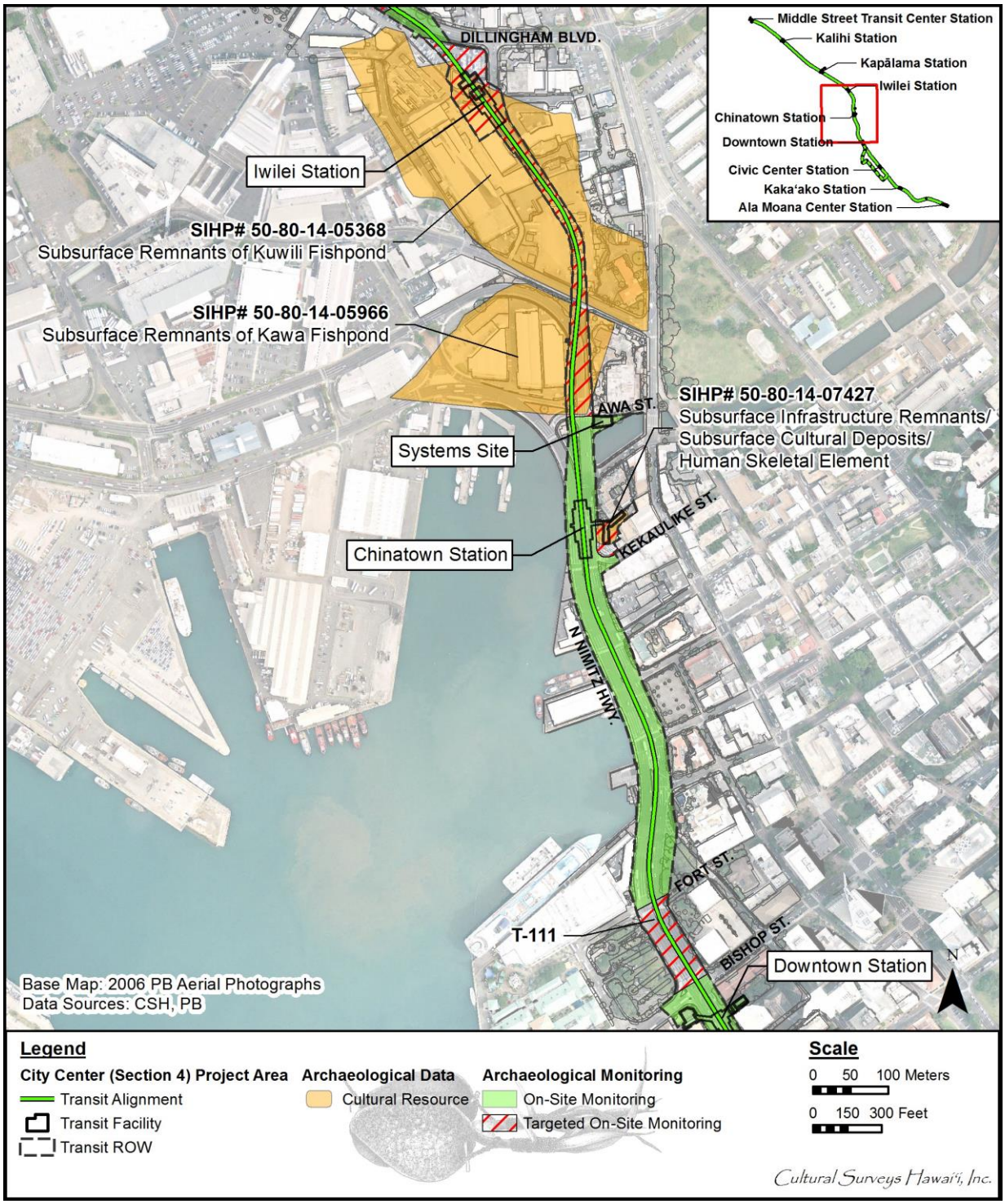

Figure 18. Portion of the City Center project area showing the targeted on-site archaeological monitoring area surrounding SIHP #s -5368, 5966, and 7427, and T-111 (base map: PB 2006)

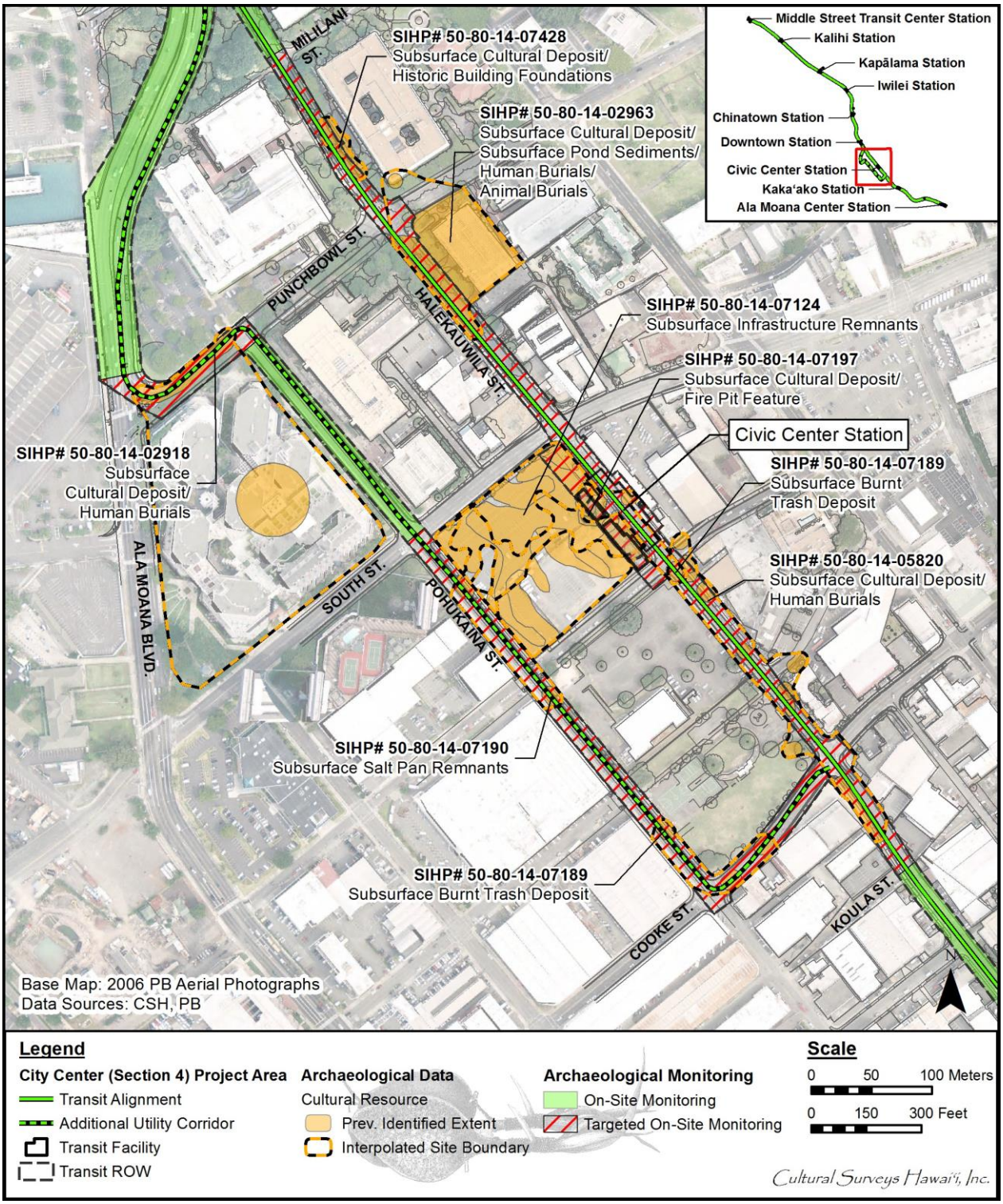

Figure 19. Portion of the City Center project area showing the targeted on-site archaeological monitoring area surrounding SIHP #s -7428, 2963, 2918, 7124, 7189, 7190, and 5820 (base map: PB 2006)

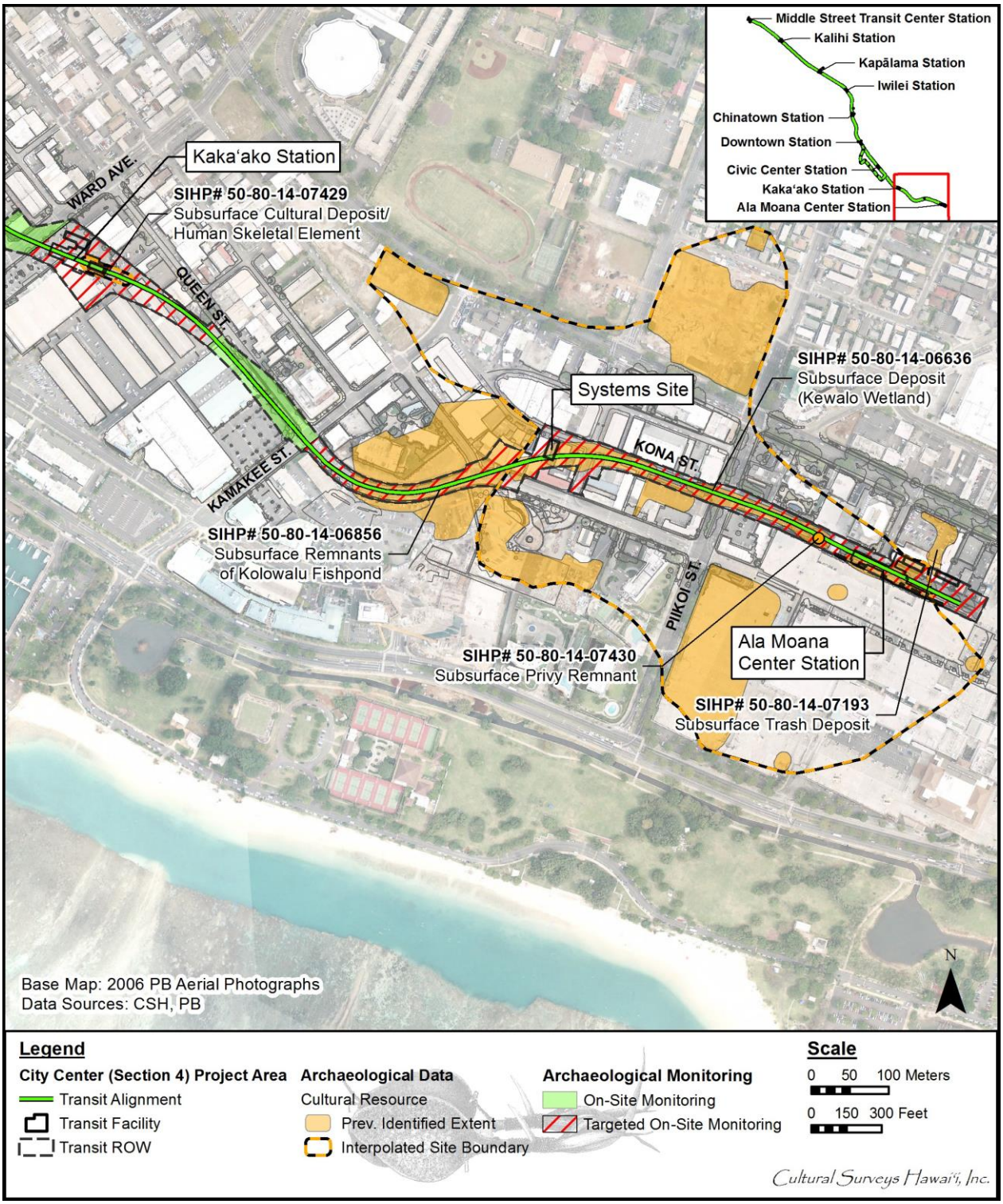

Figure 20. Portion of the City Center project area showing the targeted on-site archaeological monitoring area surrounding SIHP #s -7429, 6856, 6636, 7193, and 7430, and T-172 (base map: PB 2006)

Table 2. Summary of Targeted On-Site Monitoring Areas by Intersection or Landmark

Location	Target
Dillingham Blvd; NW end of O‘ahu Community Correctional Center Property to Laumaka St	SIHP # -7425
Dillingham Blvd; Waikamilo Rd to Akepo Lane	SIHP # -7426 and 7506
Nimitz Hwy; Dillingham Blvd to Awa St	SIHP # -5368 and 5966
Chinatown Station Footprint	SIHP # -7427
Nimitz Hwy; Fort St to Bishop St	T-111
Halekauwila St; Mililani St to Koula St	SIHP #s -7428, 2963, 7124, 7189, and 5820
Punchbowl St; Pohukaina St to Ala Moana Blvd	SIHP # -2918
Pohukaina St; South St to Cooke St and Cooke St to Halekauwila St	SIHP #s -7190 and 7189
Ross Dress for Less parking lot; Ward Ave to Consolidated Ward 16 Theatre	SIHP # -7429 and T-172
Queen St/Kona St; Kamake‘e St to eastern of City Center (Section 4) project area	SIHP #s -6856, 6636, 7193, and 7430

2.2.5 On-Site Targeted Monitoring of Identified Historic Properties and Potential Cultural Resources

On-site targeted monitoring is recommended for specific areas where known historic properties and/or potential cultural resources were identified during the City Center AIS (refer to Figure 15 through Figure 20 and Table 2). These areas include the immediate vicinity of 19 archaeological historic properties (SIHP #s -7425, 7426, 7506, 5368, 5966, 7427, 7428, 2963, 7124, 7189, 7190, 7197, 5820, 7429, 6856, 6636, 7430, 7193, and 2918) (see Appendix B) and two AIS test excavations (T-111 and T-172) which contained potential subsurface cultural deposits (see Appendix C). The primary focus of on-site targeted monitoring is to provide additional documentation and analysis of these culturally rich areas in profile and plan view exposures and through specialized sample collection and analysis. It should be noted that the collection of data in these areas may require a short pause in construction ground disturbance activity and/or the need for more than one archaeological monitor.

A brief description of the research objectives and methods for each on-site target area is provided below (listed in geographic order, from west to east).

SIHP # -7425

SIHP # -7425 consists of a subsurface fire feature (interpreted as the remains of a single *imu*) used for cooking activities. Targeted monitoring is recommended to recover additional data on the extent, location, and distribution of the fire feature and any associated features that can potentially provide information on pre-Contact land use within Kalihi Ahupua‘a. Should additional remnants of SIHP # -7425 be encountered during monitoring, archaeologists will document and record the exposures with plan and/or profile maps, GPS locations, and photographs. Archaeologists will also collect charcoal samples for potential wood taxa

identification and radiocarbon analysis as well as controlled bulk sediment and column samples for pollen analysis.

SIHP # -7426

SIHP # -7426 consists of a subsurface deposit of wetland sediment. Targeted monitoring is recommended to collect additional information regarding the geographic distribution/extent, paleoenvironment, and cultural modification of the pre- and post-Contact wetlands of coastal Kapālama. Should SIHP # -7425 or any potential associated features (e.g., irrigation ditch [*‘auwai*] berms) be encountered during monitoring, archaeologists will document and record the exposures with plan and/or profile maps, GPS locations, and photographs. Archaeologists will also collect controlled bulk and column samples for potential radiocarbon and pollen analysis.

SIHP # -7506

SIHP # -7506 consists of a subsurface incinerated trash deposit containing ceramics, glass bottles and bottle fragments, melted metal, insulators, miscellaneous household items, and faunal remains. Targeted monitoring is recommended to collect additional information related to the geographic distribution and materials of twentieth century refuse disposal and land reclamation efforts in the East Kapālama Geographic Zone. Should these incinerated trash deposits be encountered during monitoring, archaeologists will document and record their stratigraphic exposures with profile maps, GPS locations, and photographs. Archaeologists will also collect representative samples of cultural material present in order to help define the characteristics, age range, and origin of SIHP # -7506. Cultural material that is not collected will be photographed and documented.

SIHP # -5368

SIHP # -5368 consists of subsurface remnants of Kūwili Fishpond. Targeted monitoring is recommended to collect additional information regarding the formation, construction, depositional sequence, characteristics, and geographic extent of Kūwili Fishpond. Should these fishpond sediments and any associated features (e.g., fishpond walls) be encountered during monitoring, archaeologists will document and record with profile maps, GPS locations, and photographs. Archaeologists will also collect controlled bulk and column samples for potential radiocarbon and pollen analysis.

SIHP # -5966

SIHP # -5966 consists of subsurface remnants of Kawa Fishpond. Targeted monitoring is recommended to collect additional information on the formation, construction, depositional sequence, contents, and geographic extent of Kawa Fishpond. Should the Kawa Fishpond sediments and any associated features (e.g., fishpond walls) be encountered during monitoring, archaeologists will document and record the exposures with plan and/or profile maps, GPS locations, and photographs. Archaeologists will also collect controlled bulk and column samples for potential radiocarbon and pollen analysis.

SIHP # -7427

SIHP # -7427 consists of subsurface infrastructure remnants, subsurface cultural deposits, and a single human talus bone. Targeted monitoring is recommended to collect additional information on pre-Contact and nineteenth to twentieth century habitation at the previous

settlement of Kou and historic development of the area surrounding Honolulu Harbor. Should additional buried structural features or further subsurface cultural deposits of SIHP # -7427 be encountered during monitoring, archaeologists will document and record the exposures with plan and/or profile maps, GPS locations, and photographs. Representative samples of cultural materials present and bulk sediment samples of cultural deposits will also be collected.

SIHP # -7428

SIHP # -7428 consists of a subsurface cultural deposit and historic building foundation. Targeted monitoring is recommended to collect additional information on pre- to early post-Contact habitation and historic land use within Kaka‘ako, including the geographic extent of the culturally enriched A horizon. Should additional deposits and features of SIHP # -7428 be encountered during monitoring, archaeologists will document and record the exposures with plan and/or profile maps, GPS locations, and photographs and collect representative samples of cultural material present. Bulk sediment samples of the A horizon and any associated features will be collected for content analysis and potential wood taxa identification and radiocarbon dating.

SIHP # -2963

SIHP # -2963 consists of subsurface pond sediments, a subsurface cultural deposit with associated features, human burials, and animal burials. Targeted monitoring is recommended to recover data on the depositional sequence and geographic extent of SIHP # -2963, as well as to document culturally enriched strata and features through recordation and controlled sample collection. Should additional subsurface remnants of SIHP # -2963 be encountered during monitoring, archaeologists will document and record the exposures with plan and/or profile maps, GPS locations, and photographs. Controlled bulk and/or column samples will be collected from A horizon material, pond sediments, and pit features for potential radiocarbon, pollen, and macrobotanical analysis. Archaeologists will also collect representative samples of cultural material that can be used to define the age range and characterization of SIHP # -2963. Cultural material that is not collected will be photographed and documented.

SIHP # -7124

SIHP # -7124 consists of subsurface historic infrastructure remnants, including demolition debris and refuse enriched fill deposits. Targeted monitoring is recommended to collect additional information on the geographic extent and distribution of additional buried structural remnants that may be associated with SIHP # -7424. Should additional buried structural remnants associated with SIHP # -7124 be encountered during monitoring, archaeologists will document and record the exposures with plan and/or profile maps, GPS locations, and photographs. Archaeologists will also collect representative samples of cultural material that can be used to define the age of construction of each structural remnant and potentially aid in matching these remnants to specific former structures on historic maps. Cultural material that is not collected will be photographed and documented.

SIHP # -7189

SIHP # -7189 consists of a subsurface burnt trash deposit containing large quantities of glass bottles, ceramics, metal, and cut faunal bone. Targeted monitoring is recommended to recover data on the geographic extent and distribution of SIHP # -7189. Should additional subsurface

burnt trash be encountered during monitoring, archaeologists will document and record the exposures with profile maps, GPS locations, and photographs. Archaeologists will also collect representative samples of cultural material that can be used to better characterize the content and age range of SIHP # -7189. Cultural material that is not collected will be photographed and documented.

SIHP # -7190

SIHP # -7190 consists of subsurface salt pan remnants. Targeted monitoring is recommended to collect additional information related to the depositional sequence, characterization, and geographic extent of SIHP # -7190. Should possible salt pan remnants be encountered during monitoring, archaeologists will document and record the exposures with profile maps, GPS locations, photographs, and extensive sampling. Sampling will include the collection of sediment column samples and/or sediment cores that will be incrementally partitioned and potentially submitted for radiocarbon, pollen, and resistivity analysis. The radiocarbon data and/or palynological analysis will be used to interpret the age, content, and duration of use of the salt pan remnants of SIHP # -7190. Resistivity testing may help to identify the presence of salt pan deposits.

SIHP # -7197

SIHP # -7197 consists of a subsurface cultural deposit and fire pit feature. Targeted monitoring is recommended to help characterize and to identify the geographic extent of SIHP # -7197. Should the buried culturally enriched A horizon and any potential archaeological features associated with SIHP # -7197 be encountered during monitoring, archaeologists will document and record the exposures with plan and/or profile maps, GPS locations, photographs, and sample collection of cultural material and sediments. Bulk sediment samples will be collected for content analysis and potential wood taxa identification and radiocarbon dating.

SIHP # -5820

SIHP # -5820 consists of a subsurface cultural deposit and human burials. Targeted monitoring is recommended to collect additional data on the depositional sequence and geographic extent of SIHP # -5820, as well as to document any associated culturally enriched strata and features through recordation and sample collection. Should strata and features of SIHP # -5820 be encountered during monitoring, archaeologists will document and record the exposures with plan and/or profile maps, GPS locations, photographs, and sample collection of cultural material and sediments. Bulk sediment samples will be collected for content analysis and potential wood taxa identification and radiocarbon dating.

SIHP # -7429

SIHP # -7429 consists of a subsurface cultural deposit and a human skeletal element. Targeted monitoring is recommended to collect additional data on the depositional sequence and geographic extent of SIHP # -7429, as well as to document any associated culturally enriched strata and features through recordation and sample collection. Should strata and features of SIHP # -7429 be encountered during monitoring, archaeologists will document and record the exposures with plan and/or profile maps, GPS locations, photographs, and sample collection of cultural material and sediments. Bulk sediment samples will be collected for content analysis and potential wood taxa identification and radiocarbon dating.

SIHP # -6856

SIHP # -6856 consists of the subsurface remnants of Kolowalu Fishpond. Targeted monitoring is recommended to collect additional data on the depositional sequence and geographic extent of SIHP # -6856, as well as to document any potential structural remnants of Kolowalu Fishpond. Should components of SIHP # -6856 be encountered during monitoring, archaeologists will document and record the exposures with profile maps, GPS locations, photographs, and sample collection. Controlled bulk and column samples will be collected for potential radiocarbon and pollen analysis in an effort to potentially augment information from previous archaeological research conducted at Kolowalu Fishpond and other Hawaiian fishponds.

SIHP # -6636

SIHP # -6636 consists of the subsurface remnants of the Kewalo wetlands. Targeted monitoring is recommended to collect additional data regarding the depositional sequence and characterization of the Kewalo wetlands, as well as to identify any cultural modifications (e.g., berms, channelized ditches, *lo‘i* [pond fields], or habitation sites). Should sediments and/or features of SIHP # -6856 be encountered during monitoring, archaeologists will document and record the exposures with plan and/or profile maps, GPS locations, photographs, and controlled sampling. Controlled bulk and column samples will be collected for potential radiocarbon, pollen, and macrobotanical analysis.

SIHP # -7430

SIHP # -7430 consists of the subsurface remnants of a historic privy. Targeted monitoring is recommended to collect additional data regarding the geographic extent and function of SIHP # -7430, as well as to document any remaining structural elements of the privy. Should additional components of SIHP # -7430 be encountered during monitoring, archaeologists will cordon off the exposed portions of the privy to allow for complete documentation and intensive bulk sampling of the privy sediments for macrobotanical analysis. Archaeologists will also collect representative samples of cultural material that can be used to better characterize the age range of SIHP # -7189. Cultural material that is not collected will be photographed and documented.

SIHP # -7193

SIHP # -7193 consists of a subsurface trash deposit. Targeted monitoring is recommended to collect additional data regarding the geographic extent and age range of SIHP # -7193. Should additional deposits of SIHP # -7193 be encountered during monitoring, archaeologists will document and record the exposures with profile maps, GPS locations, and photographs. Archaeologists will also collect representative samples of cultural material that can be used to better characterize the content and age range of SIHP # -7193. Cultural material that is not collected will be photographed and documented.

SIHP # -2918

SIHP # -2918 consists of a subsurface cultural deposit and human burials. Targeted monitoring is recommended to collect additional data on the depositional sequence and geographic extent of SIHP # -2918, as well as to document culturally enriched strata and features through recordation and sample collection. Should additional components of SIHP # -2918 be

encountered during monitoring, archaeologists will document and record the exposures with plan and/or profile maps, GPS locations, photographs, and controlled sampling. Bulk sediment samples will be collected for content analysis and potential wood taxa identification and radiocarbon dating.

City Center AIS Test Excavation 111

Test Excavation 111 contained a potential cultural resource consisting of several large concrete covered basalt blocks directly below the asphalt pavement of Nimitz Highway. The blocks were scattered along the test excavation length between the depths of 0.40 and 1.05 m below surface (mbs), and they appeared to be aligned and in situ. The blocks may represent a modern structural remnant (see Appendix C).

Targeted monitoring is recommended to collect additional data regarding the characterization and geographic extent of the basalt blocks, and to assess their eligibility to the Hawai‘i and National Registers of Historic Places. Should additional blocks or associated elements be encountered during monitoring, archaeologists will document and record the exposures with plan and/or profile maps, GPS locations, and photographs. Archaeologists will also collect representative samples of any cultural material that is present.

City Center AIS Test Excavation 172

T-172 contained a potentially culturally enriched, buried A horizon. The former land surface consisted of dark brown silty sand that contained one historic artifact (a glass bead), charcoal, a very light marine shell midden signature, and burned faunal bones (fish and mammal). The A horizon was encountered between 0.83 and 0.89 mbs, overlying Jaucas sand and capped by several fill layers.

Targeted monitoring is recommended to collect additional data regarding the content, characterization, age, and geographic extent of the buried A horizon to assess its eligibility to the Hawai‘i and National Registers of Historic Places. Should additional deposits or features of this buried A horizon be encountered during monitoring, archaeologists will document and record the exposures with plan and/or profile maps, GPS locations, photographs, and controlled sampling. Bulk sediment samples will be collected for content analysis and potential wood taxa identification and radiocarbon dating.

2.2.6 Legislative Monitoring Provisions

Hawai‘i State historic preservation legislation governing archeological monitoring programs requires that each monitoring plan discuss eight specific items (HAR §13-13-279-4). Additionally, the SHPD has asked that monitoring plans also include a brief discussion of research questions and goals that may be addressed by an archaeological monitoring program. The monitoring provisions below address these requirements in terms of the archaeological monitoring of construction related excavation within the project area.

1. Anticipated Archaeological Cultural Resources:

   Based on background research and previous archaeological studies conducted within the current project area (refer to Hammatt 2013), archaeological cultural resources in the form of pre- and post-Contact subsurface cultural, wetland, and aquacultural

deposits may be encountered during archaeological monitoring of ground disturbance within the project area.

Evidence of indigenous Hawaiian land use could include subsurface cultural deposits containing midden and artifacts, salt pan and fishpond remnants, and human burials. Evidence of post-Contact land use could include subsurface cultural deposits in the form of trash pits, privies, building foundations, salt pan remnants, cultural deposits, and human burials.

2. Locations of Archaeological Cultural Resources:

Archaeological cultural resources may be encountered anywhere within the project area. Based on current information, it appears that significant archaeological deposits (e.g., archaeological cultural resources eligible for listing on the Hawai‘i and/or National Register) are more likely to be found within West Kalihi, West and East Kapālama, Iwilei, West Kaka‘ako, Kewalo, East Kaka‘ako, and Kālia Geographic Zones.

3. Fieldwork:

On-site monitoring by a qualified archaeologist is recommended for all ground disturbing activities during project construction. In addition, on-site monitoring is recommended for all ground disturbing activities associated with project pre-construction design and planning activity within all areas of high archaeological potential (18 of the 19 historic properites, excepting SIHP # -6636, natural Kewalo wetlands). For those areas outside these 18 historic properties, a program of on-call monitoring is recommended for pre-construction subsurface activities. Any departure from this will only follow consultation with, and written concurrence from, the SHPD.

The monitoring fieldwork may 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, column 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 encountered during construction will be handled in compliance with HRS §6E-43 and HAR §13-13-300 and in consultation with the 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 ensure 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 subcontractor (i.e., pre-construction design and planning activities) and/or construction crews 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. The monitor shall stress to the Project Managers and/or the Foreperson(s) that they are responsible for informing the archaeological firm of all participating subcontractors to ensure that every project participant is made aware of the archaeologist’s role and authority. At this time it will also be made clear that the archaeologist must be on site during all subsurface excavations during project construction and at specified areas during project design and planning subsurface activities.

6. Laboratory work:

   Laboratory work will be conducted in accordance of HAR §13-13-279-5-(6). Laboratory analysis of non-burial related finds will be tabulated and standard artifact and midden recording will be conducted. 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 §13-13-279-5). 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 and/or human skeletal remains will be addressed as directed by the SHPD, following Hawai‘i State burial law (HRS §6E-43 and HAR §13-13-300). In compliance with the project’s Programmatic Agreement, Stipulation III.F “Curation,” the City will curate recovered materials in accordance with applicable laws, including HAR §13-13-278 and 36 CFR 79. The City is currently developing a curation program and seeking a curation facility that will meet these requirements. Until these curation measures are in place, all collected materials and associated records generated by the HRTP Section 4 City Center monitoring program will be temporarily curated at CSH’s main O‘ahu office in Waimānalo.

2.2.7 Research Objectives

This monitoring program will provide an opportunity to better document the City Center project area in greater detail and attain a better understanding of existing pre-Contact and post-Contact archaeological deposits and their geographic extent. For details of the research objectives and methods for each identified historic property and potential cultural resource, see the above discussion regarding on-site targeted monitoring. The general research objectives that may be explored during this monitoring program are as follows:

a) What are the geographic extents of each archaeological historic property?

b) Do the culturally enriched, loamy sand A horizons within Kaka‘ako evidence variation in cultural activity, function, and intensity over time and space?

c) Do the culturally enriched, loamy sand A horizons within Kaka‘ako interrelate and/or are any or all of them part of the same cultural layer?

d) Can subsurface structural remnants identified within the project area be associated with specific former buildings?

e) What do cultural deposits and infrastructure remnants within the downtown Honolulu area tell us about the transition from a small traditional Hawaiian coastal settlement to an international port town?

f) What is the relationship between Kawa Fishpond (SIHP # -5966) and Kūwili Fishpond (SIHP # -5368)? How are they similar, or how do they differ? Can comparisons be made of their formation, construction, and characteristics?

g) To what extent do the the Kewalo wetland show evidence of cultural modification, and what do these modifications indicate about cultural usage of this type of wetland environment?

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USDOT/FTA and C&C/DTS (U.S. Department of Transportation Federal Transit Administration and City and County of Honolulu Department of Transportation Services)

2010 Honolulu High-Capacity Transit Corridor Project, Final Environmental Impact Statement/Section 4(f) Evaluation, June 2010. U.S. Department of Transportation Services, City and County of Honolulu, Honolulu.

U.S. Geological Survey

1998 Honolulu USGS 7.5-minute topographic quadrangle. Available at USGS Information Services, Box 25286, Denver, Colorado.

2005 USGS Orthoimagery, Honolulu Quadrangle (aerial photograph). Available at USGS Information Services, Box 25286, Denver, Colorado.

Appendix A SHPD Acceptance Letters

SHPD Acceptance Letter: HHCTCP Archaeological Inventory Survey Plan (Section 4)

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

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

GUY H. KAULUKUKUI
ACTING FIRST DEPUTY

WILLIAM M. TAM
ACTING DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
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CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
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FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

October 25, 2011

Hallett H. Hammatt, Ph.D
P.O. Box 1114
Kailua, Hawaii 96734

LOG NO: 2011.2379
DOC NO: 1110NN08

Dear Dr. Hammatt:

SUBJECT: National Historic Preservation Act (NHPA) Section 106 Review – (REVISED) Archaeological Inventory Survey Plan for City Center PHASE 4 of the Honolulu High-Capacity Transit Corridor Project Kalihi, Kapālama, and Honolulu Ahupua‘a, Honolulu District, Island of O‘ahu TMK: (3) 7-4-021: 002

Thank you for requesting our review of the (Revised) Archeological Inventory Survey Plan (AISP) titled *Archaeological Inventory Survey Plan for the City Center (Construction Phase 4) of the Honolulu High-Capacity Transit Corridor Project, Kaliki, Kapālama, and Honolulu Ahupua`a, Honolulu Disctrict, Island of O‘ahu TMK: [1] 1-2, 1-5, 1-7, 2-1, 2-3 (Various Plats and Parcels) Volume I: Plan and Appendices F and G* and *Volume II: Appendices A-E, Land Documents by* Hammatt, et.al (CSH report code KALIHI 17), received by our office on August 12, 2011. This AISP was prepared in compliance with National Historic Preservation Act Section 106 Review.

The AISP explains the intent to identify and record any remaining historic sites and cultural deposits located within the 13.87 acre project corridor that extends east along the southern coast of O‘ahu from Kalihi Stream on Dillingham Boulevard to Ala Moana Center on Kona Street. Project construction will require relocation of existing utility lines within the project corridor that conflict with the proposed Honolulu High-Capacity Transit Corridor Project. Amongst other land disturbing activities including grading of facility locations, and excavations for the guide way column foundations, relocating utilities will cause the most disturbances.

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.

Sincerely,

Pua Aiu, PhD
Administrator
Historic Preservation Division

SHPD Acceptance Letter: Addendum Archaeological Inventory Survey Plan (Section 4)

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
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KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

HISTORIC PRESERVATION DIVISION
DEPARTMENT OF LAND AND NATURAL RESOURCES

601 Kamokila Boulevard, Suite 555
Kapolei, HI 96806

March 1, 2013

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

LOG NO: 2013.1958
DOC NO: 1302SL28
Archaeology

Dear Mr. McDermott:

SUBJECT: Chapter 6E-8 and National Historic Preservation Act (NHPA) Section 106 Review – Addendum to an Archaeological Inventory Survey Plan for the City Center (Phase 4) of the Honolulu High-Capacity Transit Corridor Project Kalihi, Kapālama, and Honolulu Ahupua‘a, Honolulu District, Island of O‘ahu TMK Sections (1) 2-1, 2-3 (various)

Thank you for the opportunity to review this revised report titled *Addendum to an Archaeological Inventory Survey Plan for the City Center (Phase 4) of the Honolulu High-Capacity Transit Corridor Project Kalihi, Kapālama, and Honolulu Ahupua‘a, Honolulu District, Island of O‘ahu TMK: (1) 2-1, 2-3 (Various Plats and Parcels) Addressing Changes from the Vicinity of Ward Avenue and Halekauwila Street to the Vicinity of Queen and Kamakee Streets* (Hammatt et al., February 2013). Our Kapolei office received this submittal on February 20, 2013.

The entire study area for the Honolulu High-Capacity Transit Corridor Project (HHCTCP) extends about 23 miles from Kapolei in the west to Ala Moana Center in the east. The City Center (Phase 4) study area represents the eastern 4.3 mile terminus of the HHCTCP. The AISP Addendum study area differs from the study area defined in the City Center (Phase 4) AISP approved by SHPD on October 25, 2011 (Log No. 2011.2379, Doc. No. 1110NN08). The AISP Addendum involves re-location of the City Center’s Kaka‘ako Station footprint and corridor beginning about 30 m ‘Ewa (northwest) of Ward Avenue and rejoining the original alignment in the middle of Queen Street about 100 m Diamond Head (southeast) of Kamake‘e Street.

The revisions made to this document adequately address the concerns raised in our prior correspondence (January 31, 2013; Log No. 2012.3654, Doc. No. 1301SL34). This archaeological inventory survey plan meets all of 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.

Please contact Susan A. Lebo at (808) 692-8019 or at Susan.A.Lebo@hawaii.gov if you have any questions regarding this letter.

Aloha,

Theresa K. Donham
Deputy State Historic Preservation Officer

cc: Paul Cleghorn, Kako‘o, cleghorn@pacificlegacy.com

SHPD Acceptance Letter: HHCTCP Archaeological Inventory Survey (Section 1)

LINDA LINGLE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
601 KAMOKILA BOULEVARD, ROOM 555
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LAURA H. THIELEN
CHAIRPERSON
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RUSSELL Y. TSUJI
FIRST DEPUTY

KEN C. KAWAHARA
DEPUTY DIRECTOR - WATER

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April 19, 2010

Dr. Hal Hammatt
Cultural Surveys Hawai'i
P. O. Box 1114
Kailua, Hawai'i 96736

LOG NO: 2010.1749
DOC NO: 1004MV01
Archaeology

Dear Dr. Hammatt:

SUBJECT: Section 106 National Historic Preservation Act (NHPA) Review
Revised Draft Archaeological Inventory Survey For Construction Phase I of the Honolulu High-Capacity Transit Corridor Project,
Hono‘uli‘uli, Hō‘ae‘ae, Waikele, Waipi‘o, and Waiawa Ahupua‘a, ‘Ewa District, O‘ahu, Hawai'i
TMK: (1) 9-1, 9-4, 9-6, 9-7 (Various Plats and Parcels)

Thank you for providing us the opportunity to review this Archaeological Inventory Survey (AIS), (Revised Draft *Archaeological Inventory Survey For Construction Phase I of the Honolulu High-Capacity Transit Corridor Project, Hono‘uli‘uli, Hō‘ae‘ae, Waikele, Waipi‘o, and Waiawa Ahupua‘a, ‘Ewa District, O‘ahu, Hawai'i TMK: (1) 9-1, 9-4, 9-6, 9-7 (Various Plats and Parcels)[Hammatt, Ph.D, CSH, February 2010]).*

The transit corridor, Phase 1 included 156 acres; the APE was 75 acres for direct surface disturbance. Field work was conducted for approximately 125 days. Field work was conducted from August 5 through October 14, 2009. A pedestrian survey was conducted for a 100% of the APE 7.4 miles corridor. The total length of the survey, 6.8 miles of Phase I and 0.6 miles of the western most Phase II (7.4 miles total) has been clarified and the distinction between backhoe trenches and column excavations has been made.

One historic site was identified 50-80-09-7751, a subsurface cultural deposit (lo'i sediments). This site dates from AD 990-1190. Site #7751 is significant under criteria D. In addition, we support the change in mitigating action for SIHP # 50-80-09-7751 from monitoring to data recovery, and we will look forward to the opportunity to review your investigation of the subsurface agricultural sediment.

We believe that the changes made to the document are sufficient. Please resubmit a copy of this report, marked "FINAL," along with a copy of this review letter and a text-searchable PDF version on CD to the attention of the "**SHPD Library**" at the Kapolei SHPD office.

Please contact Mike Vitousek at (808) 692-8015 if you have any questions or concerns regarding this letter.

Aloha,

Nancy A. McMahon

Nancy A. McMahon (Deputy SHPO)
State Historic Preservation Officer

SHPD Acceptance Letter: HHCTCP Archaeological Inventory Survey (Section 2)

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

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INTERIM CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

GUY H. KAULUKUKUI
ACTING FIRST DEPUTY

WILLIAM M. TAM
ACTING DEPUTY DIRECTOR - WATER

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May 23, 2012

Hallett H. Hammatt, Ph.D.
Cultural Surveys Hawai'i, Inc.
P.O. Box 1114
Kailua, Hawaii 96734

LOG NO: 2012.1449
DOC NO: 1205NN23

Dear Dr. Hammatt:

Subject: **National Historic Preservation Act (NHPA) Section 106 Consultation - Revised Archaeological Inventory Survey Report for Construction Phase 2 Honolulu High-Capacity Transit Corridor Project Waiawa, Mānana, Waimano, Waiau, Waimalu, Kalauao, 'Aiea, & Hālawa Ahupua'a, 'Ewa District, Island of O'ahu TMK: (1) 9-7, 9-8, 9-9 Various Plats and Parcels**

Thank you for the opportunity to review this report titled *Archaeological Inventory Survey for Construction Phase 2 of the Honolulu High-Capacity Transit Corridor Project, Waiawa, Mānana, Waimano, Waiau, Waimalu, Kalauao, 'Aiea and Hālawa Ahupua'a, 'Ewa District, Island of O'ahu, TMK: (1) 9-7, 9-8, 9-9 Various Plats and Parcels,* Sroat, Thurman, and McDermott (April 2012), which our office received on September 9, 2012. This report was prepared for Parsons Brinckerhoff, Inc. on behalf of the City and County of Honolulu and the Federal Transit Administration. We have previously provided comments on the archaeological inventory survey plan (Log 2010.1748, Doc 1005NM14), draft archaeological inventory survey (Log 2012.0966, Doc 1205NN02) and the archaeological monitoring plan for this project (Log 2012.1041, 1205NN12). Revisions requested in our prior review of the draft inventory survey have been addressed in this revised report, as indicated below (in summary):

1. The test trench stratigraphy descriptions for Trenches E7, E13, E16, and PRS1 have been expanded to clarify the distinctions made between fill layers, culturally sterile natural layers and possible lo'i or fishpond deposits. In addition, difference between overlying fill layers and underlying natural strata was made.

2. Three test trenches were initially proposed for the *mauka* portion of the Pearlridge Transit Station (TMK [1] 9-8-010:002), but land access onto the property was not permitted. According to the revised AIS report, the City and County of Honolulu obtained ownership of this parcel from 50th State Properties, and Cultural Surveys Hawaii can now complete its three test trenches as part of a supplemental archaeological inventory survey. The supplemental archaeological inventory survey will be conducted prior to the beginning of construction activities. The results of the supplemental archaeological inventory survey will be reported in a supplemental archaeological inventory survey addendum to this approved archaeological inventory survey report.

3. Lastly, provisions of the archaeological monitoring program has been removed from the revised AIS report and was included an archaeological monitoring plan, which has been approved.

Dr. Hammatt
May 23, 2012
Page 2

As indicated in our prior letter, one newly identified historic property (SIHP Site 50-80-09-7150) was identified within Trench E-7, located along Kamehameha Highway, midway between Kuleana Road and Ka'ahumanu Street. This location is in a documented area of former ponded taro fields (LCA#9385). We concur that this site is significant under National Register of Historic Places and Hawaii Register of Historic Places Criterion D, and has the potential to yield information important for understanding prehistory. We concur with the proposed mitigation measures, which is on-site monitoring of any land alteration activities in the vicinity of the site area.

This revised report meets the requirements of HAR 13-276 and *The Secretary of Interior's Standards for Identification and Evaluation*, and 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. Please contact Deona Naboa at (808) 692-8015 or Deona.Naboa@Hawaii.gov if you have any questions or concerns regarding this letter.

Aloha,

Theresa K. Donham
Archaeology Branch Chief

SHPD Acceptance Letter: Supplemental Archaeological Inventory Survey (Section 2)

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
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ESTHER KIA'AINA
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WILLIAM M. TAM
DEPUTY DIRECTOR - WATER

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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

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August 27, 2013

Matt McDermott
Principal Investigator
Cultural Surveys Hawaii
P.O. Box 1114
Kailua, HI 96734

Log No. 2013.4527
Doc. No. 1308SL22

Dear Mr. McDermott:

Subject: **Chapter 6E-8 and National Historic Preservation Act (NHPA) Section 106 Review—Supplemental Archaeological Inventory Survey for Phase 2 of the Honolulu High-Capacity Transit Corridor Project, Proposed Pearlridge Station Waimalu Ahupua'a, 'Ewa District, Island of O'ahu TMK: (1) 9-8-009:017 and 9-8-010:002**

Thank you for the opportunity to review this report titled *Supplemental Archaeological Inventory Survey for Section 2 of the Honolulu High-Capacity Transit Corridor Project, Proposed Pearlridge Station, Waimalu Ahupua'a, 'Ewa District, Island of O'ahu. TMK: (1) 9-8-009:017 and (1) 9-8-010:002* (Sroat, Matsushima & McDermott, August 2013), which our office received on July 25, 2013.

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 as a whole was determined to have an adverse effect on historic properties. A Programmatic Agreement (PA) was executed on January 18, 2011 between the Federal Transit Administration (FTA), the Hawaii State Historic Preservation Officer (SHPO), the US Navy and the Advisory Council on Historic Preservation as signatories and the City and County of Honolulu as an invited Signatory. An archaeological inventory survey for the four phases of the project under HAR chapter 276 is stipulated as a mitigation measure in the PA.

The Area of Potential Effect (APE) for archaeology is defined in the PA as all areas of direct ground disturbance. Thus, for the Supplemental AIS for Phase 2 the area of direct ground disturbance is approximately .2 acres, which is the area of the Pearlridge Station. An archaeological inventory survey plan (AISP) for Phase 2 was prepared by Cultural Surveys Hawaii, Inc. (Hammatt 2010b). The AISP was reviewed and accepted by SHPD on May 7, 2010 (Log No. 2010.1748, Doc. No. 1005NM14). The three test trenches in this supplemental AIS were included in the original AISP, but could not be done at the time because the landowner would not allow access. We confirm that the supplemental archaeological inventory survey was conducted in accordance with the Phase 2 AISP.

Three test trenches were excavated to provide more information on the subsurface nature of the Pearlridge Station, to identify and document any archaeological historic resources encountered and to make eligibility recommendations for the Hawaii and National Registers of Historic Places. No historic resources were found during this supplemental archaeological inventory survey. However, 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. SHPD concurs with the proposed mitigation of a combination of on-call and full-time on-site archaeological monitoring as previously agreed to in the SHPD's acceptance of the AIS for Phase 2 (Log No. 2010.1749, Doc. No. 1004MV01).

Mr. McDermott
August 27, 2013
Page 2

The 30 day comment period for the project started on July 25, 2013 and ended on August 26, 2013. SHPD received no comments.

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

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

90104

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

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

ESTHER KIA'AINA
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WILLIAM M. TAM
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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

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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**
Hālawa 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 Hālawa 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 §13-275and 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

SHPD Acceptance Letter: HHCTCP Archaeological Inventory Survey (Section 4)

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
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ESTHER KIA'AINA
FIRST DEPUTY

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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
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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: 2013.2564, 2013.4338
DOC NO: 1308SL21
Archaeology

Dear Mr. McDermott:

SUBJECT: **Chapter 6E-8 and National Historic Preservation Act (NHPA) Section 106 Review—**
Revised Archaeological Inventory Survey Report for City Center (Construction Phase 4)
Honolulu High-Capacity Transit Corridor Project
Kalihi, Kapālama, and Honolulu Ahupua'a,
Honolulu District, Island of O'ahu
TMK: (1) 1-2, 1-5, 1-7, 2-1, 2-3, Various Plats and Parcels

Thank you for the opportunity to review this report titled *Archaeological Inventory Survey Report (AISR) for Construction Phase 4 of the Honolulu High-Capacity Transit Corridor Project, Kalihi, Kapālama, and Honolulu Ahupua'a, Honolulu District, O'ahu Island TMK Sections [1] 1-2, 1-5, 1-7, 2-1, 2-3 (Various Plats and Parcels)* (Hammatt et al., June 2013), which our office received on July 15, 2013. We received the initial draft on April 9, 2013. Due to the size and complexity of this review all comments have been provided directly on text pages of the report as well as through in-person reviews of specific areas with Cultural Surveys Hawaii staff.

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 within the transit corridor and a Programmatic Agreement (PA) was executed on January 18, 2011 between the Federal Transit Administration (FTA), the Hawaii State Historic Preservation Officer (SHPO), the US Navy and the Advisory Council on Historic Preservation as signatories and the City and County of Honolulu as an invited Signatory. An archaeological inventory survey for the four phases of the project under HAR §13-276 is stipulated as a mitigation measure in the PA.

The Area of Potential Effect (APE) for archaeology is defined in the PA as all areas of direct ground disturbance. Thus, for the City Center the area of direct ground disturbance is approximately 13.9 acres, including nine (9) stations. The survey study area is the eastern-most 4.3 miles (6.9 km) of the overall HHCTCP area, extending from Kalihi Stream/Middle Street Station in the west to Ala Moana Center in the east. An archaeological inventory survey plan (AISP) was prepared by Cultural Surveys Hawai'i, Inc. (Hammatt et al. 2011). The AISP was reviewed and accepted by SHPD on October 25, 2011 (Log No. 2011.2379, Doc. No. 1110NN08). An Addendum AISP was completed to address the relocation of the City Center's Kaka'ako Station footprint and corridor beginning about 30 meters 'Ewa (northwest) of Ward Avenue and rejoining the original alignment in the middle of Queen Street about 100 meters Diamond Head (southeast) of Kamake'e Street. The Addendum AISP was accepted by SHPD on March 1, 2013 (Log No. 2013.1958, Doc. No. 1302SL28).

Mr. McDermott
August 26, 2013
Page 2

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 250 test trench excavations. Two-hundred and thirty-two (232) trenches were proposed in the AISP, nine (9) were abandoned due to utility conflicts, safety issues or realignment/redesign, and twenty-seven (27) trenches were added to replace abandoned trenches or at the request of SHPD. The additional trenches were included to ensure that entire column locations were tested, alternative column or utility locations were tested, or to ensure the extent of sand deposits and the absence of burials in those sand deposits. The proposed and final locations of some of the trenches differ slightly, reflecting changes required to address impediments (e.g. utility line locations) and/or safety issues.

Nineteen (19) historic resources were identified within, or immediately adjacent to the Construction Phase 4 AIS survey area. Twelve (12) of these resources were previously identified and documented. Seven (7) resources were newly identified in this survey. All 19 historic resources have been assigned Hawai'i State Inventory of Historic Properties (SIHP) numbers, all with the prefix 50-80-14. The historic resources, associated test excavation numbers, descriptions, Hawai'i and/or National Register-eligibility, and mitigation recommendations are listed in the table below. Bold SIHP numbers represent the seven (7) historic properties newly identified during the Construction Phase 4 AIS. Numbers not in bold represent the twelve (12) historic properties in the Rail Corridor found during previous studies.

SIHP#	Construction Phase 4 Test Excavation #	Description/Formal Type	Significance/Eligibility		Mitigation
			HAR §13-276-6 Criterion	National Register	
50-80-14-7425	T-020	Subsurface *imu* (earth oven) feature	Recommend: D	Recommend: D	Monitoring
50-80-14-7426	T-054 through T-082, and 085	Subsurface wetland deposit	Recommend: D	Recommend: D	Monitoring
50-80-14-7506	T-064, T-066 and T-067	Subsurface incinerated trash deposit	Recommend: D	Recommend: D	Monitoring
50-80-14-5368	T-088, 091, 092, 093, and 094	Subsurface remnants of Kūwili Fishpond	Recommend: D	Recommend: D	Monitoring
50 80-14-5966	T-095	Subsurface remnants of Kawa Fishpond	Recommend: D	Recommend: D	Data Recovery, Monitoring
50-80-14-7427	T-096 through T-101 and test bores C-1-C-6	Subsurface historic building foundations and walls and underlying culturally enriched sediments, also one human talus bone in a fill deposit	Recommend: D, E	Recommend: D	Monitoring, Data Recovery, and Burial Treatment Plan
50-80-14-7428	T-119, 119A, 120, 120A, 120B	Subsurface culturally-enriched sand A-horizon (T-120, T-120A, and T-120B) and historic warehouse foundation (T-119 and T-119A)	Recommend: D	Recommend: D	Data Recovery and monitoring of sand A-horizon (T-120, 120A, and 120B), monitoring for historic foundation (T-119 and 119A)
50-80-14-2963	T-122, 123, and 124	Subsurface pond sediments containing historic artifacts, culturally-enriched sand A-horizon, also includes 7 human burials as described in the adjacent Makai Parking Garage monitoring report.	Recommend: D, E	Recommend: D	Monitoring for pond sediments, data recovery and monitoring for culturally-enriched sand A-horizon
50-80-14-7124	T-132	Subsurface historic building remnants	Previous: A, D Recommend: D	Recommend: D	Monitoring
50-80-14-7189	T-130, 132, 134, 138, 140, 231A, 232, and 232A	Subsurface fill layer containing burnt historic trash from open burning	Previous: A, D Recommend: D	Recommend: D	Monitoring

Mr. McDermott
August 26, 2013
Page 3

SIHP#	Construction Phase 4 Test Excavation #	Description/Formal Type	Significance/Eligibility		Mitigation
			HAR §13-276-6 Criterion	National Register	
50-80-14-7190	T-229 and 230	Subsurface salt pan remnants	Previous: A, D Recommend: D	Recommend: D	Data Recovery, Monitoring
50-80-14-7197	Not observed (see mitigation)	Subsurface culturally–enriched sand A-horizon	Previous: A, D and D Recommend: D	Recommend: D	Monitoring; Not observed in current AIS (see mitigation), but potentially affected by project construction due to close proximity
50-80-14- 5820	T-141, 142, 145, 146A, 150, 151, 151A	Human skeletal remains/burials and subsurface culturally enriched sand A-horizon	Recommend: D, E	Recommend: D	Data Recovery, Monitoring, Burial Treatment Plan
50-80-14-7429	T-167, 168, 168A, 168B, 169, 170, and 170A	Subsurface culturally-enriched sand A-horizon and human cranial Fragment in T-170	Recommend: D, E	Recommend: D	Data Recovery, Monitoring, Burial Treatment Plan
50-80-14-6856	T-181-185	Subsurface remnants of Kolowalu Fishpond	Recommend: D	Recommend: D	Monitoring
50-80-14-6636	T-186-193, 195, 196, 198-200, 202, 202A, 203, 205, 207, 208, 210-212, 214, 219, and 220	Subsurface remnants of the former Kewalo wetland	Previous: A, D Recommend: D	Recommend: D	Monitoring
50-80-14-7430	T-202	Subsurface remnant of a historic privy	Recommend: D	Recommend: D	Monitoring
50-80-14-7193	T-214	Subsurface historic refuse-enriched fill deposit	Ineligible	Ineligible	NA
50-80-14-2918	T-226A, B, C, and D, T-227 and 227A	Subsurface culturally-enriched sand A-horizon with human skeletal remains/burials, also includes iron historic trolley or cart tracks	Recommend: D, E	Recommend: D	Data Recovery, Monitoring, Burial Treatment Plan

We concur with the eligibility recommendations of the 19 sites in the above table, including the ineligible SIHP# 50-80-14-7193 determination. The 18 remaining sites are significant under National Register of Historic Places and Hawaii Register of Historic Places recommended criteria listed in the table. The overall effect of the undertaking has been previously determined to be "adverse" under 36 CFR part 800, as discussed above. The project effect under the provisions of HAR §13-275-7(2) is determined to be "effect with proposed mitigation." We concur with the proposed mitigation measures, which include on-site archaeological monitoring of any land alteration activities in the vicinity of the site areas and data recovery and burial treatment as identified above.

We confirm that the archaeological inventory survey was conducted in accordance with the AISP and Addendum AISP. As mentioned above, all comments to this AIS were done directly on the report and in face-to-face meetings with staff from Cultural Surveys Hawai'i, Inc.

Mr. McDermott
August 26, 2013
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In addition, SHPD received comments from 13 individuals and organizations with a total of 98 comments related to Archaeological Inventory Survey for the entire Rail Corridor. Fifty-seven comments (57) were specific to the City Center portion of the project. Forty-nine (49) of those comments requested additional testing related to column locations, utilities, the limited nature of geotechnical core testing or testing that had been stopped due to water inundation. SHPD has considered all comments received and believes that an adequate inventory survey has been completed. Data recovery will be conducted on eight historic sites as mitigation. SHPD notes that burials found during data recovery are considered previously identified and the decision to preserve them in place or relocate them will be the purview of the O‘ahu Island Burial Council. HART has agreed that no construction will take place within 25 feet of any burials prior to SHPD's acceptance of a burial treatment plan.

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

SHPD Acceptance Letter: HHCTCP Archaeological Inventory Survey (Sections 1-4)

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

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KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
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August 27, 2013

Mr. Dan Grabauskas
Executive Director and CEO
Honolulu Authority for Rapid Transit
City and County of Honolulu
1099 Alakea Street, 17th Floor
Honolulu, HI 96813

LOG NO.: 2013.4987
DOC. NO.: 1308SL23

Dear Mr. Grabauskas:

Subject: **Chapter 6E-8 and National Historic Preservation Act (NHPA) Section 106 Review—Archaeological Inventory Survey Report for the Honolulu High-Capacity Transit Corridor Project, West Kapolei to Ala Moana Center**
Honouliuli, Ho'ae'ae, Waikele, Waipi'o, Waiawa Manana, Waimano, Waiau, Waimalu, Kalauao, 'Aiea, and Halawa Ahupua'a, 'Ewa District and Moanalua, Kalihi, Kapālama, Honolulu, and Waikīkī Ahupua'a, Honolulu (Kona) District, Island of O'ahu
TMK: (1) 1-1, 1-2, 1-5, 1-7, 2-1, 2-3, 9-1, 9-4, 9-6, 9-7, 9-8, and 9-9 (Various Plats and Parcels)

SHPD has received, reviewed, and hereby accepts the archaeological inventory survey reports for the Honolulu High-Capacity Transit Corridor Project (HHCTCP or project), including all phases of the project. The reports are collectively referred to herein as "the AIS." Supportive documentation is provided in four appendices (A–D).

The Honolulu High-Capacity Transit Corridor Project (HHCTCP) 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 within the transit corridor and a Programmatic Agreement was executed on January 18, 2011 between the Federal Transit Administration (FTA), the Hawaii State Historic Preservation Officer (SHPO), the US Navy and the Advisory Council on Historic Preservation as signatories and the City and County of Honolulu as an invited Signatory. An archaeological inventory survey for the four phases of the project under HAR Chapter 13-276 is stipulated as a mitigation measure in the PA. The PA also stipulates that archaeological fieldwork would be done in advance of the completion of final design and approved by SHPD. The terms of the Programmatic Agreement also stipulate that the Area of Potential Effect (APE) for archaeological resources is all areas of direct ground disturbance.

The area of direct ground disturbance for the entire 23 mile corridor is approximately 113 acres, and the survey study area is the 23 mile corridor. A total of 423 test trenches were excavated for this AIS. A list of accepted reports, dates of acceptance, SHPD log and document numbers, the APE and survey areas, and historic properties and mitigation is included as Appendix A to this letter. An Archaeological Inventory Survey Plan was accepted for each of the project's four phases, and Addendum Archaeological Survey Plans were accepted for Phases 3 and 4. All plans are collectively referred to as "AISP."

Archaeological Inventory Survey Reports were accepted for each of the project's four phases and a Supplemental Archaeological Inventory Survey Report was accepted for Phase 2. SHPD acceptance letters are attached to this letter as Appendix D. We confirm that the archaeological inventory surveys for all phases were conducted in accordance with the AISP for the corresponding phase of the project.

Mr. Grabauskas
August 26, 2013
Page 2

A total of 21 historic properties were found throughout the corridor. Two additional historic properties have the potential to be affected but were not relocated (SIHP Sites 7197 and 5966). Appendix B lists all of the historic properties that are potentially affected by this project. SHPD has concurred with the proposed significance determinations as listed in Appendix B. SHPD also concurs with the proposed effect determination, which is an "adverse effect" on historic properties under 36 CFR 800(5) and "effect with proposed mitigation commitments" under HAR §13-275-7(2). Thus, mitigation recommendations were provided and are listed in Appendix B. SHPD concurs with the mitigation proposals as listed.

In addition, SHPD received comments from 13 individuals with a total of 98 comments related to archaeological inventory survey for the entire Rail Corridor. The majority of the comments requested more test trenches in column locations, station locations and utility relocation corridors. Several of the comments requested more testing in areas that had been abandoned due to meeting the water table or due to unstable soil. Fifty-seven comments were about Phase 4, with 49 of those comments requesting more testing. A total of 38 comments addressed the first three phases of rail, with most requesting additional testing. Thirteen comments addressed underground karst caves and water systems and their relation to cultural practices at shore.

SHPD reviewed and considered all of the comments and believes that adequate testing has been done for this project. Several of the comments related to sites outside of the project corridor. Data recovery is the mitigation proposed for a total of nine sites, eight (8) in the City Center phase and one (1) within the Waipahu Transit Center Station footprint (Site 7751). Data recovery fieldwork is complete at Site 7751 and an Interim Protection Plan (IPP) pursuant to HAR§13-275-9(d) is being prepared for the eight (8) sites in the City Center. SHPD notes that any burials found during data recovery are considered previously known and the determination to remain in place or relocate those *iwi* will be the purview of the O'ahu Island Burial Council. A table listing all of the comments and responses will be posted on the HART website in September.

The AIS for the project, including the entire rail corridor, meets the requirements specified in the *Secretary of the Interior's Standards for Archeological Documentation* and the requirements set forth in HAR Chapter 13-276 "Rules governing standards for Archaeological Inventory Surveys and Reports." Hard copies of the final reports and PDF's have been requested in prior correspondence. Appendix C lists all of the volumes related to the AIS for this project and encompassed by this acceptance letter. We look forward to receiving an IPP and detailed mitigation plans per HAR Chapters 13-275-8, 9 and 10. Please contact Dr. Susan A Lebo at (808) 692-8019 or Susan.A.Lebo@hawaii.gov if you have any questions regarding this letter.

Aloha,

William J. Aila, Jr.
State Historic Preservation Officer

Enclosures:

Appendix A: HCRTCP List of Reports Accepted by SHPD
Appendix B: List of Potentially Affected Sites, Significance and Mitigation
Appendix C: List of Reports Associated with the Archaeological Inventory Survey for the Honolulu High Capacity Rapid Transit Corridor Project.
Appendix D: SHPD Acceptance Letters for the Honolulu High Capacity Rapid Transit Corridor

SHPD Acceptance Letter: HHCTCP Interim Protection Plan

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

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COMMISSION ON WATER RESOURCE MANAGEMENT

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CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

August 29, 2013

Dan Grabauskas
Honolulu Authority for Rapid Transportation
City and County of Honolulu
Alii Place, Suite 1700
1099 Alakea Street, Honolulu, HI 96813

Log No. 2013.5066A
Doc No. 1308PA01

Dear Mr. Grabauskas:

SUBJECT: **HRS §6E-8 Review of an Interim Protection Plan in compliance HAR Section 13-275-9(d) for the Honolulu High-Capacity Rapid Transit Corridor Project, East Kapolei to Ala Moana Center**
Honouliuli, Ho'ae'ae, Waikele, Waipi'o, Waiawa, Manana, Waimanalo, Waiau, Kalauao, 'Aiea and Halawa, Moanalua, Kalihi, Kapālama, Honolulu and Waikiki Ahupua'a, 'Ewa and Honolulu Districts, Island of O'ahu.
TMK (1) 1-1, 1-2, 1-5, 1-7, 2-1, 2-3, 9-1, 9-4, 9-6, 9-7, 9-8, and 9-9 (various Plats and Parcels)

Thank you for the opportunity to review the report titled *Interim Protection Plan for the Honolulu High Capacity Transit Corridor Project (*Hammatt and Shideler, August 2013*)*. It was received by SHPD on August 29, 2013.

Honolulu Authority for Rapid Transportation (HART) is requesting an accelerated, two step verification of compliance with the historic preservation process under HAR Section 13-275-9 (d). Step 1 of this process involves "documentation to SHPD indicating that data recovery fieldwork . . . or interim protection measures for properties to be preserved have been successful completed." This interim protection plan is being submitted to meet Step 1 of the two step verification process and is done with the understanding that Step 2 must be completed to conclude the historic preservation process.

An Archaeological Inventory Survey (AIS) for the entire Honolulu High Capacity Rapid Transit Corridor Project (HHCRTCP, or project) was accepted by SHPD (Log No. 2013.4987, Doc No. 1308SL23). A total of 21 sites were found during the AIS. Two additional sites were not found (Sites 50-80-14-7197 and 50-80-14-5966), but because of their close proximity to the project have the potential to be affected by the project and were included in mitigation measures. One of the sites found was deemed not to meet the significance criteria under HAR Chapter 13-275-6(b). The mitigation measure for thirteen of the sites is monitoring, and the mitigation for nine of the sites is data recovery and monitoring. In addition seven sets of *iwi kupuna*, or human skeletal remains were found at four of the sites. The recommendation is preservation in place. Thank you for the table on pages 3-5 which lists all sites and the mitigation status. We have included a copy of this table as an enclosure to this letter for ease of reference.

For the section of the project that extends from East Kapolei to Leeward Community College (Construction Phase 1), the agreed-upon mitigation was data recovery in Site 50-80-09-7751, subsurface *lo'i* sediments. An End-of-Fieldwork Letter has been accepted for this site (Log No. 2013.4528, Doc No. 1308SL24. Therefore no additional protection measures are required for Phase 1 and construction can start in that area of the project corridor.

For section of the project on Kamehameha Highway from Leeward Community College to Aloha Stadium (Construction Phase 2), monitoring was the agreed-upon mitigation measure for site 50-80-09-7150, former ponded

taro fields. An archaeological monitoring plan for this site has been reviewed and accepted by SHPD (Log No. 2012.1041, Doc No. 1205NN12). Therefore, no additional protection measures are needed for Phase 2 and construction can start in that area of the project corridor.

For the section of the project extending from Aloha Stadium to approximately the Middle Street Interchange (Construction Phase 3) there were two historic properties found, SIHP site 50-80-13-7420 and 50-80-13-7421. Monitoring is the agreed-upon mitigation for both these properties. A monitoring plan has not been reviewed and accepted by SHPD, therefore as an interim protection measure HART is proposing that no construction take place in the HHCRTCP between Halawa Stream and Pu'uhale Road. A letter stating such has been sent to the construction contracting firm and a copy has been provided to SHPD. No physical measures will be taken to mark the sites, as they are subsurface and continuing surface use will not damage either site.

For the section of the project extending from Middle Street to Ala Moana Center (Construction Phase 4) a total of 19 historic properties were found. The agreed-upon mitigation for eleven sites is monitoring and for eight sites is data recovery and monitoring. All four burial sites are in phase 4 of the project. SHPD has not reviewed monitoring, data recovery, or burial treatment plans for Construction Phase 4. The interim protection plan proposes that no construction be done between Pu'uhale Road and Ala Moana Center until a monitoring plan for Construction Phase 4 has been reviewed and accepted by SHPD. The monitoring plan will provide for construction buffers for the data recovery sites until a data recovery plan and End of Fieldwork Letter are accepted by SHPD. *SHPD adds the following conditions before it will approve the start of construction in Construction Phase 4: 1) a Data Recovery Plan must be accepted by SHPD, 2)an End-of-Fieldwork Letter must be accepted by SHPD, and 3) the archaeological monitoring plan will include construction buffers for the four burial sites in the event that a Burial Treatment Plan has not been approved by the O'ahu Island Burial Council and SHPD prior to review and acceptance of the End-of-Fieldwork Letter and the monitoring plan.* No physical measures will be taken to mark the sites as they are all subsurface and located in highly trafficked areas. All of the sites have been resurfaced. Continued surface use will not damage any of the sites. A letter stating that no construction is to take place within in the Construction Phase 4 portion of the project has been sent to the contractor and a copy has been provided to SHPD.

In regard to Table 1, please note that the criteria for the Hawaii Register are located in HAR Section 13-198-8. Significance criteria for the Historic Preservation review process are located in HAR 13-275-6(b). While the two are substantially the same, the Hawaii Register does not include criterion "e." Also, as written, the table appears to have the wrong citation. Please correct this in your final copy.

This Interim Protection Plan provides adequate protection measures for sites throughout the corridor. The protection measures are: no construction in Construction Phases 3 and 4 until SHPD accepts an archaeological monitoring plan. In addition SHPD added three conditions before construction can start in Construction Phase 4, as listed above. SHPD accepts the plan, with the modifications and conditions state above, per HAR Section 13-275-9 (d)(1). 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.

Please contact Pua Aiu at (808) 587-1497or at pua.aiu@hawaii.gov if you have any questions regarding this letter.

Aloha,

William J. Aila, Jr.
State Historic Preservation Officer

Encl: Table 1

TABLE 1

Section and SIHP#	Description/Formal Type	Significance/Eligibility		Mitigation	Status of Mitigation
		Hawai‘i Register (13-275-6 (b) criteria)	National Register (36 CFR 60.4 criteria)		
Section 1					
50-80-09-7751	Subsurface lo‘i sediments	D	D	Data Recovery	Complete, End of Fieldwork letter accepted
Section 2					
50-80-09-7150	Former ponded taro fields	D	D	Monitoring	Monitoring plan accepted
Section 3					
50-80-13-7420	Buried asphalt roadway	D	D	Monitoring	Monitoring plan pending, will precede construction.
80-80-13-7421	Buried concrete slabs, coral pavement and base course sections	D	D	Monitoring	Monitoring plan pending, will precede construction.
Section 4					
50-80-14-7425	Subsurface *imu* (earth oven) feature	D	D	Monitoring	Monitoring plan pending, will precede construction.
50-80-14-7426	Subsurface wetland deposit	D	D	Monitoring	Monitoring plan pending, will precede construction.
50-80-14-7506	Subsurface incinerated trash deposit	D	D	Monitoring	Monitoring plan pending, will precede construction.
50-80-14-5368	Subsurface remnants of Kūwili Fishpond	D	D	Monitoring	Monitoring plan pending, will precede construction.
50 80-14-5966	Kawa Fishpond – sediments not found because trench abandoned	D	D	Data Recovery, Monitoring	Monitoring plan pending, will precede construction. Data recovery plan pending.
50-80-14-7427	Subsurface historic building foundations and walls and underlying culturally enriched sediments, also one human talus bone in a fill deposit	D, E	D	Monitoring, Data Recovery, and Burial Treatment	Monitoring plan pending, will precede construction. Data recovery and burial treatment plans pending.
50-80-14-7428	Subsurface culturally-enriched sand A-horizon (T-120, T-120A, and T-120B) and historic warehouse foundation (T-119 and T-119A)	D	D	Data Recovery and monitoring of sand A-horizon (T-120, 120A, and 120B), monitoring for historic foundation (T-119 and 119A)	Monitoring plan pending, will precede construction. Data recovery plan pending.

1

TABLE 1

Section and SIHP#	Description/Formal Type	Significance/Eligibility		Mitigation	Status of Mitigation
		Hawai‘i Register (13-275-6 (b) criteria)	National Register (36 CFR 60.4 criteria)		
50-80-14-2963	Subsurface pond sediments containing historic artifacts, culturally-enriched sand A-horizon, also includes 7 human burials as described in the adjacent Makai Parking Garage monitoring report	D, E	D	Monitoring for pond sediments, data recovery and monitoring for culturally- enriched sand A-horizon	Monitoring plan pending, will precede construction. Data recovery plan pending.
50-80-14-7124	Subsurface historic building remnants	D	D	Monitoring	Monitoring plan pending, will precede construction.
50-80-14-7189	Subsurface fill layer containing burnt historic trash from open burning	D	D	Monitoring	Monitoring plan pending, will precede construction.
50-80-14-7190	Subsurface salt pan remnants	D	D	Data Recovery, Monitoring	Monitoring plan pending, will precede construction. Data recovery plan pending.
50-80-14-7197	Subsurface culturally–enriched sand A-horizon	D	D	Monitoring; Not observed in current AIS, but potentially affected by project construction due to close proximity	Monitoring plan pending, will precede construction.
50-80-14- 5820	Human skeletal remains/burials and subsurface culturally enriched sand A-horizon	D, E	D	Data Recovery, Monitoring, Burial Treatment Plan	Monitoring plan pending, will precede construction. Data recovery and burial treatment plans pending.
50-80-14-7429	Subsurface culturally-enriched sand A-horizon and human cranial Fragment in T-170	D, E	D	Data Recovery, Monitoring, Burial Treatment	Monitoring plan pending, will precede construction. Data recovery and burial treatment plans pending.
50-80-14-6856	Subsurface remnants of Kolowalu Fishpond	D	D	Monitoring	Monitoring plan pending, will precede construction.
50-80-14-6636	Subsurface remnants of the former Kewalo wetland	D	D	Monitoring	Monitoring plan pending, will precede construction.
50-80-14-7430	Subsurface remnant of a historic privy	D	D	Monitoring	Monitoring plan pending, will precede construction.
50-80-14-7193	Subsurface historic refuse-enriched fill deposit	Ineligible	Ineligible	NA	N/A

2

TABLE 1

Section and SIHP#	Description/Formal Type	Significance/Eligibility		Mitigation	Status of Mitigation
		Hawai‘i Register (13-275-6 (b) criteria)	National Register (36 CFR 60.4 criteria)		
50-80-14-2918	Subsurface culturally-enriched sand A-horizon with human skeletal remains/burials, also includes iron historic trolley or cart tracks	D, E	D	Data Recovery, Monitoring, Burial Treatment	Monitoring plan pending, will precede construction. Data recovery and burial treatment plans pending.

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Appendix B Historic Property Descriptions

The following historic property descriptions are copied from the City Center (Section 4) AIS report, Volume I (Hammatt 2013):

SIHP # 50-80-14-2918

FORMAL TYPE:	Subsurface cultural deposit, human burials
FUNCTION:	Habitation and burial interment
PREVIOUS DOCUMENTATION:	Yent (1985)
AGE:	Pre- and post-Contact
NUMBER OF FEATURES:	30
TYPES OF FEATURES:	29 pits (including 1 human burial pit, 1 dog burial pit, 4 postmolds, 1 trash pit, and 22 indeterminate) and 1 human skeletal remains
DISTRIBUTION:	0.33 acres within current project area, 8.4 acres total
LOCATION:	Along Punchbowl Street near the Ala Moana intersection (Kaka‘ako Makai Geographic Zone)
TAX MAP KEY:	TMK [1] 2-1-027 (Punchbowl Street ROW por.); and [1] 2-1-029:001
LAND JURISDICTION:	City and County of Honolulu
TEST EXCAVATIONS:	T-226A, T-226B, T-226C, T-226D, T-227, and T-227A; T-226 abandoned

SIHP # 50-80-14-2918 is a previously-identified subsurface cultural deposit and 30 features that is located along Punchbowl Street near the Ala Moana intersection, and *makai* of Pohukaina Street between Punchbowl and South Streets. This archaeological cultural resource was first identified in 1985 by Martha Yent of State Parks as consisting of at least five burial pits located at the Honolulu Ironworks construction site (Yent 1985). The Honolulu Ironworks was located at the corner of Punchbowl Street and Pohukaina Street and includes TMK [1] 2-1-029:001. The location of the five burial pits, which included a total of six burials is unknown. Figure 1 provides an approximate location for the five burial pits identified by Yent (1985) as the center point of the parcel with an interpolated site boundary that includes all of TMK [1] 2-1-029:001.

Yent (1985) provides basic stratigraphic and contextual information on Burial #5 and #6 as follows:

> The burial pits are exposed on the face of a construction pit about 10 feet on a side with 3 pilings already placed in the center of the pit. The burials are in the sand deposit which underlies at least [a] meter of the ironworks fill. Because of the extensive overburden, all [of] the excavations to expose the burials was into the face. Burial #5 became burial #5 and #6 as the excavation extended into the face. Burial #5 was recognized as the 2 femurs exposed in cross-section in the pit face. Approximately 20cm into the face, a cranium was exposed which did not correspond to the anatomical position of the femurs. Therefore, the cranium became designated burial #6. [Yent 1985:1]

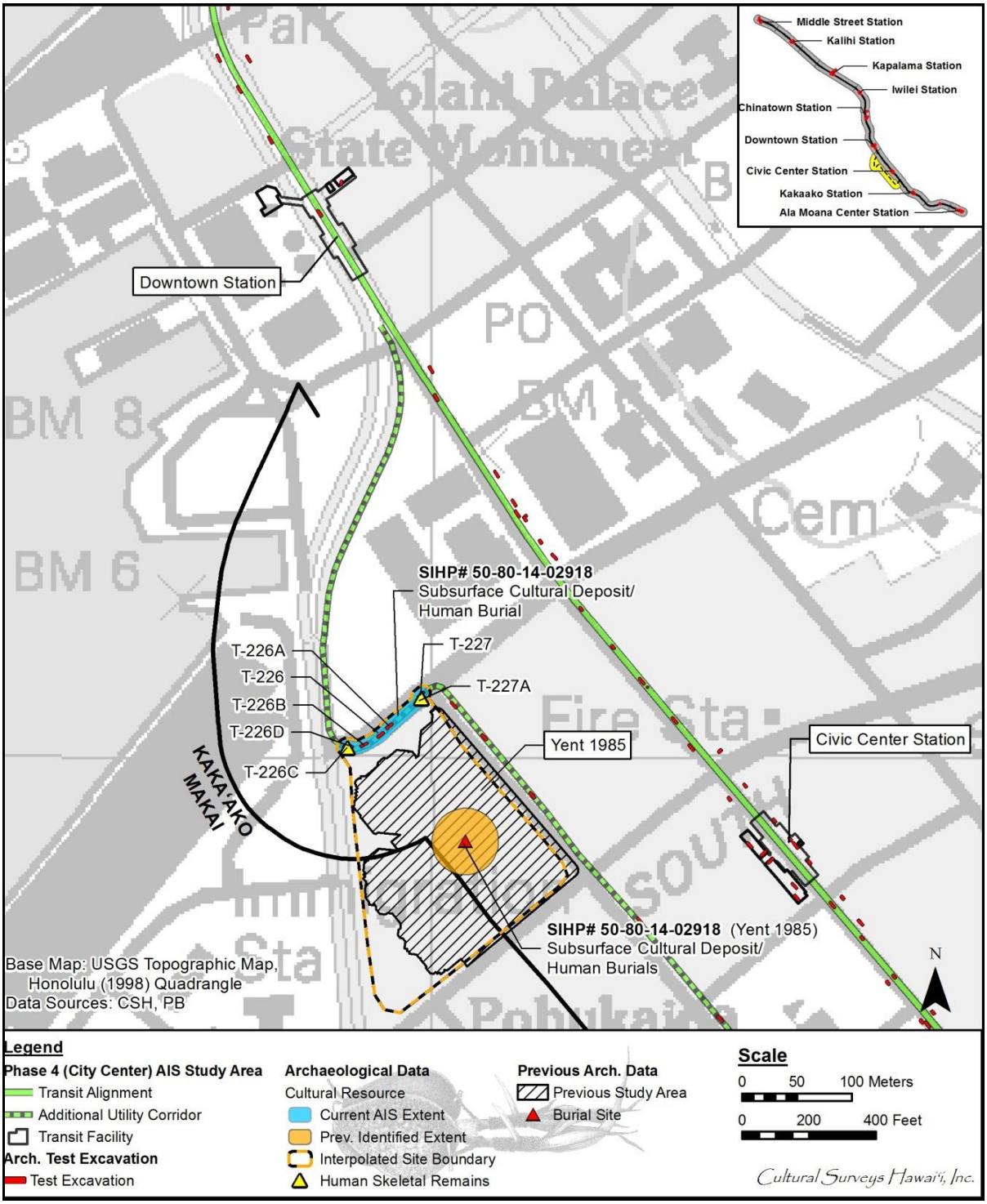


Figure 1. Location of SIHP # 50-80-14-2918 within Kaka‘ako Makai Zone (Base Map: USGS 1998 Topographic Map of Honolulu Quadrangle)

Additional information is provided on the burial position and burial pit dimensions for Burials #5 and #6 as follows:

> Burial #5:
>
> The femurs of burial #5 are located to the right and slightly above the cranium of burial #6. Continued excavation into the face of the pit exposed the femurs, patellas, and the tibia and fibula of both legs. The burial appears to have been extended with only the leg portion now intact – the upper portion of the body would have been disturbed during the excavation of the pit. A pelvis was located to the right of the tibia and fibula suggestive of a third burial, again because the remains were out of anatomical position. The pelvis was removed but no other associated remains were located. The pelvis appears to be from a secondary burial or was disturbed when burial #5 was placed in the ground.
>
> The bone was fragile due to the moisture content in the sand. The pit measured about 50cm in width and went into the exposed face at least 70cm. The base of [the] burial pit was defined by a thin, dark band that separated the sandy fill of the pit from the consolidated, white sand/weathering coral below.
>
> Burial #6:
>
> The back of the cranium was exposed about 20cm into the excavation of the pit face. The cranium was located at the base of the pit fill. Burial #6 is extended and the chin was resting on the chest. The teeth of the cranium and mandible suggested an adult and older individual – there had been tooth loss and bone resorption prior to death. The small size of the cranium suggested a female. The excavation extended 70cm into the face which exposed the vertebrae, ribs, and arms (humerus). Additional excavation was difficult because of the overburden and therefore, was discontinued at the point. Burial #6 also appears to be extended, laying on the back with the arms straight along the side of the body and the right hand atop the pelvic area. Several other bones, probably dog, were found in the pit fill but were not articulated and not associated with the human burial. [Yent 1985:1]

The age and ancestry of the human remains were not determined, however both Burial #5 and #6 were considered to be in the extended position (Yent 1985).

Sketch maps of the stratigraphic profile associated with Burials #4 and #5, and a sketch plan map for Burial #4, are provided (Figure 2 and Figure 3). The stratigraphic profile for Burial #4 indicates that this burial was identified within a cultural layer beneath a meter of “black dump” fill overlying white fill. A black charcoal lens was located along the upper boundary of the cultural layer overlying the burial pit. The adjacent location of the Burial #3 pit also is provided. The stratigraphic profile for Burial #5 appears to indicate that this burial pit was an intrusive feature that was excavated through a grayish, medium-coarse sand and charcoal-stained layer and into white, compacted sand and weathering coral. The Burial #3 pit was overlain by a red silt

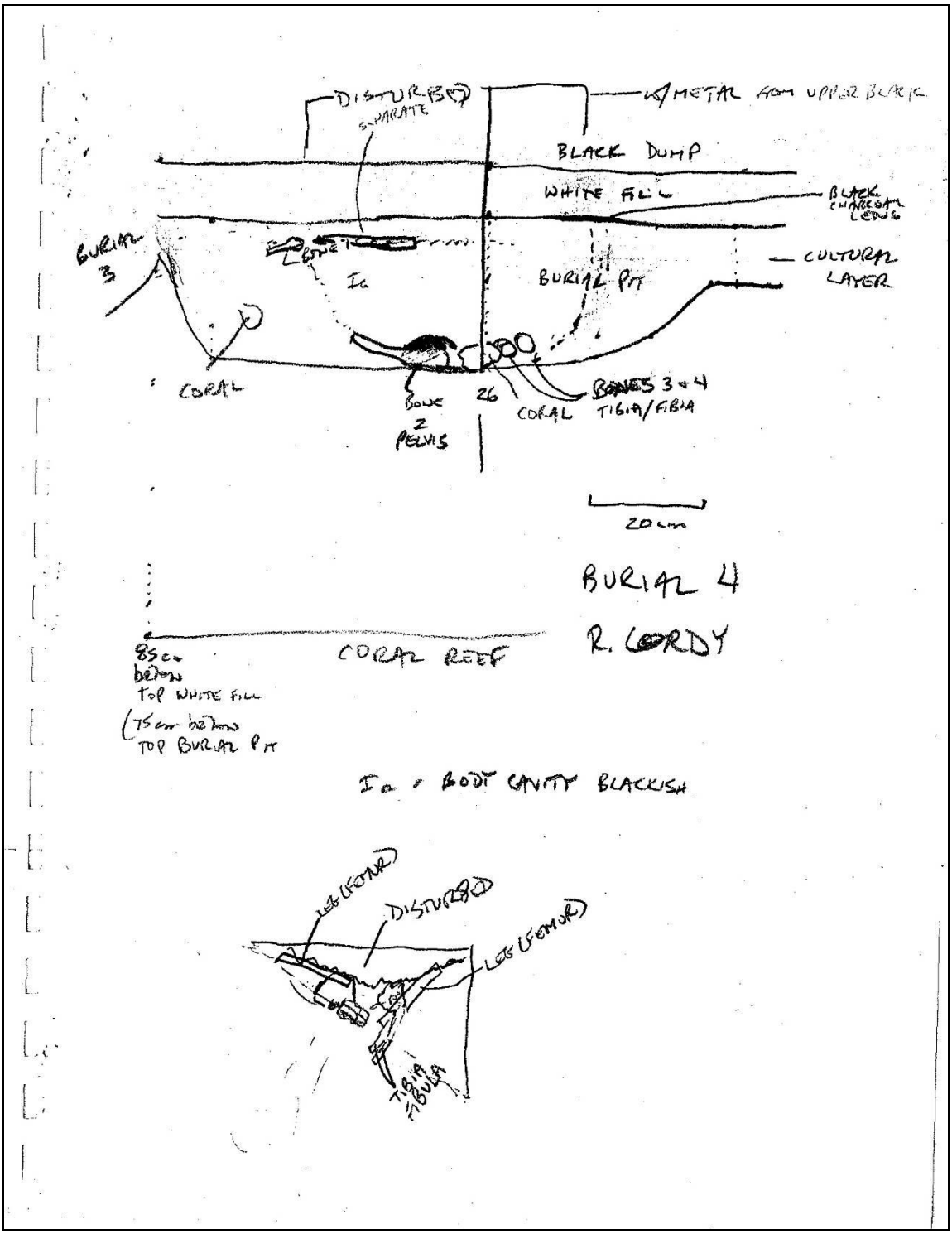


Figure 2. Stratigraphic profile and plan view map of Burial #4 from Yent (1985:3)

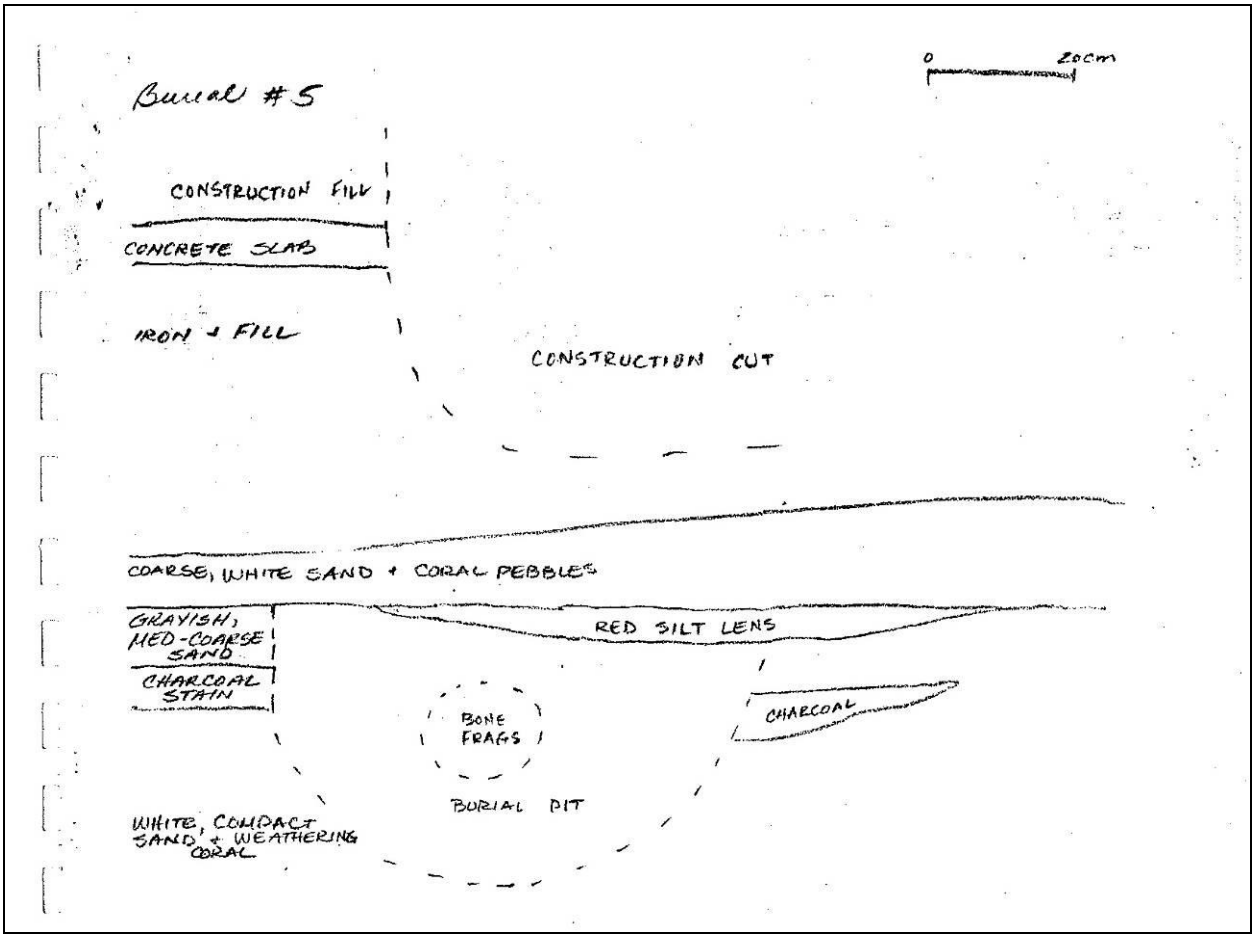


Figure 3. Stratigraphic profile of Burial #5 from Yent (1985:2)

lens followed by the deposition of a layer of course, white sand and coral pebbles, fill associated with the Honolulu Ironworks, a concrete slab, and construction fill.

During the City Center (Section 4) AIS, a buried, culturally-enriched loamy sand A horizon containing 26 archaeological features was identified in six test excavations (T-226A, T-226B, T-226C, T-226D, T-227, and T-227A).

The depositional sequence in each of the six test excavations was generally similar (Figure 4). The buried Late Pleistocene calcareous reef (coral reef) and overlying natural gley sediment was identified at the base of excavation in T-226A, T-227, and T-227A, and is presumed to be beneath the water table and base of excavation within T-226B, C, and D.

Natural calcareous sand, termed Jaucas sand and designated Stratum III, was present at the base of excavation in each of the six test excavations and was overlying the coral shelf and gley sediments in T-226A, T-227, and T-227A.

The culturally-enriched sandy loam A horizon, exhibiting both pre- and post-Contact land usage and designated Stratum II, developed on the natural Jaucas sand surface. The 26 features originating from the A horizon were observed to be intrusive into the underlying Jaucas sand (Figure 5). The 26 features (Feature 1–23 and 25–27) consist of 1 human burial pit, 1 dog burial pit, 3 postmolds, and 21 indeterminate pits. Four additional features (Features 24 and 28-30), which are not associated with the A horizon, were also identified. The 30 features were designated as Features 1–30 of SIHP # 50-80-14-2918.

SIHP # -2918 Feature 1 was identified within T-226A originating from the base of Stratum II at 0.92 mbs and terminating at 1.04 mbs as an intrusive pit within Stratum III. SIHP # -2918 Feature 1 was irregularly shaped in plan and measured more than 0.58 m long and 0.75 m wide, extending beyond the width of the excavation and beyond the south end of the excavation. The sediment matrix of SIHP # -2918 Feature 1 was sandy loam with similar characteristics to Stratum II. A 5.5-liter bulk sediment sample was collected from Feature 1 that contained charcoal (5.0 g), burned *kukui* nutshell (0.7 g), shell midden (24.9 g), naturally-occurring marine shell (0.6 g), unidentified medium mammal bone fragments (1.3 g), and an unidentified burned fish bone (0.1 g). The charcoal (5.0 g) was submitted for wood taxa identification, which identified native and Polynesian-introduced taxa. SIHP # -2918 Feature 1 is interpreted as a pit of indeterminate function.

SIHP # -2918 Feature 2 was identified within T-226A originating from the base of Stratum II at 0.82 mbs and terminating at 0.96 mbs as an intrusive pit within Stratum III. SIHP # -2918 Feature 2 was irregularly shaped in plan and measured 0.23 m long by more than 0.20 m wide, extending into one excavation sidewall. The sediment matrix of Feature 2 was sandy loam with similar characteristics to Stratum II. A 6-liter bulk sediment sample was collected from SIHP # -2918 Feature 2 that contained charcoal (2.9 g), shell midden (16.9 g), naturally-occurring marine shell (0.8 g), a rusted nail (4.8 g), a white ceramic fragment (0.5 g), unidentified medium mammal bone fragments (0.8 g), unidentified fish bones (0.2 g), and a pig (*Sus scrofa*) molar fragment (0.1 g). The charcoal (2.9 g) was submitted for wood taxa identification, which identified native, Polynesian-introduced, and historically-introduced taxa. SIHP # -2918 Feature 2 is interpreted as a pit of indeterminate function.

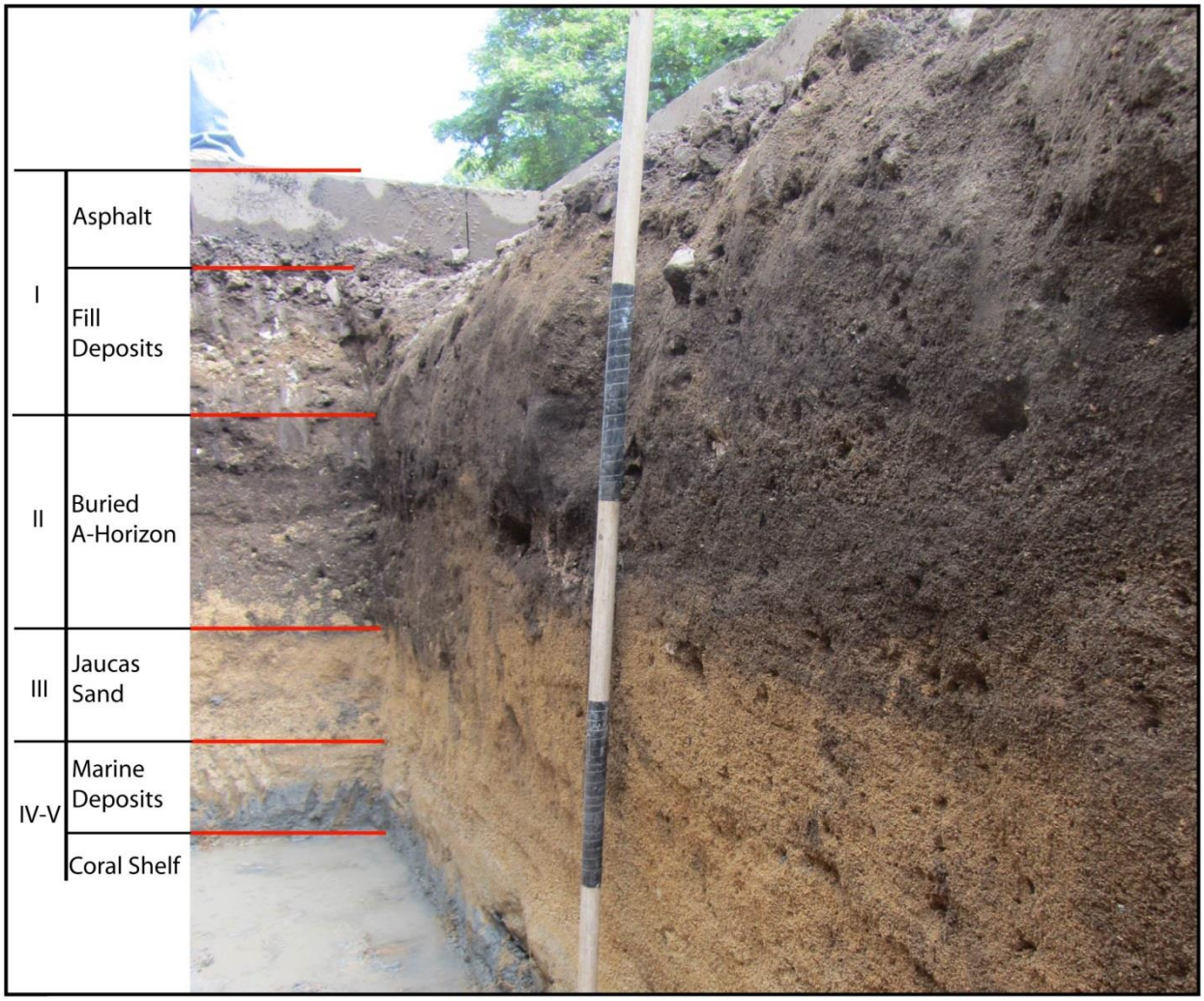


Figure 4. T-226A northeast wall profile showing the general depositional sequence observed in the vicinity, view to north

Figure 5. T-226B Stratum II excavation floor showing pit Features 4–11 which were intrusive into the underlying Jaucas sand, view to southwest

SIHP # -2918 Feature 3 was identified within T-226A originating from the base of Stratum II at 0.82 mbs and terminating at 1.02 mbs as an intrusive pit within Stratum III. SIHP # -2918 Feature 3 was irregularly shaped in plan and measured 0.43 m long by more than 0.75 m wide, extending beyond the width of the excavation. The sediment matrix of SIHP # -2918 Feature 3 was sandy loam with similar characteristics to Stratum II. A 5-liter bulk sediment sample was collected from SIHP # -2918 Feature 3 that contained charcoal (13.3 g), shell midden (67.7 g), naturally-occurring marine shell (0.2 g), a carbonized *kukui* nut shell (2.7 g), a piece of volcanic glass (0.1 g), an unidentified fish bone (0.1 g), unidentified medium mammal bone (1.1 g), and burned medium mammal bone (0.3 g). The charcoal (13.3 g) was submitted for wood taxa identification, which identified native and Polynesian-introduced taxa. SIHP # -2918 Feature 3 is interpreted as a pit of indeterminate function.

SIHP # -2918 Feature 4 was identified within T-226B originating from the base of Stratum II at 0.70 mbs and terminating at 0.96 mbs as an intrusive pit within Stratum III. Feature 4 was irregularly shaped in plan and measured 0.52 m long by more than 0.75 m wide, extending beyond the width of the excavation. The sediment matrix of SIHP # -2918 Feature 4 was sandy loam with similar characteristics to Stratum II. A 19-liter screened sample and a 4.5-liter bulk sample were collected from SIHP # -2918 Feature 4, which contained charcoal (2.3 g), fish bone (0.1 g), a shark tooth (0.1 g), a *Rattus sp.* (rat) tooth (0.1 g), fire-cracked rock (10.8 g), naturally-occurring marine shell (2.7 g), and shell midden (17.0 g). The charcoal (2.3 g) was submitted for wood taxa identification, which identified native and Polynesian-introduced taxa. SIHP # -2918 Feature 4 is a pit of indeterminate function.

SIHP # -2918 Feature 5 was identified within T-226B originating from the base of Stratum II at 0.75 mbs and terminating at 0.95 mbs as an intrusive pit within Stratum III. SIHP # -2918 Feature 5 was oval-shaped in plan and measured 0.35 m long by 0.24 m wide. The sediment matrix of SIHP # -2918 Feature 5 was sandy loam with similar characteristics to Stratum II. A 9.5-liter screened sample and a 2-liter bulk sample were collected from SIHP # -2918 Feature 5, which contained charcoal (0.4 g), volcanic glass (0.1 g), *Rattus* sp. (rat) bones (0.1 g), naturally-occurring marine shell (1.3 g), and shell midden (8.6 g). The charcoal (0.4 g) was submitted for wood taxa identification, which identified native and Polynesian-introduced taxa. SIHP # -2918 Feature 5 is a pit of indeterminate function.

SIHP # -2918 Feature 6 was identified within T-226B originating from the base of Stratum II at 0.80 mbs and terminating at 1.10 mbs as an intrusive pit within Stratum III. SIHP # -2918 Feature 6 was irregularly shaped in plan and measured 1.23 m long by more than 0.75 m wide, extending beyond the width of the excavation. The sediment matrix of SIHP # -2918 Feature 6 was sandy loam with similar characteristics to Stratum II. A 19-liter screened sample, a 4-liter bulk sample, and an intact large piece of charcoal were collected from SIHP # -2918 Feature 6. The combined samples contained charcoal (1.6 g), volcanic glass (1.1 g), *Canis lupus familiaris* (dog) premolar tooth (0.3 g), vesicular basalt (14.5 g), naturally-occurring marine shell (0.3 g), and marine shell midden (38.1 g). The charcoal (1.6 g) was submitted for wood taxa identification and radiocarbon dating. All of the identified wood taxa were considered to be native or Polynesian-introduced trees or shrubs. The charcoal identified as *Kukui* nutshell (0.26 g) was submitted for radiocarbon dating analysis, which yielded four possible date ranges, with a calibrated 2-sigma date of AD 1720 to AD 1820 (52.2%) being the most probable. SIHP # -2918 Feature 6 is a pit of indeterminate function.

SIHP # -2918 Feature 7 was identified within T-226B originating from the base of Stratum II at 0.80 mbs and terminating at 0.95 mbs as an intrusive pit within Stratum III. SIHP # -2918 Feature 7 was circular-shaped in plan, located within the central portion of SIHP # -2918 Feature 6, and measured 0.27 m long by 0.28 m wide. The sediment matrix of SIHP # -2918 Feature 7 was sandy loam with similar characteristics to Stratum II. One 3-liter bulk sediment sample was collected from SIHP # -2918 Feature 7 that contained charcoal (0.2 g), naturally-occurring marine shell (0.2 g), and marine shell midden (10.4 g.). The charcoal (0.2 g) was submitted for wood taxa analysis, which identified coconut palm, a Polynesian-introduced tree and an unknown wood. SIHP # -2918 Feature 7 is interpreted as a pit of indeterminate function.

SIHP # -2918 Feature 8 was identified within T-226B originating from the base of Stratum II at 0.76 mbs and terminating at 0.90 mbs as an intrusive pit within Stratum III. SIHP # -2918 Feature 8 was irregularly-shaped in plan and measured 1.09 m long by more than 0.75 m wide, extending beyond the width of the excavation. The sediment matrix of SIHP # -2918 Feature 8 was sandy loam with similar characteristics to Stratum II. A 19-liter screened sample, a 4-liter bulk sample, one charcoal sample, and one possible fire-cracked rock fragment were collected from SIHP # -2918 Feature 8. Collectively these samples contained charcoal (6.9 g), volcanic glass (1.1 g), small/medium mammal remains (0.5 g), Tinker’s Butterflyfish bone (*Chaetodon tinkeri*; 0.4 g), fire-cracked rock (184.5 g), a basalt fragment (0.1 g), naturally-occurring marine shell (0.3 g), and marine shell midden (37.5 g). A portion of the charcoal (0.9 g) was submitted for wood taxa identification and radiocarbon dating. All of the identified wood taxa were considered to be native or Polynesian-introduced trees or shrubs. The charcoal identified as coconut nutshell (0.06 g) was submitted for radiocarbon dating analysis, which yielded three possible date ranges, with a calibrated 2-sigma date of AD 1630 to AD 1690 (44.7%) being the most probable. SIHP # -2918 Feature 8 is a pit of indeterminate function.

SIHP # -2918 Feature 9 was identified within T-226B originating from the base of Stratum II at 0.76 mbs and terminating at 0.85 mbs as an intrusive pit within Stratum III. SIHP # -2918 Feature 9 was circular shaped in plan and measured 0.16 m long by 0.13 m wide. The sediment matrix of SIHP # -2918 Feature 9 was sandy loam with similar characteristics to Stratum II. One bulk sediment sample was collected from SIHP # -2918 Feature 9 that contained charcoal (0.1 g) and marine shell midden (8.3 g). The charcoal (0.1 g) was submitted for wood taxa identification, which was unable to determine the represented plant species. SIHP # -2918 Feature 9 is a pit of indeterminate function.

SIHP # -2918 Feature 10 was identified within T-226B originating from the base of Stratum II at 0.75 mbs and terminating at 0.87 mbs as an intrusive pit within Stratum III. SIHP # -2918 Feature 10 was irregularly-shaped in plan and measured 0.43 m long by more than 0.30 m wide, extending into one excavation sidewall. The sediment matrix of SIHP # -2918 Feature 10 was sandy loam with similar characteristics to Stratum II. One bulk sediment sample was collected from SIHP # -2918 Feature 10 that contained charcoal (0.2 g), waterworn basalt (5.3 g), a *Rattus sp.* (rat) long bone (0.1 g), medium mammal remains (0.1 g), a trace amount of naturally-occurring marine shell, and marine shell midden (4.7 g). The charcoal (0.2 g) was submitted for wood taxa identification, which identified all native taxa. Feature 10 is a pit of indeterminate function.

SIHP # -2918 Feature 11 was identified within T-226B originating from the base of Stratum II at 0.78 mbs and terminating at 0.94 mbs as an intrusive pit within Stratum III. SIHP # -2918 Feature 11 was irregularly shaped in plan view and measured 1.02 m long by more than 0.75 m

wide, extending beyond the width of the excavation. The sediment matrix of SIHP # -2918 Feature 11 was sandy loam with similar characteristics to Stratum II. A complete articulated *Canis lupus familiaris* (dog) skeleton was identified and collected from the sediment matrix of SIHP # -2918 Feature 11. A 19-liter screened sample and a 4-liter bulk sample were collected, which yielded charcoal (1.7 g), fish bone (0.2 g), basalt gravel (9.2 g), naturally-occurring marine shell (0.4 g), and marine shell midden (41.3 g). The charcoal (1.7 g) was submitted for wood taxa identification and radiocarbon dating. All of the identified wood taxa were considered to be native or Polynesian-introduced trees or shrubs. The charcoal identified as coconut nutshell (0.15 g) was submitted for radiocarbon dating analysis, which yielded four possible date ranges, with a calibrated 2-sigma date of AD 1720 to AD 1820 (52.2%) being the most probable. SIHP # -2918 Feature 11 is a pit containing *Canis lupus familiaris* (dog) skeletal remains.

SIHP # -2918 Feature 12 was identified within T-226C as a pit truncated by Stratum Id, a sand fill, at 1.14 mbs, and which was intrusive into Stratum III, Jaucas sand. The pit base terminated at 1.37 mbs (Figure 6). SIHP # -2918 Feature 12 was oval shaped in plan and measured 0.30 m long by more than 0.07 m wide, extending into the south sidewall. The remaining portion of the pit was clearly defined with straight sides and a rounded base. SIHP # -2918 Feature 12 is associated with the culturally-enriched sandy loam A horizon (Stratum II), which was likely removed in this area prior to, or during, the deposition of Stratum Id (see Figure 6). A 1-liter bulk sediment sample was collected from SIHP # -2918 Feature 12. It yielded charcoal (0.1 g), fish bone (0.1 g), and naturally-occurring marine shell (0.5 g). SIHP # -2918 Feature 12 is a truncated pit of indeterminate function.

SIHP # -2918 Feature 13 was identified within T-226C as a truncated pit containing human skeletal remains. Feature 13 was truncated by Stratum Id, a sand fill, at 1.15 mbs and was not excavated below the human skeletal remains (1.17 mbs). SIHP # -2918 Feature 13 is associated with the culturally-enriched sandy loam A horizon (Stratum II), which was likely removed in this area prior to, or during, the deposition of Stratum Id (see Figure 6, Figure 7, and Table 1). SIHP # -2918 Feature 13 was circular shaped in plan and measured 0.45 m long by more than 0.23 m wide, extending into the south sidewall. Excavation of SIHP # -2918 Feature 13 ceased upon the discovery of human skeletal remains consisting of a pelvis with no articulating leg elements. The sediment matrix of SIHP # -2918 Feature 13 was loamy sand, which appeared to be a mixture of Jaucas sand (Stratum III) and sediment with similar characteristics to the culturally-enriched sandy loam A horizon (Stratum II) encountered in nearby excavations. SIHP # -2918 Feature 13 is a burial pit containing human skeletal remains.

SIHP # -2918 Feature 14 was identified within T-227 originating from the base of Stratum II at 0.90 mbs and terminating at 1.07 mbs as an intrusive pit within Stratum III. SIHP # -2918 Feature 14 was irregular in plan and measured more than 1.2 m long by more than 0.7 m wide, extending beyond the width of excavation and into the northeast end of the excavation. The sediment matrix of SIHP # -2918 Feature 14 was sandy loam with similar characteristics to Stratum II. One bulk sediment sample was collected from SIHP # -2918 Feature 14 that contained charcoal (3.5 g), naturally-occurring marine shell (1.7 g), bottle glass (0.7 g), and fish remains (0.1 g). SIHP # -2918 Feature 14 also contained a single *Bos taurus* rib that had been butchered with a metal saw blade. SIHP # -2918 Feature 14 is a pit of indeterminate function.

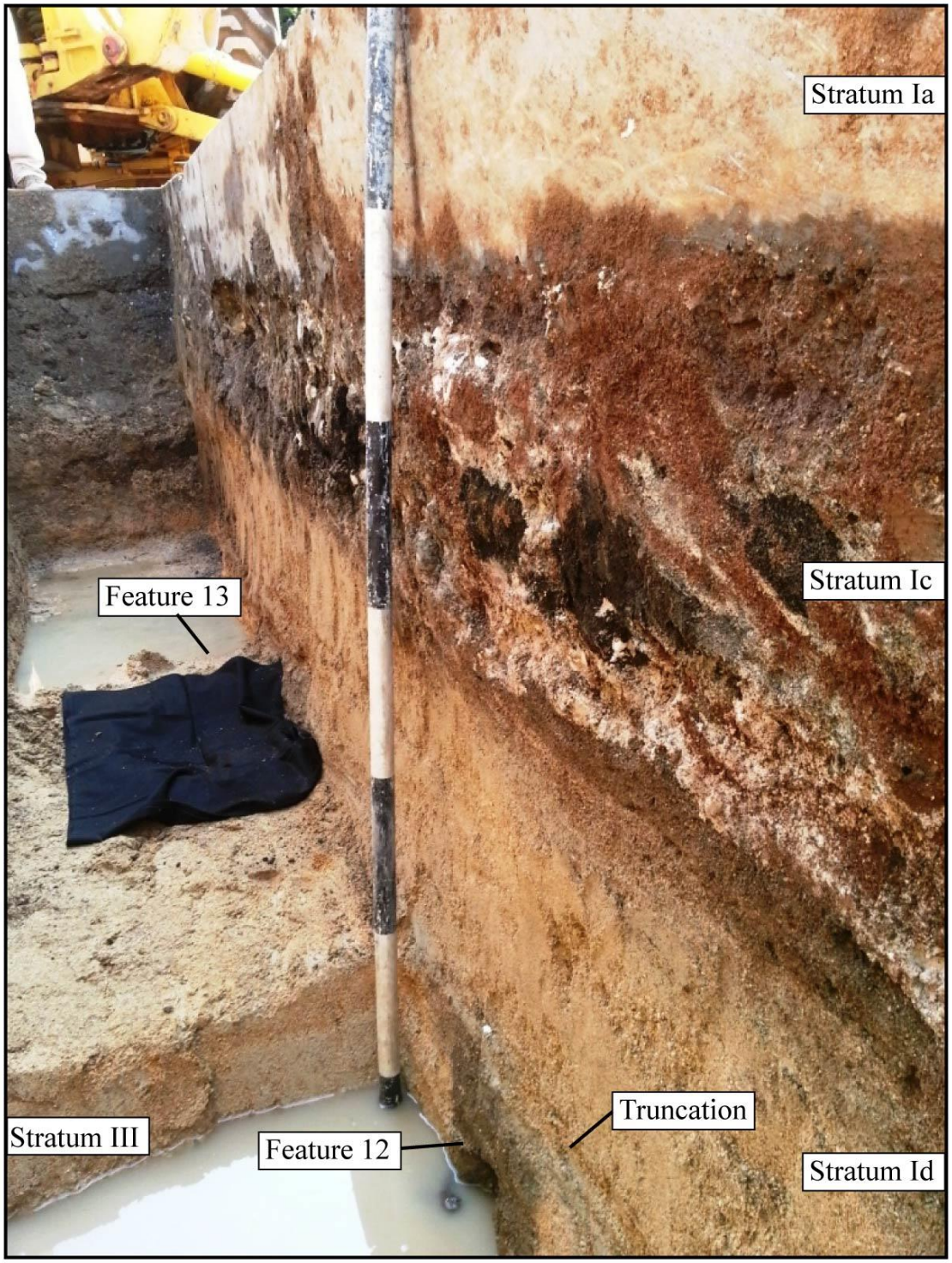


Figure 6. T-226C south wall profile showing the horizontal truncation of Features 12 and 13 by Stratum Id, view to southeast

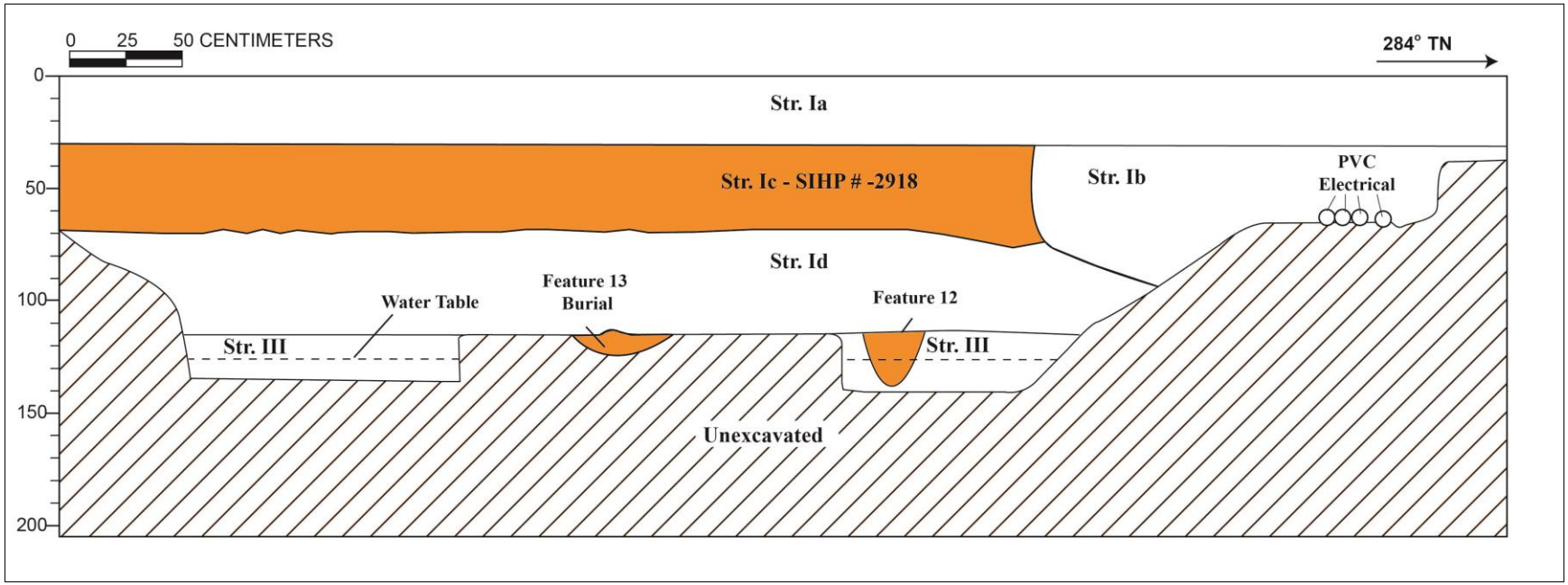


Figure 7. T-226C south wall profile showing SIHP # -2918 Features 12 and 13

Table 1. T-226C Stratigraphic Description, south wall profile

Stratum	Depth (cmbs)	Description
Ia	0–31	Asphalt; road surface
Ib	30–93	Fill; 5 YR 3/3 (dark reddish brown); gravelly clay loam; weak, fine, crumb structure; moist, weakly coherent consistency; non-plastic; abrupt, broken/discontinuous lower boundary; utility trench fill
Ic	30–75	Fill; 10 YR 3/3 (dark brown) mottled with 10 YR 5/6 (yellowish brown); extremely gravelly loamy sand; structureless, single grain; moist, loose consistency; non-plastic; mixed origin; clear, broken/discontinuous lower boundary; mixed fill with crushed coral; may be locally procured and redeposited A horizon sediment with mixed fill; fill deposit which became a cultural A horizon; considered a component of SIHP # 50-80-14-2918
Id	68–115	Fill; 10 YR 5/4 (light yellowish brown); coarse grain sand; structureless, single grain; moist, loose consistency; non-plastic; clear, smooth lower boundary; contained glass bottle and fragment, faunal bone (collected); redeposited sand
SIHP # -2918 Feature 12	114-137	Pit feature; 10 YR 5/3 (brown); sandy loam; structureless; moist, very friable consistency; non-plastic; mixed origin; truncated pit feature that likely originated from a former sandy loam A horizon (Stratum II) that has been removed; SIHP # 50-80-14-2918 Feature 12
SIHP # -2918 Feature 13	115-117 (BOE)	Pit feature; 10 YR 5/3 (brown); sandy loam; structureless; moist, very friable consistency; non-plastic; mixed origin; truncated pit feature that likely originated from a former sandy loam A horizon (Stratum II) that has been removed; human burial; SIHP # 50-80-14-2918 Feature 13
III	115–139 (BOE)	Natural; 10 YR 6/4 (light yellowish brown); medium-grain sand; structureless, single grain; moist, loose consistency; non-plastic; marine origin; lower boundary not observed; Jaucas sand

SIHP # -2918 Feature 15 was identified within T-227 originating from within SIHP # -2918 Feature 14 at 0.93 mbs and terminating at 1.13 mbs as an intrusive pit within Stratum III and SIHP # -2918 Feature 14. SIHP # -2918 Feature 15 was circular in plan with a diameter of approximately 0.22 m. The sediment matrix of SIHP # -2918 Feature 15 was sandy loam with similar characteristics to Stratum II. SIHP # -2918 Feature 15 is a postmold.

SIHP # -2918 Feature 16 was identified within T-227 originating from the base of Stratum II at 1.01 mbs and terminating at 1.17 mbs as an intrusive pit within Stratum III. SIHP # -2918 Feature 16 was roughly circular in plan and measured 0.6 m long by more than 0.4 m wide, extending into the northwest excavation sidewall. The sediment matrix of SIHP # -2918 Feature 16 was sandy loam with similar characteristics to SIHP # -2918 Stratum II. One bulk sediment sample was collected from SIHP # -2918 Feature 16 that contained charcoal (0.3 g), naturally-occurring marine shell (0.8 g), rusted metal (0.9 g), and bottle glass fragments (0.2 g). SIHP # -2918 Feature 16 also contained unmodified medium mammal diaphysis fragments. SIHP # -2918 Feature 16 is a pit of indeterminate function.

SIHP # -2918 Feature 17 was identified within T-227 originating from the base of Stratum II at 1.05 mbs and terminating at 1.16 mbs as an intrusive pit within Stratum III. SIHP # -2918 Feature 17 was oval-shaped in plan and measured 0.37 m wide by more than 0.7 m long, extending into the southeast excavation sidewall. The sediment matrix of SIHP # -2918 Feature 17 was sandy loam with similar characteristics to Stratum II. One bulk sediment sample was collected from SIHP # -2918 Feature 17. It yielded charcoal (0.4 g), naturally-occurring marine shell (0.3 g), rusted metal (4.8 g), aqua-colored bottle glass (2.6 g), medium mammal remains (0.5 g), fish remains (0.1 g), and midden (3.3 g). SIHP # -2918 Feature 17 also contained unmodified *Sus scrofa* (pig) molar fragments. Feature 17 is a pit of indeterminate function.

SIHP # -2918 Feature 18 was identified within T-227 originating from the base of Stratum II at 1.0 mbs and terminating at 1.05 mbs as an intrusive pit within Stratum III. SIHP # -2918 Feature 18 was oval-shaped in plan and measured 0.25 m long by more than 0.25 m wide, extending into the northwest excavation sidewall. The sediment matrix of SIHP # -2918 Feature 18 was sandy loam with similar characteristics to Stratum II. One bulk sample was collected from SIHP # -2918 Feature 18 that contained charcoal (0.1 g), naturally-occurring marine shell (0.5 g), and fish remains (0.1 g). SIHP # -2918 Feature 18 is a pit of indeterminate function.

SIHP # -2918 Feature 19 was identified within T-227 originating from the base of Stratum II at 1.0 mbs and terminating at 1.22 mbs as an intrusive pit within Stratum III. SIHP # -2918 Feature 19 was circular in plan with a diameter of approximately 0.15 m. The sediment matrix of SIHP # -2918 Feature 19 was sandy loam with similar characteristics to Stratum II. One bulk sample was collected from SIHP # -2918 Feature 19 that contained charcoal (1.0 g), naturally-occurring marine shell (0.2 g), and marine shell midden (2.9 g). SIHP # -2918 Feature 19 is a pit of indeterminate function.

SIHP # -2918 Feature 20 was identified within T-227 originating from the base of Stratum II at 0.98 mbs and terminating at 1.02 mbs as an intrusive pit within Stratum III. SIHP # -2918 Feature 20 was circular in plan, measuring 0.20 m wide and extending 0.12 m from the northwest excavation sidewall. The sediment matrix of SIHP # -2918 Feature 20 was sandy loam with similar characteristics to Stratum II. SIHP # -2918 Feature 20 is a pit of indeterminate function.

SIHP # -2918 Feature 21 was identified within T-227 originating from the base of Stratum II at 1.00 mbs and terminating at 1.19 mbs as an intrusive pit within Stratum III. SIHP # -2918 Feature 20 was irregular in plan and measured 0.65 m long by more than 0.7 m wide, extending into the northwest and southeast excavation sidewalls. The sediment matrix of SIHP # -2918 Feature 21 was sandy loam with similar characteristics to Stratum II. One bulk sample was collected from SIHP # -2918 Feature 21 and contained charcoal (0.8 g), naturally-occurring marine shell (0.5 g), ceramic fragments (0.3 g), and marine shell midden (2.6 g). SIHP # -2918 Feature 21 is a pit of indeterminate function.

SIHP # -2918 Feature 22 was identified within T-227A originating from the base of Stratum II at 1.03 mbs and terminating at 1.08 mbs as an intrusive pit within Stratum III. SIHP # -2918 Feature 22 was roughly square shaped in plan and measured 0.27 m long by 0.25 m wide. The sediment matrix of Feature 22 was sandy loam with similar characteristics to Stratum II. A 6.0-liter screened sample was collected from SIHP # -2918 Feature 22 that contained marine shell midden (1.7 g), fish bones (0.4 g), fire-cracked rocks and a brick fragment (106.3 g), and a basalt fragment (13.1 g). SIHP # -2918 Feature 22 is a pit of indeterminate function.

SIHP # -2918 Feature 23 was identified within T-227A originating from the base of Stratum II at 1.08 mbs and terminating at 1.31 mbs as an intrusive pit within Stratum III. SIHP # -2918 Feature 23 was circular in plan and measured approximately 0.20 m in diameter. The sediment matrix of SIHP # -2918 Feature 23 was sandy loam with similar characteristics to Stratum II. A 4-liter screened sample and a 2-liter bulk sample were collected from SIHP # -2918 Feature 23, which contained charcoal (<0.1 g), volcanic glass (0.7 g), gastropods (0.3 g), limpets (0.5 g), miscellaneous shell fragments (0.3 g), and 9.2 g of marine shell midden material. The charcoal (<0.1 g) was submitted for wood taxa identification, which identified native taxa. Feature 23 is a postmold.

SIHP # -2918 Feature 24 was identified within T-227A originating from within Stratum III at 1.17 mbs and terminating at 1.30 mbs as an intrusive pit within Stratum IV. SIHP # -2918 Feature 24 was oval-shaped in plan and measured 0.17 m long by 0.12 m wide. The sediment matrix of SIHP # -2918 Feature 24 was sandy loam. One bulk sample was collected from SIHP # -2918 Feature 24 that contained naturally-occurring marine shell (3.8 g), unidentified osseous remains of a medium mammal (0.1 g), and a shark tooth (0.1 g). SIHP # -2918 Feature 24 is a pit of indeterminate function.

SIHP # -2918 Feature 25 was identified within T-227A originating from within Stratum II at 0.94 mbs and terminating at 1.08 mbs as an intrusive pit into stratum III. SIHP # -2918 Feature 25 was circular in plan with a diameter of approximately 0.2 m. The sediment matrix of SIHP # -2918 Feature 25 was sandy loam with similar characteristics to Stratum II. One bulk sample was collected from SIHP # -2918 Feature 25 that contained naturally-occurring marine shell (1.0 g), volcanic glass (0.2 g), and fish bone (0.1 g). SIHP # -2918 Feature 25 is a pit of indeterminate function.

SIHP # -2918 Feature 26 was identified within T-227A originating from the base of Stratum II at 1.12 mbs and terminating at 1.37 mbs as an intrusive pit within Stratum III. SIHP # -2918 Feature 26 was circular in plan with a diameter of approximately 0.20 m. The sediment matrix of SIHP # -2918 Feature 26 was loamy sand which appeared to be a mixture of Stratum II and III (Figure 7). One bulk sample was collected from Feature 26 that contained faunal remains (0.5 g) consistent with a medium mammal (*cf. Canis lupus familiaris*), naturally-occurring marine shell

(0.7 g), and marine midden consisting of *Nerita picea* (0.8 g). SIHP # -2918 Feature 26 is a postmold.

SIHP # -2918 Feature 27 was identified within T-227A within Stratum III (Jaucas sand) at 1.25 mbs extending into Stratum IV (natural gley). The sediment matrix surrounding the burial was Jaucas sand (Stratum III) with no discernible pit outline. SIHP # -2918 Feature 27 consisted of human skeletal remains that were identified as an infant between 0–3 years based on the size and growth development of the remains. Ancestry determination on infant remains is not possible. SIHP # -2918 Feature 27 is a human burial.

SIHP # -2918 Feature 28 was identified within T-226D as a truncated pit, extending from the base of Stratum Ia, the asphalt road surface, at 0.35 mbs and terminating at 0.82 m as an intrusive pit within Stratum Ib, an extremely gravelly loamy sand fill. SIHP # -2918 Feature 28 was irregular shaped in plan and measured 2.2 m long by more the 0.8 m wide, extending beyond the width of the test excavation. The sediment matrix of SIHP # -2918 Feature 28 was loamy sand with similar characteristics to Stratum Ib without the basalt gravel content. Metal rails (I-beams) and numerous yellow bricks and brick fragments were encountered within the sediment matrix (Figure 9). SIHP # -2918 Feature 28 is an infilled pit containing historic structural remains.

Feature 29 was identified within T-226C as a pit. The feature originated near the base of Stratum Ic, a locally-procured, culturally-enriched fill. It was identified at 0.73 mbs and terminated at 1.22 mbs within Stratum III, Jaucas sand (Figure 10 and Table 2). SIHP # -2918 Feature 29 was circular shaped in plan and measured 0.42 m long by more than 0.21 m wide, extending into the northern excavation sidewall. The sediment matrix of Feature 29 consisted of loamy sand with similar characteristics to Stratum Ic. A 19-liter screened sample and one bulk sample were collected from SIHP # -2918 Feature 29 and contained charcoal (4.3 g); midden, including Crustacea (1.3 g); and burned medium mammal bone (0.1 g); naturally-occurring shell, including *Brachidontes crebristriatus* (0.1 g) and other worn shells and gastropods; burned wood (0.4 g); a green bottle glass fragment (0.8 g); and fire-cracked basalt rock (275.4 g). SIHP # -2918 Feature 29 is located in fill deposited directly atop the culturally-enriched A horizon. SIHP # -2918 Feature 29 is a historic pit of unknown function.

Feature 30 was identified within T-226C as a pit containing a preserved wooden post and fire-cracked rocks. Feature 30 pit originated within a fill deposit (Stratum Ic) at 0.78 mbs and terminated at 1.13 mbs within redeposited sand (Stratum Id) (Figure 10 and Table 2). The wooden post (0.70-1.10 mbs) and the western edge of the pit appear to have been truncated by Stratum Ib, a utility trench consisting of redeposited sand. Feature 30 was circular-shaped in plan and measured 0.30 m long by more than 0.15 m wide. It extended into the northern excavation sidewall. The sediment matrix of Feature 30 is loamy sand with similar characteristics to Stratum Ic, a locally-procured, culturally-enriched fill. Feature 30 is a postmold containing a preserved post and fire-cracked rocks.

Figure 8. T-227A Feature 26, a postmold with a loamy sand sediment matrix considered to be a combination of Stratum II and III, view to southwest

Figure 9. T-226D Feature 28, an infilled pit containing historic structural remains, view to west

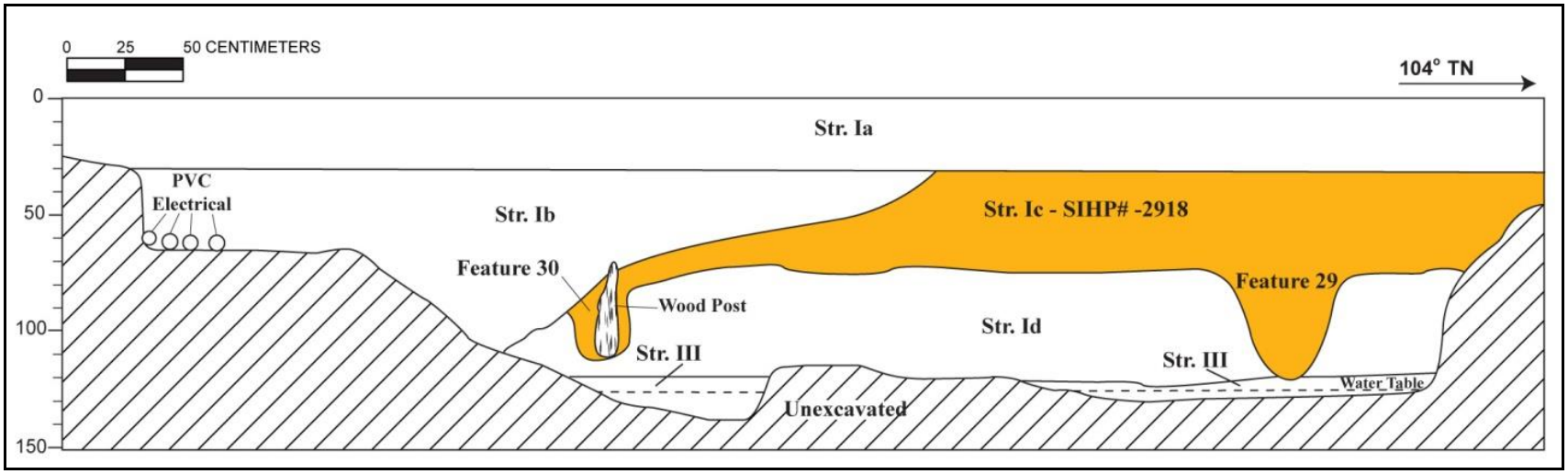


Figure 10. T-226C north wall profile showing SIHP # -2918 Features 29 and 30; Stratum Ic is also a component of SIHP # -2918

Table 2. T-226C Stratigraphic Description, north wall profile

Stratum	Depth (cmbs)	Description
Ia	0–31	Asphalt; road surface
Ib	31–110	Fill; 5 YR 3/3 (dark reddish brown); gravelly clay loam; weak, fine, crumb structure; moist, weakly coherent consistency; non-plastic; abrupt, broken/discontinuous lower boundary; utility trench fill
Ic	32–97	Fill; 10 YR 3/3 (dark brown) mottled with 10 YR 5/6 (yellowish brown); extremely gravelly loamy sand; structureless, single grain; moist, loose consistency; non-plastic; mixed origin; clear, broken/discontinuous lower boundary; mixed fill with crushed coral; may be locally procured and redeposited A horizon sediment with mixed fill; fill deposit which became a cultural A horizon; contains pit features 29 and 30; component of SIHP # 50-80-14-2918
SIHP # -2918 Feature 29	73-122	Pit feature; 10 YR 3/3 (dark brown) mottled with 10 YR 5/6 (yellowish brown); extremely gravelly loamy sand; structureless, single grain; moist, loose consistency; non-plastic; mixed origin; pit feature that originated from the base of locally-procured fill and redeposited A horizon sediment (Stratum Ic) and terminated within Jaucas sand (Stratum III); SIHP # 50-80-14-2918 Feature 29
SIHP # -2918 Feature 30	78-113	Pit feature; 10 YR 3/3 (dark brown) mottled with 10 YR 5/6 (yellowish brown); extremely gravelly loamy sand; structureless, single grain; moist, loose consistency; non-plastic; mixed origin; pit feature that containing a preserved wooden post and fire-cracked rocks; originated within a fill deposit (Stratum Ic) at 0.78 mbs and terminated at 1.13 mbs within redeposited sand (Stratum Id); SIHP # 50-80-14-2918 Feature 30
Id	73–120	Fill; 10 YR 5/4 (light yellowish brown); coarse grain sand; structureless, single grain; moist, loose consistency; non-plastic; clear, smooth lower boundary; contained glass bottle and fragment, faunal bone (collected); redeposited sand
III	120–139 (BOE)	Natural; 10 YR 6/4 (light yellowish brown); medium-grain sand; structureless, single grain; moist, loose consistency; non-plastic; marine origin; lower boundary not observed; Jaucas sand

Detailed information regarding the location, age, type, function and content of each archaeological feature is provided in Table 3.

The buried A horizon (Stratum II; SIHP # -2918) has been capped by layers of locally-procured and imported fill, base course, and the modern asphalt surface of Punchbowl Street, all of which have been subdesignated under Stratum I. The fill sediments that cap the former land surface are considered to be late nineteenth century to modern deposits related to land reclamation, grading, and the construction of Punchbowl Street.

The buried culturally-enriched A horizon (SIHP # -2918) identified in T-226A, T-226B, T-226C, T-226D, T-227, and T-227A contained both traditional and post-Contact cultural material, human skeletal remains, vertebrate and invertebrate faunal material, and charcoal.

Traditional Hawaiian cultural material identified within the buried culturally-enriched A horizon (SIHP # -2918) included ten pieces of volcanic glass debitage, which were recovered from a total of six features ((SIHP # -2918) Features 3, 5, 6, 8, 23, and 25) and the A horizon itself in T-226B. Also a dog bone (*Canis lupus familiaris*) pick for removing the meat from gastropods was collected from T-226A at the interface between Stratum Ic and Stratum II (Figure 11).

Historic cultural material within the buried culturally-enriched A horizon (SIHP # -2918) included glass bottles, ceramics, and metal fragments, bricks and brick fragments, and miscellaneous household refuse. The historic artifacts date from the late nineteenth century through the late twentieth century. The historic artifacts collected from three pit features (SIHP # -2918 Features 14, 16, and 17) within T-227 included bottle glass fragments, a machine drilled ivory bead (Acc. #227-A-30), a nail, and a possible candleholder (Acc. #227 A-29) (Figure 12 and Figure 13). Historic artifacts were also collected from SIHP # -2918 Feature 28 (T-226D) including a rail beam and a spike (possible remnants of the Honolulu streetcar system) and brick fragments. Fragmentary historic remains were also recovered from bulk samples in SIHP # -2918 Features 2 (T-226A); 14, 16, 17, and 21 (T-227); and 22 (T-227A).

Both traditional Hawaiian and historic cultural material occurred together throughout the buried culturally-enriched A horizon (Stratum II; SIHP # -2918) and within numerous pit features. The co-occurrence of traditional Hawaiian and historic cultural material reflects the continuity of use and/or occupation of the former land surface (Stratum II) from the pre-Contact period into the early twentieth century.

Human skeletal remains were observed in SIHP # -2918 Features 13 (T-226C) and 27 (T-227A). (SIHP # -2918) Feature 13 is considered to be a burial pit containing human skeletal remains that once extended from the base of the former land surface (A horizon), but later was horizontally truncated by fill deposits. The observed skeletal remains included a pelvis with no articulating leg elements. The sex and ancestry of the skeletal remains could not be determined. SHIP #-2918 Feature 27 is a partial infant burial that was observed within Jaucas sand underlying the culturally enriched A horizon. The burial was determined to be an infant between 0-3 years based on the size and growth development of the remains. The stratigraphic context and the form of the burial pits are consistent with traditional Hawaiian burial practices.

Table 3. Archaeological Features of SIHP # -2918 Identified during the City Center (Section 4) AIS

Feature	Test Excavation	Depth (cmbs)	Radiocarbon Age (C14)	Type/Function	Contents
1	T-226A	92-104	-	Pit/Indeterminate	Charcoal (*kolomona*, *‘ilima*, *kōpiko*, *‘ōhi‘a lehua*, *ipu*, *hau*, *kukui*, *‘āheahea*, *hala*, *‘akoko*), burned *kukui* nut shells, naturally-occurring marine shell, shell midden, faunal bone (fish, medium mammal)
2	T-226A	82-96	-	Pit/Indeterminate	Charcoal (*kukui*, *niu*, *‘ōhi‘a lehua*, *hau*, *‘ulu*), rusted nail, ceramic fragment, naturally-occurring marine shell, shell midden, faunal bone (fish, *Sus scrofa* molar fragment, medium mammal)
3	T-226A	82-102	-	Pit/Indeterminate	Charcoal (*kōpiko*, *kukui*, *kī*, *‘akoko*, *‘ōhi‘a lehua*, *‘āheahea, ‘ulu*, *‘ūlei*, *‘ilima*, *lama*, grass, *kolomona*, *ipu*), naturally-occurring marine shell, shell midden, burned *kukui* nut shells, volcanic glass (1 debitage), faunal bone (fish, *Rattus* sp., small mammal)
4	T-226B	70-96	-	Pit/Indeterminate	Charcoal (*‘ōhi‘a lehua*, *‘āheahea*, *kukui*, *‘ulu*, and *maiapilo*), naturally-occurring marine shell, shell midden, faunal bone (fish, a shark tooth, a *Rattus* sp. tooth), fire-cracked rock
5	T-226B	75-95	-	Pit/Indeterminate	Charcoal (*‘akoko*, *kolomona*, and *kukui*), naturally-occurring marine shell, shell midden, faunal bone (*Rattus* sp.), volcanic glass (1 debitage)
6	T-226B	80-110	AD 1720-1820	Pit/Indeterminate	Charcoal (*‘ōhi‘a lehua*, *kukui*, *hau*, *niu*, and *kī*), naturally-occurring marine shell, shell midden, faunal bone (*Canis lupus familiaris* premolar tooth), vesicular basalt, volcanic glass (3 debitage)

Feature	Test Excavation	Depth (cmbs)	Radiocarbon Age (C14)	Type/Function	Contents
7	T-226B	80-95	-	Pit/Indeterminate	Charcoal (*niu*), naturally-occurring marine shell, shell midden
8	T-226B	76-90	AD 1630-1810	Pit/Indeterminate	Charcoal (*niu*, *‘akoko*, *kolomona*, *‘ilima*, *‘āheahea*, *kī*, *kukui*, and *lama*), naturally-occurring marine shell, shell midden, faunal bone (fish, small/medium mammal), fire-cracked rock, volcanic glass (1, debitage)
9	T-226B	76-85	-	Pit/Indeterminate	Charcoal, shell midden
10	T-226B	75-87	-	Pit/Indeterminate	Charcoal (*‘ōhi‘a lehua* and *‘ilima*), naturally-occurring marine shell, shell midden, faunal bone (*Rattus* sp., medium mammal), water-worn basalt
11	T-226B	78-94	AD 1720-1820	Pit/Dog burial	Charcoal (*kolomona*, *niu*, *‘ilima*, and *kukui*), naturally-occurring marine shell, shell midden, faunal bone (fish)
12	T-226C	114-137	-	Pit/Indeterminate	Charcoal, naturally-occurring marine shell, faunal bone (fish)
13	T-226C	115-117	-	Pit/Human burial	Observed skeletal remains consisted of a pelvis with no articulating leg elements
14	T-227	90-107	-	Pit/ Indeterminate	Charcoal, naturally-occurring marine shell, faunal bone (fish, *Bos taurus*), a bottle glass fragment
15	T-227	93-113	-	Pit/Postmold	Possible postmold
16	T-227	101-117	-	Pit/Indeterminate	Charcoal, naturally-occurring marine shell, faunal bone (medium mammal), metal, bottle glass fragment
17	T-227	105-116	-	Pit/Indeterminate	Charcoal, naturally-occurring marine shell, faunal bone (fish, medium mammal, 2 *Sus scrofa* molars), metal, bottle glass fragment, glass candleholder, and an ivory bead

Feature	Test Excavation	Depth (cmbs)	Radiocarbon Age (C14)	Type/Function	Contents
18	T-227	100-105	-	Pit/Indeterminate	Charcoal, shell midden, faunal (fish)
19	T-227	100-122	-	Pit/Indeterminate	Charcoal, shell midden
20	T-227	98-102	-	Pit/Indeterminate	No sample collected, no cultural material observed
21	T-227	100-119	-	Pit/Indeterminate	Charcoal, shell midden, ceramic fragment
22	T-227A	103-108	-	Pit/Indeterminate	Shell midden, faunal bone (fish), fire-cracked rock, a brick fragment
23	T-227A	108-131	AD 1720-1810	Pit/ Postmold	Charcoal (*kōpiko* and *lama*), naturally-occurring marine shell, volcanic glass (2 debitage)
24	T-227A	117-130	-	Pit/Indeterminate	Naturally-occurring marine shell, faunal bone (medium mammal, a shark tooth)
25	T-227A	94-108	-	Pit/Indeterminate	Naturally-occurring marine shell, faunal bone (fish), volcanic glass (1 debitage)
26	T-227A	112-137	-	Pit/ Postmold	Naturally-occurring marine shell, faunal bone (*Canis lupus familiaris*)
27	T-227A	125	-	Skeletal remains/Human burial	A partial infant burial (0-3 years); no visible pit outline
28	T-226D	35-82	-	Pit/Trash pit	Contains a wood beam, metal rails (I-beams), and numerous yellow bricks and brick fragments; possible railway or streetcar system structural remains
29	T-226C	73-122	-	Pit/Indeterminate	Contains former culturally-enriched sand A horizon sediment and fill sediments, charcoal, burned wood, a green bottle glass fragment, burned faunal bone (medium mammal), and fire-cracked rock
30	T-226C	78-113	-	Pit/Postmold	A preserved wooden post and fire-cracked rocks

Figure 11. Bone pick found in T-226A, at the interface of Strata Ic and II (Acc. # 226A-H-1)

Figure 12. T-227 pressed glass artifact, possible candlestick holder, (Acc. #227-A-29) from SIHP # -2918 Feature 17

Figure 13. T-227 machine drilled ivory bead (Acc. #227-A-30) from SIHP # -2918 Feature 17

Vertebrate faunal remains were collected from the buried culturally-enriched A horizon and SHIP #-2918 Features 3, 11, 14, and 17. Some of these faunal remains exhibit evidence of butchering (i.e., cut with a metal saw blade). Faunal remains collected from the buried A horizon (SHIP #-2918) include *Bos taurus* (butchered), *Sus scrofa* (butchered), *Capra aegagrus hircus* (unmodified), and *Canis lupus familiaris* (unmodified). Faunal remains collected from SHIP #-2918 Features 3, 11, 14, and 17 consist of *Rattus* sp. (unmodified), *Bos taurus* (butchered), *Sus scrofa* (unmodified), and *Canis lupus familiaris* (unmodified), and a variety of unidentified fish remains.

Invertebrate faunal remains were predominately collected from screened and bulk sediment samples of the buried culturally-enriched A horizon and associated features (all designated SHIP #-2918). Invertebrate fauna include non-cultural shell and shell midden (see Table 3).

Radiocarbon analysis on charcoal samples from SHIP #-2918 Features 6, 8, 11, and 23 provided a date range for SHIP #-2918 of late pre to early post-Contact (see Table 3).

The buried culturally-enriched A horizon with 26 associated features (Features 1–23 and 25–27) and four additional features (Features 24, 28–30) documented during the City Center (Section 4) AIS in T-226A through T-226D, T-227, and T-227A are combined into SIHP # -2918, previously described by Yent (1985) (see Figure 1). Although poorly documented, the Yent (1985) study identified six human burials within pits and were truncated by or associated with a cultural layer and/or charcoal staining, and were intrusive into underlying sand. The depositional sequence described by Yent (1985) is similar to the depositional sequence observed within T-226A, T-226B, T-226C, T-226D, T-227, and T-227A. In both studies, the cultural layer or buried culturally-enriched A horizon (SIHP # -2918) is truncated and/or capped with up to 1.0 m of fill deposition. The association of human burials extending from or intrusive of a cultural layer, which is documented by Yent (1985) on two profile maps also correlates with the identification of SIHP # -2918 Feature 13 burial in T-226C and SIHP # -2918 Feature 27 in T-227A. In addition, similarities in the depositional environment, location in the stratigraphic column, geographic location, cultural layers or culturally-enriched A horizon and associated burials provide the basis for a combination of the findings of Yent (1985) with the findings within T-226A, T-226B, T-226C, T-226D, T-227, and T-227A.

SIHP # -2918 is a buried, culturally-enriched sandy loam A horizon and 30 newly-identified archaeological features (Features 1–30) as well as six burials (Burial #1-6) that were previously identified by Yent (1985). Of the 30 newly-identified features, 26 features (Feature 1–23 and 25–27) are associated with the subsurface, culturally-enriched sandy loam A horizon and consist of 1 human burial pit, 1 dog burial pit, 3 postmolds, and 21 indeterminate pits. Four additional features (Features 24 and 28–30), which are not associated with the A horizon, also were identified. SIHP # -2918 Features 24 and 29 are pits of unknown function. SIHP # -2918 Feature 28 is an infilled pit containing historic structural remains and SIHP # -2918 Feature 30 is a postmold containing a preserved post. SIHP # -2918 Features 29 and 30 originate from the base of Stratum Ic in T-226C, a deposit of mixed locally-procured fill and redeposited A horizon sediment. SIHP # -2918 contained both traditional and post-Contact cultural material, human skeletal remains, vertebrate and invertebrate faunal material, and charcoal. Laboratory analysis of material collected from SIHP # -2918 indicates that the former land surface (culturally-enriched A horizon, Stratum II) was utilized from the pre- and/or early post-Contact period to the early twentieth century, prior to being capped by historic fill deposits.

Based on the guidance of National Register Bulletin No. 15, SIHP # -2918 retains its integrity of location, design, materials, and workmanship. Based on past documentation and the results of this investigation, CSH recommends that this cultural resource maintains the integrity to support its historic significance under Criterion D (has yielded, or is likely to yield, information important for research on prehistory or history) for its information potential, and E (has cultural significance to an ethnic group) of the Hawai‘i Register.

SIHP # -2918 has provided information, and has potential to provide additional information, on late pre- to early post-Contact habitation, historic land use, and burial practices within Kaka‘ako. The potential for additional research warrants the implementation of a data recovery program. Data recovery at SIHP # -2918 will focus on data collection from the buried, culturally-enriched sandy loam A horizon and associated features, and any discrete post-Contact features within the overlying fill layers. Data recovery will include a more intensive regime of strata- and feature specific radiocarbon, palynological, and botanical analysis. The analysis will seek to indicate use and function of culturally-enriched strata and features, and attempt to temporally categorize subsurface deposits to distinguish between traditional Hawaiian versus historic deposition. Data recovery will identify additional non-burial features as well as any burials or human skeletal remains that may be present at SIHP # -2918, including their stratigraphic association and chronology. Following the data recovery program, an archaeological monitoring program is recommended for SIHP # -2918. Archaeological monitoring will recover additional data on the nature, depositional sequence, and extent of SIHP # -2918. The previously-identified burials associated with SIHP # -2918 will be treated in accordance with HAR Chapter 13-13-300 and HRS 6E-43. In order to alleviate the project’s effect on human burials, a project-specific burial treatment plan (a requirement of HAR Chapter 13-13-300) will be prepared for consideration of the OIBC and recognized descendants. The agreed upon treatment is preservation in place, the details of which will be documented in the burial treatment plan submitted to SHPD for review and acceptance.

SIHP # 50-80-14-2963

FORMAL TYPE:	Subsurface cultural deposit, subsurface pond sediments, human burials, animal burials
FUNCTION:	Aquaculture, habitation, and burial
PREVIOUS DOCUMENTATION:	Ota and Kam 1982, Clark 1987
AGE:	Pre- and post-Contact
NUMBER OF FEATURES:	47 total; 35 previously identified and 12 newly identified
TYPES OF FEATURES:	16 pits, 8 trash pits, 7 human burials, 5 animal burials, 4 possible postmolds, 2 building foundations, 2 areas containing animal bone in a disturbed context, 1 burial land surface, 1 posthole, and 1 burned soil area
DISTRIBUTION:	2.1 acres total; 0.44 acres (within current project area)
LOCATION:	Along Halekauwila Street at the intersection of Punchbowl Street and between Punchbowl Street and South Street (West Kaka‘ako Geographic Zone)
TAX MAP KEY:	TMK [1] 2-1-030 (Halekauwila Street ROW por.); [1] 2-1-026:001; and [1] 2-1-031:010
LAND JURISDICTION:	City and County of Honolulu (current project area), [1] 2-1-026:001 and [1] 2-1-031:010 (previously identified)
TEST EXCAVATIONS:	T-122, T-122A, T-123, T-124, and Test Bore T-124A

SIHP # 50-80-14-2963 consists of a previously-identified subsurface cultural deposit, subsurface pond sediments, human burials, and animal burials located along Halekauwila Street, at the intersection of Punchbowl Street and between Punchbowl Street and South Street (Figure 1). This archaeological resource was first identified by Ota and Kam (1982) approximately 16 m northeast of the current City Center project APE as human skeletal remains representing six incomplete skeletons (Figure 2). The cultural resource was subsequently identified by Clark (1987) immediately adjacent to the northeast boundary of the current City Center project APE as consisting of the following 35 features: 8 pits, 8 trash pits, 7 human burials, 5 animal burials, 2 building foundations, 2 areas containing animal bone in a disturbed context, 1 burial land surface, 1 posthole, and 1 burned soil area (Figure 3 and Table 1). Clark (1987) also identified buried pond sediments. The 1881 Brown map of Honolulu depicts three ponds at this location, with one pond labeled “Auwaiolimu Crown Land” located within the interpolated boundary of SIHP # -2963 including the western portion of the Clark (1987) study area and a section of the current project’s APE (Figure 4). SIHP # -2963 was identified within T-122 through T-124A of the current City Center study.

Ota and Kam (1982) conducted an osteological analysis on human skeletal remains representing six incomplete skeletons that were collected from the northeastern corner of Punchbowl Street and Halekauwila Street. The skeletal remains were disturbed during construction of the State Office Building #2 and were collected by personnel from Borthwick Mortuary who produced a sketch plan map of the burial locations (see Figure 2).

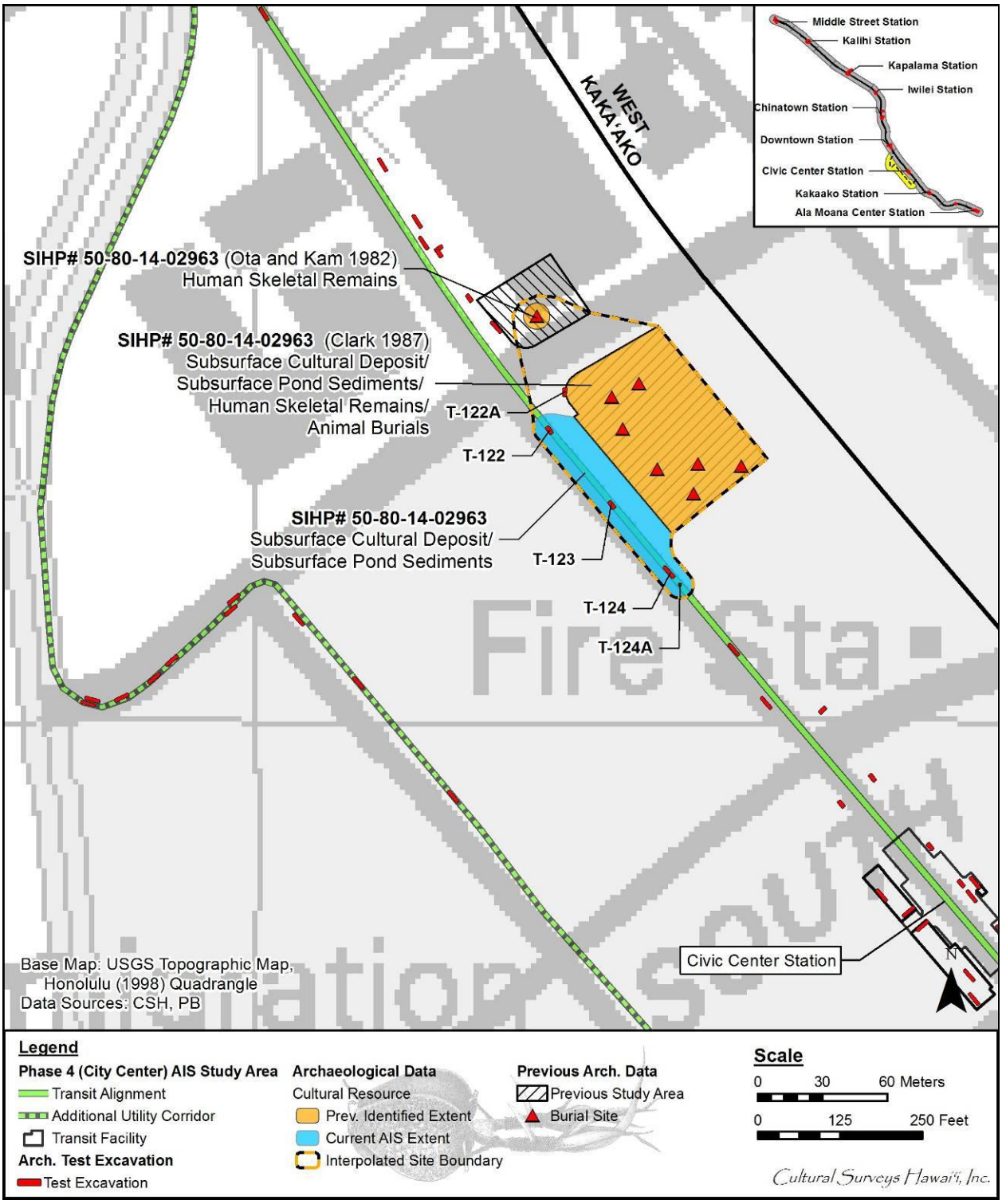


Figure 1. Location of SIHP # 50-80-14-2963 in the West Kaka‘ako Zone (Base Map: USGS 1998 Topographic Map of Honolulu Quadrangle)

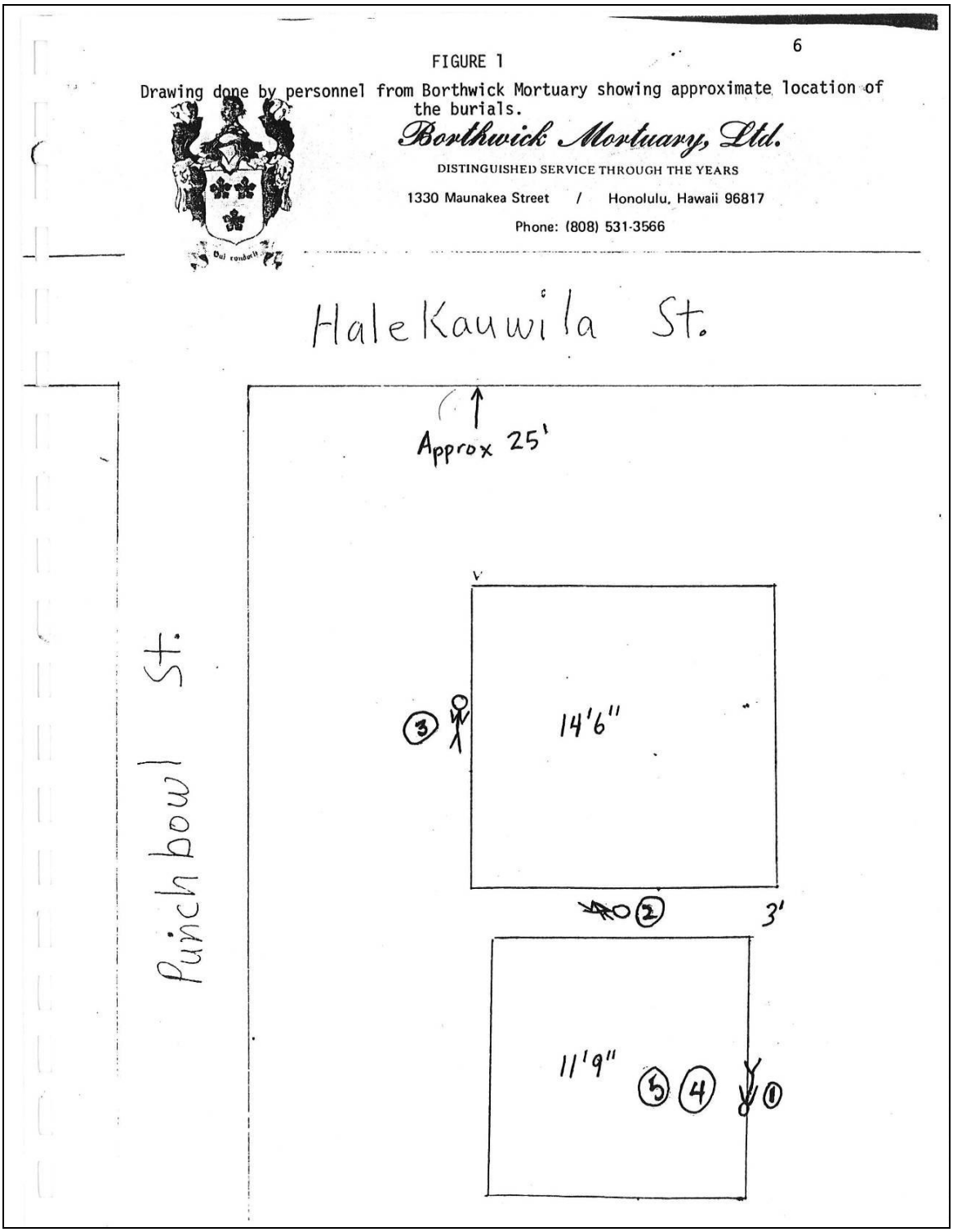


Figure 2. Location of burials disinterred during the construction of the State Office Building #2 and associated with SIHP # 50-80-14-2963 (Ota and Kam 1982:6)

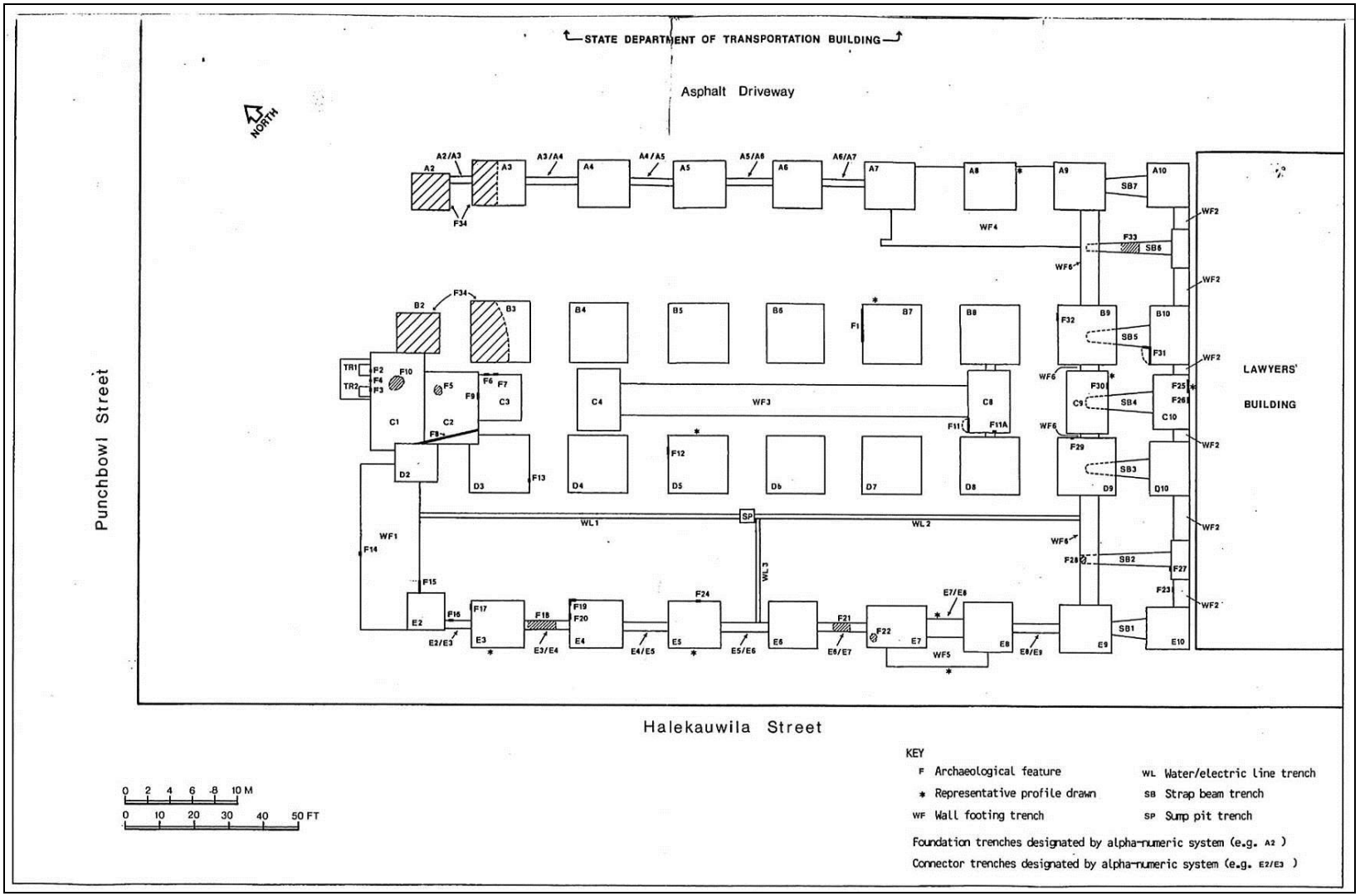


Figure 3. Location of previously-identified archaeological features of SIHP # 50-80-14-2963 (Clark 1987:27)

Table 1. Summary of Previously-Identified Archaeological Features of SIHP # 50-80-14-2963 (adapted from Clark 1987)

Feature	Stratum	Depth (cmbs)	Radiocarbon Date (C14)	Type/Function	Description
1	Fill E	60-130	-	Trash pit	Deep historic pit; base not exposed; contains cement fragments, plastic, wire, wood, auto parts, and saw blade; pit matrix is mixed deposits of fills F through H.
2	I	73-88	-	Trash pit	Roughly rectangular in plan view; contains shell and bone (rat, medium and large mammal and fish) midden, volcanic glass, adze, flake, coral file, and historic artifacts (glass and metal); layer I fill.
3	I	75-89	-	Animal burial	Articulated skeleton of infant, advanced artiodactyl (goat or sheep); coral found next to cranium area; layer I fill.
4	I	70-75	-	Burned soil area	Reddish color to layer I soil; burned area with charcoal staining; situated between Features 2 and 3.
5	I	70-90	-	Trash pit	Roughly oval in plan view; contains a rusted metal fragment, nail, basalt flake, marine shell and turtle bone midden; layer I fill.
6	I	75-85	-	Pit	Pit deeper on south side; layer I fill; adjacent to Feature 7 pit.
7	I	72-90	-	Pit	Pit deeper on north side; charcoal staining present at base; layer I fill.
8	Fill H	40-45	-	Foundation	Portion of squared cement foundation or wall base.
9	I	65-100	-	Trash pit	Deep historic pit containing historic artifacts (glass bottles, ceramics, and cut cow bone); base of pit not exposed; layer I fill.
10	I	75-118	-	Human burial	Oval-shaped burial pit; remains disturbed by fill H; Hawaiian male in flexed position; 50-70 yrs.; volcanic glass in pit; cranium broken by backhoe blade; layer I and II fill.
11	I	40-100	-	Human burial	Two-thirds of burial removed by backhoe; legs in flexed position; Hawaiian female 30+ years; layer I and II fill.

Feature	Stratum	Depth (cmbs)	Radiocarbon Date (C14)	Type/Function	Description
11a	I	25-50	-	Animal burial	Small pit with rounded base and narrow width in cross section; contains articulated remains of pig; layer I fill.
12	I	20-70	-	Pit	Roughly rectangular in cross section; traditional basalt artifacts (adze, hammerstone, poi pounder top, and basalt flakes) recovered in backfill from Feature 12 area; layer I fill.
13	I	20-50	-	Animal burial	Roughly oval in cross section; articulated skeleton of a medium sized mammal (pig or dog) partly recovered; layer I fill.
14	I	15-37	-	Human burial	Bundle burial in irregular-shaped pit; layer I fill; Hawaiian female, 25-30 yrs.
15	I	20-40	-	Trash pit	Long pit with historic artifacts (glass bottles, ceramics, nail, and cut cow bone; base of pit not exposed; layer I fill.
16	I	20-30	-	Isolated animal bone	Bone (pig, dog, and cow) and historic artifacts (glass and ceramic) collected from disturbed layer I deposits; feature type not defined.
17	I	20-45	-	Trash pit	Roughly rectangular in cross section; contains historic artifacts (glass and ceramics) and charcoal fragments; layer I fill.
18	Unknown	20-40	-	Human burial	Scattered human skeletal remains associated with Feature 21; burial previously disturbed by bulldozing; Hawaiian male, 20-30 yrs; burial pit not found; advanced artiodactyl remains collected from same area.
19	I	50-100	-	Pit	Deep pit containing historic artifacts (glass and ceramic fragments) and sparse charcoal; pit disturbed by fill H; base of pit not exposed; layer I and II fill.
20	I	45-90	-	Pit	Deep pit containing sparse historic bottle glass fragments; vertical sides on pit; mottled layer I and II fill.

Feature	Stratum	Depth (cmbs)	Radiocarbon Date (C14)	Type/Function	Description
21	Unknown	45-50	-	Human burial	Isolated human cranium associated with Feature 18 remains; remains of unidentified large mammal collected in same area.
22	Fill J	40-50	-	Trash pit	Oval-shaped pit containing wood, glass bottles, glass and ceramic fragments, rusted metal objects, metal light fixture; contains fill layers J, K, and L.
23	I	50-85	-	Pit	Small pit with rounded base; contains sparse *kukui* shell; layer I fill
24	I	50-80	-	Trash pit	Roughly rectangular in cross section; contains remains of two individual *aku* (*Katsuwonus pelamis*) and charcoal; layer I fill.
25	II	50-53	A.D. 430-905	Buried surface	Thin (3-5 cm) lens of loamy sand with charcoal.
26	I	30-60	-	Pit	Pit with rounded base adjacent to Feature 25; mixed layer I and II fill.
27	I	Unknown	-	Isolated animal bone	One isolated piece of medium mammal bone in disturbed layer I deposit.
28	I	10-40	A.D. 1270-1410	Human burial	Burial greatly disturbed by backhoe; Hawaiian male, 20-25 yrs; probably disturbed prior to present construction; concentrated charcoal in burial pit.
29	I	05-30	-	Posthole	Probably posthole 25 cm deep; basalt rock in feature matrix; no midden observed; layer I fill.
30	I	30-50	-	Animal Burial	Articulated pig skeleton in pit (cranium, upper torso removed by backhoe); mottled layer I and II fill.
31	I	13-190	-	Animal burial	Articulated cow skeleton in large pit; cranium, upper torso and legs removed and identified; layer I and II fill.
32	I	150-220	-	Pit	Large pit with sparse historic artifacts (rusted metal, slate pencil fragment, bottle glass fragments) and charcoal flecking; layer I fill.
33	Unknown	Unknown	-	Human burial	Isolated human femur (left side) found in backhoe dirt pile; pit feature not found.

Feature	Stratum	Depth (cmbs)	Radiocarbon Date (C14)	Type/Function	Description
34	Fill H/layer I	55-65	-	Foundation	Red clay bricks in fairly level layers in these trenches; possible building foundation/floor, or bulldozed remnants; situated under fill H and over layer I.

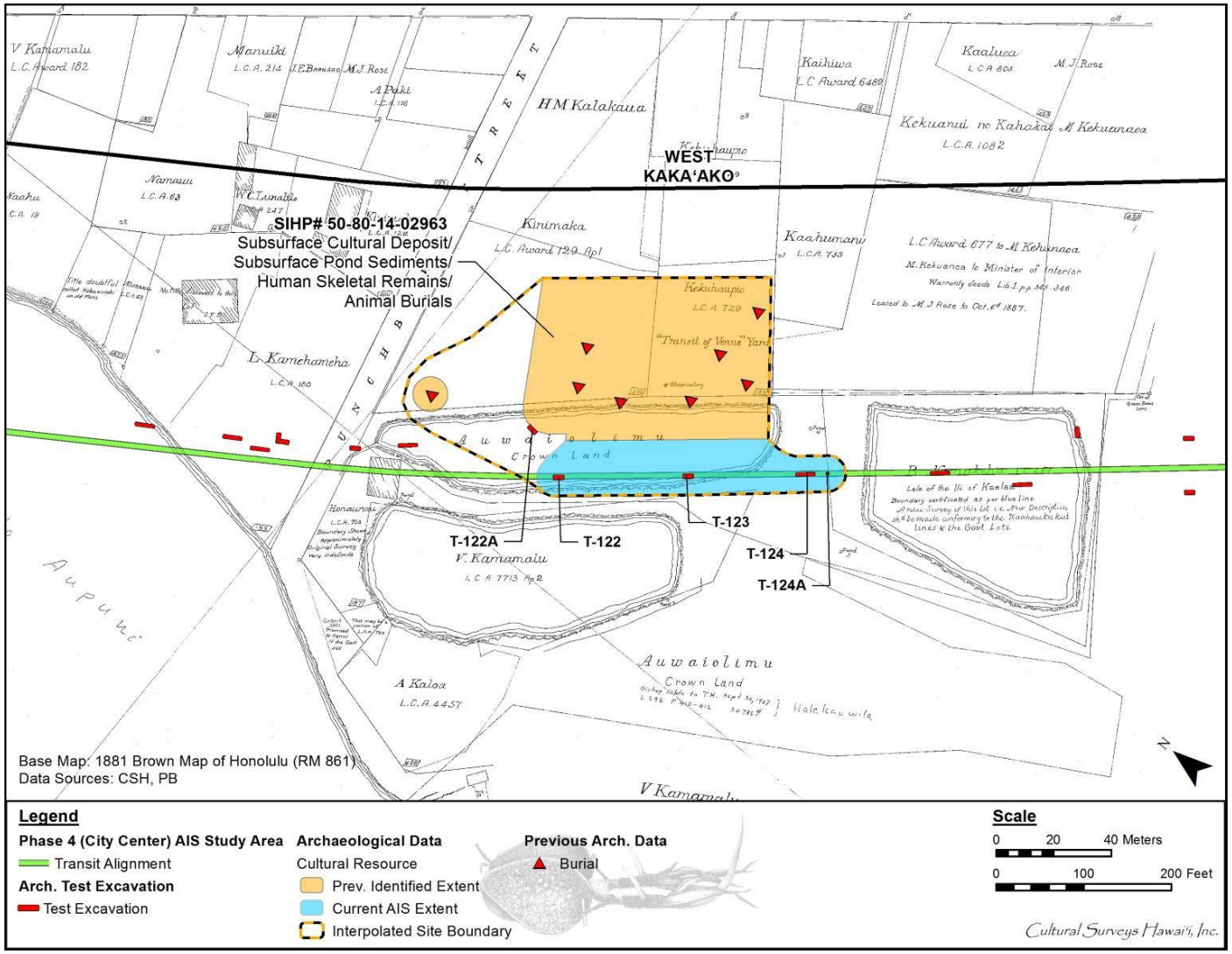


Figure 4. Portion of the 1881 Map of Honolulu by Brown (RM 861) showing the location of three ponds at the location of SIHP # 50-80-14-2963

Ota and Kam (1982) received the skeletal remains in bags with no recorded provenience, stratigraphic association, or associated cultural material, which minimized the possibility for data analysis. Ota and Kam (1982:4) summarize the osteological analysis as follows:

> Six fragmented individuals were examined and an attempt was made to distinguish age at time of death, sex, and pathological conditions, if any at time of death. The remains were incomplete (except for the possible exception of #2) and fragile. Since no long bone measurements could be taken, metrical data could not be composed to those done on other population studies in Hawaii. Skull measurements done on burial #3 were compared to a study done in Kalahuipua‘a, but since it is just a comparison of one individual, the variability exhibited traits from both the male and female sample. No definite race determination could be made on any of the remains. It appears however that burial 2 and 3 could be of Hawaiian extraction based on the evulsed incisors. There are written accounts as well as physical evidence of the Hawaiians using tooth evulsion as part of their mourning rites. It is not believed that this cultural practice was done by the Oriental population living in Hawaii. Admittedly, this is not an absolute method to determine the race of an individual, but known cultural practices that are done in one population can be used to differentiate it from another. It should be noted that this is taking into account that the incisors were evulsed observing a cultural practice, not due to an unintentional loss such as fighting.
>
> The general appearance of the remains of #2 tend to support the idea that this individual was Hawaiian due to the robustness and size of the bones.
>
> Only one individual exhibited any pathological conditions (#2). Osteoarthritis was evident on the vertebrae of this burial.

Clark (1987) describes the depositional environment at SIHP # -2963 as involving three overlying types of deposits (Figure 5, Figure 6, and Table 2). The deepest deposits consisted of natural strata identified as follows: a culturally-enriched marine sand and terrigenous sediment containing prehistoric and historic features (Layer I), beach sand (Layer II), pond sediments (Pond Layer I and II), and volcanic cinder (Layer III) overlying coral bedrock (Clark 1987:43-45). Two fill sequences were overlain atop the natural strata and involved parking lot fills (Fills A–H) and fishpond fills (Fills J–N). The parking lot fill sequence consisted of basalt pebbles in loam (Fill A), coral gravel in clay loam (Fill B), sandy clay loam with sparse coral pebbles (Fill C), coral sand with coral gravel and pebbles (Fill D), strongly cemented medium sand (Fill E), sand with coral gravel, pebbles, and cobbles (Fill F), clay with charcoal staining and bottle glass fragments (Fill G), and sand with coral gravel, pebbles, cobbles, and sparse boulders (Fill H) (Clark 1987:39). The fishpond fills were observed in the western portion of the project area in Trenches E2 through E10 and WF5 (see Figure 3). The fishpond fill sequence consisted of possibly oil-stained sand (Fill J), coarse sand with marine shell and historic artifacts (Fill K), fine sand (Fill L), very fine coral silt with gleyed mottles (Fill M), and coarse sand with rounded marine shell fragments and dark greenish gray mottles (Fill N) (Clark 1987:43).

The 35 features of SIHP # -2963 identified by Clark (1987) consisted of 3 features associated with the parking lot fill sequence, 1 feature associated with the fishpond sequence, 27

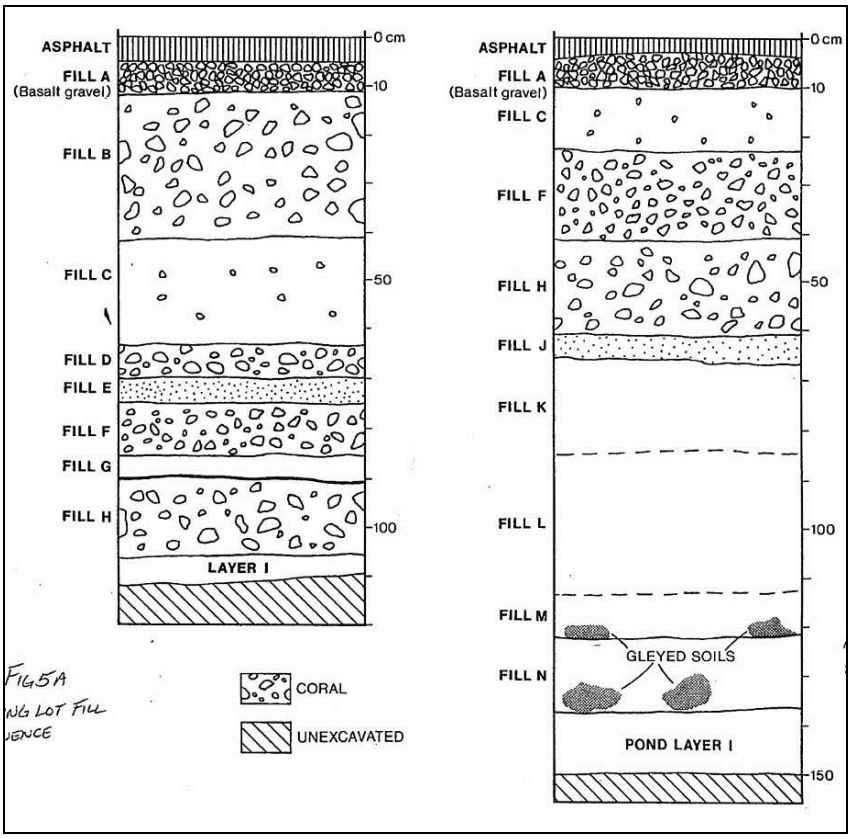


Figure 5. The parking lot fills (A–H; left) and fishpond fills (J–N; right) stratigraphic sequences (Clark 1987:38)

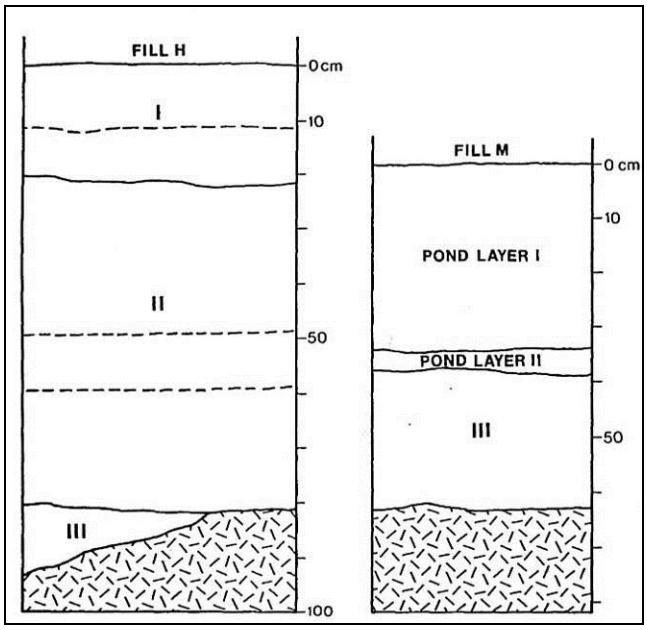


Figure 6. The natural beach (I–III; left) and pond (Pond Layer I–II; right) stratigraphic sequences (Clark 1987:44)

Table 2. Depositional Sequences Observed by Clark (1987:39-44)

Stratum	Description
Parking Lot Fills	
Fill A	Angular basalt pebbles in a brown loam matrix; directly underlies asphalt paving of parking lot; 5 to 10 cm thickness range
Fill B	Pale brown clay loam with coral gravel, pebbles, and sparse cobbles; strongly cemented; 15 to 35 cm thickness range
Fill C	Dark brown sandy clay loam with sparse coral pebbles; 20 to 25 cm thickness range
Fill D	Very pale brown to white coral sand with coral gravel and pebbles; strongly cemented; 5 to 10 cm thickness range
Fill E	Light gray to gray, medium coral sand; strongly cemented; 3 to 8 cm thickness range
Fill F	Pale brown coral sand with coral gravel, pebbles, and cobbles; strongly cemented; 8 to 12 cm thickness range
Fill G	Dark reddish brown clay; thin zone of charcoal staining at base of fill; contains sparse broken bottle glass in matrix; 3 to 9 cm thickness range
Fill H	Pale brown coral sand with coral gravel, pebbles, cobbles, and sparse boulders; strongly cemented; 10 to 25 cm thickness range; first parking lot layer to be deposited in project area; directly overlies layer I
Fishpond Fills	
Fill J	Gray to light gray, medium coral sand; possibly oil-stained; 5 to 8 cm thickness
Fill K	Very pale brown coarse coral sand with rounded marine shell fragments; contains historic artifacts; 10 to 23 cm thickness
Fill L	Very pale brown fine to very fine coral sand; 15 to 28 cm thickness
Fill M	Very pale brown fine to very fine coral silt; sparse light greening gray, gleyed mottled areas in lower proveniences; 8 to 12 cm thickness range
Fill N	Coarse coral sand with greenish gray and dark yellowish brown colors; contains rounded marine shell fragments; dark greenish gray mottled areas in lower proveniences; 10 to 15 cm thickness range; directly overlies pond layer I
Natural Beach Strata	
I	Very dark brown sandy clay loam; less clay in lower proveniences; contains traditional Hawaiian and historic artifacts, pit features, human and animal burials
II	Brownish yellow, very fine to coarse coral sand; discontinuous very pale brown central band with very fine to medium coral sands and silts
III	Black and dark reddish brown volcanic cinder
Natural Pond Strata	
Pond Layer I	Black silty mud with high organic content; contains historic artifacts and preserved vegetation materials
Pond Layer II	Dark greenish gray silty mud; gleyed; contains sparse historic artifacts

features associated with Layer I, 1 feature associated within Layer II, and 3 features with unknown stratigraphic association (see Table 2).

The identified parking lot sequence features consisted of a large pit (Feature 1), a cement building foundation (Feature 8), and a red brick layer or possible building foundation (Feature 34). The features associated within Layer I consisted of eight pits (Features 6, 7, 12, 19, 20, 23, 26, and 32) six trash pits (Features 2, 5, 9, 15, 17, and 24), five animal burials (Features 3, 11a, 13, 30, and 31), four human burials (Features 10, 11, 14, and 28), two isolated animal bone areas (Feature 16 and 27), one burned soil area (Feature 4), and one posthole (Feature 29). The Layer II feature was a buried land surface (Feature 25). The three features of unknown stratigraphic association (Features 18, 21, and 33) were all previously-disturbed human burials with no associated burial pits or strata.

Layer I of the Clark (1987) study is interpreted as a buried, culturally-enriched A horizon or former land sand based on the stratigraphic description, the depositional sequence and association with development on marine sand, and the types and amounts of associated archaeological features. Radiocarbon analysis of charcoal collected from the Feature 28 burial pit dated from AD 1270 to 1410.

The buried land surface (Feature 25) within the Layer II beach sand of Trench C10 is particularly interesting. This land surface is overlain by natural beach sand which predates the overlying culturally-enriched A horizon (Layer 1) (Figure 7). Radiocarbon analysis of charcoal collected from Feature 25 dated from AD 430 to 905. Clark (1987:109) notes:

> Although no Hawaiian cultural materials or features were found in association with this buried surface, it is worth reporting because the age of the buried surface falls into the age range of Hawaiian occupation of O‘ahu.

Feature 25 was identified within Trench C10 which was located along the southeastern edge of the Clark (1987) study area and adjacent to the “Lawyer’s Building”.

Beneath the fishpond fill sequence, two natural strata (Pond Layer I and II) were identified by Clark (1987:50) as being associated with a fishpond micro-environment. Pond Layer I is described by Clark (1987:50) as follows:

> This is a deposit of black silty mud mixed with a high organic content. It ranges from 20 to 45 cm thick and is moderately compact. Pond layer I directly underlies Fill N and directly overlies pond layer II. Pond layer I contains thick concentrations of well preserved vegetation matter (leaves, twigs, and seeds). Vegetation materials identified in this layer include *kukui* nuts (*Aleurites moluccana*), Pandanus keys (*Pandanus* spp.), and coconuts (*Cocos nucifera*). In fact numerous well preserved coconuts (with and without fibrous husks) and several coconut tree stumps with root systems were found preserved in this layer. Samples of pond layer II were collected for further identification of organic materials.
>
> Numerous historic artifacts were found in this layer. These include items such as glass bottles (whole and fragments), ceramic fragments, leather shoes, and pieces of cut wood.

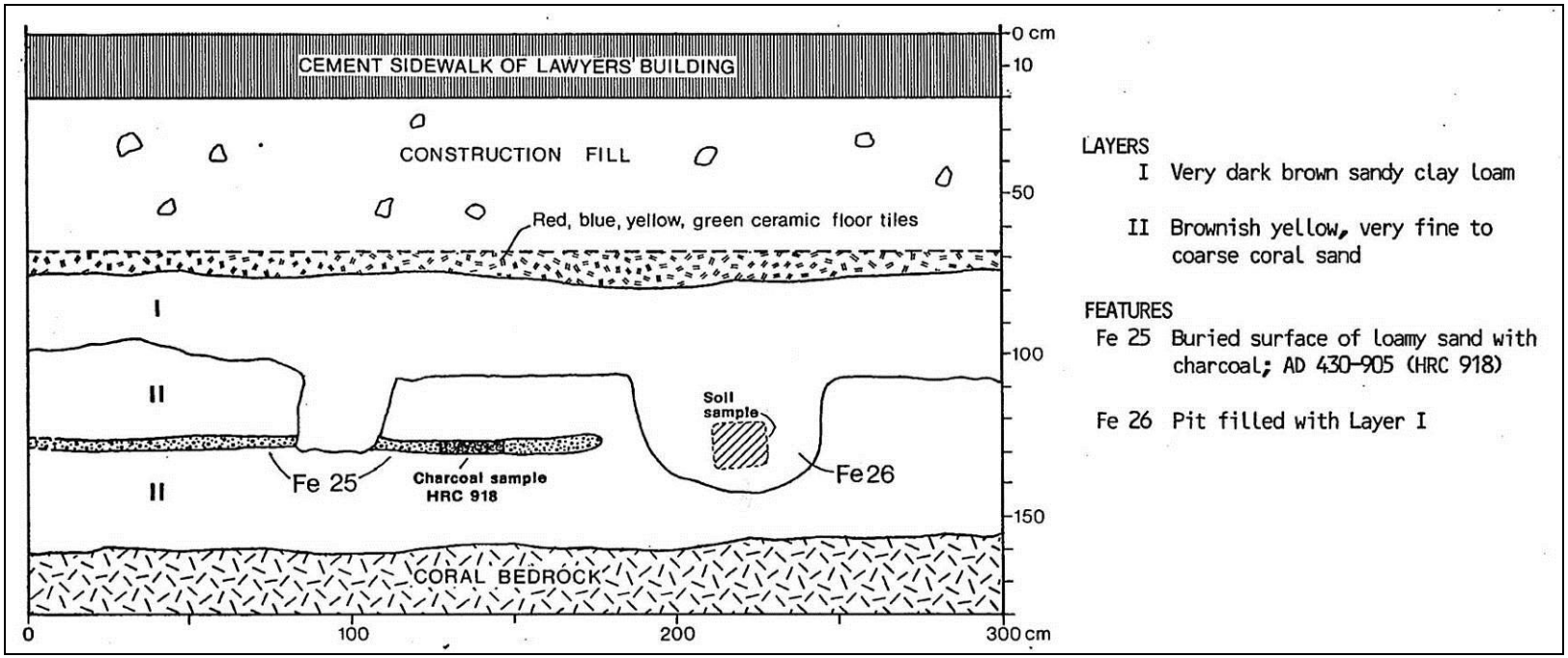


Figure 7. Trench C10 stratigraphic profile showing Feature 25 (buried surface) and Feature 26 (pit) (Clark 1987:48)

Pond Layer II is described by Clark (1987:51) as follows:

> This layer consists of gleyed, fine textured, silty mud. It is dark greenish gray in color and ranges from 3 to 5 cm thick. It directly overlies layer III volcanic cinder and contains sparse historic artifacts, primarily broken glass.

Similar depositional sequences, culturally-enriched strata, and archaeological features as those described by Clark (1987) were identified during the City Center (Section 4) AIS within T-122 through T-124A. A buried, culturally-enriched A horizon with 12 associated archaeological features (Features 1–12) was identified within T-124 (Table 3). Three features (Features 1–3) extended from the base of Stratum IIa, the upper sandy loam portion of the buried A horizon (Figure 8 through Figure 10 and Table 4). The remaining nine features (Features 4–12) extended from the base of Stratum IIb, the lower loamy sand portion of the buried A horizon (see Figure 8 through Figure 10 and Table 4). Stratum IIa was considered to be the historically disturbed or modified upper portion of the former land surface (buried A horizon) within T-124. Stratum IIb was considered to be the in situ pre- and/or early post-Contact lower portion of the former land surface. Both Strata IIa and IIb were designated as components of SIHP # 50-80-14-2963, also identified within T-122 and T-123. The twelve features within T-124 were designated as Features 1–12 of SIHP # -2963.

SIHP # -2963 Feature 1 was interpreted to be a possible postmold with straight sides and a slightly rounded base. SIHP # -2963 Feature 1 originated in the lower portion of Stratum IIa and extended from 1.16 mbs to 1.36 mbs. It was irregular shaped in plan view and measured 0.42 m long by 0.62 m wide. SIHP # -2963 Feature 1 was exposed in plan view near the southeastern end of the excavation and did not extend into any of the sidewalls. A single traditional Hawaiian artifact (Acc. #124-H-1) consisting of seven fragments of volcanic glass debitage was collected from SIHP # -2963 Feature 1 within a bulk sample obtained between 1.16 and 1.36 mbs.

SIHP # -2963 Feature 2 was a shallow discoloration that was interpreted to be a pit of indeterminate function. SIHP # -2963 Feature 2 originated in the lower portion of Stratum IIa and extended from 1.16 mbs to 1.25 mbs. SIHP # -2963 Feature 2 was irregular shaped in plan view near the southeast end of the excavation and measured. 0.40 m long and 0.55 m wide. SIHP # -2963 Feature 2 was only visible in plan view and did not extend into the excavation sidewalls.

SIHP # -2963 Feature 3 was interpreted as a possible postmold with angled sides and an angled, slightly rounded base. SIHP # -2963 Feature 3 originated in the lower portion of Stratum IIa and extended from 1.16 mbs to 1.40 mbs. SIHP # -2963 Feature 3 was intrusive into Stratum IIb and partially into Stratum III. SIHP # -2963 Feature 3 was oval shaped in plan view and measured 0.44 m long by 0.20 m wide and extended into the northeast sidewall.

SIHP # -2963 Feature 4 was a shallow circular discoloration that was interpreted to be a pit of indeterminate function. SIHP # -2963 Feature 4 originated in the lower portion of Stratum IIb and extended from 1.40 mbs to 1.45 mbs. It was observed near the southeast end of the excavation and was circular in shape with a 0.15 m diameter. SIHP # -2963 Feature 4 was only visible in plan view and was not observed in the excavation sidewalls.

SIHP # -2963 Feature 5 was a circular discoloration that contained charcoal and was interpreted as a pit of indeterminate function. SIHP # -2963 Feature 5 originated in the lower portion of Stratum IIb and extended from 1.40 mbs to 1.63 mbs. It was near the southeast end of the

excavation and was circular in shape with a 0.25 m diameter. SIHP # -2963 Feature 5 was only visible in plan view and was not observed in the excavation sidewalls.

SIHP # -2963 Feature 6 was an oval-shaped and straight-sided discoloration and measured 0.30 m long by 0.22 m wide. It was interpreted to be a pit or possible postmold. SIHP # -2963 Feature 6 originated in the lower portion of Stratum IIb and extended from 1.40 mbs to the coral shelf at 1.75 mbs. It was intrusive into Strata III, IV, and V. SIHP # -2963 Feature 6 was observed in plan view and extended into the northeast sidewall.

SIHP # -2963 Feature 7 was a circular discoloration that was interpreted to be a pit of indeterminate function. SIHP # -2963 Feature 7 originated in the lower portion of Stratum IIb and extended from 1.44 mbs to 1.50 mbs. It was observed near the northwest end of the excavation and was circular in shape with a 0.12 m diameter. SIHP # -2963 Feature 7 was only visible in plan view and was not observed in the excavation sidewalls.

SIHP # -2963 Feature 8 was a discoloration with charcoal and was interpreted to be a pit of indeterminate function. SIHP # -2963 Feature 8 was identified in the lower portion of Stratum IIb and extended from 1.44 mbs to 1.62 mbs. SIHP # -2963 Feature 8 was observed near the northwest end of the excavation and was circular in shape with a 0.20 m diameter. The discoloration was only visible in plan view and did not extend into the excavation sidewalls. A single traditional Hawaiian artifact (Acc. #124-H-2) consisting of a volcanic glass debitage fragment was collected from SIHP # -2963 Feature 8 within a bulk sample obtained between 1.44 mbs and 1.62 mbs.

SIHP # -2963 Feature 9 was a 0.20-m diameter oval-shaped discoloration that was interpreted to be a pit of indeterminate function. SIHP # -2963 Feature 9 originated in the lower portion of Stratum IIb and extended from 1.44 mbs to 1.50 mbs. It was observed near the northwest end of the excavation. SIHP # -2963 Feature 9 was only visible in plan view and was not observed in the excavation sidewalls.

SIHP # -2963 Feature 10 was a deep, circular-shaped discoloration that was interpreted to be a pit or possible postmold with straight sides and a flat bottom. SIHP # -2963 Feature 10 originated in the lower portion of Stratum IIb and extended from 1.30 mbs to 1.70 mbs to the upper boundary of Stratum V. SIHP # -2963 Feature 10 was observed near the southeast end of the excavation, measured 0.30 m long by 0.22 m wide, and extended into the southwest sidewall.

SIHP # -2963 Feature 11 was a shallow, oval-shaped dark discoloration that was interpreted to be a pit of indeterminate function. SIHP # -2963 Feature 11 originated within the lower portion of Stratum IIb and extended from 1.23 mbs to 1.32 mbs. SIHP # -2963 Feature 11 was not visible in plan view and was only observed within the southwest sidewall.

SIHP # -2963 Feature 12 was a circular discoloration that had downward sloping sides and a narrow, rounded base. SIHP # -2963 Feature 12 was interpreted to be a pit of indeterminate function. SIHP # -2963 Feature 12 originated in the lower portion of Stratum IIb and extended from 1.35 mbs to 1.53 mbs. SIHP # -2963 Feature 12 was not visible in plan view and was only documented in the northeast sidewall.

Table 3. Summary of Newly-Identified Archaeological Features of SIHP # -2963

Feature	Test Excavation	Stratum	Depth (cmbs)	Radiocarbon Date (C14)	Type/Function	Description
1	T-124	IIa	116–136	AD 1810-1920	Pit/Possible postmold	Possible postmold with straight sides and a slightly rounded base. The feature contained charcoal (18.4 g), midden (47.3 g), naturally-occurring marine shell (39.8 g), volcanic glass fragments (0.7 g), basalt fragments (158.1 g), medium mammal remains (2.7 g), unidentified fish remains (2.9 g), a shark tooth (0.1 g), a small mammal cf. *Rattus* sp. (0.3 g), and *Pervagor spilosoma* remains (0.1 g, Fantail file fish). A subsample of the charcoal from the feature was submitted for wood taxa identification and radiocarbon dating. Wood taxa identification results included *Kī* (*cf. Cordyline terminalis*), *‘Āheahea* (*Chenopodium oahuense*), *Kolomona* (cf. *Senna* sp.), *‘Ōhi‘a ‘ai*/roseapple/ Java plum (cf. *Syzygium* sp.), *Niu* (*Cocos nucifera*), Palm (Arecaceae), *‘Akoko* (*Chamaesyce* sp.), and three unidentified species.

Feature	Test Excavation	Stratum	Depth (cmbs)	Radiocarbon Date (C14)	Type/Function	Description
2	T-124	IIa	116–125	AD 1790-1950	Pit/ Indeterminate function	Pit with indeterminate function. The feature contained charcoal (2.5 g), midden (13.4 g), naturally-occurring marine shell (4.4 g),), medium mammal remains (1.8 g), small mammal remains (0.1 g), and fish remains (0.3 g). A sample of the charcoal from the feature was submitted for wood taxa identification and radiocarbon dating. Wood taxa identification results included *Kolomona* (cf. *Senna* sp.), *‘Ōhi‘a ‘ai*/roseapple/ Java plum (cf. *Syzygium* sp.), *Hau* (*Hibiscus tiliaceus*), ‘*Akoko* (*cf. Chamaesyce sp.*), ‘*Āheahea* (*Chenopodium oahuense*), ‘*Ilima* (*cf. Sida fallax*), *Lama* (*Diospyros sandiwicensis*), monocot, and seven unidentified species.
3	T-124	IIa	116–140	-	Pit/Possible postmold	Possible postmold with angled sides and a slightly rounded base.
4	T-124	IIb		-	Pit/ Indeterminate function	Pit with indeterminate function. The feature was a shallow circular discoloration.

Feature	Test Excavation	Stratum	Depth (cmbs)	Radiocarbon Date (C14)	Type/Function	Description
5	T-124	IIb		AD 1490-1670	Pit/ Indeterminate function	The feature contained charcoal (6.4 g), midden (16.4 g), naturally-occurring marine shell (3.6 g), medium mammal remains (0.1 g), unidentified fish remains (2.2 g), *Chelonia mydas* remains (0.7 g, Green sea turtle), and *Seriola* cf. *dumerili* remains (0.2 g, Greater Amberjack fish). A sample of the charcoal from the feature was submitted for wood taxa identification and radiocarbon dating. Wood taxa identification results included *Lama* (*Diospyros sandwicensis*), *‘A‘ali‘i* (cf. *Dodonaea viscosa*), *‘Āheahea*/*‘āweoweo* (*Chenopodium oahuense*), *Kukui* (cf. *Aleurites moluccana*), and an unidentified wood fragment
6	T-124	IIb		-	Pit/Possible postmold	Possible postmold that is oval-shaped and has straight sides.
7	T-124	IIb		-	Pit/ Indeterminate function	The feature was a circular discoloration that was considered to be a pit of indeterminate function.
8	T-124	IIb		-	Pit/ Indeterminate function	The feature contained charcoal (0.1 g), midden (4.6 g), naturally-occurring marine shell (0.7 g), volcanic glass (0.1 g), *Rattus* sp. remains (0.1 g), and fish remains (0.2 g).
9	T-124	IIb		-	Pit/ Indeterminate function	The feature was an oval-shaped discoloration that was considered to be a pit of indeterminate function.
10	T-124	IIb		-	Pit/Possible postmold	Possible postmold that is circular-shaped with straight sides and a flat bottom.

Feature	Test Excavation	Stratum	Depth (cmbs)	Radiocarbon Date (C14)	Type/Function	Description
11	T-124	IIb		AD 1450-1640	Pit/ Indeterminate function	Pit with indeterminate function. The feature contained charcoal (6.9 g), midden (1.4 g), naturally-occurring marine shell (0.5 g), and small mammal remains (0.1 g). A sample of the charcoal from the feature was submitted for wood taxa identification and radiocarbon dating. Wood taxa identification results included *Lama* (*Diospyros sandiwicensis*), and *Hō’awa* (cf. *Pittosporum* sp.) as well as one unidentified species
12	T-124	IIb		-	Pit/ Indeterminate function	Pit with indeterminate function. It is circular in shape with downward sloping sides and a narrow, rounded base.

Figure 8. T-124 southwest profile wall, showing SIHP # -2963 Feature 11, view to west

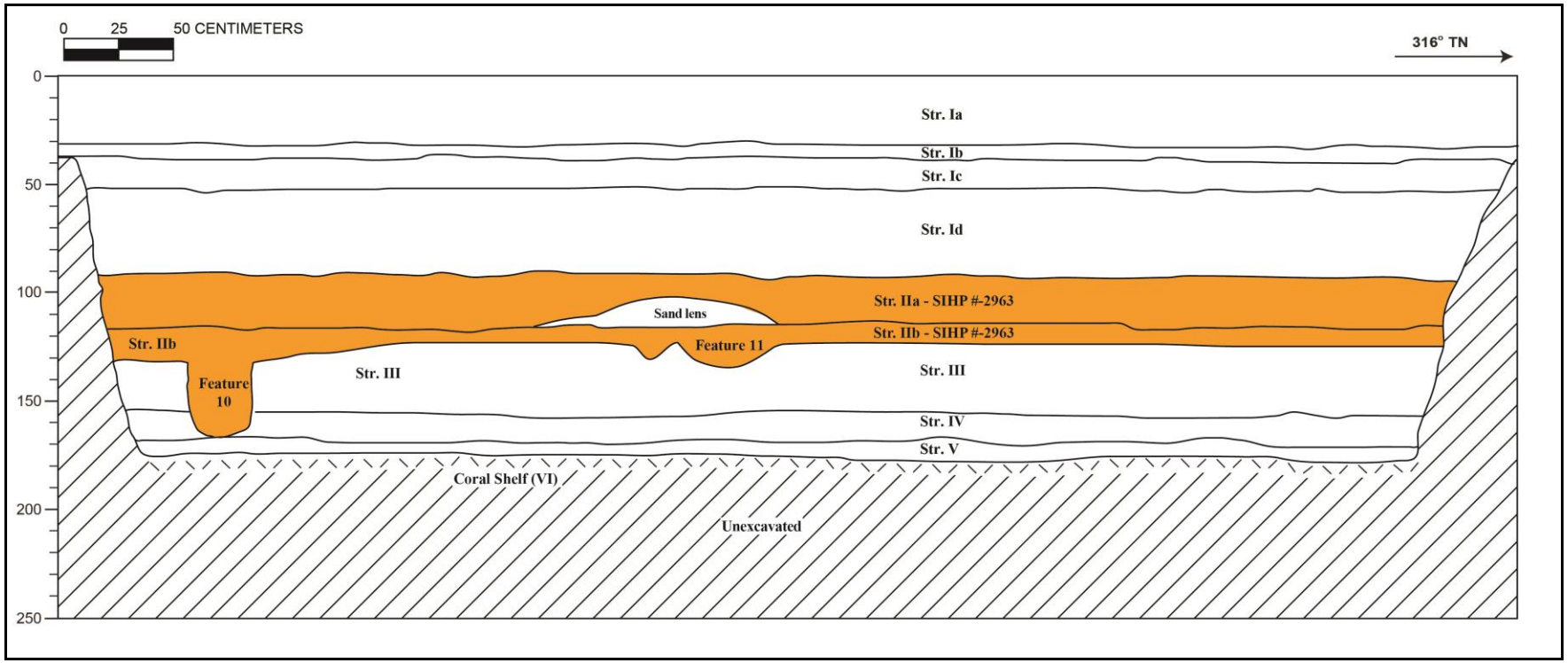


Figure 9. T-124 stratigraphic profile of the southwest wall showing SIHP # -2963 Features 10 and 11

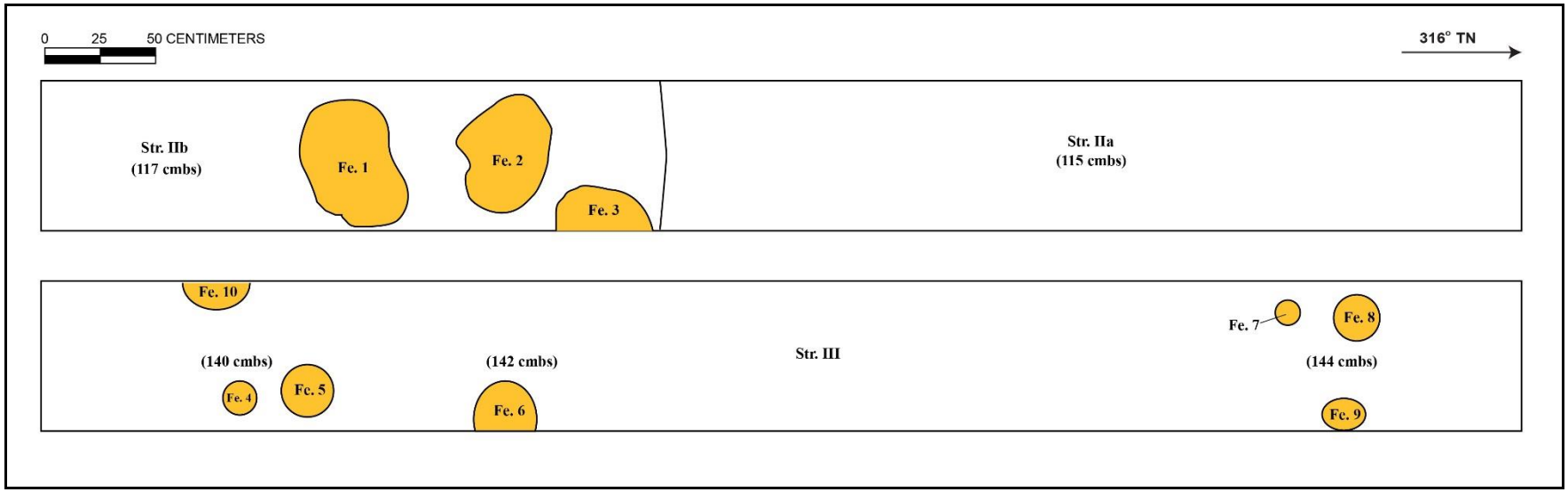


Figure 10. T-124 plan view showing SIHP # -2963 Features 4–10

Figure 11. T-124 northeast profile wall, view to north

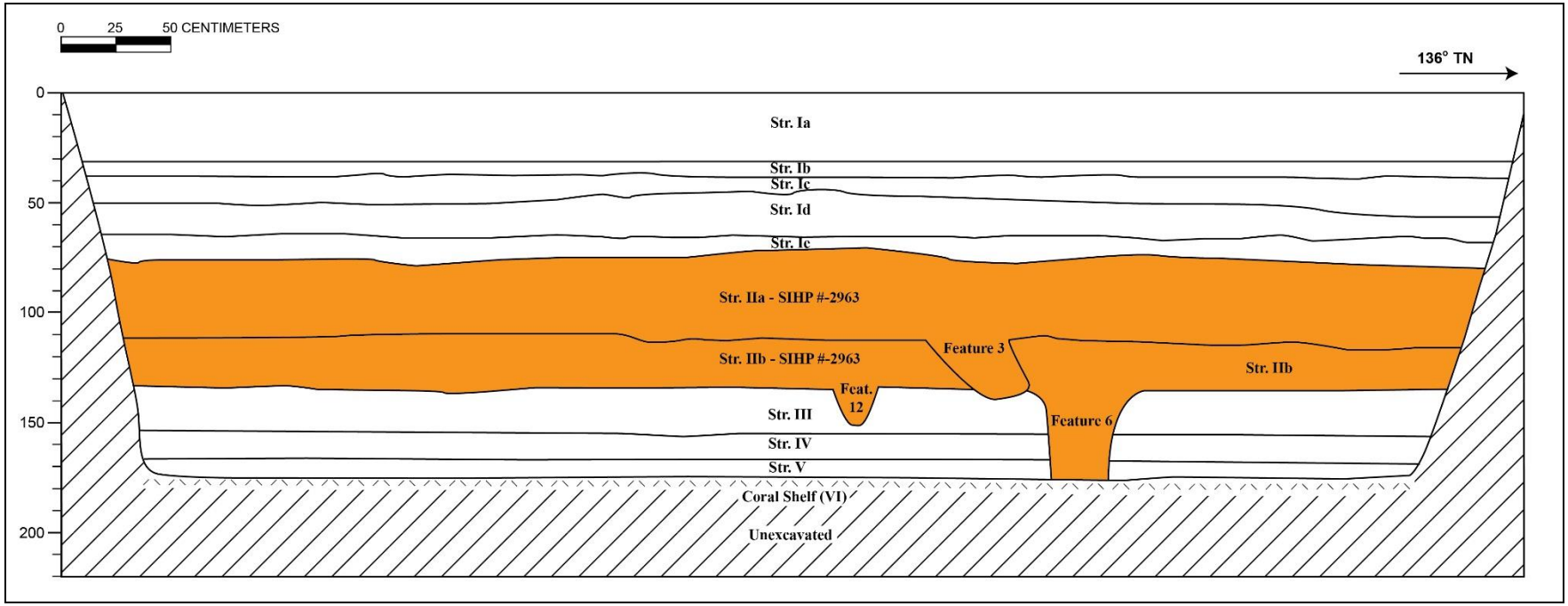


Figure 12. T-124 stratigraphic profile of the northeast wall showing SIHP # -2963 Features 3, 6, and 12

Table 4. T-124 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–32	Asphalt
Ib	32–38	Fill; 2.5 Y 3/1 (very dark gray); extremely gravelly sandy loam; structureless; moist, friable consistency; slightly plastic; terrigenous origin; very abrupt, smooth lower boundary; fill layer underlying road surface containing ~ 70% small basalt gravels
Ic	38–56	Fill; 10 YR 8/3 (very pale brown); very gravelly sand; structureless, single grain; moist loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary; crushed coral base course
Id	47–67	Fill; 10 YR 4/3 (brown); sandy loam; structureless; moist, very friable consistency; non plastic; mixed origin, clear lower boundary; contained glass bottle fragments, a brick fragment, cut faunal bone, ceramic fragments, nails, wire (not collected), marine shell, cane slag (not collected), a basalt sheath tile (not collected), and a pipe stem or cigarette holder (collected)
Ie	67–80	Fill; 10 YR 3/3 (dark brown); loam; structureless; moist, friable consistency; slightly plastic; terrigenous origin; clear to diffuse lower boundary; few, very fine to medium roots; fill seen only in NE excavation wall
IIa	70–140	Natural, 10 YR 3/2 (very dark grayish brown); sandy loam; structureless; moist, loose consistency; non-plastic; mixed origin; clear lower boundary; contained abundant charcoal; buried A horizon; likely the historically-disturbed or modified upper portion of the former land surface
SIHP # -2963 Feature 1	116–136	Natural, 10 YR 3/2 (very dark grayish brown); sandy loam; structureless; moist, loose consistency; non-plastic; mixed origin; possible post mold feature originating from Stratum IIa; contained seven pieces of volcanic glass debitage, charcoal, marine shell midden, a shark tooth, fish bone (including *Pervagor spilosoma*, or fantail filefish), rat bone, medium mammal bone, naturally-occurring marine shell; SIHP # -2963 Feature 1
SIHP # -2963 Feature 2	116–125	Natural, 10 YR 3/2 (very dark grayish brown); sandy loam; structureless; moist, loose consistency; non-plastic; mixed origin; pit feature originating from Stratum IIa; bulk sample taken; sample contained charcoal, marine shell midden, fish bone, small and medium mammal bone, naturally-occurring marine shell midden; SIHP # -2963 Feature 2
SIHP # -2963 Feature 3	116–140	Natural, 10 YR 3/2 (very dark grayish brown); sandy loam; structureless; moist, loose consistency; non-plastic; mixed origin; possible post mold feature originating from Stratum IIa; SIHP # -2963 Feature 3

Stratum	Depth (cmbs)	Description
IIb	117–177	Natural; 10 YR 4/3 (brown); loamy sand; fine structure; moist, loose consistency; non-plastic; mixed origin; clear lower boundary; contained Features 4-12; likely the in situ pre- and/or early post-contact lower portion of the former land surface
SIHP # -2963 Feature 4	140–145	Natural; 10 YR 4/3 (brown); loamy sand; fine structure; moist, loose consistency; non-plastic; mixed origin; pit feature originating from Stratum IIb; SIHP # -2963 Feature 4
SIHP # -2963 Feature 5	140–163	Natural; 10 YR 4/3 (brown); loamy sand; fine structure; moist, loose consistency; non-plastic; mixed origin; pit feature originating from Stratum IIb; sample contained charcoal, marine shell midden, fish bone (*Seriola* cf. *dumerili*, or Greater amberjack fish), Green sea turtle bone (*Chelonia mydas*), medium mammal bone, naturally-occurring marine shell; SIHP # -2963 Feature 5
SIHP # -2963 Feature 6	140–175	Natural; 10 YR 4/3 (brown); loamy sand; fine structure; moist, loose consistency; non-plastic; mixed origin; pit or possible post mold feature originating from Stratum IIb
SIHP # -2963 Feature 7	144–150	Natural; 10 YR 4/3 (brown); loamy sand; fine structure; moist, loose consistency; non-plastic; mixed origin; pit feature originating from Stratum IIb; SIHP # -2963 Feature 6
SIHP # -2963 Feature 8	144–162	Natural; 10 YR 4/3 (brown); loamy sand; fine structure; moist, loose consistency; non-plastic; mixed origin; pit feature originating from Stratum IIb; sample contained one piece volcanic glass debitage, charcoal, marine shell midden, fish bone, rat bone, naturally-occurring marine shell; SIHP # -2963 Feature 7
SIHP # -2963 Feature 9	144–150	Natural; 10 YR 4/3 (brown); loamy sand; fine structure; moist, loose consistency; non-plastic; mixed origin; pit feature originating from Stratum IIb; SIHP # -2963 Feature 9
SIHP # -2963 Feature 10	130–170	Natural; 10 YR 4/3 (brown); loamy sand; fine structure; moist, loose consistency; non-plastic; mixed origin; pit or possible post mold feature originating from Stratum IIb; SIHP # -2963 Feature 10
SIHP # -2963 Feature 11	123–132	Natural; 10 YR 3/2 (very dark grayish brown); loamy sand; fine structure; moist, loose consistency; non-plastic; mixed origin; pit feature originating from Stratum IIb; sample contained charcoal, shell midden, small mammal bone; SIHP # -2963 Feature 12
SIHP # -2963 Feature 12	135–153	Natural; 10 YR 4/3 (brown); loamy sand; fine structure; moist, loose consistency; non-plastic; mixed origin; pit feature originating from Stratum IIb; SIHP # -2963 Feature 13
III	135–155	Natural; 10 YR 7/4 (very pale brown); sand; structureless, single grain; moist, loose consistency; non-plastic; marine origin; abrupt lower boundary; Jaucas sand
IV	155–167	Natural; 2.5 YR 8/3 (pale yellow); clay loam; structureless, massive; moist, friable consistency; slightly plastic; marine origin; abrupt lower boundary; many, very fine roots; marine sediment containing abundant very fine roots, organics

Stratum	Depth (cmbs)	Description
V	167–175	Natural; 10 YR 7/4 (very pale brown) with common fine mottles 10 YR 6/6 to 10 YR 5/8 (brownish yellow to yellowish brown); coarse sand; structureless; moist, loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary; contained naturally-deposited marine shells; marine sediment overlying coral shelf
VI	175 (BOE)	Natural; 10 YR 7/4 (very pale brown); bedrock-limestone; structureless, massive; moist, weakly to strongly cemented; discontinuous consistency; non-plastic; marine origin; lower boundary not observed; Pleistocene coral shelf

The buried A horizon (Stratum II; SIHP # -2963) was also identified in a geotechnical test bore located southeast of T-124 (see Figure 1). The geotechnical test bore was designated as T-124A. The buried A horizon (Stratum II) within T-124A did not exhibit a clear upper and lower portion and thus could not be accurately associated with either Stratum IIa or IIb of T-124 (Figure 13 and Table 5). The buried A horizon in T-124A was capped by two fill strata (Ia-Ib) that correspond with Stratum Ib and Ic observed in T-124. Fill layers corresponding to Stratum Id and Ie within T-124 were not present in T-124A.

Selected charcoal samples collected from pit features within T-124 were submitted for wood taxa identification and radiocarbon analysis. All of the charcoal submitted for identification from SIHP # -2963 Features 1, 2, 5, and 11 in T-124 represented either native or Polynesian-introduced taxa (see Table 3). These include *kī* or ti, *‘āheahea*, *‘ōhi‘a ‘ai*, coconut, *‘akoko*, *hau*, *‘ilima*, *lama*, *‘a‘ali‘i*, *kukui*, and *hō‘awa*. Radiocarbon analysis indicated broad date ranges for the submitted charcoal samples. The youngest dates were derived from the charcoal in SIHP # -2963 Feature 1 (AD 1810 to 1920) and SIHP # -2963 Feature 2 (AD 1790 to 1950). Radiocarbon analysis placed the charcoal samples collected from SIHP # -2963 Features 1 and 2 within the post-Contact period (post-1778). The oldest dates were derived from SIHP # -2963 Feature 5 (AD 1490 to 1670) and Feature 11 (AD 1450 to 1640). Radiocarbon analysis placed the charcoal samples collected from SIHP # -2963 Features 5 and 11 within the pre-Contact period.

Pond sediment, similar to Pond Layer I and II designated by Clark (1987) was encountered near the base of excavation within T-122 and T-123. Both T-122 and T-123 are located within the pond labeled “Auwaiolimu Crown Land” on the 1881 Brown map of Honolulu (see Figure 4).

The pond sediment within T-122, designated Stratum II (SIHP # -2963), was clay loam that contained metal and a complete porcelain teapot with an Asian design (Figure 14 through Figure 16 and Table 6). The metal was not collected from the excavation. A 3-liter bulk sample was collected from Stratum II at 1.65-1.70 mbs. The sample contained charcoal (0.3 g), naturally-occurring shell (5.0 g), seeds (3.4 g), plant fibers (2.3 g), small pods (0.1 g), porcelain (7.3 g), metal (0.2 g), Aves remains (0.2 g), fish remains (0.1 g), and midden (3.1 g). Midden collected included Neritidae *Nerita picea* operculum (1.8 g), Tellinidae *Tellina palatam* (1.1 g), burned crustacean (0.1 g), and Echinoidea *mathae*i sp. (0.1 g).

The pond sediment within T-123, designated Stratum II (SIHP # -2963), was a gleyed, coarse sandy clay that contained a ceramic electrical insulator (Figure 17, Figure 18, and Table 7). A 5-liter bulk sample was collected from Stratum II (SIHP # -2963) at 1.73-1.80 mbs. The sample contained charcoal (0.2 g), naturally-occurring marine shell (12.5 g), *Ruppia maritima* seeds (0.2 g), wood (7.3 g), bottle glass (167.5 g), fish bone (0.1 g), medium mammal skeletal remains (0.1 g), and abundant small freshwater-brackish snails (607.7 g). The pond sediment within T-123 designated Stratum III (SIHP # -2963) was a loamy sand that contained one piece of volcanic glass. A 3-liter bulk sample was collected from Stratum III (SIHP # -2963) at 1.80-1.92 mbs. The sample contained charcoal (0.9 g), naturally-occurring marine shell (2.0 g), *Ruppia maritima* seeds (0.1 g), burned *kukui* (1.0 g), wood (0.2 g), a volcanic glass fragment (0.3 g), medium mammal skeletal remains (0.3 g), fish bone (0.1 g), small freshwater-brackish snails (~84.0 g), and marine shell midden consisting of *Conus* spp. (27.0 g), *Nerita picea* (3.1 g), *Brachidontes crebristriatus* (2.9 g), *Tellina palatam* (1.1 g), *Trochus intextus* (0.2 g), *Isognomon* sp. (0.1 g), and crustacean (0.3 g).

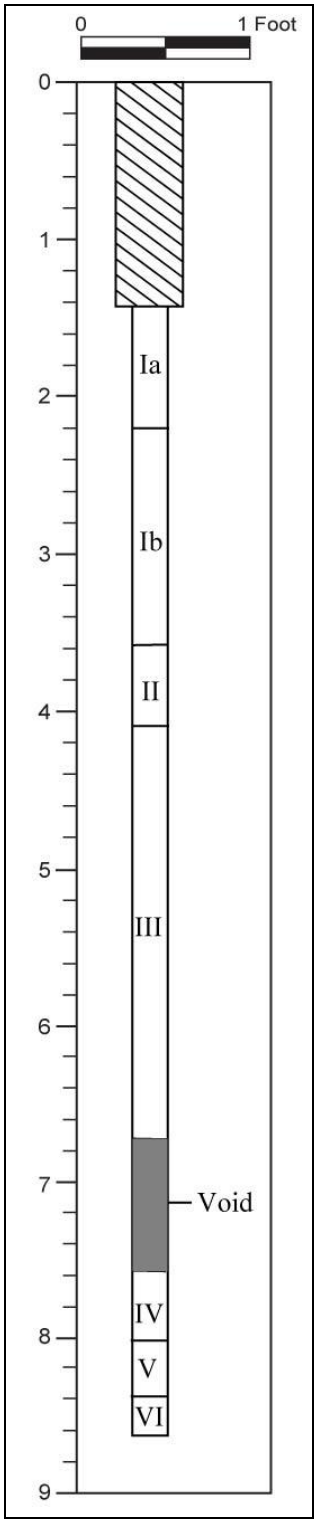


Figure 13. T-124A geotechnical test bore (note: hatched area represents drill through)

Table 5. T-124A Stratigraphic Description

Stratum	Depth (cmbs)	Description
N/A	0-43	Drill Through
Ia	43-67	Fill; 2.5 Y 3/1 (very dark gray); extremely gravelly sandy loam; structureless; moist, friable consistency; slightly plastic; terrigenous origin; very abrupt, smooth lower boundary; fill layer underlying road surface containing ~ 70% small basalt gravels
Ib	67-110	Fill; 10 YR 8/3 (very pale brown); very gravelly sand; structureless, single grain; moist loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary; crushed coral base course
II	110-125	Natural, 10 YR 3/2 (very dark grayish brown); sandy loam; structureless; moist, loose consistency; non-plastic; mixed origin; clear lower boundary; buried A horizon, identified as SIHP # -2963
III	125-204	Natural; 10 YR 7/4 (very pale brown); sand; structureless, single grain; moist, loose consistency; non-plastic; marine origin; abrupt lower boundary; Jaucas sand
N/A	204-232	Void
IV	232-244	Natural; 2.5 YR 8/3 (pale yellow); clay loam; structureless, massive; moist, friable consistency; slightly plastic; marine origin; abrupt lower boundary; many, very fine roots
V	244-256	Natural; 10 YR 7/4 (very pale brown) with common fine mottles 10 YR 6/6 to 10 YR 5/8 (brownish yellow to yellowish brown); coarse sand; structureless, single grain; moist, loose consistency; non-plastic; marine origin; lower boundary not visible; contained naturally-deposited marine shells; marine sediment overlying coral shelf
VI	256-265	Natural; 10 YR 7/4 (very pale brown); bedrock-limestone; structureless, massive; moist, weakly to strongly cemented; discontinuous consistency; non-plastic; marine origin; lower boundary not observed; Pleistocene coral shelf

Figure 14. T-122 southwest profile wall, view to southwest

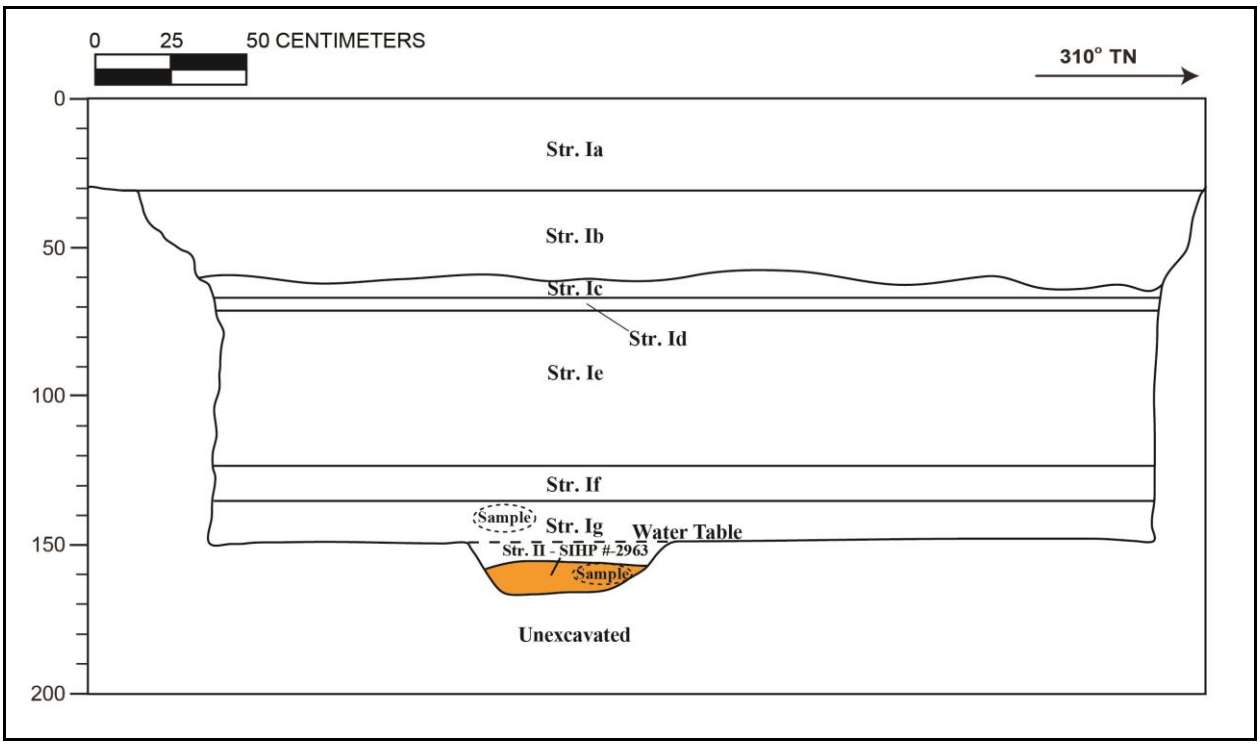


Figure 15. T-122 southwest profile

Figure 16. T-122 ceramic tea pot (Acc. # 122-A-1) collected from Stratum II (SIHP # -2963)

Table 6. T-122 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-30	Asphalt
Ib	30-61	Fill; 10 YR 8/2 (very pale brown); very cobbly sand; structureless, single grain; dry, loose consistency; non-plastic; marine origin; abrupt, wavy lower boundary; imported fill,coral cobble 60%
Ic	61-68	Fill; 10 YR 5/2 (grayish brown); fine sand; structureless, single grain; dry, loose consistency; non-plastic; marine origin; very abrupt, smooth lower boundary; fine sand, imported fill, compact
Id	68-72	Fill; 10 YR 8/2 (very pale brown); fine sand; structureless, single grain; dry, loose consistency; non-plastic; marine origin; abrupt, smooth boundary; imported fill, fine sand, compact
Ie	72-125	Fill; 10 YR 7/4 (very pale brown); medium to coarse sand; structureless, single grain; dry, loose consistency; non-plastic; marine origin; very abrupt, smooth lower boundary; contained red brick (collected); coarse grain sand, locally procured beach sand fill
If	125-137	Fill; 10 YR 7/2 (light gray); fine sand; structureless, single grain; wet, non-sticky consistency; non-plastic; marine origin; very abrupt lower boundary; fine sand used as fill
Ig	136-160	Fill; GLEY 2 8/5BG (light greenish gray); sandy clay; structureless, single grain; wet, slightly sticky consistency; slightly plastic; marine origin; abrupt, smooth lower boundary; possible hydraulic fill
II	160-165 (BOE)	Natural; 10 YR 3/1 (very dark gray); clay loam; structureless, single grain; mixed origin; lower boundary not visible, contained metal (not collected) and a single ceramic (collected); wetland possible agricultural with organic matting; component of SIHP # -2963

Figure 17. T-123 northeast profile wall, view to north

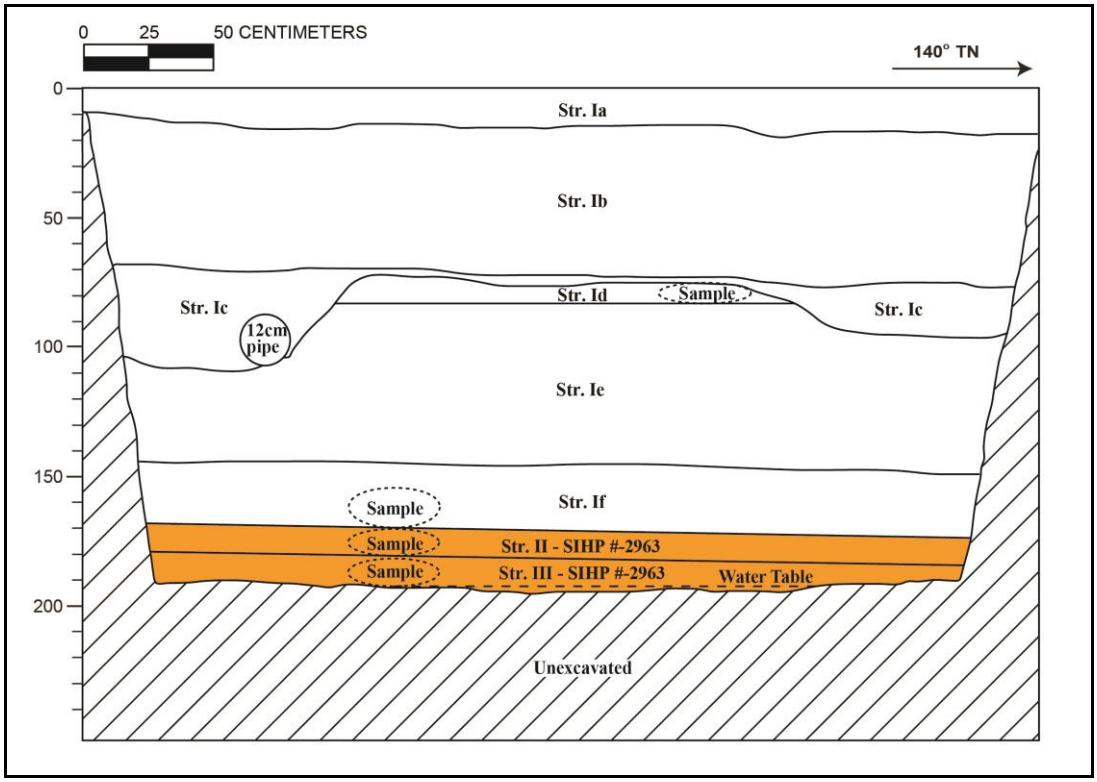


Figure 18. T-123 stratigraphic profile

Table 7. T-123 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–15	Fill; asphalt
Ib	15–72	Fill; 10 YR 4/1 (dark gray); extremely gravelly coarse sand; structureless, massive; dry, loose consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; crushed basalt gravel with 90% gravel and 10% sand matrix
Ic	72–110	Fill; 2.5 Y 6/2 (light brownish gray); very gravelly fine sand; structureless, single grain; moist, loose consistency; non-plastic; mixed origin; clear, irregular lower boundary; contained 0.12 m diameter utility pipe; 40% crushed coral gravel
Id	76–85	Fill; 10 YR 6/2 (light brownish gray); fine grain sand; structureless, single grain; moist, loose consistency; non-plastic; mixed origin; clear, smooth lower boundary; disturbed sand stratum
Ie	85–145	Fill; 10 YR 8/4 (very pale brown); fine grain sand; structureless, single grain; moist, loose consistency; non-plastic; marine origin; diffuse, smooth lower boundary; contained case gin bottle glass (collected) and ceramic fragments (not collected); locally procured sand fill
If	145–173	Fill; GLEY 1 7/5GY (light greenish gray); sandy clay; structureless, massive; moist, firm consistency; plastic; marine origin; abrupt, smooth lower boundary; possible hydraulic fill
II	173–180	Natural; GLEY 1 3/10Y (very dark greenish gray); coarse sandy clay; weak, medium, crumb structure; moist, friable consistency; slightly plastic; mixed origin; clear, smooth lower boundary; common, coarse roots; contained bottle glass (not collected), porcelain insulator (collected); 80% small freshwater-brackish snails, agricultural/wetland sediment; component of SIHP # -2963
III	180–194 (BOE)	Natural; 2.5 Y 3/1 (very dark gray); loamy sand; weak, fine, crumb structure; wet, slightly sticky consistency; non-plastic; mixed origin; lower boundary not visible; contained volcanic glass (collected) and small freshwater-brackish snails; gleyed sand at water table and just above coral shelf; component of SIHP # -2963

The buried, culturally-enriched A horizon along with the 12 associated features identified in T-124, and the pond sediment strata identified in T-122 and T-123 have been combined into SIHP # -2963, previously identified by Clark (1987) (see Figure 1). The culturally-enriched marine sand and terrigenous sediments containing both pre- and post-Contact features that was designated Layer I by Clark (1987) is consistent with the culturally-enriched sandy loam (Stratum IIa) and loamy sand (Stratum IIb) containing traditional Hawaiian and historic cultural material, and a total of 12 archaeological features within T-124 and T-124A. The beach sand that was designated Layer II by Clark (1987) is consistent with the Jaucas sand (Stratum III) within T-124 and T-124A. The organically rich black silty mud and gleyed, fine textured, silty mud deposits that were designated Pond Layer I and II, respectively by Clark (1987) are similar to the clay loam with organic matting (Stratum II) of T-122 and the gleyed, culturally-enriched coarse sand (Stratum II) and the loamy sand (Stratum III) of T-123. The two fill sequences described by Clark (1987) as parking lot fills and fishpond fills could not be accurately compared to the fill sequences observed within T-122 through T-124A. However, the similarities in the depositional sequence, geographic location, and the presence of both a culturally-enriched buried A horizon with associated features and pond sediments in both study areas provide the basis for a combination of the findings of Clark (1987) with the findings within T-122 through T-124A.

SIHP # 50-80-14-2963 is a subsurface cultural deposit consisting of a buried, culturally-enriched A horizon with 39 associated features, pond sediments, and 8 other archaeological features associated with other fills or natural strata. The 39 features of the buried, culturally-enriched A horizon consist of 27 previously-identified features and 12 newly-identified features. Collectively, they consist of 16 pits, 6 trash pits, 5 animal burials, 4 human burials, 4 possible postmolds, 2 isolated animal bone areas, 1 burned soil area, and 1 posthole. The 27 previously-identified by Clark (1987), and the 12 newly-identified features encountered during the excavation of T-124. The buried A horizon was also identified within T-124A, a geotechnical test bore located southeast of T-124. Pond sediments were identified along the western edge of the Clark (1987) study area and within T-122 and T-123. The pond sediments identified in the two studies are considered to be the buried remnants of the pond labeled “Auwaiolimu Crown Land” on the 1881 Brown map of Honolulu (see Figure 4). The other 8 archaeological features identified by Clark (1987) consist of a large pit, a cement building foundation, a red brick layer or possible building foundation within parking lot fill, a buried land surface within marine sand, and three human burials with no associated burial pits or strata. A total of 13 human burials are associated with SIHP # 50-80-14-2963, of which six were identified by Ota and Kam (1982) and seven were identified by Clark (1987). No human burials associated with SIHP # 50-80-14-2963 were located in the current City Center project APE.

Based on the guidance of National Register Bulletin No. 15, SIHP # 50-80-14-2963 retains its integrity of location, materials, and workmanship. Based on past documentation and the results of this investigation, CSH recommends that this cultural resource maintains integrity to support its historic significance under Criterion D (has yielded, or is likely to yield, information important for research on prehistory or history) and E (has cultural significance to an ethnic group) of the Hawai‘i Register, and Criterion D of the National Register, exclusively for its information potential.

SIHP # 50-80-14-2963 has provided information, and has potential to provide additional information, on late pre- to early post-Contact habitation, historic land use including pond

infilling, pre- and/or post-Contact burial practices, and pond aquaculture within Kaka‘ako. The potential for additional research warrants the implementation of a data recovery program. Data recovery at SIHP # -2963 will focus on data collection from the buried, culturally-enriched A horizon and associated features, and from discrete features within fill layers. Data recovery will include a more intensive regime of strata- and feature specific radiocarbon, palynological, and botanical analysis. The analysis will examine use and function of culturally-enriched strata and features, and will differentiate, where possible, traditional Hawaiian and historic deposits and their relatively chronological associations. Data recovery also will identify any burials or human skeletal remains that may be present within SIHP # -2963, along with their stratigraphic associations. Following the data recovery program, an archaeological monitoring program is recommended for SIHP # -2963. Archaeological monitoring will recover additional data on the nature, or depositional sequence, and extent of SIHP # -2963.

SIHP # 50-80-14-5368

FORMAL TYPE:	Subsurface remnants of Kūwili Fishpond
FUNCTION:	Aquaculture
PREVIOUS DOCUMENTATION:	McGerty et al.1997; Athens and Ward 1997; Hammatt et al. 2008
AGE:	Pre-Contact through post-Contact
NUMBER OF FEATURES:	12 (previously identified by McGerty et al. 1997)
TYPES OF FEATURES:	Disarticulated human skeletal remains, 2 rock walls, 3 metal pipes, 2 foundations/structures, 1 concrete jacket, 1 concrete drain, 1 backfilled pit, 1 drainage/dredge channel
DIMENSIONS:	0.02 acres (within current project area), 17.12 acres (total area)
LOCATION:	West of King Street between Dillingham Boulevard and Iwilei Road (Iwilei Geographic Zone)
TAX MAP KEY:	[1] 1-5-007; [1] 1-5-007:001, 002, 009, 014, 015, 016, 018, 021, 023, 024, 026, 028 through 033, 036, 037, 041, 042; [1] 1-5-008; [1] 1-5-009; [1] 1-5-009:007, 009, 014, 015, 016, 019, 020; and [1] 1-5-015:001, 003, 004
LAND JURISDICTION:	Hawaiian Electric, Nu‘uanu Auto Company, and the City and County of Honolulu (current project area excavations)
TEST EXCAVATIONS:	T-091, T-092, T-093; not found in T-088 or T-094

SIHP # 50-80-14-5368 consists of the previously-identified remnants of Kūwili Fishpond in the Iwilei Geographic Zone (Figure 1). Kūwili Fishpond appears on historic maps and in photographs and documents. The geographic extent of Kūwili Fishpond (17.12 acres) used in this historic property description is based on the fishpond’s depiction on J.F. Brown’s 1885 map of Kalihi and Kapālama (Figure 2). SIHP # -5368 was originally designated as buried remnants of Kūwili Fishpond during the AIS for the proposed Liliha Civic Center (McGerty et al. 1997). Further investigation of SIHP # -5368 was performed by Athens and Ward (1997) during a paleoenvironmental coring study of the proposed Liliha Civic Center. Hammatt et al. (2008) also described Kūwili Fishpond during data recovery for the Iwilei Senior Housing Project.

Few oral traditions, legends, or other ethnographic information exist regarding Kūwili Fishpond. Kūwili literally means “stand swirling” (Pukui et al. 1974:125). Kūwili Fishpond is mentioned in the legend of Kū‘ula (the fish god of Hawai‘i). Kū‘ula’s son, ‘Ai‘ai, gave a sacred fishhook to his son, Puniaiki, who used it to summon a substantial school of *aku* to Honolulu Harbor (Manu 1998:247-248). The location of Kūwili Fishpond is shown on an 1885 map by J. F. Brown and an 1887 map by W.A. Wall (see Figure 2 and Figure 3). Although the time of construction and the use history of Kūwili Fishpond remain unclear, Kūwili Fishpond is considered to be an aquacultural site constructed in pre-Contact times with continued use into the second half of the nineteenth century (Figure 4). Early historic maps show taro fields surrounding the fishpond illustrating the area’s use as an important agricultural and aquacultural resource (Athens and Ward 1997). Kikuchi, in his 1973 study of Hawaiian fishponds, classified Kūwili Fishpond as a Type II pond, or a *loko pu‘uone* or a *loko haku‘one*, “an isolated shore

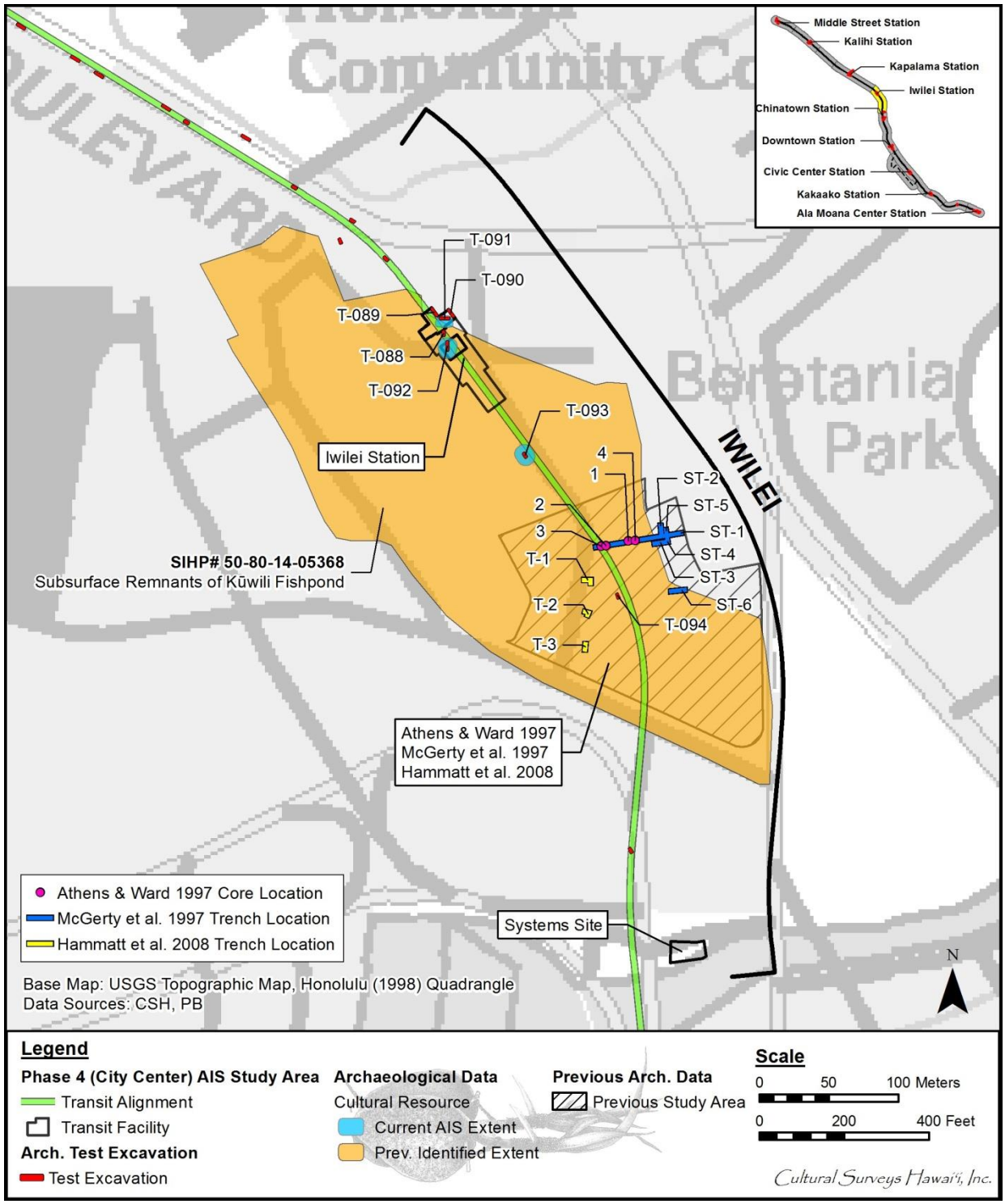


Figure 1. Locations of former- and newly-identified extents of SIHP # 50-80-14-5368, Kūwili Fishpond, showing locations of AIS excavations T-088 through T-094 along the Iwilei Zone corridor and previous study areas (base map: 1998 U.S. Geological Survey topographic map, Honolulu Quadrangle)

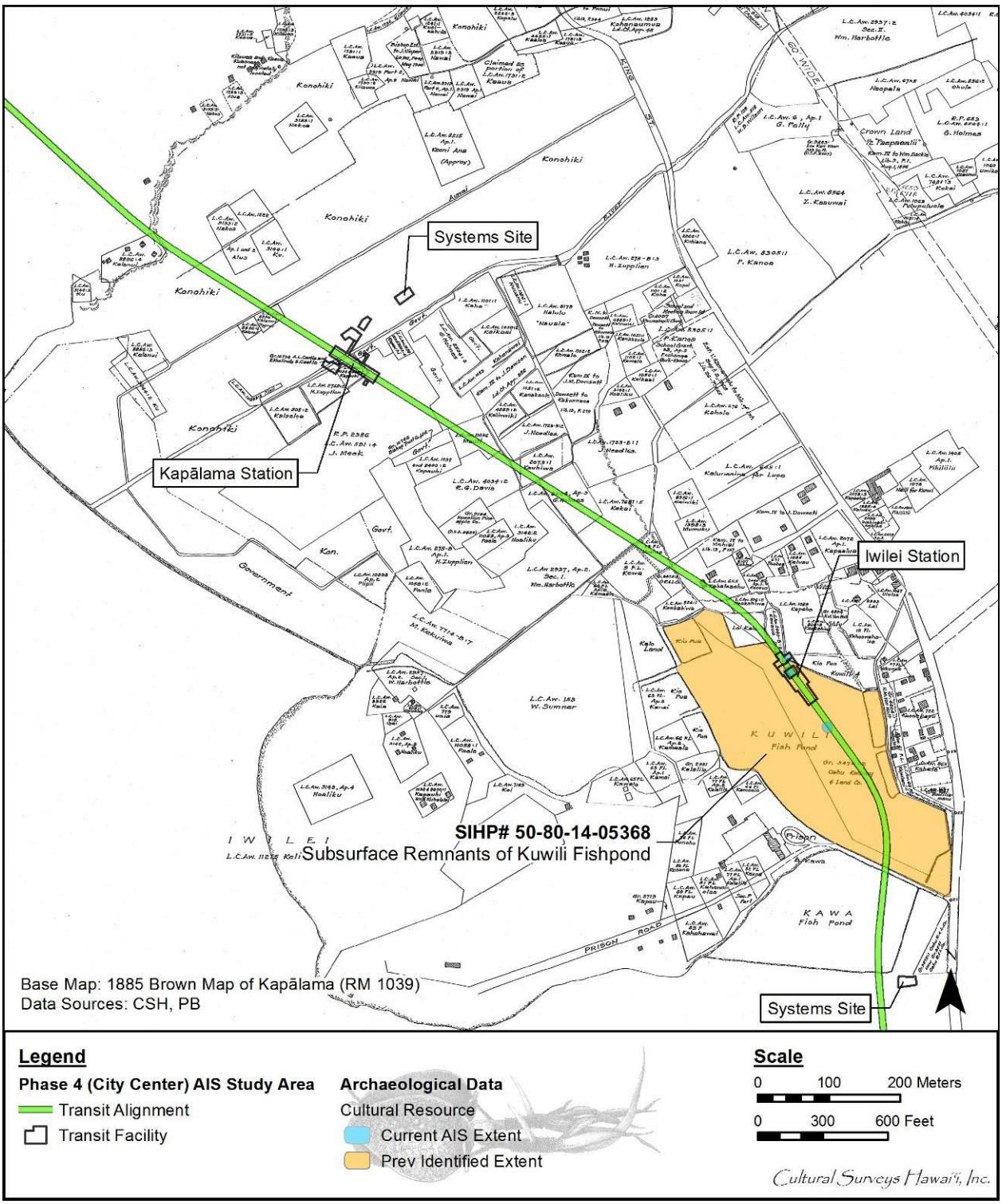


Figure 2. A portion of the 1885 map of Kalihi and Kapālama, *makai* sections, by J. F. Brown depicting the general location of Kūwili Fishpond within the Iwilei Geographic Zone

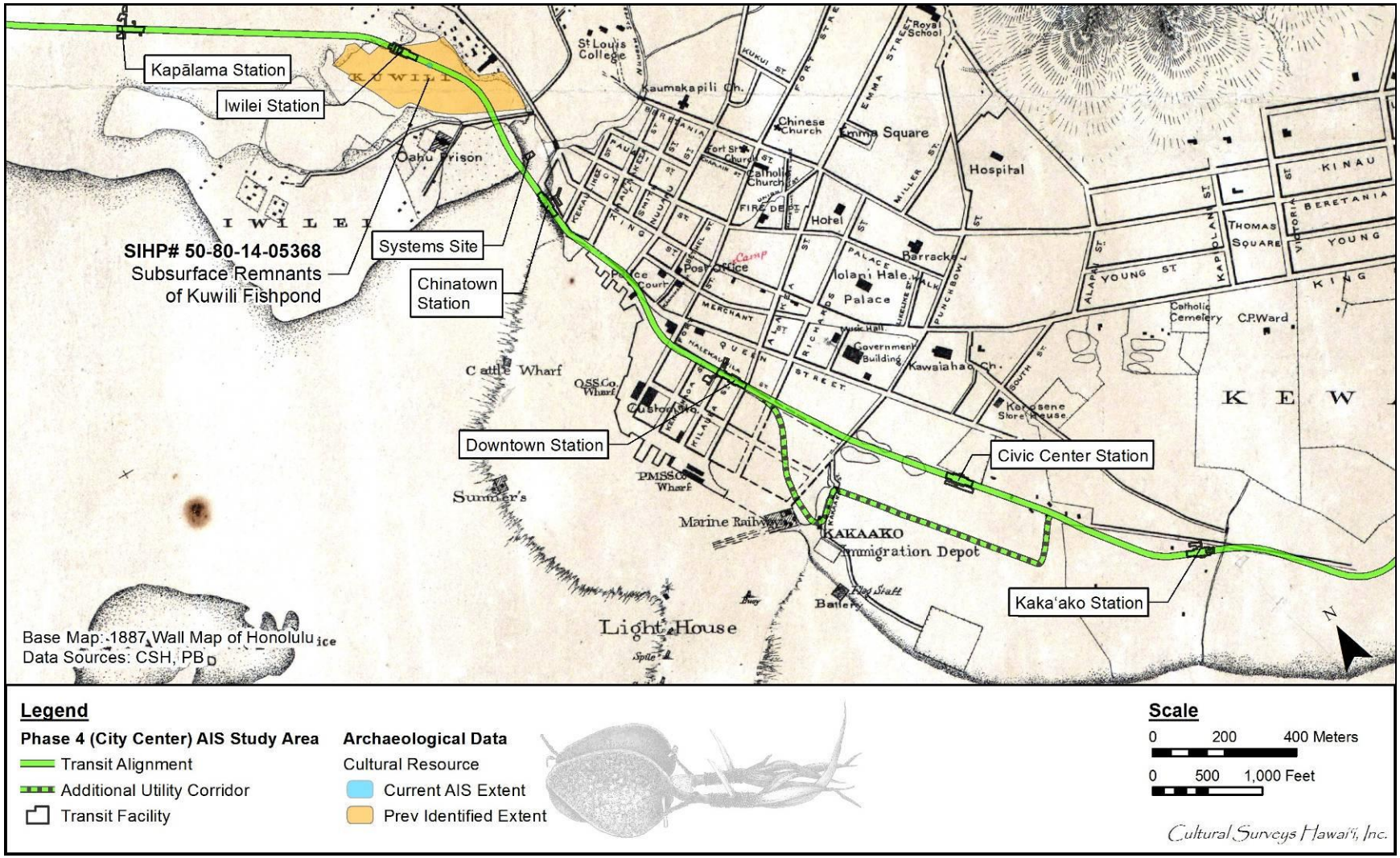


Figure 3. 1887 W. A. Wall Hawaiian Government Survey Map of Honolulu and Vicinity, showing the location of Kūwili Fishpond within the Iwilei Geographic Zone

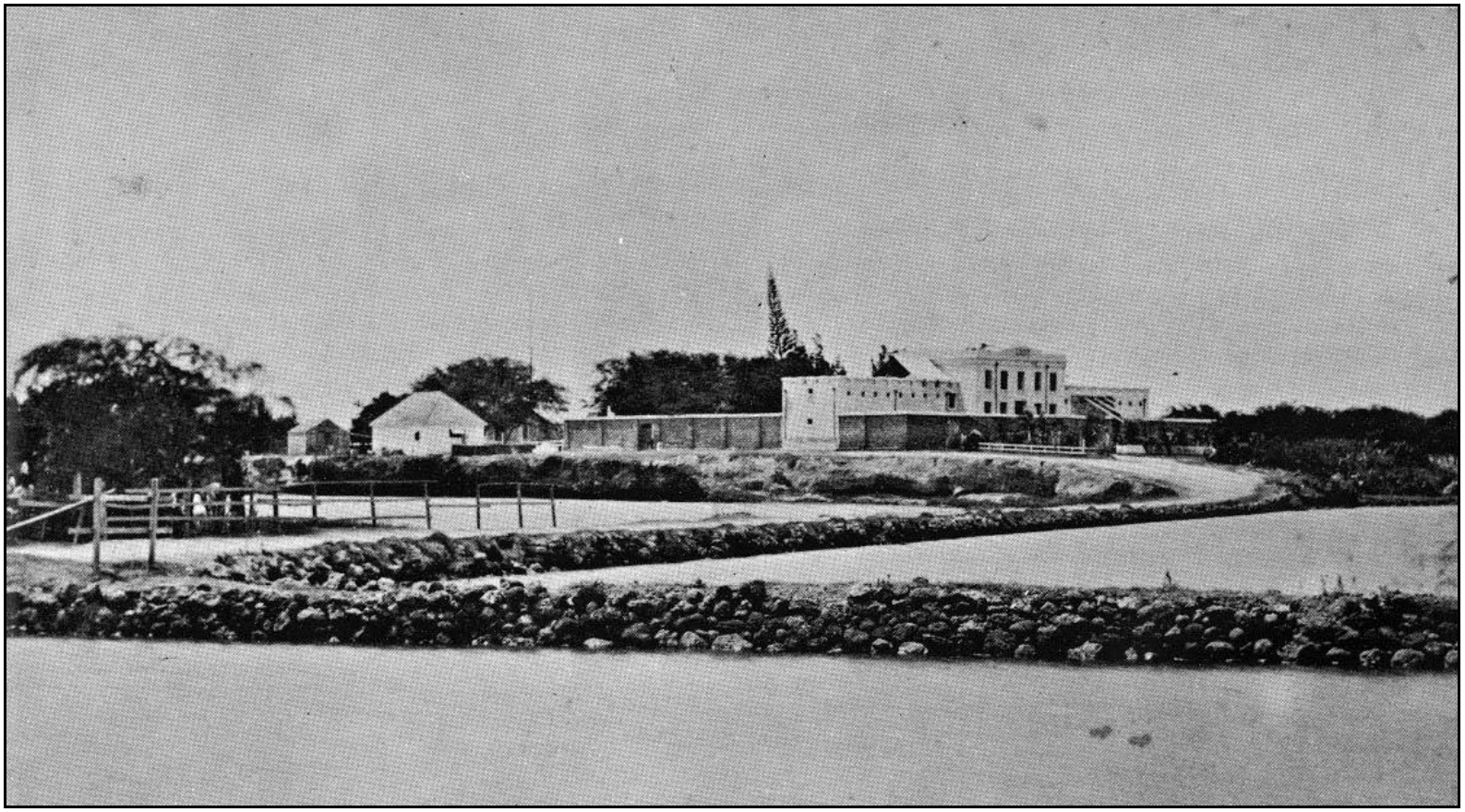


Figure 4. 1857 Photograph showing the O‘ahu Prison in Iwilei with Kūwili Fishpond to the right of the causeway extending to the Prison and Kawa Fishpond to the left (Hawai‘i State Archives)

fishpond usually formed by the development of barrier beaches building a single, elongated sand ridge [*pu‘uone* or *haku‘one*] parallel to the coast and containing one or more ditches and sluice grates" (Kikuchi 1973:228). The fishpond itself was built within shallow lagoon waters and may have been constructed as early as AD 1100 (McGerty et al. 1997).

Filling of the fishpond in the 1890s was due to both health concerns and the development and urbanization of Honolulu (Figure 5). An outbreak of cholera centered on both sides of Nu‘uanu Stream, prompted the Honolulu Board of Health to recommend the infilling of the adjoining Kawa Fishpond and a good portion of Kūwili Fishpond; this was completed by 1901 (McGerty et al. 1997:23). Following its purchase by the O‘ahu Railway and Land Company (OR&L) in 1890, the remainder of Kūwili Fishpond was filled to accommodate the new railroad and its facilities (Figure 6). The reclamation of this portion of the fishpond occurred from 1895 through 1901 and incorporated dredged materials from Honolulu Harbor:

> In making Harbor improvements, 6,000,000 cubic yards of mud, sand, and loose coral had been dredged, and several thousand cubic yards of hard coral had been blasted by O.R. & L. Co, in 1901. All of this material was used in reclaiming and filling in low land near the harbor and terminal. (McGerty et al. 1997:21)

The 1914 Sanborn Fire Insurance Map (Figure 7) shows the extensive OR&L facilities that were constructed within Kūwili Fishpond's infilled footprint. These facilities included the roundhouse, car barn, a corral, numerous track alignments, and the depot building itself (labeled waiting area and office on the 1914 Sanborn Fire Insurance Map).

The depositional stratigraphic sequence recorded within Kūwili Fishpond is characterized by multiple fill layers overlying sediments associated with pond use, and earlier underlying natural estuary sediments. Typically the uppermost fill layers represent modern events while deeper fill layers are associated with historic events dating to reclamation infilling of the fishpond (Hammatt et al. 2008). Remnants of the OR&L railroad (including rail spikes, wooden ties, and rails) were observed in some recent fills post-dating dismantling of the railroad system between 1948 and 1951 (McGerty et al. 1997). Beneath the historic fills and underlying Kūwili Fishpond sediments, the lower-most layers consist of natural sediments predating construction of the fishpond. This generalized stratigraphic sequence characterizes the nature, extent and/or use of Kūwili Fishpond.

Kūwili Fishpond sediments are generally represented by gleyed silty and sandy clays, with abundant snail shells and organics. McGerty et al. (1997) identified fishpond sediments from 1.61 to 2.60 mbs. Athens and Ward (1997) identified similar sediments from 1.45 to 2.35 mbs, and Hammatt et al. (2008) identified fishpond sediments from 1.80 to 2.70 mbs. McGerty et al. (1997) and Athens and Ward (1997) concluded that fishpond sediments generally occurred in situ between 1.50 and 2.40 mbs (Figure 8 through Figure 13).

McGerty et al. (1997) designated marine and fluvial type sediments as Stratum III-IIIj. These strata (III-IIIj) were described as well sorted silty to silty clay, gleyed sediments containing rounded cobbles and gravel, and terrestrial snail (Rissoacea). Generally, these deposits did not contain artifacts. The lowest layer indicated was Stratum IV, a very fine silty clay. Hammatt et al. (2008) designated the Stratum III (IIIa-IIIc) natural silty to sandy clay sediments as pond deposits below hydraulic fills. Their lowest layer consisted of natural clays designated as Stratum IV (IVa-IVb). Athens and Ward (1997) analyzed two of their five cores and identified Stratum III, a gleyed silty clay with terrestrial snails, as fishpond sediment directly overlying Stratum IV

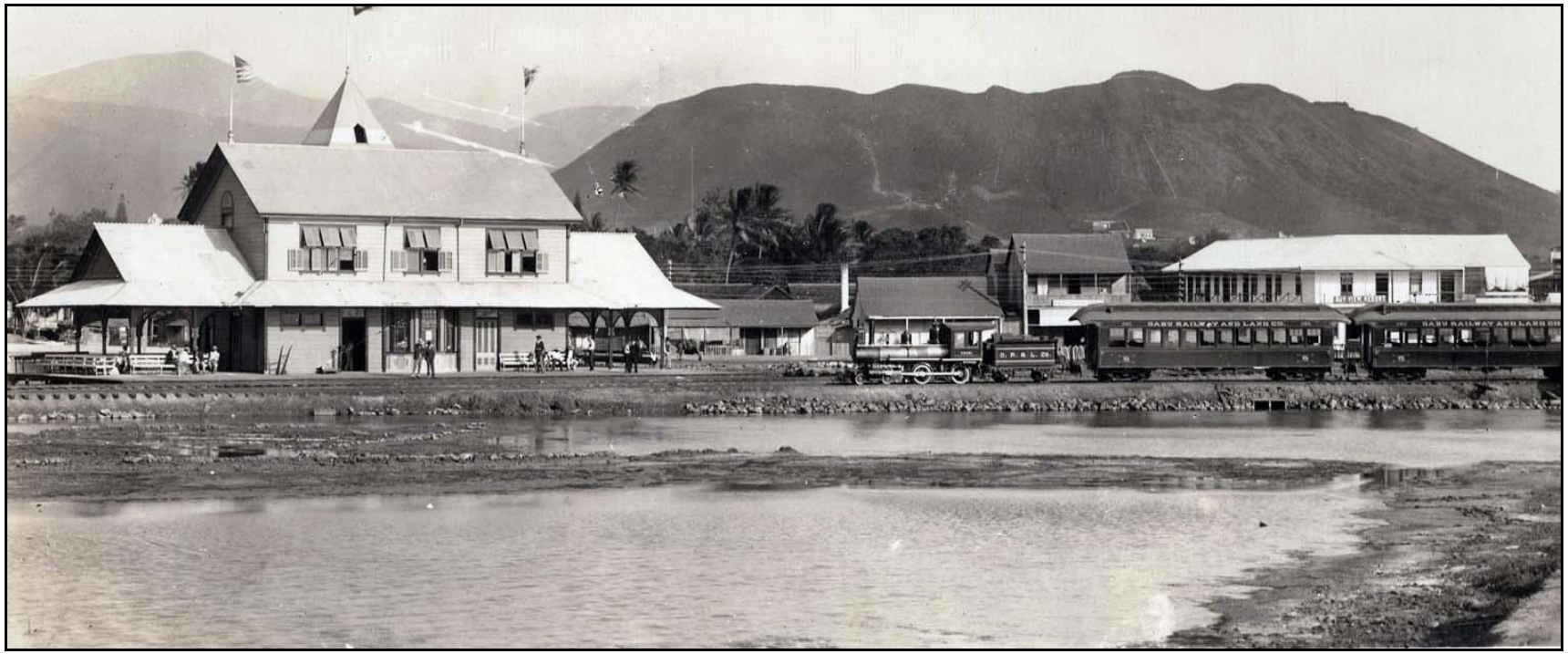


Figure 5. 1890 photograph showing a partially filled Kūwili Fishpond and the OR&L Depot (Scott 1968:859)

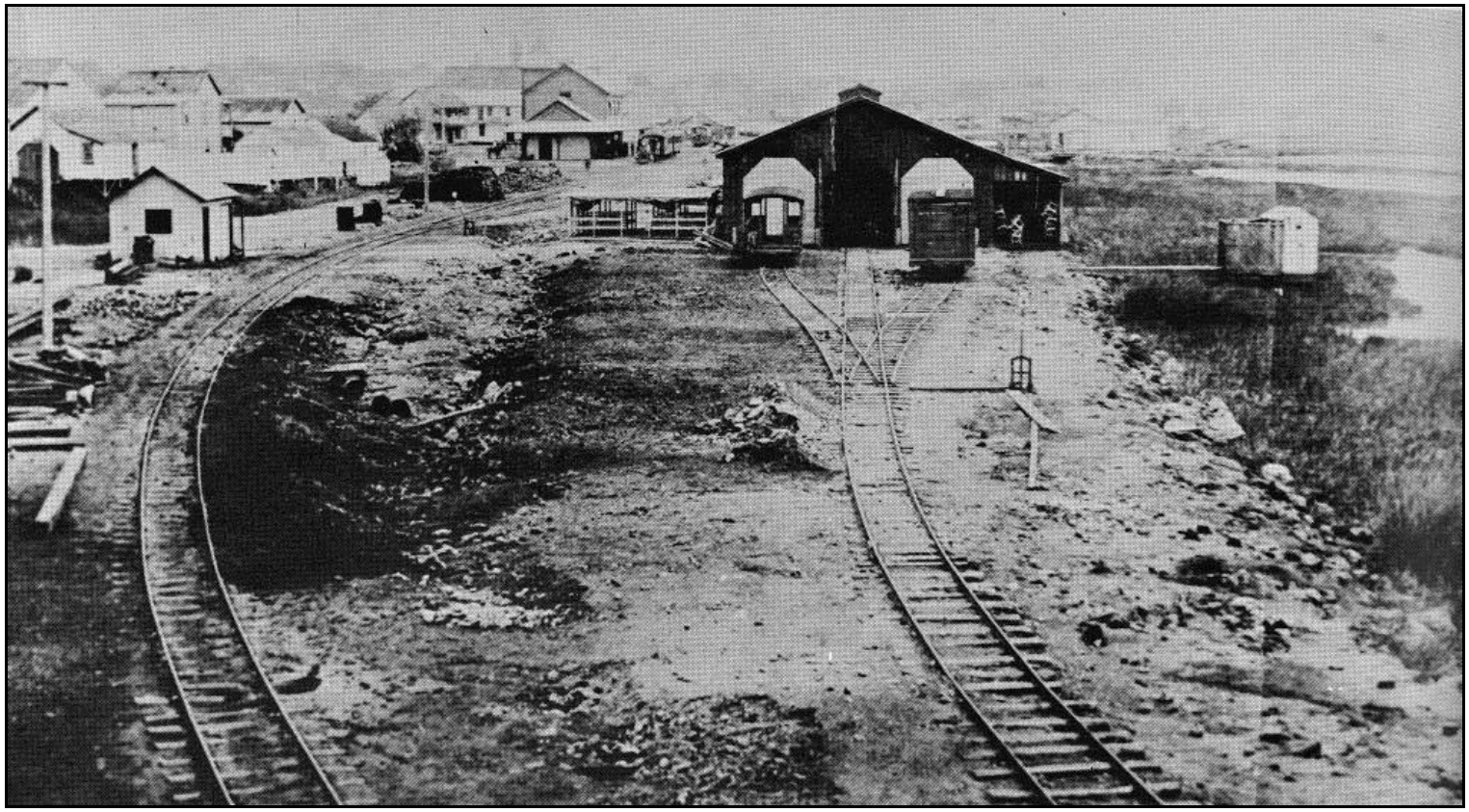


Figure 6. 1890 photograph showing the OR&L Depot situated atop the partially filled Kūwili Fishpond (Scott 1968:858)

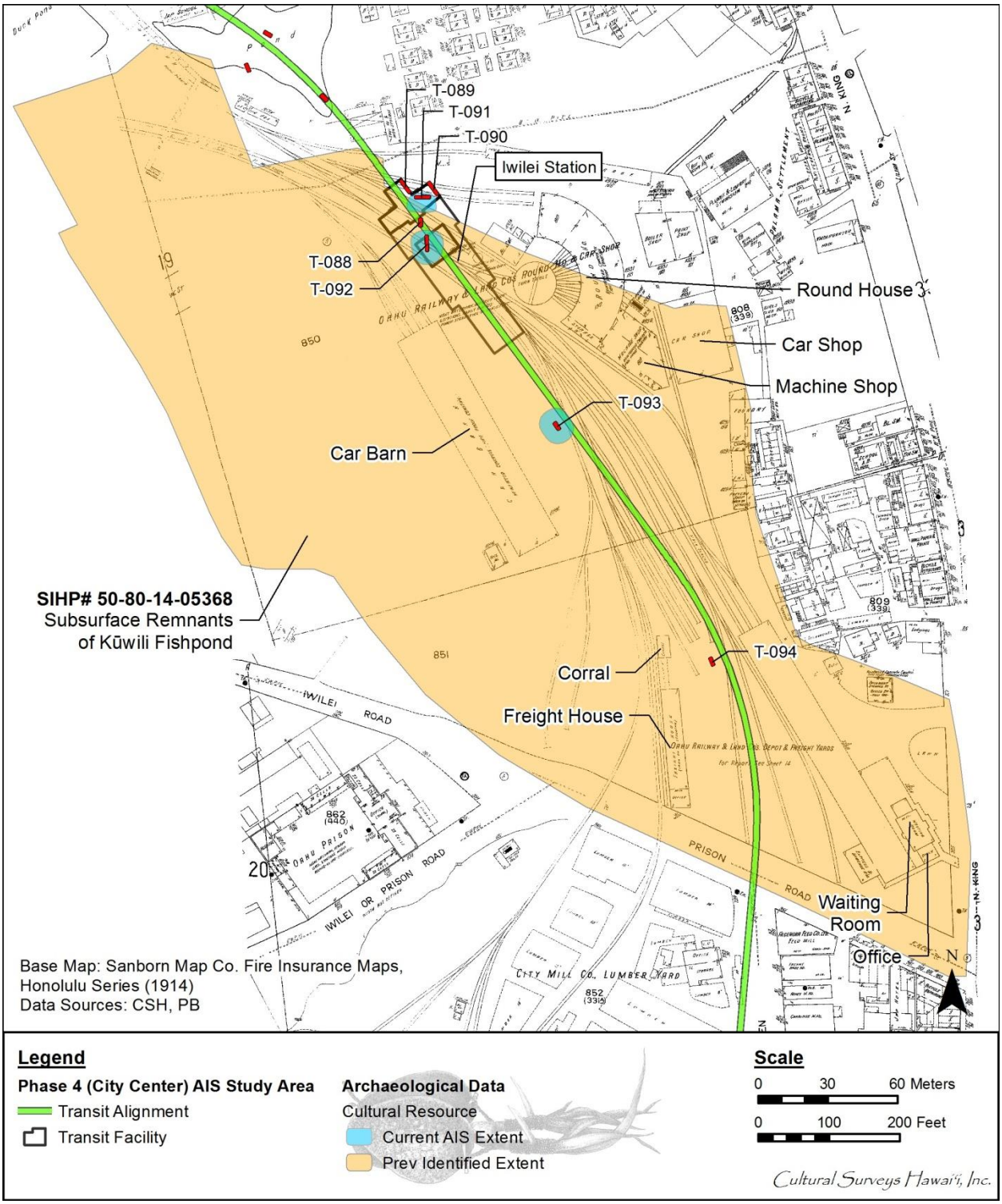


Figure 7. 1914 Sanborn Series map (Sanborn Map Company 1914) with an overlay of Kūwili Fishpond showing the extensive OR&L facilities constructed atop the infilled fishpond footprint

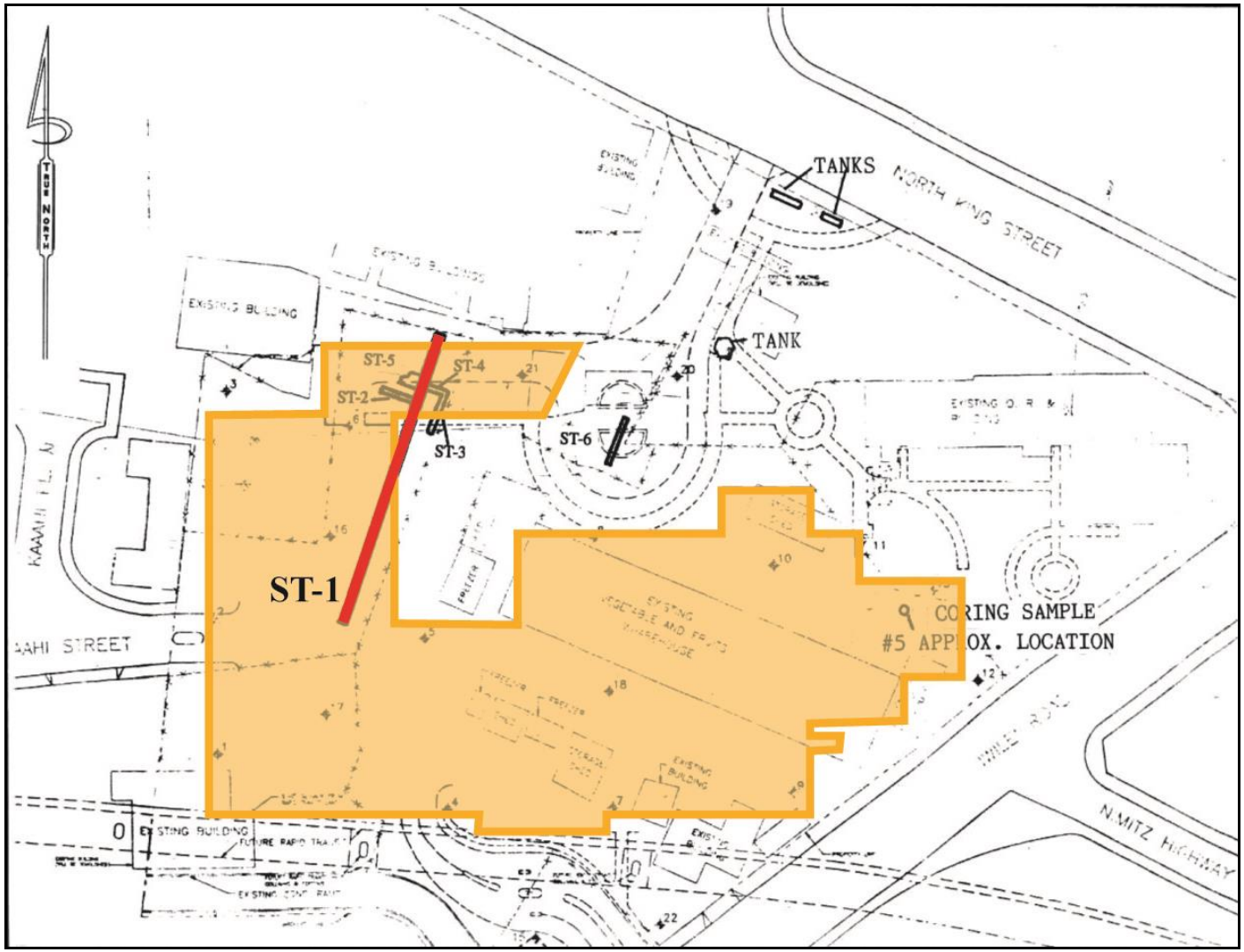


Figure 8. Plan view of McGerty et al. (1997:4) project area showing excavation locations within the former Kūwili Fishpond footprint; see Figure 158 for location of previous studies

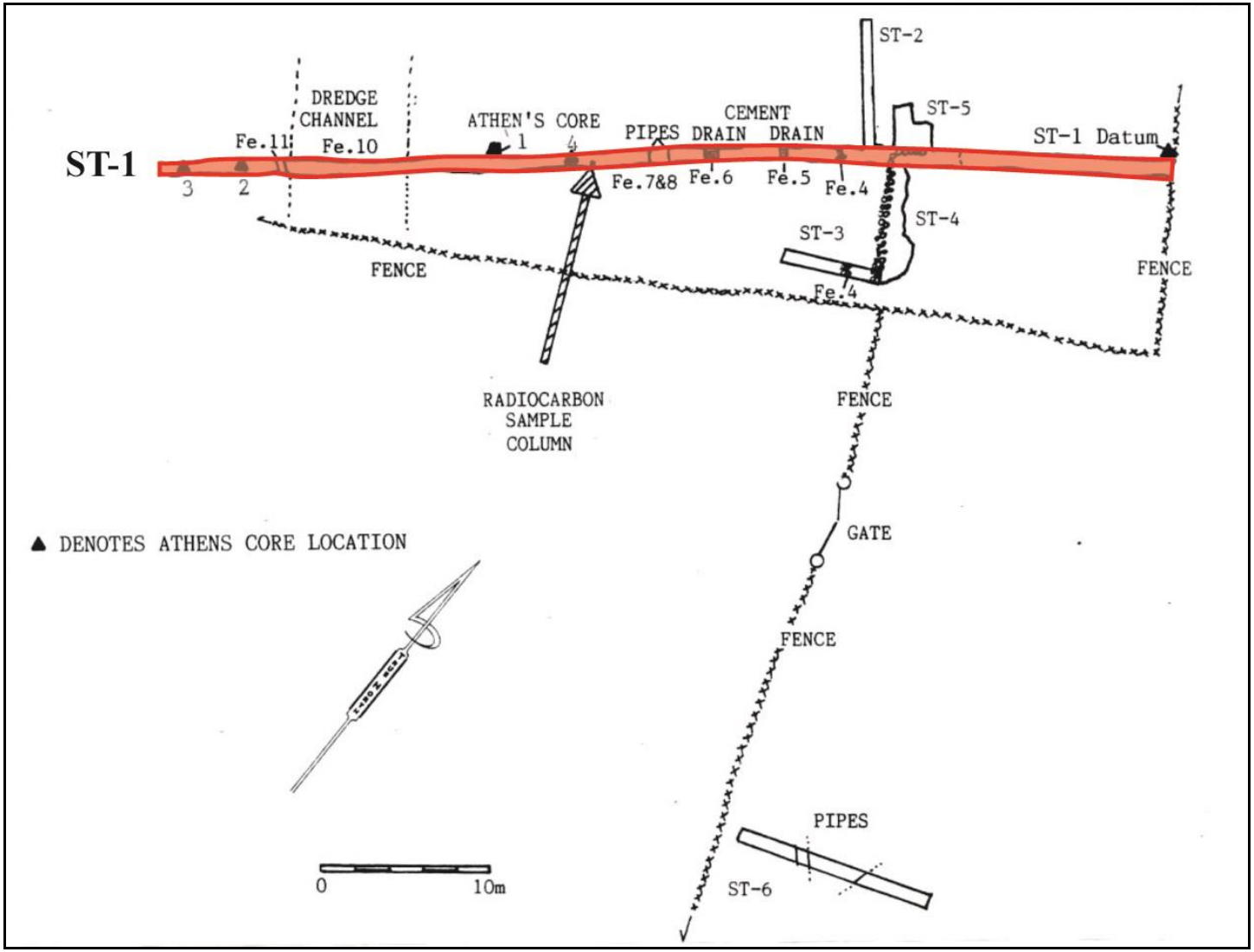


Figure 9. Plan view of McGerty et al. (1997:28) excavation areas and features and location of Athens and Ward (1997) cores

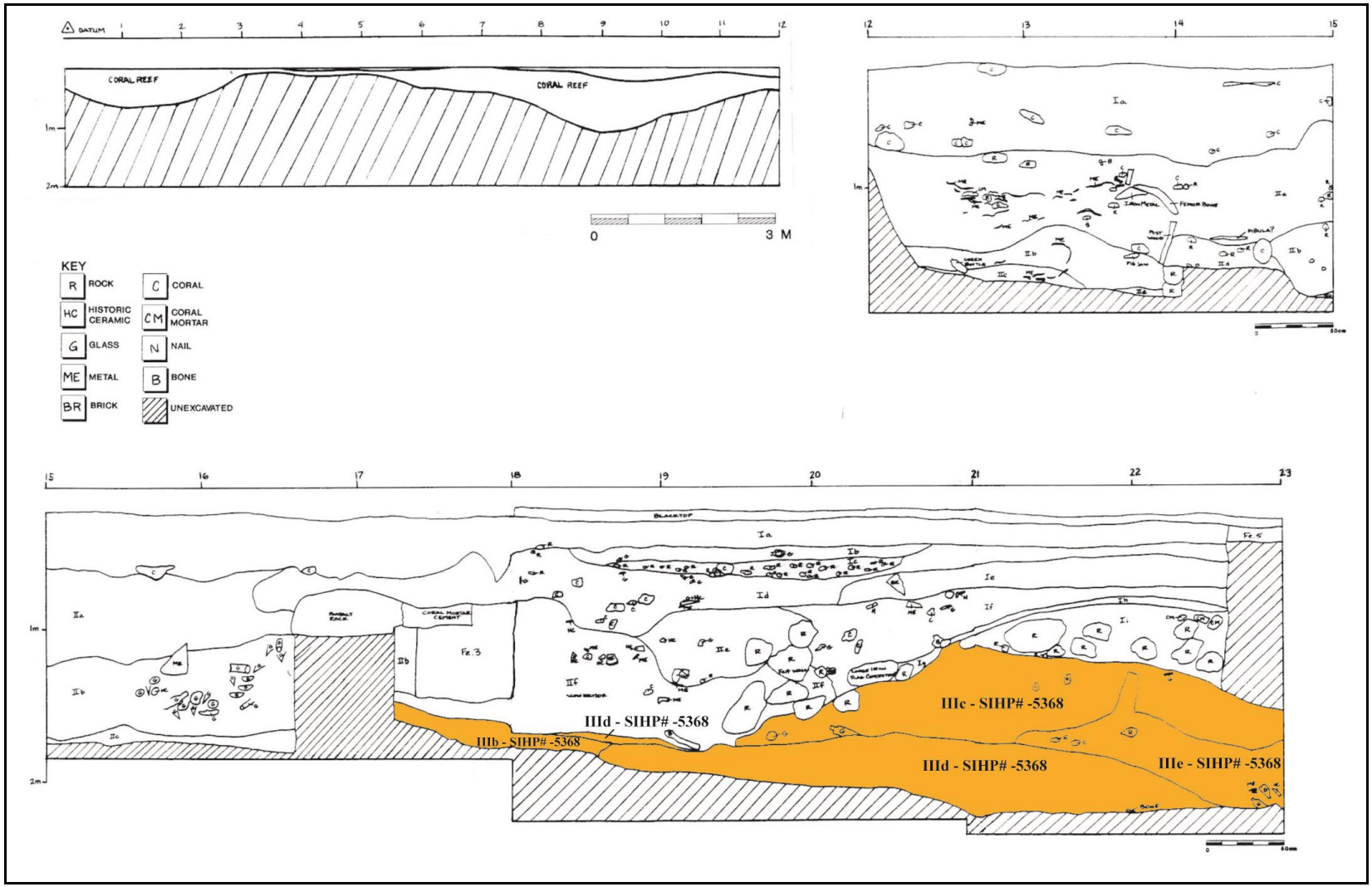


Figure 10. Profile of ST-1 south wall showing Kūwili Fishpond sediments (SIHP # -5368) (adapted from McGerty et al. 1997:39)

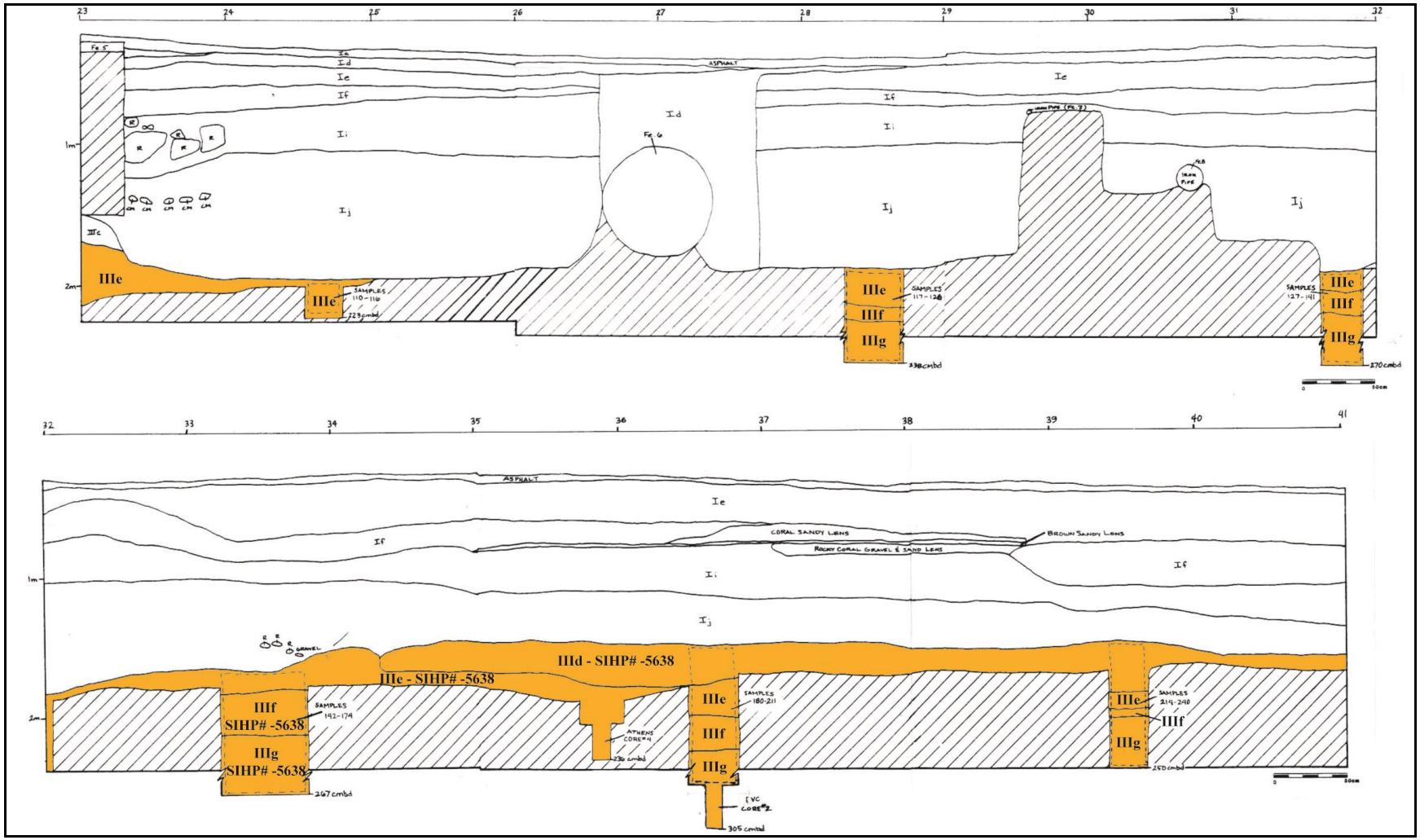


Figure 11. Profile of ST-1 south wall showing Kūwili Fishpond sediments (SIHP # -5368; Strata IIIe through IIIg); also shown is the column sample illustrated in Figure 13 (adapted from McGerty et al. 1997:40)

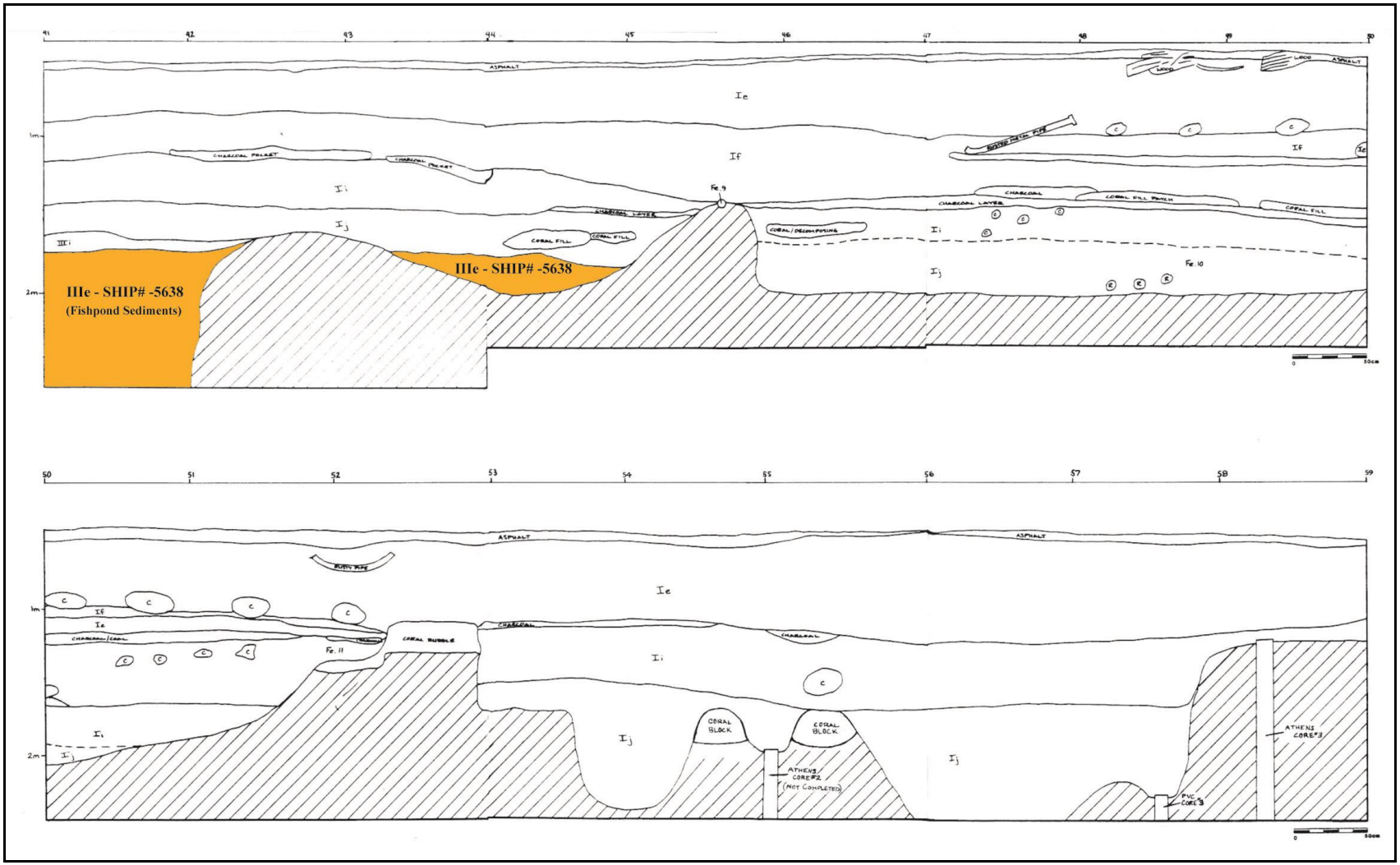


Figure 12. Profile of ST-1 south wall, showing Kūwili Fishpond sediments (SIHP # -5368; Strata IIIe (adapted from McGerty et al. 1997:41)

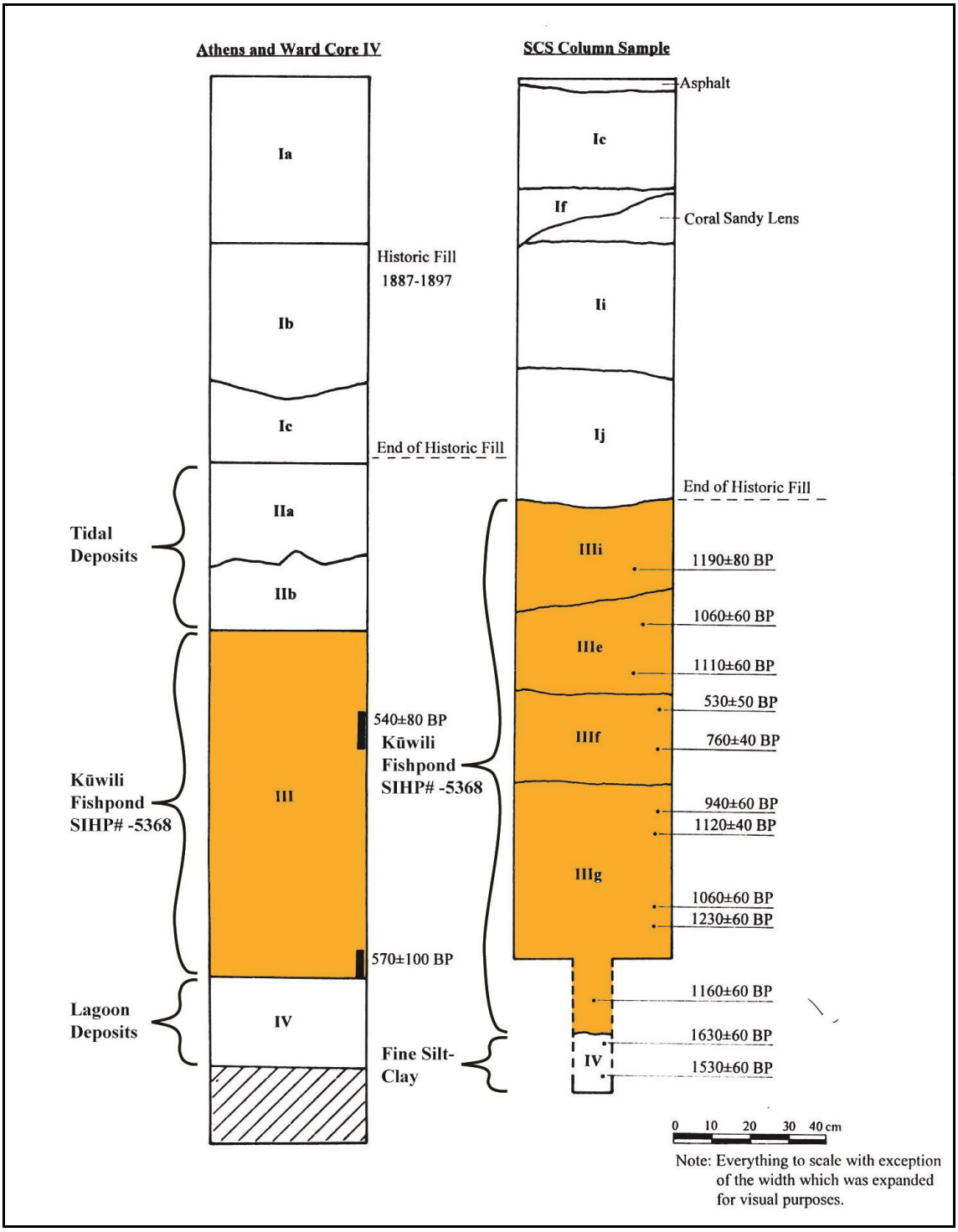


Figure 13. Figure showing comparison of the Athens and Ward (1997) Core IV to column sample collected during McGerty et al. (1997:65) AIS—labeled “SCS” on figure; column sample location is shown in Figure 11.

a sandy loam lagoonal deposit. Athens and Ward (1997) also recorded silty clay tidal sediments (Stratum IIa-IIb) directly below historic fill deposits.

The remnants of Kūwili Fishpond were located beneath thick historic fill layers. McGerty et al. (1997) designated Stratum II as fill strata (II-IIf), which contained abundant 19th century refuse. These sediments varied from gravels to silty loams and often contained bottles, glass and metal fragments, animal remains, charcoal, brick and ceramic pieces. Athens and Ward (1997) identified Strata Ia-Ic deposited above their Stratum II as representing historic fills. Athens and Ward (1997) indicated much of the fill appeared to date from 1887 to 1897. Hammatt et al. (2008) recorded multiple fill sediments, with deposits (Strata If-Ij and Stratum II) extending below approximately 0.50 mbs being identified as historic.

The uppermost fill layers were considered to be associated with more modern fill events. McGerty et al. (1997) considered strata Ia-Ij to be fills associated with railroad demolition and recent parking lot developments. Historic material included bottle glass and few brick and ceramic fragments. Hammatt et al. (2008) reported upper fill strata (Ia-Ie) as being related to modern construction activities.

During AIS work for the proposed Liliha Civic Center (TMK: (1) 1-5-007:001, 014, 015, 018, 057, 058, 060-078) McGerty et al. (1997) documented 12 subsurface features associated with SIHP # -5368. The AIS involved six trench excavations, ST-1 through ST-6. In conjunction with the McGerty et al. (1997) AIS, Athens and Ward (1997) collected five sediment cores (Cores 1-5), four from within excavation ST-1 and one from the eastern corner of the project area. McGerty et al. (1997) indicate four features (Features 4 and 10-12) represent the construction and/or use of the fishpond, while eight (Features 1-3, and 5-9) correlate with historic infilling of the fishpond. McGerty et al. (1997) provided feature descriptions and summarized them further in their text, presented in Table 1. Depths recorded in Table 1, profile figures, and their text vary. The following SIHP # -5368 feature summaries are derived from McGerty et al. (1997:31-36):

Feature 1 was a partial human femur uncovered at the eastern end of ST-1. Feature 1 was within fill containing debris dating to the twentieth century. A probable human femur fragment was identified in the south sidewall of the trench. No burial pit, coffin outline, or articulated remains were identified in the fill surrounding Feature 1. Feature 1 was interpreted to be a previously-disturbed burial and was incorporated into the trash fill. The human skeletal remains were reburied within ST-1 and the excavation was backfilled.

Feature 2 was a basalt rock wall constructed of rounded to subangular basalt rocks. Feature 2 was observed in ST-1 north wall profile between 15.0 and 17.0 m west of ST-1 datum string. Feature 2 was a faced wall, two to three courses high, with coral mortar present between the basalt rocks. The base of Feature 2 was constructed on Stratum II domestic refuse fill. At 17.0 m from the datum, Feature 2 turned ninety degrees to the south and extended into the south wall of ST-1. Feature 2 was interpreted as a foundation built atop fill deposits that accumulated within the *ki‘o pua* (fry pond).

Feature 3 was a previously-backfilled trench present in ST-1. Feature 3 was perpendicular to ST-1, extending from the northwest to the southeast and containing dark reddish brown silty clay sediment. Feature 3 was present 17.40 m west of the ST-1 datum and was approximately 0.40 m

Table 1. Previously Identified Archaeological Features of SIHP # -5368 (adapted from McGerty et al. 1997)

Feature	Trench Excavation	Depth (cmbs)*	Stratum	Type/Function	Contents/Description
1	ST-1	100-125	IIa	Skeletal remains/Previously disturbed burial	Single partial human femur and probable femur fragment. No burial pit or coffin outline was visible. Remains were identified in fill and considered previously disturbed.
2	ST-1	-	-	Wall/Foundation	Basalt rock wall. Wall was two to three courses high with coral mortar between subangular to rounded basalt stones. Constructed on historic fill (Stratum II).
3	ST-1; ST-2; ST-3	52-64	IIb	Pit/Indeterminate	Previously-backfilled excavation that contained dark reddish brown silty clay and a single green glass bottle fragment.
4	ST-1; ST-3	100-185	IIe/IIf	Wall/*ki‘o pua* wall	Loosely built wall of basalt, burned brick and imported stone. Constructed above gleyed deposits of Stratum IIIa and IIIb.
5	ST-1	8-22	Ia	Concrete jacket/Historic infilling	Concrete jacket within Stratum Ia. Interpreted as associated with infilling of the pond during construction of the OR&L Railway.
6	ST-1	100-180	Id	Concrete drain/Drainage	Concrete drain considered to be late 19th or 20th century structure.
7	ST-1	60	Ii	Metal pipe/Utility line	Iron pipe considered to be late 19th or 20th century pipe.
8	ST-1	130-140	Ij	Metal pipe/Utility line	Iron pipe considered to be late 19th or 20th century pipe.
9	ST-1	155	If/Ii	Metal pipe/Utility line	Iron pipe considered to be late 19th or 20th century pipe.

Feature	Trench Excavation	Depth (cmbs)*	Stratum	Type/Function	Contents/Description
10	ST-1	175-200	Ij	Channel/Drainage	Possible drainage channel comprised of silty sand sediments. Truncated lower gleyed deposits of IIIa-IIIe. Interpreted as a hydraulic dredge drainage channel.
11	ST-1	120-160	Ii	Coral rubble /Indeterminate possible temporary foundation	Loose scatter of coral rubble overlying Stratum Ii. Possibly functioned as temporary foundation during hydraulic dredging.
12	ST-6	100-125	IIh	Coral block platform with basalt alignment/ Foundation or structure	Basalt boulder alignment overlying coral-filled platform. Alignment was a single course high. Interpreted a post-Contact structure or foundation constructed at the edge of the fishpond.

*Depths are reported from McGerty et al. (1997) profile figures and may not correspond with their in text descriptions.

wide and ranged from 0.52 to 0.64 mbs. The excavation of ST-2 exposed Feature 3 for seven meters to the northwest. Feature 3 was also observed in ST-3 six meters to the south. A single green glass bottle mouth fragment was collected from Feature 3 at 0.92 mbs. Feature 3 was interpreted as a trench of indeterminate function.

Feature 4 was a loosely-built wall and consisted of basalt, burned brick, and possible imported stone material. Feature 4 was approximately 0.70 m high and was 20.0 m west of ST-1 datum. It also was present in ST-3. Feature 4 was constructed atop Stratum IIIa or Stratum IIIb sediments. Late 19th-century bottles were observed below Feature 4, while red and yellow bricks and iron slag were observed atop and around Feature 4. Historic maps depict a *ki‘o pua* wall in the vicinity of ST-1 and ST-3. Feature 4 was interpreted as the wall edge of a historic period *ki‘o pua* (fry pond).

Feature 5 was a concrete jacket. Feature 5 was observed at a depth of approximately 0.08 mbs. Feature 5 measured approximately 0.65 by 0.10 m and was 22.5 m west of ST-1 datum. Feature 5 was directly below the asphalt within Stratum Ia which consisted of coral gravel and sand. Upper fill strata and Feature 5 were interpreted as being associated with the infilling of Kūwili Pond in advance of the construction of the OR&L Railway; infilling began before 1890 and finished by 1899 (see Figure 6).

Feature 6 was a concrete drain located approximately 27 m west of ST-1 datum. Feature 6 had a diameter of 0.76 m and was exposed at 0.60 mbs. Feature 6 was within Stratum Id which consisted of coral rubble and sand. Feature 6 was interpreted as a late nineteenth- to twentieth-century utility drain.

Feature 7 was a small iron pipe located 29.6 m west of the ST-l datum. Feature 7 was present at 0.40 mbs within Stratum Ii. Feature 7 was interpreted as a late nineteenth- to twentieth-century utility pipe based on its association with the upper fill layers.

Feature 8 was an iron pipe located 30.55 m west of the ST-1 datum. Feature 8 was identified at 0.79 mbs within Stratum Ij. Feature 8 had a diameter of 0.19 m. Feature 8 was interpreted as a late 19th- to 20th-century utility pipe based on its association with the upper fill layers.

Feature 9 was a rusted metal pipe located 45.55 m west of the ST-1 datum. Feature 9 was identified at 0.94 mbs within Stratum If. Feature 9 was interpreted as a late nineteenth- to twentieth-century utility pipe based on its association with the upper fill layers.

Feature 10 was a channel comprised of silty sand located between 45.50 m and 52.00 m west of the ST-1 datum. Feature 10 was observed at approximately 1.44 mbs within Stratum Ij. Feature 10 was approximately 7.0 m wide and truncated the gleyed deposits (IIIa-IIIe) near the base of excavation within ST-1. Feature 10 was interpreted as a possible drainage channel prior to hydraulic dredging and infilling.

Feature 11 was a loose scatter of coral rubble located 52.0 m west of the ST-1 datum. Feature 11 overlay the gleyed pond deposits at 1.10 to 1.30 mbs (Stratum Ii). Feature 11 was interpreted as an indeterminate feature; also suggested was Feature 11 possibly served as a temporary foundation for hydraulic dredging during the removal of Feature 10.

Feature 12 was a basalt boulder alignment directly above a low coral-filled platform at the base of ST-6. Feature 12 was one course high at the edge of the reef. A number of angular coral blocks were observed near the northern end. Feature 12 appeared to be a low, coral block-filled platform lined with basalt boulders. A small clamshell deposit directly atop Feature 12 was

collected for possible radiocarbon dating. Early photographs of the fishpond show that several structures existed along its edge. Feature 12 was considered to be a post-Contact structure.

More recently, Hammatt et al. (2008) conducted archaeological data recovery work within Kūwili Fishpond as part of the Iwilei Senior Housing project (TMK: (1) 1-5-007:002). Hammatt et al. (2008) excavated three trenches (see Figure 1) and fishpond sediments were documented within two of the three excavations below numerous fill deposits. No features were observed in any of the excavations.

All three previous studies conducted radiocarbon analysis to determine possible date ranges for the fishpond sediments. McGerty et al. (1997) and Hammatt et al. (2008) suggest an early, pre-Contact construction date for the fishpond. McGerty et al. (1997) analyzed 12 samples collected from strata IIIi-IIIg and Stratum IV within ST-1. Radiocarbon results from Stratum IIIi and Stratum IIIe presented older age ranges than those of strata directly beneath. McGerty et al. (1997) interpreted these strata as being redeposited pond sediments used as fill material. Results of Stratum IIIf and IIIg indicated dates of AD 1310 to 1350 and AD 1220 to 1300, respectively. Hammatt et al. (2008) analyzed four samples from Trench 1 and three samples from Trench 2 and reported a somewhat earlier date range, with pond sediments deposited ca. AD 1020 to 1120. Athens and Ward (1997) conducted radiocarbon analysis of two samples collected from their Core 4 Stratum III. The upper sample yielded a range of AD 1461 to 1643, and the lower sample yielded a range of AD 1489 to 1648. Based on available information, Kūwili Fishpond was constructed in the pre-Contact period, possibly as early as ca. AD 1100 or as late as ca. AD 1600.

Athens and Ward (1997) and Hammatt et al. (2008) also conducted pollen analysis. Athens and Ward (1997) analyzed the fishpond sediment (Stratum III) present within Core 4. Results indicated the presence of *Cheno-am* pollen, Cheriodendron, Coprosma, Myrsine, Melicope, sedge pollen, Pteridophyte spores. Polynesian-introduced species included *Aleurites moluccana* (*kukui*), *Cocos nucifera* (*niu*), and *Cordyline fruticosa* (*ti*), and a single pollen grain of *Kanaloa kahoolawensis* was present. Hammatt et al. (2008) analyzed fishpond sediment samples collected from Stratum III in Trench 1 and Trench 2 and Stratum IV pre-fishpond sediments. Both strata III and IV contained *Cyperaceae* (sedge), *Cheno-am*, *Poacea* (grass), and *Pritchardia* (*loulu* palm), with small quantities of *Araliacea*, *Anacardiaceae*, *Myrsine*, *Myrtacea*, and *Euphorbia* pollen. Stratum III contained a greater variety of pollen including four Polynesian-introduced and ten endemic species. Pollen results indicated a gradual shift in the area’s flora from pre-fishpond coastal wetland, to post-fishpond wetland dominated by sedges and grasses, with nearby shrubs and trees (Hammatt et al. 2008).

The current AIS investigation conducted five test excavations within the Kūwili Fishpond boundary (SIHP # -5368) as shown on J.F. Brown’s 1885 map of Kalihi and Kapālama (see Figure 1). Pond sediments associated with Kūwili Fishpond were identified within three test excavations (T-091, T-092, and T-093) and two additional test excavations (T-088 and T-094) were included as being within the previously-identified fishpond footprint based on historic maps.

Test excavations T-088 and T-094 yielded neither fishpond sediments nor natural sediments. Instead, fill deposits extended to the base of excavation in both trenches. A total of seven fill strata (Stratum Ia-Ib, IIa-IIc, and III-IV) were observed within T-088 (Figure 14) while a total of six fill strata (Stratum Ia-If) were observed in T-094 (Figure 25, Table 6). T-088 Stratum Ib contained narrow wooden planks, a railroad spike, rail metal cylinders, and red brick fragments.

These historic materials suggest that the upper fill within T-088 may be associated with the demolition of the OR&L railroad in the late 1940s and early 1950s. Fill sediments from T-094 contained concrete, angular cobbles, glass fragments, and asphalt. Seven machine-made brick fragments also were collected from Stratum Id. The sequence of fill deposits observed in T-088 and T-094 indicate fill deposition within the fishpond footprint continued after the fishpond was infilled in the late nineteenth century, including fills deposited as part of, or subsequent to, the demolition of the OR&L facilities in the late 1940s to early 1950s.

Test excavations T-091, T-092, and T-093 encountered buried pond sediments beneath multiple fill layers (Figure 16 through Figure 23; Table 3 through Table 5). In each of these test excavations, natural sediments were located beneath ten fill strata (Ia-Ij). Within fill Stratum Ij of T-091 and T-092, wooden planks and metal fragments were observed. In contrast, Stratum Ij in T-093 appeared to be redeposited coastal sediment that contained non-cultural shell fragments, charcoal flecking, and gravel. Stratum Ij may have been readily available and utilized as a fill during land reclamation; potentially this consists of harbor dredge sediments noted above in the quote from McGerty et al. (1997:21). Additionally, Stratum Ii of T-093 was a silty clay hydraulic fill similar to the dredge deposit observed overlying pond sediments by Hammatt et al. (2008). The fill layers present within T-091, T-092, and T-093 were sometimes observed to be broken and discontinuous. This suggests that smaller, localized fill events occurred between larger, broadly distributed events and is consistent with the fishpond being filled over the course of at least several years.

Beneath fill strata were clay-rich, very dark to dark greenish gray sediments that contained abundant non-cultural marine and terrestrial snail shells. These sediments were between 0.1 to 0.4 m thick and observed at 1.65 to 1.90 mbs. The depths are within the 1.50 to 2.40 mbs range described by McGerty et al. (1997) and Athens and Ward (1997) as containing in situ pond deposits. During excavation of T-091 and T-092 only a single natural layer was observed (Stratum II). T-093 contained two natural layers, Stratum IIa and Stratum IIb. Stratum IIa contained slightly more organics and may have represented the upper region of settling.

Bulk sediment samples were collected from T-092 and T-093. One bulk sediment sample was collected for T-092 Stratum II at 1.73-1.83 mbs (5 L). The sample contained burned *Naticidae* (1.1 g), charcoal (0.6 g), a burned seed pod fragment (0.4 g), *Ruppia maritime* seeds (1.7 g), wood (3.0 g), and non-cultural water-rounded marine shell (2.4 g). Three bulk sediment samples were collected from T-093. One sample was collected from Stratum IIa at 1.95-2.2 mbs (4 L), and two from Stratum IIb, one each from 2.29 to 2.5 mbs (0.5 L) and from 2.5 to 2.74 mbs (0.5 L). The sample from Stratum IIa contained charcoal (0.3g), wood organics (0.9g), *Ruppia maritima* seeds (0.1g), and non-cultural shell. The Stratum IIb sample from 2.29 to 2.5 mbs contained terrestrial snail shell (35.3 g), charred organics (0.1 g), *Ruppia maritima* seeds (0.3 g), and charred fish vertebrae (0.1g). The Stratum IIb sample from 2.5 to 2.74 mbs contained non-cultural shell, and *Ruppia maritima* seeds (0.4 g). These results indicate organics, non-cultural shells, and terrestrial snail shells are characteristic of the remnant Kūwili Fishpond sediments (SIHP # -5368). Based on these findings, Stratum II in T-092 and Strata II and IIb in T-093 are designated as components of SIHP # -5368.

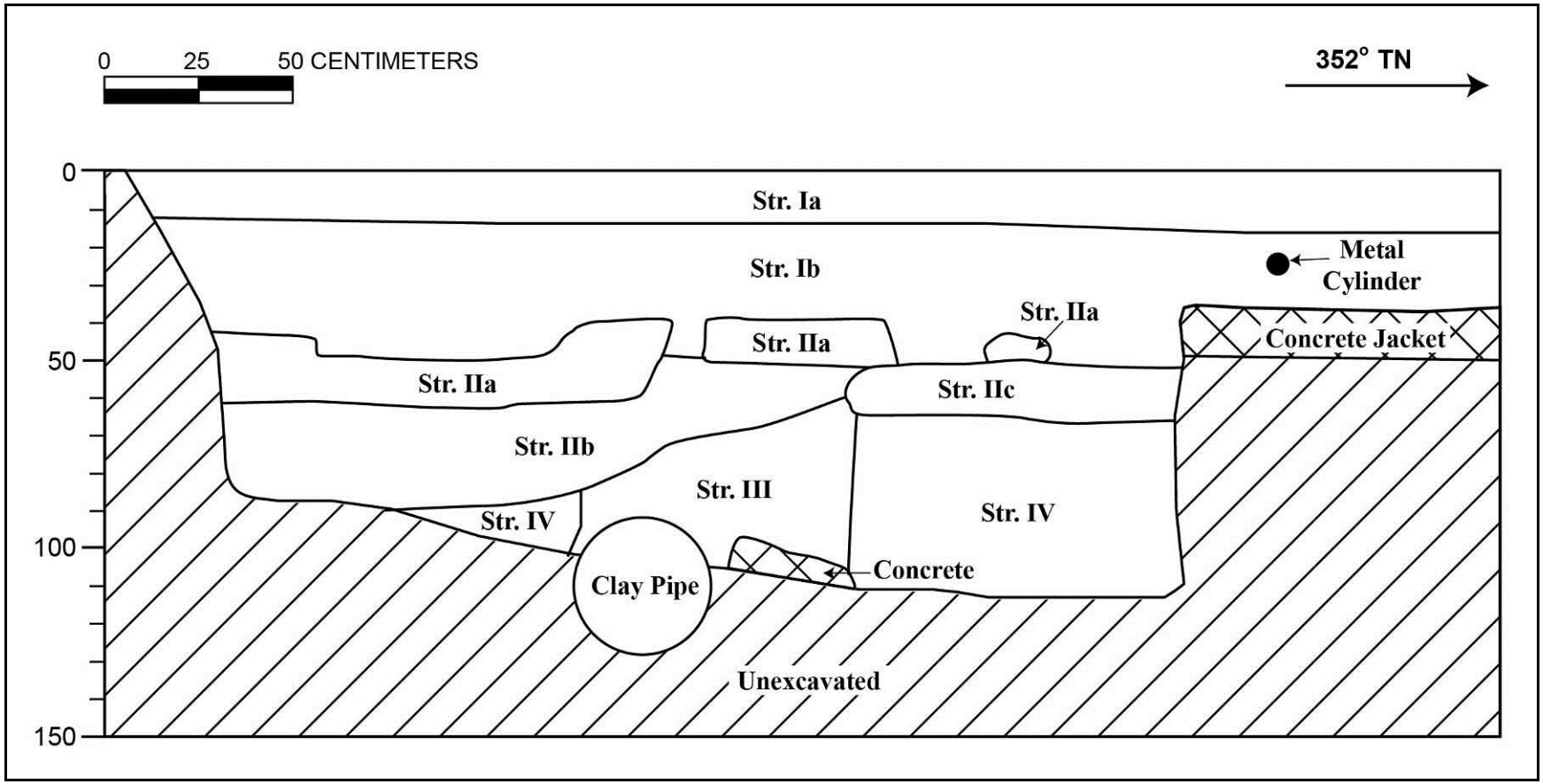


Figure 14. T-088 southwest wall profile

Table 2. T-088 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-11	Concrete; driveway surface
Ib	11-50	Fill; 10 YR 3/4 (dark yellowish brown); very gravelly cobbly sandy loam; weak, fine crumb structure; moist, friable consistency; slightly plastic; terrigenous origin; abrupt, smooth lower boundary; contained narrow wooden planks, railroad spike, rail metal cylinders, and red brick fragment (not collected); flakes of burnt wood
IIa	36-60	Fill; asphalt; buried asphalt surface
IIb	50-87	Fill; 10 YR 8/2 (very pale brown); very gravelly silty sand; structureless, single grain; moist, loose consistency; non-plastic; marine origin; very abrupt, wavy and broken/discontinuous lower boundary; contained 50% crushed coral gravel, possible base course fill for Stratum IIa
IIc	48-62	Fill; 10 YR 4/4 (dark yellowish brown); very gravelly, cobbly loamy sand; moderate, fine crumb structure; moist, very friable consistency; non-plastic; mixed origin; abrupt, smooth/broken, discontinuous lower boundary
III	60-105	Fill; 10 YR 2/1 (black); with few clay mottles of 10 YR 5/4 yellowish brown; sandy loam and clay loam mix; weak, fine crumb structure; moist, friable consistency; slightly plastic; terrigenous IIa origin; lower boundary not visible; churned fill surrounding clay pipe
IV	62-110 (BOE)	Fill; 10 YR 8/2 (very pale brown); extremely stony sand; structureless, single grain; moist, loose consistency; non-plastic; terrigenous origin; lower boundary not visible; basalt boulders

Figure 15. T-091 south wall profile

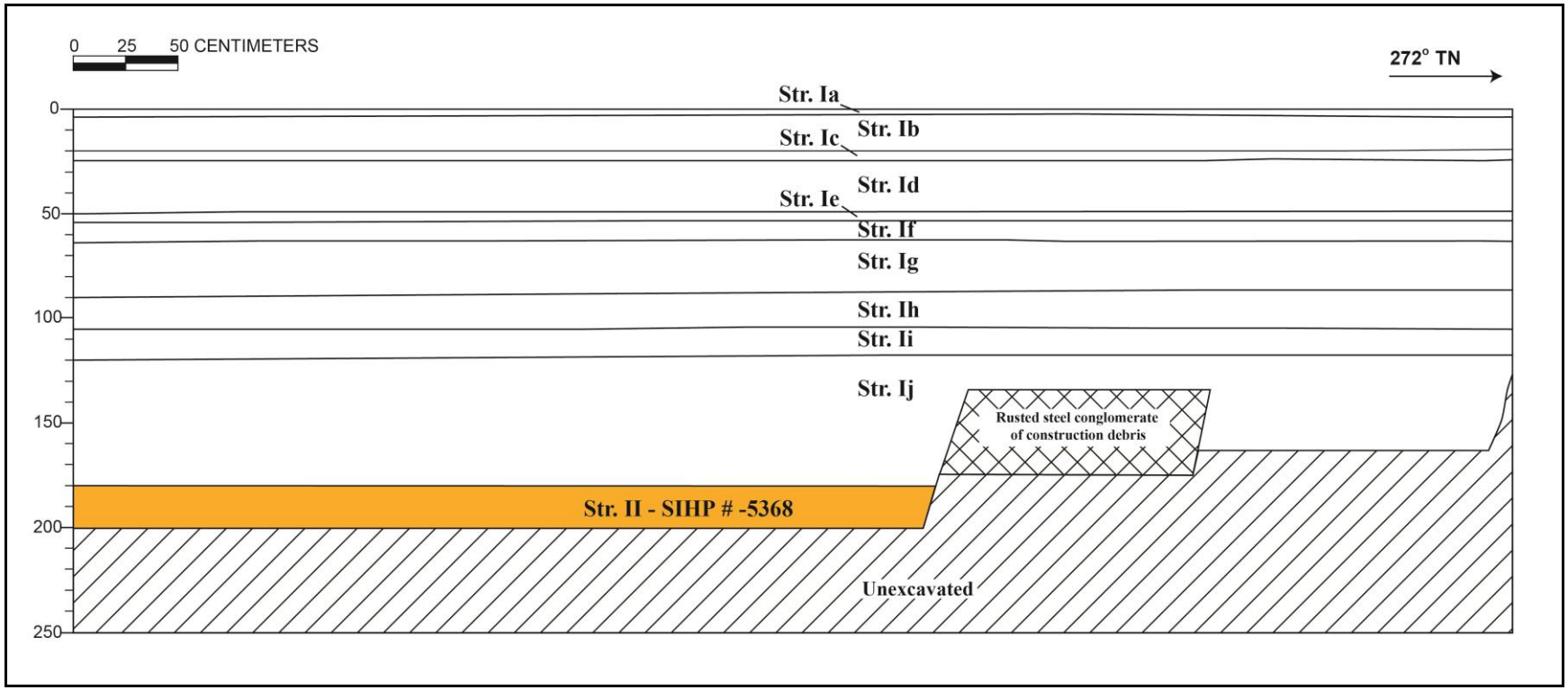


Figure 16. T-091 south wall profile

Table 3. T-091 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-4	Asphalt
Ib	4-21	Fill; 10 YR 3/6 (dark yellowish brown); very gravelly sandy loam; structureless, single grain; moist, loose consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary; gravel base course
Ic	21-25	Fill; buried concrete
Id	25-50	Fill; 10 YR 4/2 (dark grayish brown); sandy clay loam; blocky structure; moist, friable consistency; slightly plastic; mixed origin; abrupt lower boundary; modern fill event with ferrous construction material
Ie	50-55	Fill; asphalt; abrupt lower boundary; old buried asphalt
If	55-65	Fill; 10 YR 8/1 (white); gravelly sand; structureless, single grain; moist, loose consistency; non-plastic; marine origin; abrupt lower boundary; crushed coral fill
Ig	65-90	Fill; 10 YR 2/1 (black); silty sandy loam; weak, fine, crumb structure; moist, loose consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; gravelly fill layer
Ih	90-106	Fill; 10 YR 8/2 (very pale brown); crushed coral; structureless, single grain; moist, loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary
Ii	106-120	Fill; 10 YR 3/2 (very dark grayish brown); very gravelly sandy loam; weak, fine to medium, crumb structure; moist, friable consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; crushed coral cobbles in sandy loam fill
Ij	120-190	Fill; 10 YR 2/1 (black); sandy gravelly cinder; weak, fine to medium, crumb structure; moist, loose consistency; non-plastic; mixed origin; imported fill with ferrous material and wood observed (not collected)
II	190-200 (BOE)	Natural; Gley1 4/N (dark gray); clay loam; structureless, massive; wet, sticky consistency; plastic; mixed origin; pond sediment, fresh water snail shells; Kūwili Fishpond sediments; component of SIHP # -5368

Figure 17. T-092 west wall profile, view to south. Stratum II pond sediments appear as dark sediments along the base of the trench wall and in the trench floor to the left of the photo scale

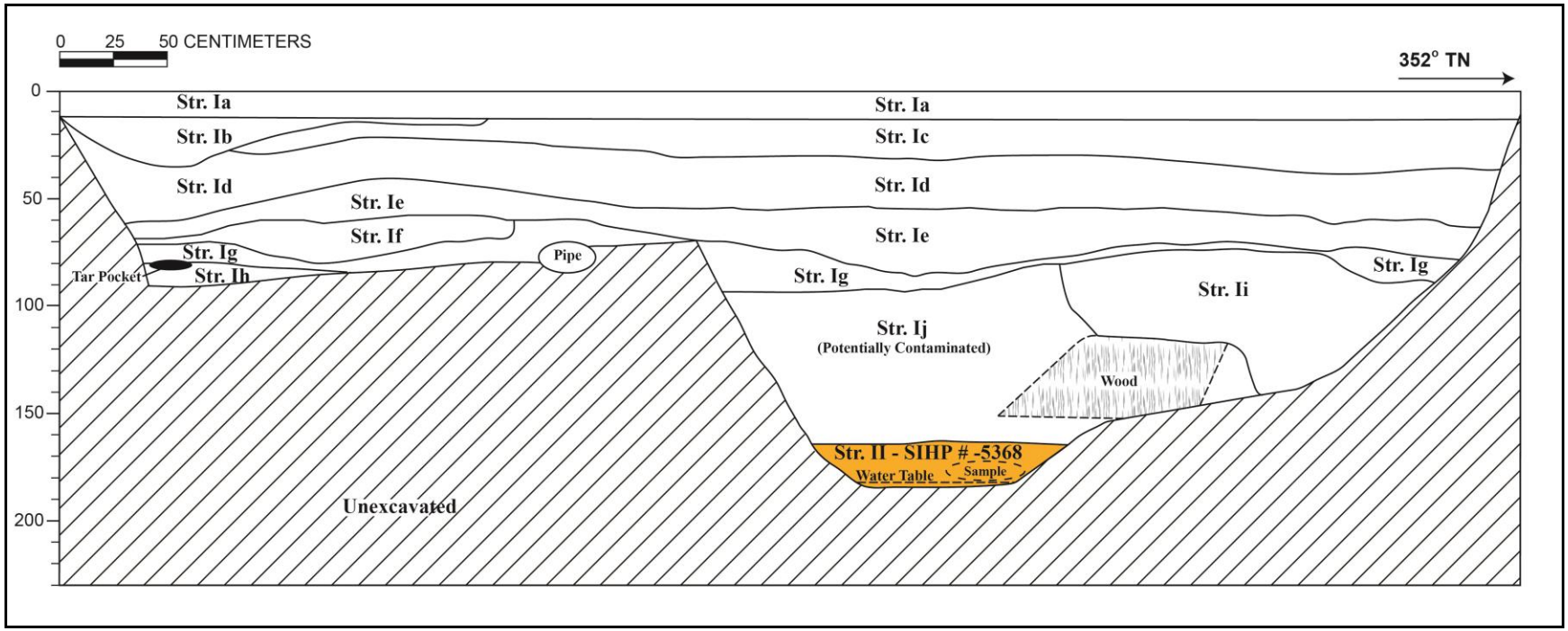


Figure 18. T-092 west wall profile

Table 4. T-092 Stratigraphic Descriptions

Stratum	Depth (cmbs)	Description
Ia	0-13	Asphalt
Ib	13-35	Fill; 10 YR 8/2 (very pale brown); sandy clay loam; structureless, massive; moist, firm consistency; slightly plastic; marine origin; very abrupt, broken/discontinuous lower boundary; likely dredged marine layer—seen only in Diamond Head end of T-092
Ic	13-35	Fill; 7.5 YR 4/4 (brown); gravelly sandy clay; structureless, massive; moist, firm consistency; plastic; terrigenous origin; abrupt, wavy lower boundary; contained coarse coral sand and coral gravel, some dense metal debris was revealed, possibly from fill
Id	35-60	Fill; 10 YR 2/1 (black); asphalt; structureless, massive; moist, extremely firm consistency; non-plastic; terrigenous origin; likely surface for former gas station/train platform or other industrial use
Ie	40-85	Fill; 10 YR 4/2 (dark grayish brown); very gravelly sand; structureless, single grain; dry, loose consistency; non-plastic; abrupt, wavy lower boundary; contained non-diagnostic piece of coiled metal wire (not collected); fill
If	57-80	Fill; 10 YR 8/1 (white); gravel and cobbles (coral); structureless, single grain; moist, loose consistency; non-plastic; marine origin; very abrupt, broken/discontinuous lower boundary; crushed coral seen only in Diamond Head end of T-092—likely associated with Stratum Id asphalt
Ig	60-93	Fill; 2.5 YR 5/3 (light olive brown); extremely gravelly clay; structureless; moist, friable consistency; slightly plastic; abrupt, broken/discontinuous lower boundary; diffusion with If as If ran into Ig on horizontal plane; crushed coral in clay matrix; metal pipe found running approximately west to east, possible fuel line
Ih	80-90	Fill; 10 YR 4/2 (dark grayish brown); sandy loam; structureless, single grain; moist, friable consistency; non-plastic to slightly plastic; terrigenous origin; abrupt, broken/discontinuous lower boundary; seen only in Diamond Head end of T-092.
Ii	70-140	Fill; 10 YR 3/3 (dark brown); sandy loam; structureless, single grain; moist, friable consistency; non-plastic to slightly plastic; terrigenous origin; lower boundary not visible; contained oxidized metal fragments (not collected); contaminated petroleum created diffuse boundary
Ij	79-165	Fill; 10 YR 2/1 (black); clay; structureless, massive; moist, firm consistency; plastic; mixed origin; diffuse, broken/discontinuous lower boundary; contained debris wood planks and metal fragments; potentially contaminated with petroleum product; contained some small basalt gravel
II	165-183 (BOE)	Natural; Gley1 3/10Y (very dark greenish gray); clay; structureless, massive; wet, sticky consistency; plastic; marine origin; lower boundary not visible; marine sediment contained many marine shells; Kūwili Fishpond sediment; component of SIHP # -5368

Figure 19. T-093 northeast wall profile, view to southwest

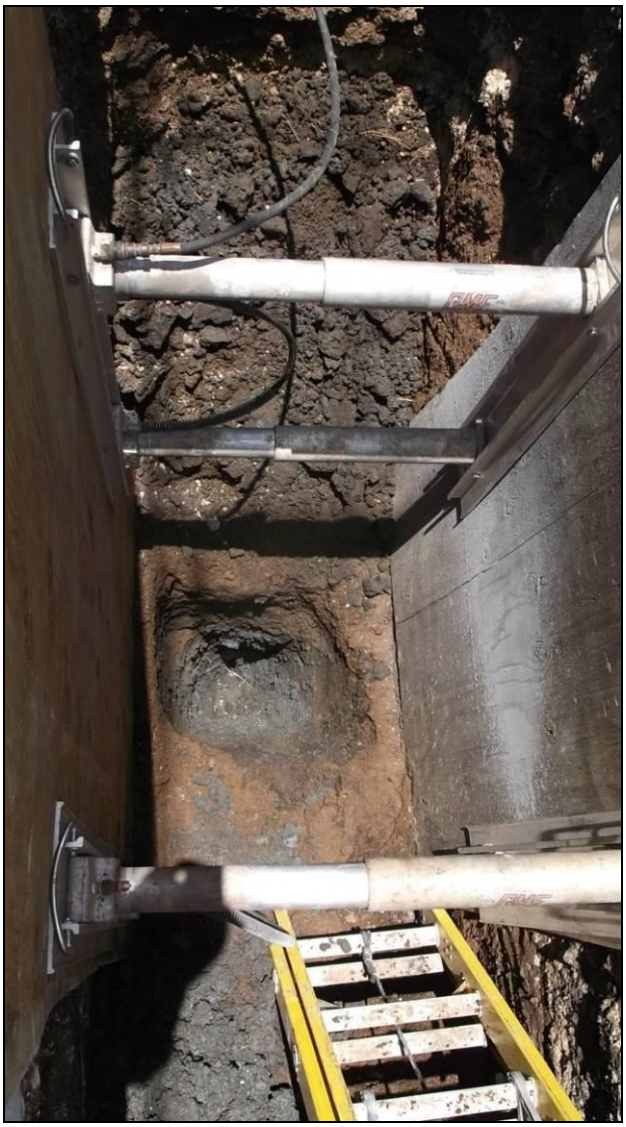


Figure 20. T-093 overhead view of shoring system and excavation into Stratum IIb

Figure 21. Close-up of terrestrial snail shells within T-093 Stratum IIb

Figure 22. Close-up of organics within T-093 Stratum IIa

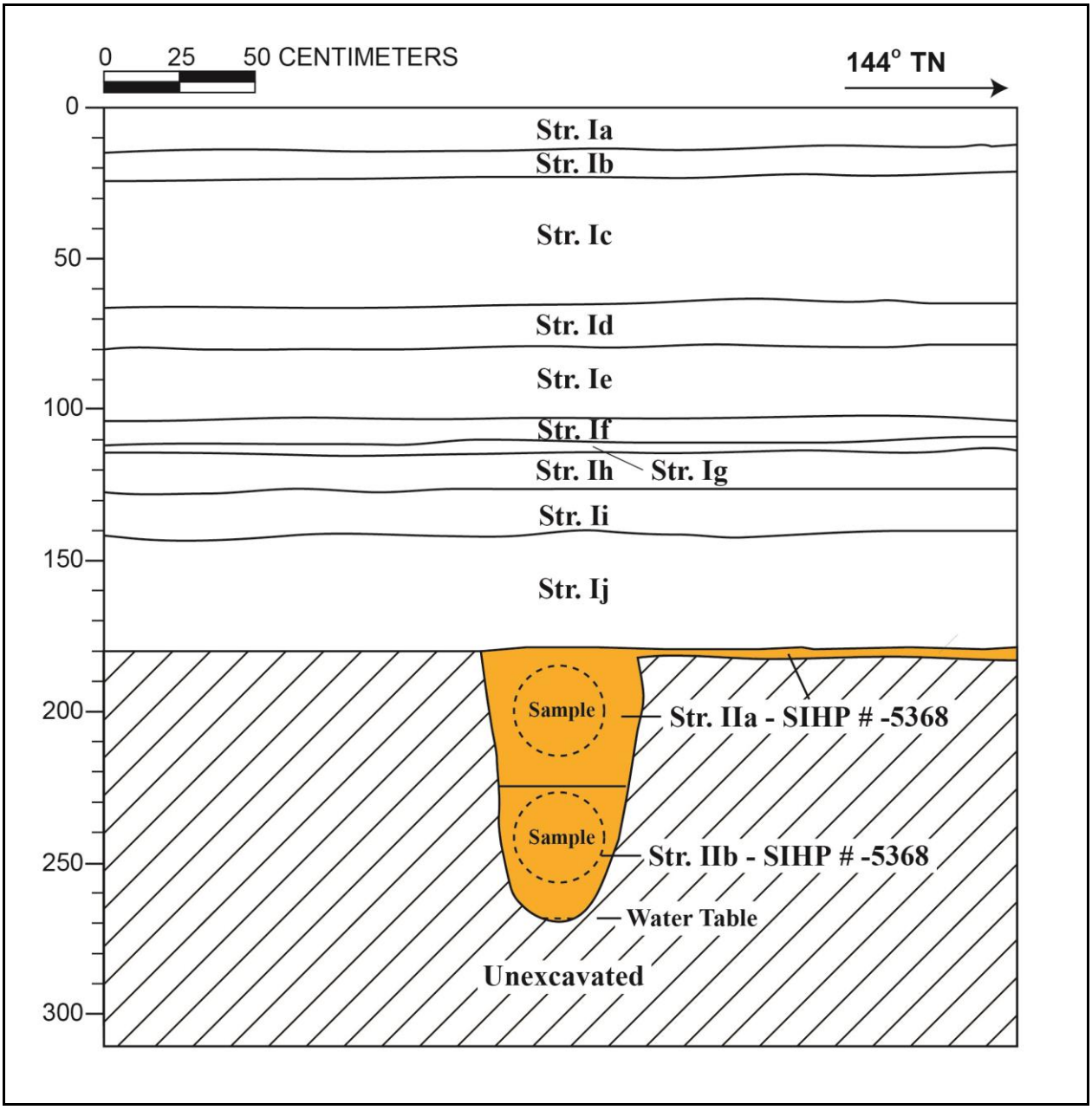


Figure 23. T-093 northeast wall profile

Table 5. T-093, Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-14	Asphalt
Ib	14-23	Fill; 10 YR 6/4 (light yellowish brown); extremely gravelly loamy sand; structureless, single grain; moist, loose consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; contained small to large coral gravels, (1) piece rebar at bottom of layer
Ic	23-66	Fill; 10 YR 3/3 (dark brown); stony sandy loam; structureless, single grain; moist, very friable consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; contained (1) large marble, abundant coral cobbles and boulders
Id	65-80	Fill; 10 YR 8/3 (very pale brown); crushed coral; structureless, single grain; moist, loose consistency; non-plastic; abrupt, smooth lower boundary
Ie	80-106	Fill; 10 YR 3/1 (very dark gray); sandy loam; structureless, single grain; moist, very friable consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; has strong petroleum odor
If	106-114	Fill; 2.5 Y 7/4 (pale yellow); crushed coral; structureless, single grain; moist, loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary
Ig	114-117	Fill; 10 YR 3/4 (dark yellowish brown); silty loam; weak, fine, crumb structure; moist consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary
Ih	117-130	Fill; 10 YR 3/2 (very dark grayish brown); sandy loam; single grain, very fine structure; moist, loose consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; contained common charcoal flecks and chunks, few shell fragments, and glass fragments (not collected)
Ii	130-145	Fill; 2.5 Y 3/1 (very dark gray); silty clay; massive structure; moist consistency; plastic; terrigenous origin; abrupt, smooth lower boundary; dredge fill
Ij	145-182	Fill; 10 YR 3/3 (dark brown); silty sand; structureless, single grain; moist, loose consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; contains abundant charcoal flecks, water-rounded gravel and shells and shell fragments; likely coastal material used as fill
IIa	182-229	Natural; Gley1 3/10Y (very dark greenish gray); silty clay; structureless, massive; moist consistency; plastic; marine origin; lower boundary not visible; extremely homogenous sediment with a few brown organics (see photos); wetland sediment; part of SIHP # -5368 (buried remnants of Kūwili Fishpond)
IIb	229-274 (BOE)	Natural; Gley1 3/N (very dark gray); silty clay; structureless, massive; moist consistency; plastic; marine origin; lower boundary not visible; pond sediment, extremely abundant shells; part of SIHP # -5368 (buried remnants of Kūwili Fishpond)

Figure 24. T-094 southwest wall profile, view to south

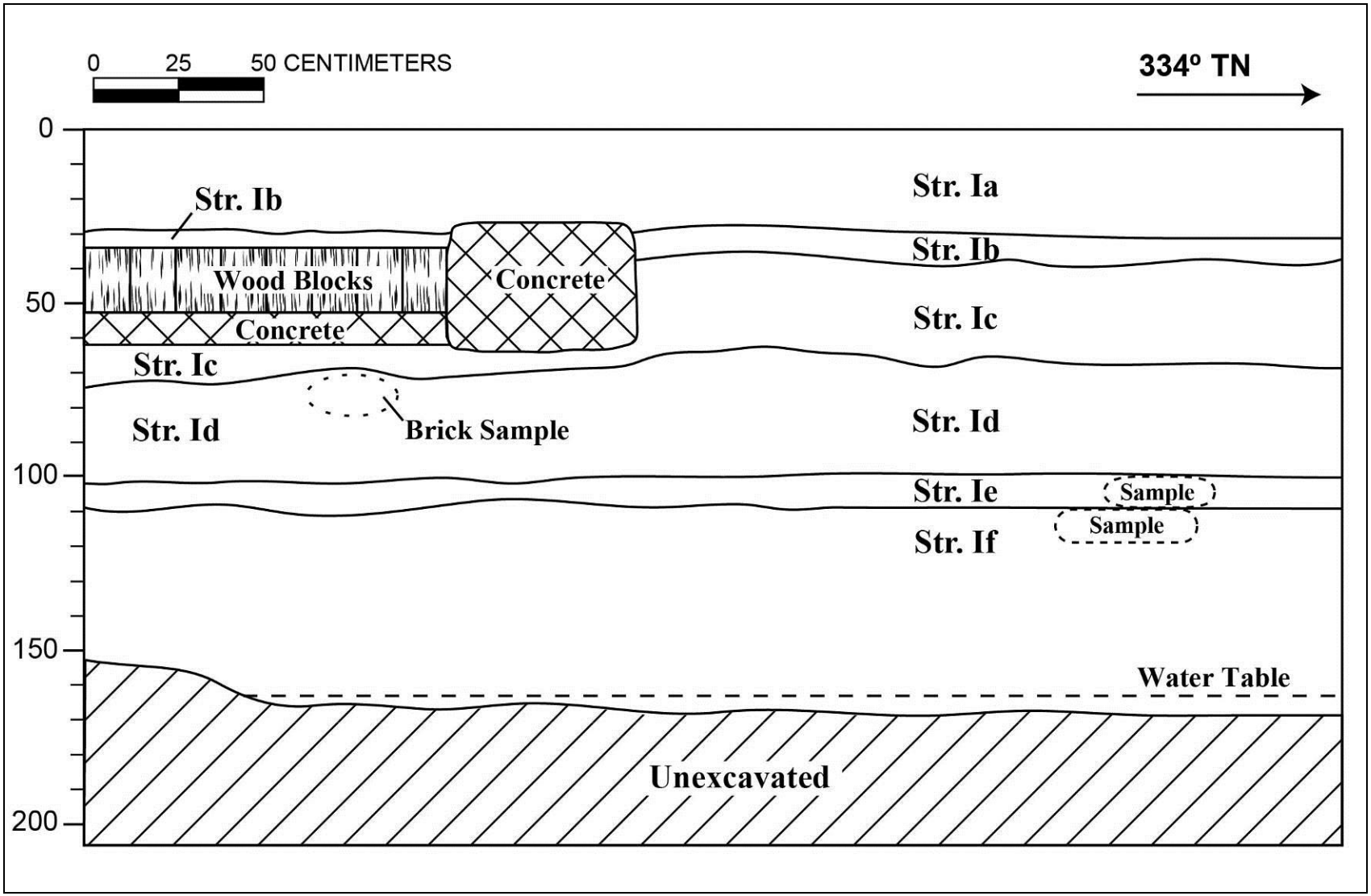


Figure 25. T-094 southwest wall profile

Table 6. T-094 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-30	Fill; 10 YR 6/4 (light yellowish brown); extremely gravelly sand, structureless, single grain; moist, friable consistency; non-plastic; abrupt, smooth lower boundary; crushed coral gravel road surface
Ib	30-37	Fill; asphalt
Ic	37-75	Fill; 10 YR 4/2 (dark grayish brown); very gravelly cobbly sandy loam; weak, fine, crumb structure; moist, friable consistency; slightly plastic; mixed origin; abrupt, smooth lower boundary; very angular basalt cobbles present; concrete and wood blocks observed and not collected
Id	65-100	Fill; 10 YR 7/3 (very pale brown); very gravelly clay loam; fine to medium, blocky structure; moist, friable consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary; brick found at NW wall (collected)
Ie	100-110	Fill; 10 YR 3/2 (very dark grayish brown); silty clay loam; weak, fine, crumb structure; moist, friable consistency; plastic; terrigenous origin; abrupt, smooth lower boundary; contained charcoal deposit and glass fragments (not collected)
If	110-170 (BOE)	Fill; 10 YR 3/3 (dark brown); gravelly sandy loam; fine to medium, blocky structure; moist, friable consistency; slightly plastic; mixed origin; lower boundary not observed; possible water-rounded basalt cobbles, chunks of coral blocks

SIHP # -5368 (Kūwili Fishpond) is a historically-documented fishpond that background research and previous archaeological studies suggest was constructed during pre-Contact times, possibly as early as ca. AD 1100 and most likely by ca. AD 1600, with continued use into the latter part of the nineteenth century. Historic maps and photographs document the presence of the fishpond through the 1890s. Due to health concerns following a cholera outbreak, as well development pressure related to the need for an OR&L terminal in close proximity to Honolulu, Kūwili Fishpond was filled in beginning in the 1880s. McGerty et al. (1997) and Athens and Ward (1997) both identified Kūwili Fishpond sediments during their AIS studies for the proposed Liliha Civic Center Project. Hammatt et al. (2008) also identified fishpond sediments within two of three excavations during data recovery for the Iwilei Senior Housing Project. Radiocarbon and pollen analyses of fishpond samples collected during the studies suggests a pre-Contact construction date for Kūwili Fishpond.

The City Center (Section 4) AIS investigation identified fishpond sediments within three test excavations (T-091, T-092, T-093) while two additional excavations (T-088, T-094) within the known footprint of the pond exposed only fill deposits. Up to ten distinct fill strata were recorded in T-091, T-092, and T-093, and six in T-088 and T-094. Fill strata in each of the five test excavations contained historic debris. The older fill strata date between the late 1880s and 1900 and were part of the infilling of the fishpond that followed the cholera outbreak and preceded the construction of the OR&L terminal. The more recent fill deposits, some containing discarded railroad debris, are associated with circa 1950s deposition related to the demolition of the OR&L infrastructure, circa 1950, present within the infilled fishpond footprint. Beneath the thick fill strata, Kūwili Fishpond deposits consisted of clay-rich, darkly colored sediments that containing abundant non-cultural shell, terrestrial snail shells, charcoal, and organics.

Based on the guidance of National Register Bulletin No. 15, SIHP # 50-80-14-5368 (Kūwili Fishpond) retains its integrity of location, materials, and workmanship. SIHP # -5368 was previously determined eligible to the Hawai‘i and National Registers under significance Criterion D (has yielded, or is likely to yield information important for research on prehistory or history) (McGerty et al. 1997). Based on the results of the current AIS investigation, CSH recommends that this cultural resource maintains integrity to support its historic significance under Criterion D of both the Hawai‘i and National Registers, exclusively for its information potential.

SIHP # 50-80-14-5368 has provided information, and has potential to provide additional information, on the construction, depositional sequence, characteristics, and geographic extent of Kūwili Fishpond. McGerty et al. (1997) and Athens and Ward (1997) documented in situ fishpond sediments between 1.50 mbs to 2.40 mbs. Because of the amount of significant information provided by Athens and Ward (1997) and McGerty et al. (1997), data recovery excavations as a form of mitigation do not appear warranted for the current project. However, the possibility of encountering Kūwili Fishpond sediments during future project-related ground disturbance warrants the implementation of an archaeological monitoring program. Archaeological monitoring will obtain additional data on the depositional sequence and extent of SIHP # -5368 as well as document any potential structural remnants of Kūwili Fishpond. Archaeological monitoring also will involve recordation of stratigraphic profiles and sampling of exposed Kūwili Fishpond sediments for radiocarbon and palynological analyses. This effort will potentially augment the information from previous archaeological research conducted at Kūwili Fishpond and other Hawaiian fishponds, including adjacent Kawa Fishpond (SIHP # 50-80-14-5966).

SIHP # 50-80-14-5820

FORMAL TYPE:	Subsurface cultural deposit, human burials
FUNCTION:	Habitation and burial interment
PREVIOUS DOCUMENTATION:	Wineskin and Hammatt (2000)
AGE:	Pre- and post-Contact
NUMBER OF FEATURES:	42 total; 31 newly identified and 11 previously documented
TYPES OF FEATURES:	12 human burials, 1 *imu* pit, 1 pit containing two dog burials, 1 pit containing a horse burial and disturbed human remains, and 27 indeterminate pits
DISTRIBUTION:	Approximately 0.04 acres within the current project area, 0.08 acres total area
LOCATION:	Halekauwila Street from Keawe Street to east of Ohe Street (West Kaka‘ako Geographic Zone)
TAX MAP KEY:	TMK [1] 2-1-050:067; [1] 2-1-050 (Halekauwila Street ROW por.); [1] 2-1-051 (Halekauwila Street ROW por.); [1] 2-1-031 (Keawe Street ROW por.); [1] 2-1-051:003 and 038
LAND JURISDICTION:	Hawai‘i Community Development Authority and the City and County of Honolulu (within current project area)
TEST EXCAVATIONS:	T-141, T-142, T-145, T-146A, T-150, T-151, and T-151A; T-140, T-143, T-144, T-146, T-147, T-148, T-148A, T-149, and T-152 are included in the SIHP # -5820 interpolated boundary

SIHP # 50-80-14-5820 is a previously-identified subsurface cultural deposit including 42 features in the vicinity of Mother Waldron Park and Halekauwila Street from Keawe Street to east of Ohe Street. This archaeological cultural resource was first reported by Wineskin and Hammatt (2000) as consisting of 11 human burials encountered within and/or near Mother Waldron Park and Halekauwila Street (Figure 1).

Wineskin and Hammatt (2000) conducted archaeological monitoring between 1990 and 1992 by CSH for the Kaka‘ako Improvement District 3 (I3) project which included infrastructure improvements to utility and drainage systems along Mother Waldron Park and Halekauwila Street. Of the 11 burials designated by Wineskin and Hammatt (2000) as part of SIHP # -5820, five were located along Halekauwila Street, two were within Keawe Street, and four burials were within Mother Waldron Park. All 11 burials were recovered and reinterred within Mother Waldron Park. The project also included construction of the Pohulani Elderly Rental Housing facility along Queen Street; however, the archaeological findings from that location are not a component of SIHP # -5820.

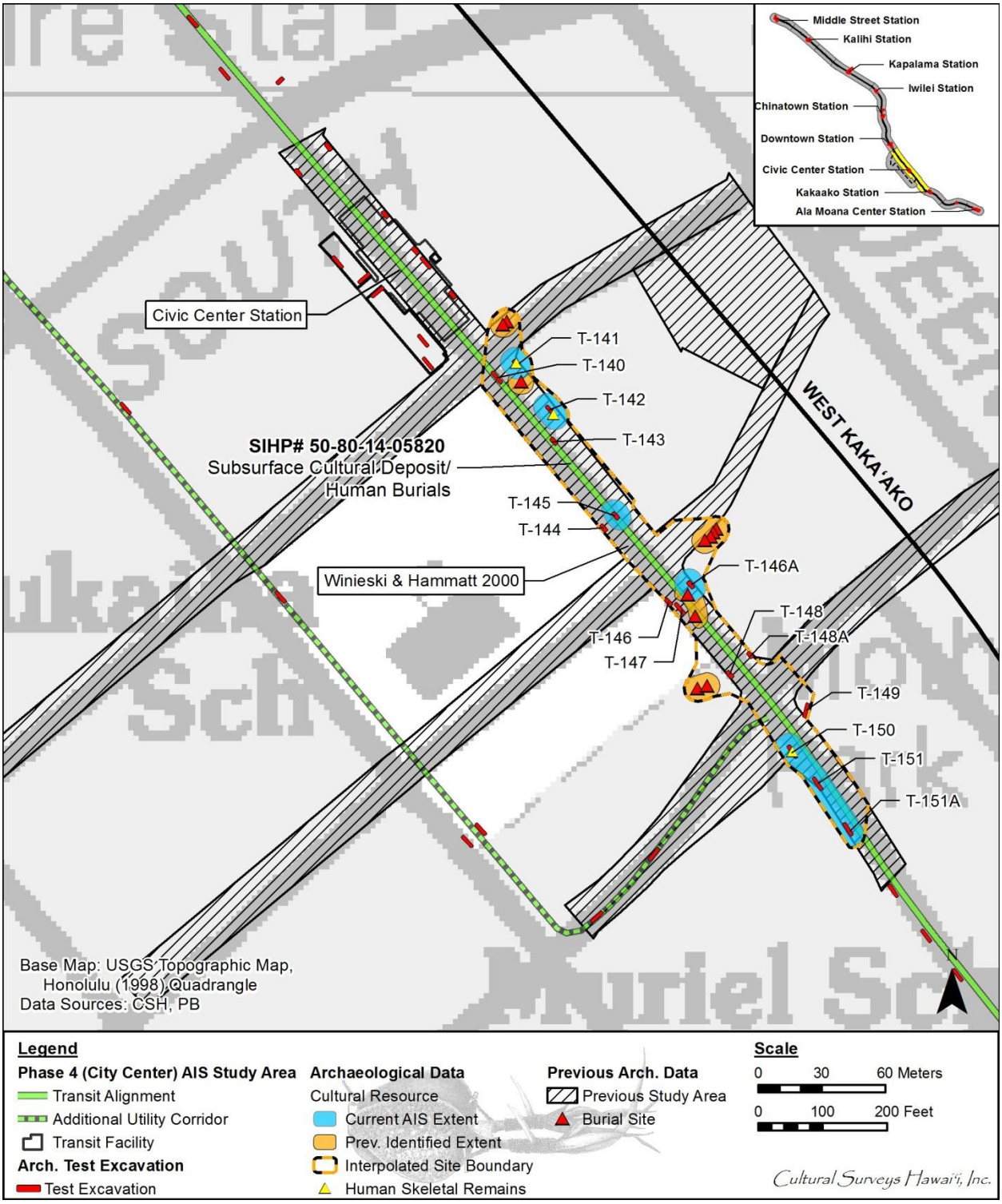


Figure 1. Location of SIHP # 50-80-14-5820 in the Kaka‘ako West Geographic Zone (Base Map: 1998 USGS Topographic Map of Honolulu Quadrangle)

According to Wineskin and Hammatt (2000), the general stratigraphic sequence recorded at the burial sites consisted of beach sand deposits overlain by a discontinuous buried A horizon and/or fill layers. Archaeological monitoring of the project mostly involved on-call monitoring or response to an inadvertent discovery. Therefore, the extent and distribution of the cultural A horizon across the project area was not recorded, and the A horizon initially was not included as a component of SIHP # -5820.

The buried A horizon documented by Wineskin and Hammatt (2000) ranged from a very dark grayish brown to dark brown silty sand to sandy clay. It was identified at depths from 0.4 mbs to 1.25 mbs. At least eight of the 11 human burials encountered during the project were located within the A horizon (Table 1). In most cases, the burial pits intruded into the underlying sterile beach sand.

Of the 11 burials identified by Wineskin and Hammatt (2000), eight had identifiable burial pits, seven were either intact or partially intact, and six were in a fully flexed position characteristic of traditional Hawaiian burial practices (see Table 1). Mother Waldron Park Burial 4 was the deepest of the confirmed flexed finds. It was uncovered between 1.45 mbs and 1.50 mbs in gleyed sandy clay directly at the water table. The damp environment surrounding this burial preserved a sennit cord wrapped around the remains. It was probably a remnant of the cordage used to bind the body into a flexed position (Wineskin and Hammatt 2000).

The remaining flexed burials originated in the A horizon and extended into the underlying sterile layer of beach sand. Wineskin and Hammatt (2000) documented the depths of the burials as ranging from 1.15 mbs to 1.40 mbs, except for one burial encountered at 0.60 mbs.

Wineskin and Hammatt (2000) recorded osteological information from Mother Waldron Park Burial 1, recovered from a depth of 1.25 mbs to 1.35 mbs. The remains were flexed in a burial pit with the arms tight against the upper torso, the hands near the shoulders, and the skull oriented to the north. Osteological analyses suggested that the burial was an adult female of Polynesian ancestry between approximately 40 to 45 years of age. The cranium exhibited artificial deformation known to have been practiced in Hawai‘i.

A whole pig (*Sus scrofa*) was found buried at the base of the trench directly adjacent to the skull of Mother Waldron Park Burial 1. The pig burial was within a well-defined pit extending from the cultural layer and intruding into the white beach sand layer. Additionally, a small pit approximately 0.50 m east of the human and pig burials contained the charred partial remains of another pig (Figure 2). This latter pit intruded into the beach sand layer from the base of the overlying cultural layer. The pig bones were bundled in the base of the pit at a depth of 1.70 mbs.

Keawe Street Burial 2 was also of particular note. It was discovered at depth of 0.60 mbs to 0.70 mbs, making it the shallowest of the confirmed fully-flexed burials. The 0.85-m oval pit extended from the A horizon into sterile beach sand and contained the in situ remains of a juvenile female. The remains were lying on their left side with the skull toward the north, and the arms were flexed with the hands in front of the face. Cowrie and tellina species shells were found in association with the burial, near the elbows.

The only confirmed extended burial was Halekauwila Street and Coral Street Burial 3. The remains were located in a disturbed pit at the base of the A horizon, at a depth of 1.2 mbs to 1.3 mbs. The articulated portion of the burial was in an extended position, with the fragmented

Table 1. Detail of 11 Burials Documented as SIHP # 50-80-14-5820 by Wineskin and Hammatt (2000)

Burial #	Condition	Position	Head Direction	Depth (cmbs)	Stratum	Notes
Mother Waldron Park Burial 1	Intact pit burial	Flexed, supine	North	125-135	Sand A horizon	Female, Polynesian descent, aged 40 to 45 years; artificial cranial deformation. Associated with a whole pig burial in an adjacent pit, and charred partial remains of a second pig
Mother Waldron Park Burial 2	Disturbed/ fragmented	-	-	-	-	Right ulna and radius, and hand fragments. No in situ location identified.
Mother Waldron Park Burial 3	Intact pit burial	Flexed, right	Southeast	110-115	Sand A horizon	No osteological analysis provided
Mother Waldron Park Burial 4	Intact pit burial	Flexed, right	East	145-150	Gleyed sandy clay	Recovered a sennit cord used to bind the remains in a flexed position; preservation due to location at the water table
Keawe St. Burial 1	Disturbed/ fragmented	-	-	-	-	Skull and long bones recovered from backdirt. No in situ location identified.
Keawe St. Burial 2	Intact pit burial	Flexed, left	North	60-70	Beach sand	Juvenile female with hands positioned in front of face, charcoal near the hands, associated cowrie and tellina shells
Halekauwila St. & Coral St. Burial 1	Disturbed/ fragmented	-	-	140	Silty sand A horizon	Heavy disturbance from project-related excavation
Halekauwila St. & Coral St. Burial 2	Disturbed pit burial	-	North	140-160	Silty sand A horizon	In situ portions included an ulna and radius, and a torso and scapulae. Disturbance from project-related excavation.
Halekauwila St. & Coral St. Burial 3	Disturbed pit burial	Extended, supine	Southeast	120-130	Silty sand A horizon	In situ portions included right ulna and radius, pelvis, vertebrae, and ribs. Disturbance from project-related excavation.
Halekauwila St. & Coral St. Burial 4	Intact pit burial	Flexed, right	East	130-140	Silty sand A horizon	Complete in situ except for the skull
Halekauwila St. & Keawe St. Burial 1	Disturbed pit burial	Flexed	South	80-115	Silty sand A horizon	In situ portion included femur, patella, tibia, fibula and mandible fragment. Disturbance from project-related excavation.

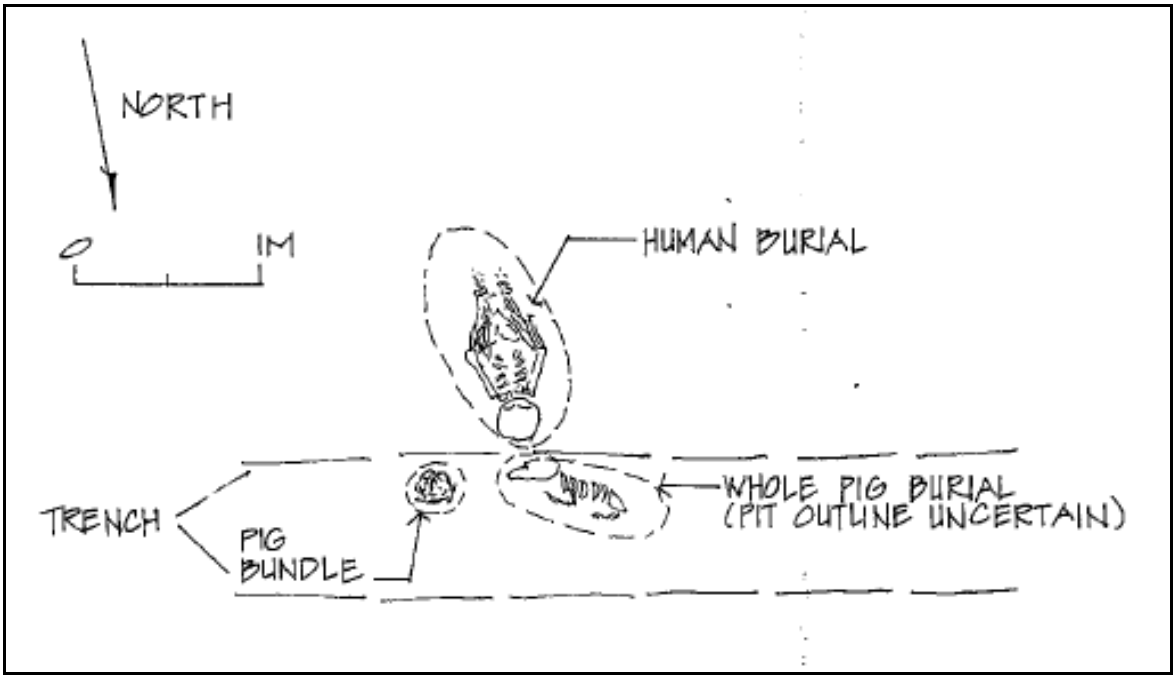


Figure 2. Wineskin and Hammatt (2000:26) plan view of Mother Waldron Park Burial 1

skull oriented toward the southeast. The in situ portion of the burial consisted of the articulated right ulna and radius, pelvis, vertebrae, and ribs. Disturbance was due to project-related excavations.

In 2012, Scientific Consulting Services, Inc. (SCS) recovered a human burial at the intersection of Halekauwila Street and Cooke Street, across from Mother Waldron Park (Dagher and Spear 2013). The burial location is approximately 5 m east of the City Center Section 4 AIS T-149, and 15 m northeast of T-150. The cultural resource was designated as SIHP # 50-80-14-7260. The in situ remains had been displaced by construction activity, and no burial pit was identified. Based on the sand context of the burial and the lack of historic materials, it was identified as a pre-Contact burial. Traditional Hawaiian artifacts associated with the burial consisted of five fragments of volcanic glass (1 core, 1 flake, and 3 fragments of debitage) and possible midden material (e.g., pig, fish, marine invertebrates) (Dagher and Spear 2013:15). However, historic artifacts were collected from the backfill material and included 1 clay pipe stem fragment, 1 ferrous square nail, 5 ceramic fragments, and 1 brass military button. Preliminary analysis of the skeletal elements indicated a single individual of Polynesian ancestry between 16 to 19 years of age (Dagher and Spear 2013:17).

During the City Center (Section 4) AIS, two cultural layers were identified as components of SIHP # -5820. The lower cultural layer is an in situ culturally-enriched A horizon identified as Stratum II in T-141, T-142, T-145, T-146A, T-150, and T-151. It was capped by multiple fill layers consisting of either locally-procured material or imported sediments, subsequently capped by the modern Halekauwila Street asphalt surface and underlying base course. The upper cultural layer (Stratum Id) was identified in T-151 and T-151A. Stratum Id consisted of redeposited culturally-enriched fill, and was likely a reworked former A horizon. It was separated from the lower cultural layer (Stratum II) by an approximately 20 to 50 cm thick fill deposit (Stratum Ie). The upper cultural layer was also capped by multiple fill layers consisting of either locally-procured material or imported sediments.

A general sequence for the stratigraphy within the interpolated boundaries of SIHP # -5820 indicates the lower A horizon (Stratum II) is overlain by a series of historic and modern fills and is underlain by Jaucas sand. This sequence was documented in T-141, T-142, T-145, T-146A, T-150, and T-151. A generalized profile of this sequence is shown in Figure 3 based on data from T-146A. The coral reef was exposed below the Jaucas sand in T-141 and, although not reached, is presumed to be present within the other test excavations dug within the interpolated boundaries of SIHP # -5820. In T-141, T-142, and T-151, marine deposits were identified below the Jaucas sand to the base excavation. These marine deposits are described as silty sand (T-141), sand (T-142), and sand with clay mottles (T-151).

Due to historic/modern disturbances and/or excavation limitations (e.g., concrete jackets, water table), these culturally-enriched strata (Stratum II and Id) were not exposed in another nine test excavations (T-140, T-143, T-144, T-146, T-147, T-148, T-148A, T-149, and T-152) dug within the interpolated boundaries of SIHP # -5820. However, available stratigraphic data suggest the A horizon likely was previously present in each of these nine test excavations.

Pit features are associated with both the lower cultural layer (II) and the upper cultural layer (Id in T-151 and T-151A only). The features associated with the lower cultural layer are as follows: Features 2 and 4 in T-141, Features 5-8 in T-142, Features 9 and 10 in T-145, Features

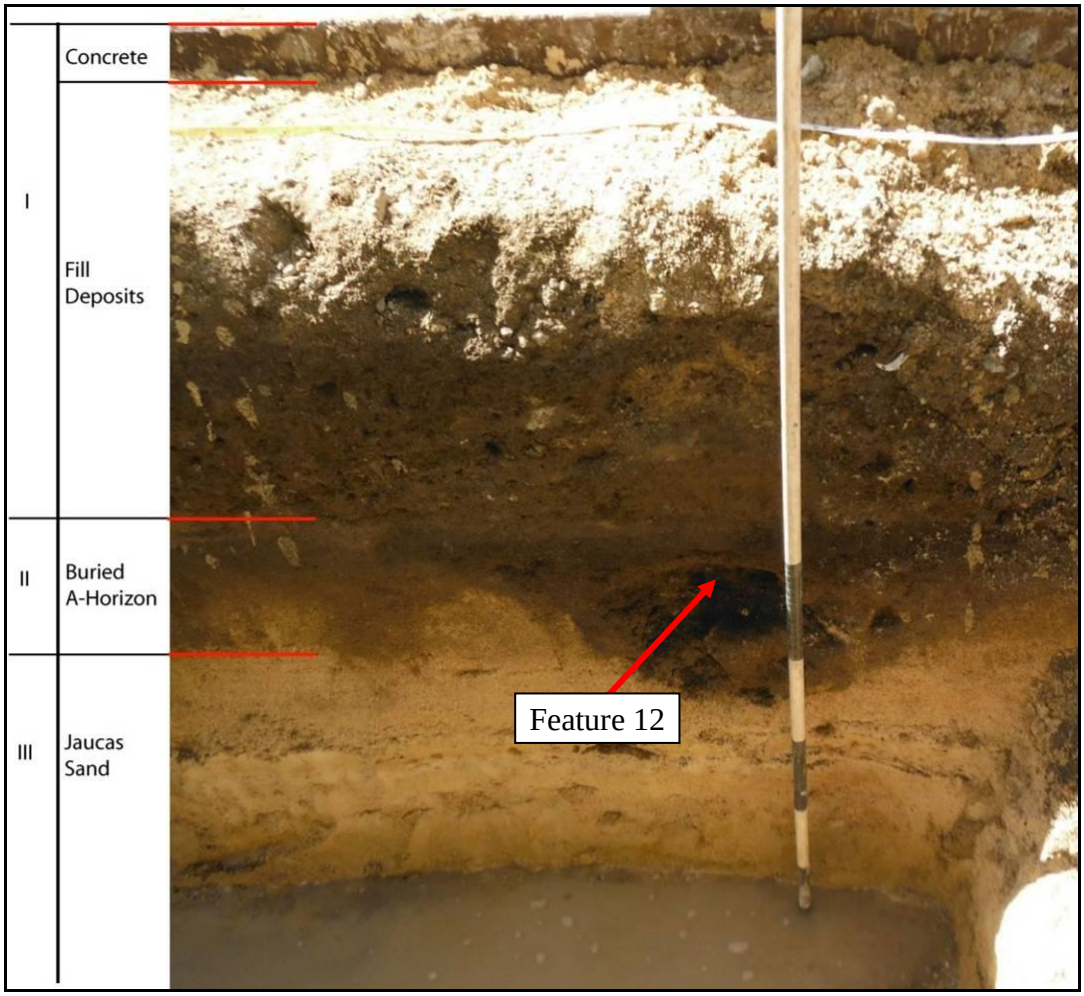


Figure 3. T-146A southwest wall profile representing the general depositional sequence observed in the vicinity, also shown is SIHP # -5820 Feature 12, view to southwest

11-17 in T-146A, Features 18-20 in T-150, and Feature 25 in T-151. The features associated with the localized upper cultural layer (Stratum Id) consist of SIHP # -5820 Features 21-24 in T-151 and Features 26-29 in T-151A.

Four additional pit features (Features 1, 3, 30, and 31) not associated with either the lower or upper cultural layers were identified within SIHP # -5820. Feature 1 is a pit in T-141 that was truncated by sandy loam fill (Stratum Ie) and that is intrusive into the buried A horizon (Stratum II) and the underlying natural Jaucas sand (Stratum III). Feature 3 is a second pit in T-141 that was truncated by sandy loam fill (Stratum Ie) and that is intrusive into the buried A horizon (Stratum II), the underlying natural Jaucas sand (Stratum III), and the lagoonal sediment (Stratum IV). Feature 30 is an in situ human burial exposed in the Jaucas sand (Stratum III) below the lower cultural layer in T-142. Feature 31 is a large pit intrusive through two fill strata (IIe), the lower cultural layer (Stratum II), the underlying Jaucas sand (Stratum III) and natural marine/lagoonal sediments (Stratum IV), terminating just above the coral shelf.

The 31 pit features identified as components of the SIHP # -5820 consist of 1 horse burial pit with disarticulated and scattered human remains (Feature 1), 26 indeterminate pits (Features 2-8, 10-22, 25-29, and 31), 1 *imu* (Feature 9), 1 possible postmold (Feature 23), two infant dog burials (Feature 24), and 1 traditional Hawaiian human burial (Feature 30). These features are summarized in Table 2 and briefly described below.

SIHP # -5820 Feature 1 was identified within T-141 as a pit extending from the lower boundary of Stratum Ie at 0.55 mbs and terminating within Stratum III at 1.15 mbs (Figure 4 and Table 3). The pit was truncated by overlying fill layers and was intrusive into both the buried A horizon (Stratum II) and underlying natural Jaucas sand (Stratum III). The upper portion (0.55-0.77 mbs) contained isolated and disarticulated human skeletal elements (Figure 5). Human skeletal elements were also found within SIHP # -5820 Feature 31 (an adjacent pit feature of mixed fill), and along the upper boundary of Stratum III. The presence of historic artifacts within both SIHP # -5820 Feature 1 and Feature 31 indicates the features post-date the A horizon and Stratum III.

Terrestrial faunal remains individually collected from SIHP # -5820 Feature 1 consisted of a pig (*Sus scrofa*) molar, dog (*Canis lupus familiaris*) bones, and bird (Aves) bones. A basalt stone sinker (Acc. # 141-H-1) was found at 0.70 mbs immediately adjacent to the pit outline visible at the upper limit of Stratum III (Jaucas sand) (Figure 6). Beneath the human skeletal remains within the pit, a complete, in situ horse (*Equus ferus caballus*) burial was encountered between 0.77 mbs and 1.15 mbs (Figure 7). All of the sediment within pit was screened in order to complete the recovery of human skeletal remains. A 11-liter bulk sample of sediment within the pit was collected from 0.83-1.15 mbs. The screened bulk sediment sample yielded charcoal (0.1 g), possible marine shell midden (20.6 g), naturally-occurring marine shell (9.4 g), and one medium mammal bone fragment (0.8 g). The possible marine shell midden included *Tellina palatam* (12.1 g), *Brachidontes crebristriatus* (3.2 g), Isognomidae (1.8 g), *Nerita picea* (1.8 g), crustacean (1.5 g), and Echinoidea (0.2 g).

The human skeletal remains identified within SIHP # -5820 Feature 1 represented a minimum number of three individuals. Skeletal elements noted as either juvenile or adult included a second cervical vertebra, a thoracic vertebra, several unspecified vertebrae, several rib fragments, a manubrium, a right third metacarpal, two left second metacarpals, a proximal hand phalanx, an

Table 2. Archaeological Features of SIHP # -5820 Identified during the City Center (Section 4) AIS

Feature	Test Excavation	Depth (cmbs)	Radiocarbon Age (C14)	Type/Function	Contents
1	T-141	55-115	-	Pit/Horse burial/ Disarticulated human skeletal remains	In situ horse burial, previously disturbed and scattered human skeletal remains (incomplete remains of at least 1 infant, 1 adult, and a possible juvenile or adult), faunal remains (pig, dog, bird, and medium-sized mammal), charcoal, shell midden, and no naturally-occurring marine shell
2	T-141	71-89	-	Pit/Indeterminate	Marine shell and a pig bone fragment
3	T-141	63-150	-	Pit/Indeterminate	Ceramic fragments and rusted metal, possible midden
4	T-141	75-95	-	Pit/Indeterminate	Charcoal (*kukui and unidentified monocot*)
5	T-142	44-75	-	Pit/Indeterminate	Basalt game stone; a fire-cracked, water-worn basalt cobble, several flakes from fire-cracked rock, two ceramic fragments and rusted metal pieces, charcoal, naturally-occurring shell, midden, and faunal remains (cow, medium mammal, and fish).
6	T-142	56-75	-	Pit/Indeterminate	A traditional Hawaiian shell fishhook and historic artifacts including a possible ceramic fragment, a clear glass fragment, and a piece of rusted metal. Charcoal, shell midden, naturally-occurring marine shell, water-worn rocks, faunal remains (cow, medium mammal, fish, and rat), and human skeletal remains (two teeth and cancellous bone) also present.
7	T-142	50-90	-	Pit/Indeterminate	Charcoal, shell midden, naturally-occurring marine shell, a fragment of vesicular basalt, faunal remains (bird, fish, cow, medium mammal, and pig), earthenware ceramic, metal, and glass fragments
8	T-142	55-70	AD 1610-1670	Pit/Indeterminate	Charcoal (coconut, *kukui*, and *kōpiko*), shell midden, naturally-occurring marine shell, and faunal remains (fish, pig, medium and small mammal)

Feature	Test Excavation	Depth (cmbs)	Radiocarbon Age (C14)	Type/Function	Contents
9	T-145	74-92	AD 1480-1650 (95.4%)	*Imu* pit	Charcoal (*‘ōhi‘a lehua, ‘ilima*, *lama*, and an unidentified monocot), thermally-altered basalt stones, shell midden, naturally-occurring marine shell, and bottle glass fragments
10	T-145	70-110	-	Pit/Indeterminate	Charcoal (*kukui*, conifer, and monocot), shell midden, naturally-occurring marine and faunal remains of a medium-sized mammal
11	T-146A	67-76	-	Pit/Indeterminate	Charcoal, shell midden, naturally-occurring marine shell, and burned fish bone
12	T-146A	75-95	AD 1630-1690 (51.3%)	Pit/Indeterminate	Charcoal (*kukui*, *hau*, *‘akoko*, *niu*, and *‘a‘ali‘i*), shell midden, naturally-occurring marine shell, volcanic glass, basalt, and vesicular fire-cracked rock
13	T-146A	83-97	AD 1630-1690 (51.3%)	Pit/Indeterminate	Charcoal (*kukui*, *hau*, *kolomona*, and *‘ōhi‘a lehua*), shell midden, fire-cracked rock, and faunal remains (fish and medium-sized mammal)
14	T-146A	84-95	AD 1490-1670 (95.4%)	Pit/Indeterminate	Charcoal (*niu* and *‘ōhi‘a lehua*), shell midden, naturally-occurring marine shell, burned wood, volcanic glass, fire-cracked rock and fish bones
15	T-146A	84-92	AD 1720-1820 (53.5%)	Pit/Indeterminate	Charcoal (*kukui* and *pilo*), shell midden, naturally-occurring marine shell, basalt fragments, and faunal remains (pig, dog, fish, medium mammal)
16	T-146A	93-100	-	Pit/Indeterminate	Shell midden, naturally-occurring shell, and fish bones
17	T-146A	121-135	-	Pit/Indeterminate	SIHP # -5820 Feature 17 was subsequently interpreted as natural. As such no sediment samples were collected for analysis.-
18	T-150	75-105	-	Pit/Indeterminate	Worked human bone (proximal tibia shaft), basalt tool fragment, fire-cracked rock, shell midden, naturally-occurring marine shell, and fish remains.

Feature	Test Excavation	Depth (cmbs)	Radiocarbon Age (C14)	Type/Function	Contents
19	T-150	53-95	AD 1810-1920 (67.1%)	Pit/Indeterminate	Charcoal (*kukui*, *kolomana*, *‘ōhi‘a lehua*, *‘ilima*, and *‘āheahea* or *‘āweoweo*), shell midden, naturally-occurring shell, and fish remains
20	T-150	90-130	AD 1630-1690 (51.3%)	Pit/Indeterminate	Charcoal (*kukui*, monocot, and one unidentified species), shell midden, naturally-occurring marine shell, a small fragment of volcanic glass debitage, and fish bones
21	T-151	48-85	-	Pit/Indeterminate	Shell midden and fire-cracked rock
22	T-151	60-90	-	Pit/Indeterminate	Shell midden, cement fragments, 2 fragments of volcanic glass debitage, naturally-occurring marine shell, and medium mammal bone
23	T-151	60-99	-	Pit/Possible Postmold	Shell midden, naturally-occurring marine shell, a red brick fragment (dated 1918-1978), possible coal fragments, glass fragments, fish and medium mammal bones, vesicular basalt fragments, and fire-cracked basalt
24	T-151	70-83	-	Dog burials	2 *in situ* infant dog burials
25	T-151	90-119	AD 1480-1660 (95.4%)	Pit/Indeterminate	Charcoal (*kukui*, *ko‘oko‘olau,* and one unidentified species), shell midden, and rat bones
26	T-151A	74-80	-	Pit/Indeterminate	Basalt, a fragment of volcanic glass debitage, shell midden, naturally-occurring marine shell, and fish bones
27	T-151A	65-72	-	Pit/Indeterminate	Charcoal, shell midden, naturally-occurring marine shell, white and pink glass fragments, and fish bones
28	T-151A	60-80	-	Pit/Indeterminate	Charcoal, shell midden, naturally-occurring marine shell, ceramic and glass fragments, medium mammal bone, and possible fire-cracked rock
29	T-151A	47-58	-	Pit/Indeterminate	Naturally-occurring shell and fish bone

Feature	Test Excavation	Depth (cmbs)	Radiocarbon Age (C14)	Type/Function	Contents
30	T-142	100	-	Human burial	*In situ* human burial. Adult or adolescent, traditional Hawaiian burial in a flexed or partially flexed position. Located in the natural Jaucas sand underlying the A horizon with a faint burial pit outline. No grave goods were observed.
31	T-141	25-135	-	Pit/Indeterminate	Scattered, disarticulated human skeletal remains, faunal remains (pig and chicken)

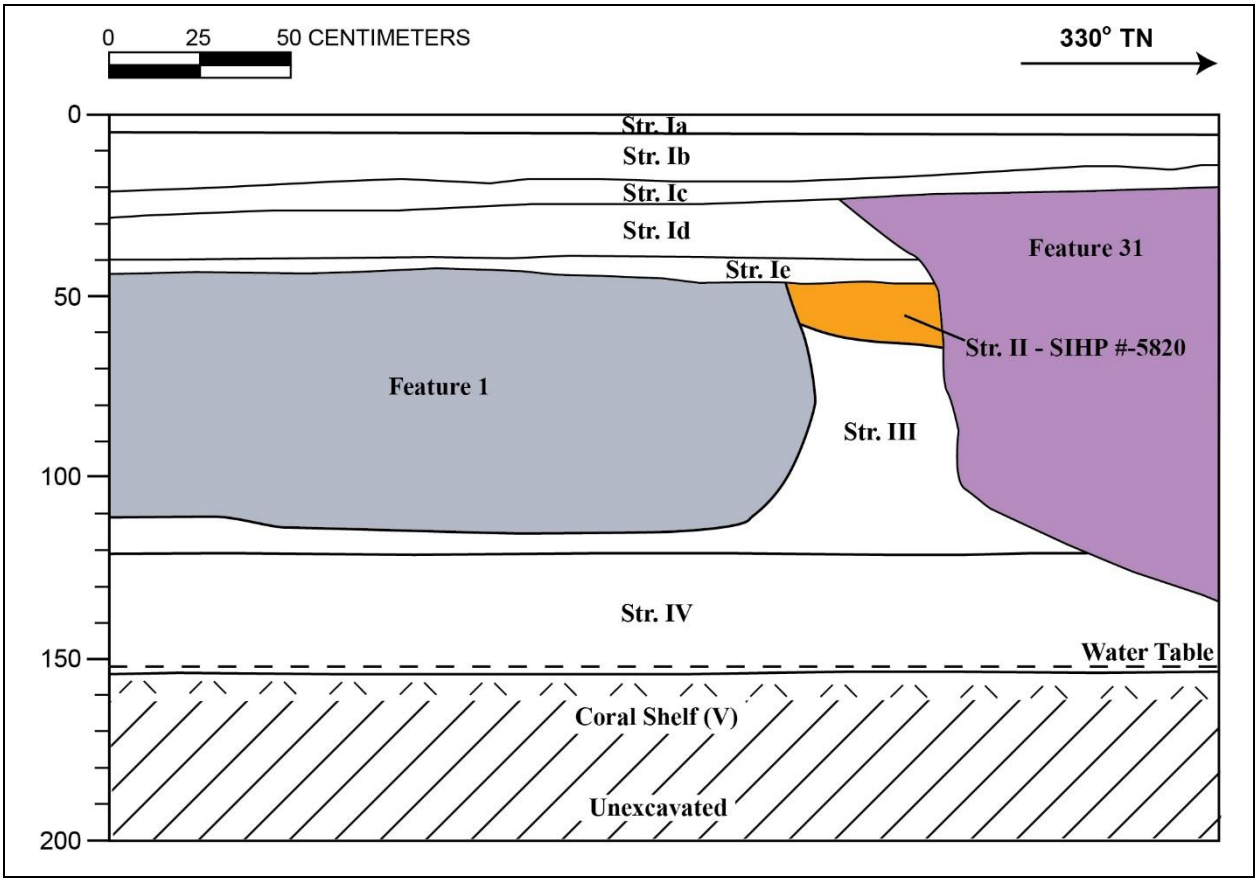
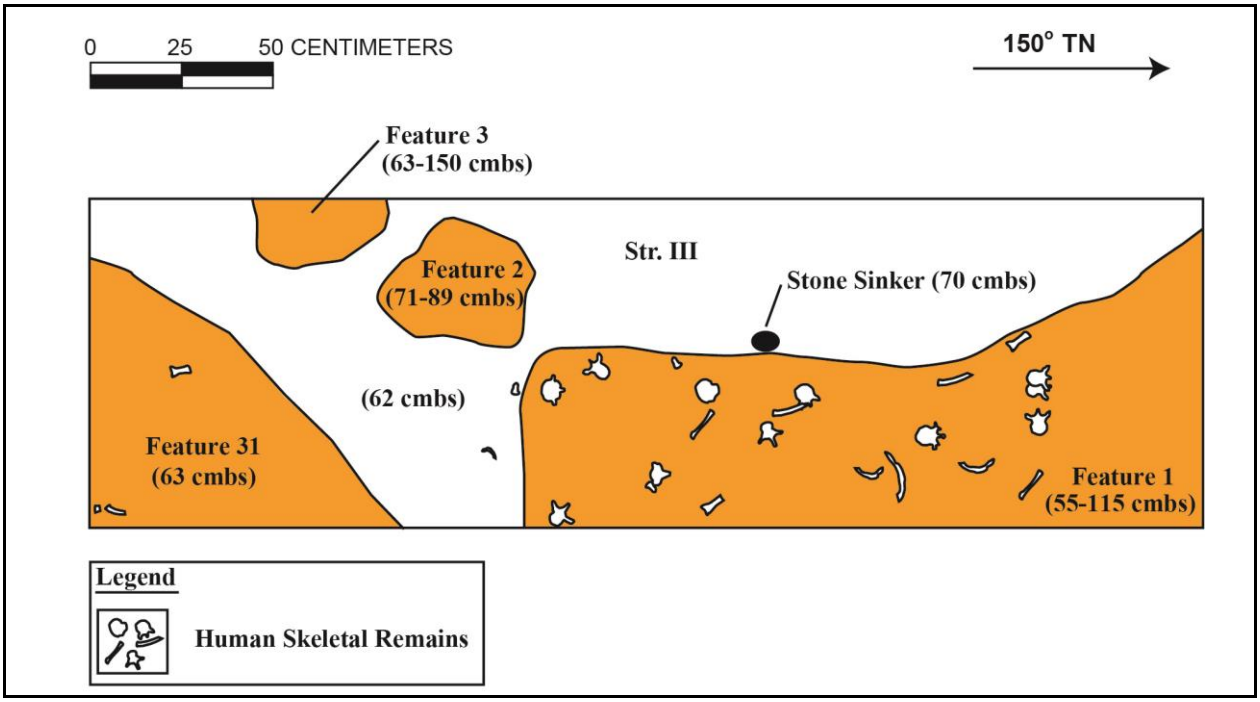


Figure 4. T-141 southwest wall profile showing SIHP # -5820 Feature 1 which contained scattered human skeletal elements and an articulated horse burial

Table 3. T-141 Stratigraphic Description of Southwest Profile

Stratum	Depth (cmbs)	Description
Ia	0-6	Asphalt
Ib	6-20	Fill; 2.5 YR 5/4 (reddish brown); very gravelly silt loam; weak, very fine, blocky structure; dry, weakly coherent consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary; imported basalt base course
Ic	15-35	Fill; 7.5 YR 3/2 (dark brown); sandy loam; weak, very fine, crumb structure; moist, firm consistency; non-plastic; mixed origin; clear, smooth lower boundary; fill material
SIHP # -5820 Feature 31	25-135	Pit feature originating at the lower boundary of Stratum Ic; gravelly sandy loam mixed fill; contained glass fragments and metal fragments (not collected), and ceramic fragments (collected), and previously disturbed, disarticulated and scattered human skeletal remains; SIHP # -5820 Feature 31
Id	25-40	Fill; 2.5 Y 8/3 (pale yellow); extremely gravelly sand; structureless, single grain; moist, loose consistency; non-plastic; marine origin; abrupt, broken/discontinuous lower boundary; fill material
Ie	40-50	Fill; 7.5 YR 3/2 (dark brown); sandy loam; weak, very fine, crumb structure; moist, firm consistency; non-plastic; mixed origin; clear, smooth lower boundary; fill material; contained red brick fragment (collected)
SIHP # -5820 Feature 1	55-115	Pit feature truncated at upper boundary; loamy sand; contained *in situ* horse burial, previously disturbed and scattered human skeletal remains (incomplete remains of at least 1 infant, 1 adult, and a possible juvenile or adult), charcoal, shell midden, non-cultural shell, and faunal remains of a medium-sized mammal; SIHP # -5820 Feature 1
SIHP # -5820 Feature 3	63-150	Pit feature originating from Stratum Ie; loamy sand; contained rusted metal and ceramic fragments; SIHP # -5820 Feature 3
II	43-72	Natural, 10 YR 6/2 (light brownish gray); loamy sand; weak, very fine, crumb structure; moist, very friable consistency; slightly plastic; mixed origin; diffuse, broken/discontinuous lower boundary; buried A horizon; former land surface; designated SIHP # -5820, includes SIHP # -5820 Features 2 and 4
SIHP # -5820 Feature 2	71-89	Pit feature originating from Stratum II; loamy sand; contained marine shell and faunal fragments; SIHP # -5820 Feature 2
SIHP # -5820 Feature 4	75-95	Pit feature originating from Stratum II; loamy sand; contained charcoal (*kukui* nutshell); SIHP # -5820 Feature 4

III	53-121	Natural; 10 YR 6/4 (light yellowish brown); very fine sand; structureless, single grain; moist, loose consistency; non-plastic; marine origin; diffuse, smooth lower boundary; Jaucas sand
IV	121-152	Natural; 2.5 Y 8/4 (pale yellow); silty sand; structureless, single grain; wet, non-sticky consistency; non-plastic; marine origin; abrupt, smooth lower boundary; lagoonal sediment
V	152 (BOE)	Natural; 10 YR 7/4 (very pale brown); bedrock-limestone; structureless, massive; moist, weakly to strongly cemented; discontinuous consistency; non-plastic; marine origin; lower boundary not observed; Pleistocene coral shelf



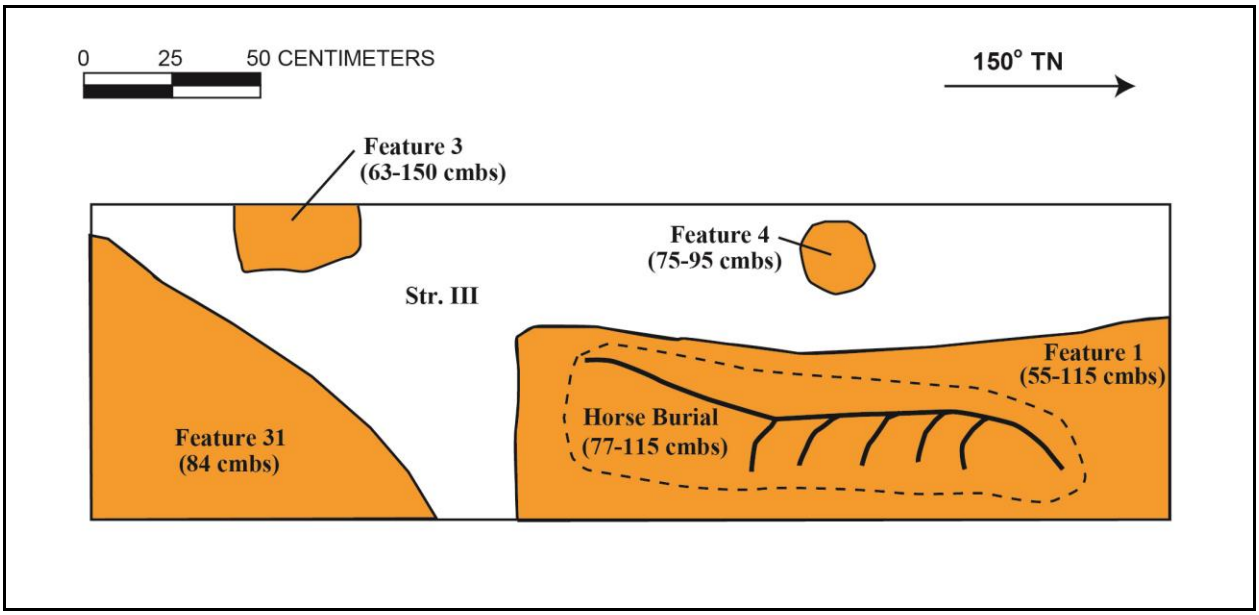


Figure 5. T-141 plan view showing the upper boundary of SIHP # -5820, Feature 1 with scattered and disarticulated human skeletal remains (top) and the lower portion of Feature 1 with an articulated horse burial (bottom); also note SIHP # -5820 Features 2 through 4 and Feature 31

Figure 6. Basalt stone sinker (Acc. # 141-H-1) collected from the natural Jaucas sand adjacent to SIHP # -5820 Feature 1 in T-141

Figure 7. T-141, articulated horse burial in SIHP # -5820 Feature 1 extending into southwest sidewall, view to south

intermediate hand phalanx, two distal hand phalanges, an unsided innominate, and a left calcaneus. The skeletal elements identified as either child or infant remains included mandible fragments, multiple rib fragments, a left radius, and a right innominate. An unidentified long bone was noted as either infant or fetal. The minimum number of individuals (MNI) was based on the age differences and reported duplication of the left second metacarpal. Sex and ancestry were not determined. SIHP # -5820 Feature 1 is interpreted as a pit containing a horse burial and previously disturbed and disarticulated human skeletal remains.

SIHP # -5820 Feature 2 was identified as a pit within the central portion of T-141. It originated from the base of Stratum II at 0.71 mbs and terminated at 0.89 mbs within Stratum III. The feature was irregularly-shaped in plan view, measured a maximum of 0.42 m long by 0.35 m wide, but did not extend into any of the excavation sidewalls (see Figure 5). The sediment matrix within the pit was loamy sand with similar characteristics to Stratum II. A single unmodified pig (*Sus* scrofa) cranial fragment was collected from SIHP # -5820 Feature 2. A 10-liter screened sample was collected from within the pit at 0.89 mbs which yielded *Echinothrix diadema* sp. (0.5 g). SIHP # -5820 Feature 2 is interpreted as a pit of indeterminate function.

SIHP # -5820 Feature 3 was identified within T-141 at the lower boundary of Stratum Ie at 0.63 mbs. The pit appeared truncated by overlying fill layers. It was intrusive into the buried A horizon (Stratum II) and the underlying natural sands (Strata III and IV), and terminated at the coral shelf at 1.50 mbs. The feature was elongated and irregular-shaped in plan view, measured approximately 0.17 m long by 0.36 m wide, and extended into the northeast sidewall. The sediment matrix within the pit was loamy sand with similar characteristics to Stratum II. The feature contained historic material including rusted metal and ceramic fragments. SIHP # -5820 Feature 3 is interpreted as a pit of indeterminate function.

SIHP # -5820 Feature 4 was identified within the central portion of T-141. The pit originated at or near the base of Stratum II at 0.75 mbs, intruded into Stratum III, and terminated at 0.95 mbs. The feature was largely circular-shaped in plan view and measured approximately 0.20 m in diameter. It did not extend into the excavation sidewalls. The sediment matrix within the pit was loamy sand with similar characteristics to Stratum II. No cultural material was identified within the pit fill. SIHP # -5820 Feature 4 is interpreted as a pit of indeterminate function.

SIHP # -5820 Feature 5 was identified within T-142. The pit originated at or near the base of Stratum II at 0.44 mbs and terminated within Stratum III at 0.75 mbs. The feature was irregular-shaped in plan view, measured 0.80 m long by 0.30 m wide, and extended into the northeast sidewall (Figure 8). The previously backfilled excavation (probable utility trench) observed within T-142 appeared to crosscut and remove a portion of SIHP # -5820 Feature 5. The sediment matrix with the pit was loamy sand with similar characteristics to Stratum II. A 2-liter bulk sediment sample (0.50–0.75 mbs) and a 7.5-liter field screened bulk sediment sample (0.44–0.52 mbs) were collected for analysis. The combined samples contained charcoal (4.1 g), possible marine shell midden (39.6 g), naturally-occurring marine shell (0.3 g), a rounded vesicular basalt game stone (180.5 g), refined earthenware fragments (23.2 g), rusted metal fragments (7.6 g), an unidentified fish bone (0.1 g), a fragment of a fire-cracked waterworn cobble (>500 g), and fire-cracked vesicular basalt rocks and rock fragments (540.4 g). The shell midden included *Nerita picea* shell (11.2 g) and three opercula (1.7 g), *Nassarius gaudiosus* (1.0 g), *Turbo sandwicensis* (17.2 g), burned shell (4.4 g), *Tellina palatam* (0.5 g), *Isognomon* sp. (0.2 g), Echinoidea (0.3 g), and crustacean (0.1 g). he basalt game stone (Acc. # 142-H-1) is

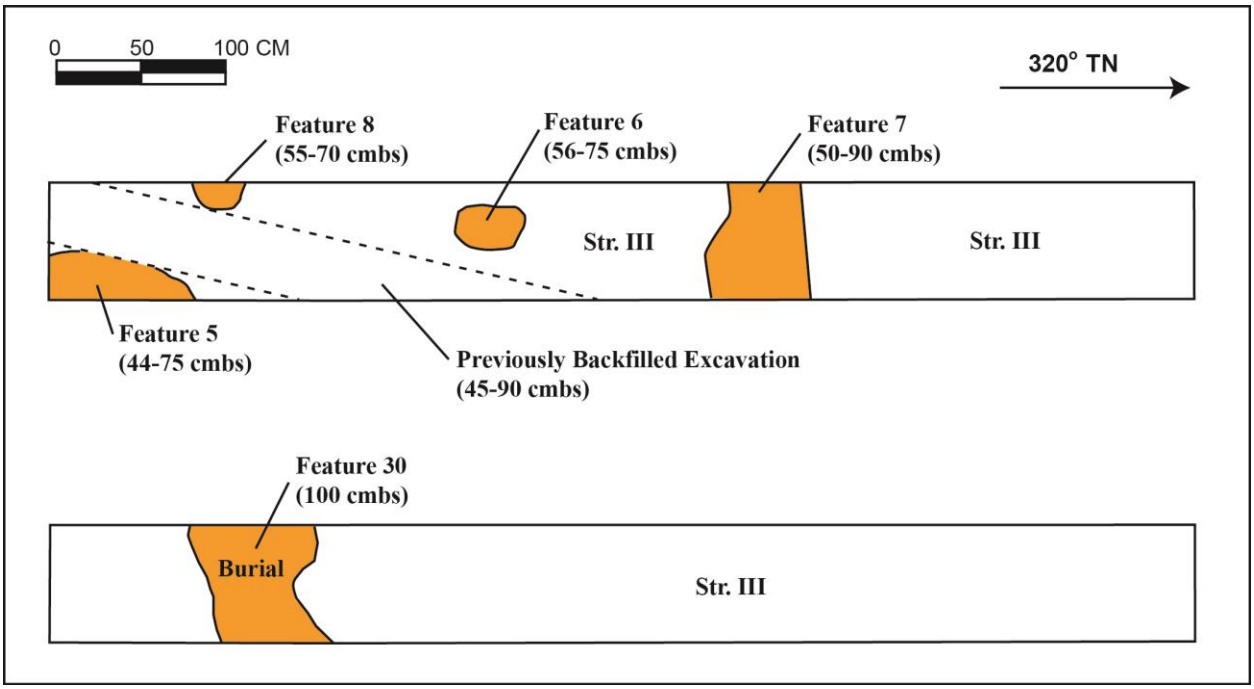


Figure 8. T-142 plan views showing SIHP # -5820 Features 5-8 at the Strata II/III interface (top), and SIHP # -5820 Feature 30 within Stratum III (bottom)

considered a traditional Hawaiian artifact (Figure 9). The basalt game stone was sent for EDXRF analysis, and although specific source material was not available, the results indicated that it had a high ratio of Strontium to Zirconium which does not match O‘ahu Island volcanic source samples (see EDXRF discussion in Volume V). SIHP # -5820 Feature 5 is interpreted as a pit of indeterminate function.

SIHP # -5820 Feature 6 was identified within T-142 as originating at or near the base of Stratum II at 0.56 mbs. This pit feature was intrusive into Stratum III and terminated at 0.75 mbs. The feature was irregular shaped in plan view and measured approximately 0.40 m long by 0.25 m wide (see Figure 8). The pit was observed in plan view near the central portion of the excavation and it did not extend into either sidewall. The sediment matrix within the pit was loamy sand with similar characteristics to Stratum II. A 2-liter bulk sample (0.560.64 mbs) was collected from within the pit. The screened bulk sample yielded charcoal (6.0 g), possible marine shell midden (226.3 g, see SIHP # -5820 Feature 6 Midden Results Table located at the end of this section), naturally-occurring marine shell (3.1 g), a shell fishhook (0.5 g), rusted metal fragments (0.5 g), glass fragments (1.7 g), possible ceramic fragment (0.7 g), angular basalt gravel (171.6 g), water-worn basalt gravel (32.7 g), unidentified medium mammal bones (17.9 g), an unidentified fish bone (0.6 g), rat (*Rattus* sp.) bone (0.5 g), and human skeletal remains. The shell midden consisted of *Isognomon* sp. (157.2 g), *Nerita picea* (21.7 g), Echinoidea spp. (18.7 g), *Conus* sp. (17.4 g), *Theodoxus neglectus* (8.8 g), *Brachidontes crebristriatus* (1.6 g), and crustacean (0.9 g). The marine shell fishhook (Acc. # 142-H-2) is considered a traditional Hawaiian artifact (Figure 10). Human skeletal remains also were encountered within the bulk sediment sample. The human skeletal remains were identified as a mandibular right lateral incisor with a broken tooth root, an additional tooth crown fragment, and a small cancellous bone fragment. Minimal attrition was noted on the occlusal surface. The biological profile and context (pre- versus post-Contact) of the human skeletal remains is indeterminate, especially as the feature contained artifacts from both periods. The human remains (two teeth and cancellous bone) were reinterred in the nearby excavation T-141. SIHP # -5820 Feature 6 is interpreted as a pit of indeterminate function.

SIHP # -5820 Feature 7 was identified within T-142 as originating at or near the base of Stratum II at 0.50 mbs. This pit feature was intrusive into Stratum III and terminated at 0.90 mbs (Figure 11 and Table 4). The feature was irregularly shaped in plan view, measured 0.60 m long by over 0.70 m wide, and extended beyond the width of the excavation into both the southwest and northeast sidewalls (see Figure 8). The sediment matrix within the pit was loamy sand with similar characteristics to Stratum II. A 2-liter bulk sediment sample (0.50–0.60 mbs), a 17-liter field-screened bulk sample (0.60 mbs), and a 9.5-liter field-screened bulk sample (0.55–0.70 mbs) were collected from within the pit. The combined samples contained charcoal (1.8 g), possible marine shell midden (361.4 g, see SIHP # -5820 Feature 7 Midden Results Table located at the end of this section), naturally-occurring marine shell (23.5 g), stoneware fragments (157.0 g), refined earthenware fragments (75.8 g), rusted metal fragments and debris (31.8 g), glass fragments (14.0 g), an unidentified bird (Aves) bone (0.9 g), unidentified medium mammal bone (0.4 g), unidentified burnt medium mammal bones (7.8 g), fish bones (0.2 g), and a vesicular basalt stone (1.1 g). The shell midden consisted of *Isognomon* sp. (281.6 g), *Nerita picea* shell (46.9 g) and an operculum (0.1 g), *Conus* sp. (11.0 g), Echinoidea (10.8 g), *Tellina palatam*

Figure 9. Basalt game stone (Acc. # 142-H-1) collected from SIHP # -5820 Feature 5 in T-142 (scale blocks are in cm)

Figure 10. Marine shell fishhook (Acc. # 142-H-2) collected from SIHP # -5820 Feature 6 in T-142

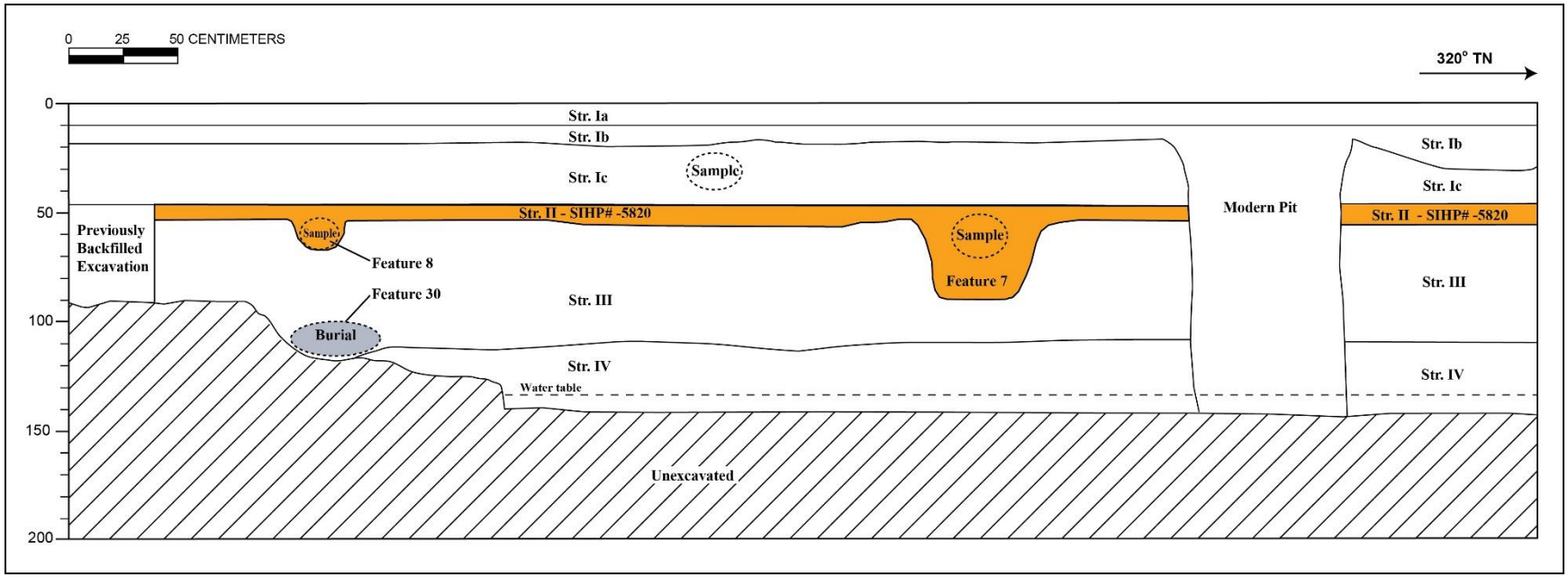


Figure 11. T-142 southwest profile showing SIHP # -5820 Features 7, 8, and 30

Table 4. T-142 Stratigraphic Description of Southwest Profile

Stratum	Depth (cmbs)	Description
Ia	0-10	Asphalt
Ib	10-30	Fill; 2.5 YR 2.5/4 (dark reddish brown); very gravelly silty loam; structureless, singlgrain; moist, loose consistency; non-plastic; terrigenous origin; abrupt smooth lower boundary; gravel base coarse
Ic	18-47	Fill; 2.5 YR 8/3 (pale yellow); gravelly cobbly sand; structureless, singlgrain; moist, loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary; contained faunal bone (collected), ceramic fragments; crushed coral
II	47-90	Natural; 10 YR 4/2 (dark grayish brown); sandy loam; weak, fine, crumb structure; moist, very friable consistency; mixed origin; abrupt smooth lower boundary; contained multiple historics: glass, ceramics, faunal bone (collected), marine shell, tar vine from possible old road way; mixed use of A horizon, top portion historically used and impacted. Bottom more pre-Contact/Hawaiian land use; designated SIHP # -5820, includes SIHP # -5820 Features 5-8
SIHP # -5820 Feature 5	44-75	Pit feature originating from Stratum II; loamy sand; contained a traditional Hawaiian basalt game stone, fircracked rock, a water-worn basalt cobble, ceramic fragments, metal pieces, charcoal, fish bones, and naturally-occurring marine shell; SIHP # -5820 Feature 5
SIHP # -5820 Feature 6	56-75	Pit feature originating from Stratum II; loamy sand; contained a traditional Hawaiian shell fishhook, ceramic and glass fragments, metal, charcoal, shell midden, naturally-occurring marine shell, water-worn rocks, fish bone, mammal bone, and human skeletal elements (two teeth and cancellous bone); SIHP # -5820 Feature 6
SIHP # -5820 Feature 7	50-90	Pit feature originating from Stratum II; loamy sand; contained charcoal, shell midden, naturally-occurring marine shell, fish bone, bird bone, ceramic, glass and metal fragments; SIHP # -5820 Feature 7
SIHP # -5820 Feature 8	55-70	Pit feature originating from Stratum II; loamy sand; contained charcoal, shell midden, fish bone, and mammal bone; SIHP # -5820 Feature 8
III	60-115	Natural; 10 YR 8/6 (yellow); very fine to fine grained sand; structureless singlgrain; moist, loose consistency; non-plastic; marine origin; diffuse lower boundary; Jaucas sand; Features 5-8 intrude into layer; includes human burial, SIHP # -5820 Feature 30
SIHP # -5820 Feature 30	100	In situ human burial within Jaucas sand (Stratum III); faint burial pit; flexed or partially flexed; SIHP # -5820 Feature 30
IV	110-143 (BOE)	Natural; 10 YR 8/4 (very pale brown); sand; structureless singlgrain; moist, loose consistency; non-plastic; marine origin; diffuse lower boundary; common fine roots; increasing clay content toward the base

adhered to corroded metal (4.7 g), *Brachidontes crebristriatus* (3.4 g), burned shell (2.1 g), *Ostrea sandwicensis* (2.0 g), *Turbo sandwicensis* (2.8 g), and burned crustacean (0.7 g). Feature 7 faunal remains consist of *Bos taurus* skeletal elements, unmodified *Sus scrofa* skeletal elements, and unmodified medium mammal (possible *Bos taurus* or *Sus scrofa*) irregular bone fragments. The *Bos taurus* radius and vertebrae had been butchered with a metal saw blade, indicating an historic origin. SIHP # -5820 Feature 7 is interpreted as a pit of indeterminate function.

SIHP # -5820 Feature 8 was identified within T-142 originating from near or at the base of Stratum II at 0.55 mbs. The pit feature was intrusive into Stratum III and terminated at 0.70 mbs (see Figure 11 and Table 4). The feature was a small, oval shape in plan view. It measured approximately 0.30 mbs long and 0.18 mbs wide, and extended into the southwest sidewall. A 0.25-liter bulk sediment sample was collected from within the pit between 0.55 mbs and 0.70 mbs. The sample yielded charcoal (0.6 g), possible marine shell midden (10.3 g; see SIHP # -5820 Feature 7 Midden Results Table located at the end of this section), naturally-occurring marine shell (3.7 g), pig (*Sus scrofa*) bone (0.5 g), unidentified medium mammal bone (0.4 g), unidentified fish bone (0.1 g), and unidentified small mammal bone (0.1 g). The charcoal was submitted for wood taxa identification and radiocarbon analysis. Wood taxa analysis identified native and Polynesian-introduced trees consisting of *Cocos nucifera* (*Niu*, coconut), *Aleurites moluccana* (*Kukui*), *Psyotria* sp. (*Kōpiko*), and unidentified monocot. Radiocarbon analysis yielded five possible date ranges, with a calibrated 2-sigma date of A.D. 1610 to 1670 (46.7%) being the most probable. SIHP # -5820 Feature 8 is interpreted as a pit of indeterminate function.

SIHP # -5820 Feature 9 was identified within T-145 a possible *imu* pit originating from the base of Stratum II at 0.74 mbs. The pit was intrusive into Stratum III, terminating at 0.92 mbs (Figure 12 and Table 5). The feature was generally circular in plan view. It measured 0.50 m long by over 0.47 m wide and extended into the southwest sidewall. The sediment matrix within the pit was silty sand with similar characteristics to Stratum II. Several thermally-altered basalt cobbles, charcoal flecking, and faunal bone were observed within the pit fill. A 2.5-liter bulk sample collected from SIHP # -5820 Feature 9 (0.81-0.92 mbs) yielded charcoal (1.4 g), naturally-occurring marine shell (1.6 g), and possible marine shell midden consisting of *Strombus* sp. (0.8 g), burned crustacean (1.8 g), burned gastropod (1.6 g), and *Ethinometra mathaei* sp. (1.4 g).

Wood taxa analysis of the charcoal and identified only native taxa consisting of consisting of cf. *Metrosideros polymorpha* (‘*ōhi‘a lehua*), cf. *Sida fallax* (‘*ilima*), *Diospyros sandwicensis* (*lama*), and an unidentified monocot. Radiocarbon analysis performed on the ‘*ilima* yielded three possible date ranges, with a calibrated 2-sigma date of AD 1480 to 1650 (95.4%) being the most probable. SIHP # -5820 Feature 9 is interpreted as a possible *imu* pit.

SIHP # -5820 Feature 10 was identified within the southeast end of T-145. The pit feature originated at or near the base of Stratum II at 0.70 mbs. It was intrusive into Stratum III and terminated at 1.10 mbs (see Figure 12 and Table 5). The feature was not documented in plan view. In profile view, SIHP # -5820 Feature 10 was visible in the southwest sidewall. It had straight to slightly sloping walls and a flat base, with a maximum length of 0.40 m. The sediment matrix within the pit consisted of darker-colored silty sand and appeared to be previously disturbed by the overlying fill deposition. A 2-liter bulk sample collected within SIHP # -5820

Figure 12. T-145 southwest profile showing SIHP # -5820 Feature 9, a possible *imu* pit with basalt cobbles visible near the base, view to west

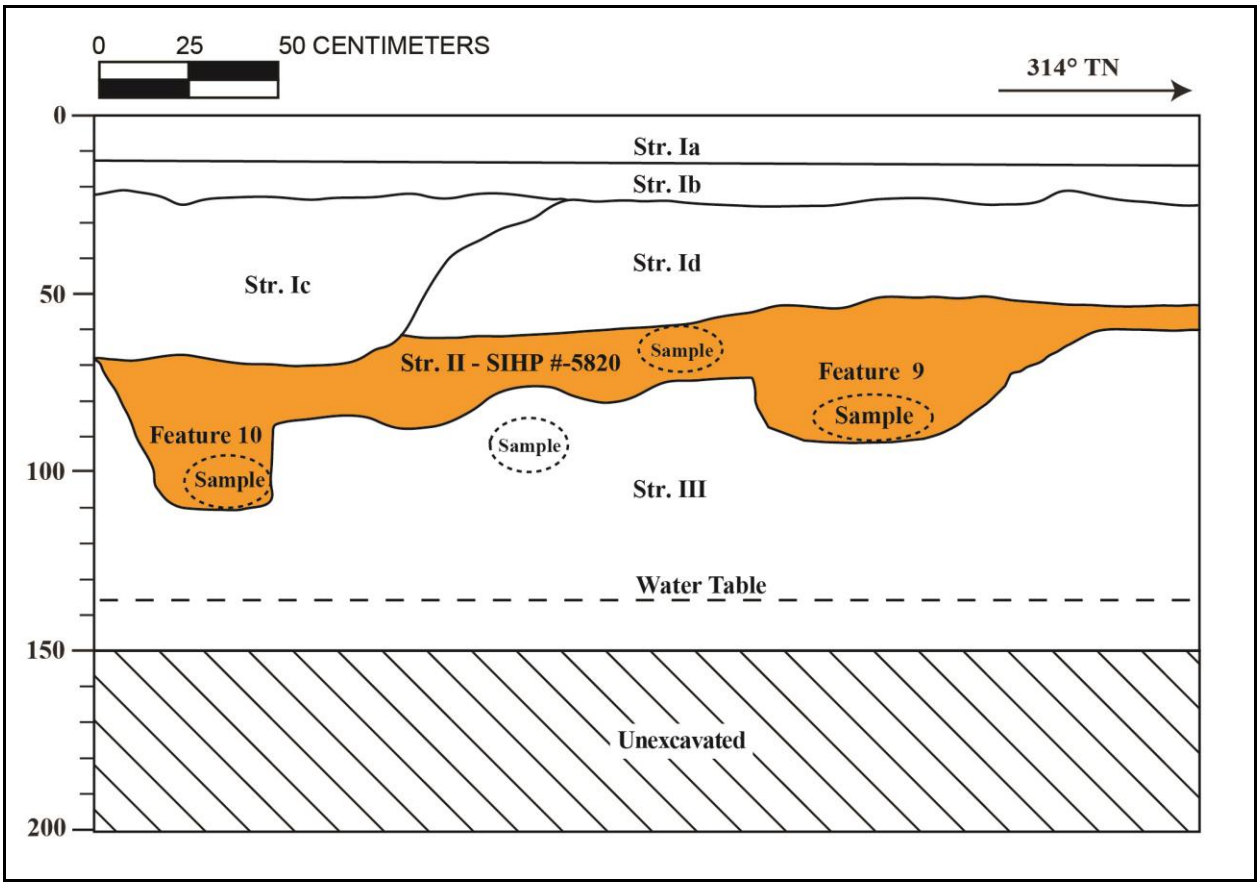


Figure 13. T-145 southwest profile, showing SIHP # -5820 Features 9 and 10

Table 5. Stratigraphic Description, southwest profile

Stratum	Depth (cmbs)	Description
Ia	0-14	Asphalt
Ib	14-25	Fill; 10 YR 4/2 (dark grayish brown); extremely gravelly loam; structureless, singlgrain; moist, very friable consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary; imported fill
Ic	23-70	Fill; 10 YR 4/2 (dark grayish brown) with mottles (inclusion, sand) 10.5Y 7/6 (yellow); very gravelly loam; structureless, singlgrain; moist, very friable consistency; non-plastic; terrigenous origin; diffuse, broken/discontinuous lower boundary; contains bottle glass, and faunal bone (collected), marine shell; imported fill, sand inclusions
Id	25-64	Fill; 10 YR 8/2 (very pale brown); extremely gravelly sand; structureless, singlgrain; moist, loose consistency; non-plastic; marine origin; very abrupt, smooth lower boundary; imported crushed coral fill
II	50-87	Natural; 10 YR 4/3 (brown); silty sand; structureless, singlgrain; moist, loose consistency; non-plastic; mixed origin; diffuse, wavy lower boundary; natural sediment; buried A horizon (SIHP # 50-80-14-5820) including SIHP # -5820 Features 9 and 10
SIHP # -5820 Feature 9	74-92	Possible imu feature originating in Stratum II; silty sand; contained fircracked rock, charcoal, faunal bone, and marine shell midden; SIHP # -5820 Feature 9
SIHP # -5820 Feature 10	70-110	Pit feature originating in Stratum II; silty sand; contained charcoal, faunal bone, and marine shell midden; SIHP # -5820 Feature 10
III	75-150 (BOE)	Natural; 10.5 YR 7/6 (yellow); medium to coarse grain sand; structureless, singlgrain; wet, non-sticky consistency; non-plastic; marine origins; lower boundary not visible; natural sediment

Feature 10 (0.95-1.10 mbs), yielded charcoal (0.2 g), unidentified medium mammal bone (1.3 g), naturally-occurring marine shell (4.4 g), and marine shell midden consisting of crustacean (1.4 g), *Nerita picea* (1.3 g), *Brachidontes crebristriatus* (0.8 g), *Strombus* sp. (0.7 g), and Echinoidea (0.1 g). Wood taxa analysis of the charcoal identified both native and historically-introduced taxa consisting of *Aleurites moluccana* (*kukui*) and Conifer (i.e., pine, fir, or other cone-bearing variety) as well as unidentified monocot. SIHP # -5820 Feature 10 is interpreted as a pit of indeterminate function.

SIHP # -5820 Feature 11 was identified in T-146A as originating within Stratum II at 0.67 mbs (Figure 14). The pit was intrusive into Stratum III and terminated at 0.76 mbs. The feature had an irregular shape in plan view, measured 2.50 m long by more than 0.48 m wide, and extended into the southwest sidewall. The sediment matrix within SIHP # -5820 Feature 11 was loamy sand with similar characteristics to Stratum II. Two 5-liter bulk sediment samples were collected from the east and west ends of the pit between 0.67-0.76 mbs. These samples yielded charcoal (1.1 g), naturally-occurring marine shell (1.0 g), unidentified burnt shell fragments (1.2 g), burnt *Tellina palatam* (0.7 g), burnt Neritidae (0.6 g), *Tonna dolium* (0.5 g), *Brachidontes crebristriatus* (0.1 g), burnt crustacean (0.1 g), *Echinothrix diadema* sp./*Echinometra mathaei* sp. (0.1 g), and burned fish bone (0.1 g). SIHP # -5820 Feature 11 is interpreted as a pit of indeterminate function.

SIHP # -5820 Feature 12 was identified within T-146A as originating at or near the base of Stratum II at 0.75 mbs. The pit was intrusive into Stratum III and terminated at 0.95 mbs (see Figure 3 and Figure 14). The feature was irregular shaped in plan view, measured 0.78 m long by over 0.17 m wide, and extended into the northeast sidewall. The sediment matrix within the pit was loamy sand with similar characteristics to Stratum II. The installation of a subsurface concrete utility jacket immediately adjacent to SIHP # -5820 Feature 12 may have disturbed or truncated the northeast portion of the feature. A 5-liter bulk sediment sample collected within the pit between 0.75-0.90 mbs contained charcoal (1.2 g), two pieces of volcanic glass (0.2 g), naturally-occurring marine shell (2.7 g), and marine shell midden consisting of *Strombus* sp. (0.3 g), *Brachidontes crebristriatus* (0.2 g), *Tellina* spp. (0.1 g), crustacean (0.7 g), unidentified burnt shell (0.4 g), *Echinothrix diadema* sp./*Echinometra mathaei* sp. (0.4 g), basalt (788.2 g), and a vesicular fircracked rock fragment (176.4 g). The volcanic glass pieces were submitted for EDXRF analysis. The results indicated that the volcanic glass clearly does not match sources from the island of Hawai‘i. The sample is from “Group 1,” one of two distinct geochemical groups identified from the 35 City Center Section 4 AIS EDXRF volcanic glass samples, likely representing different volcanic sources on O‘ahu (see EDXRF discussion in Volume V). The charcoal was submitted for wood taxa analysis and was identified as native and Polynesian-introduced taxa consisting of *kukui* (*Aleurites moluccana*), *hau* (*Hibiscus tiliaceus*), *niu* (*Cocos nucifera*), *‘a‘ali‘i* (cf. *Dodonaea viscose*), and *‘akoko* (cf. *Chamaesyce* sp.). The *niu* charcoal sample submitted for radiocarbon analysis yielded six possible date ranges, with a calibrated 2-sigma date of AD 1630 to 1690 (51.3%) being the most probable. SIHP # -5820 Feature 12 is interpreted as a pit of indeterminate function.

SIHP # -5820 Feature 13 was identified within T-146A as originating near the base of Stratum II at 0.83 mbs (see Figure 14, Figure 15 and Table 6). This pit was intrusive into Stratum III and terminated at 0.97 mbs. The feature was an elongated and irregular-shaped in plan view. It measured over 1.11 m long by 0.31 m wide and extended into the northwest end of the

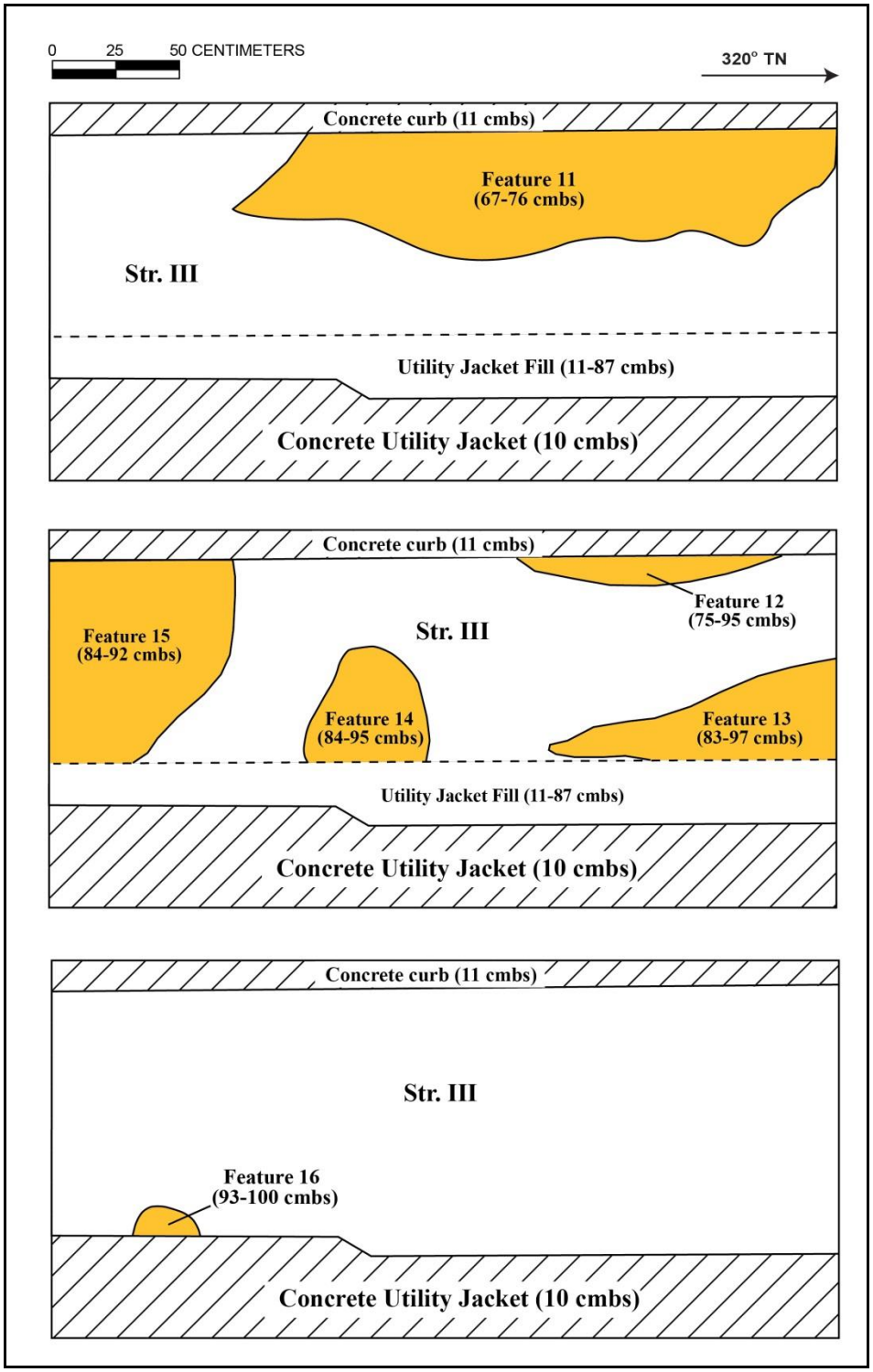


Figure 14. T-146A plan view of the upper boundary of Stratum III showing SIHP # -5820 Features 11-16 (originating within Stratum II and extending into Stratum III)

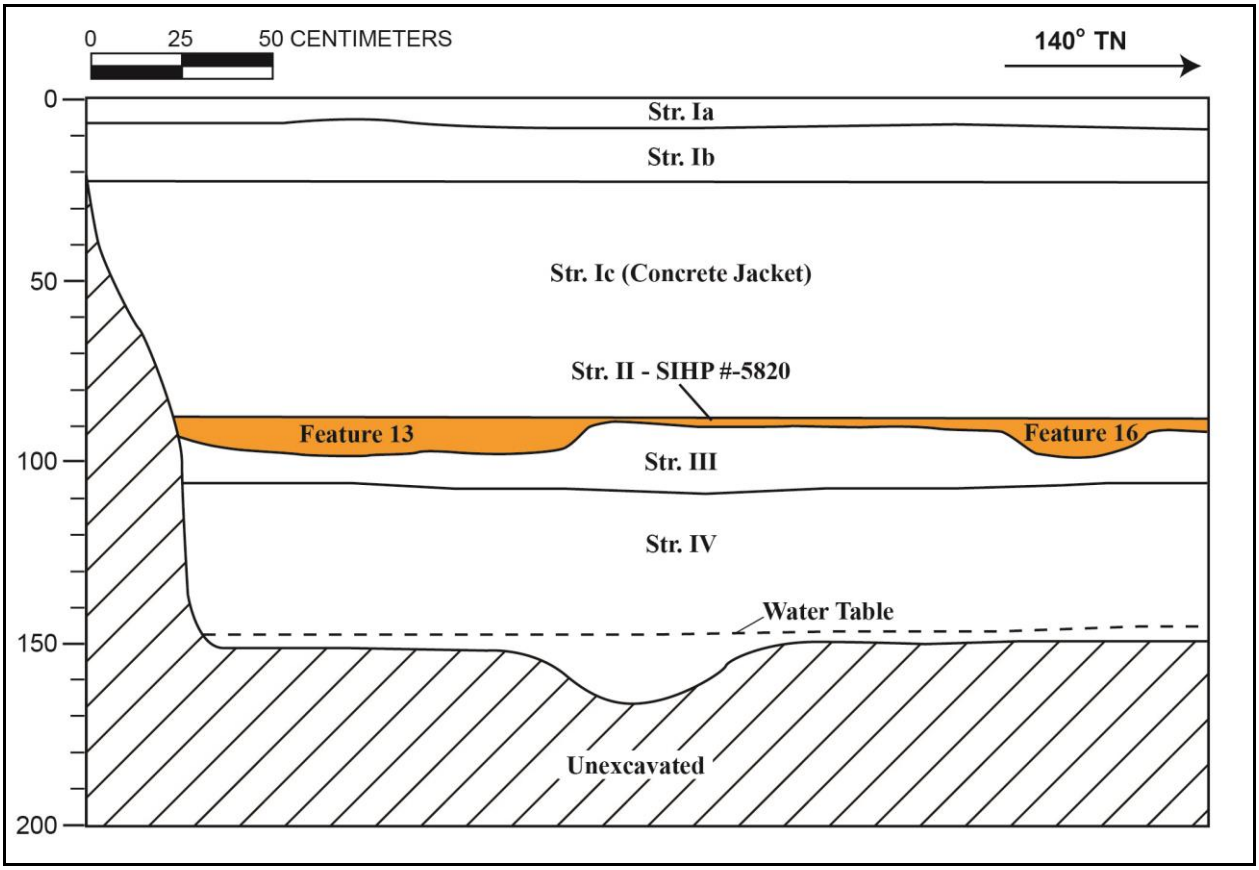


Figure 15. T-146A northeast wall profile

Table 6. T-146A Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-9	Concrete sidewalk
Ib	9-23	Fill; 10 YR 2/2 (very dark brown); gravelly sandy loam; weak, fine, blocky structure; moist, friable consistency; non-plastic; terrigenous origin; very abrupt, smooth lower boundary
Ic	23-87	Concrete utility jacket (
II	87-110	Natural; 10 YR 3/2 (very dark gray); fine to medium very sandy loam; weak, fine, crumb structure; moist, friable consistency; non-plastic; mixed origin; diffuse, wavy lower boundary; buried A horizon (SIHP # 50-80-14-5820) including SIHP # -5820 Features 11-17
SIHP # -5820 Feature 11	67-76	Pit feature originating in Stratum II; loamy sand; contained charcoal, burnt marine shell fragments, and burnt fish bone; SIHP # -5820 Feature 11
SIHP # -5820 Feature 12	75-95	Pit feature originating in Stratum II; loamy sand; contained charcoal, burnt marine shell, a fircracked rock fragment, and volcanic glass; SIHP # -5820 Feature 12
SIHP # -5820 Feature 13	83-97	Pit feature originating in Stratum II; loamy sand; contained charcoal, fish bone, mammal bone, marine shell midden, and fircracked rock; SIHP # -5820 Feature 13
SIHP # -5820 Feature 14	84-95	Pit feature originating in Stratum II; loamy sand; contained charcoal, marine shell midden, burned wood, fish bone, fircracked rock, and volcanic glass; SIHP # -5820 Feature 14
SIHP # -5820 Feature 15	84-92	Pit feature originating in Stratum II; loamy sand; contained charcoal, marine shell midden, fish bone, and mammal bone; SIHP # -5820 Feature 15
SIHP # -5820 Feature 16	93-100	Pit feature originating in Stratum II; loamy sand; contained fish bone and marine shell midden; SIHP # -5820 Feature 16
III	90-110	Natural; 10 YR 7/4 (very pale brown); medium to coarse sand; structureless, singlgrain; moist, friable consistency; non-plastic; marine origin; lower boundary not visible
SIHP # -5820 Feature 17	121-135	Pit feature originating in Stratum III; loamy sand; SIHP # -5820 Feature 17; subsequently determined to be natural rather than cultural in origin
IV	108-167 (BOE)	Natural; 2.5 Y 8/4 (pale yellow); silty sand; structureless, singlgrain; moist, firm consistency; non-plastic; marine origin; lower boundary not visible; increasing gravel content toward base

excavation. The sediment matrix within the pit was loamy sand with similar characteristics to Stratum II. A 5-liter bulk sediment sample and a 19-liter screen were collected from SIHP # -5820 Feature 13 between 0.83 and 0.94 mbs. The samples contained charcoal (1.2 g), *Melampus* sp. (0.2 g), unidentified fish bone (0.2 g), unidentified medium mammal bone (0.2 g), fircracked rock (63.2 g), and marine shell midden consisting of crustacean (0.2 g), *Echinothrix diadema* sp. (0.1 g), *Brachidontes crebristriatus* (0.9 g), *Natica* sp. (0.5 g), *Tellina* sp. (0.5 g), *Theodoxus neglectus* (0.3 g), *Isognomon* sp. (0.1 g.). The charcoal was submitted for wood taxa analysis and identified as native and Polynesian-introduced taxa consisting of *kolomona* (cf. *Senna sp.*), *kukui* (*Aleurites moluccana*), *‘ōhi‘a lehua* (cf. *Metrosideros polymorpha*), and *hau* (*Hibiscus tiliaceus*). Two unknown taxa were also represented. A *kukui* charcoal sample submitted for radiocarbon analysis yielded six possible date ranges, with a calibrated 2-sigma date of AD 1630 to 1690 (51.3%) being the most probable. SIHP # -5820 Feature 13 is interpreted as a pit of indeterminate function.

SIHP # -5820 Feature 14 was identified within the central portion of T-146A (see Figure 14). This pit originated from near the base of Stratum II at 0.84 mbs. It was intrusive into Stratum III and terminated at 0.95 mbs. SIHP # -5820 Feature 14 was an irregular-shaped pit in plan view and measured a maximum of 0.38 m long by 0.40 m wide. The feature was observed in plan view only near the central portion of the excavation and did not extend into the excavation sidewalls. The sediment matrix within the pit was loamy sand with similar characteristics to Stratum II. A 5-liter bulk sediment sample and 19-liter screened sample were collected from SIHP # -5820 Feature 14 between 0.84 to 0.95 mbs. The samples contained charcoal (0.1 g), naturally-occurring marine shell (0.5 g), burned wood (0.1 g), unidentified fish bone (0.2 g), fircracked rock (9.0 g), volcanic glass (1.0), and marine shell midden consisting of *Tellina palatam* (0.9 g), crustacean (0.2 g), *Echinothrix diadema* sp./*Echinometra mathaei* sp. (0.2 g), *Brachidontes crebristriatus* (0.2 g), *Strombus* sp. (2.3 g), and Cypraeidae (0.1 g). The volcanic glass was submitted for EDXRF analysis, and the results clearly indicated that the material does not match sources from Hawaii County. The sample is from “Group 1,” which is one of two distinct geochemical groups identified from the 35 City Center AIS EDXRF volcanic glass samples, likely representing different volcanic sources on O‘ahu (see EDXRF discussion in Volume IV). The charcoal was submitted for wood taxa analysis and identified as native taxa including *niu* (coconut, *Cocos nucifera*) and *‘ōhi‘a lehua* (cf. *Metrosideros polymorpha*). The *niu* charcoal sample was submitted for radiocarbon analysis and yielded three possible date ranges, with a calibrated 2-sigma date of AD 1490 to 1670 (95.4%) being the most probable. SIHP # -5820 Feature 14 is interpreted as a pit of indeterminate function.

SIHP # -5820 Feature 15 was identified in the southeast end of T-146A as originating from near the base of Stratum II at 0.84 mbs (see Figure 14). This pit was intrusive into Stratum III and terminated at 0.92 mbs. The feature was an irregular-shaped pit in plan view and measured 0.75 m in length by more than 1.05 m wide. The sediment matrix within the pit was loamy sand with similar characteristics to Stratum II. Faunal remains encountered during excavation of SIHP # -5820 Feature 15 consisted unmodified *Sus scrofa*, *Canis lupus familiaris* and medium mammal skeletal elements. None of the remains showed any indication of cultural modification. Both identified species (*Sus scrofa* and *Canis lupus familiaris*) are Polynesian introductions common in both pr and post-Contact contexts. Two 5-liter bulk sediment samples were collected from within the feature between 0.84-0.92 mbs. The samples contained charcoal (2.3 g), unidentified fish bone (0.1 g), basalt fragments (135.9 g), naturally-occurring marine shell (3.0 g), and marine

shell midden consisting of *Strombus* sp. (3.1 g), *Tellina palatam* (2.2 g), *Nerita picea* (2.4 g), *Theodoxus neglectus* (0.5 g), crustacean (1.0 g), Echinoidea (0.7 g), *Echinothrix diadema* sp. (0.2 g), and *Brachidontes crebristriatus* (0.1 g). The faunal remains collected from SIHP # -5820 Feature 15 consisted unmodified *Sus scrofa*, *Canis lupus familiaris* and medium mammal skeletal elements. None of the remains showed any indication of cultural modification.The charcoal was submitted for wood taxa analysis and identified as native and Polynesian-introduced taxa including *kukui* (*Aleurites moluccana*) and *pilo* (cf. *Coprsma* sp.). Three unknown taxa also were represented. The *pilo* charcoal sample was submitted for radiocarbon analysis and yielded six possible date ranges, with a calibrated 2-sigma date of AD 1720 to 1820 (53.5%) being the most probable. SIHP # -5820 Feature 15 is interpreted as a pit of indeterminate function.

SIHP # -5820 Feature 16 was identified in T-146A as originating from at or near the base of Stratum II at 0.93 mbs and terminating at 1.00 mbs within Stratum III (see Figure 14). This pit was oval shaped in plan view, measured 0.17 m long by over 0.12 m wide, and extended into the southwest sidewall. The sediment matrix within the feature was loamy sand with similar characteristics to Stratum II. A 5-liter bulk sediment sample was collected from within the pit between 0.93-1.00 mbs. This sample yielded gastropods (0.5 g), unidentified fish bone (0.1 g), and marine shell midden consisting of *Brachidontes crebristriatus* (1.1 g), crustacean (0.3 g), and *Isognomon* sp. (0.1 g). SIHP # -5820 Feature 16 is interpreted as a pit of indeterminate function.

SIHP # -5820 Feature 17 was identified in T-146A. Feature 17 is a circular-shaped pit identified within Stratum III at 1.21 mbs. It intruded into Stratum IV to a depth of 1.35 mbs. It was observed in plan view at the southeastern end of the excavation and did not extend into the excavation sidewalls. SIHP # -5820 Feature 17 was subsequently interpreted as natural. As such no sediment samples were collected for analysis (see Figure 14).

SIHP # -5820 Feature 18 was identified within T-150 as originating from at or near the base of Stratum II at 0.75 mbs. The pit intruded into Stratum IIIa and terminated at 1.05 mbs (Figure 16 and Table 7). SIHP # -5820 Feature 18 was an irregular-shaped pit in plan view. It measured approximately 0.75 m long by over 0.75 m wide and extended beyond the width of the excavation and into both the northeast and southwest sidewalls. The sediment matrix within the pit consisted of loamy sand with similar characteristics to Stratum II, except for additional charcoal flecking, marine shell midden, fish bone and fircracked rock. A modified human bone fragment (Acc. # 150-H-1) and a basalt tool fragment (Acc. # 150-H-2) were found within SIHP # -5820 Feature 18. The human bone fragment was discovered at 0.95 mbs. The fragment measured approximately 9.0 cm long, 2.5 cm wide, and 0.5 cm to 1.0 cm thick. The fragment was most consistent with a posterior-proximal portion of a human tibia. The distinguishing features included a mostly flattened shape, a sharp lateral edge, and an oblique muscle marking indicative of the soleal line. The morphology of the fracture margins suggested perimortem fragmentation, meaning the bone fractured when it was still in a fresh state and produced the comminuted fragment. The inferior portion of the fragment appeared to be filed (i.e., polished from a repetitive saw-like motion), likely for use as a tool. Based on the stratigraphic context of the fragment, including the association of the cultural material with Stratum II, the bone fragment was most likely Native Hawaiian and is considered to be a traditional Hawaiian human bone artifact. A 49-liter screened sample was collected from Stratum II (SIHP # -5820) Feature

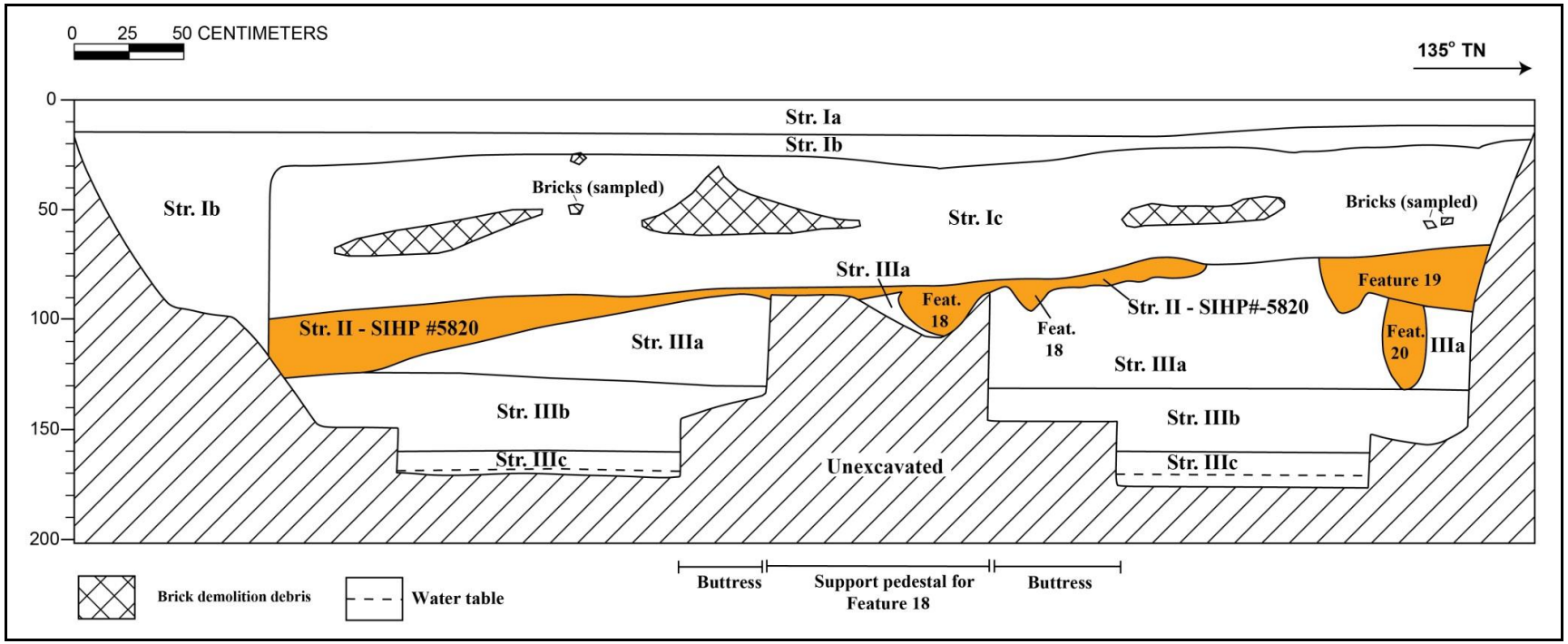


Figure 16. T-150 northeast profile showing SIHP # -5820 Features 18–20

Table 7. T-150 Stratigraphic Description of Northeast Profile

Stratum	Depth (cmbs)	Description
Ia	0-15	Asphalt
Ib	10-116	Fill; 5 YR 5/1 (gray); extremely gravelly silty clay; weak, medium, crumb structure; moist, very friable consistency; plastic; mixed origin; clear, wavy lower boundary; gravel base course
Ic	16-100	Fill; 7.5 YR 4/2 (brown); gravelly silt loam; structureless, singlgrain; dry, loose consistency; non-plastic; mixed origin; diffuse, wavy lower boundary; contained brick (collected), metal (not collected), coral inclusions, some shell; disturbed upper boundary
II	70-127	Natural; 10 YR 6/3 (pale brown); loamy sand; structureless, singlgrain; moist, loose consistency; non-plastic; marine origin; clear, broken/discontinuous lower boundary; contained midden, fircracked rock; buried A horizon (SIHP # 50-80-14-5820) with three features (Feature 18-20)
SIHP # - 5820 Feature 18	75-105	Pit feature originating in Stratum II; loamy sand; contained charcoal, marine shell midden, fish bone, a fragment of a stone tool, and a fragment of a possibly worked human proximal tibia and fircracked rock
SIHP # - 5820 Feature 19	53-95	Pit feature within Stratum II and intrusive into Stratum IIIa and truncated by Stratum Ic; loamy sand; contained charcoal, marine shell midden, fish bone, and fircracked rock
SIHP # - 5820 Feature 20	90-130	Pit feature within Stratum II and intrusive into Stratum IIIa; loamy sand; contained charcoal, marine shell midden, fish bone, and volcanic glass
IIIa	75-130	Natural; 10 YR 8/4 (very pale brown); fine to coarse grained sand; structureless, singlgrain; moist, loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary; contained few small shells; Jaucas sand
IIIb	125-165	Natural; 10 YR 7/4 (very pale brown); very fine to fine grained sand; structureless, singlgrain; wet, non-sticky consistency; non-plastic, marine origin; diffuse, smooth lower boundary; Jaucas sand
IIIc	160-175 (BOE)	Natural; 2.5 Y 6/3 (light yellowish brown); medium to very coarse grained sand; structureless, singlgrain; wet, slightly sticky consistency; weakly cemented; non-plastic; marine origin; lower boundary not visible; contained larger shells; Jaucas sand

18 at 0.70-1.04 mbs. The sample contained charcoal (2.3 g), fish remains (0.3 g), naturally-occurring marine shell (0.8 g), and marine shell midden consisting of *Cypraea caputserpentis* (0.4 g), *Brachidontes crebristriatus* (1.9 g), *Nerita picea* (12.4 g), *Theodoxus neglectus* (1.9 g), Strombidae (2 g), burned Strombidae (2.4 g), Tellinidae (0.1 g), *Tellina palatam* (3.0 g), *Tonna dolium* (0.2 g), Trochidae (0.1 g), *Turbo sandwicensis* (10.5 g), *Echinometra mathaei* sp. (0.1 g), and crustacean (0.8 g). SIHP # -5820 Feature 18 was interpreted as a pit of indeterminate function.

SIHP # -5820 Feature 19 is a pit identified in the southeast end of T-150 at 0.53 mbs. Historic fill Stratum Ic horizontally truncated the upper limit of Stratum II and associated Features 18 and 19. SIHP # -5820 Feature 19 was intrusive into Stratum IIIa and truncated the upper limit of SIHP # -5820 Feature 20. The pit terminated at 0.95 mbs within Stratum II (see Figure 16 and Table 7; Figure 17). SIHP # -5820 Feature 19 was an irregular-shaped pit in plan view. It measured 1.25 m long by over 0.75 m wide and extended beyond the width of excavation in both the northeast and southwest sidewalls. The sediment matrix within the pit was loamy sand with similar characteristics to Stratum II. A 4-liter bulk sediment sample and a 34-liter screened sample were collected from SIHP # -5820 Feature 19 at 0.70–0.95 mbs. The samples were wet screened and contained charcoal (4.5 g), fish remains (0.2 g), *Hipponix* sp. (0.1 g), *Melampus castaneus* (0.3 g), Naticidae (0.1 g), and marine shell midden consisting of *Nerita picea* (35.3 g), Neritidae operculum (4.3 g), *Strombus* sp. (20.5 g), Strombidae (2.4 g), *Brachidontes crebristriatus* (11.2 g), burned shell (10.1 g), *Tellina* spp. (7.1 g), *Isognomon* sp. (1.3 g), Cypraeidae (1.3 g), Cymatiidae (1.5 g), *Trochus* sp. (0.4 g), *Turbo* sp. (5.8 g), crustacean (3.0 g), and *Echinothrix diadema* sp./*Echinometra mathaei* sp. (0.2 g). The charcoal was submitted for wood taxa analysis and identified as native and Polynesian-introduced species including *kukui* (*Aleurites moluccana*), *kolomona* (cf. *Senna* sp.), *‘ōhi‘a lehua* (cf. *Metrosideros polymorpha*), ‘*ilima* (cf. *Sida fallax*), ‘*āheahea*/‘*āweoweo* (*Chenopodium oahuense*), and monocot. Two unidentified species were also noted. The *kukui* sample was submitted for radiocarbon analysis and yielded seven possible date ranges for SIHP # -5820 Feature 19, with a calibrated 2-sigma date of AD 1810 to 1920 (67.1%) being the most probable. SIHP # -5820 Feature 19 was interpreted as a pit of indeterminate function.

SIHP # -5820 Feature 20 was identified in the southeast end of T-150 as having been truncated by SIHP # -5820 Feature 19. It likely originated within Stratum II was visible at 0.90 mbs. The lower limit extended to the base of Stratum IIIa at 1.30 mbs (see Figure 16, Table 7, and Figure 17). The feature was not documented in plan view. In profile, SIHP # -5820 Feature 20 was an elongated pit in the northeast sidewall with tapering walls and a rounded base. The sediment matrix within the pit was loamy sand with similar characteristics to Stratum II with the addition of charcoal flecking. A 3-liter bulk sediment sample was collected from SIHP # -5820 Feature 20 at 0.90-1.3 mbs. The sample was wet screened and contained charcoal (0.7 g), a volcanic glass fragment (0.1 g), fish remains (0.2 g), naturally-occurring marine shell (10.2 g), and marine shell midden consisting of *Nerita picea/Theodoxus neglectus* (1.3 g), *Tellina palatam* (0.8 g), *Strombus* sp. (1.2 g), *Brachidontes crebristriatus* (0.3 g), Cymatiidae (0.1 g), *Echinometra mathaei* sp. (0.1 g), and crustacean (0.8 g). The volcanic glass was sent for EDXRF analysis. The results indicated that the volcanic glass clearly does not match sources from the island of Hawai‘i. The sample is from “Group 1,” one of two distinct geochemical groups identified from the 35 City Center Section 4 AIS EDXRF volcanic glass samples, likely

Figure 17. T-150 northeast profile showing SIHP # -5820 Features 19 and 20, view to east

representing different volcanic sources on O‘ahu (see EDXRF discussion in Volume V). The charcoal was submitted for wood taxa analysis and identified as Polynesian-introduced *kukui* (*Aleurites moluccana*), a monocot, and one unidentified species. The *kukui* sample was submitted for radiocarbon analysis and yielded six possible date ranges, with a calibrated 2-sigma date of AD 1630 to 1690 (51.3%) being the most probable. SIHP # -5820 Feature 20 was interpreted as a pit of indeterminate function.

SIHP # -5820 Feature 21 was identified as a pit near the middle of T-151. It originated within fill Stratum Id at 0.48 mbs and was intrusive into fill Stratum Ie (fill) and the underlying Stratum II (buried A horizon), where it terminated at 0.85 mbs (Figure 18 and see Table 8); both Strata Id and II are designated components of SIHP # -5820. The pit was oval in plan, measured 0.20 m wide by more than 0.40 m long, and extended into the southwest excavation sidewall. The sediment matrix within the pit feature was loam with similar characteristics to Stratum Id. A 5.5-liter bulk sediment sample and a 7.6-liter screened sample collected from SIHP # -5820 Feature 21 were combined, screened, and yielded charcoal (4.6 g), naturally-occurring marine shell (3.9 g), fish remains (1.6 g), fircracked rock (253.9 g), and marine shell midden consisting of burned shell (4.9 g), *Brachidontes crebristriatus* (5.7 g), Echinoidea (1.8 g), *Nerita picea* (1.8 g), crustacean (0.4 g), and *Tellina palatam* (0.1 g). SIHP # -5820 Feature 21 was interpreted as a pit of indeterminate function.

SIHP # -5820 Feature 22 was identified near the middle of T-151. The pit originated within fill Stratum Id at 0.60 mbs. It was intrusive into both Stratum Ie (fill) and Stratum II (buried A horizon), where it terminated at 0.90 mbs (see Figure 18 and see Table 8). SIHP # -5820 Feature 22 was oval in plan and measured 0.30 m wide by more than 0.66 m long. The feature extended into the southwest excavation sidewall. The sediment matrix within the pit feature was loam with similar characteristics to Stratum Id. A 5.5-liter bulk sediment sample and a 15.2-liter screened sample from SIHP # -5820 Feature 22, collectively yielded charcoal (0.2 g), two pieces of volcanic glass (0.4 g), unidentified medium mammal bone (0.3 g), cement fragments (4.2 g), naturally-occurring marine shell (0.7 g), and marine shell midden consisting of *Nerita picea/Theodoxus neglectus* (7.2 g), *Nerita picea* (49.4 g), *Strombus* sp. (9.1 g), unidentified burned shell (0.6 g), crustacean (0.5 g), *Echinothrix diadema* sp./*Echinometra mathaei* sp. (0.3 g), *Brachidontes crebristriatus* (0.3 g), *Tellina* sp. (0.1 g), and *Turbo* sp. operculum (0.7 g). Two pieces of volcanic glass were sent for EDXRF analysis. The results indicated that the volcanic glass clearly does not match sources from Hawaii County. The sample is from “Group 1,” one of two distinct geochemical groups identified from the 35 City Center Section 4 AIS EDXRF volcanic glass samples, likely representing different volcanic sources on O‘ahu (see EDXRF discussion in Volume V). SIHP # -5820 Feature 22 was interpreted as a pit of indeterminate function.

SIHP # -5820 Feature 23 was identified near the middle of T-151. The pit feature originated within Stratum Id at 0.60 mbs, intruded through Stratum II (buried A horizon) and into Stratum III (Jaucas sand). The feature terminated at 0.99 mbs (see Figure 18 and see Table 8). SIHP # -5820 Feature 23 was oval-shaped in plan and measured 0.49 m wide by more than 0.42 m long. The pit extended into the southwest excavation sidewall. SIHP # -5820 Feature 23 contained marine shell midden, coal, glass, medium mammal bone, and fircracked rock. A 5.5-liter bulk sediment sample and a 11.4-liter screened sample from SIHP # -5820 Feature 23 collectively

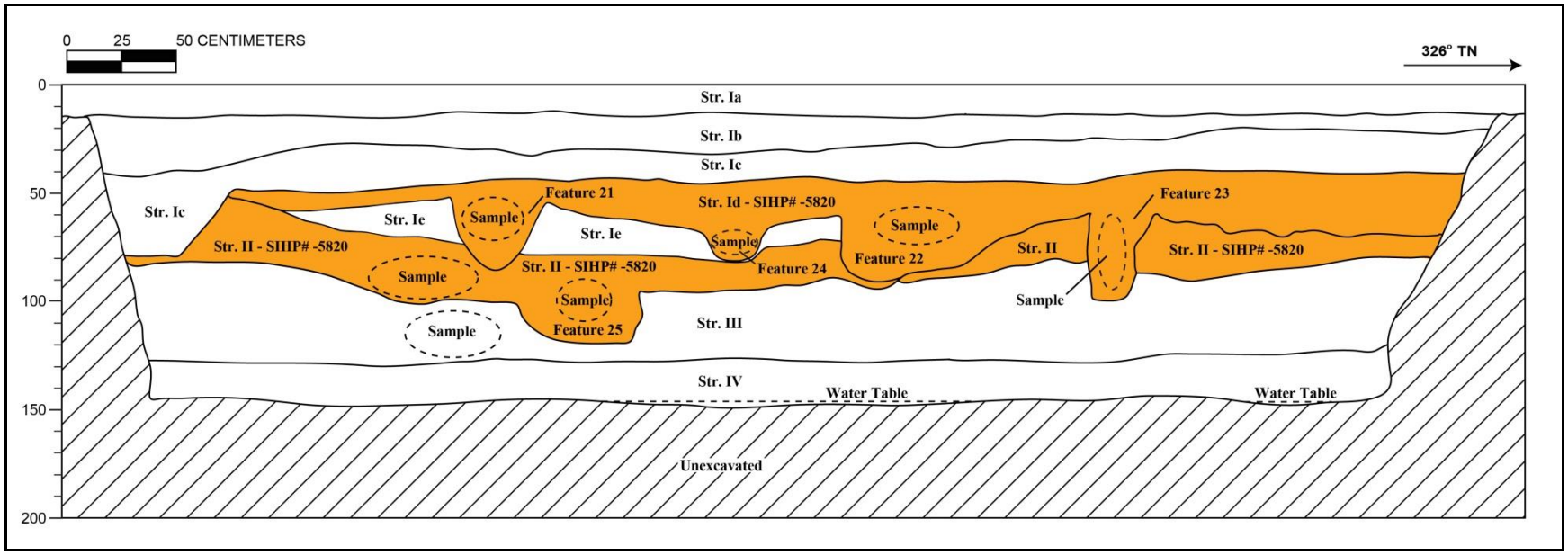


Figure 18: T-151 southwest profile showing SIHP # -5820 Features 21–25

Table 8: T-151 Stratigraphic Description of Southwest Profile

Stratum	Depth (cmbs)	Description
Ia	0-14	Asphalt
Ib	14-42	Fill; 2.5 Y 5/2 (grayish brown); very gravelly sandy loam; structureless, singlgrain; moist, very friable consistency; non plastic; terrigenous origin; clear, smooth lower boundary; contained some wire—possibly from construction; gravel base course fill
Ic	20-79	Fill; 2.5 Y 8/2-7/2 (pale yellow to light gray); extremely gravelly sand; structureless, singlgrain; moist, loose consistency; non-plastic; marine origin; clear, smooth lower boundary; crushed coral base course/grading fill
Id	40-98	Fill; 7.5 YR 2.5/1 (black); gravelly loam; weak, fine, crumb structure; dry, weakly coherent consistency; non-plastic; terrigenous origin; contained *pipipi* (Neritidae) shells, fish remains, burnt metal fragments, 1 red brick fragment (collected); truncated by Stratum Ic; previously disturbed A horizon (SIHP # -5820); contained Features 21-23
SIHP # -5820 Feature 21	48-85	Pit feature originating from Stratum Id; intrusive into Stratum Ie and Stratum II; loam; contained charcoal, marine shell midden, and fish bone; SIHP # -5820 Feature 21
SIHP # -5820 Feature 22	60-90	Pit feature originating from Stratum Id; intrusive into Stratum Ie and Stratum II; loam; contained charcoal, marine shell midden, fish bone, volcanic glass, medium mammal bone, metal and cement fragments; SIHP # -5820 Feature 22
SIHP # -5820 Feature 23	60-99	Possible post mold originating from Stratum Id; intrusive into Stratum II and Stratum III; contained marine shell midden, coal, glass, medium mammal bone, and fircracked rock; SIHP # -5820 Feature 23
SIHP # -5820 Feature 24	70-83	Two small pits, each containing an infant dog burial, originating from Stratum Id; SIHP # -5820 Feature 24
Ie	57-80	Fill, 2.5 Y 7/2 (light gray); loamy sand; weak, medium, crumb structure; moist, friable consistency; non-plastic; mixed origin; clear, wavy lower boundary; contained Feature 24
II	51-118	Natural, 2.5 Y 4/2 (dark grayish brown); fine grained silty sand; weak, fine, crumb structure; moist, very friable consistency; non-plastic; mixed origin; diffuse, irregular lower boundary; contained shells, charcoal, pig and fish remains (collected); truncated by Stratum Ic; former A horizon (SIHP # -5820); contained Feature 25
SIHP # -5820 Feature 25	90-119	Pit originating from Stratum II and intrusive into Stratum III; contained charcoal and faunal bone; SIHP # -5820 Feature 25
III	81-127	Natural; 10 YR 6/4 (light yellowish brown); fine grained sand; structureless, singlgrain; moist, very friable consistency; non-plastic; mixed origin; clear, smooth lower boundary; Jaucas sand

Stratum	Depth (cmbs)	Description
IV	125-150 (BOE)	Natural; 10 YR 7/3 (very pale brown) with clay mottles of 10 YR 7/3 very pale brown; medium-grain sand, structureless, singlgrain; very friable consistency; non-plastic; marine origin; Jaucas sand

yielded possible coal fragments (33.0 g), glass fragments (0.1 g), unidentified fish bone (0.3 g), unidentified medium mammal bone (0.1 g), fircracked basalt rock (344.8 g), vesicular basalt fragments (15.4 g), naturally-occurring marine shell (1.0 g), and marine shell midden consisting of *Nerita picea* (8.0 g), burned shell (2.3 g), *Cymatium* sp. (0.7 g), *Tellina palatam* (1.4 g), *Brachidontes crebristriatus* (0.4 g), *Echinothrix diadema* sp./*Echinometra mathaei* sp. (0.3 g), and crustacean (0.6 g). SIHP # -5820 Feature 23 was interpreted as a possible postmold.

SIHP # -5820 Feature 24 was identified near the middle of T-151. The pit originated within Stratum Id (fill) at 0.70 mbs and terminated within Stratum Ie at 0.83 mbs (see Figure 18 and see Table 8). SIHP # -5820 Feature 24 consisted of two oval-shaped pits; one measured 0.30 m wide by 0.50 m long, while the second measured 0.30 m wide, was more than 0.15m long, and extended into the sidewall. Each pit contained the in situ skeletal remains of an infant dog (*Canis lupus familiaris*, one with incompletely formed permanent dentition and one with deciduous dentition. Additional faunal remains were hand collected during excavation from Stratum II at 0.98 mbs, near and below SIHP # -5820 Feature 24. These remains consisted of juvenile *Sus scrofa* fragments and a Fantail Filefish fragment (0.1 g). None of the remains showed any evidence of cultural modification. SIHP # -5820 Feature 24 was interpreted as two dog burials.

SIHP # -5820 Feature 25 was identified near the middle of T-151. The pit originated at or near the base of Stratum II at 0.90 mbs. It intruded into Stratum III and terminated at 1.19 mbs (see Figure 18 and see Table 8). SIHP # -5820 Feature 25 was not recorded in plan view, but was observed in the southwest profile wall. A 5.5-liter bulk sediment sample was collected from within the pit at 0.90–1.07 mbs. The sample was wet screened and contained charcoal (0.5 g), rat (*Rattus* sp.) bone (0.1 g), burned crustacean (0.8 g), and Echinoidea (0.1 g). Charcoal samples from SIHP # -5820 Feature 25 were submitted for wood taxa identification, and the results indicated the presence of native, Polynesian-introduced, and/or historically- introduced species consisting of *kukui* (*Aleurites moluccana*), *ko‘oko‘olau* (cf. *Bidens* sp.), and one unidentified species. The *ko‘oko‘olau* charcoal sample was submitted for C14 radiocarbon analysis and yielded three possible date ranges, with a calibrated 2-sigma date of AD 1480 to 1660 (95.4%) being the most probable.

SIHP # -5820 Feature 26 was identified near the southeast end of T-151A. The pit originated at or near the base of Stratum Id at 0.74 mbs. It intruded into Stratum Ie and terminated at 0.80 mbs (Figure 19, and Table 9). SIHP # -5820 Feature 26 was an irregular-shaped pit in plan view, measured approximately 0.90 m long by over 0.45 m wide, and extended into the southwest sidewall. The sediment matrix within the pit was consistent with that of Stratum Id. A 2-liter bulk sediment sample and a 9.5-liter screened bulk sediment sample collected from SIHP # -5820 Feature 26 collectively yielded charcoal (0.7 g), naturally-occurring marine shell (1.1 g), volcanic glass (0.1 g), fish remains (0.1 g), basalt (0.6 g), and marine shell midden consisting of *Nerita picea* (6.8 g), *Strombus* sp. (4.6 g), *Echinothrix diadema* sp./*Echinometra mathaei* sp. (0.1 g), *Brachidontes crebristriatus* (0.4 g), crustacean (0.7 g), and burned shell (0.2 g). SIHP # -5820 Feature 26 is interpreted as a pit of indeterminate function.

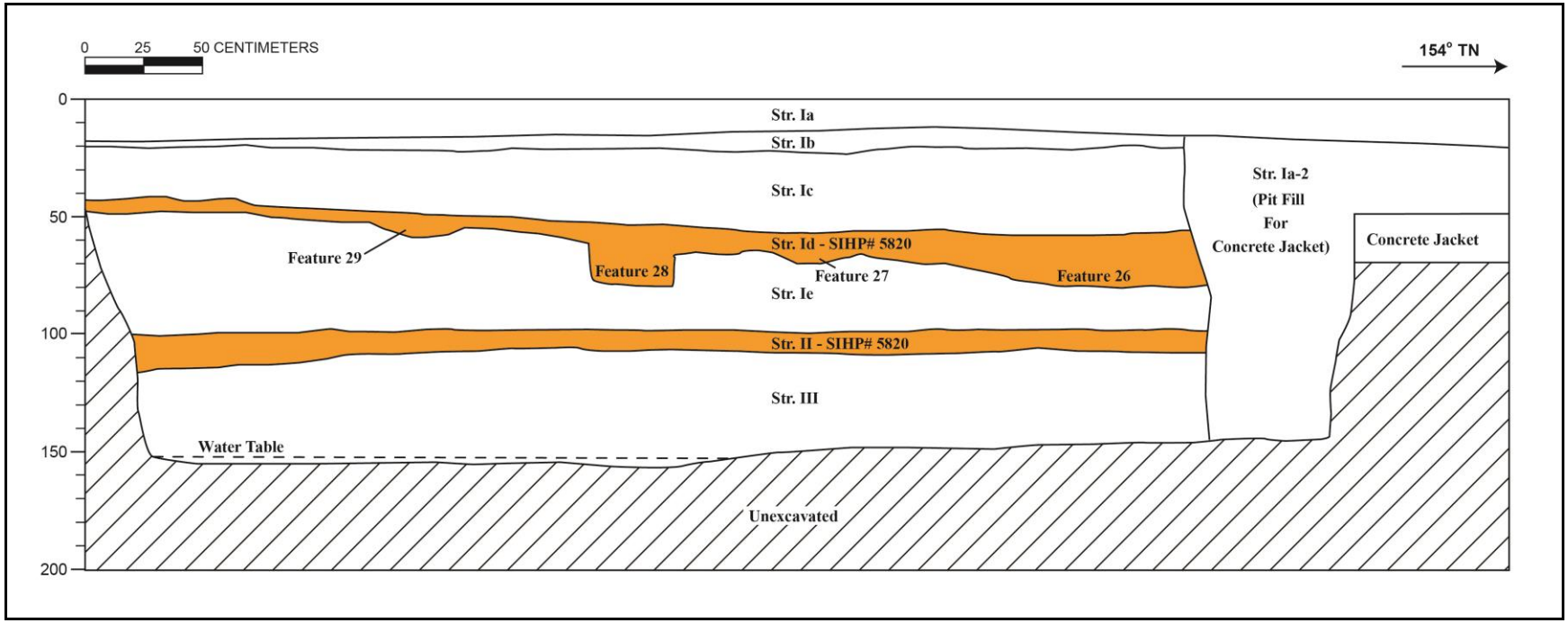


Figure 19. T-151A northeast profile, showing SIHP # -5820 Features 26-29

Table 9. T-151A Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-19	Asphalt
Ia–2	16-145	Fill; 10 YR 4/1 (dark gray); very gravelly sandy loam; structureless; moist, friable consistency; non-plastic; terrigenous origin; lower boundary not visible; fill for concrete jacket
Ib	12-22	Fill; 5 YR 5/1 (gray); very gravelly sandy loam; structureless, singlgrain; moist, friable consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; gravel base course
Ic	19-57	Fill; 2.5 Y 8/3 (pale yellow), very gravelly sand; structureless, singlgrain; moist, friable consistency; non-plastic; marine origin; abrupt, smooth lower boundary; contained PVC utility at 0.46 mbs on the northeast sidewall
Id	40-80	Fill; 10 YR 3/2 (very dark grayish brown); gravelly silty sandy loam; structureless, singlgrain; moist, friable consistency; non-plastic; mixed origin; abrupt, irregular lower boundary; contained historics, shell material, and faunal remains (collected); locally procured fill; based its on texture and contents it was likely procured from the buried A horizon sediments in the vicinity (SIHP # -5820); includes Features 26-29
SIHP # -5820 Feature 26	74-80	Pit feature originating from Stratum Id; silty sandy loam; contained marine shell midden, basalt flakes, volcanic glass, and fish remains; SIHP # -5820 Feature 26
SIHP # -5820 Feature 27	65-72	Pit feature originating from Stratum Id; silty sandy loam; contained marine shell midden, glass, charcoal, and fish remains; SIHP # -5820 Feature 27
SIHP # -5820 Feature 28	60-80	Pit feature originating from Stratum Id; silty sandy loam; contained marine shell midden, glass, ceramics, charcoal, medium mammal remains, and possible fircracked rock; SIHP # -5820 Feature 28
SIHP # -5820 Feature 29	47-58	Pit feature originating from Stratum Id; silty sandy loam; no cultural material observed; SIHP # -5820 Feature 29
Ie	49-100	Fill; 10 YR 6/3 (pale brown); silty sandy loam; structureless, singlgrain; moist, friable consistency; non-plastic; mixed origin; abrupt, smooth lower boundary
II	98-115	Natural, 10 YR 3/2 (very dark grayish brown); silty loamy sand; structureless, singlgrain; moist, friable consistency; non-plastic; mixed origin; clear, smooth lower boundary; contained shell material; faunal remains; buried A horizon; a component of SIHP # -5820
III	105-155 (BOE)	Natural; 10 YR 6/3 (pale brown); silty sandy loam; structureless, singlgrain; moist, friable consistency; non-plastic; marine origin; lower boundary not visible

SIHP # -5820 Feature 27 was identified near the middle of T-151A. The pit originated from at or near the base of Stratum Id at 0.65 mbs. The feature intruded into Stratum Ie and terminated at 0.72 mbs (see Figure 19, Figure 20 and Table 9). SIHP # -5820 Feature 27 was irregular-shaped in plan view. The pit measured approximately 0.38 m long by over 0.35 m wide and extended into the northeast sidewall. The sediment matrix within the feature was consistent with that of Stratum Id. A 1-liter bulk sediment sample and a 3.8-liter screened bulk sediment sample collected from SIHP # -5820 Feature 27 collectively yielded charcoal (0.1 g), naturally-occurring marine shell (2.1 g), white and pink glass fragments (4.8 g), fish remains (0.1 g), and marine shell midden consisting of *Nerita picea* (1.0 g), crustacean (0.4 g), *Brachidontes crebristriatus* (0.2 g), and *Echinometra mathaei* sp. (0.1 g). SIHP # -5820 Feature 27 is interpreted as a pit of indeterminate function.

SIHP # -5820 Feature 28 was identified near the middle of T-151A. The pit originated from at or near the base of Stratum Id at 0.60 mbs and terminated at 0.80 mbs within Stratum Ie (see Figure 19, Figure 20 and Table 9). SIHP # -5820 Feature 28 was mostly linear in plan view, measured approximately 0.30 m long by over 0.74 m wide, and extended beyond the width of the excavation into both the northeast and southwest sidewalls. The sediment matrix of SIHP # -5820 Feature 28 was consistent with that of Stratum Id. A 2-liter bulk sediment sample and a 3.8-liter screened bulk sediment sample collected from within the pit feature yielded charcoal (16.5 g), naturally-occurring marine shell (0.8 g), ceramics (1.5 g), glass (0.6 g), medium mammal remains (0.2 g), medium mammal remains cut with a metal saw blade (14.7 g), possible fire-affected rock (9.7 g), and marine shell midden consisting of *Nerita picea* (4.6 g), crustacean (0.1 g), Echinoidea (0.1 g), and *Brachiodontes crebristriatus* (0.3 g). SIHP # -5820 Feature 28 is interpreted as a pit of indeterminate function.

SIHP # -5820 Feature 29 was identified near the northwest end of T-151A. The pit originated at or near the base of Stratum Id at 0.47 mbs. It was intrusive into Stratum Ie where it terminated at 0.58 mbs (see Figure 19, Figure 20 and Table 9). SIHP # -5820 Feature 29 was not documented in plan view. It was identified in the northeast profile wall, where it measured approximately 0.40 m in length. The sediment matrix within the pit feature was consistent with that of Stratum Id (locally-procured A horizon). 1-liter bulk sediment sample collected from SIHP # -5820 Feature 29 contained naturally-occurring limpets and gastropods (0.4 g), crustacean (0.2 g), *Echinothrix diadema* sp. (0.1 g), and fish remains (0.1 g). SIHP # -5820 Feature 29 is interpreted as a pit of indeterminate function.

Two additional pit features (Features 30 and 31) not associated with either the culturally-enriched A horizons (Stratum Id Stratum II) were identified within SIHP # -5820. SIHP # -5820 Feature 30 is an in situ human burial exposed in the Jaucas sand (Stratum III) below the lower cultural layer in T-142. SIHP # -5820 Feature 31 is a large pit intrusive through two fill strata (IIe), the lower cultural layer (Stratum II), the underlying Jaucas sand (Stratum III) and natural marine/lagoonal sediments (Stratum IV), terminating just above the coral shelf.

SIHP # -5820 Feature 30 was identified near the southeast end of T-142 as an in situ human burial within Stratum III (Jaucas sand) and only partially exposed between 1.00 mbs and 1.12 mbs (see Figure 8, Figure 11, and Table 4). A faint, irregular-shaped pit outline was indiscernible until hand excavation was extended to a depth of 1.00 mbs. The SIHP # -5820 Feature 30 pit most likely extended from the lower boundary of the former A horizon (II), but

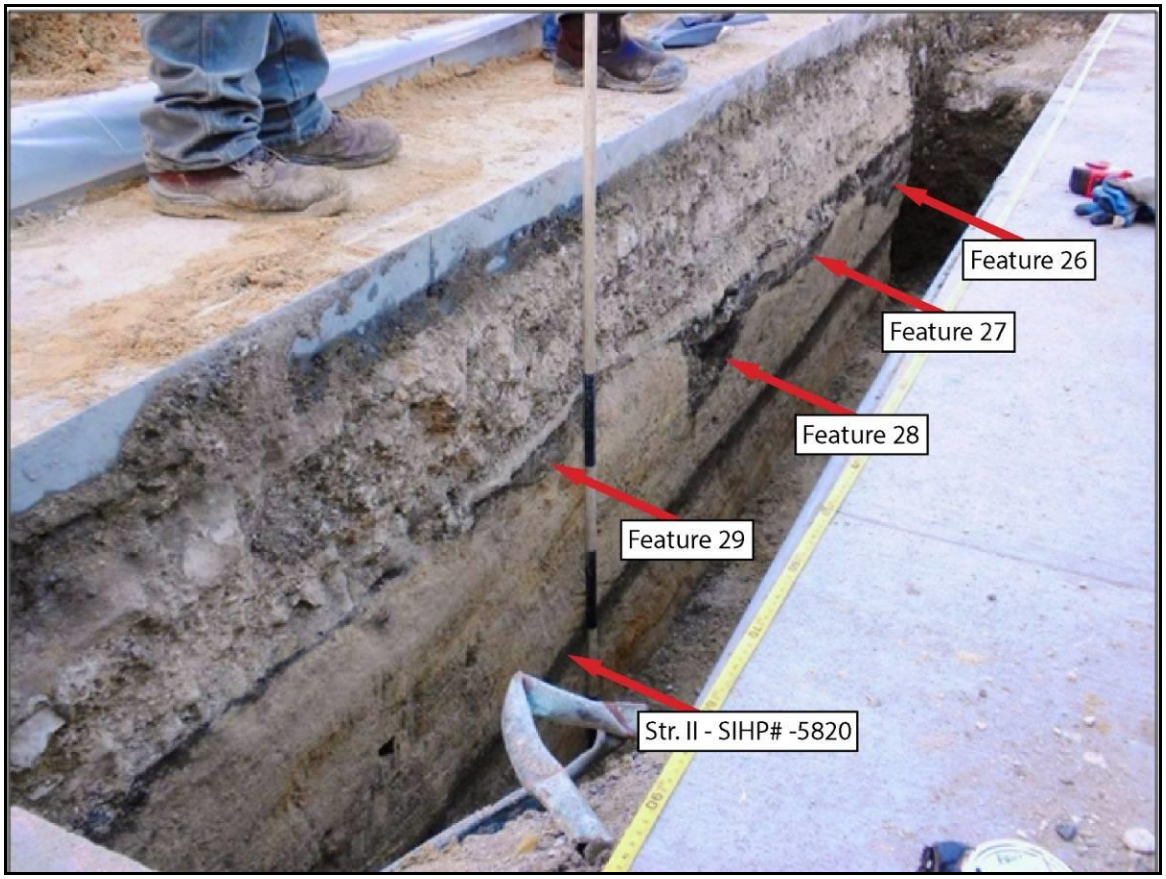


Figure 20. T-151A northeast profile showing SIHP # -5820 (Stratum II) and Features 26-29, view to east

was crosscut by a previously backfilled excavation that terminated at 0.90 mbs. SIHP # -5820 Feature 8, which overlies SIHP # -5820 Feature 30, does not appear to be associated. The burial pit outline was approximately 0.60 m long and over 0.70 mbs wide, extending beyond the width of the excavation into the southwest and northeast sidewalls. The excavation of T-142 resulted in minimal disturbance to the human remains, and all of the sediment from the immediate vicinity of SIHP # -5820 Feature 30 was screened in an effort to recover any fragmented or disturbed human skeletal remains. No grave goods were observed within the feature. The burial was in a flexed position, which typifies traditional Hawaiian practices. The burial was preserved in place, and therefore, a detailed assessment of the remains was not conducted. SIHP # -5820 Feature 30 is identified as a traditional Hawaiian human burial.

SIHP # -5820 Feature 31 appeared to be an intrusive pit feature that was identified at the interface of Strata Ic and Id in T-141 (see Figure 4 and Table 3). SIHP # -5820 Feature 31 originated at the lower boundary of Stratum Ic at 0.25 mbs and intruded into Strata Id through IV and terminated at approximately 1.35 mbs. SIHP # -5820 Feature 31 appeared truncated by overlying fill layers (Strata Ia-Ic) but was intrusive into two fill layers (Strata Id and Ie), the buried A horizon (Stratum II), and underlying natural sands (Strata III and IV). SIHP # -5820 Feature 31 was only observed in the southwest sidewall in the northwestern end of the excavation. A total of seven historic artifacts (Acc. #s 141-A-1 to A-7) were collected from SIHP # -5820 Feature 31 and consisted of Chinese, Japanese, and Euro-American ceramic vessels. The presence of historic material with SIHP # -5820 Feature 31 indicates that the feature postdates the A horizon and Stratum III. SIHP # -5820 Feature 31 also contained scattered, disarticulated human skeletal remains.

Traditional Hawaiian cultural material identified within the buried culturally-enriched A horizon included a basalt game stone (SIHP # -5820 Feature 5) (see Figure 9), a shell fishhook (SIHP # -5820 Feature 6) (see Figure 10), volcanic glass pieces (SIHP # -5820 Features 12, 14, 20 and a bulk sediment sample from Stratum II of T-151), a worked human tibia bone fragment likely for use as a tool (SIHP # -5820 Feature 18), and a basalt tool fragment (SIHP # -5820 Feature 18). Notably, SIHP # -5820 Features 22 and 26 and a bulk sediment sample from Stratum Id of T-151 also contained a piece of volcanic glass; although, these features and the bulk sample originated from fill material postdating the A horizon. In addition, a basalt stone sinker was found in Stratum III (Jaucas sand) of T-141 adjacent to SIHP # -5820 Feature 1 (see Figure 5 and Figure 6).

Historic cultural material was identified within both the lower (Stratum II) and upper (Stratum Id in T-151 and T-151A) cultural layers (SIHP # -5820). Nine ceramic fragments from three Euro-American and one German (pr1820) vessel were collected from Feature 7 within the buried A horizon (Stratum II). The upper cultural layer (Stratum Id) contained one machine-made brick fragment dated between 1918 and 1978 (SIHP # -5820 Feature 23) as well as ceramic and glass fragments collected from bulk sediment samples (Features 27 and 28). Additional historic artifacts were collected from the fill material overlying the cultural layers. They include stone, plastic, and metal (SIHP # -5820 Feature 1), eight Chinese, Euro-American, and Japanese ceramic fragments from seven artifacts (SIHP # -5820 Feature 31), and one small red brick fragment collected from Stratum Id in T-141.

Human skeletal remains were observed in SIHP # -5820 Feature 1 of T-141, Feature 6 of T-142, and SIHP # -5820 Feature 30 of T-142. SIHP # -5820 Feature 1 appears to have been truncated by the overlying fill layer (Stratum Ie). The human skeletal remains associated with

SIHP # -5820 Feature 1 were previously disturbed and scattered beyond the boundaries of the feature. The remains were disarticulated and partially represented a minimum of three individuals. The human skeletal remains from SIHP # -5820 Feature 6 were collected from a bulk sediment sample, from the base of Stratum II, and identified as a tooth (mandibular right lateral incisor), a tooth fragment, and a small piece of cancellous bone. SIHP # -5820 Feature 30 was identified as an in situ human burial within the Jaucas sand (Stratum III) and predating the buried culturally-enriched A horizon. A pit outline was only visible at the level of the human remains; although it is possible that the outline had extended from the base of Stratum II. The burial appeared to be in a flexed position which is indicative of traditional Hawaiian burial practices. SIHP # -5820 Feature 30 was preserved in place, and the general biological profile of the burial was not assessed.

Test excavations comprising SIHP # 50-80-14-5820 contained invertebrate and vertebrate faunal material expressing a strong midden signature. This strong midden content was identified within the lower (Stratum II) and upper (Stratum Id in T-151 and T-151A) cultural layers and within SIHP # -5820 Features 1-29. In general, the faunal remains that were collected were either unmodified, or they exhibited evidence of butchering (i.e., cut with a metal saw blade). Faunal remains identified within the features included a horse (*Equus ferus caballus*) burial (SIHP # -5820 Feature 1), two infant dog (*Canis lupus familiaris*) burials (SIHP # -5820 Feature 24), and skeletal elements identified as cow (*Bos taurus*), pig (*Sus scrofa*), chicken (*Gallus gallus*), bird (Aves), rat (*Rattus* sp.), fish, and small/medium-mammal. T-150 also included osseous material identified as a possible cat (*Felis catus*) within the lower cultural layer (Stratum II).

Invertebrate faunal remains predominately were collected from screened and bulk sediment samples of the SIHP # -5820 buried culturally-enriched A horizon and associated features. Invertebrate fauna included non-cultural shell and shell midden (see Table 2).

Radiocarbon analysis on charcoal samples from SIHP # -5820 Features 8, 9, 12–15, 19, 20, and 25 provided a date range between the late pre-Contact and early post-Contact periods, from as early as AD 1480 to as late as 1920 (see Table 2).

The two culturally-enriched cultural layers (Stratum II and Stratum Id) and the 31 archaeological features identified during the City Center (Section 4) AIS have been combined into SIHP # -5820, previously described by Wineskin and Hammatt (2000) (see Figure 1). Wineskin and Hammatt (2000) reported 11 burials inadvertently discovered along Mother Waldron Park and Halekauwila Street during archaeological monitoring that occurred between 1990 and 1992. At least eight of the 11 human burials encountered during the project were located within the buried culturally-enriched A horizon intruding into the underlying natural sand (see Table 1). The general depositional sequence recorded at the burial sites indicated beach sand deposits overlain by a discontinuous buried A horizon and/or fill layers, similar to the seven City Center Section 4 AIS test excavations designated as SIHP # -5820. In both studies, the cultural layer(s) are capped with one meter or less of fill deposition. Similarities in the depositional environment, location in the stratigraphic column, geographic location, and association with a cultural layer or culturally-enriched A horizon provide the basis for a combination of the findings of Wineskin and Hammatt (2000) with the findings within T-141, T-142, T-145, T-146A, T-150, T-151, and T-151A.

SIHP # -5820 consists of two buried, culturally-enriched layers. SIHP # -5820 includes a total of 31 newly-identified archaeological features (Features 1-31) as well as 11 burials previously identified by Wineskin and Hammatt (2000). Of the 31 newly-identified features, 19 features

(SIHP # -5820 Features 2, 4-20, and 25) are associated with the lower, culturally-enriched A horizon (Stratum II) and include 1 *imu* pit and 18 indeterminate pits. Eight features (SIHP # -5820 Features 21-24 and 26-29) were identified within the upper cultural layer (Stratum Id in T-151 and T-151A) and include 1 pit containing two dog burials, 1 possible postmold, and 6 indeterminate pits. Three additional features (SIHP # -5820 Features 1, 3, and 31) that were truncated by fill material postdating the buried A horizon were considered to be part of SIHP # -5820 based on proximity. They include 1 horse burial pit with disarticulated and scattered human remains, and 2 indeterminate pits. SIHP # -5820 Feature 30 was identified as a traditional Hawaiian burial within the Jaucas sand (Stratum III), which predated the buried A horizon. SIHP # -5820 contained both traditional and post-Contact cultural material, human skeletal remains, vertebrate and invertebrate faunal material, and charcoal. Laboratory analyses of material collected from SIHP # -5820 indicate that the former land surface was utilized from the pre- and/or early post-Contact period to the twentieth century, prior to being capped by historic fill deposits.

Based on the guidance of National Register Bulletin No. 15, SIHP # 50-80-14-5820 retains its integrity of location, design, materials, and workmanship. Based on past documentation and the results of this investigation, CSH recommends that this cultural resource maintains the integrity to support its historic significance under Criterion D (has yielded, or is likely to yield, information important for research on prehistory or history) and E (has cultural significance to an ethnic group) of the Hawai‘i Register, and Criterion D of the National Register, exclusively for its information potential.

SIHP # 50-80-14-5820 has provided, and can potentially provide, additional information on late pre- to early post-Contact habitation, historic land use, and pre- and post-Contact burial practices and distribution within Kaka‘ako. The potential for additional research warrants the implementation of a data recovery program. Data recovery at SIHP # -5820 will focus on data collection from the buried, culturally-enriched sandy loam A horizon and associated features. Additionally, discrete features within fill layers will be identified and documented. Data recovery will include a more intensive regime of strata- and feature specific radiocarbon, palynological, and botanical analysis. The analysis will seek to indicate use and function of culturally-enriched strata and features, and attempt to temporally categorize subsurface deposits to distinguish between traditional Hawaiian versus historic deposition. Data recovery will also seek to identify additional burials or human skeletal remains that may be present at SIHP # 50-80-14-5820. Data recovery will include detailed stratigraphic documentation of identified burial pits or human skeletal remains. Following the data recovery program, an archaeological monitoring program at SIHP # -5820 is recommended. Archaeological monitoring will seek to recover data on the depositional sequence and extent of SIHP # -5820 as well as document culturally-enriched strata and features through recordation and sample collection. The previously identified burial and human remains associated with SIHP # -5820, will be treated in accordance with HAR Chapter 13-13-300 and HRS 6E-43. In order to alleviate the project’s effect on human burials, a project specific burial treatment plan (a requirement of HAR Chapter 13-13-300) will be prepared for consideration of the OIBC and recognized descendants. The agreed upon treatment is preservation in place, the details of which will be documented in the burial treatment plan.

SIHP # 50-80-14-5966

FORMAL TYPE:	Subsurface Kawa Fishpond Sediments
FUNCTION:	Aquaculture
PREVIOUS DOCUMENTATION:	McDermott and Mann 2001
AGE:	Pre- and post-Contact
NUMBER OF FEATURES:	N/A
TYPES OF FEATURES	N/A
DISTRIBUTION:	Approximately 8.13 acres (previously identified)
LOCATION:	West of N Nimitz Highway between Iwilei Road and Awa Street (Iwilei Geographic Zone)
TAX MAP KEY:	TMK [1] 1-5-008:001, 004, 005, 014, 015, 018, 020; [1] 1-5-039; [1] 1-5-039:001, 007, 010; [1] 1-5-040:002, 004; and [1] 2-1-001
LAND JURISDICTION:	Jiriochi Otani Family, Ltd. and the State of Hawai‘i
TEST EXCAVATIONS:	T-095

SIHP # 50-80-14-5966 is a previously-identified cultural resource that consists of subsurface pond sediments associated with Kawa Fishpond (Figure 1). The SIHP # -5966 cultural resource boundary was established based on the 1885 J. F. Brown map of Kapālama (Figure 2). It remains unknown whether fishpond wall(s) exist below the multiple fill deposits documented in this area. Based on historic maps and documents, the former footprint of Kawa Fishpond consists of 8.13 acres. Today the Kawa Fishpond footprint is largely bounded by Iwilei Road, Sumner Street, Awa Street, and N. Nimitz Highway within the Iwilei Geographic Zone. Initial documentation of the fishpond was performed by McDermott and Mann (2001) during an archaeological inventory survey for the Nimitz Highway Water System Improvements, Part I, Project (see Figure 1).

Few oral traditions, legends, or other ethnographic information exist regarding Kawa Fishpond. The Hawaiian word “*kawa*,” however, literally translates as a precipice or leaping place, or as the pool below a precipice into which swimmers leap (Pukui and Elbert 1986:139). The earliest information about the pond comes from historic maps of Honolulu. The location of Kawa Fishpond can be seen in an 1885 map by J. F. Brown and an 1897 map by M. D. Monsarrat (see Figure 2 and Figure 3). Whether Kawa Fishpond dates prior to European Contact or dates to early nineteenth century efforts to feed Kamehameha’s royal court remains unclear as no ethnographic or historical accounts of the construction or use of Kawa Fishpond were found.

Historic photographs dating to the mid-1860s indicate that portions of the Kawa Fishponds walls included approximately four to seven courses of exposed dry-stacked, basalt and/or coral boulders (Figure 4 to Figure 6). The northwestern edge of the pond, nearest to Iwilei Prison, consists of a natural limestone bank (Figure 7). Kikuchi, in his 1973 study of Hawaiian fishponds, classified Kawa Fishpond as a Type I pond or *loko kuapā*. Kikuchi (1973:227) describes this type as “a fishpond of littoral water whose side or sides facing the sea consist of a stone or coral wall containing one or more sluice grates.”

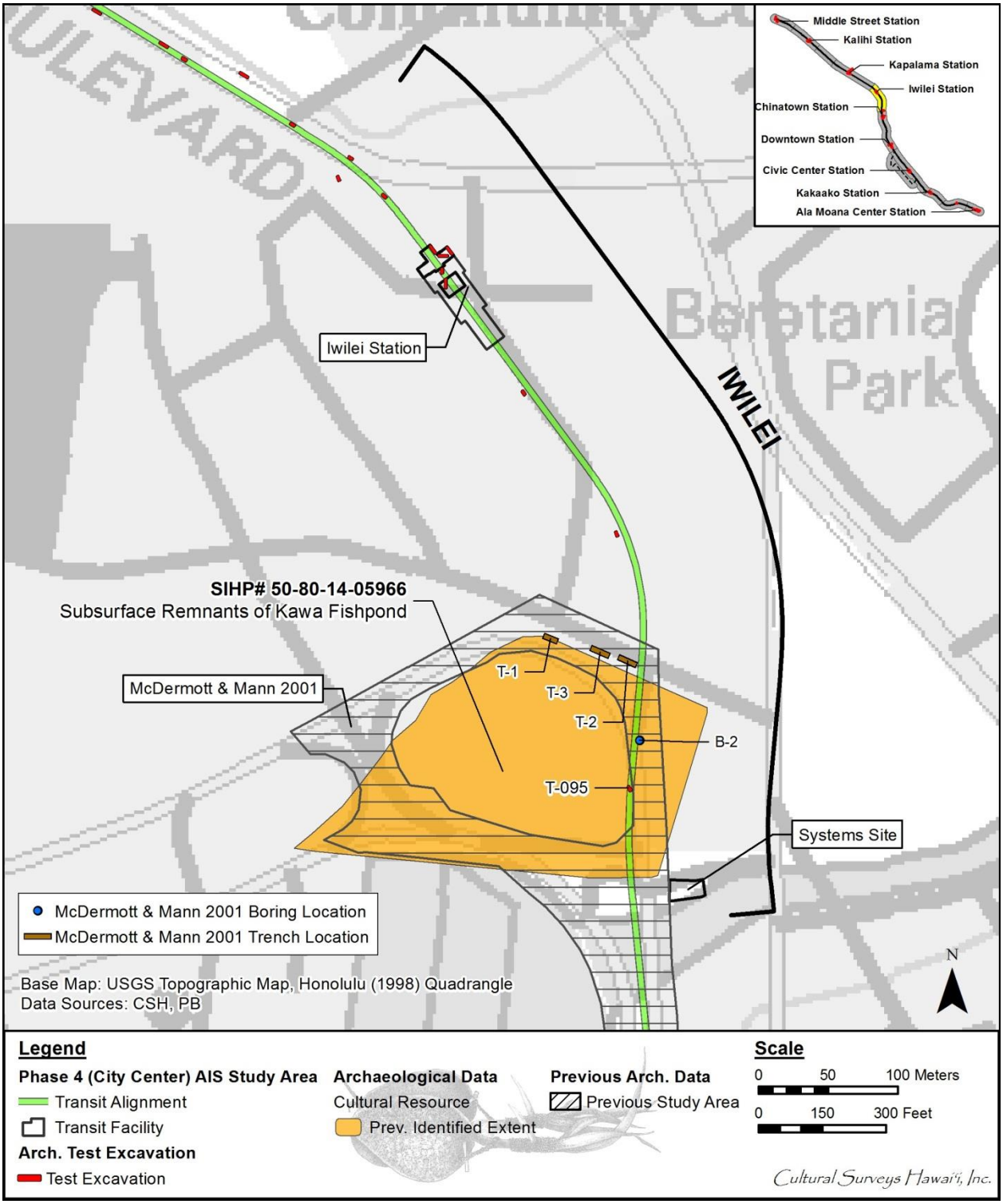


Figure 1. Location and extent of Kawa Fishpond AIS test excavation T-095 and previous archaeological investigations (Trenches T-1 through T-3 and Bore 2) (base map: 1998 U.S. Geological Survey topographic map, Honolulu Quadrangle)

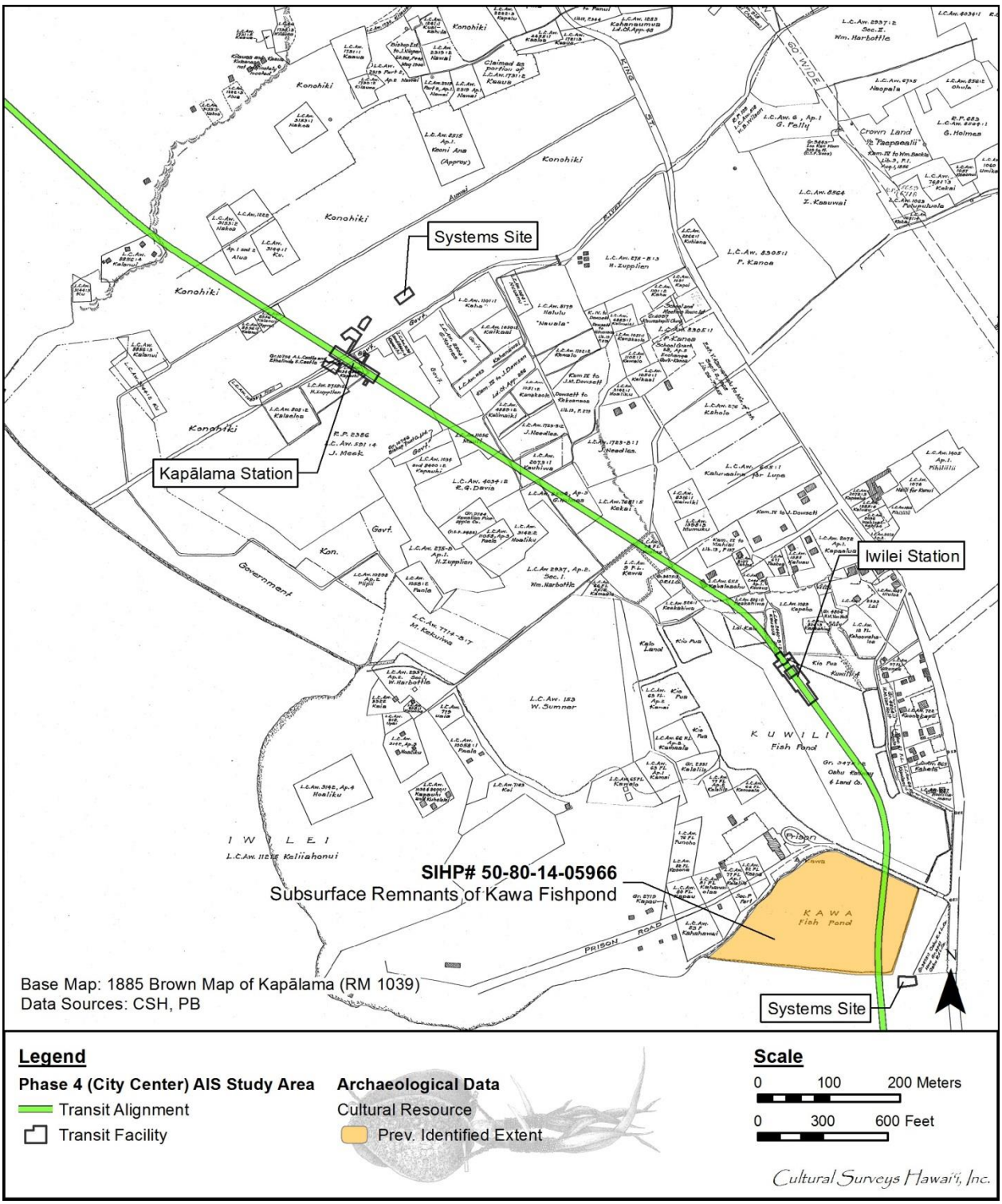


Figure 2. *Makai* sections of the 1885 map of Kalihi and Kapālama by J. F. Brown showing the general location of Kawa Fishpond (shown in yellow)

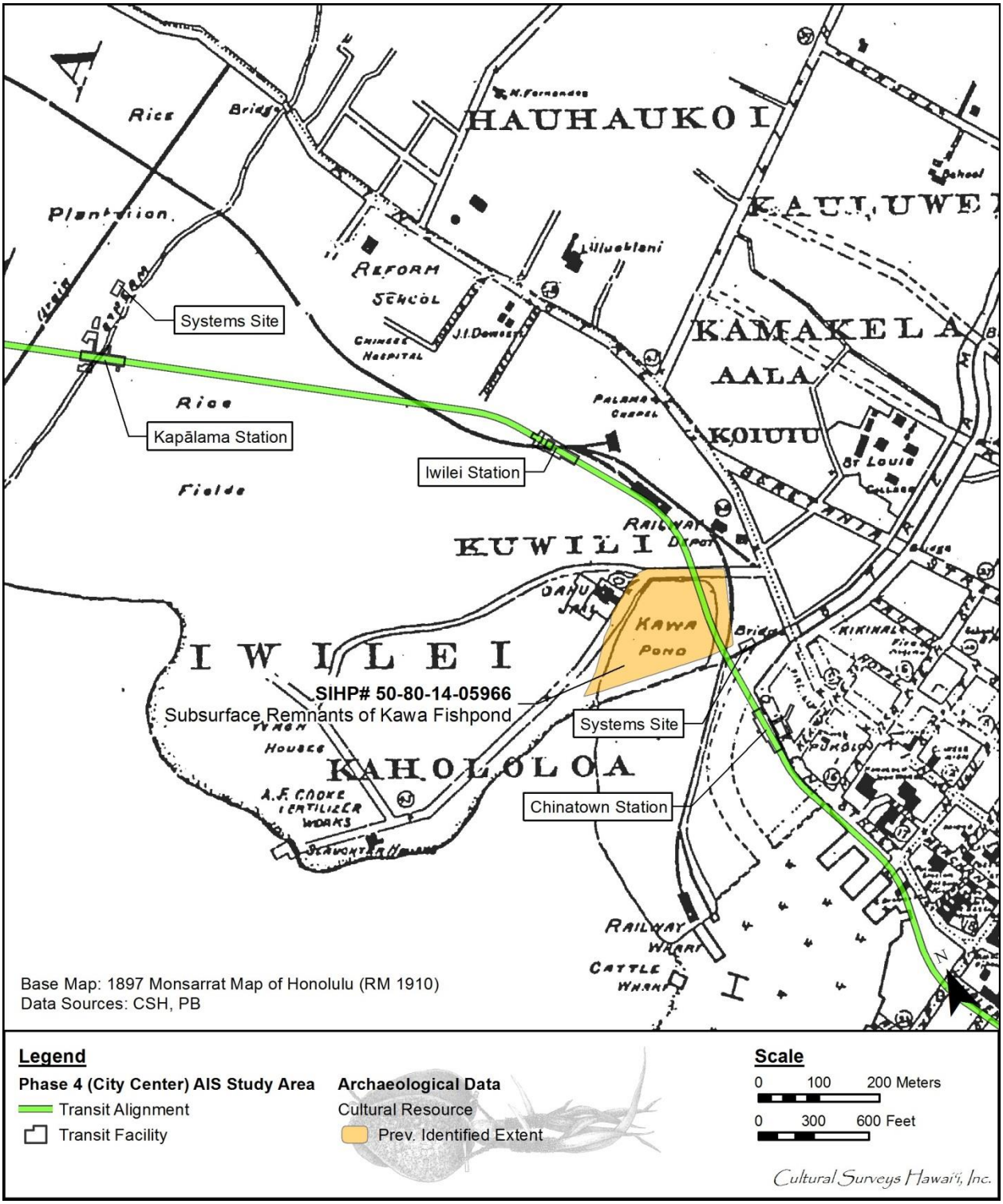


Figure 3. Portion of the 1897 Map of Honolulu by M. D. Monsarrat (Reg. Map 1910) showing the general location of Kawa Fishpond (shown in yellow)

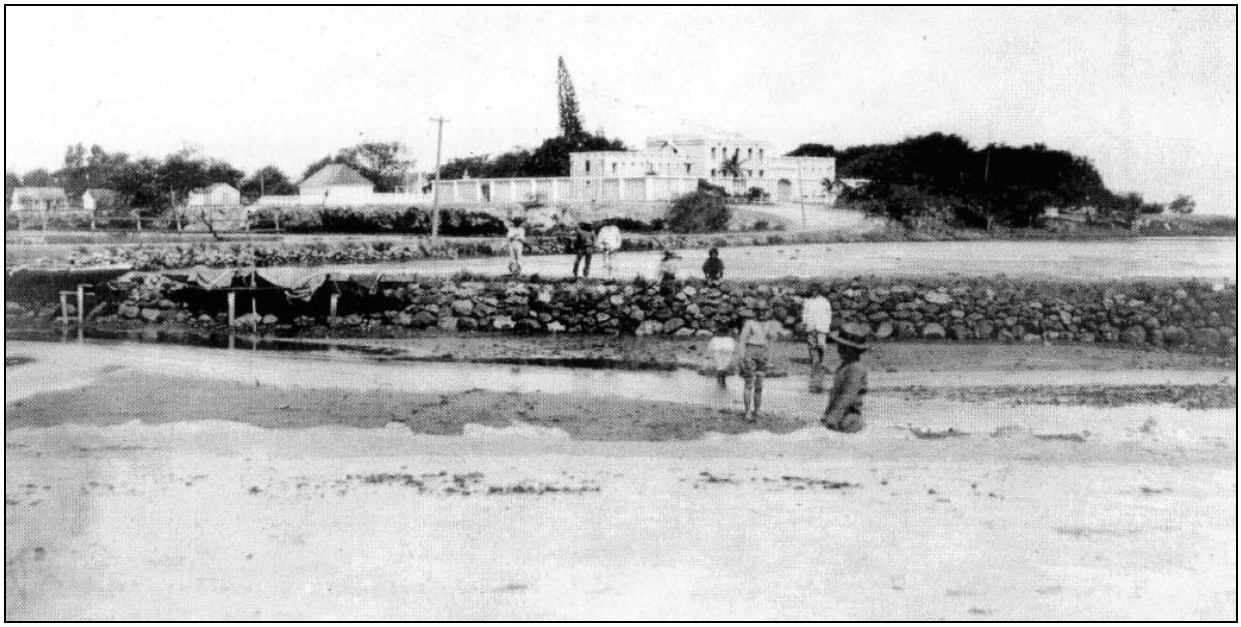


Figure 4. 1860s photograph, shot to the west, of Kawa Fishpond (foreground), Kūwili Fishpond (far right), Iwilei (Prison) Road, and Iwilei Prison, taken at low tide (Hawai‘i State Archives)

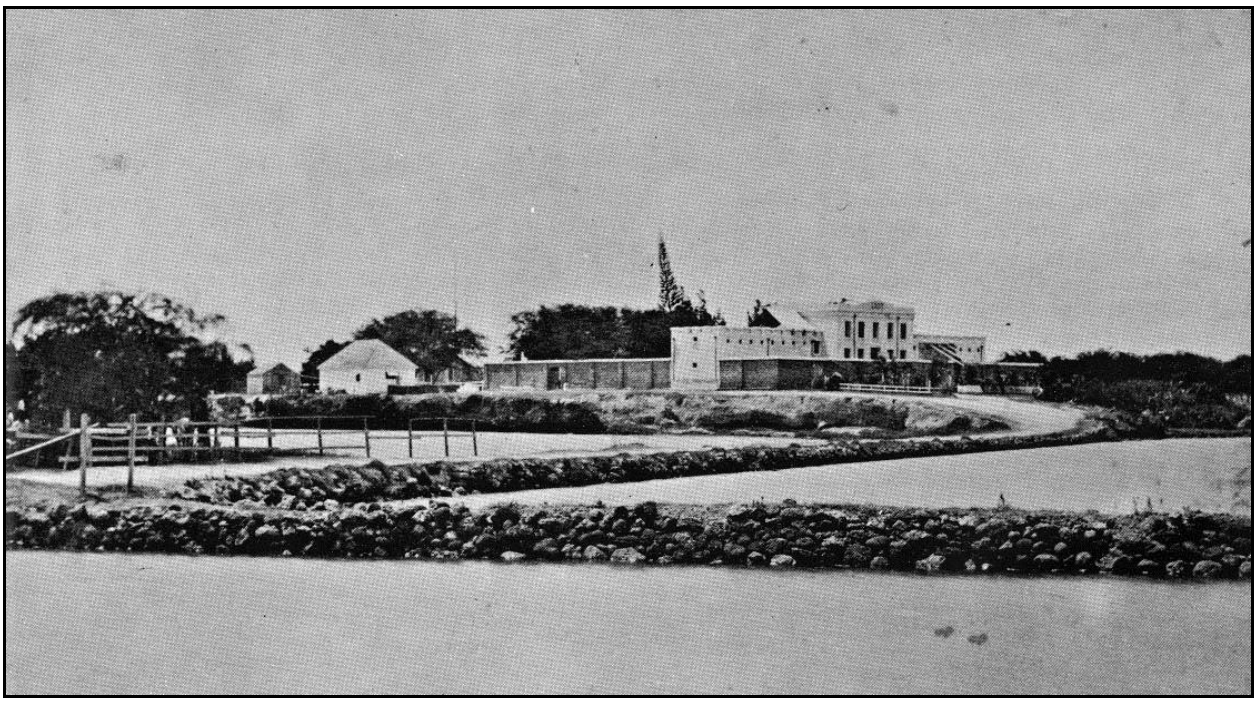


Figure 5 1860s photograph, shot to the west, of Kawa Fishpond (foreground), Kūwili Fishpond (right), Iwilei (Prison) Road (left), and Iwilei Prison (Hawai‘i State Archives)

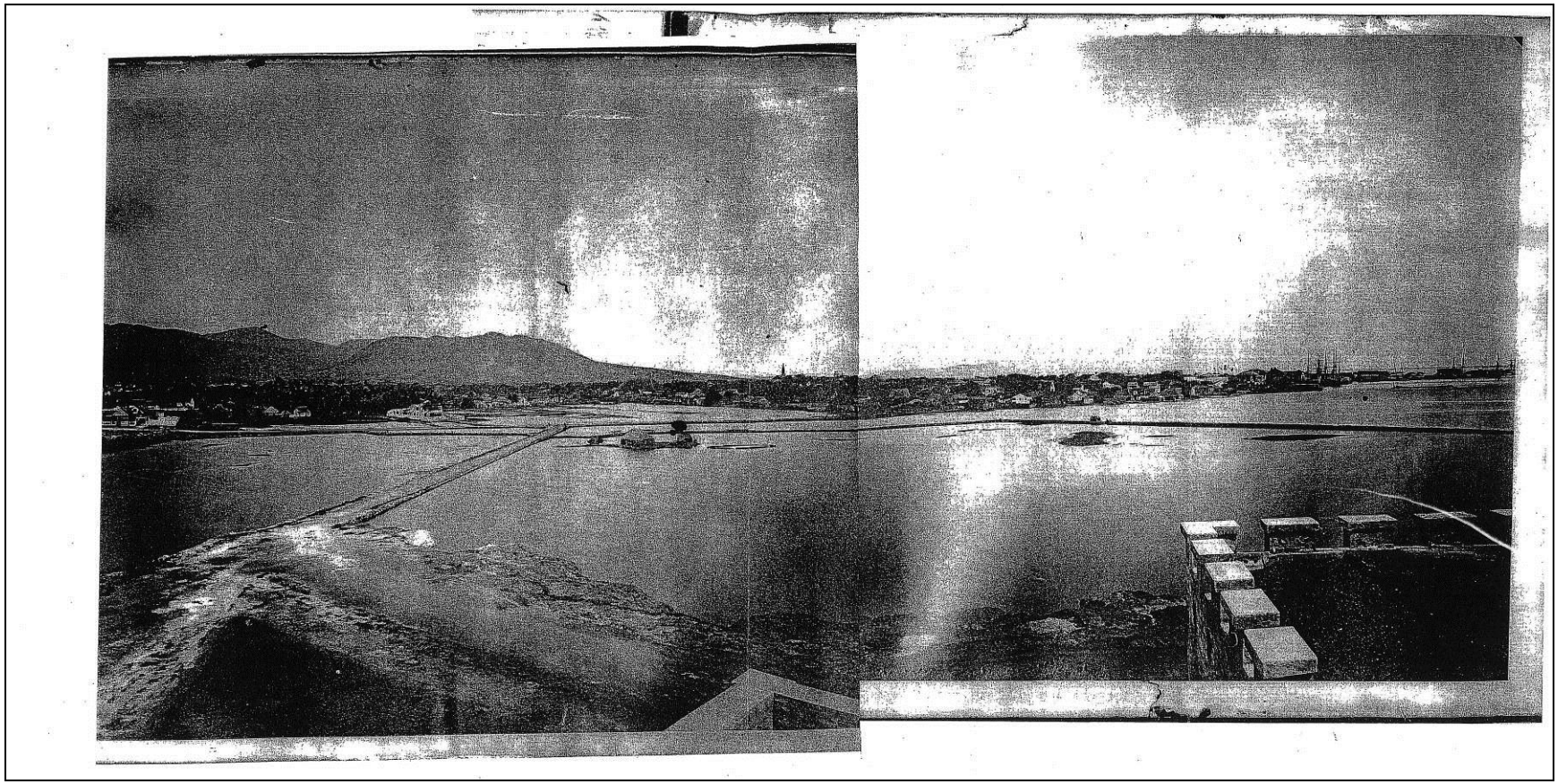


Figure 6. Three 1865 photographs taken from Iwilei Prison ramparts showing a panorama of Kūwili (left) and Kawa (right) Fishponds with Iwilei (Prison) Road (adapted from McDermott and Mann 2001:20)

Figure 7. 1860s photograph of northern portion of Kawa Fishpond with Iwilei Prison in background. A natural limestone bank of the fishpond is clearly visible (Hawai‘i State Archives)

Historic maps indicate that the location and shape of Kawa Fishpond remained relatively unchanged into the late 1800s. An outbreak of cholera centered on both sides of the Nu’uanu Stream, however, prompted the Honolulu Board of Health on September 28, 1895, to recommend the infilling of the fishpond (*Pacific Commercial Advertiser*, 2:2).

McDermott and Mann (2001) identified Kawa Fishpond sediments within two of three backhoe test excavations (Trench 1 and Trench 3) and one geotechnical test bore (2) performed during the archaeological inventory survey for the Nimitz Highway Water System Improvements, Part I, Project. These fishpond sediments were identified ranging in depth from 2.04 mbs to 3.50 mbs. They described them as “fine grained, relatively homogenous, dark gray silty sediments” underlying fill deposits (McDermott and Mann 2001:43).

Documentation of Trench 3 in the McDermott and Mann (2001) study identifies Kawa Fishpond sediments as Stratum XIII (204-230 cmbs) (Figure 8, Figure 9, and Table 1). A total of four samples were collected from the Kawa Fishpond sediments within Trench 3 for radiocarbon, micro-charcoal, and palynomorph analysis. The two samples depicted on the Trench 3 profile include Beta 157193 (AD 1450 to 1650, 95.4% probability) and Beta 157454 (AD 1670 to 1770, 30.3% probability/AD 1800 to 1960, 61.5% probability) (see Figure 9). No samples were analyzed from Trench 1 as the deepest layers of the excavation were considered to be heavily contaminated with petroleum (McDermott and Mann 2001:45).

McDermott and Mann (2001:59) attempted to provide data on the age of construction of Kawa Fishpond and summarized the radiocarbon results as follows:

> The radiocarbon dating evidence, albeit tentative, combined with indisputable historic evidence, indicate that the low-energy, finely-sorted Stratum XIII, presumed to be the floor of Kawa Fishpond (in Trench 3), was extant from between the period A.D. 1150-1350 and c. A.D. 1890.

Micro-charcoal particle counts and palynomorph analysis of Kawa Fishpond sediments identified only native and Polynesian-introduced taxa, with no historically-introduced taxa present. These results were considered anomalous considering the known historic use of the fishpond (McDermott and Mann 2001:60). In addition, glass bottle fragments dating to the mi to late nineteenth century were recovered from within the fishpond sediments.

Subsurface Kawa Fishpond sediments were not encountered in T-095, the only test excavation located within the former Kawa Fishpond footprint during the current archaeological inventory survey (Figure 10, Figure 11, and Table 2). No additional test excavations within the fishpond footprint were attempted due to the presence of existing numerous subsurface utilities and the potential disruption to vehicular traffic and adjacent business access. The observed stratigraphy within T-095 consisted of fill layers down to 1.45 mbs, where excavation was halted due to the presence of contaminated sediment. The lower fill deposits likely are associated with the initial late nineteenth century infilling of Kawa Fishpond, as McDermott and Mann (2001) indicate they encountered fishpond sediments only 20 cm below this, at 2.04 mbs in Trench 3. However, since pond sediments were not encountered within (T-095), it is unknown how many more fill layers may exist below the contaminated layer. In addition, it remains unknown if buried fishpond sediments occur below the lowest fill deposits.

Figure 8. Trench 3 sidewall, view to northeast (McDermott and Mann 2001:53)

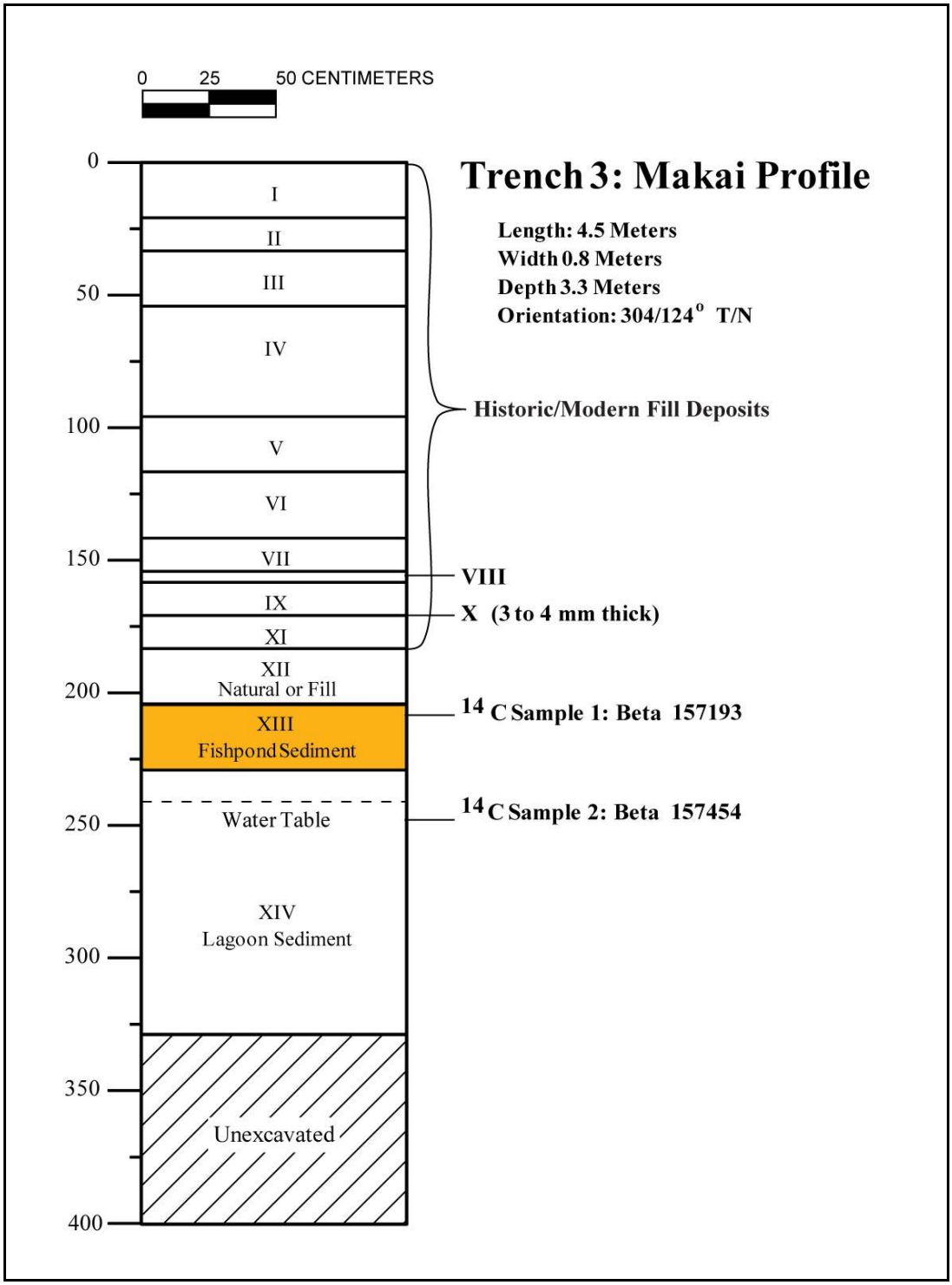


Figure 9. Trench 3 (T-3) Profile showing fishpond sediment (Layer XIII) below natural or fill sediment (Layer XII) and atop natural lagoonal sediments (Layer XIV) (adapted from McDermott and Mann 2001:54)

Table 1. Trench 3 Stratigraphic Description (adapted from McDermott and Mann 2001)

Stratum	Depth (cmbs)	Description
I	0-20	(Dry) 5YR 3/3 dark reddish brown; non-coherent; clay loam; weak, fine, subangular blocky structure; contains roots and rootlets, some construction gravels and modern trash; L/B abrupt/smooth; modern landscaping fill sediment
II	20-30	Crushed coral fill material
III	30-55	Basalt construction gravel, 5-10 cm diameter, in a sandy loam matrix, bed for overlying crushed coral surface
IV	55-90	(Dry) 10YR 5/4 yellowish brown; slightly hard; loamy sand; structureless; contains basalt and coral construction gravel, a few roots and rootlets; L/B clear smooth; modern fill material
V	90-115	(Dry) 10YR 4/2 dark grayish brown; slightly hard; medium sand; structureless; contains a few subangular coral cobbles; L/B abrupt smooth; fill material
VI	138-156	(Dry) 7.5YR 4/4 brown; slightly hard; gravelly loamy sand; structureless; contains some roots, a piece of shell; L/B abrupt wavy; fill layer
VII	138-156	(Dry) 7.5YR 3/3 dark brown; slightly hard; sandy loam; structureless; contains roots and rootlets and some pockets of marine sand with shell fragments; L/B abrupt/smooth; fill layer.
VIII	156-161	(Moist) 5YR 4/4 brown; very friable; very fine silty sand; structureless; contains charcoal fragments; L/B very abrupt/smooth; fill layer
IX	161-174	(Moist) 10YR 4/1 dark gray; very friable; very fine micro-stratigraphy (layers c. 2 mm-3 cm thick) consisting of interbedded layers of clay and silty clay, some of the layers are heavily enriched with decomposing organic material; structureless; L/B very abrupt/smooth; fill material, most likely that result of the settling of pumped, very fine sediments
X	174	(Moist) 10YR 5/1 gray; slightly sticky; sandy clay; structureless; layer only approximately 3-4 mm thick; L/B very abrupt/smooth; fill material, similar to the overlying Stratum IX
XI	174-176	(Wet) 7.5YR 4/3 brown; slightly sticky; coarse sand; structureless; contains small shell fragments; L/B very abrupt smooth; fill material
XII	176-204	(Wet) dark gray; non sticky; medium to fine sand; structureless; contains shell fragments and some whole shells, also water rounded basalt gravels; L/B abrupt/smooth; Dr. Ward found micro-charcoal particles within this sediment, a low concentration of 2.3 mm^2/cc; it is not clear whether this well-sorted sand is a natural sediment or fill layer. Based on superposition it post-dates the silty clay fishpond sediments immediately below (Strata XIII). It apparently contains no historically-introduced palynomophs

XIII	204-230	(Wet) 10YR 4/1 dark gray; slightly sticky; silty clary; structureless; contains a coconut shell fragment, and fragments of two glass bottles manufactured between 1870 and 1900; charcoal particles were collected from this sediment during wet screening with 1/16 inch mesh; also Dr. Ward calculated a micro-charcoal particle concentration of 54.6 mm^2/cc for this sediment; good palynomorph preservation; L/B abrupt/smooth; natural fishpond sediment; Kawa Fishpond sediment; component of SIHP # -5966
XIV	230-330	(Wet) 10YR 4/1 dark gray; slightly sticky; cobbly, gravelly, silty clay; structureless; contains subangular to rounded coral gravels and cobbles, also water rounded basalt gravels and cobbles, and angular shell fragments and whole shells; charcoal particles were collected from this sediment during wet screening with 1/16 inch mesh; also Dr. Ward calculated a micro-charcoal particle concentration of 38.3 mm^2/cc for this sediment; palynomorph preservation was good; natural lagoonal sediment

Figure 10. T-095 northeast wall profile, showing fill deposits only, view to northeast

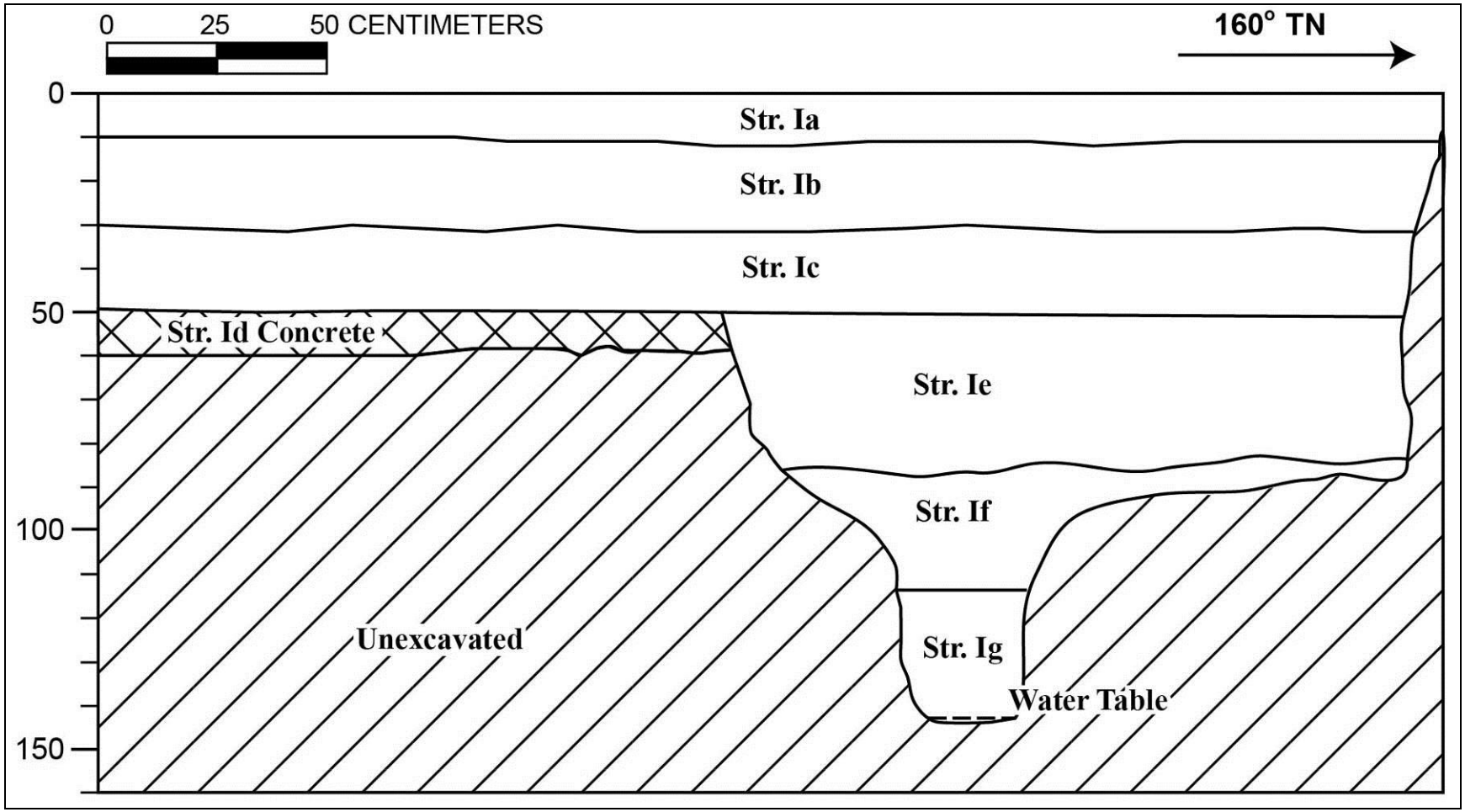


Figure 11. T-095 northeast wall profile

Table 2. T-095 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-11	Asphalt
Ib	11-31	Fill; 10 YR 7/3 (very pale brown); gravelly cobbly coarse sand; structureless, singlgrain; dry, loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary; crushed coral base course
Ic	31-50	Fill; 10 YR 3/3 (dark brown); clay loam; weak, very fine, blocky structure; moist, friable consistency; slightly plastic; terrigenous origin; clear, smooth lower boundary; imported fill layer with coral gravel inclusions
Id	50-60	Fill; 2.5” concrete slab, possible sidewalk
Ie	50-87	Fill; 10 YR 3/2 (very dark grayish brown); sandy loam; structureless, singlgrain; moist, loose consistency; non-plastic; mixed origin; diffuse, smooth lower boundary; contained construction debris fill, ABM bottle fragment, ceramic plate fragment, bakelite fragment, and red brick chunks (not collected), coral and basalt chunks
If	85-115	Fill; 10 YR 4/2 (dark grayish brown); clay loam; weak, very fine, blocky structure; moist, friable consistency; plastic; terrigenous origin; abrupt lower boundary; contained some charcoal flecking ~5%; imported fill, 0.5 m x 0.5 m x 0.3 m coral block
Ig	115-145 (BOE)	Fill; 10 YR 2/1 (black); very fine sandy loam; structureless, singlgrain; moist, friable consistency; plastic; terrigenous origin; lower boundary not visible; contaminated fill layer

SIHP # -5966 (Kawa Fishpond) is an aquacultural locality that, based on background research and previous archaeological studies, may have been constructed pre-Contact or in the early nineteenth century with continued use to the end of the nineteenth century. Kikuchi (1973:227) classified Kawa Fishpond as a Type I pond or *loko kuapā*, and photographs from the 1860s document the presence of fishpond walls consisting of about four to seven exposed courses of dry-stacked, basalt and/or coral boulders. McDermott and Mann (2001) identified Kawa Fishpond sediments within two of three backhoe test excavations (T-1 and T-3) and one geotechnical test bore (2). Radiocarbon analysis of fishpond pond sediment samples collected by McDermott and Mann (2001) provided evidence for pre-Contact deposition. One test excavation (T-095) was excavated within the footprint of Kawa Fishpond during the City Center (Section 4) AIS. The observed stratigraphy within T-095 consisted of fill layers down to 1.45 mbs, where excavation was halted due to the presence of contaminated sediment. Although direct evidence of Kawa Fishpond was not encountered during the current investigation, there is a possibility that fishpond sediments are present below the documented fill deposits in T-095 based on findings reported in McDermott and Mann (2001).

Based on the guidance of National Register Bulletin No. 15, SIHP # 50-80-14-5966 (Kawa Fishpond) retains its integrity of location and possibly also of materials and workmanship. SIHP # -5966 was previously determined eligible to the Hawai‘i and National Registers under significance Criterion D (has yielded, or is likely to yield information important for research on prehistory or history) by McDermott and Mann (2001).

SIHP # -5966 has provided information, and has potential to provide additional information, on the construction and use history of Kawa Fishpond, as well as the nature and sequence of sedimentation within the fishpond and its subsequent infilling near the end of the nineteenth century. The potential for additional research warrants the implementation of a data recovery program. Data recovery will compare previous and current data in an attempt to provide information on the relationship between Kawa Fishpond (SIHP # -5966) and adjacent Kūwili Fishpond (SIHP # -5368). In addition, data recovery will focus on identifying Kawa Fishpond sediments within the HRTP project APE and establishing a more refined chronology of the fishpond through intensive sampling of sediments for micro- and macro-botanical, radiocarbon, and other analytical studies. Sediment column samples and/or sediment cores will be incrementally partitioned (1-3 cm increments) and submitted for palynological and radiocarbon analysis. Following the data recovery program, an archaeological monitoring program is recommended at SIHP # -5966. Archaeological monitoring will seek to obtain additional data on the depositional sequence and extent of SIHP # -5966 as well as document any potential structural remnants of Kawa Fishpond such as fishpond walls that may be encountered during construction. Archaeological monitoring will involve additional intensive sampling of any exposed Kawa Fishpond sediments for palynological and radiocarbon analysis for comparison to data from previous archaeological research within Kawa fishpond and with data from other Hawaiian fishponds, especially the adjacent Kūwili Fishpond.

SIHP # 50-80-14-6636

FORMAL TYPE:	Subsurface Kewalo wetland remnants
FUNCTION:	Agriculture, aquaculture, and habitation
PREVIOUS DOCUMENTATION:	O’Hare et al. 2003, O’Hare et al. 2004, Tulchin and Hammatt 2005, Clark and Grosser 2005, Hammatt 2008, Altizer et al. 2011, Runyon et al. 2011, and Morriss et al. 2013
AGE:	Pre- and post-Contact
NUMBER OF FEATURES:	1
TYPES OF FEATURES:	1 Berm, associated coral wall and post (O’Hare et al. 2003)
DISTRIBUTION:	Approximately 1.22 acres (within current project area), 62.8 acres (total interpolated area)
LOCATION:	Bounded by Keeaumoku Street, Ala Moana Boulevard, Cummins Street, and Hoolai Street (East Kaka‘ako and Kālia Geographic Zones)
TAX MAP KEY:	[1] 2-3-004, [1] 2-3-004:069, [1] 2-3-007, [1] 2-3-007:033 [1] 2-3-038:006, [1] 2-3-039:004 and 011 (current project area); [1] 2-3-010:028 (O’Hare et al. 2003); [1] 2-3-006:014, 017 (O’Hare et al. 2004); [1] 2-3-004:073, [1] 2-3-005:027, [1] 2-3-006:014, and [1] 2-3-007:002 (Tulchin and Hammatt 2005); [1] 2-3-003:075 (Clark and Grosser 2005); [1] 2-3-010:019, 020, 021, 024, 025, 026 (Altizer et al. 2011); [1] 2-3-004:080, [1] 2-3-006:014 (Runyon et al. 2011); [1] 2-3-007:026 and 049 (Runyon et al. 2012);[1] 2-3-038:001 (Morriss et al. 2013)
LAND JURISDICTION:	The City and County of Honolulu; Cody Properties, LLC; Kaka‘ako Associates, LLC; General Growth Properties Ala Moana; Kewalo Development LLC; Sam House Development, LLC; and Izuo Brothers, Ltd. (within current project area)
TEST EXCAVATIONS:	T-186 through T-193, T-195, T-196, T-198 through T-200, T-202, T-202A, T-203, T-205, T-207 through T-212, T-214, T-219, T-220, and T-221

SIHP # 50-80-14-6636 is a previously-identified subsurface deposit representing the former Kewalo wetland, including pond sediments, berm(s), and possible associated coral retaining wall and wooden post. The subsurface deposit has been identified in numerous previous archaeological studies. SIHP # -6636 is primarily bounded by Keeaumoku Street, Ala Moana Boulevard, Cummins Street, and Hoolai Street within the East Kaka‘ako and Kālia Geographic Zones (Figure 1).

The 1884 Bishop Map of Honolulu indicates that the entire current interpolated extent of SIHP # -6636 is located within wetlands or marsh with minimal development in the vicinity (Figure 2). LCA records document fishponds, taro patches, house lots, and pasture land. LCA

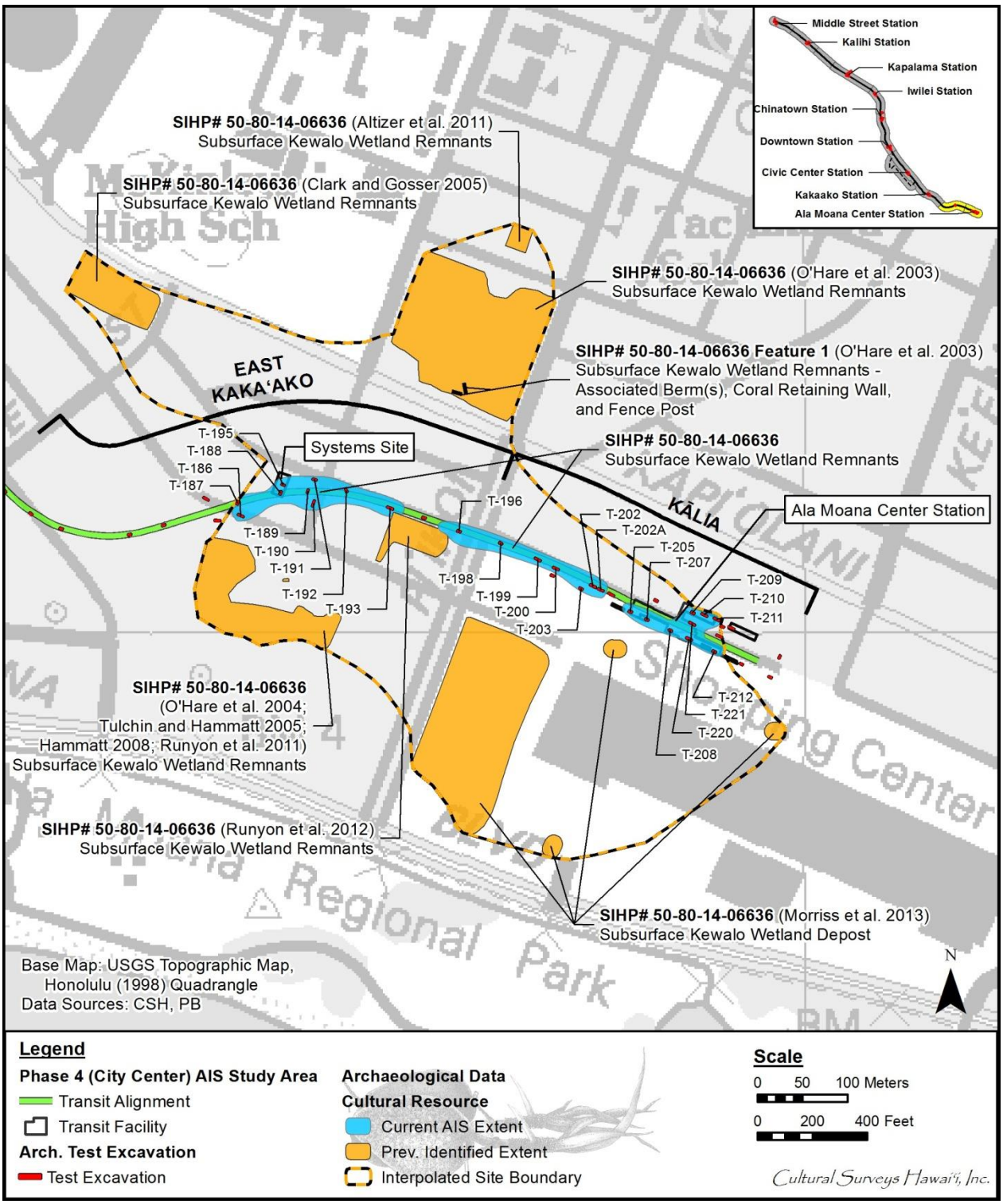


Figure 1. Locations of former- and newly-identified portions of SIHP # 50-80-14-6636 in the vicinity of the East Kaka‘ako and Kālia Geographic Zones

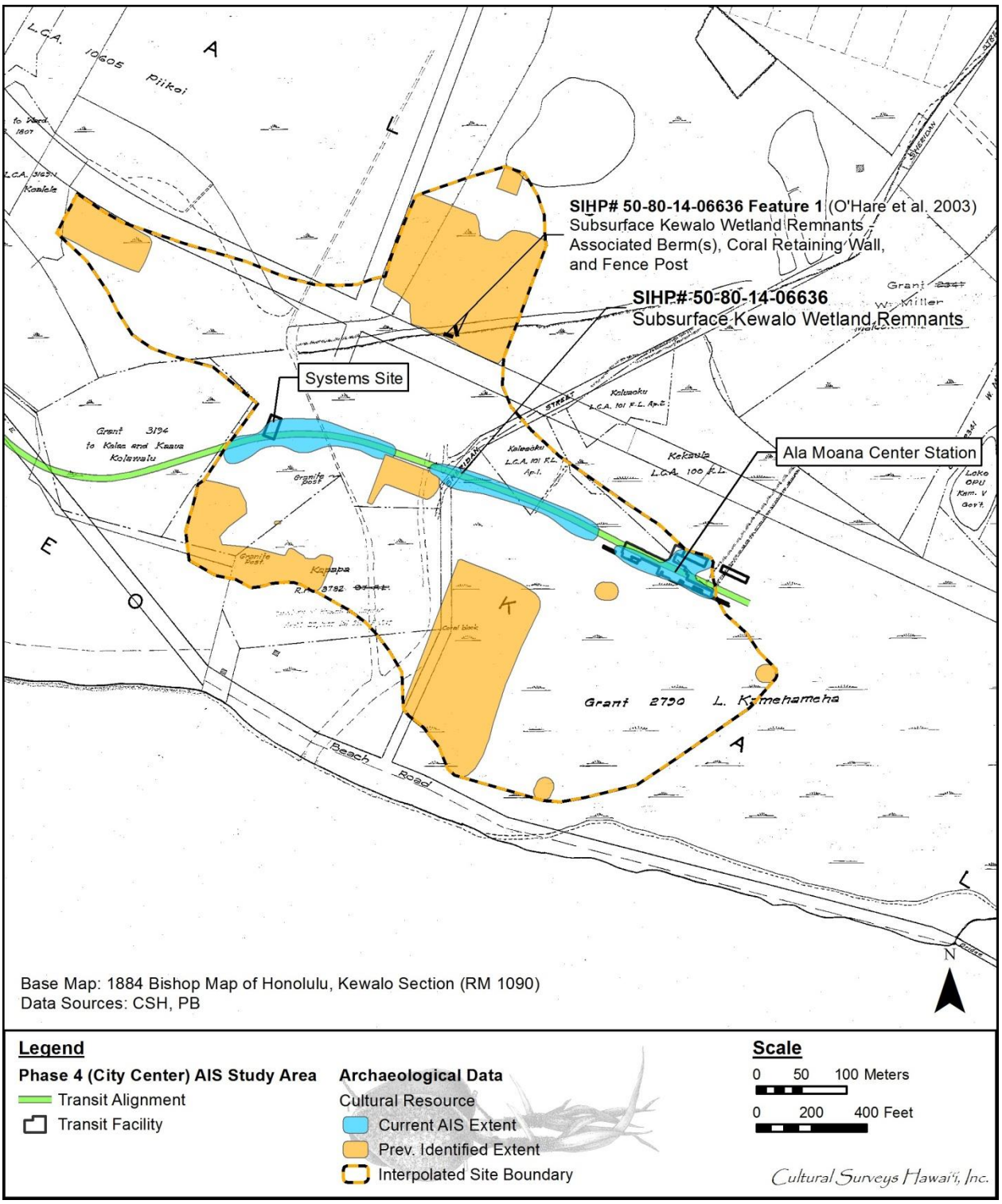


Figure 2. 1884 Map of Honolulu, Kewalo Section, by S. E. Bishop (Reg. Map 1090), showing the extend of wetland and/or marsh within the East Kaka‘ako and Kālia Geographic Zones

records for 100 F.L. (Fort Lands) describe two ponds, five fry ponds (*ki‘o pua*), one taro patch (*lo‘i*), one house lot, and one pasture (*kula* land). LCA records for 101 F.L. (Fort Lands) also document two ponds and three *ki‘o pua*. The 1926 Land Court Application 709 Map 1 depicts several unnamed ponds, roadways or paths, small structures, and an area of salt pans within a portion of the SIHP # -6636 interpolated boundary (Figure 3). A 1927 aerial photograph depicts ponds, wetland agricultural fields, fallow or unmodified wetland, possible salt pan areas, and several structures within the SIHP # -6636 interpolated boundary (Figure 4). Historic maps and aerial photography confirm the extent of the Kewalo wetland, which includes a large portion of the current HHCPTCP project APE as well as numerous previous archaeological studies.

SIHP # -6636 was initially identified by O’Hare et al. (2003) during an archaeological inventory survey for a six-acre property in Waikiki (Figure 5). Kewalo wetland sediments were identified within 22 of 24 backhoe test excavations (Trenches 1-8, 10, 11, and 13-24) during the survey (Figure 6). These sediments were identified ranging in depth from 0.90 mbs to 2.20 mbs and were designated as Strata IIIa and IIIb. O’Hare et al. (2003:69) describe SIHP # -6636 as follows:

> Site 50-80-14-6636 consists of the pre-contact to early 20th century land surface that underlays the dredged fill materials from the Kewalo and Ala Wai Canal land reclamation projects, which took place in the 1920s and the 1930s. This land surface is a wetland deposit (Stratum III), which probably extends across the entire project area. This site also contains a sand berm that crosses the southeast corner of the project area. This sand berm is illustrated on an 1884 map, but may have been constructed earlier. Radiocarbon date determinations for the sand berm do not give a definitive date for the construction of this feature.

O’Hare et al. (2003:54) describe the Kewalo wetland sediments as follows:

> Substratum IIIa is a very dark brown sandy clay loam with a high percentage of platy organic material. The layer contained charcoal, marine gastropods and bivalves, and fish scales. Substratum IIIb is a very dark grayish brown sandy loamy clay with less organic material. It also contains charcoal, marine invertebrates, and fish scales; in addition it was also characterized by inclusion of rounded basalt gravel.

An artificially-constructed sand berm (Feature 4) was identified in Trenches 12 and 23 within the southeast corner of the O’Hare et al. (2003) project area (see Figure 6) (see Figure 1). The composition of the sand berm is described within Trench 12 as dark grayish brown sandy clay with marine gastropods and 67 cm in thickness, and in Trench 23 as dark gray clay loam with micro-stratigraphy of sand lenses (O’Hare et al 2003:55). The berm in Trench 23 was associated with a concentration of coral boulders, which may represent a retaining wall for the berm, and a wooden fence post, which may suggest a fence lining (Figure 7 and Table 1); the possible retaining wall and fence post are designated along with aforementioned Feature 4 berm as SIHP # -6636 Feature 1 for the current AIS study. Radiocarbon analysis of the sand berm produced a two-sigma calibrated date of AD 1660 to 1890 (78.1% probability) (O’Hare et al. 2003).

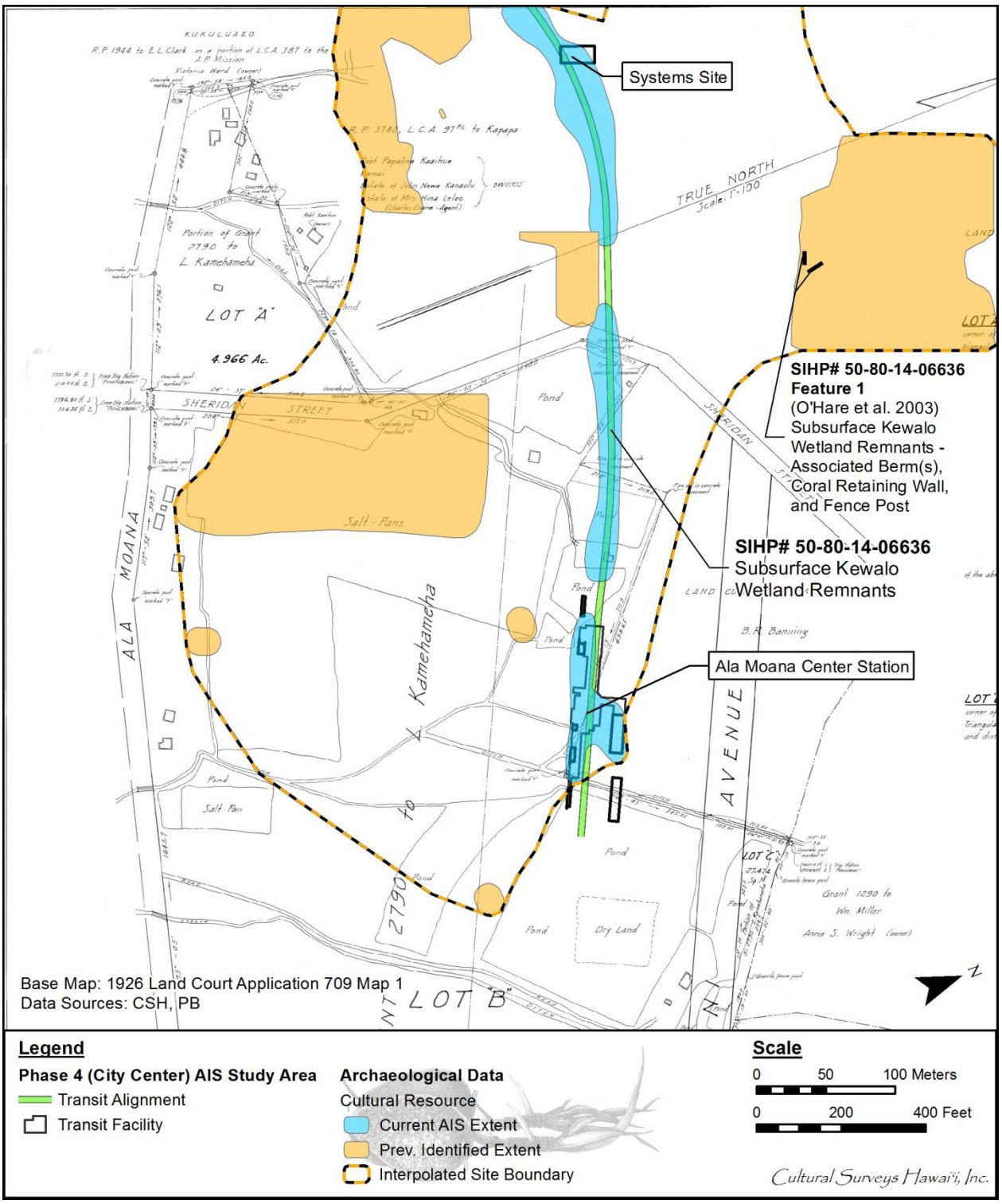


Figure 3. Portion of the 1926 Land Court Application 709 Map 1 showing various land use within the SIHP # 50-80-14-6636 interpolated boundary

Figure 4. Portion of the 1927 UH SOEST aerial photograph of the Kaka‘ako coast showing various land use within the SIHP # 50-80-14-6636 interpolated boundary

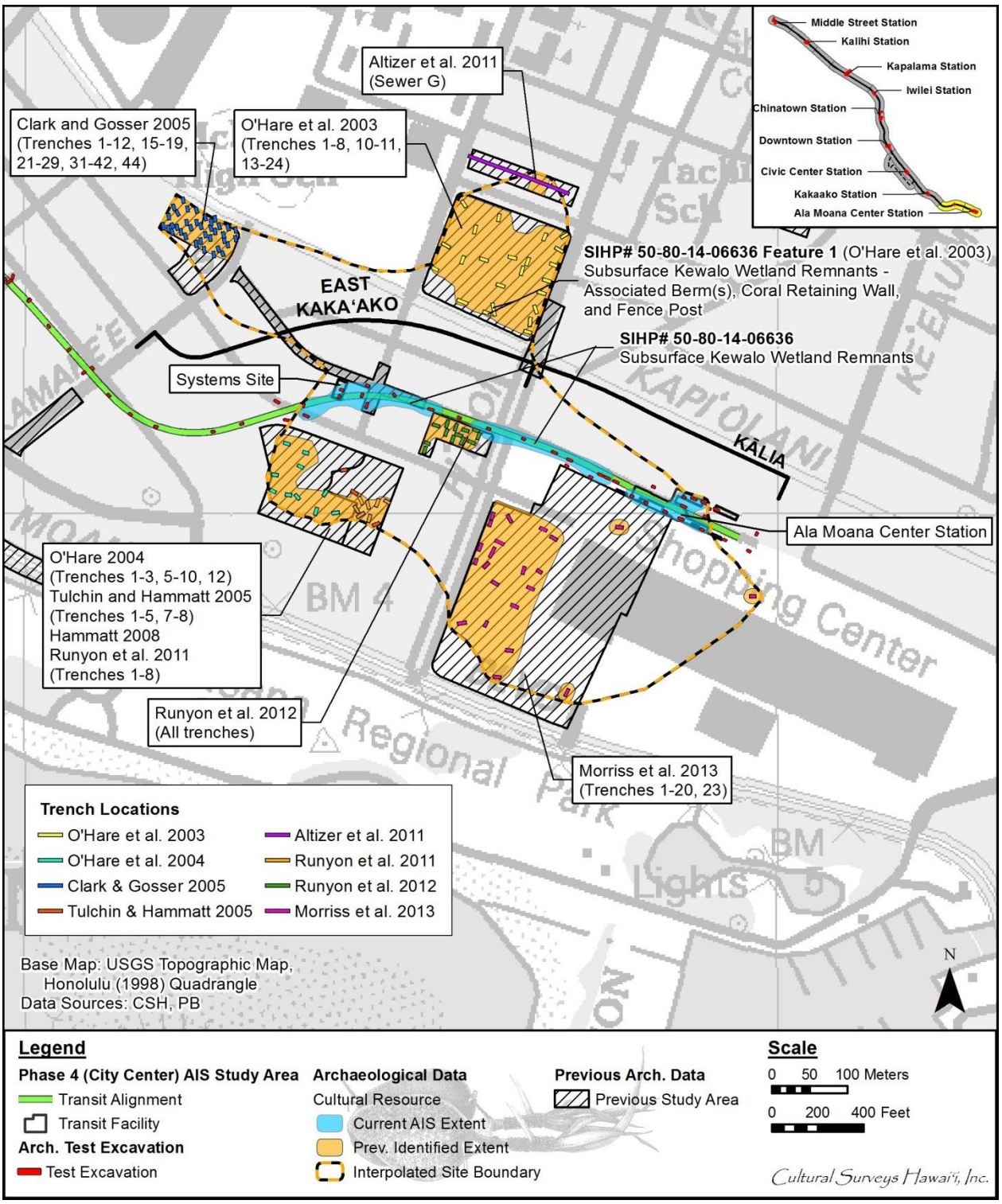


Figure 5. Locations of former- and newly-identified portions of SIHP # 50-80-14-6636 including excavation locations in the vicinity of the East Kaka‘ako and Kālia Geographic Zones

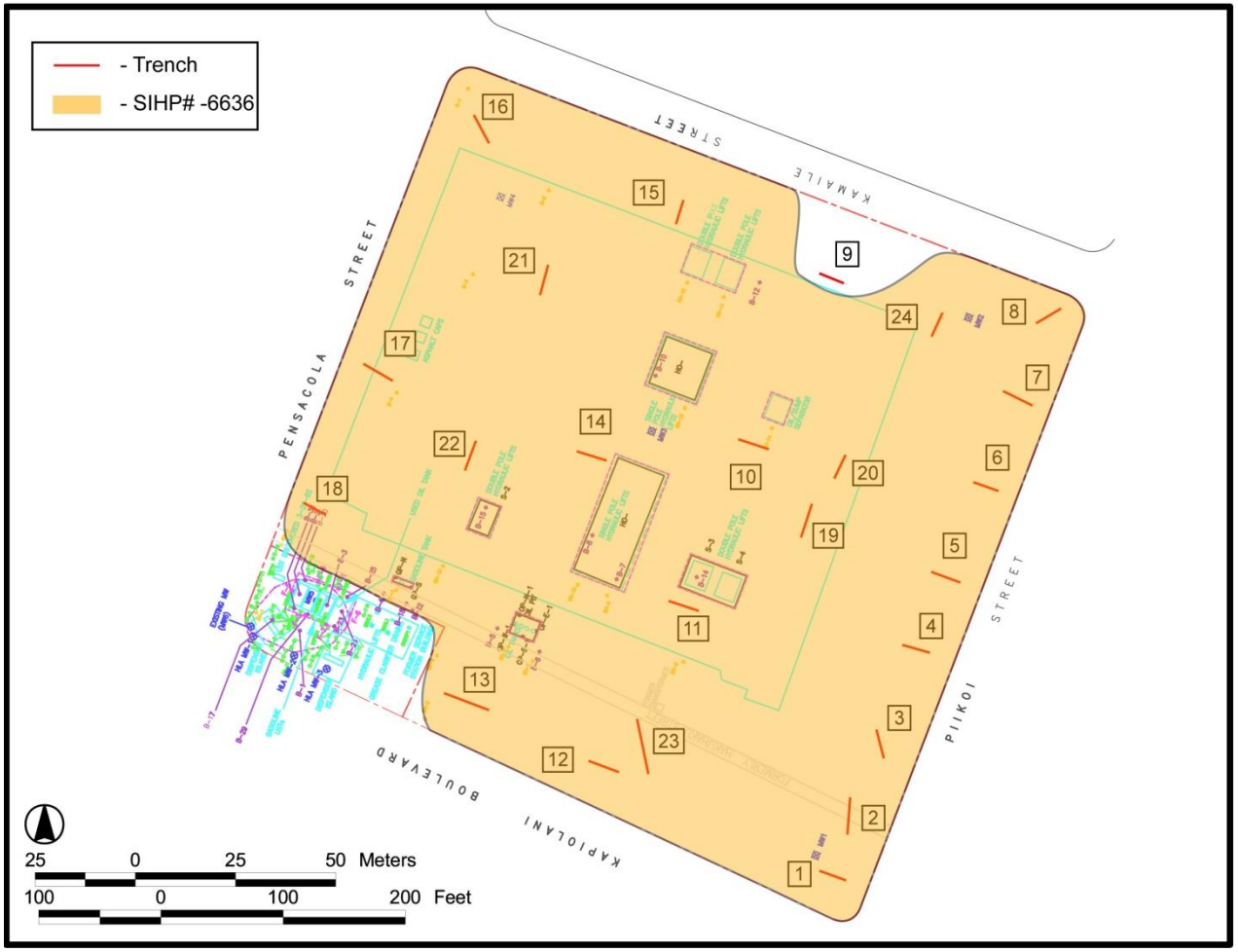


Figure 6. O’Hare et al. (2003:52) study area map showing the locations of Trenches 1-24 and the distribution of SIHP # 50-80-14-6636; see Figure 5 for location of O’Hare et al. (2003) study area

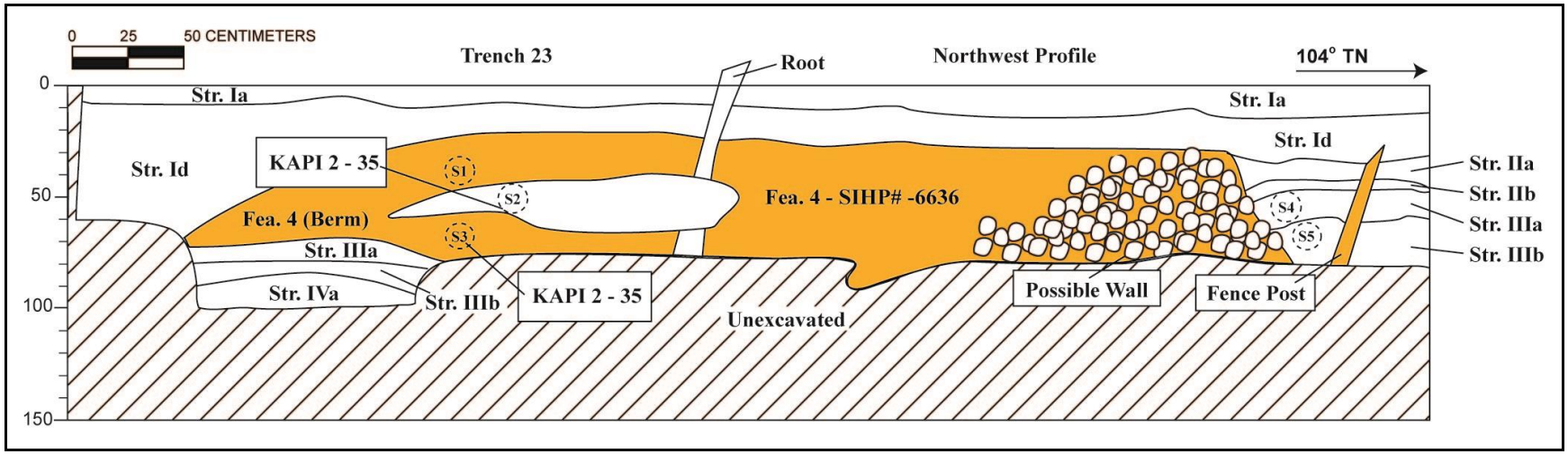


Figure 7. Trench 23 profile showing artificially-constructed sand berm, coral retaining wall, and wooden fence post (shown in orange) (adapted from O’Hare et al. 2003:56); the berm, wall, and fence post were designated in current AIS as SIHP # -6636 Feature 1 (see Figure 5 for location of SIHP # -6636 Feature 1)

Table 1. Trench 23 Stratigraphic Description (adapted from O’Hare et al. 2003)

Stratum	Depth (cmbs)	Description
Ia	0-18	Fill; dark brown (7.5YR 3/3) gravelly silt loam with 25% basalt and calcareous gravels present; weak, fine to medium, subangular blocky structure; very friable, non-sticky, and slightly plastic; many fine to medium tubular roots; very abrupt wavy, boundary.
Id	18-62	Fill; brown (10YR 5/3) sandy loam with 5% coral cobbles; weak, fine, granular structure; loose, non-sticky, and non-plastic; many fine to medium interstitial roots; abrupt, wavy boundary.
Feature 4	38-140	Sand Berm; very dark gray (10YR 3/1) clay loam with micro-stratigraphy; very friable, sticky and plastic; clear, wavy boundary over a Dk. Grayish Brown (10 YR 4/2) clay loam, very friable, sticky and plastic; abrupt, wavy boundary; designated during current City Center AIS as SIHP # -6636 Feature 1, also including associated coral retaining wall and possible fence lining (see Figure 7)
IIa	62-78	Pumped Fill; very pale brown (10YR 8/3) fine sand (60%) with bands of Lt. Gray (10YR 7/2) silty clay (35%) mixed with 5% coral gravel; structureless; very abrupt, smooth boundary.
IIb	78-90	Pumped Fill; blue light gray (10YR 7.2) silty clay (90%) with a few bands of Very Pale Brown (10YR 8/3) fine sand (10%) sticky, very plastic; structureless; no coral inclusions; very abrupt, smooth boundary.
IIIa	90-111	Organic Strata; very dark brown (10YR 2/2) sandy clay loam; friable, slightly sticky, non-plastic; 80% humic organics in a platy structure; terrestrial gastropods present; clear, smooth boundary.
IIIb	111-153	Organic Strata; very dark grayish brown (10YR 3/2) sandy loamy clay; very friable, sticky, very plastic; some humic material (10%) in widely spaced bands throughout samples; terrestrial gastropods and rounded basalt gravel present; upright fence post at base of strata; very abrupt, smooth boundary.
IV	153-195+	Sand/Coral Substrate; greenish-gray gley (6/1) coarse sand at water level with 75% coral cobbles and boulders; structureless, sticky and very plastic; fence post found at base of trench

Subsequent investigations identified additional portions of SIHP # -6636 throughout the Kewalo/greater Kaka‘ako area (see Figure 5). These studies consist of the following: O’Hare et al. (2004), Tulchin and Hammatt (2005), Clark and Grosser (2005), Hammatt (2008), Altizer, et al. (2011), Runyon et al. (2011), Runyon et al. (2012), and Morriss et al. (2013).

O’Hare et al. (2004) identified Kewalo wetland sediments within 10 of 13 backhoe test excavations (Trenches 1-3, 5-10, and 12) during an archaeological inventory survey for the Ko’olani Condominium Project (Figure 8). The wetland sediments were identified as ranging from 0.85 mbs to 2.35 mbs. O’Hare et al. (2004:74) describe SIHP # -6636 as follows:

> This site was the original wetlands surface, before the dredging and land reclamation projects filled in the area ca. 1930. The full dimensions are not known, as this layer is discontinuous due primarily to 20th century landfill operations. Additionally, when encountered it was obvious that the layer extends past the trenches, in all directions.
>
> The layer in certain areas contains charcoal flecking and marine shell, suggestive of pre-contact utilization. Subsequently in the 1920s, and 1930s, this layer was completely covered with fill material for the expanding urbanization of Honolulu.

O’Hare et al. (2004) designated Kewalo wetlands sediments as Stratum IIIa and IIIb (Figure 9 and Table 2). Kewalo wetland sediments were described as “sandy clay loams with various high percentages of organic material to fine, well-sorted coralline sands” underlying fill sediments (O’Hare et al. 2004:56). These layers contained marine shell including *Natica* sp., *Nerita* sp, *Bittium* sp., and *Brachidontes* sp.

Tulchin and Hammatt (2005) identified Kewalo wetland sediments within seven of eight backhoe test excavations (Trenches 1-5, 7, and 8) during the Phase 2 portion of the archaeological inventory survey for the Ko’olani Condominium Project (Figure 10). The depths of these sediments were identified as ranging from 1.65 mbs to 2.60 mbs. Tulchin and Hammatt (2005:29) describe SIHP # -6636 as follows:

> Site -6636 consisted of the original wetland surface of the Kewalo area, previously identified by O’Hare et al. (2003). Site -6636 was also identified within the Phase 1 portion of the current project area (O’Hare et al. 2004). Within the Phase 2 testing area, Site -6636 consisted of gleyed sandy clay to clay sediments, immediately overlying the coral shelf. Site -6636 was observed in varying thickness within seven of the eight excavated test trenches, at depths ranging from 165-260 cmbs. Within Trench 7, Site -6636 contained loam-type sediments, containing abundant organic material and land snail shells. The entire extent of Sit6636 is unclear, as the layer is discontinuous, primarily due to 20th century land filling operations. In the 1920s and 1930s, the original wetland surface of the Kewalo area (i.e. Sit6636) was completely covered with fill material for the expanding urbanization of Honolulu.

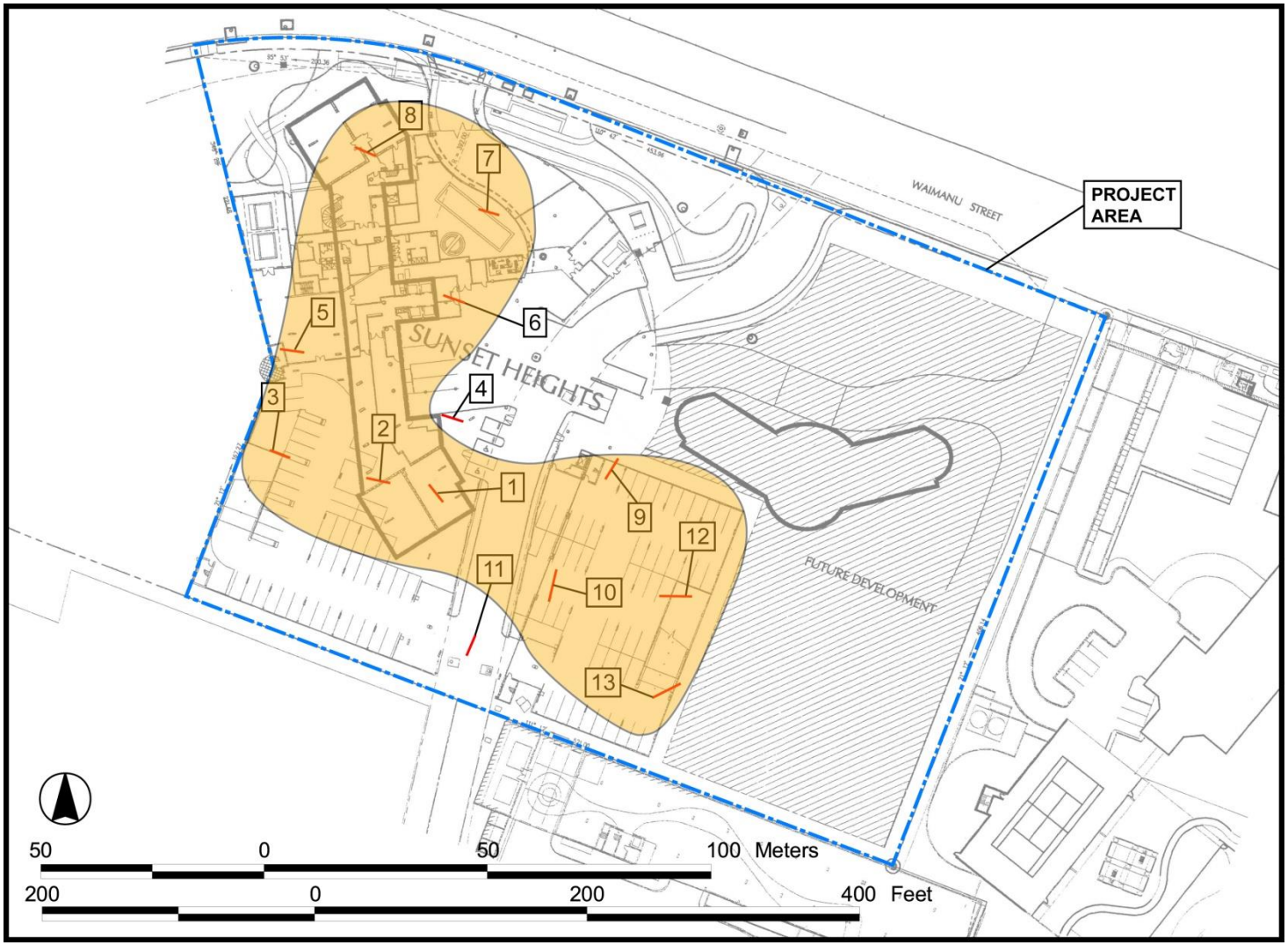


Figure 8. O’Hare et al. (2004:57) study area map showing the location of Trenches 1-13

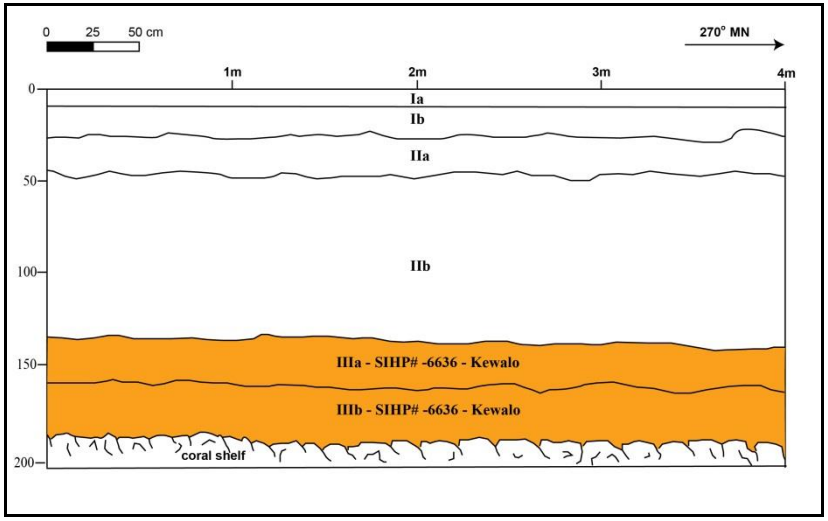


Figure 9. Trench 5 profile showing Kewalo wetland (SIHP # -6636), Strata IIIa and IIIb (O’Hare et al. 2004:64)

Table 2. Trench 5 Stratigraphic Description (adapted from O’Hare et al. 2004)

Stratum	Depth (cmbs)	Description
Ia	0-8	10YR 2/1 black; abrupt and smooth lower boundary
Ib	8-35	10YR 3/4 very dark grey gravel fill; abrupt and wavy lower boundary; gravel fill as base course for overlying asphalt
IIa	35-45	10YR 6/3 to 10YR 8/1 pale brown to very pale brown medium to coarse sand; coarse or thick structure; loose consistency; non-plastic; no cementation; abrupt and wavy lower boundary
IIb	45-135	10YR 7/3 to 7/4 very pale brown fine to medium sand; structureless, loose consistency; non-plastic; no cementation; abrupt and wavy lower boundary
IIIa	135-160/163	10Y 6/1 greenish gray silty clay; weak, fine structure; loose consistency; slightly plastic; no cementation; abrupt and smooth lower boundary; Kewalo wetlands; component of SIHP # -6636
IIIb	160/163	10Y 5/1 greenish gray fine silty clay; fine, structure; loose consistency; slightly plastic; no cementation; Kewalo wetlands; component of SIHP # -6636

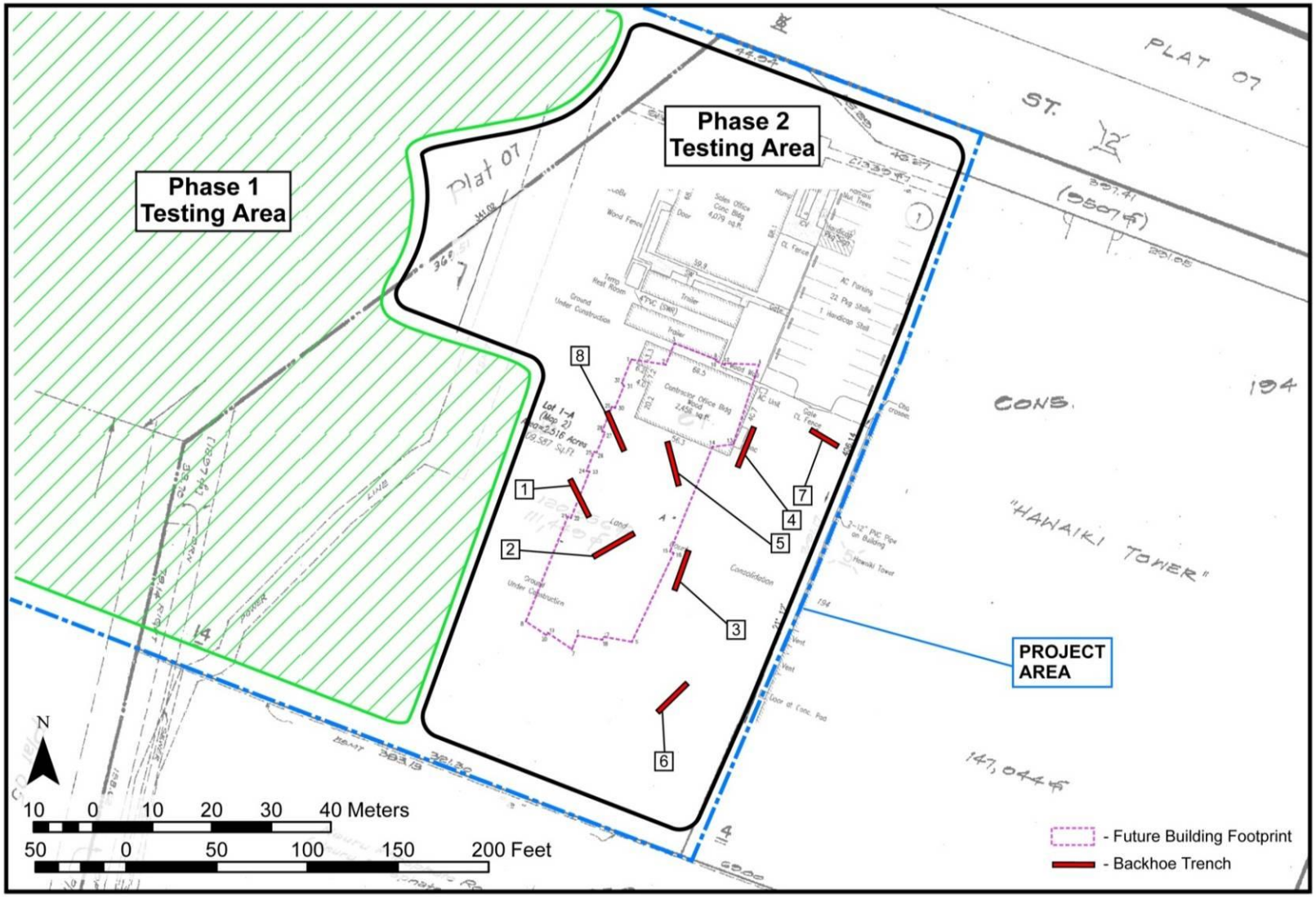


Figure 10. Tulchin and Hammatt (2005:10) study area map showing the location of Trenches 1-8

Tulchin and Hammatt (2005) designated Kewalo wetland sediments as Stratum II (Figure 11, Figure 12, and Table 3). Kewalo wetland sediments were described as “gray sandy clay to clay sediments” to “dark gray loam, containing abundant organic material and land snail shells” underlying fill sediments (Tulchin and Hammatt 2005:27). No cultural material was observed in Stratum II. The base of the Stratum II sediments was the coral shelf at approximately 2.5 meters below the current ground surface.

Clark and Grosser (2005) identified SIHP # -6636 as the subsurface remnant of a small pond within 37 of 45 backhoe trenches (TR-1-12, 15-19, 21-25, 27-29, 31-34, 36-42, and 44) during an archaeological inventory survey of TMK: (1) 2-3-003:075, 085, and 086 (Figure 13). Clark and Grosser (2005:47) described SIHP # -6636 as follows:

> This unnamed pond is represented by gleyed deposits of Layer II Pond Facies…Layer II Pond Facies is the uppermost intact stratigraphic layer found in the northern portion of the parcel, and is a very dark brown to black organic deposit similar to peat. Ranging from 1.0 to 15.0 cm thick, Layer II Pond Facies was found at or below the water table, and is discontinuous probably due to disturbance during deposition of historic fill layers.
>
> It is not certain whether this pond was a fishpond or a salt pond used for salt manufacture. Abundant fresh water snail remains, identified as *Melanoides tuberculata*, were found among the organic materials within Layer II Pond Facies, indicating a freshwater environment. However, a freshwater environment may reflect post-use changes.

Clark and Grosser (2005) designated SIHP # -6636 as “Layer II Pond Facies” (Figure 14 and Table 4). Radiocarbon analysis of the pond sediment yielded calibrated (two sigma) date ranges of AD 1530 to 1560, AD 1630 to 1690, AD 1730 to 1810, and AD 1920 to 1950, suggesting that the pond sediment had begun accumulating as early as AD 1530 to 1560 (Clark and Grosser 2005:34). The pond sediment was found beneath thick historic and modern fill layers.

Hammatt (2008) identified Kewalo wetland sediments during archaeological monitoring for the Ko‘olani Condominium Project; the parcel was subject to a previous archaeological inventory survey (O’Hare et al. 2004). Although the distribution of SIHP # -6636 within the study area was not recorded during monitoring, the wetland sediments were described as being composed of sandy clay found generally between 1.0 mbs to 1.86 mbs and designated Stratum III. Hammatt (2008:37) described Kewalo wetland sediments as:

> Stratum III represents the original ground surface before the Kewalo area was filled with marine and other sediments in the early part of the 20th century. It was divided into two substrata. It contained a limited amount and variety of charcoal flecking and marine invertebrates.

Altizer et al. (2011) identified Kewalo wetland sediments within Sewer Line G during archaeological monitoring for the Kapi‘olani Area Revised Sewer System project (Figure 15). These sediments were identified as ranging in depth from 1.8 mbs to 2.2 mbs. Altizer et al. (2011:69) described SIHP # -6636 within Sewer Line G as follows:

> The stratigraphic sequence of Line G at STA 3+25, where SIHP # 50-80-14-6636 was encountered, is consistent with the 1884 Bishop Waikiki Survey Map (RM #

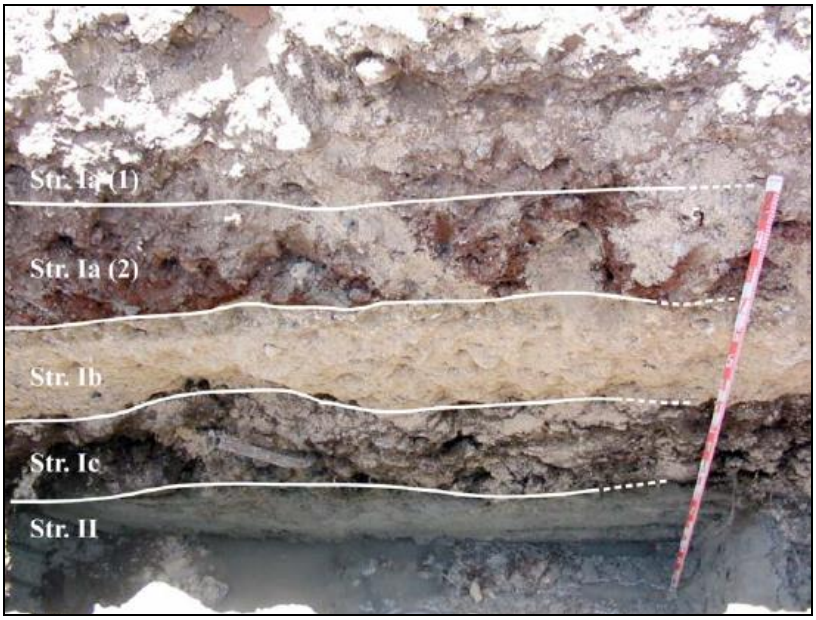


Figure 11. Trench 3 west sidewall, view to west (adapted from Tulchin and Hammatt 2005:16)

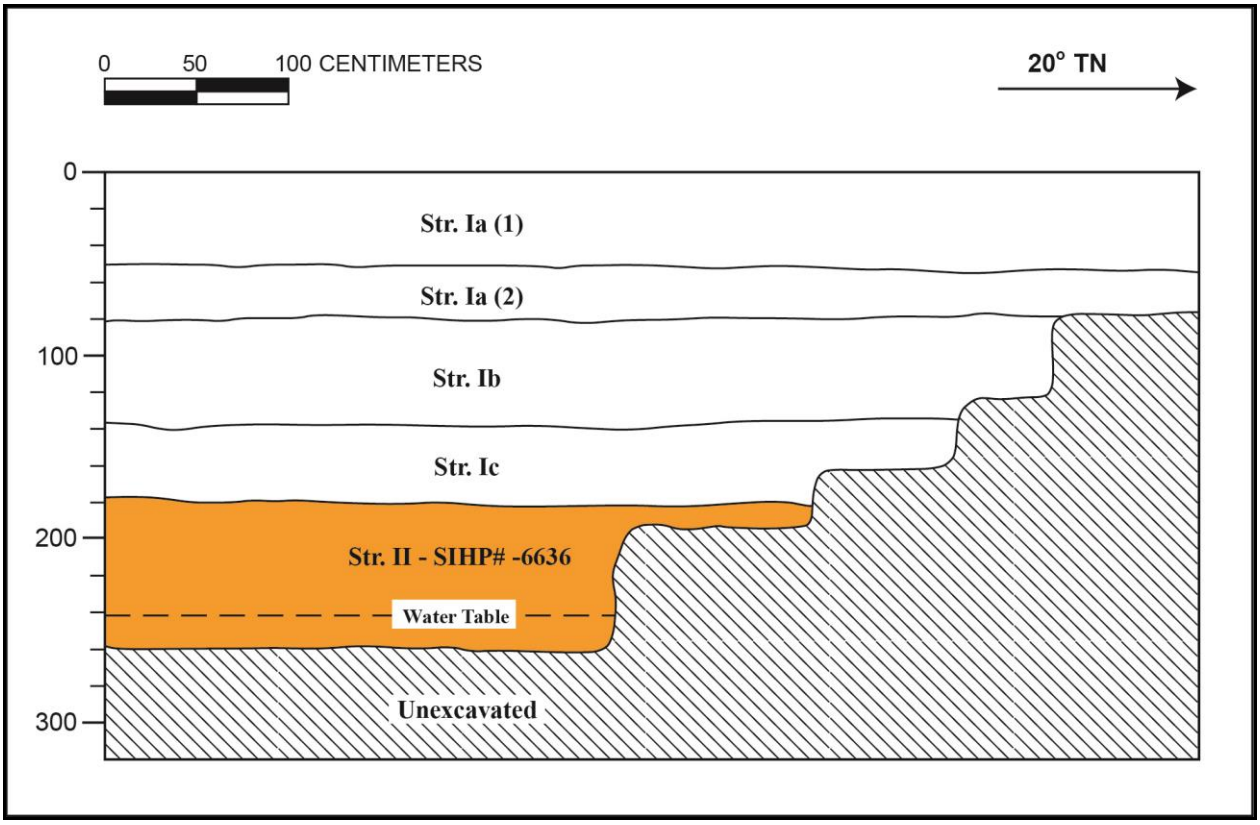


Figure 12. Trench 3 west wall profile, showing Kewalo wetland (SIHP # -6636), Stratum II (adapted from Tulchin and Hammatt 2005:16)

Table 3. Trench 3 Stratigraphic Description (adapted from Tulchin and Hammatt 2005)

Stratum	Depth (cmbs)	Description
Ia(1)	0-50	Fill; 10YR 5/3 (brown) sandy loam; weak, fine, single grain structure; dry, loose consistency; non-plastic; no cementation; terrestrial origin; Lower Boundary (LB) is abrupt, smooth.
Ia(2)	50-80	Fill; 7.5YR 4/4 (brown) sandy loam; weak, fine, single grain structure; dry, loose consistency; non-plastic; no cementation; terrestrial origin; includes 50% gravel; LB is abrupt, smooth.
Ib	80-140	Fill; 10YR 7/3 (very pale brown) crushed coral gravel; moderate, medium crumb structure; dry, hard consistency; non-plastic; weak cementation; mixed origin; LB is abrupt, smooth.
IC	140-180	Fill; 10YR 2/1 (black) sandy loam; weak, fine, single grain structure; dry, slightly hard consistency; non-plastic; weak cementation; terrestrial origin; includes 60% historic garbage (glass, wood, metal fragments); LB is abrupt, smooth
II	180-BOE	10YR 6/1 (gray) sandy clay; weak, fine, blocky structure; moist, friable consistency; slightly plastic; no cementation; mixed origin; LB is at coral shelf; Kewalo wetland; designated a component of SIHP # -6636

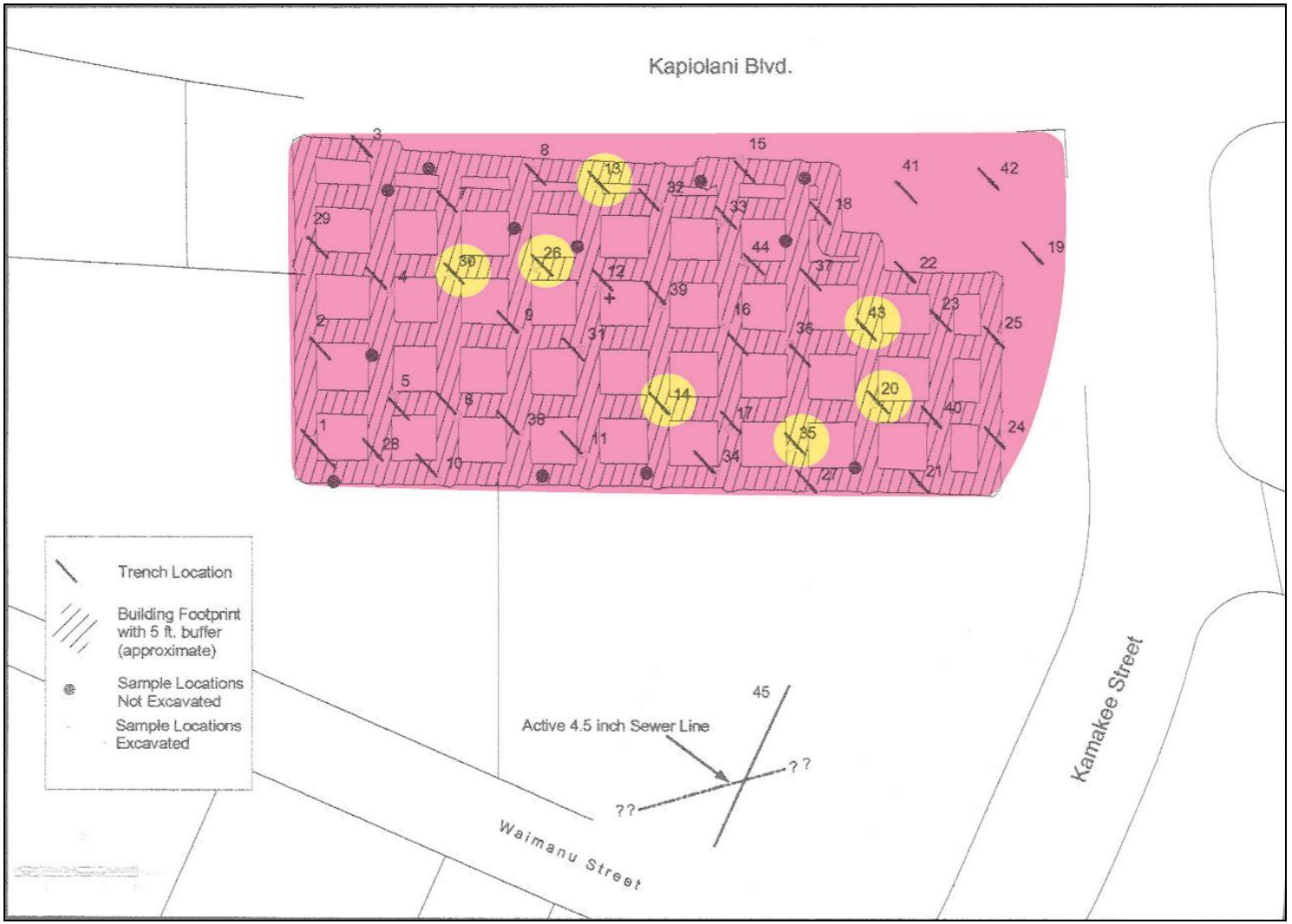


Figure 13. Clark and Gosser (2005:20) study area map showing the location of Trenches 1-45 and distribution of SIHP # -6636 throughout excavated area in all but seven trenches (13, 14, 20, 26, 30, 35, and 43) (yellow), see Figure 5 for locations of Clark and Gosser (2005) project area

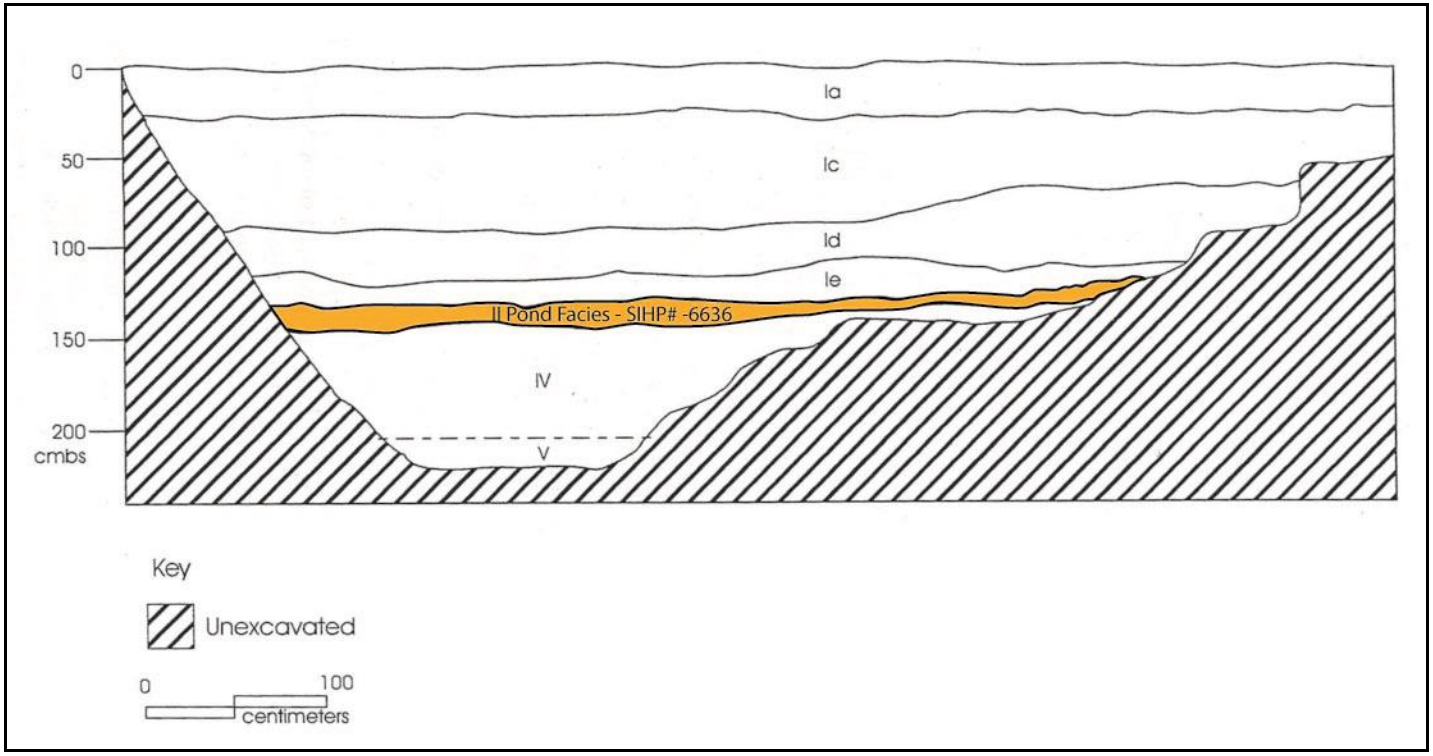


Figure 14. TR-3 west profile showing Kewalo wetland pond sediments (SIHP # -6636), Stratum II (adapted from Clark and Gosser 2005:41)

Table 4. TR-5 Stratigraphic Description (adapted from Clark and Grosser 2005)

Stratum	Thickness Range (cm)	Description
Ia	10.0 – 225.0	Brown to yellowish brown (10YR 5/4, moist) sandy loam; hard, firm, slightly sticky, slightly plastic; contains recent items and construction debris.
Ic	35.0 – 130.0	Very pale brown (10YR 8/2) to light gray (10YR 7/1, moist) coral fill of cobbles, pebbles, gravel and sands; hard, firm, non-sticky, non-plastic; contains recent items and construction debris.
Id	5.0 – 50.0	Yellow (10YR 7/4, moist) fine to very fine coral sand; loose, non-sticky, non-plastic; no cultural materials observed.
Ie	12.0 – 70.0	Alternating micro-layers of clay, silty clay and sandy clay; greenish gray (10GY 6/1, wet) grading into pale yellow (2.5YR 7/3, wet); hard, firm, sticky, plastic; no cultural materials observed.
II Pond Facies	1.0 – 15.0	Very dark brown (10YR 2/2, wet) to black (10YR 2/1, wet) organic deposit in a sandy silt matrix; firm, non-sticky, non-plastic; contains concentrated organic materials and fresh-water mollusks; Kewalo wetland; designated a component of SIHP # -6636
III	30.0 – 50.0	Very pale brown (10YR 8/2) to pale yellow (2.5Y 8/2, moist) very fine to medium coral sand with less than 5% coral gravel and marine shell fragments; loose, non-sticky, non-plastic; no cultural materials observed.
IV V	2.0 + - 65.0 5.0+ - 10.0+	Dark greenish gray (10GY 4/1, wet) fine to very fine sandy silt; firm, non-sticky, non-plastic; no cultural materials observed. Conglomerate of coral, coralline algae, and marine shell fragments in a matrix of greenish gray (5GY 6/1, wet) fine to coarse coral sand; no cultural materials observed.

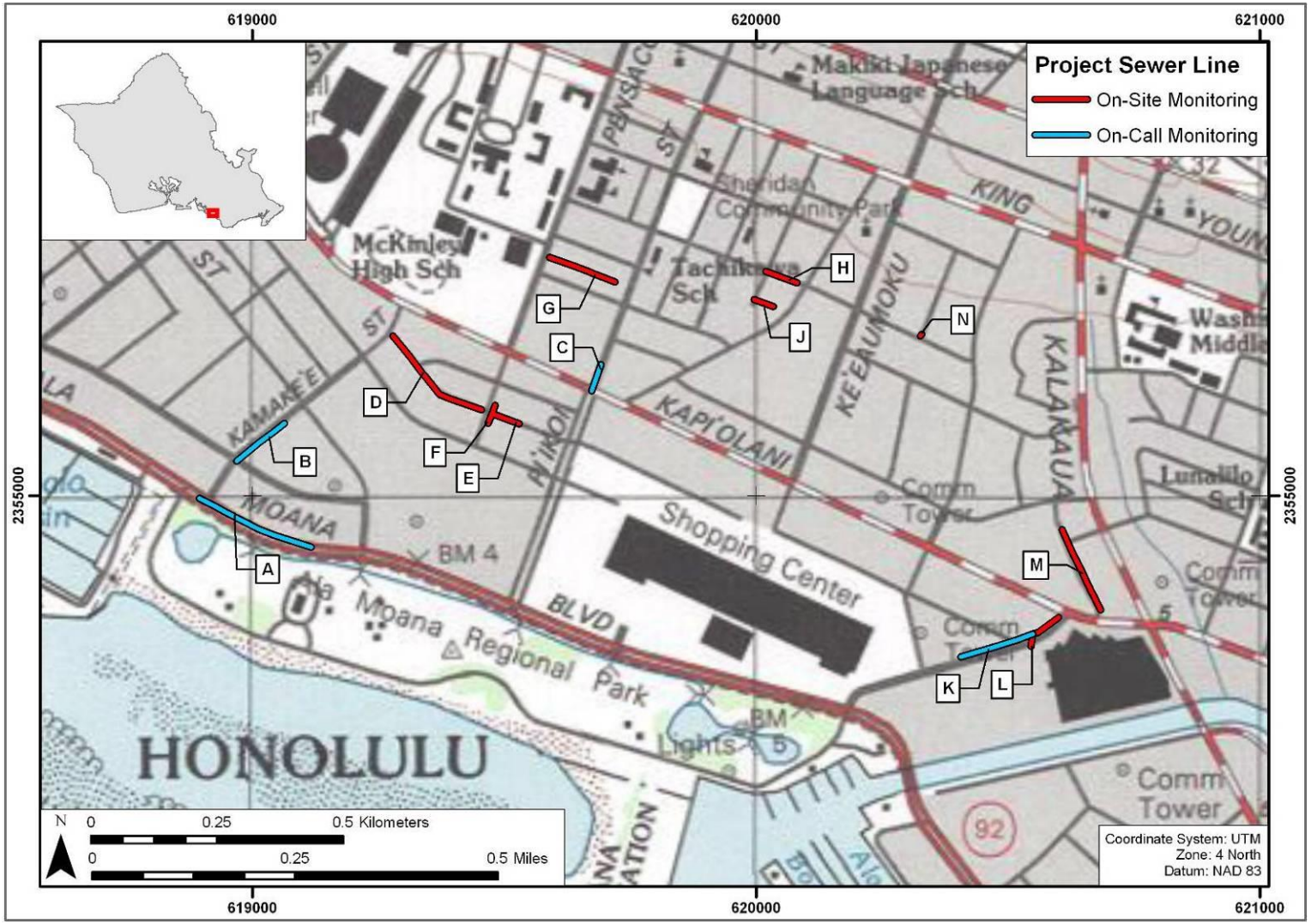


Figure 15. Altizer et al. (2011:44) Sewer Line G monitored trench locations shown on a portion of the 1998 U.S. Geological Survey topographic map, Honolulu quadrangle

> 1090) and the 1897 Monsarrat map (RM #1910), which show a pond present in the vicinity of the current project area. The pond is not named on either map, but is present within former rice fields. The sediments encountered during monitoring activities associated with Sewer Line G are described as black clay loam, which is not typical of pond sediments on Oahu, but does correspond with wetland deposits. The abundance of land snails, also documented in Sewer Line G, are indicative of wetland deposits as well.

They designated SIHP # -6636 as Strata IIa and IIb (Figure 16, Figure 17, and Table 5). These sediments were described as being “black clay loam” and “very dark gray silt loam” underlying thick historic and modern fill layers (Altizer et al. 2011:48).

Runyon et al. (2011) identified Kewalo wetland sediments below fill deposits within three of 29 test excavations (Trenches 6, 14, and 27) dug during an archaeological inventory survey for the Ko‘olani phase II project (Figure 18). They described SIHP # -6636 as follows:

> SIHP # 50-80-14-6636 consists of portions of the former wetland surface of the Kewalo area, originally identified by O‘Hare et al. (2003) and also identified within the Phase 1 portion of the Ko‘olani Condominium project (O’Hare et al. 2004) and associated Addendum Inventory Survey (Tulchin and Hammatt 2005). The characteristics that define SIHP # -6636 would have extended beyond the designated site boundaries before modern fill events took place. Cultural modifications to the site likely included but were not limited to channelized ditches, ponds, *lo‘i*, berms, and habitation areas as shown on historic maps. The cultural modifications impacted the wetland sediments as evidenced by the frequent charcoal flecking found within the sediment.
>
> The existence of this site is known only within tested areas. It is likely that wetland sediments very similar to those encountered during this project, exist under fill deposits throughout the greater Kewalo Kaka‘ako region (as indicated in O’Hare et al. 2003).
>
> The site consists of dark grayish brown and very dark brown clay loam sediments with a high organic (peaty) content, abundant land snail shells and charcoal flecking. The wetland sediment overlies marine sediments and the coral shelf. SIHP # -6636 was observed in three of the test trenches (Trenches 6, 14 and 27) during the current inventory survey investigation. SIHP # -6636 was observed from 1.3 to 2.4 m below the current ground surface.
>
> The entire extent of SIHP # -6636 is unclear, as the layer is discontinuous, primarily due to twentieth century land filling operations. In the 1920s and 1930s, the original wetland surface of the Kewalo area was completely covered with fill material for the expanding urbanization of Honolulu. (Runyon et al. 2011:262-264)

Runyon et al. (2011) designated Kewalo wetland sediments below fill deposits as Stratum II in Trenches 6 and 27, and Stratum IV in Trench 14 (Figure 19, Figure 20, and Table 6).

Figure 16. Sewer line G, view to southwest (Altizer et al. 2011:50)

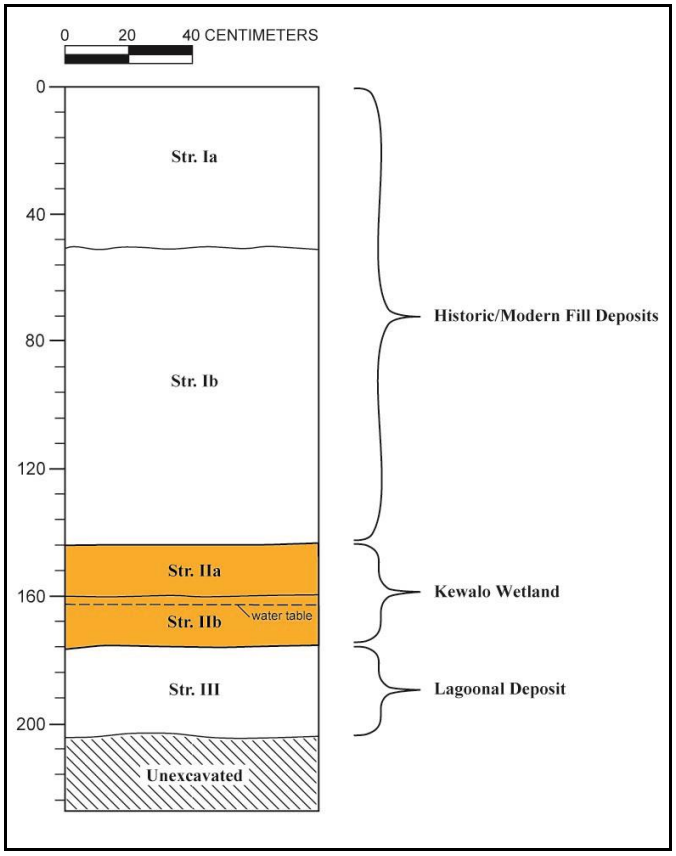


Figure 17. Sewer line G profile, south wall, showing Kewalo wetland (SIHP # -6636), Strata IIa and IIb (adapted from Altizer et al. 2011:49)

Table 5. Sewer line G Stratigraphic Description (adapted from Altizer et al. 2011)

Stratum	Depth (cmbs)	Description
Ia	0-65	7.5YR 3/2, dark brown; clay loam; moderate, fine, granular structure; moist friable to wet non-sticky consistency; plastic; weak cementation; terrestrial in origin; very abrupt boundary; smooth topography. Fill layer with modern trash including plastic and metal.
Ib	65-180	7.5YR 3/4 dark brown; clay; moderate, fine granular structure; moist firm to wet sticky consistency; plastic; strong cementation; terrestrial in origin; abrupt boundary; smooth topography. Fill material
IIa	180-200	7.5YR 3/1, very dark gray; silt loam; weak, medium, granular structure; moist, very friable to wet, non-sticky consistency; non-plastic; weak cementation; terrestrial in origin; abrupt boundary; smooth topography. Former wetland or marsh with a lot of land snail shells; Kewalo wetland; designated a component of SIHP # -6636
IIb	200-220	7.5YR 2/0, black; clay loam; moderate, fine, granular structure; moist very friable consistency; slightly plastic; weak cementation; terrestrial in origin; diffuse boundary; smooth topography. Former wetland or marsh; water table encountered at 210 cmbs; Kewalo wetland; designated a component of SIHP # -6636
III	220-255 BOE	Gley 5/N, greenish-gray, fine clay; single grain structure; moist very friable to wet non-sticky consistency; non-plastic; weak cementation; Natural lagoonal sediment with coral pebble inclusions.

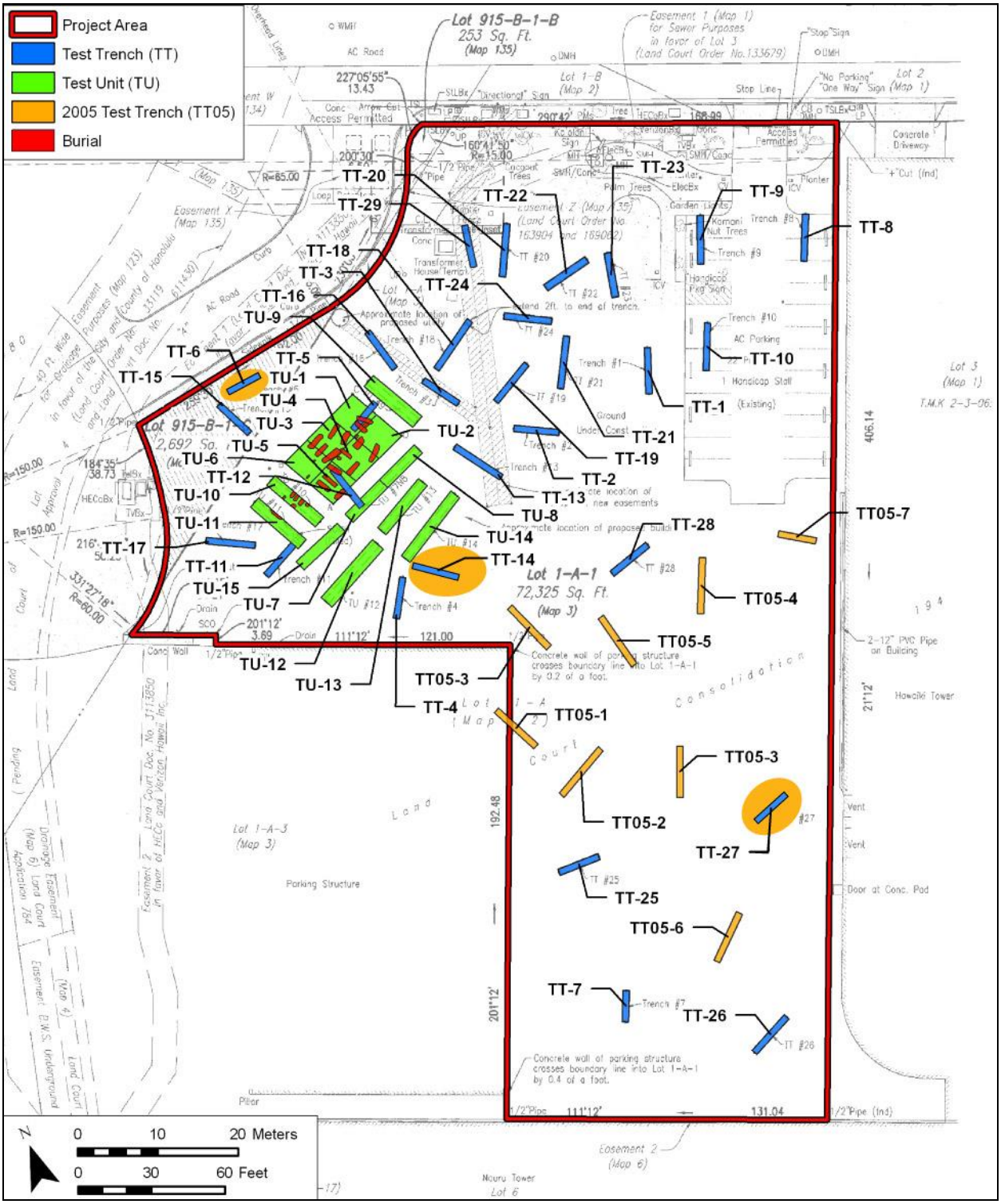


Figure 18. Runyon et al. (2011:107) study area showing excavation locations including Trenches 6, 14, and 27 which exposed Kewalo wetland (SIHP # -6636) in strata below thick fill deposits; see Figure 5 for locations of Runyon et al. (2011) study area

Figure 19. Trench 6 northwest sidewall, showing Kewalo wetland (SIHP # -6636), Stratum II below thick fill deposits, view to northwest (adapted from Runyon et al. 2011:128)

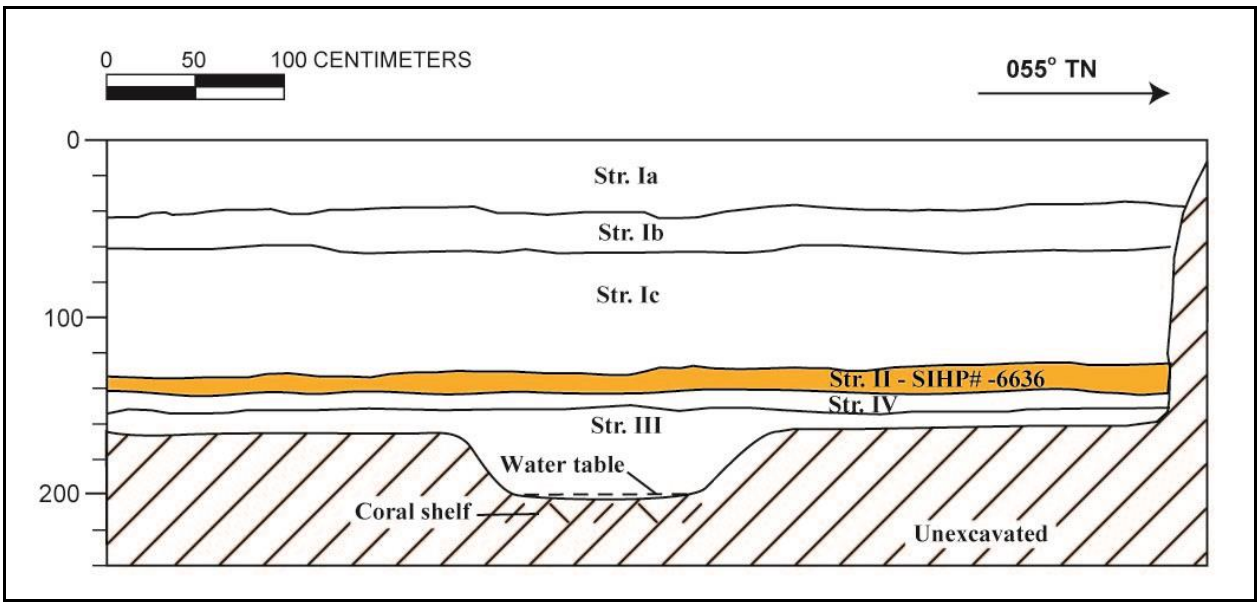


Figure 20. Trench 6 northwest profile showing Kewalo wetland (SIHP # -6636), Stratum II (adapted from Runyon et al. 2011:128)

Table 6. Trench 6 Stratigraphic Description (adapted Runyon et al. 2011)

Stratum	Depth (cmbs)	Description
Ia	0-40	Fill Layer; 10YR 4/3 brown; silt loam; structureless; dry loose consistency; non-plastic; no cementation; mixed origin; abrupt smooth lower boundary
Ib	40-60	Fill Layer; Gley 2 7/5BG light greenish gray; concrete; structureless; dry extremely hard consistency; non-plastic; strong cementation; terrestrial origin; abrupt smooth lower boundary
Ic	60-130	Fill Layer; 10YR 8/3 very pale brown; crushed coral; structureless; moist loose consistency; non-plastic; no cementation; marine origin; abrupt smooth lower boundary
II	130-140	Wetland Sediment; 10YR 4/2 dark grayish brown; peaty clay loam; moderate medium crumb structure; moist friable consistency; slightly plastic; no cementation; mixed origin; abrupt smooth lower boundary; peaty sediment, contains decomposing plant material and land snail shells; Kewalo wetland; designated a component of SIHP # -6636
III	140-153	Jaucas sand; 10YR 8/3 very pale brown; sand; weak fine single grain structure; moist loose consistency; non-plastic; no cementation; marine origin; abrupt smooth lower boundary
IV	150-200	Marine Sediment; Gley 2 6/5B bluish gray; clay; moderate medium blocky structure; moist friable consistency; very plastic; no cementation; marine origin; marine clay over coral shelf

Runyon et al. (2012) identified Kewalo wetland sediments within all 13 test excavations (Trenches 1-13) dug during an archaeological inventory survey for the Senior Residence at Pi‘ikoi (Figure 21). They designated Kewalo wetland sediments as Stratum IIa, IIb, and IIc (Figure 22, Figure 23, and Table 7). These sediments ranged from 1.6 mbs to 2.5 mbs. Runyon et al. (2012:146) described SIHP # -6636 as follows:

> SIHP # 50-80-14-6636 consists of portions of the former wetland surface of the Kewalo area, originally identified during a study by O'Hare et al. (2003) and also identified within the Phase 1 and Phase II portions of the Ko‘olani Condominium project (O'Hare et al. 2004, Tulchin and Hammatt 2005, and Runyon et al. 2011). The site boundary within the current project area is known only within tested portions of the project area. However, based on the distribution of SIHP # -6636 in the vicinity of the project area, this portion of SIHP # -6636 is likely discontinuous with wetland deposits documented both *mauka* (O'Hare et al. 2003) and *makai* (O'Hare et al. 2004, Tulchin and Hammatt 2005, and Runyon et al. 2011) of the project.
>
> Within the current project area, SIHP # 50-80-14-6636 was found beneath thick layers of various fill materials (hydraulic fill or pump dredge and crushed coral) that were imported during early twentieth century Land Reclamation fill events. In general, the natural wetland contained two distinct strata. The upper stratum of SIHP # -6636 consisted of a silty clay loam containing abundant decomposing organic materials (peat), snail shells, rootlets and charcoal flecking representing an intact buried A horizon. The lower strata of SIHP # -6636 consisted of gleyed sandy clay wetland sediment containing rootlets and small snail shells. The buried wetland sediments (SIHP # -6636) were observed within all excavated trenches and were found directly overlying the coral shelf.
>
> The stratigraphy observed during this study is similar to studies in the near vicinity which have documented SIHP # -6636.

Morriss et al. (2013) identified Kewalo wetland sediments within 22 of 26 backhoe test excavations (Trenches 1-20, 23, and 26) dug during the archaeological inventory survey for the Ala Moana Center (AMC) ‘Ewa Mall Expansion project (Figure 24). They described SIHP # -6636 as follows:

> The wetland sediments observed within the current project area consist primarily of greenish-gray sandy clays containing decomposing organics, charcoal, and snail shells. These sediments were documented at depths ranging from 99 to 190 cm below the surface (cmbs), with an average upper boundary of 141 cmbs. Peat was observed as distinct layers, usually directly above the sandy clays, and as inclusions within the sandy clays. No cultural materials were observed within the wetland surface, except where this surface was disturbed in historic times. Microscopic charcoal fragments were identified in the wetland samples examined for pollen. The presence of charcoal in these deposits corresponds with the region being inhabited throughout the prehistoric/historic period, and utilized for agriculture, aquaculture, and salt production. (Morriss et al. 2013:168-170)

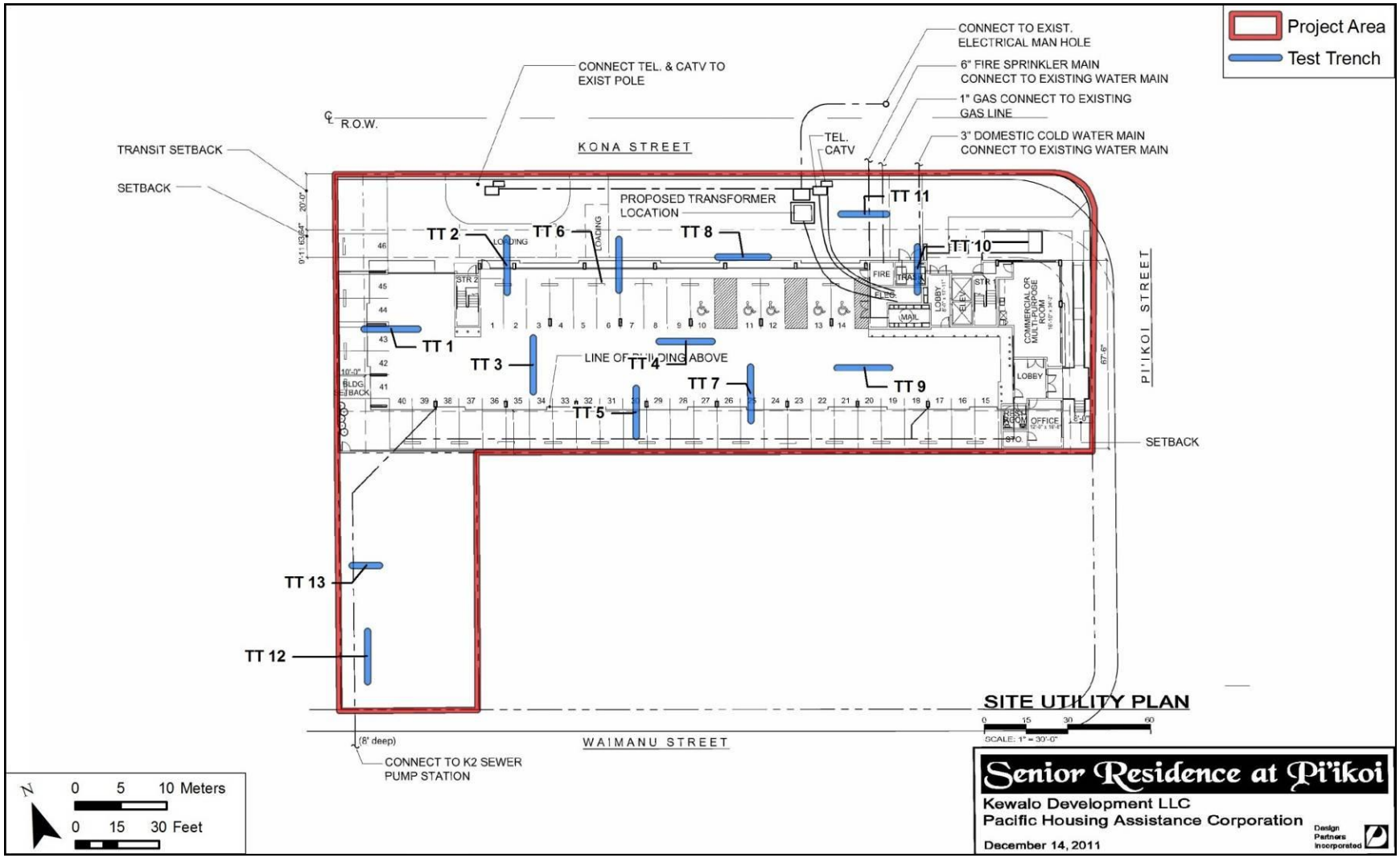


Figure 21. Runyon et al. (2012:113) study area showing locations of Trenches 1-13, all of which exposed Kewalo wetland (SIHP # -6636) sediments; see Figure 5 for location of Runyon et al. (2012) study area

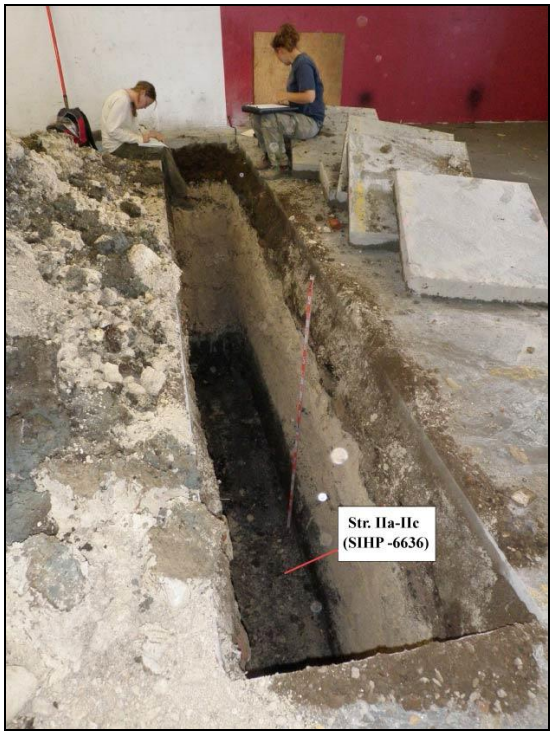


Figure 22. Trench 8, northeast wall, showing Kewalo wetland (SIHP # -6636), Strata IIa-IIc, view to west (adapted from Runyon et al. 2012:132)

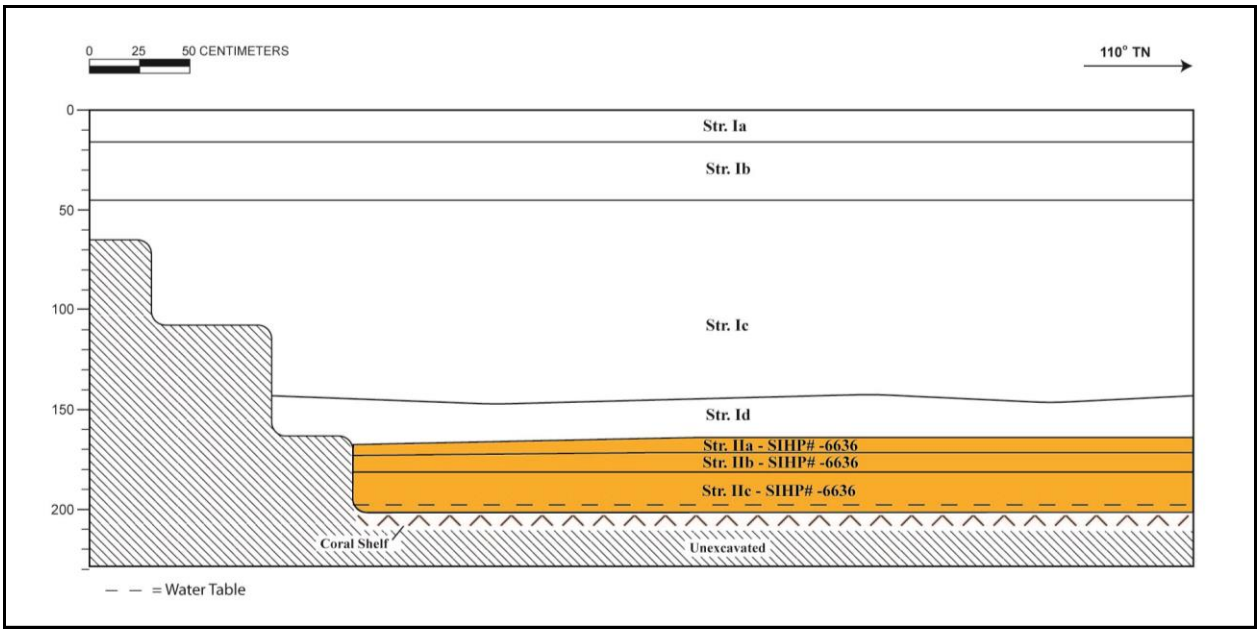


Figure 23. Trench 8 profile showing Kewalo wetland (SIHP # -6636), Strata IIa-IIc (adapted from Runyon et al. 2012:132)

Table 7. Trench 8 Stratigraphic Description (adapted from Runyon et al. 2012)

Stratum	Depth (cmbs)	Sediment Description
Ia	0-15	Concrete Surface.
Ib	15-45	Fill; 10YR 4/3 (brown); gravelly sandy clay; structureless, fill; dry, loose consistency; non-plastic; mixed sediment; clear, smooth lower boundary; base course fill material.
Ic	45-145	Fill; 10YR 6/2 (light brownish gray); crushed coral; structureless, fill; dry, loose consistency; non-plastic; marine sediment; clear, smooth lower boundary; coral fill.
Id	145-165	Fill; 10YR 4/2 (light gray); silty clay; structureless, massive; wet, very sticky; plastic; marine sediment; diffuse, smooth lower boundary; hydraulic fill (pump dredge) material.
IIa	165-170	Natural; 10 YR 2/2 (very dark brown); silty clay loam; weak, medium, crumb structure; moist, very friable consistency; slightly plastic; terrigenous; clear, smooth lower boundary; many very fine to fine rootlets; natural organically-enriched A horizon containing thick peat, very small snails, rootlets and charcoal flecking; Kewalo wetland sediment; designated a component of SIHP # -6636.
IIb	170-185	Natural; Gley 1 4/5GY (dark greenish gray); sandy clay; weak, fine, granular structure; wet, sticky consistency; plastic; marine sediment; diffuse, smooth lower boundary; common, fine rootlets; contains snail shell; Kewalo wetland sediment; designated a component of SIHP # -6636.
IIc	185-200	Natural; 10YR 3/1 (very dark gray); silty clay loam; moderate, medium, crumb structure; moist, friable consistency; plastic; terrigenous sediment; many, fine rootlets; contains very small snails; Kewalo wetland sediment; designated a component of SIHP # -6636.

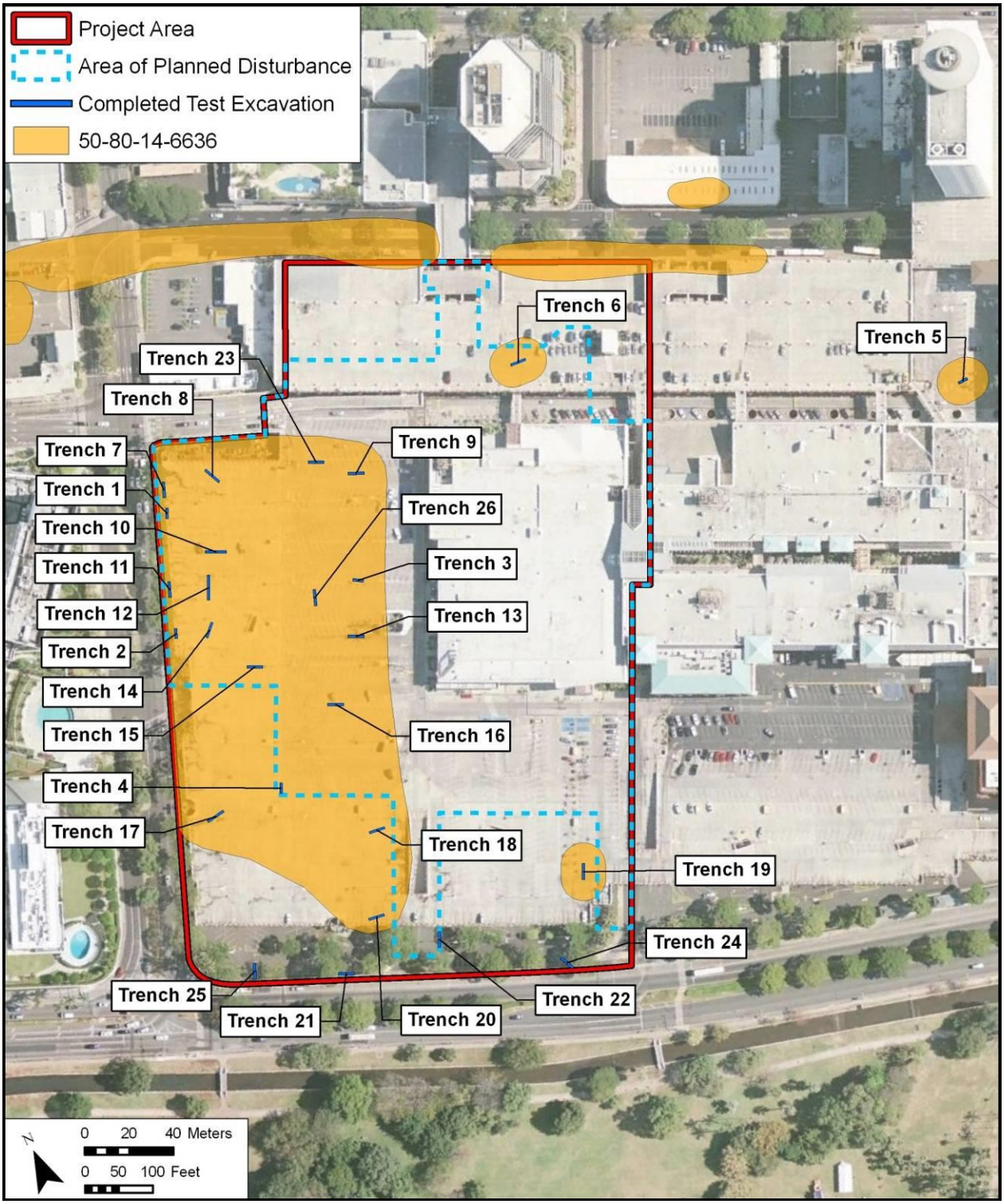


Figure 24. Morriss et al. (2013:162) study area Trenches 1-27 and distribution of SIHP # -6636; see Figure 5 for location of Morriss et al. (2013) study area

The Kewalo wetlands sediments were designated as Stratum II (Figure 25, Figure 26, and Table 8). Pollen and phytolith analysis showed that the wetland sediments within the AMC project area were indicative of a sedge marshland. The margins of the marsh were dominated by grasses, sedges, and *kolea* trees. A variety of sea grass known as, *Ruppia maritima*, grew within the marsh. Local vegetation in the vicinity included native *‘ahea*, *kolokolo, ahakea lau li‘i* or *‘akupa*, coconut, *loulu* palm, *‘a‘ali‘i*, legumes, kadua, *aulu*, *‘ihi*, as well as grasses and ferns. This wetland environment was modified at some point during the nineteenth- or twentieth-century based on the presence of alien (introduced) *kiawe* pollen and the lack of sedge and non-wind dispersed pollen. This may have been related to making the region viable for agriculture, aquaculture, salt pan operations, and/or due to land reclamation efforts (Morriss et al. 2013).

During the City Center (Section 4) AIS, a buried land surface comprised of wetland sediments was identified in 27 test excavations within the East Kaka‘ako and Kālia Geographic Zones (T-186 through T-193, T-195, T-196, T-198 through T-200, T-202, T-202A, T-203, T-205, T-207 through T-212, T-214, T-219, T-220, and T-221). The depositional sequence in these 27 test excavations was similar. In general, the wetland sediments were documented as variations of brown and gray silty clays, sandy clays, clay loams, and black silt loam peat layers at or near the water table. The wetland sediments ranged from 0.78 mbs to 2.38 mbs, were developed over natural marine lagoonal deposits and/or the coral shelf, and were capped by historic and/or modern fill deposits. The wetland sediments generally contained organic material, freshwater snail shells and/or marine shells. The profile recorded for T-186 is representative of this local stratigraphic sequence (Figure 27, Figure 28, and Table 9).

Summarized below are the current City Center AIS results of the specialized analyses conducted to better characterize the wetland sediments comprising SIHP # -6636. These analyses involved Energy Dispersive X-ray Fluoresence (EDXRF), palynology, wood taxa identification, historic artifact classification, and malacology. Results presented by individual test excavation appear in Volume IV and by analytical study in Volume V.

A single piece of volcanic glass debitage (Acc. # 189-H-1) was collected from SIHP # -6636. It was found in the T-189 Stratum IIb bulk sediment sample. EDXRF analysis indicates that the sample is from a local O‘ahu provenience.

Pollen analysis on six samples from T-191 and T-207 indicated that the wetland sediments in these two test excavations represent sedge marshland. *‘Aheahea* likely grew along the drier margins of the wetlands. The presence of *Acacia* pollen in the uppermost samples from T-191 and T-207 indicated that *koa* trees grew in the vicinity. The pollen record from T-207 suggested that the marsh environment in this area grew drier during the time period represented by the three column samples. A decreasing concentration of Cyperaceae (sedge) pollen appeared to correspond with increasing quantities of Poaceae (grass) and Cheno-am (*‘aheahea*) pollen. As the marsh became drier, ferns became more abundant. Microscopic charcoal was also present in the uppermost samples in T-191 and T-207.

Taxa analysis of seven charcoal samples collected from wetland sediments (Stratum IIb) in T-189 identified two native species: *hao* (cf. *Rauvolfia sandwicensis*), and *‘a‘ali‘i* (cf. *Dodonaea viscosa*), and one Polynesian-introduced species *kukui* (cf. *Aleurites moluccana*). In addition, were several unidentified woods, a temperate hard wood, and a Palm (cf. Aracaceae) also was

Figure 25. Trench 5 north sidewall showing Kewalo wetland (SIHP # -6636), Strata II and III (adapted from Morriss et al. 2013:90)

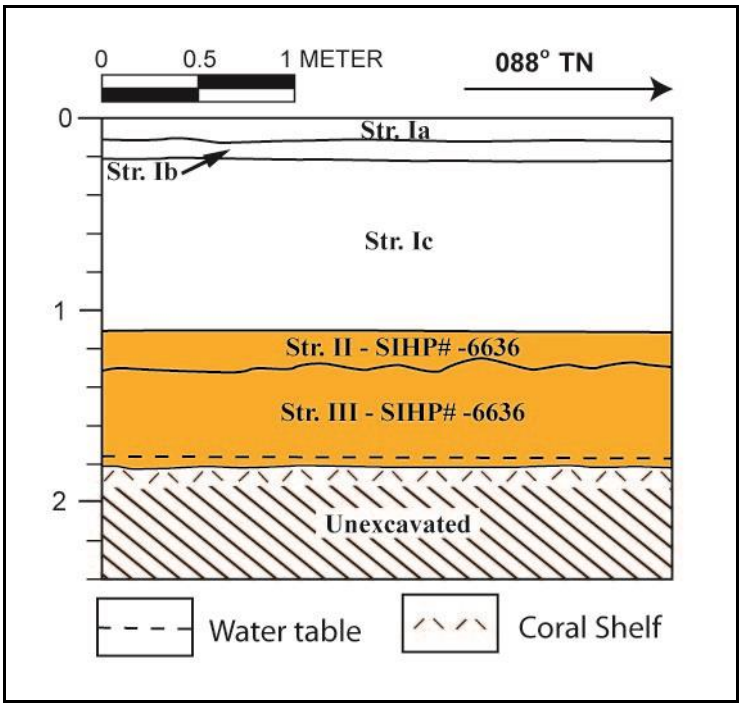


Figure 26. Trench 5 north profile showing Kewalo wetland (SIHP # -6636), Strata II and III (adapted from Morriss et al. 2013:90)

Table 8. Trench 5 Stratigraphic Description (adapted from Morriss et al. 2013)

Stratum	Depth (cmbs)	Description
Ia	0-10	Asphalt
Ib	10-20	2.5YR 3/3, dark reddish brown; mottles, 10YR 5/1, gray, 50%, coarse; gravelly silt loam; weak, fine, crumb structure; moist, friable consistency; non-plastic; terrigenous origin; very abrupt lower boundary; smooth topography; no roots observed; reddish brown basalt gravel base course
Ic	20-110	10YR 5/3, brown; mottles, 10YR 8/1, white, 20%, fine to coarse; gravelly cobbly coarse sand; structureless, singlgrain; moist, loose consistency; non-plastic; mixed origin; abrupt lower boundary; smooth topography; no roots observed; crushed coral fill
II	110-130	10YR 6/2, light brown, gray; sandy clay; massive structure; wet, sticky consistency; plastic; mixed origin; abrupt lower boundary; wavy topography; few, fine roots observed; disturbed wetland sediment; Kewalo wetland; designated a component of SIHP # -6636
III	122-180	GLEY 2 G/1, bluish gray; sandy clay; massive structure; wet, sticky consistency; plastic; mixed origin; lower boundary not visible; few, fine roots observed; naturally-deposited wetland sediment containing land snails and decomposing organics overlying the natural coral shelf; Kewalo wetland; designated a component of SIHP # -6636

Figure 27. T-186 northeast profile wall, showing Kewalo wetland (SIHP # -6636), Strata IIa and IIb, view to northwest

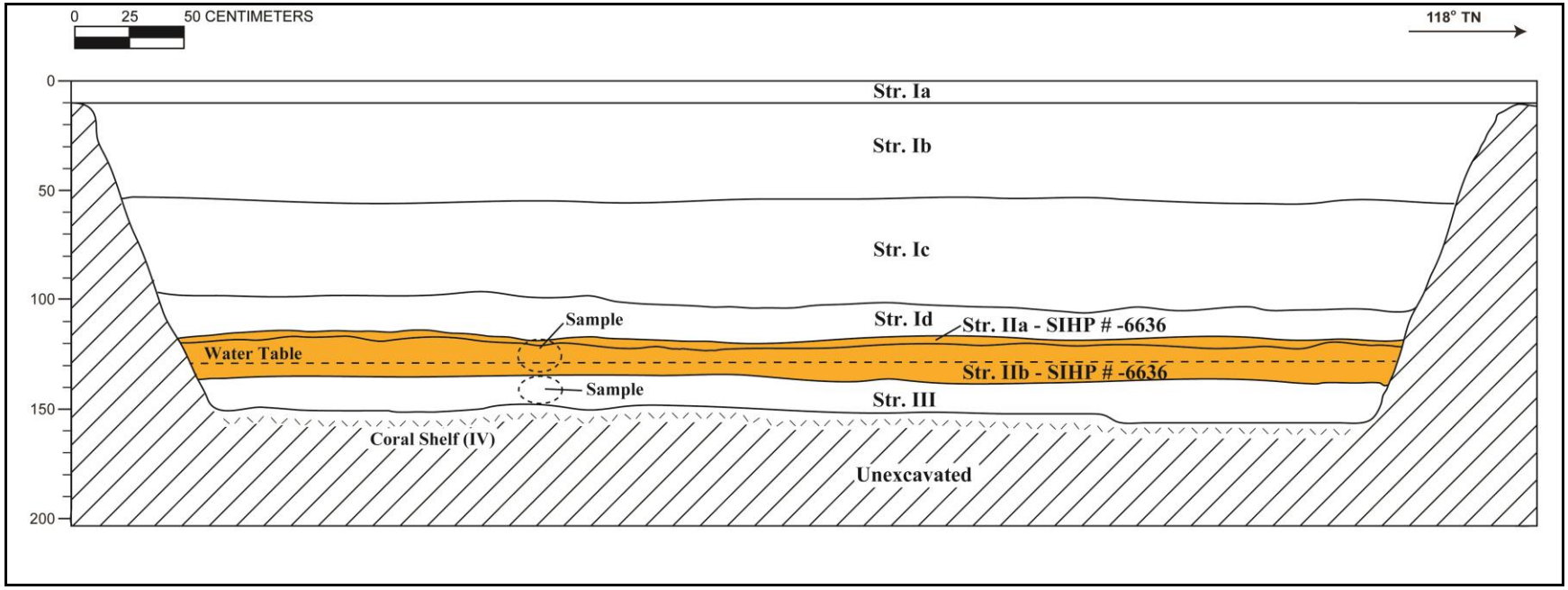


Figure 28. T-186 northeast wall profile showing Kewalo wetland (SIHP # -6636), Strata IIa and IIb

Table 9. T-186 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–10	Asphalt
Ib	10–56	Fill; 5 Y 4/1 (dark gray); very gravelly loam; structureless; moist, friable consistency; non-plastic; terrigenous origin; very abrupt, smoother lower boundary; gravel base course
Ic	45–101	Fill; 5 Y 8/1 (white); extremely gravelly sand; structureless, singlgrain; moist, friable consistency; non-plastic; abrupt, smooth lower boundary; crushed coral base course
Id	95–118	Fill; GLEY 1 7/1 5 GY (light greenish gray); silty clay; moderate, fine, platy structure; moist, firm consistency; very plastic; mixed origin; very abrupt, smooth lower boundary; hydraulic fill
IIa	112–121	Natural, 5 Y 2.5/2 (black); gravelly clay loam; weak, fine, platy structure; moist, friable consistency; non-plastic; mixed origin; clear, wavy lower boundary; former O-horizon; abundant decaying organic matter overlying wetland sediment; Kewalo wetland sediment; component of SIHP # -6636
IIb	115–136	Natural; 5 Y 5/1 (gray); gravelly loam; moderate, very fine, crumb structure; slightly plastic; mixed origin; clear, smoother lower boundary; natural wetland sediment; Kewalo wetland sediment; component of SIHP # -6636
III	131–155	Natural; GLEY 1 7/10 Y (light greenish gray); loamy sand; moderate, medium, granular structure; wet, slightly sticky consistency; non-plastic; mixed origin; lower boundary not visible; natural marine lagoonal sediment

identified, however, its variety was not determined.

Minimal historic artifacts were collected from the SIHP # -6636 sediments within test excavations T-196, T-198, T-200, T-202A, and T-205. These artifacts date from the late 1800s to early 1900s, and include two bottle glass fragments collected from T-196, Stratum II backdirt (Figure 29). A milled 2 x 4 wood plank (Acc. #198-A-1) was collected from T-198, while one moldblown glass bottle (Acc. #200-A-1) and three milled wood fragments (Acc. #200-A-2) were collected from T-200 (Figure 30). One brick (Acc. #202A-A-12), made between 1886 and 1918, was collected from T-202A. Pressed wood (6.0 g) and rusted metal (1.5 g) were collected from T-205.

Analysis of the fresh- and brackish-water snails collected from T-186, T-189, T-207, and T-219 identified estuarine, strandline, and shoreline dwelling species (*A. parvula*, *Melampus* sp., and *B. gracilis*) consistent with a coastal location. The presence of *M. tuberculata* indicated a permanent fresh- or brackish-water environment, typical of marshland. The uppermost sample from T-219 contained two historically-introduced species (*Physa* sp. and *P. duryi*). The presence of these gastropods indicates that this sample dates to the historic period and may be consistent with mi to late nineteenth century (or later) rice cultivation.

The buried Kewalo wetland sediments identified within 27 test excavations during the current City Center AIS are designated as part of SIHP # -6636. Historic maps and aerial photography confirm the extent of the Kewalo wetland, which included a large portion of the City Center APE and numerous previous archaeological studies. The depositional sequence observed during the current AIS correlate with previous studies, namely SIHP # -6636 consists of buried wetland sediment present at or near the water table which were deposited atop marine sediments and/or the coral shelf, and subsequently were capped by historic and/or modern fill strata. The sediment described in previous studies as SIHP # -6636 is similar in texture, color, and content to the SIHP # -6636 sediments described in the current AIS project area. The color and texture of SIHP # -6636 sediments varies from brown to gray to black silty clay, sandy clay, clay loam, or silt loam. SIHP # -6636 includes sedge and Cheno-am pollen (dominating the pollen record), charcoal, marine invertebrates, land snails, minimal historic artifacts, and a high percentage of organic material or peat. Although fish scales were not observed in the wetland deposits in the current project area, they were identified in Kewalo wetland deposits in two previous studies (Clark and Gosser 2005 and O’Hare et al. 2004). Radiocarbon and pollen analysis of the Kewalo wetland sediments suggests that the wetlands began forming as early as ca. AD 340 to 600, prior to Polynesian habitation. The interpreted function of SIHP # -6636 is variable among previous studies, which is indicative of the mixed usage of the Kewalo wetland from the pre-Contact era to the early twentieth century. O’Hare et al. (2003), O’Hare et al. (2004), Tulchin and Hammatt (2005), Hammatt (2008), Runyon et al. (2011), and Morriss et al. (2013) identified SIHP # -6636 as buried wetland sediments. Clark and Grosser (2005) identified SIHP # -6636 as pond sediments based on historic maps and research. Altizer et al. (2011) also indicated an unnamed pond in the vicinity, but only found evidence of agricultural sediment.

SIHP # -6636 includes one archaeological feature (Feature 1), a sediment berm that was identified within Waikīkī by O’Hare et al. (2003). It was designated Feature 1 during the current AIS (see Figure 1). SIHP # -6636 Feature 1 was identified within Trenches 12 and 23 (O’Hare et al. 2003) in the southeast corner of their project area (see Figure 6). The sand berm in

Figure 29. T-196 glass bottle fragments (Acc. #196-A-1 to A-2) from backdirt pile of Stratum II

Figure 30. T-200 aqua alcohol bottle (Acc. #200-A-1) collected from Stratum IIb

Trench 12 is described as dark grayish-brown sandy clay, 67 cm in thickness and containing marine gastropods. In Trench 23, it is described as dark gray clay loam with micro-stratigraphy of sand lenses. In addition, it appeared to be associated with a concentration of coral boulders, interpreted as a possible berm retaining wall, and a wooden fence post, suggestive of a possible fence lining (see Figure 7 and Table 1); the possible wall and fence post/lining also are designated SIHP # -6636 Feature in the current study. Radiocarbon analysis of the sand berm produced a two-sigma calibrated date of AD 1660 to 1890 (78.1% probability) (O’Hare et al. 2003).

Based on the guidance of National Register Bulletin No. 15, SIHP#50-80-14-6636 retains its integrity of location and materials and was previously determined eligible to the Hawai‘i and National Registers under Criterion A (associated with events that have made an important contribution to the broad patterns of our history) and D (has yielded, or is likely to yield information important for research on prehistory or history). Based on the results of the current City Center AIS, and in consultation with SHPD, CSH recommends that SIHP # -6636 does not have the integrity to convey its significance under Criterion A of both the Hawai‘i and National Register. The former land surface and its potential features (i.e., berms, ponds, and other cultural components) are buried and their surroundings have been completely altered by modern development since their time of construction and period of use. Accordingly, CSH recommends that this cultural resource maintains the integrity to support its historic significance only under Criterion D of the Hawai‘i Register and recommends eligibility to the National Register under Criterion D, exclusively for its information potential.

SIHP # -6636 has provided information, and can potentially provide additional information; on pre-Contact to early twentieth century habitation, and agricultural and aquacultural use of the former Kewalo wetland. The current project will potentially impact approximately 1.22 acres of an estimated 62.8 acres of buried wetland based on an interpolation of the cultural resource boundary (see Figure 1). The potential for impact of the buried Kewalo wetland during project construction warrants the implementation of an archaeological monitoring program within the interpolated boundary of SIHP # -6636. Archaeological monitoring at SIHP # -6636 will be research driven with a focus on additional documentation of the depositional sequence, identification of potential subsurface features, and collection of additional in situ wetland sediments for laboratory analysis. Any newly-identified archaeological features associated with SIHP # -6636 will be mapped in plan view and profile, photographed, mapped using GPS, and sampled for radiocarbon, macrobotanical, and/or palynological analysis. Sample collection from SIHP # -6636 sediments or potential features will include discrete bulk sediment samples and column samples. Column sample analysis will potentially provide incremental information regarding diachronic changes in the content and depositional history of the Kewalo wetland sediments across time and space.

SIHP # 50-80-14-6856

FORMAL TYPE:	Subsurface remnants of Kolowalu Fishpond
FUNCTION:	Aquaculture
PREVIOUS DOCUMENTATION:	Bell et al. (2006), O’Hare et al. (2006), and Thurman et al. (2009)
AGE:	Pre- and post-Contact
NUMBER OF FEATURES:	N/A
TYPES OF FEATURES:	N/A
DISTRIBUTION:	Approximately 0.98 acres (within current project area), 7.17 acres (total area)
LOCATION:	Along Queen Street between Kamake‘e and Waimanu Streets (East Kaka‘ako Geographic Zone)
TAX MAP KEY:	[1] 2-3-004; [1] 2-3-004:076, 080; [1] 2-3-005:013; [1] 2-3-006:014
LAND JURISDICTION:	Hawai‘i Community Development Authority; Cody Properties, LLC; Kaka‘ako Associates, LLC; and the City and County of Honolulu
TEST EXCAVATIONS:	T-181 through T-185

SIHP # 50-80-14-6856 is a previously-identified cultural resource that consists of the subsurface remnants of Kolowalu Fishpond (i.e., sediments, berms, and sandbar) that is located along Queen Street between Kamake‘e and Waimanu Streets within the East Kaka‘ako Geographic Zone (Figure 1). The SIHP # -6856 cultural resource boundary was established based on a combination of historic maps and previous archaeological data to include 7.17 acres. SIHP # -6856 was initially designated by Bell et al. (2006) during an archaeological inventory survey for the Victoria Ward Village Shops Project (Figure 2). Subsequently, SIHP # -6856 was identified by O’Hare et al. (2006) during archaeological monitoring for the Kaka‘ako Community Improvement District 10 Project and Thurman et al. (2009) during an archaeological inventory survey for the Queen Street Parks Project (see Figure 2).

Few oral traditions, legends, or other ethnographic information exist regarding Kolowalu Fishpond. Pukui et al. (1974:116-117) interpreted the name of Kolowalu, a ridge in Mānoa, as “eight creeping.” The Kolowalu Kai area may have been a *lele* (jump land) of the *ahupua‘a* of Mānoa and this interpretation of Kolowalu could apply to Kolowalu Fishpond. In general the location of Kolowalu Fishpond is depicted on historic maps as being 200 m inland from the pre-reclamation shoreline. This inland location suggests the fishpond was likely supplied by either fresh- or brackish-water. Kolowalu Fishpond is depicted on the 1884 S.E. Bishop map (Figure 5) and on the 1897 M. D. Monsarrat map (Figure 3) which indicates that Kolowalu Fishpond was part of Land Commission Grant 3194. Grant 3194 was awarded to Kalae and Ka‘aua, and contained many fishponds collectively called Kolowalu. Ka‘aua was awarded the land in 1878, and may have had ties with the land from the early- to mid-nineteenth century (Thurman et al. 2009). Depictions of Kolowalu Fishpond on historic maps may indicate that the pond was constructed during the late pre-Contact to early post-Contact era; however, with no ethnographic or historical accounts of the construction or use of Kolowalu Fishpond, its age and origin remain unclear.

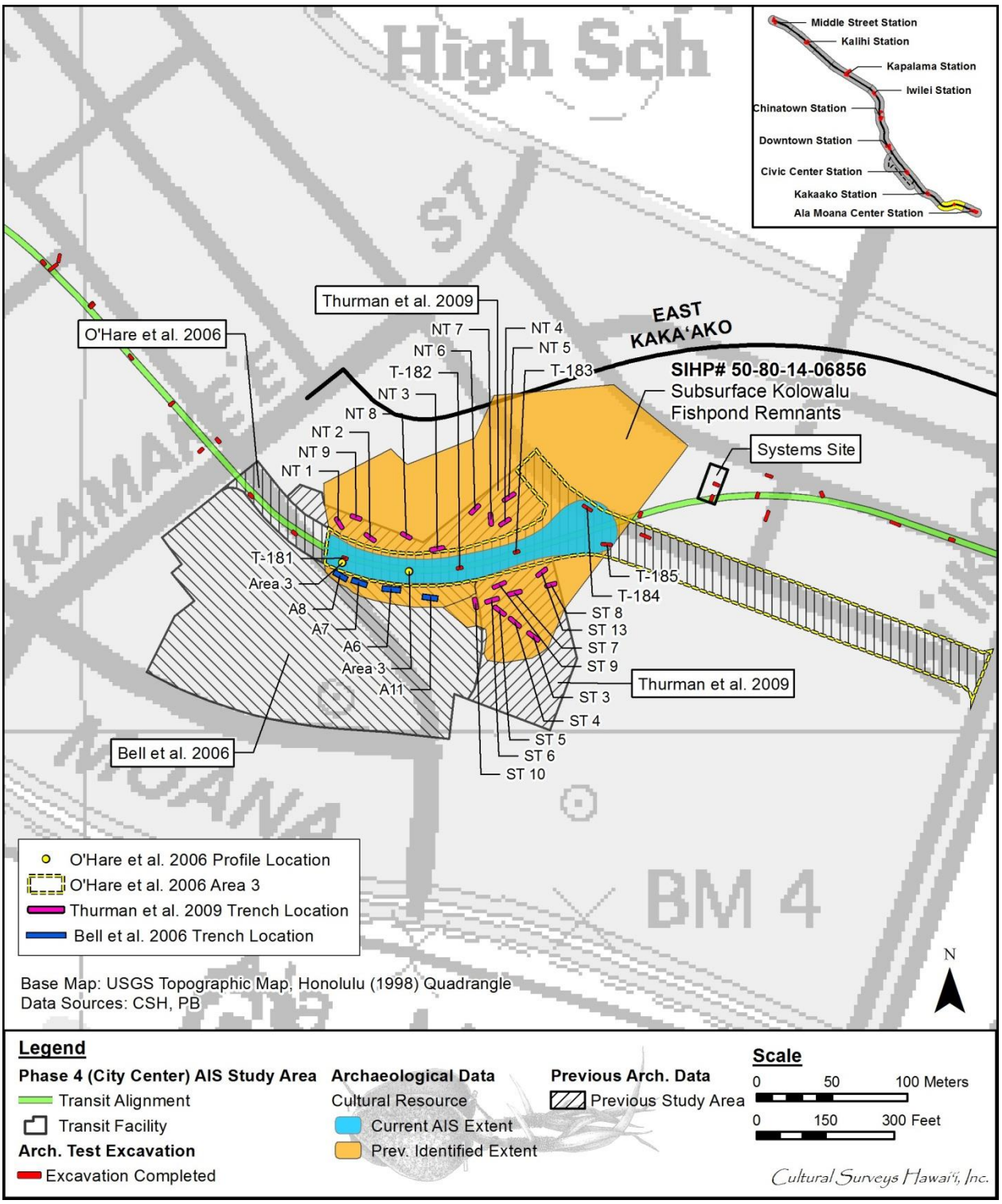


Figure 1. Location and extent of SIHP # -6856, Kolowalu Fishpond, with locations of current AIS excavations T-181 through T-185 along the East Kaka‘ako Zone corridor (base map: 1998 U.S. Geological Survey topographic map, Honolulu Quadrangle)

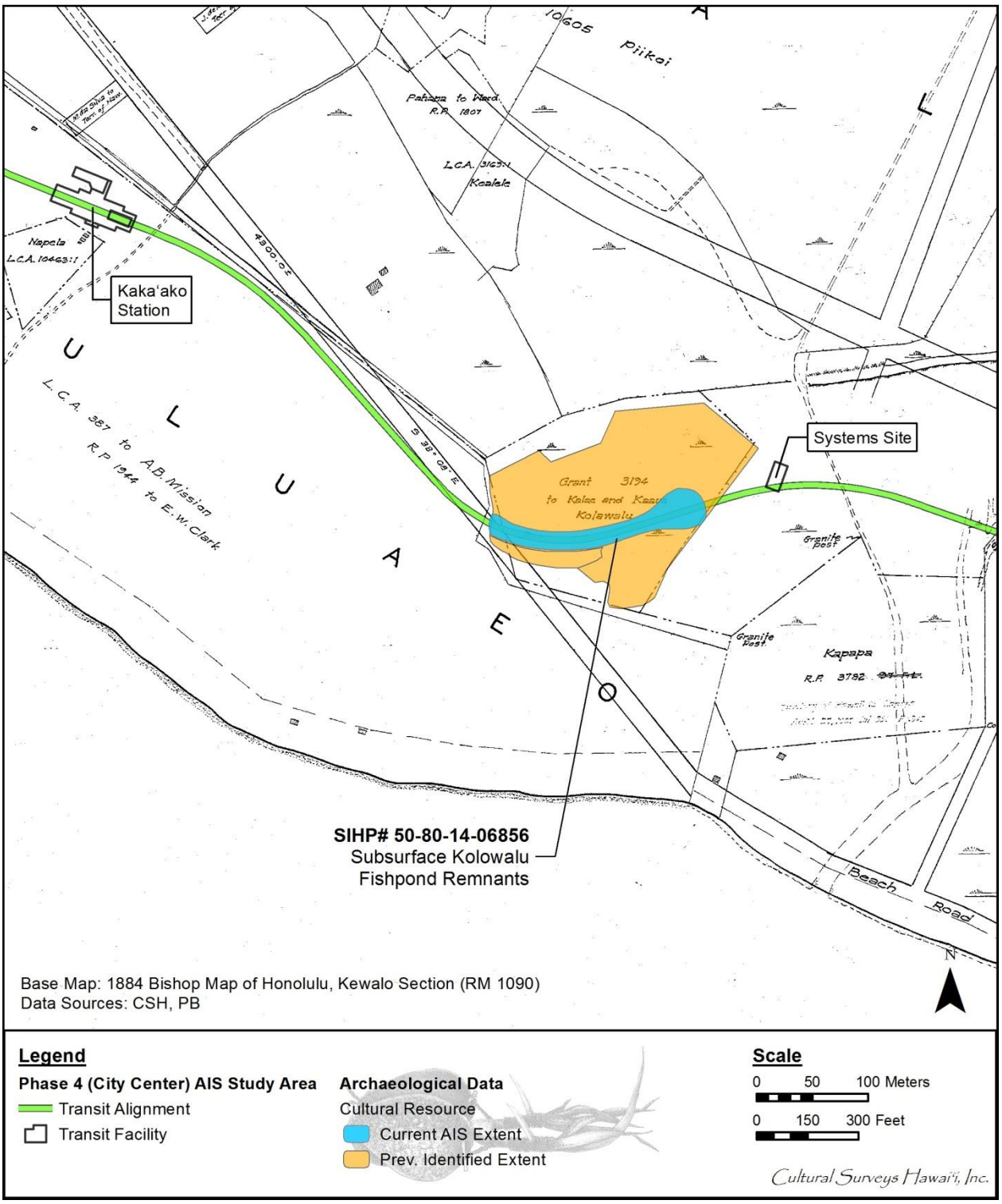


Figure 2. 1884 Map of Honolulu and Kewalo by S.E. Bishop (Reg. Map 1090) showing the general location of Kolowalu Fishpond

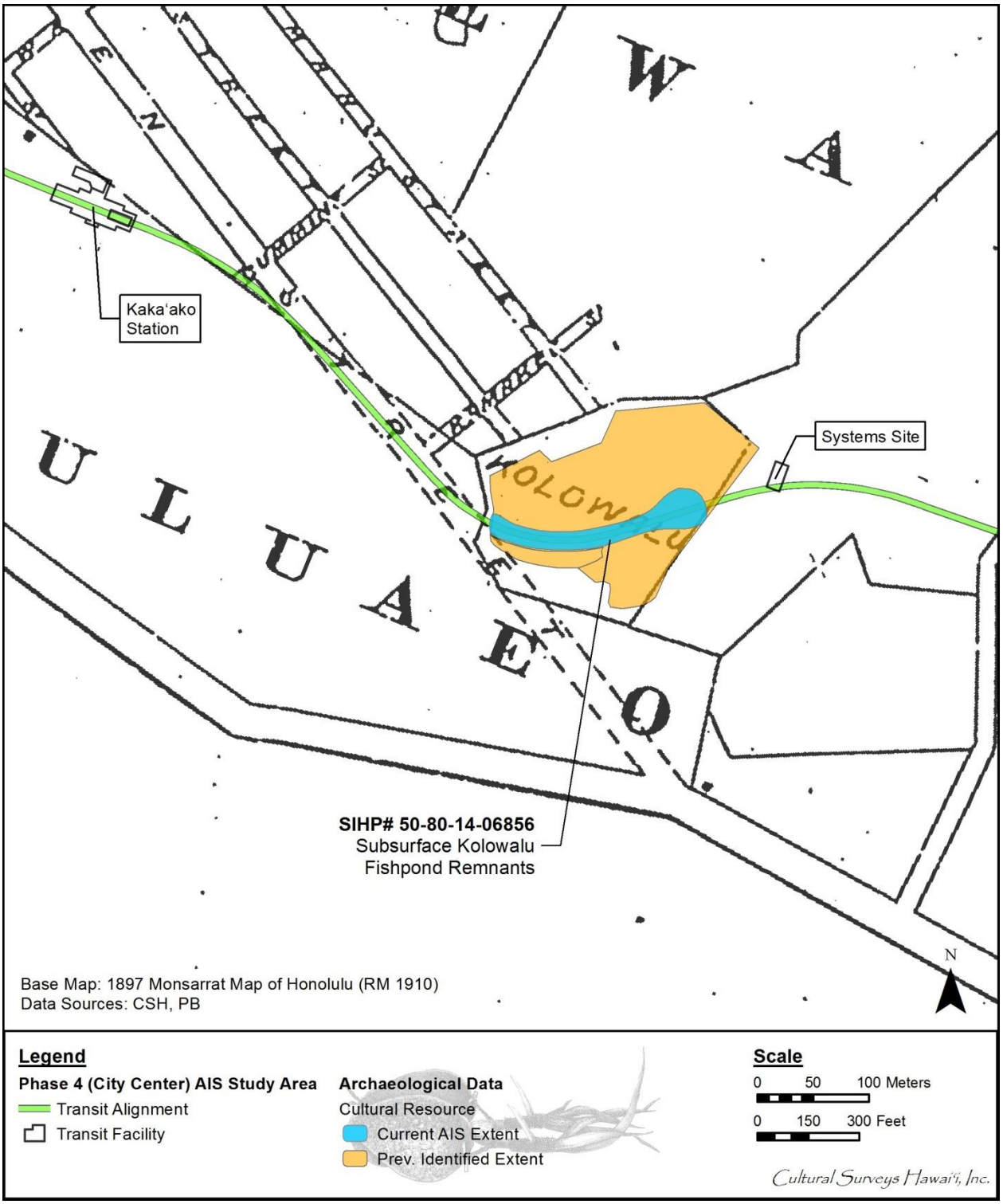


Figure 3. 1897 Map of Honolulu by M. D. Monsarrat (Reg. Map 1910) showing the general location of Kolowalu Fishpond

Kolowalu fishpond remained extant through the early twentieth century and is depicted in a 1927 aerial photograph (Figure 5). Kolowalu Fishpond was not completely filled in until the late 1920s or early 1930s as part of the Waikīkī Reclamation Project (O’Hare et al. 2006).

Kolowalu Fishpond sediments still remain beneath fill deposits and were initially documented during an archaeological study conducted by Bell et al. (2006). O’Hare et al. (2006) and Thurman et al. (2009) subsequently also documented additional exposures of fishpond sediments. In general, the stratigraphy in these previous studies indicates relatively thick historic fill deposits overlie the natural pond sediments which were deposited atop either the coral shelf or lagoonal sediments. Thurman et al. (2009:172) describes the stratigraphic sequence within their project area as follows:

> The stratigraphic sequence across both the mauka and makai sections of the proposed park included a minimum of one (1) m of fill everywhere tested. The fill material ranged from terrestrial mixed soils with some historic era artifacts to primarily crushed coral fill. Below the fill layers was generally a thin organic A horizon and pond sediments.

The natural fishpond deposits generally consisted of sand, clay, and sandy clay sediments that were usually overlying the Pleistocene coral shelf. These deposits were observed below historic fill deposits, at an average depth of 1.10 to 2.17 mbs. Thurman et al. (2009:96) documented a thin A horizon associated with the “backshore marsh or pond sediments associated with SIHP 50-80-14-6856” fishpond sediments. This A horizon consisted of a peat layer that contained land snails and decomposing organic material. Documented components of the Kolowalu Fishpond included an elevated berm (Stratum VII) during the Bell et al. (2006) AIS, and a natural sandbar (Stratum II and III) identified during the O’Hare et al. (2006) study.

Various fill strata overlie the natural pond sediments. Bell et al. (2006) documented up to five fill strata ranging in depth from 0.5 to 1.5 mbs. Fill material included crushed coral, terrigenous clays and clay loams, hydraulic fill, asphalt layers with gravel base courses, and historic trash fills (Bell et al. 2006). O’Hare et al. (2006) identified a total of nine fill strata (Ia-Ii) that contained historic material dating to the 1920s and 1930s. Thurman et al. (2009) indicated overlying fills generally consisted of construction fill, burnt and unburnt historic trash layers, crushed coral, and hydraulic fills.

During testing for the Victoria Ward Village Shops Project archaeological inventory survey, Bell et al. (2006) identified Kolowalu Fishpond sediments within Trench A-6 (Figure 6). They also identified a berm related to the former pond. Within Trench A-6, the Kolowalu Fishpond sediments were designated as Stratum VI (Figure 6 through Figure 8 and Table 1). The fishpond sediments ranged in depth from 1.55 mbs to 1.70 mbs and were described as “gleyed, greenish gray, sandy clay” underlying fill sediments (Bell et al. 2006:269). The adjacent Stratum VII, was described as a natural, light gray sandy clay that appeared to form a berm or boundary of the pond sediment.

O’Hare et al. (2006) identified Kolowalu Fishpond sediments during archaeological monitoring for the Kaka‘ako Community Improvement District 10 Project. Remnants of the fishpond sediments were documented in Area 3, the eastern portion of their project area (Figure 9). O’Hare et al. (2006:64) describe the stratigraphy in Area 3 as follows:

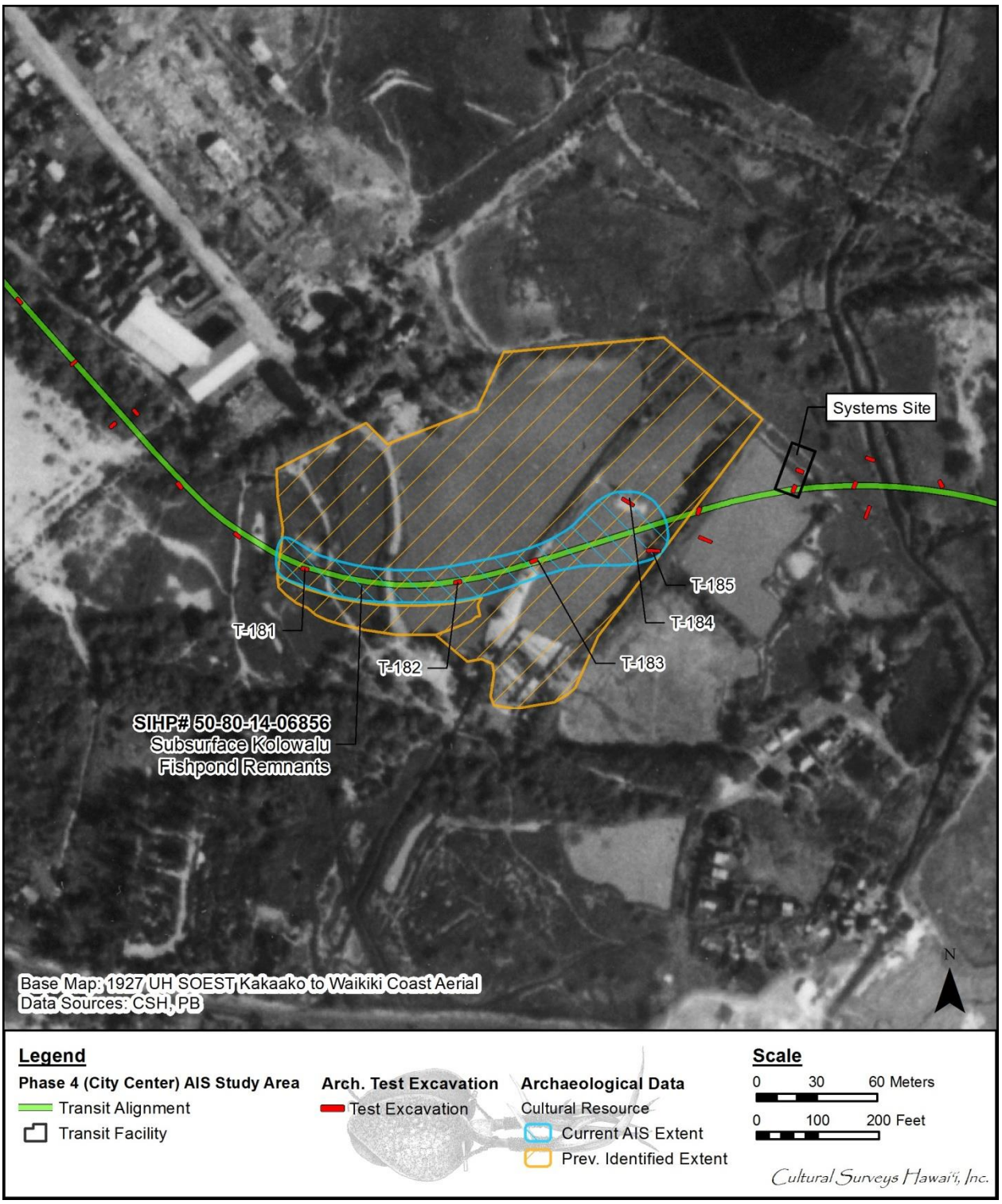


Figure 4. Portion of a 1927 aerial photograph (source: UH SOEST) depicting Kolowalu Fishpond (SIHP # -6856)

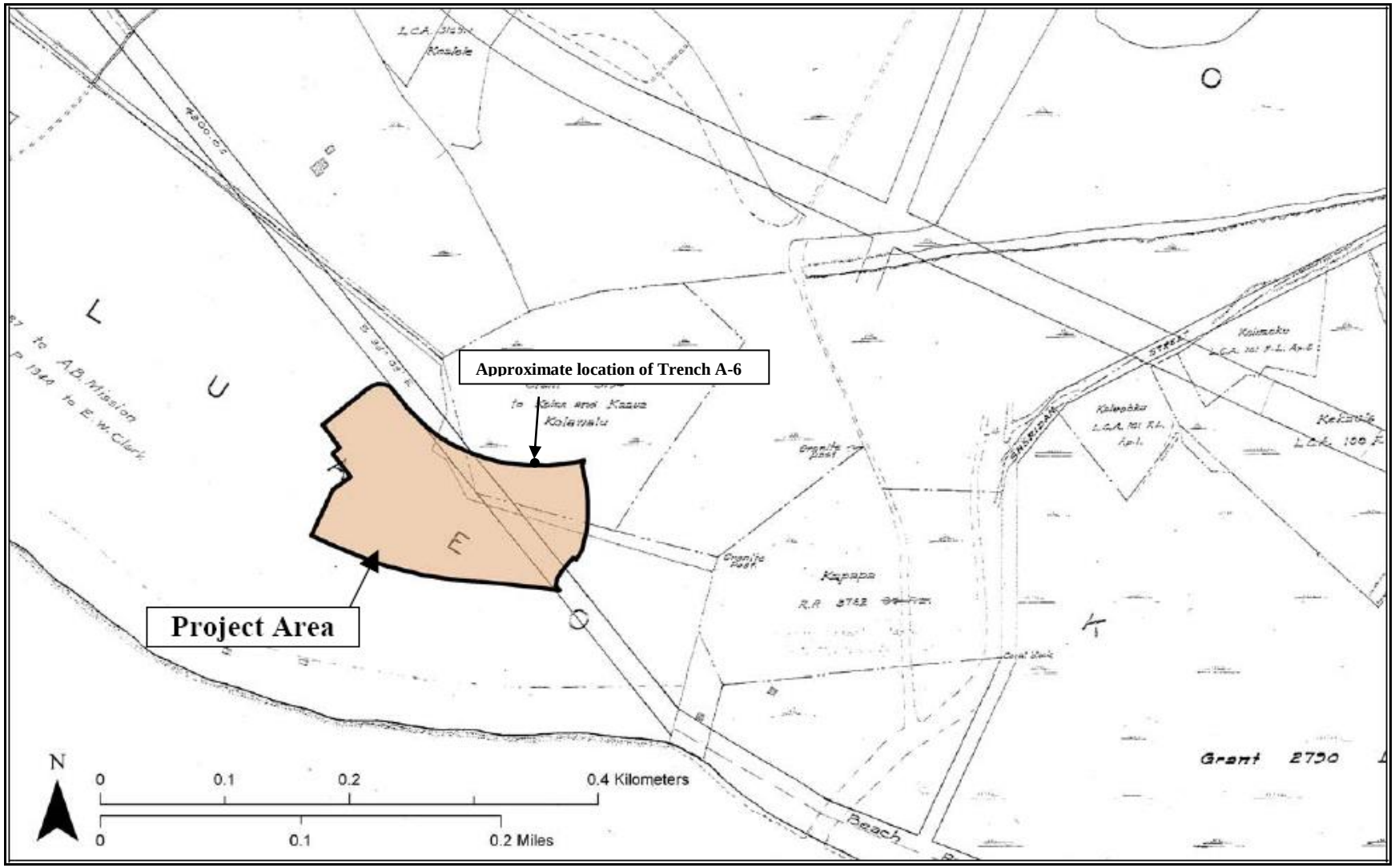


Figure 5. 1884 map of Honolulu by S.E. Bishop showing the Bell et al. (2006) AIS project area and approximate location of their Trench A-6; see Figure 1 for locations of previous studies

Figure 6. Trench A-6 southern sidewall showing the relationship between the pond sediment (VI) and the overlying fill sediments (I-V), and the underlying lagoonal sediment (VII) (adapted from Bell et al. 2006:69)

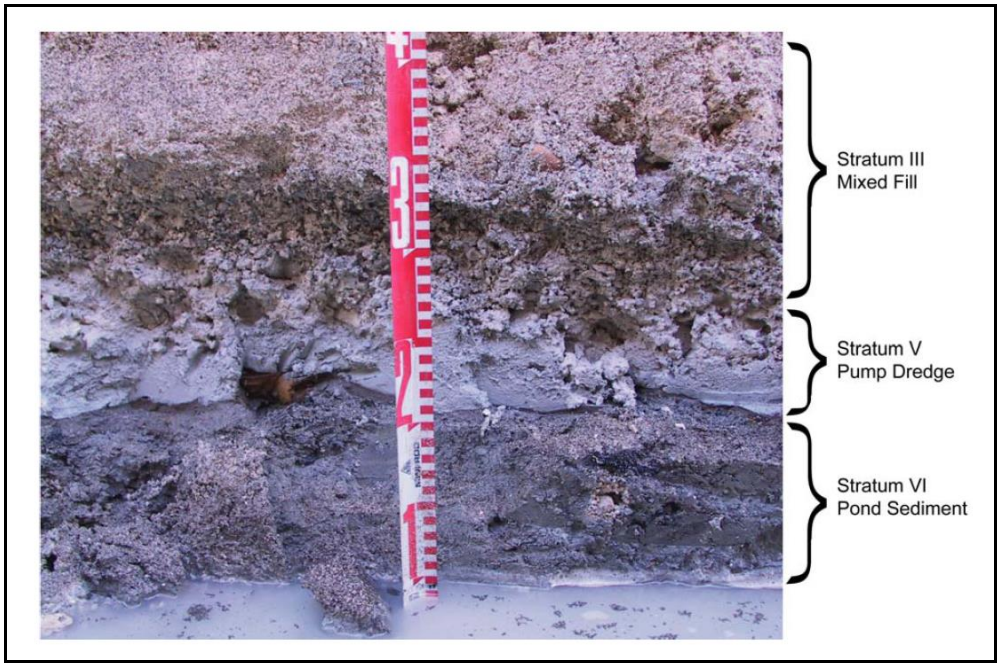


Figure 7. Close-up of the lower strata observed within Trench A-6 (adapted from Bell et al. 2006:70)

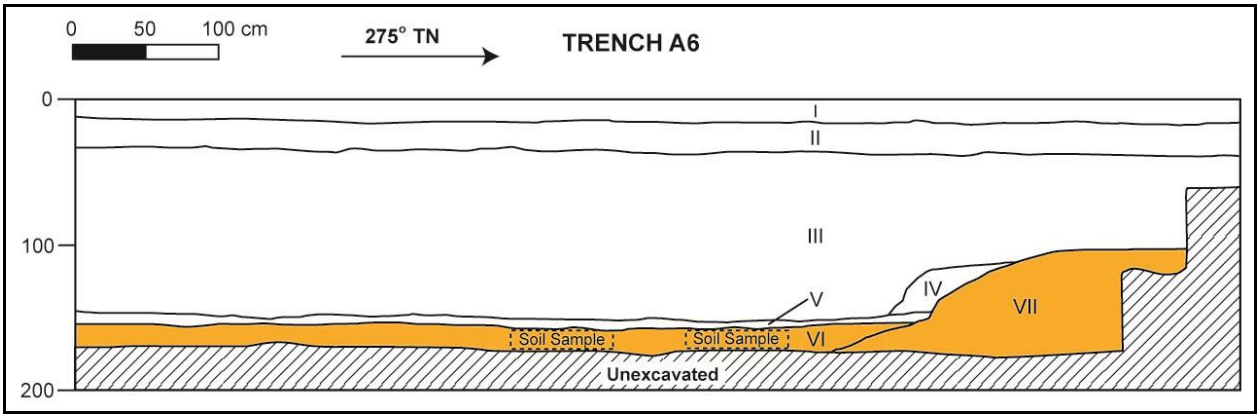


Figure 8. Profile of Trench A-6, south wall, showing Kolowalu fishpond sediments (Stratum VI) and natural lagoonal berm (Stratum VII) (adapted from Bell et al. 2006:68)

Table 1. Trench A6 Stratigraphic Description (adapted from Bell et al. 2006)

Stratum	Depth (cmbs)	Description
I	0-15	Asphalt
II	15-35	Fill Horizon; 10 YR 6/1, gray; gravel, structureless, loose dry consistency; non-plastic; no cementation; abrupt smooth lower boundary. This is a gravel base course for the asphalt.
III	35-100/150	Fill Horizon; 10 YR 7/3, very pale brown; very coarse, sand; structureless, loose dry consistency; non-plastic; no cementation; clear wavy lower boundary. 75% coral cobble and pebble. A piece of glazed ceramic found near the top of this layer.
IV	110-145	Fill Horizon; 10 YR 7/2, light gray; fine to medium, sand; structureless, loose moist consistency; non-plastic; no cementation; abrupt irregular lower boundary. Layer grades from medium sand at top to fine sand at bottom.
V	150-155	Fill Horizon; 10 YR 6/1, gray; clay; structureless, very sticky wet consistency; plastic; no cementation; very abrupt smooth lower boundary. This is hydraulic pump dredge sediment.
VI	155-170	Pond sediment; Gley 1 5/1, greenish gray; sandy clay; structureless, very friable moist consistency; very plastic; no cementation; very abrupt wavy lower boundary. Overlies natural berm (Stratum VII). Pond was capped by 1920/1930s pump dredge (Stratum V) deposited directly atop of coral shelf. Two sediment samples were collected from this stratum; component of SIHP # -6856
VII	100-170	Lagoonal sediment; 10 YR 7/2, light gray; sandy clay; structureless, loose moist consistency; sticky wet consistency; plastic; no cementation; this stratum sits directly atop of coral shelf, Marine deposited lagoonal sediment; may be a natural berm

> In this area, fill materials are found all of the way down to the top of a stratum of gleyed clay (Stratum V), which formed on the bottom of the pond, or down to the coral bedrock (Stratum VI).

Kolowalu Fishpond sediments (Stratum V) ranged from 1.21 mbs to 1.99 mbs (see Figure 10 and Table 2). They were observed beneath fill sediments and were described as being a “gleyed or clay layer, which represents the original pre-Contact to early post-Contact marshy environment of the area” (O’Hare et al 2006:68).

In addition to Kolowalu Fishpond sediments, O’Hare et al. (2006) also documented 28 burials (SIHP # 50-80-14-6658) recovered near the southwestern edge of the Kolowalu Fishpond parcel, and two previously-disturbed burials (SIHP # 50-80-14-6659) from fill deposits within the former fishpond footprint. SIHP # -6658 consists of a discrete cemetery which included extended, flexed and semi-flexed burial positions of both previously-disturbed and in situ burials. The 28 burials (minimum number of individuals [MNI] = 28 individuals) were encountered in sand deposits (Stratum II and III) identified as part of a natural sandbar that bordered the edge of Kolowalu Fishpond (see Figure 11). Collected grave goods dated from 1820 to 1890 and the cemetery was believed to have been used from the early- to late nineteenth century but not after the turn of the century (O’Hare et al. 2006). SIHP#-6659 consists of two previously-disturbed burials, one of which (Burial 20) was located in fill material deposited within the former Kolowalu Fishpond footprint. The nature and age of the burials could not be determined.

Thurman et al. (2009) identified Kolowalu Fishpond sediments during subsurface testing for the Queen Street Parks Project archaeological inventory survey. A total of 29 test units were excavated, the majority of which were within the known footprint of the Kolowalu Fishpond (see Figure 12). Test Unit 1 (Strata III-V) and Test Unit 3 (Strata III-IV) were identified as containing natural pond sediments (see Figure 13 to Figure 16, and Table 3 and Table 4). Although they do not specify whether the remaining test units clearly contained pond sediments, stratigraphic descriptions indicate that natural sediments observed in other test units generally consisted of similar lagoonal or marine deposits (Thurman et al. 2009). The locations of the test units suggest these sediments are possibly associated with Kolowalu Fishpond.

Subsurface testing for the current City Center AIS included five test excavations within the former footprint of Kolowalu Fishpond (T-181 through T-185). In general, observed stratigraphy in these test excavations consisted of thick fill strata (Ia-Id) overlying natural sediment (Stratum II) (see Figure 17 to Figure 25, and Table 5 to Table 9). The natural sediment (Stratum II) consisted of greenish and bluish gray sandy clay, loamy sand, and silty clay sediments. Within T-183 the natural sediment was subdivided into Stratum IIa and IIb, based primarily on color and textural differences. Natural sediments within T-181 contained lenses of peat material, and abundant snail shells were present within T-183 and T-185. Overall, these natural pond sediments within the former footprint of Kolowalu Fishpond were observed between 1.10 mbs and 1.70 mbs.

Bulk sediment samples were collected from T-181, T-182, and T-184. The results yielded only non-cultural shell and organic material.

Pollen analysis was conducted for natural sediment (Stratum II) samples collected from T-181 and T-184. The T-181 sample (1.20-1.30 mbs) yielded several alien species including *Casuarina*,

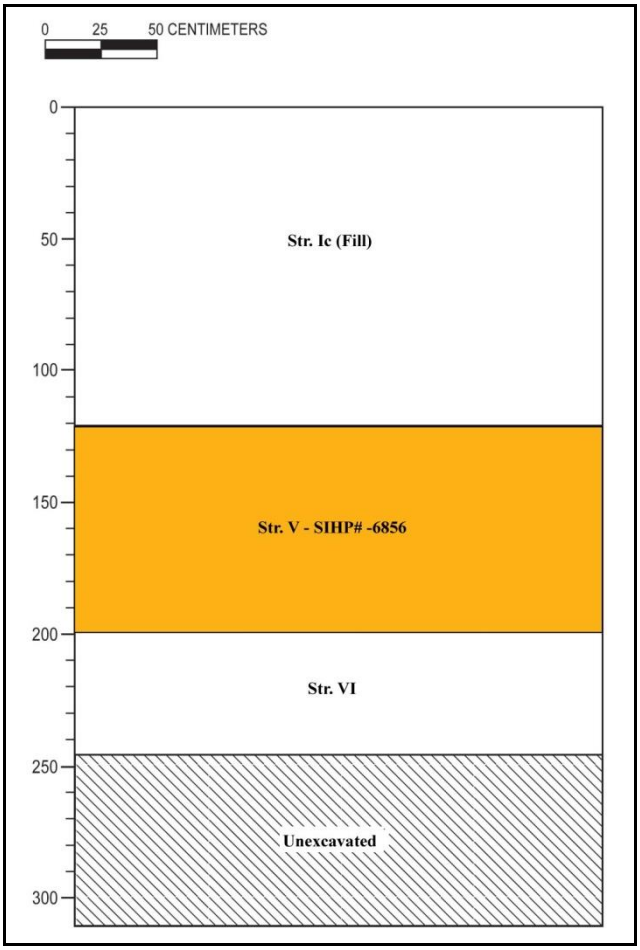


Figure 9. Area 3 profile showing Kolowalu Fishpond sediments (SIHP # -6856) below thick fills (Stratum Ic) and above coral shelf (Stratum VI) (adapted O'Hare et al. (2006:79)

Table 2. Area 3 Stratigraphic Description (adapted from O'Hare et al. 2006)

Stratum	Depth (cmbs)	Description
Ic	0-121	Fill; very pale brown (10 YR 8/2) medium to coarse sand with 80% crushed coral rubble; single grain structure, loose when moist and dry, non-plastic.
V	121-199	Light greenish gray (5G 7/1) gleyed clay; weak, fine, subangular blocky structure; very sticky when wet, very plastic; Kolowalu Fishpond sediments; component of SIHP # -6856
VI	199-245+	Coral shelf

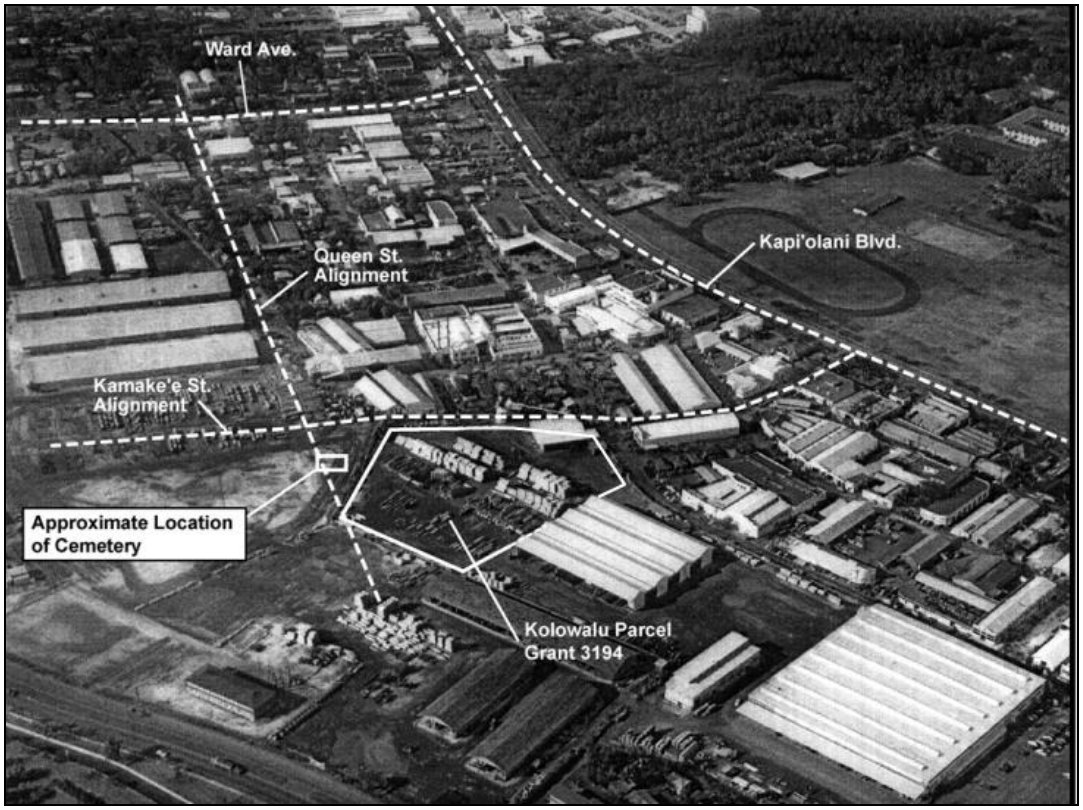


Figure 10. 1949 Aerial photograph showing the location of SIHP # -6658 (cemetery) in relation to the Kolowalu Parcel (O’Hare et al. 2006:90)

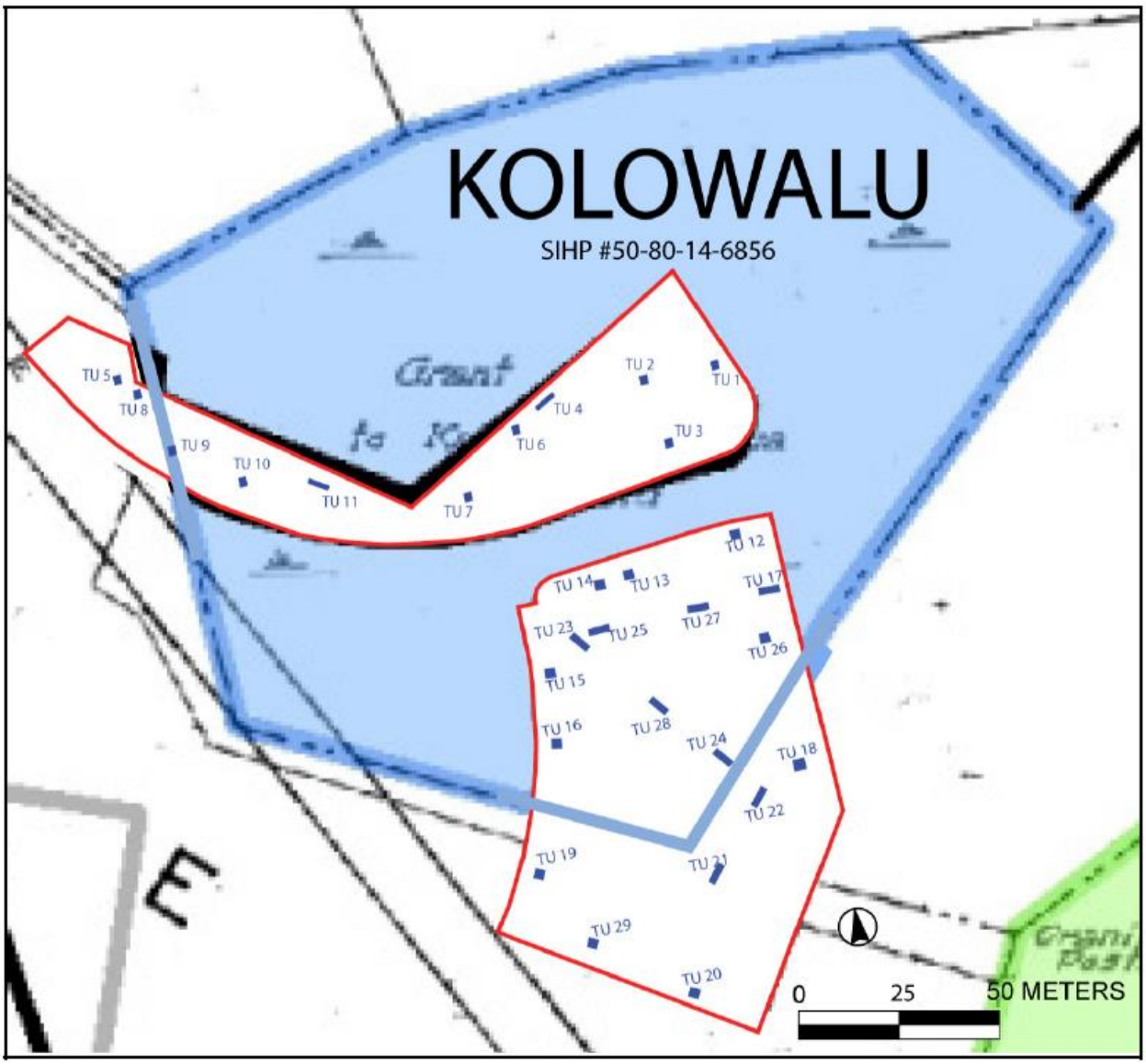


Figure 11. Thurman et al.(2009:100) map showing locations for the 29 test units within or near the former footprint of Kolowalu Fishpond (SIHP # -6856)

Figure 12. Thurman et al. (2009:101) Test Unit 1 sidewall, showing fill sediments overlying buried A horizon (Stratum II) and Kolowalu Fishpond natural sediments (SIHP # -6856), Strata III-V; see Figure 13 for profile

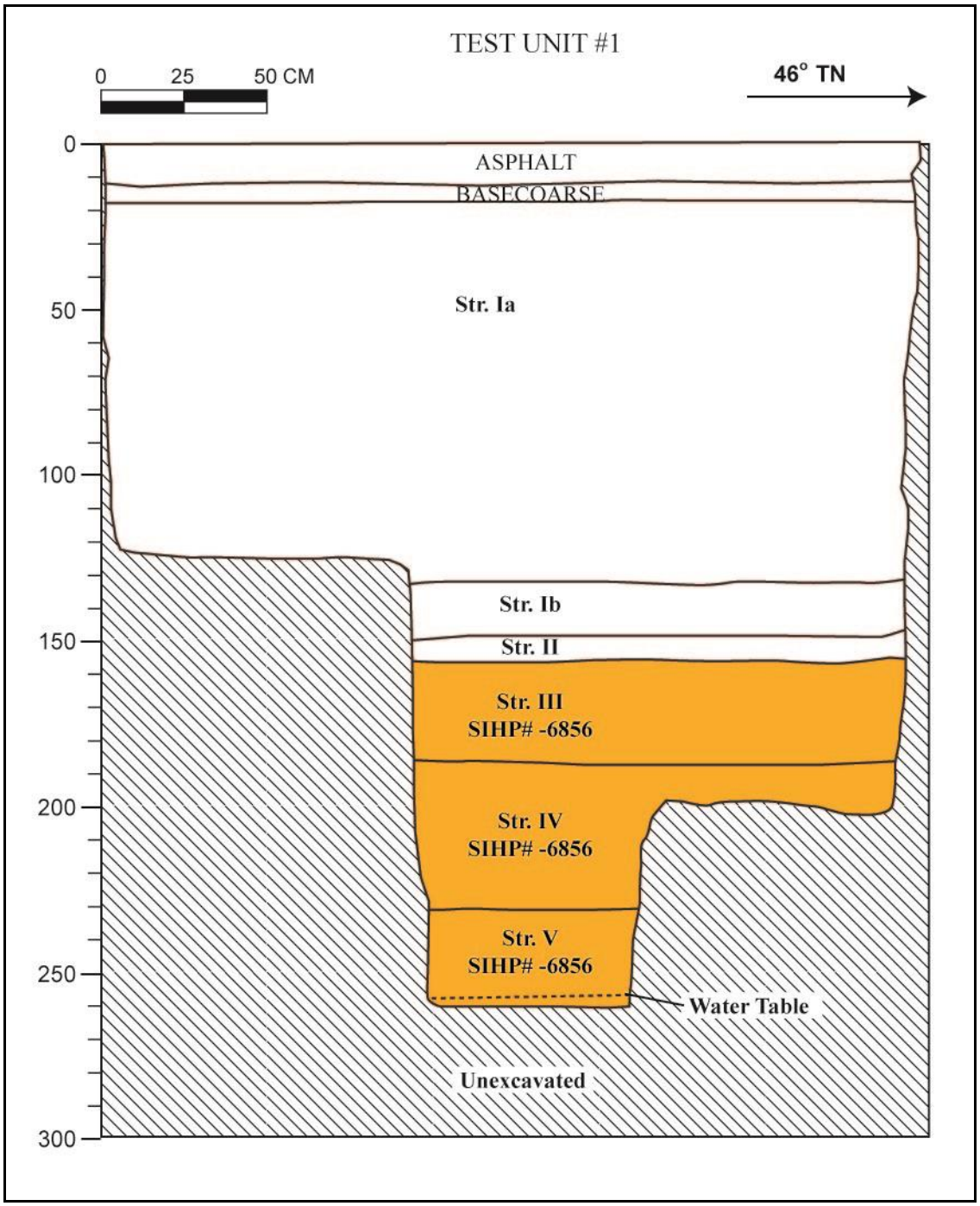


Figure 13. Thurman et al. (2009:102; color not in original)Test Unit 1 northwest wall profile, showing Kolowalu Fishpond sediments (SIHP # -6856), Strata III-V

Table 3. Stratigraphic Description of Test Unit 1 (adapted from Thurman et al. 2009)

Stratum	Depth (cmbs)	Description of Sediment
Ia	17-133	Fill; 10 YR 7/4 very pale brown; crushed coral; structureless; dry loose consistency; non plastic; no cementation; marine origin; abrupt smooth lower boundary; crushed coral fill
Ib	132-148	Fill; 10 YR 7/1 light gray; clay loam; strong fine granular structure; wet very sticky consistency; very plastic; no cementation; marine origin; abrupt smooth lower boundary; pump dredge
II	147-155	Buried A horizon; 10 YR 4/2 dark grayish brown; clay loam; moderate fine crumb structure; wet sticky consistency; plastic; no cementation; terrestrial origin; abrupt smooth lower boundary; natural land surface, contains land snail shells
III	155-187	Natural Pond Sediment; Gley 2 5/10B bluish gray; sandy clay; moderate medium granular structure; wet sticky consistency; slightly plastic; no cementation; mixed origin; abrupt smooth lower boundary; Kolowalu Fishpond sediment; component of SIHP # -6856
IV	187-206	Natural Pond Sediment; Gley 1 5/N gray; sand; moderate fine single grain; wet non-sticky; no plastic; no cementation; marine origin; abrupt smooth lower boundary; Kolowalu Fishpond sediment; component of SIHP # -6856
V	206-267 BOE	Natural Pond Sediment; Gley 1 4/10Y dark greenish gray; gravely sand; strong fine single grain matrix; moist loose consistency; non plastic; weak cementation; natural pond sediment; water table at 267 cmbs; Kolowalu Fishpond sediment; component of SIHP # -6856

Figure 14. Thurman et al. (2009:106; labels not in original) Test Unit 3, southwest wall, showing Kolowalu Fishpond sediments (SIHP # -6856), Strata III and IV below thick fills (Ia-Ic) and buried A horizon (II); see Figure 15 for profile

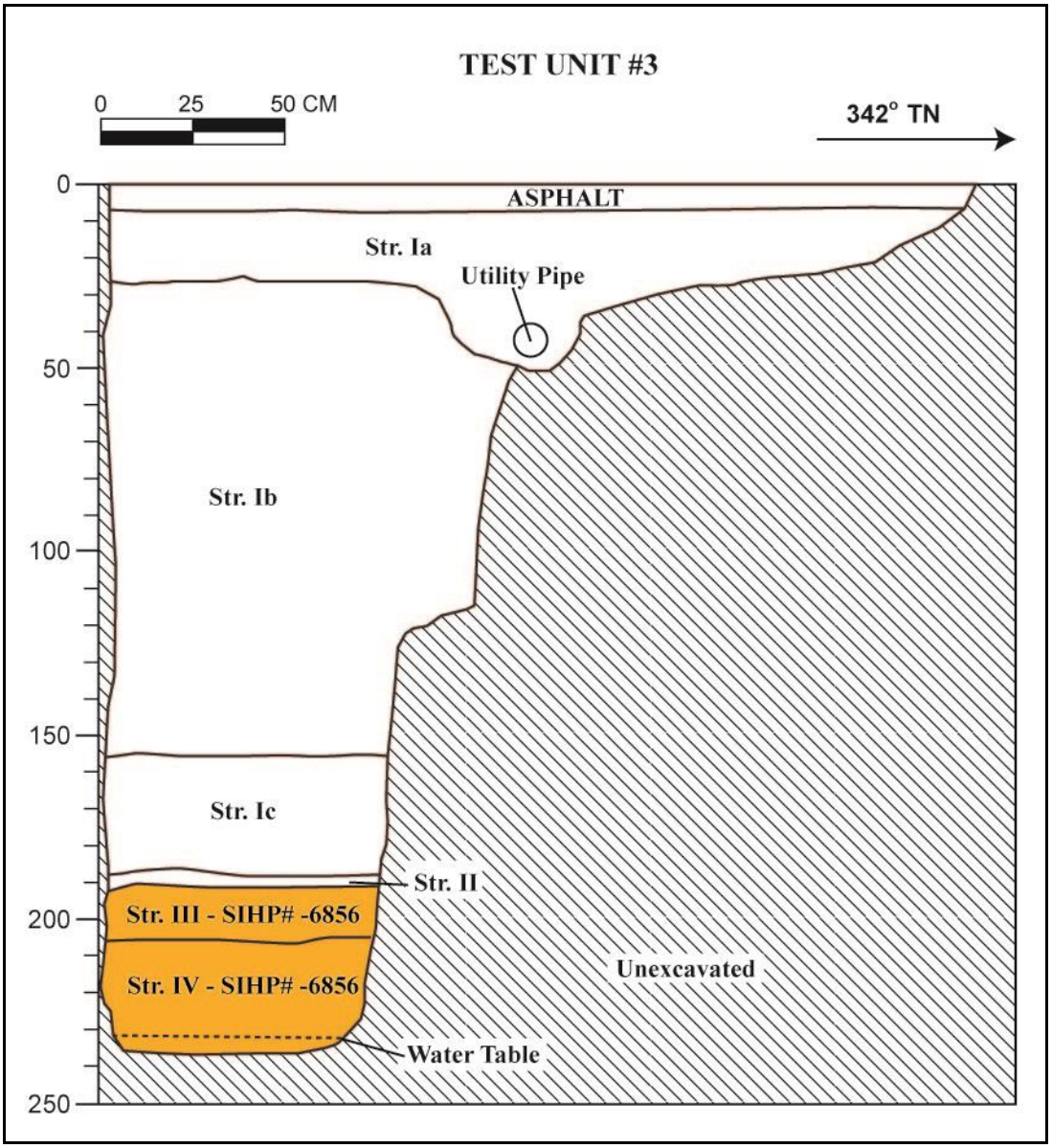


Figure 15. Thurman et al. (2009:107) Test Unit 3, southwest wall profile, showing Kolowalu Fishpond sediments (SIHP # -6856), Strata III and IV

Table 4. Stratigraphic Description of Test Unit 3 (adapted from Thurman et al. 2009)

Stratum	Depth (cmbs)	Description of Sediment
Ia	8-52	Fill; 10 YR 3/3 dark brown; silty clay loam; moderate fine crumb structure; dry loose consistency; non plastic; no cementation; terrestrial origin; abrupt smooth lower boundary; construction fill associated with utility pipe
Ib	27-156	Fill; 10 YR 8/3 very pale brown; very coarse sand and crushed coral; structureless; dry loose consistency; non plastic; no cementation; marine origin; abrupt smooth lower boundary; crushed coral fill
Ic	156-188	Fill; 10 YR 7/1 light gray; sandy clay; moderate fine crumb structure; wet very sticky consistency; plastic; marine origin; abrupt smooth lower boundary; pump dredge
II	188-192	Buried A horizon; 10 YR 4/2 dark grayish brown; clay loam; moderate fine crumb structure; moist friable, wet sticky consistency; plastic; no cementation; terrestrial origin; abrupt smooth lower boundary; natural land surface
III	192-206	Natural Pond Sediment; Gley 2 4/5BG dark greenish gray; sandy clay; structureless; dry loose, wet non-sticky consistency; non plastic; no cementation; marine origin; abrupt smooth lower boundary; Kolowalu Fishpond sediment; component of SIHP # -6856
IV	206-Coral Shelf	Natural Pond Sediment; Gley 1 5/N gray; sand; structureless; wet non-sticky consistency; non plastic; no cementation; marine origin; natural pond sediment above gravely weakly cemented coral shelf, water table at 233 cmbs; Kolowalu Fishpond sediment; component of SIHP # -6856

Figure 16. T-181 south profile wall, view to southwest

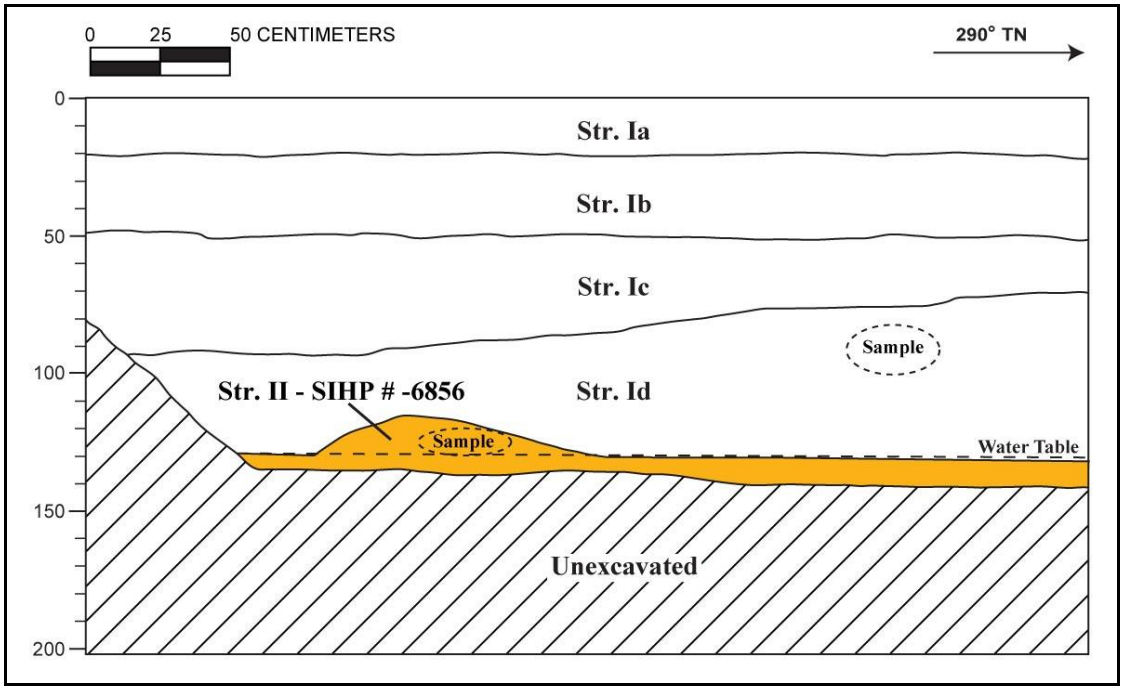


Figure 17. T-181 south wall profile, showing Kolowalu Fishpond sediments (SIHP # -6856), Stratum II

Table 5. T-181 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–21	Asphalt
Ib	21–50	Fill; 10 YR 4/4 (dark yellowish brown); extremely gravelly clay loam; structureless, singlgrain; dry, loose consistency; non-plastic; terrigenous; very abrupt lower boundary; base course used a cushion material for overlying street surface, basalt gravel and coral gravel and cobble
Ic	50–95	Fill; 10 YR 8/3 (very pale brown); very coarse sand to cobbles; structureless, singlgrain; moist, loose consistency; non-plastic; marine origin; abrupt, wavy lower boundary; crushed coral used as fill to elevate former land surface
Id	70–130	Fill; 2.5 Y 7/2 (light gray) with many, coarse, sandy clay mottles of 10YR 7/3 (very pale brown); structureless, massive; moist, firm to very firm consistency; plastic; mixed origin; clear, wavy lower boundary; locally-procured sediment from underlying wetland environment
II	115–140 (BOE)	Natural; GLEY 1 6/10 Y (greenish gray) with common, fine to coarse mottles of GLEY 1 7/1 (light greenish gray); sandy clay; structureless, massive; moist, very friable consistency; plastic; terrestrial origin; discontinuous lower boundary; common, very fine roots; contained lenses of peat material; Kolowalu Fishpond sediment; component of SIHP # -6856

Figure 18. T-182 south profile wall, view to southwest

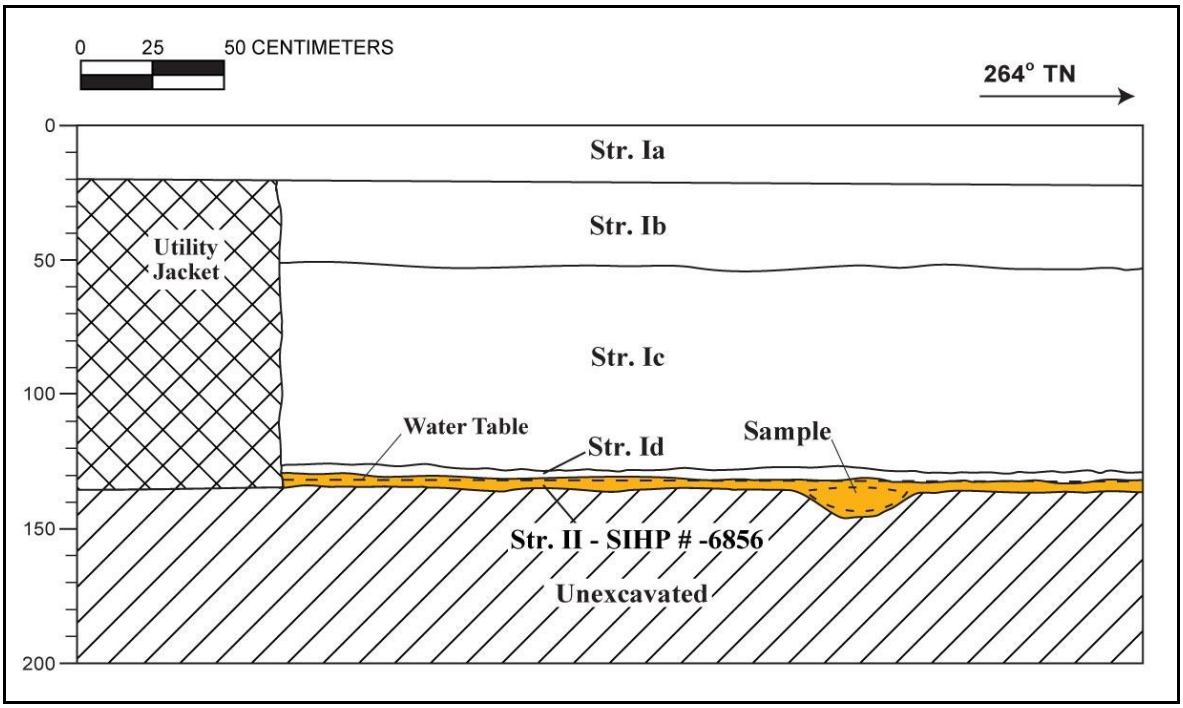


Figure 19. T-182 north wall profile, showing Kolowalu Fishpond sediments (SIHP # -6856), Stratum II

Table 6. T-182 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–20	Asphalt
Ib	20–50	Fill; 10 YR 3/4 (very yellowish brown); very gravelly sandy loam; weak, very fine, crumb structure; dry, weakly coherent consistency; terrigenous origin; clear, smooth lower boundary; concrete jacket at E end; basalt base course
Ic	50–126	Fill; 10 YR 8/3 (very pale brown); stony sand; structureless, singlgrain; moist-loose consistency; non-plastic; marine origin; diffuse, smooth lower boundary; crushed coral fill
Id	126–130	Fill; 10 YR 8/2 (very pale brown); fine sand; structureless, singlgrain; non-sticky consistency; non-plastic; marine origin; clear lower boundary; appears to be fine grain material that has settled from the overlying stony crushed coral sand (Ic)
II	129–138 (BOE)	Natural; GLEY 2 6/1 (bluish gray); clay; structureless, massive; wet, slightly sticky consistency; slightly plastic; terrestrial origin; lower boundary not visible; natural sediment; Kolowalu Fishpond sediment; component of SIHP # -6856

Figure 20. T-183 south profile wall, view to southwest

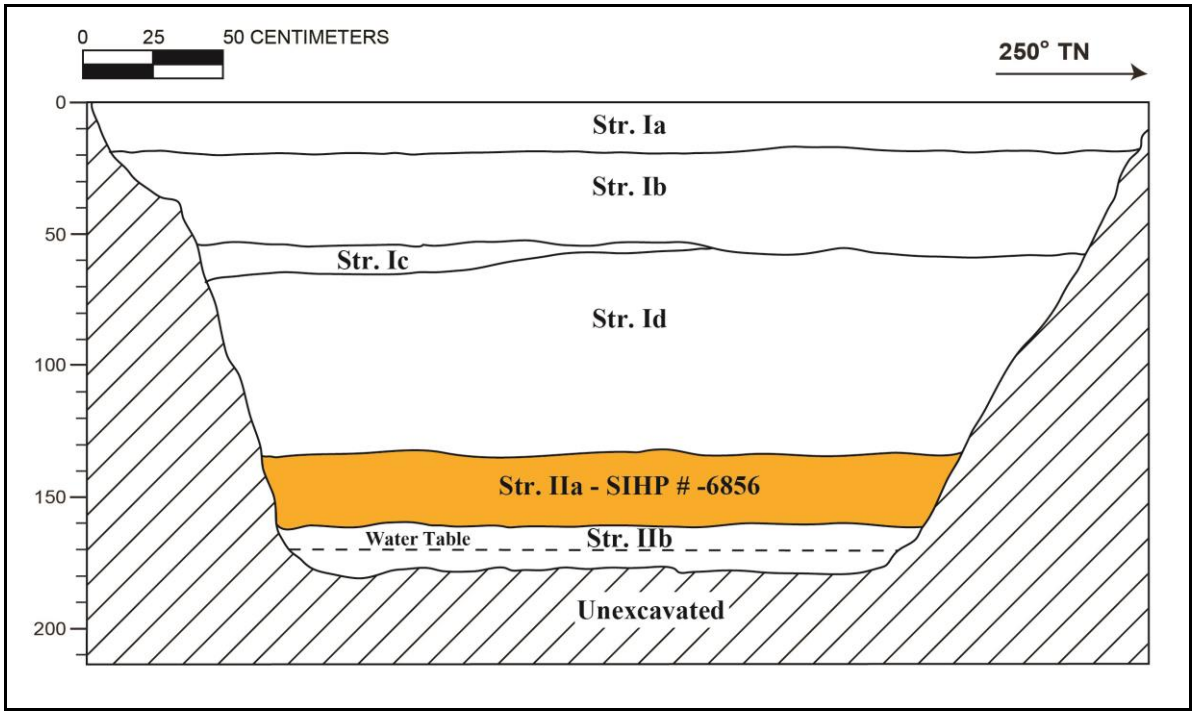


Figure 21. T-183 south wall profile, showing Kolowalu Fishpond sediments (SIHP # -6856) Stratum IIa

Table 7. T-183 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–20	Asphalt
Ib	20–58	Fill; 10 YR 6/1 (gray); extremely gravelly sandy silt singlgrain structure; moist, loose consistency; non-plastic; terrigenous origin; very abrupt, smoother lower boundary, basalt gravel base course
Ic	52–70	Fill; 10 YR 4/4 (dark yellow brown) with many coarse mottles of 10 YR 8/1 (white); very gravelly silt loam; weak, fine, crumb structure; moist, friable consistency; non-plastic; mixed origin; very abrupt, broken/discontinuous lower boundary; with crushed coral in matrix
Id	58–135	Fill; 2.5 Y 7/3 (pale yellow); sandy clay; structureless, massive; moist, very firm consistency; plastic; mixed origin; abrupt, smooth lower boundary; sandy clay hydraulic fill material
IIa	130–165	Natural; GLEY 2 6/1 (greenish gray); clay; structureless, massive; moist, very firm consistency; plastic; terrestrial origin; diffuse, smooth lower boundary; Kewalo Fishpond sediment; component of SIHP # -6856
IIb	165–180 (BOE)	Natural; GLEY 2 5/1 (greenish gray); sand; structureless, singlgrain; wet, non-sticky consistency; non-plastic; marine origin; lower boundary not visible; natural marine lagoonal sand

Figure 22. T-184 northeast wall profile, view to north

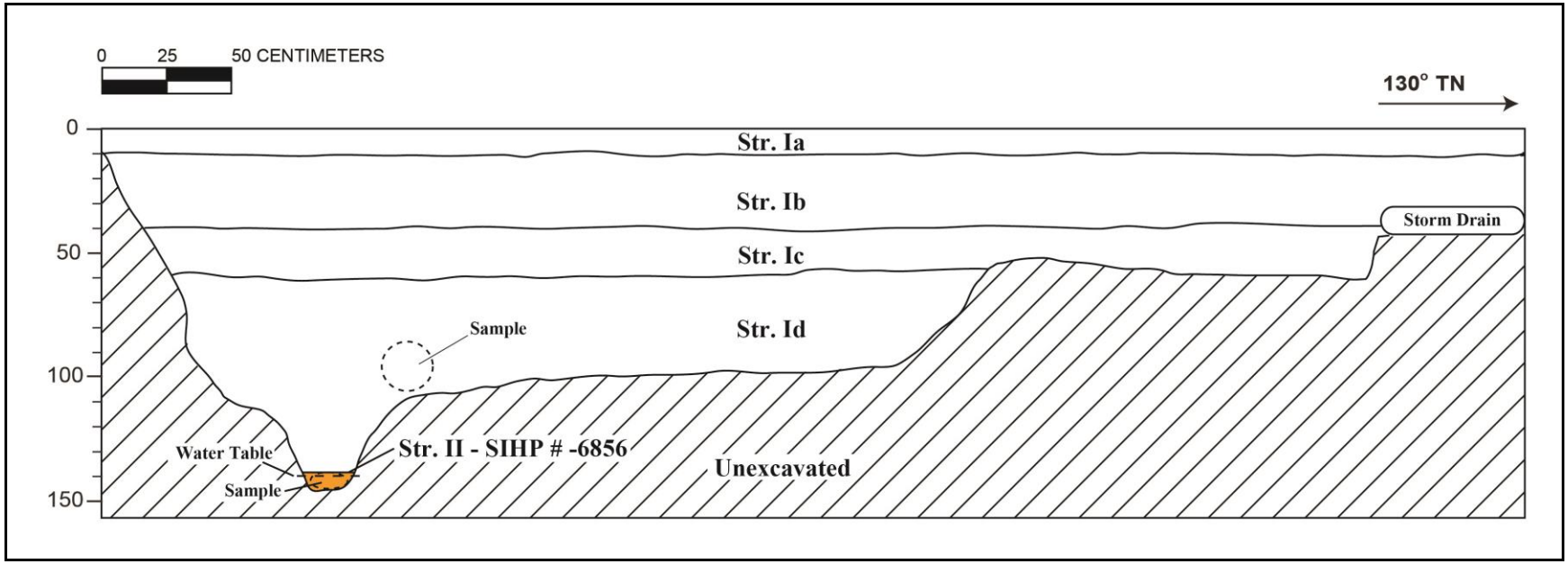


Figure 23. T-184 northeast wall profile, showing Kolowalu Fishpond sediments (SIHP # -6856), Stratum II

Table 8. T-184 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–10	Asphalt
Ib	10–40	Fill; 10 YR 6/4 (yellowish brown); very gravelly sandy loam; weak, medium structure; moist, friable consistency; non-plastic; terrigenous origin; abrupt, smooth, lower boundary; common, fine roots; gravel base course
Ic	40–60	Fill; 10 YR 8/3 (very pale brown); very gravelly cobbly sand; structureless, singlgrain; moist, loose, non-sticky, weak consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; few, coarse roots; crushed coral
Id	60–139	Fill; 2.5 Y 6/2 (light brownish gray); sandy clay; blocky structure; moist, friable consistency; plastic; few, coarse roots; abrupt, smooth lower boundary;
II	139–147 (BOE)	Natural; GLEY 2 6/1 (bluish gray); clay; medium structure; wet, sticky consistency; plastic; terrestrial origin; abrupt, smooth lower boundary; natural sediment; Kolowalu Fishpond sediment; component of SIHP # -6856

Figure 24. Photograph of T-185 north profile wall, view to northwest

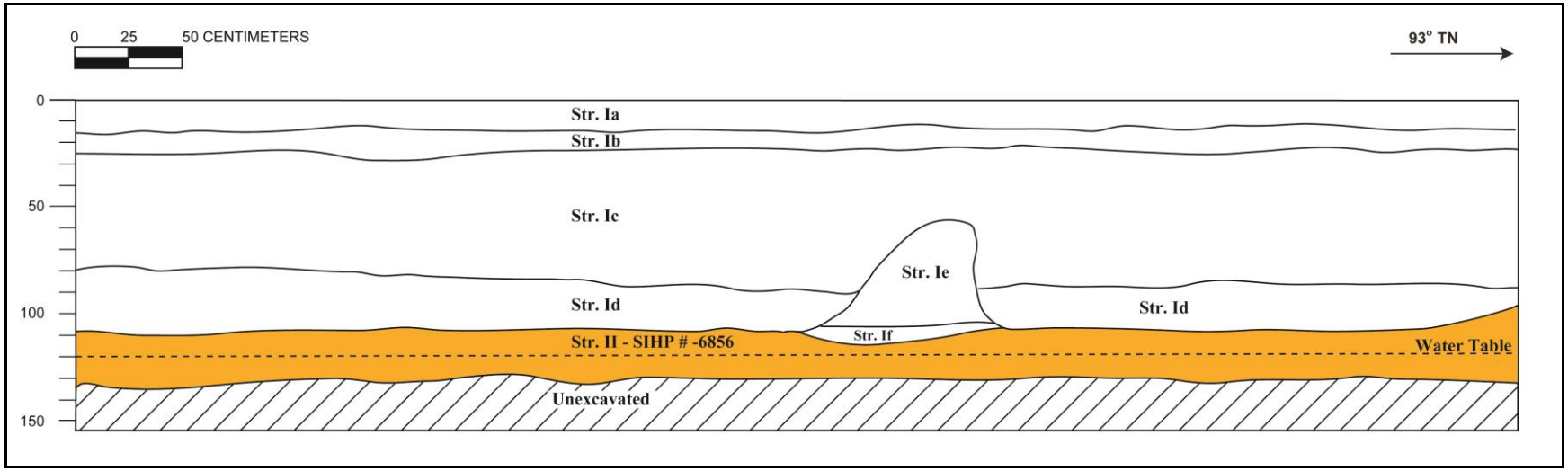


Figure 25. T-185 north wall profile, showing Kolowalu Fishpond sediments (SIHP # -6856), Stratum II

Table 9. Stratigraphic description for north profile in T-185

Stratum	Depth (cmbs)	Description
Ia	6–15	Asphalt
Ib	15–25	Fill; 10 YR 5/1 (gray); very gravelly loam; structureless, singlgrain; moist, loose consistency; non-plastic, terrigenous origin; abrupt, smooth lower boundary; gravel base course
Ic	25–90	Fill; 10 YR 5/2; (grayish brown); very gravelly loam; structureless, singlgrain; moist, loose consistency; non-plastic, terrigenous origin; abrupt, smooth lower boundary
Id	80–110	Fill; 10 YR 5/1; (gray); very gravelly loam; structureless, singlgrain; moist, very friable consistency; non-plastic, terrigenous origin; abrupt, smooth lower boundary; fill inside of filter fabric
Ie	55–110	Fill; 10 YR 6/2 (light brownish gray); silty loam; weak, fine, crumb structure; moist, firm consistency; slightly plastic, mixed origin; abrupt, broken/discontinuous lower boundary
If	100–117	Fill; 10 YR 6/4 (light yellowish brown); sandy clay loam; weak, fine blocky structure; moist, friable, non-sticky consistency; non-plastic; mixed origin; clear, broken discontinuous lower boundary; locally-procured wetland sediment used as fill material
II	110–135	Natural; 10 YR 4/1 (dark gray); gravelly sandy clay; weak, fine, blocky structure; moist, firm consistency; slightly plastic; mixed origin; lower boundary not visible; contained freshwater snail shell; Kolowalu Fishpond sediment; component of SIHP # -6856

Leucaena, and *Prosopis* pollen. The pollen record was dominated by Myrsine pollen suggesting open water and wind transport of pollen from *kōlea* trees growing nearby. Local vegetation appears to have included *niu*, *‘aiea*, *loulu*, and probably *‘aheahea*. The T-184 sample (1.39 - 1.47 mbs) was dominated by *Cyperaceae* pollen. *Prosopis* (*kiawe*) pollen also was noted along with a member of the sumac family such as mango, *niu*, *kōlea*, probably *‘aheahea, ‘ilima, hinahina*, and *kokolau*. The presence of a large quantity of charcoal in the sample suggests burning of agricultural stubble or weeds. The pollen record also identified Foraminifera (marine protozoans) in the T-181 samples, which is consistent with the presence of a pond.

The natural Stratum II sediments within T-181 through T-185 in the City Center AIS study area are identified as buried Kolowalu Fishpond sediments and are designated as components of SIHP # 50-80-14-6856. The current findings are combined into the previously-identified cultural resource designated SIHP # 50-80-14-6856 based on location within the former Kolowalu Fishpond footprint and similarities in the sediment depositional sequence, texture, color, and content. The 1884 map by S.E. Bishop and the 1897 map by M. D. Monsarrat confirm that T-181 through T-185 are located within the former Kolowalu Fishpond footprint (see Figure 3 and Figure 4). The depositional sequence observed during current and prior studies consists of buried Kolowalu Fishpond sediments located at or near the water table, as having developed atop marine sediments and/or the coral shelf, and being capped by numerous historic and/or modern fill strata. The Kolowalu Fishpond sediments vary between studies and include greenish and bluish gray sandy clay, loamy sand, and silty clay sediments.

SIHP # 50-80-14-6856 consists of buried Kolowalu Fishpond sediments representative of an aquacultural locality. While the precise age and origin of Kolowalu Fishpond is unclear, the pond may have been constructed during pre-Contact and/or early post-Contact times, and remained in use into the early twentieth century. Historic maps and photographs indicate Kolowalu Fishpond was constructed prior to the mid-nineteenth century. Buried Kolowalu Fishpond sediments were initially identified by Bell et al. (2006) and subsequently by O’Hare et al. (2006) and Thurman et al. (2009). Fishpond sediments occurred beneath fill strata comprised of mixed terrestrial fills that likely post-date 1927. These fill layers contained historic material from the 1920s and 1930s when Kolowalu Fishpond and the surrounding wetlands were filled in preparation for the development of the Kaka‘ako area.

Based on the guidance of National Register Bulletin No. 15, SIHP # 50-80-14-6856 (Kolowalu Fishpond) retains its integrity of location, design, materials, and workmanship. SIHP # -6856 was recommended by Bell et al. (2006) as being eligible to the Hawai‘i Register under Criterion D (has yielded, or is likely to yield information important for research on prehistory or history). CSH recommends that SIHP # 50-80-14-6856 maintains the integrity to support its historic significance under Criterion D of the Hawai‘i Register and recommends eligibility to the National Register under Criterion D, exclusively for its information potential.

SIHP # 50-80-14-6856 has provided information, and can potentially provide additional information, on the formation, construction, depositional sequence, and contents of Kolowalu Fishpond. The possibility of encountering Kolowalu Fishpond sediments during future project-related ground disturbance warrants the implementation of an archaeological monitoring program. Archaeological monitoring will seek to recover data on the construction and design, depositional sequence, and extent of SIHP # 50-80-14-6856 as well as document any potential structural remnants (e.g. Fishpond walls) of Kolowalu Fishpond. Archaeological monitoring will involve recordation of stratigraphic profiles and sampling of exposed Kolowalu Fishpond

sediments. Samples will be collected for radiocarbon and palynological analysis in an effort to potentially augment information from previous archaeological research conducted within Kolowalu Fishpond and other Hawaiian fishponds.

SIHP # 50-80-14-7124

FORMAL TYPE:	Subsurface infrastructure remnants
FUNCTION:	Habitation and commercial infrastructure
PREVIOUS DOCUMENTATION:	Pammer et al. (2011)
AGE:	Post-Contact (post 1930)
NUMBER OF FEATURES:	31
TYPES OF FEATURES:	Buried in situ and displaced historic structural remnants, demolition debris, and refuse enriched fill deposits
DISTRIBUTION:	Approximately 0.05 acres (within current project area), 1.49 acres (total area)
LOCATION:	Located southwest (*makai*) of Halekauwila Street between South Street and Keawe Street (West Kaka‘ako and Kaka‘ako Makai Geographic Zones)
TAX MAP KEY:	[1] 2-1-030:001 (Pammer et al. 2011); [1] 2-1-030:001 (within current project area)
LAND JURISDICTION:	Kamehameha Schools (Pammer et al. 2011); Bishop Estate (Waterpark Towers) (within current project area)
TEST EXCAVATION:	T-132

SIHP # 50-80-14-7124 is a previously-identified cultural resource consisting of 31 archaeological features located southwest (*makai*) of Halekauwila Street between South and Keawe Streets within the West Kaka‘ako and Kaka‘ako Makai Geographic Zones (Figure 1 and Figure 2). This archaeological cultural resource consists of subsurface infrastructure remnants that were first identified by Pammer et al. (2011) during an archaeological inventory survey for the Block 2 Parking Lot (Figure 2). SIHP # -7124 was identified within T-132 during the current City Center AIS.

Pammer et al. (2011) documented SIHP # -7124 in 31 of 78 test trenches (Figure 3). They also identified a total of 31 archaeological features of SIHP # -7124 including in situ and displaced historic structural remnants, demolition debris, and refuse enriched fill deposits (Figure 4, Figure 5, and Table 1). Based on background research and historic maps, components of SIHP # -7124 have been dated between 1914 and 1991 (Pammer et al. 2011, Vol. I:135). The former buildings on the subject property were demolished and rebuilt during various periods of urban development over the course of the twentieth century. During demolition, much of the building foundations and demolition debris was left ‘on-site’ and buried beneath various historic and/or modern fill layers, at depths ranging from 0.15 to 1.60 mbs (Pammer et al. 2011,Vol. I:135). Several of the larger foundation remnants and construction pit features extend down to, and/or into the coral shelf (as observed in Features E, F, and W), possibly suggesting that these

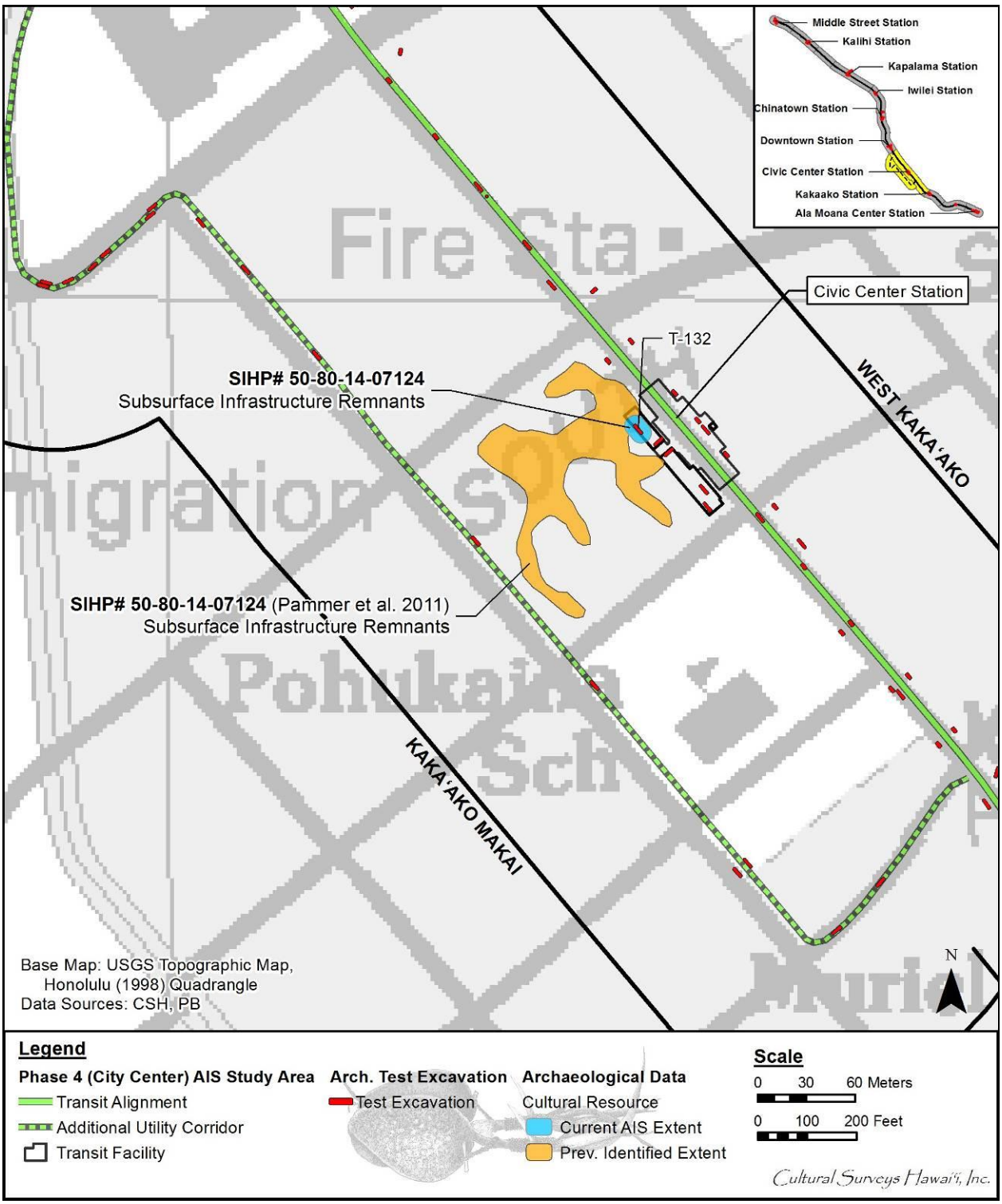


Figure 1. Locations of SIHP # -7124 within the West Kaka‘ako Geographic Zone corridor (base map: USGS 1998 Topographic Map of Honolulu Quadrangle)

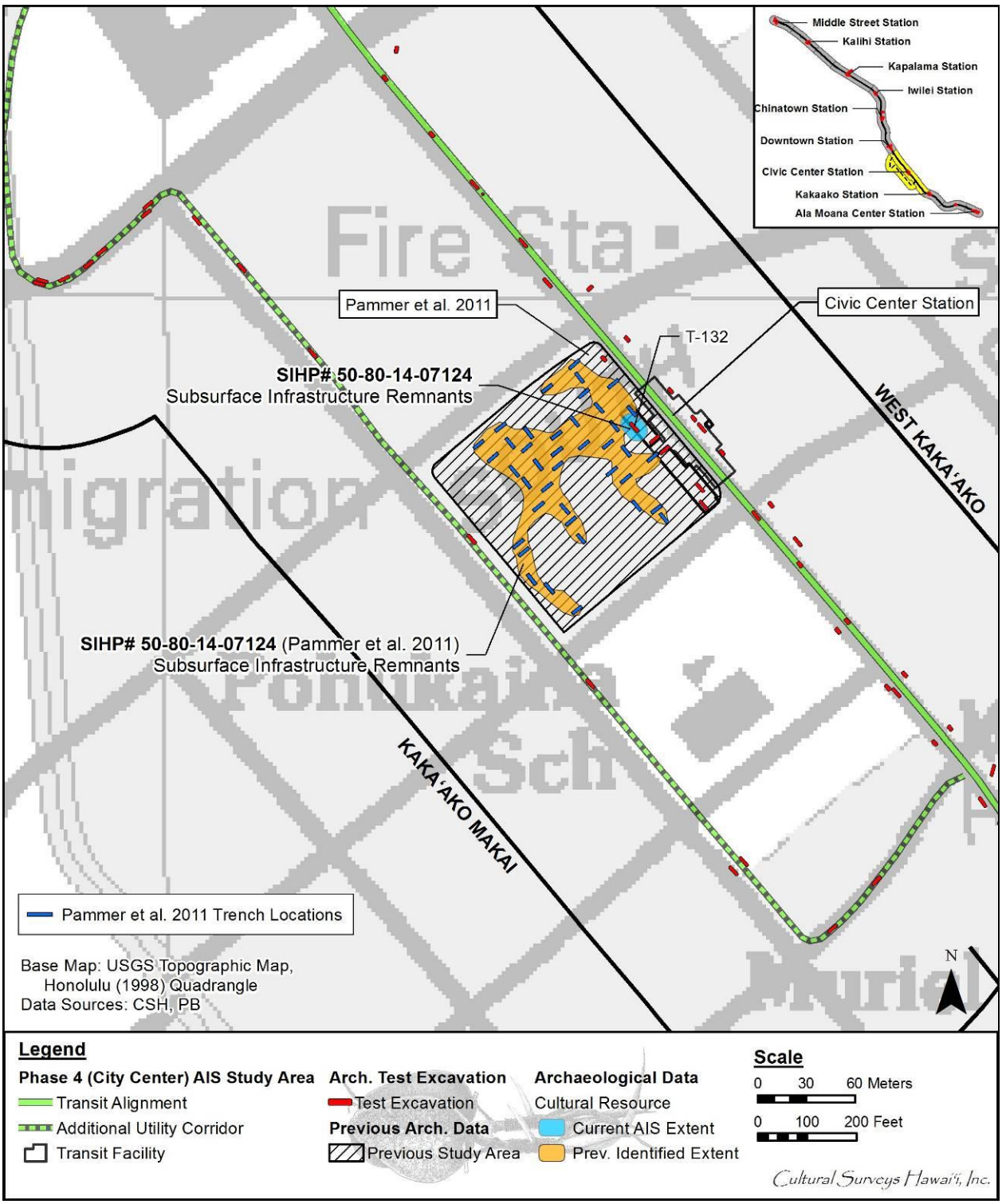


Figure 2. Location of SIHP # -7124 and the Pammer et al. (2011) study area within the West Kaka‘ako and Kaka‘ako Makai Geographic Zones (base map: USGS 1998 Topographic Map of Honolulu Quadrangle)

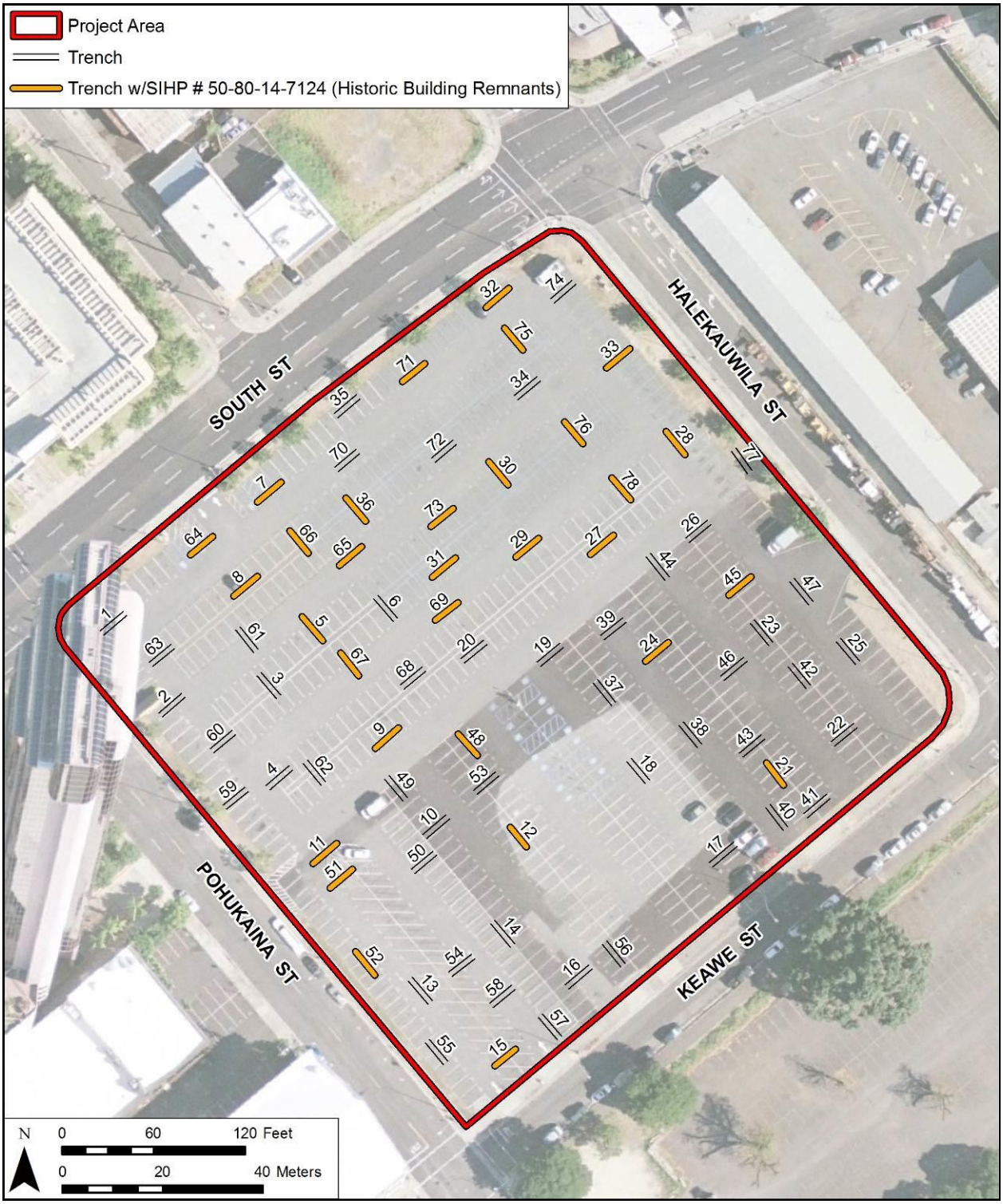


Figure 3. Aerial photograph (source: USGS Orthoimagery 2005) showing the locations of test trenches that contained SIHP # -7124 building remnants (yellow) within the Pammer et al. (2011) study area

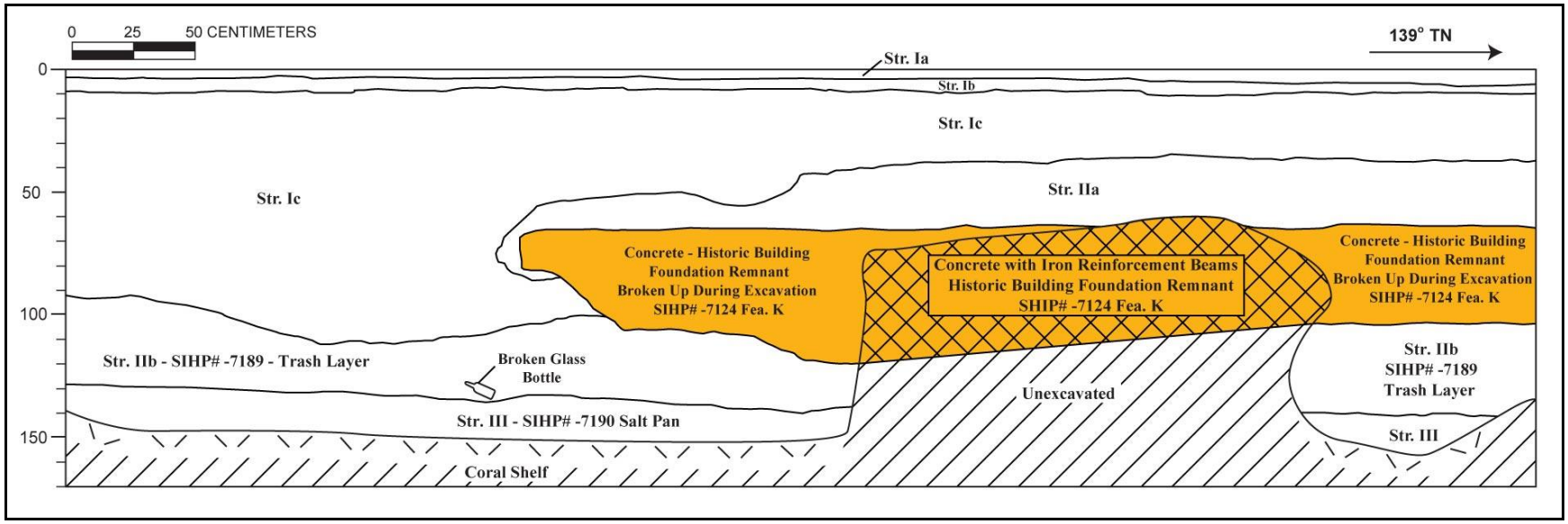


Figure 4. Pammer et al. (2011, Vol. I:172; color not in original)Test Trench 28 northeast wall profile, showing structural remnants (SIHP # -7124 Feature K) within fill deposits

Figure 5. Photograph of Test Trench 28, overview of northeast profile wall, view to east (Pammer et al. 2011, Vol. I:174)

Table 1. Stratigraphic Description of the Northeast Profile in Test Trench 28 (adapted from Pammer et al. 2011, Vol. I:173)

Stratum	Depth (cmbs)	Description
Ia	0-6	Asphalt
Ib	4-11	Fill; 10 YR 3/2 very dark grayish brown gravelly sandy clay; weak, fine, crumb structure; dry weakly coherent consistency; non-plastic; terrigenous origin; clear, smooth lower boundary. Base course for overlying asphalt surface.
Ic	9-113	Fill; 10 YR 6/3 pale brown crushed coral and sandy clay loam; structureless (singlgrain); dry slightly hard consistency; non-plastic; mixed origin; clear, wavy and irregular lower boundary. Marine based fill material mixed with terrigenous sediment.
IIa	35-86	Fill; 7.5 YR 2.5/3 very dark brown gravelly sandy clay; weak, medium, blocky structure; dry weakly coherent consistency; slightly plastic; mixed origin; clear, wavy lower boundary. Backfill material from former building foundation excavation – covers large eroding concrete foundation remnant of historic building; designated SIHP # -7124, Feature K.
IIb	92-141	Fill; 10 YR 2/1 black sandy clay; weak, medium to coarse, blocky structure; moist friable consistency; slightly plastic; mixed origin; clear, smooth lower boundary. Burnt waste containing glass bottles, ceramics, metal implements, faunal (cut) bone, historic domestic waste - material related to open air burned debris from 1920s - SIHP # -7189 - used as landfill material for covering over Kaka‘ako wetlands.
III	128-156 (BOE)	A horizon; 10 YR 4/1 dark gray sandy clay ‘peat’; weak, medium, blocky structure; wet slightly sticky consistency; non-plastic; mixed origin; very abrupt, smooth lower boundary: very fine roots present. Former historic surface layer that overlies coral shelf, associated with the salt pans (SIHP # -7190). Heavily disturbed (scraped away).

remnants may be related to larger commercial structures. According to historic maps, large scale commercial structures were situated in the northern and western portions of the Pammer et al. (2011) project area, which generally corresponds to the locations of Features E, F, and W (Test Trenches 11, 12, and 65). The demolished remnant materials include foundations composed of concrete and metal masses, red clay brick and mortar footings, concrete footings, and basalt and concrete flooring. Pammer et al. (2011, Vol. I: 135) noted that the site was discontinuous and that it likely extended outside of their project area boundary.

Pammer et al. (2011, Vol. I:119, 121) described the stratigraphy for the overall project area as follows:

> The natural coral shelf or the water table, provided there was no sand, marked the lower boundary for all trenches at approximately 2 meters below the ground surface level. The basic stratigraphic sequence consisted of the existing paved asphalt surface of the parking lot (not always having a base course layer), followed by varying layers of fill associated with the different periods of development within the project area, overlying natural sediments and the coral shelf.

Pammer et al. (2011) described the 31 features (Features A through EE) which they designated as components of SIHP # -7124 (Table 2 and Figure 3). The majority of the identified subsurface infrastructure remnants appear to be concentrated within the northwest half of their project area. This is likely due to the northwestern half having formerly consisted of substantial industrial buildings and infrastructure, while the southeastern half, and particularly the eastern portion, consisted of residential homes that required minimal subsurface disturbance during demolition, as shown in portions of the 1927 and 1950 Sanborn Fire Insurance Maps (Figure 6 and Figure 7). Pammer et al. (2011, Vol. I:142-236) described SIHP # -7124 Features A through EE as follows:

> **Feature A** was observed within Test Trench 5. Feature A consisted of two features (A-1 and A-2) containing modern and historic debris (glass, metal) including demolition debris from historic buildings (concrete, red brick, mortar). Feature A-2 consisted of a historic disturbance of the natural sand layer containing metal and charred wood. Based on the Sanborn Fire Insurance maps, the demolition debris likely originates from the demolition of the Pacific Engineering Co. Lt. Mill Work, or the Pacific Welding and Machine Works. The Feature A-2 debris likely originates from the filling of the project area for the Pacific Engineering Co. Lt. Mill Work and surrounding buildings.
>
> **Feature B** was observed within Test Trench 7. Feature B consisted of terrigenous fill containing construction material from a previously existing historic structure including brick, concrete block, glass fragments and ceramic fragments. The concrete block was likely a building foundation and runs east to west across the trench. Some brick was still observed in the sidewall of the trench and several bricks appeared to be beside the concrete block. Based on the Sanborn Fire Insurance maps, this debris and the building footing are likely associated with the northwest portion of the Pacific Welding and Machine Works building. The portion of this building observed within Test Trench 7 is labeled ‘Office’ on the 1914 and 1927 Sanborn maps.

Table 2. Archaeological Features of SIHP # -7124 Identified by Pammer et al. (2011)

Feature	Test Trench	Stratum	Type/Function
A	T-5	Ic	Demolition Debris
B	T-7	Ie	*In situ* Foundation
C	T-8	Ic	*In situ* Floor/Surface
D	T-9	Id	*In situ* Foundation
E	T-11	Ie	Demolition Debris
F	T-12	Ic	*In situ* Foundation
G	T-15	Ic	*In situ* Floor/Surface
H	T-21	Id	Demolition Debris
I	T-24	Ic	Demolition Debris
J	T-27	IIa	Demolition Debris
K	T-28	IIa	*In situ* Floor/Surface
L	T-29	IIa -IId	*In situ* Floor/Surface
M	T-30	IIa-IIb	Demolition Debris
N	T-31	IIa	*In situ* Floor/Surface
O	T-32	IIa-IIb	*In situ* Floor/Surface
P	T-33	IIa-IIc	*In situ* Floor/Surface
Q	T-36	IIa	Demolition Debris
R	T-45	Ig	*In situ* Floor/Surface
S	T-48	II	*In situ* Foundation
T	T-51	IIa	*In situ* Foundation
U	T-52	IIa-IIb	Demolition Debris
V	T-64	Ic	*In situ* Floor/Surface
W	T-65	IIII	*In situ* Foundation
X	T-66	II	*In situ* Foundation
Y	T-67	IIV	Demolition Debris
Z	T-69	II	Demolition Debris
AA	T-71	Ic	*In situ* Floor/Surface
BB	T-73	Id, IIa	*In situ* Floor/Surface
CC	T-75	Id	*In situ* Floor/Surface
DD	T-76	IIa	*In situ* Floor/Surface
EE	T-78	IIa	*In situ* Floor/Surface

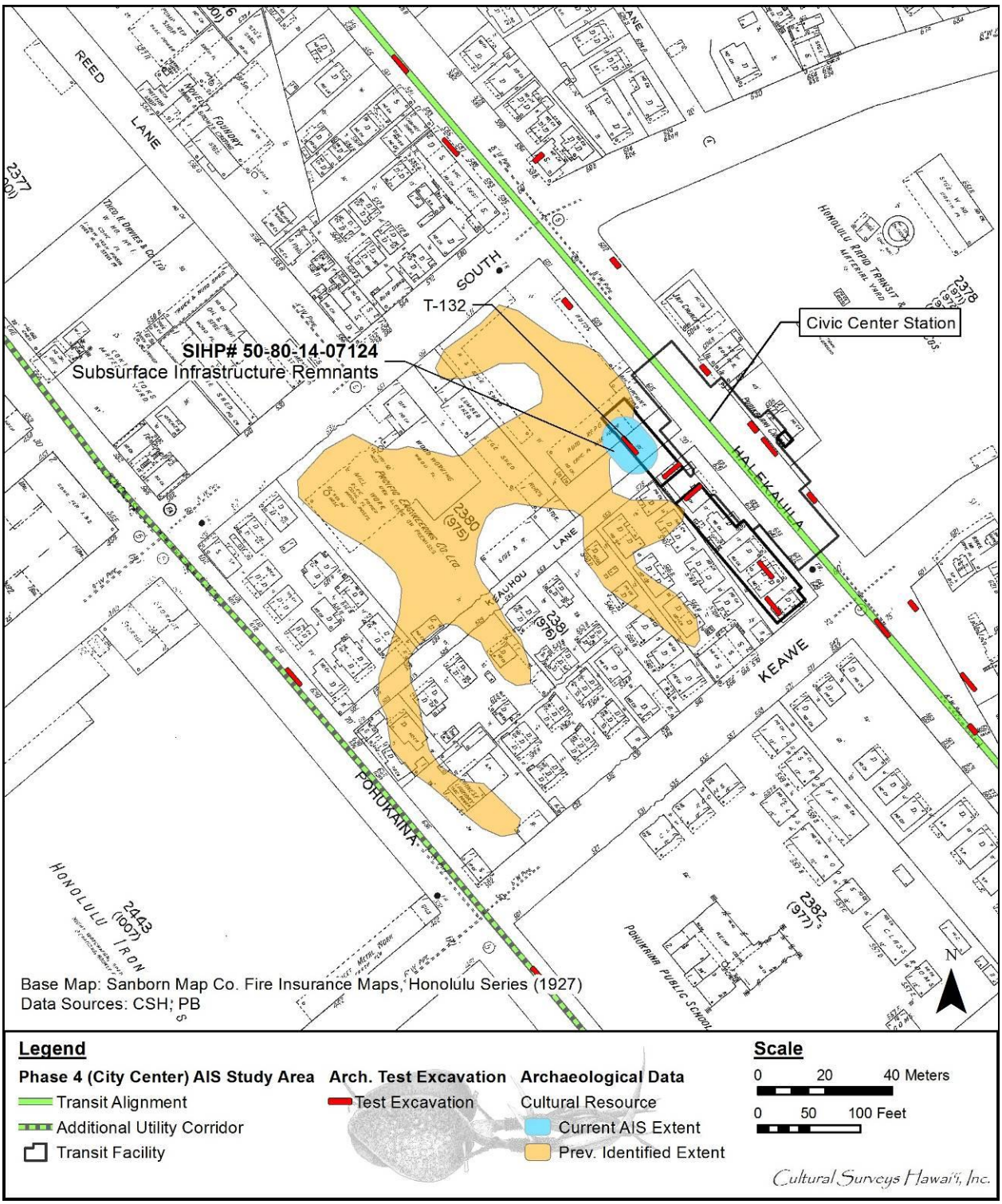


Figure 6. Portion of the 1927 Sanborn Fire Insurance Map depicting SIHP # 50-80-14-7124 and T-132 within the footprint of an Auto Repair Garage

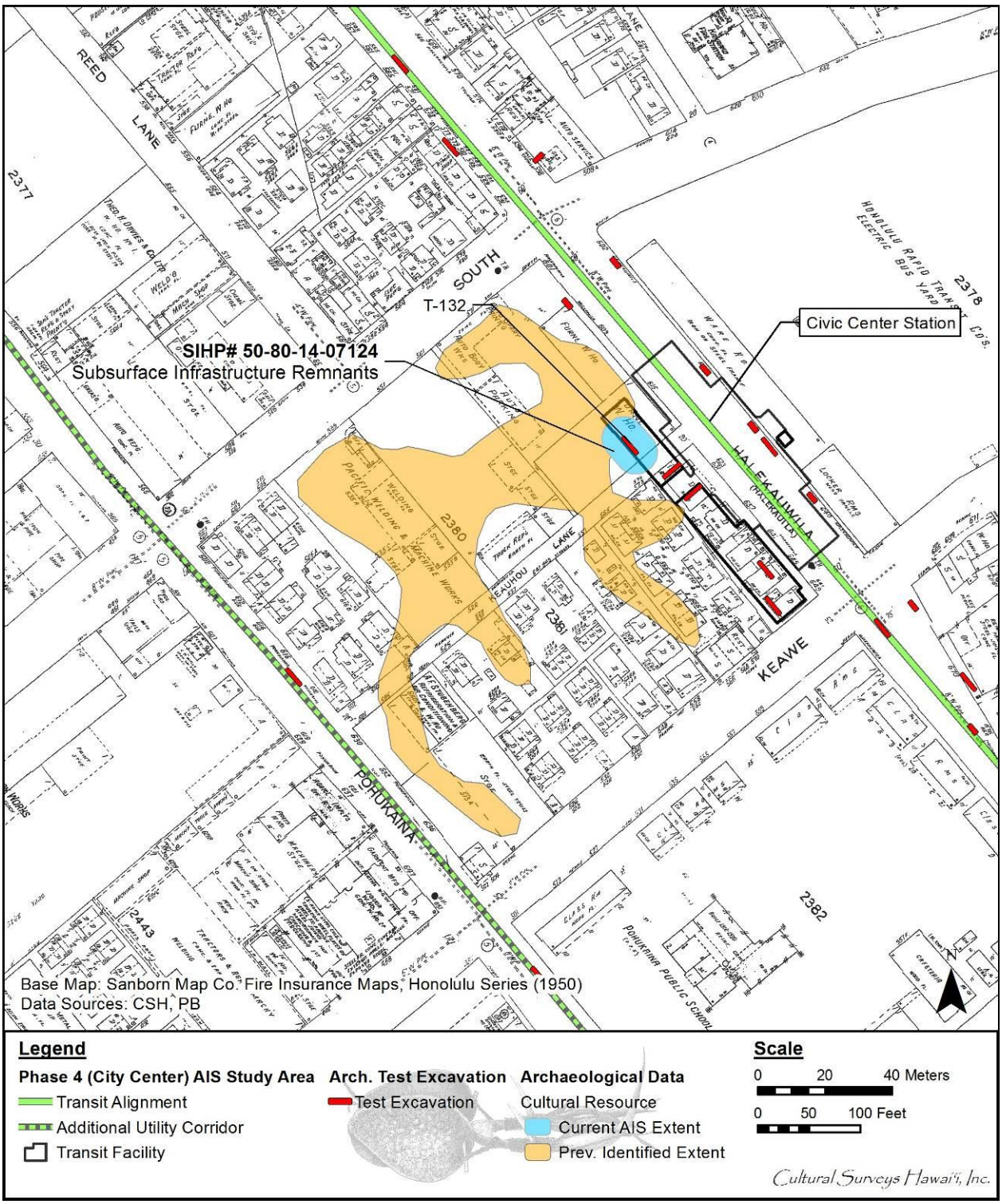


Figure 7. Portion of the 1950 Sanborn Fire Insurance Map depicting SIHP # 50-80-14-7124 and T-132 within the footprint of a furniture warehouse

Feature C was observed within Test Trench 8. Feature C consisted of coral cobbles, concrete chunks, and various modern and historic debris, as well as remnants of historic building foundations. The observed historic building debrisincluded concrete, red bricks, corroded iron rebar, broken glass and ceramics. A layer of basalt blocks was also located within this feature, likely an old floor, a walkway surface, or an old building foundation. These basalt blocks could not be removed along the southwest end of the trench. Based on the 1914 and 1927 Sanborn Fire Insurance maps, this debris and building footing is likely associated with the Pacific Engineering Co. Lt, Mill Work. No buildings were observed in this location on the 1950 and 1956 Sanborn maps.

Feature D was observed within Test Trench 9. Feature D consisted of historic debris and a building foundation constructed of brick and mortar observed in the northeast end of the trench. The observed historic building debris included nails, gravel, concrete bricks, and glass. Based on the Sanborn Fire Insurance maps, the debris and brick and mortar remnants do not appear to align with a building marked on these maps. The debris is likely related to the building marked ‘CARPP’ on the 1914 map or one marked ‘D’ for ‘Dwelling’ in the 1927 map. No buildings have been located within the northeast end of the trench, therefore the brick and mortar may be from an outdoor driveway or patio associated with the surrounding buildings, including the Pacific Engineering Co. Lt, Mill Work, the Pacific Welding and Machine Works, or possibly a walkway from the nearby old Keauhou Lane which ran parallel to the trench.

Feature E was observed within Test Trench 11. Feature E consisted of fill composed of a mixture of cinder, basalt gravel and crushed coral cobbles. This fill material also contained red bricks – likely from demolition of previous structures. Based on the Sanborn Fire Insurance maps, this debris is likely associated with the dwellings previously located in the southwest portion of the project area, as seen on the 1914, 1927, 1950 and 1956 maps. A. F. Stubenberg Refrigeration & Air Conditioning Shop and Warehouse is seen on the 1950 map, though this building is described as having concrete floors, a steel frame and trusses, which does not support the brick fragments observed within this trench. The 1956 map shows this building still standing, but vacant (‘VAC’).

Feature F was observed within Test Trench 12. Feature F consisted of two concrete footings located in the center and the northwest end of the trench. These likely represent remnant foundation structures from historic buildings. The observed debris included glass and ceramic fragments, though it is likely that this was imported with the soils brought in to fill in the remediation pond previously located within this location… Based on the Sanborn Fire Insurance maps, one small building, likely a residence, is the only building located within this trench. It is unlikely that a building of this size required large concrete footings as seen in Test Trench 12. …The origins of these footings remain unknown.

Feature G was observed within Test Trench 15. Feature G consisted of concrete block flooring located at only 30 cm below the current land surface. These concrete blocks likely represent flooring from an old historic building. Based on the Sanborn Fire Insurance maps, only the 1927 map shows a structure present

within the Test Trench 15 location. This building is relatively small, labeled ‘A’ for ‘auto house or private garage’. This may have been associated with the Chinese Laundry, located just northwest of Test Trench 15.

Feature H was observed within Test Trench 21. Feature H consisted of fill containing domestic and construction debris – likely material from demolition of previous historic structures (Stratum Id). This debris included iron rebar, clay pipe fragments, glass and ceramic fragments. Based on the Sanborn Fire Insurance maps, this debris is most likely associated with the dwellings previously located within the northwest portion of this trench, seen on the 1927, 1950 and 1956 maps. The 1914 map labels this area ‘Barnhart Ice Co. Tables’; it is unlikely that the debris is associated with this business.

Feature I was observed within Test Trench 24. Feature I consisted of historical buildings remnants including steel cable and wiring, metal rebar and concrete chunks. A concrete jacket was also observed in the center of the trench, likely a utility jacket for an unknown building. Based on the Sanborn Fire Insurance maps, the buildings previously located here consisted of private dwellings. Two separate buildings were located within this trench, a single dwelling on the southeast end, and a building containing two dwellings in the northwest side. The dwelling on the northwest end is also marked ‘NO CH’, which stands for ‘no chimney’. The observed concrete jacket appears to run between these two buildings.

Feature J was observed within Test Trench 27. Feature J consisted of construction debris including clay pipe, bricks and concrete, likely from historic building demolition (Stratum IIa). Based on the Sanborn Fire Insurance maps, this demolition debris is likely associated with a furniture warehouse located directly within this trench. This building was only observed on the 1950 and 1956 Sanborn maps. The 1927 Sanborn map depicts an auto repair shop abutting this trench. This shop may also be the source of the demolition debris, though it is unlikely based on the type of debris observed.

Feature K was observed within Test Trench 28. Feature K consisted of backfill material from the former building foundation excavation which covers a large, eroding, concrete foundation or flooring. The fill material surrounding this eroding concrete flooring also contained some trash including unidentified bottle glass fragments. Based on the Sanborn Fire Insurance maps, this concrete flooring is most likely associated with a machine shop building, part of an auto repair garage seen on the 1927 map. The auto repair shop is labeled on the 1927 map as having concrete flooring and electric power. Feature K may also be associated with the furniture warehouse observed on the 1950 and 1956 maps.

Feature L was observed within Test Trench 29. Feature L consisted of four separate layers showing evidence of historic building remnants. The topmost layer (Stratum IIa) consists of grading fill containing construction debris including clay pipe, brick & concrete fragments. The underlying layer (Stratum IIb) consists of fill containing red brick fragments, metal implements (nails, bars), glass fragments and gravel. This layer partially surrounds the underlying historic building flooring. These two layers are likely a result of historic building demolition debris.

The old building foundation/flooring is located beneath these two fill layers and is composed of compacted, corroded, brittle, melted metal (Stratum IIc). This metal may have been imported from scraps from the nearby Honolulu Iron Works. The Pacific Engineering Co., observed only on the 1914 and 1927 maps, was located near this test trench and had a close association to the Honolulu Iron Works. Many of the officers of this company were also managers or officers for the Honolulu Iron Works. Directly underlying the corroded metal flooring is a historic fill likely associated with the overlying corroded metal flooring (Stratum IId).

The 1914 Sanborn map shows this trench located over a box with an ‘X’ which represents a stable. The size of this stable, depicted on this figure, is 558 ft. The 1927 map places a new building in this area which is labeled ‘Autos’, likely associated with the nearby auto repair garage. The 1950 and 1956 maps show either the same building relabeled ‘STGE.’ for ‘storage’, or a building of relatively the same size and in the same location as the ‘autos’ building. This storage building may be associated with the furniture warehouse located where the auto repair shop was previously, though it is more likely that it is associated with the truck repair garage. The truck repair garage is labeled as having an earth floor. The 1956 map also labels the open area west of this storage shed as ‘Contractors Equipt’, possibly suggesting that the area was used to store contractors equipment. On the 1950 map, the west central section of the project area is owned by the Pacific Welding & Machine Works, likely a subsidiary company (or a name change) for the Pacific Engineering Co.

Feature M was observed within Test Trench 30. Feature M consisted of a layer of historic fill mixed with historic building debris (Stratum IIa) and a pocket of backfill material containing a large cable and rusted metal fragments (Stratum IIb). The layer of debris contained clay bricks, concrete, metal and historic waste including glass bottles and ceramics. Both strata are likely buried demolition material from the demolition of the previous structures.

Similar to Feature L, Feature M contains some evidence of corroded, melted metal flooring within the demolished building debris. This metal may have been imported from scraps from the nearby Honolulu Iron Works. The Pacific Engineering Co., found only on the 1914 and 1927 maps, was located southwest of this test trench and had a close association to the Honolulu Iron Works.

The 1927 Sanborn map places this trench between two storage sheds. The 1950 and 1956 maps also show the trench between two buildings, a storage shed and an auto parking building (1950) / auto repair garage (1956). Seeing as no building was observed within this test trench location, and based on the metal presenting in loose chunks instead of cohesive flooring, it is likely that the debris originates from the demolition of the surrounding buildings. This trench is also located near the auto body shop as seen on the 1927, 1950 and 1956 maps, suggesting much of the debris may also be buried debris from the shop.

Feature N was observed within Test Trench 31. Feature N consisted of an amalgamation of melted metal used to create a floor or surface. The old building foundation/flooring is located beneath multiple fill layers and is composed of compacted, corroded, brittle, melted metal, slag and other debris. This metal may

have been imported from scraps from the nearby Honolulu Iron Works. This flooring is similar to that seen in Features L and M.

The 1914 and 1927 Sanborn maps place this trench just outside the southeast corner of the Pacific Engineering Co. building, which had a close association to the Honolulu Iron Works. The 1950 and 1956 maps also show the trench in an open area in front of the Truck Repair Garage. The 1950 map labels the west central section of the project area as the Pacific Welding & Machine Works. This is likely a subsidiary company (or a name change) for the Pacific Engineering Co. Seeing as no building was observed within this test trench location, the presence of this flooring suggests that this area and the type of flooring may have been used as an outside driveway/access area.

Feature O was observed within Test Trench 32. Feature O consisted of an amalgamation of melted metal used to create a floor or foundation surface. The old building foundation/flooring is located beneath multiple fill layers and is composed of compacted, corroded, brittle, melted metal, basalt and cinder (Stratum IIa). This metal may have been imported from scraps from the nearby Honolulu Iron Works and is similar to what has been observed in previous features (Features L, M and N). Underlying this flooring is a thin layer of clay that was likely placed as a base for the melted metal (Stratum IIb).

The 1927 Sanborn map places this trench just outside a storage shed, within an area associated with an auto repair shop. The 1950 map locates the trench within an auto body works building (within a section of the building labeled ‘Auto Spray Painting’) while in 1957 map this portion of the building was used for welding. This trench is further away from the Pacific Engineering Co. and associated buildings which this corroded metal flooring is thought to be associated with, due to their close ties to the adjacent Honolulu Iron Works. This suggests that the corroded and melted metal scraps used as flooring may have actually been used by many of the buildings within this industrial and commercial portion of the project area as both flooring inside of buildings, and outside for access areas and driveways.

Feature P was observed within Test Trench 33. Feature P consisted of an amalgamation of melted metal and two associated fill layers. The old building foundation/flooring, composed of compacted, corroded, brittle, melted metal, basalt and cinder (Stratum IIb), is located below a layer of fill composed of clay material mixed with cinder (Stratum IIa). The old flooring was only observed in the southwest end of the trench, contiguous with a fill layer similar to the fill overlying the flooring (Stratum IIc). The overlying fill contains clay brick fragments observed only in the portion overlying the old corroded metal flooring. This suggests that the metal may have been a base with the actual floor consisting of bricks, which were removed during the building demolition. Underlying this flooring is a thin layer of clay that may have been a base for the melted metal. The melted metal was likely constructed with imported scraps from the nearby Honolulu Iron Works and is similar to what has been observed in previous features (Features L - O).

The 1927 Sanborn map places the northeast end of this trench within an ‘autos’ building, while the 1950 and 1957 maps locate the trench within a furniture warehouse. The northeast end of the trench does not contain any part of Feature P, which suggests that the metal flooring is not associated with the autos building flooring. This trench is not near the Pacific Engineering Co. and associated buildings, which the corroded metal flooring was thought to be associated with, due to their close ties to the adjacent Honolulu Iron Works. This suggests that the corroded and melted metal scraps may have actually been used by many of the buildings within this industrial and commercial portion of the project area as both flooring inside of buildings as well as outside access areas and driveways.

Feature Q was observed within Test Trench 36. Feature Q consisted of fill mixed with debris from demolished historical buildings. The observed debris included structural debris (clay bricks, cinder) and domestic debris (glass, faunal bone). Based on the Sanborn Fire Insurance maps, this demolition debris likely originates from the demolition of the Pacific Engineering Co. Lt. Mill Work, or the Pacific Welding and Machine Works.

Feature R was observed within Test Trench 45. Feature R consisted of boulders arranged as a previous surface or layer, located in the east portion of the trench. These boulders are likely remnants of an old flooring. Based on the Sanborn Fire Insurance maps, this floor most likely originates from one of the dwellings previously located within this portion of the project area. None of the Sanborn maps show a building on this side of the trench, which may suggest that the boulders actually represent a paved area outside of a dwelling, used as a patio or a walkway between houses.

Feature S was observed within Test Trench 48. Feature S consisted of a utility trench containing an electric line and an old concrete pilon with rebarb reinforcment from an old building foundation. The Sanborn Fire Insurance maps do not show a building previously located within this test trench location and the concrete pylon does not line up with anything nearby. However, a modified figure from an Ogden report (1996) on the remediation efforts and underground storage tanks before their removal and demolition in the 1990s, shows a building labeled ‘Former Fire Extinguisher Service’ within the southeastern half of Test Trench 48… It is most likely that this building is the source of the concrete pylon…

Feature T was observed within Test Trench 51. Feature T consisted of two separate disturbances, an area containing backfill material (modern disturbance), and a pit containing an old building wall or foundation and historic bottles, ceramics, and faunal bone (Stratum IIa). Both of these disturbances intruded into the underlying SIHP # -7189, incinerator fill layer, and it appears that the historic material (bottles, ceramics, faunal bone) originate from this layer. The concrete flooring is located only in the northeast end of the test trench. The concrete block is approximately 50 cm from this floor and is likely a wall remnant associated with the flooring. Based on the Sanborn Fire Insurance maps, it is most likely that these remnants are associated with the A. F. Stubenberg Refrigeration & Air Conditioning Shop and Warehouse as seen on the 1950 map. This map describes

this building as having concrete floors, a steel frame and trusses. The 1956 map shows the building still standing but vacant (‘VAC’).

Feature U was observed within Test Trench 52. Feature U consisted of demolition debris from historic buildings, including an abundance of ceramics and glass fragments. An old sewer line and associated concrete jacket were observed in the northwest end of the trench. Based on the Sanborn Fire Insurance maps, this debris likely originates from the demolition of the Chinese Laundry, A. F. Stubenberg Refrigeration & Air Conditioning Shop and Warehouse, or the multiple dwellings observed on the 1914 and 1927 Sanborn maps. The old sewer line observed may be associated with any of the buildings within the project area, industrial or residential.

Feature V was observed within Test Trench 64. Feature V consisted of imported cinder fill overlying a layer of large coral boulders in the northeast end of the trench. The coral boulders, as well as the construction debris (i.e. brick) are likely remnants of an old building flooring and evidence of its demolition. Based on the Sanborn Fire Insurance maps, the debris and old flooring are likely associated with the Pacific Engineering Co. Lt. Mill Work, or the Pacific Welding and Machine Works buildings. The 1914 and 1927 Sanborn maps place this trench just outside of the west corner of the Pacific Engineering Co. building while the 1950 and 1956 Sanborn maps show this trench within the west corner of the Pacific Welding and Machine Works building.

Feature W was observed within Test Trench 65. Feature W consisted of a concrete footing observed near the bottom of the trench (at approximately 120 cmbs) and extended across the trench. The footing extends through the coral to an unknown depth, and is associated with a large disturbed area, likely from the old building associated with this footing and its subsequent demolition. Feature W appears to extend from approximately 10-15 cm above the natural surface down to the coral shelf, excavating through a natural sand layer and a sandy modern A horizon. A modern pit feature was also observed in this trench, just to the northeast of Feature W. Based on the Sanborn Fire Insurance maps, the location of this footing suggests that it is likely associated with the Pacific Welding and Machine Works building, observed on the 1950 and 1956 maps. This building is observed bisecting Test Trench 65, the edge lining up perfectly with the location of the concrete footing.

Feature X was observed within Test Trench 66. Feature X consisted of a layer of cinder, cobbles, boulders, and debris (ceramics and glass) likely associated with an old building foundation and subsequent demolition. Based on the Sanborn Fire Insurance maps, this debris and old foundation are likely associated with the Pacific Engineering Co. Lt. Mill Work, or the Pacific Welding and Machine Works.

Feature Y was observed within Test Trench 67. Feature Y consisted of debris likely associated with building demolition. The observed debris included window pane glass, limestone/coral chunks, cinder blocks, bricks, metal scraps, and trash (i.e. coke bottles, saw cut faunal bone, and a rubber tire). Based on the Sanborn Fire Insurance maps, this demolition debris likely originates from the demolition

of the Pacific Engineering Co. Lt. Mill Work, or the Pacific Welding and Machine Works. The 1950 and 1956 Sanborn maps depict this trench within a storage building associated with the Pacific Welding and Machine Works.

Feature Z was observed within Test Trench 69. Feature Z consisted of imported cinder containing brick, ceramics, glass, metal scraps, and other debris associated with the demolition of an old building. The observed debris included a modern feature containing additional debris, likely used as an area to bury leftover demolition debris. Based on the Sanborn Fire Insurance maps, Test Trench 69 is not within the footprint of a building, but is located adjacent to the old Pacific Engineering Co. Lt. Mill Work, and the Pacific Welding and Machine Works buildings. It is likely that this demolition debris originates from the demolition of either the Pacific Engineering Co. Lt. Mill Work, or the Pacific Welding and Machine Works buildings.

Feature AA was observed within Test Trench 71. Feature AA consisted of a layer of mixed lenses containing various materials including reddish sand, cinder, and clay. An amalgamation of melted metal was observed in the southwest end of the trench, as well as portions of the northeast end. This old flooring is similar to that seen in Features L-P, though the flooring observed within this trench was brittle and the backhoe was able to successfully excavate through it. The associated fill layer contains clay brick fragments, which were commonly observed within the fill layers associated with the old metal flooring. The continued presence of the brick fragments associated with the metal flooring suggests that the metal may have been a base for brick flooring, which was removed during the building demolition. The melted metal was likely constructed from imported scraps from the nearby Honolulu Iron Works.

The 1914 Sanborn map places the southwest end of this trench within a storage building, likely associated with the Pacific Engineering Co. Lt. This building is also observed on the 1927 Sanborn map as well as a storage shed in the northeast end of the trench. The 1950 and 1957 maps locate the northeast end of the trench within an auto body works building. This trench is near the Pacific Engineering Co. and associated buildings, which this flooring was thought to be associated with. However, the distribution of the flooring is contained primarily in the north corner of the project area. This suggests that the corroded and melted metal scraps may have actually been used by many of the buildings within this industrial and commercial portion of the project area as both flooring inside of buildings as well as outside access areas and driveways.

Feature BB was observed within Test Trench 73. Feature BB consisted of an amalgamation of melted metal and two associated fill layers. The old building foundation/flooring composed of compacted, corroded, brittle, melted metal, basalt and cinder is underlying a layer of fill composed of clay material mixed with cinder. The old flooring was observed along the entire length of the trench and had been broken up and disturbed previously in the northeast end, possibly by the demolition of the associated buildings. The undisturbed portions of Feature BB were extremely hard. Underlying this flooring is a thin layer of loam that was likely placed as a base for the melted metal. The melted metal was likely

constructed with imported scraps from the nearby Honolulu Iron Works and is similar to those observed in previous features (Features L – P and AA).

The 1914 Sanborn map places the northeast end of the trench within a storage building (likely associated with the Pacific Engineering Co. Lt) and the southwest end in the northeast edge of the Pacific Engineering Co. building. The northeast end of the trench is still within the Pacific Engineering Co. Lt building on the 1927 Sanborn map. On the 1950 and 1957 maps, the trench is within an open area surrounded by the Pacific Welding and Machine Works buildings, a truck repair garage and an auto body works garage. This trench is near the Pacific Engineering Co. and associated buildings, thought to be associated with this flooring due to their close ties to the adjacent Honolulu Iron Works. However, the distribution of the flooring is contained primarily to the north corner of the project area. This suggests that the corroded and melted metal scraps may have actually been used by many of the buildings within this industrial and commercial portion of the project area as both flooring inside of buildings as well as outside access areas and driveways.

Feature CC was observed within Test Trench 75. Feature CC consisted of an amalgamation of melted metal and an associated fill layer. The old building foundation/flooring composed of compacted, corroded, brittle, melted metal, basalt and cinder is located below a layer of fill composed of clay material mixed with cinder (Stratum Id). The fill material contained chunks of cement, likely demolition material. The old flooring was observed along the entire length of the trench. The flooring was extremely hard and in the northwest end was unable to be excavated. The melted metal was likely constructed with imported scraps from the nearby Honolulu Iron Works and is similar to that observed in previous features (Features L–P, AA-BB).

Based on the Sanborn maps, this trench was in an open area used by an auto body shop and a furniture warehouse. This trench is not within a building or near the Pacific Engineering Co. and associated buildings, which this corroded metal flooring was thought to be associated with, due to their close ties to the adjacent Honolulu Iron Works. The distribution of the flooring is contained primarily to the north corner of the project area. This suggests that the corroded and melted metal scraps may have actually been used by many of the buildings within this industrial and commercial portion of the project area as both flooring inside of buildings, as well as outside access areas and driveways.

Feature DD was observed within Test Trench 76. Feature DD consisted of an amalgamation of melted metal and an associated fill layer. The fill layer contains red bricks, glass and some cinder within a loamy soil above and below the old metal flooring (Stratum IIa). The clay brick fragments were observed only above the old corroded metal flooring. This suggests that the metal may have been a base for a brick floor which was removed during the building demolition. The old building foundation/flooring was composed of compacted, corroded, brittle, melted metal, basalt and cinder and observed along the entire length of the trench. The melted metal was likely imported scraps from the nearby Honolulu Iron Works and is similar to what has been observed in previous features (Features L–P, AA-CC).

> Based on the Sanborn maps, similar to Feature CC this trench was located in an open area used by an auto body shop and a furniture warehouse. This trench is not within a former building or near the Pacific Engineering Co. and associated buildings, which this corroded metal flooring was thought to be associated with. The distribution of the flooring is contained primarily to the north corner of the project area. This suggests that the corroded and melted metal scraps may have actually been used by many of the buildings within this industrial and commercial portion of the project area as both flooring inside of buildings as well as outside access areas and driveways.
>
> **Feature EE** was observed within Test Trench 78. Feature EE consisted of an amalgamation of melted metal and two associated fill layers. The fill layer overlying the old flooring contains concrete boulders and slabs within an area of disturbance, possibly from a building foundation, and red brick. The upper boundary of the corroded metal flooring was partially disturbed by the area of disturbance within the overlying fill layer. The clay brick fragments appear to be associated with the old corroded metal flooring. This suggests that the metal may have been a base with the actual floor consisting of bricks, which were removed during building demolition. The old building foundation/flooring was composed of compacted, corroded, brittle, melted metal, basalt and cinder. Underlying this flooring is a thin layer of loam that was likely placed as a base for the melted metal. The old flooring was observed along the entire length of the trench. The melted metal was likely imported scraps from the nearby Honolulu Iron Works and is similar to that observed in previous features (Features L–P, AA-DD).
>
> The 1927 Sanborn map places this trench within the auto repair garage which had concrete flooring. On the 1950 and 1957 maps the trench is within the furniture warehouse…

During the current AIS study, numerous red bricks were identified within Stratum Id of T-132. Stratum Id consisted of dark brown gravelly to stony clay ranging from 0.30 to 1.36 mbs. A total of five strata (III) were observed within T-132 beneath the modern paved asphalt layer (Stratum Ia) (Figure 8, Figure 9, and Table 3). These strata consisted of a very gravely sandy clay fill deposit (Stratum Ib), a crushed coral fill deposit (Stratum Ic), a gravelly to stony clay fill deposit containing red bricks associated with SIHP # -7124 (Stratum Id), a burnt trash layer associated with SIHP # -7189 (Stratum Ie), and natural marine sediment (Stratum II).

Stratum Id contained red bricks, metal, ceramic and glass fragments, and one cat (*Felis catus*) bone. The red bricks observed within Stratum Id of T-132 cannot be directly attributed to any particular historic building or function. The red bricks were determined to date between 1918 and 1978. A review of historic maps indicates that there were two primary phases of urban development in the vicinity of T-132 postdating 1910. The 1927 Sanborn map places the location of T-132 within an auto repair garage, which had concrete flooring (see Figure 6). By 1950, the location of T-132 was within the footprint of a furniture warehouse (see Figure 7). The red bricks within Stratum Id of T-132 are considered to be a component of the previously-identified SIHP # 50-80-14-7124 based on similarities in composition and depositional context, as well as proximity to the structural remnants, debris, and deposits documented by Pammer et al. (2011).

In summary, SIHP # 50-80-14-7124 consists of buried in situ and displaced historic infrastructure remnants, demolition debris, and refuse enriched fill deposits that were initially

identified by Pammer et al. (2011) during an archaeological inventory survey of a 4-acre property in Kaka‘ako (see Table 2). The in situ archaeological remains associated with SIHP # -7124 include seven foundation features and 14 floor/surface features. Displaced demolition/building debris was identified within ten test trenches by Pammer et al. (2011), and also within T-132 during the City Center (Section 4) AIS. The historic and modern building materials identified by Pammer et al. (2011) date between 1914 and 1991. The red bricks observed within Stratum Id of T-132 dated between 1918 and 1978 and are designated as a component of SIHP # -7124. The total area of this historic property is approximately 1.49 acres. Additional components of SIHP # -7124 may exist n undocumented portions within and/or adjacent to the current project area.

SIHP # 50-80-14-7124 directly overlies a reclamation-related trash layer designated SIHP # 50-80-14-7189. The trash layer is identified as being associated with open air burning of trash and of containing late nineteenth- and early twentieth-century bottles as well as plastic, metal, ceramic, wood and other items or debris. Historic photos show open air burning in Kala‘ako during the 1930s (see Figure) It is likely SIHP # 50-80-14-7124 post-dates the 1930s based on its stratigraphic position above SIHP # 50-80-14-7189.

Based on the guidance of the National Register Bulletin No.15, SIHP # 50-80-14-7124 retains its integrity of location, materials, and workmanship. SIHP # -7124 was previously determined eligible to the Hawai‘i Register under Criterion A (associated with events that have made an important contribution to the broad patterns of our history) and D (has yielded, or is likely to yield information important for research on prehistory or history). Based on the results of the current City Center Section 4 AIS, and in consultation with SHPD, CSH recommends that SIHP # -7124 does not convey its significance under Criterion A for either the Hawai‘i or National Registers. The structural remnants have been completely altered by historic to modern land reclamation and urban development. Accordingly, CSH recommends that this cultural resource maintains the integrity to support its historic significance only under Criterion D of the Hawai‘i Register and recommends eligibility to the National Register under Criterion D, exclusively for its information potential.

SIHP # -7124 has provided information, and can potentially provide additional information, on twentieth century habitation and former commercial infrastructure within Kaka‘ako. The potential for the identification and impact of additional buried structural remnants during project construction within the current project APE warrants the implementation of an archaeological monitoring program. Archaeological monitoring will recover additional data on the location and distribution of any buried structural remnants encountered that may be associated with SIHP # -7424. If encountered, documentation will include plan and/or profile maps, GPS locations, photographs, and sample collection of datable components. These data will be used to refine the age of construction of individual structural remnants and to potentially correlate remnants to specific former structures shown on historic maps.

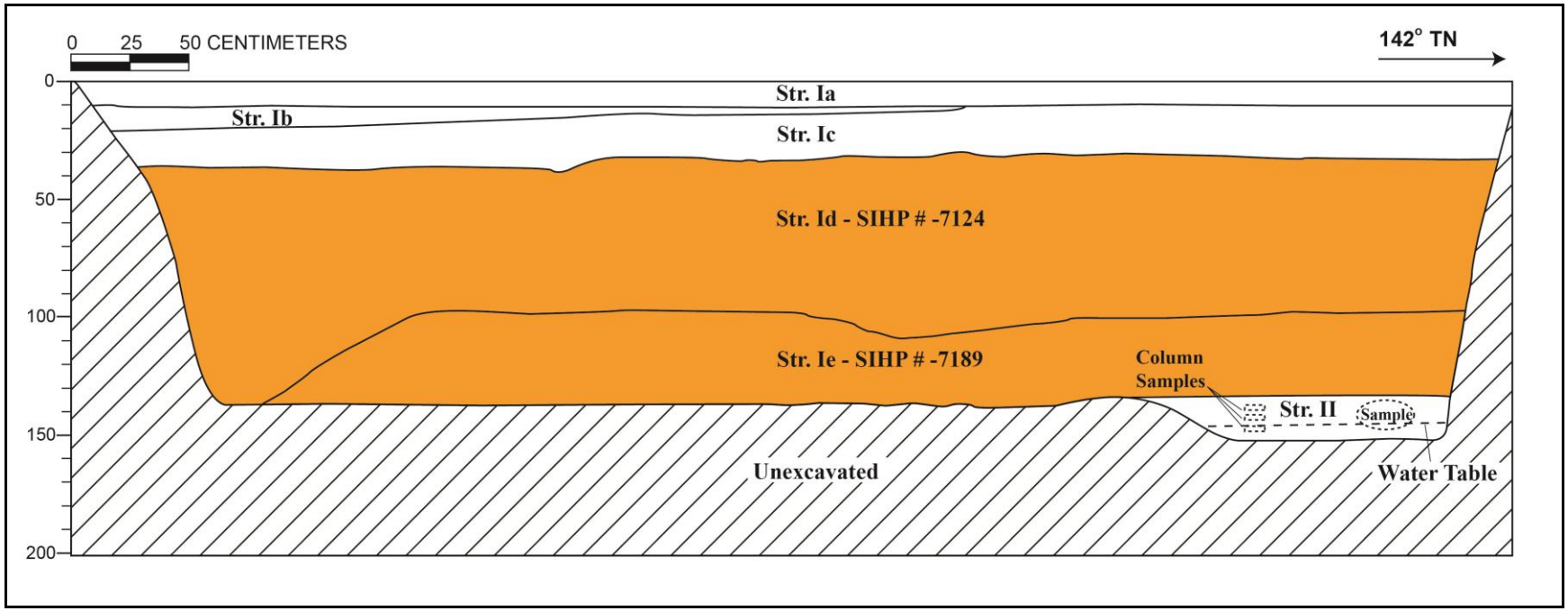


Figure 8. T-132 northeast wall profile, showing Stratum Id containing brick rubble identified as a component of SIHP # -7124 (historic structural remnants) which overlies reclamation-related burnt trash layer (SIHP # -7189)

Figure 9. T-132, Photograph of northeast profile wall, view to north

Table 3. T-132 Stratigraphic description for the northeast profile in T-132

Stratum	Depth (cmbs)	Description
Ia	0-10	Asphalt
Ib	10-20	Fill; 10 YR 4/2 (dark grayish brown); very gravelly sandy clay; weak, fine, crumb structure; dry, loose consistency; slightly plastic; terrigenous origin; very abrupt, broken/discontinuous lower boundary; base course, present only in northwestern half, crushed basalt in clay loam matrix
Ic	10-38	Fill; 10 YR 8/2 (very pale brown); extremely gravelly sand; structureless, singlgrain; dry, weakly coherent consistency; non-plastic; marine origin; very abrupt, smooth lower boundary; crushed coral fill
Id	30-136	Fill; 7.5 YR 3/3 (dark brown); gravelly to stony clay; weak, fine, blocky structure; moist, firm consistency; very plastic; terrigenous origin; clear, smooth lower boundary; contained many burnt red bricks and basalt gravel to cobbles; red bricks likely from historic building (SIHP # -7124); contained bands, striations black mixed fill
Ie	97-139	Fill; 10 YR 2/1 (black); clay loam, medium, blocky structure; moist, friable consistency; plastic; terrigenous origin; lower boundary not visible; contained ceramic fragments, shoes, glass bottles, leather pouch, coconut husks, round wooden bases, non-diagnostic metal pieces, cut wood, synthetic roof tile, old telephone wire; contained burnt trash (SIHP # -7189) used to cover Kaka‘ako wetlands from late 1800s-early 1900s: faunal bones, lauhala mat at Ie/II
II	139-151	Natural; 2.5 Y 5/1 (gray); sandy silty clay; weak, medium, blocky structure; wet, sticky consistency; plastic; marine origin; lower boundary not visible; marine sediment contained organics, shells

SIHP # 50-80-14-7189

FORMAL TYPE:	Subsurface burnt trash deposit
FUNCTION:	Refuse disposal
PREVIOUS DOCUMENTATION:	Pammer et al. (2011)
AGE:	Post-Contact (late 1800s-1930s)
NUMBER OF FEATURES:	N/A
TYPES OF FEATURES:	N/A
DISTRIBUTION:	2.56 acres (interpolated total area)
LOCATION:	In the vicinity of the block bounded by Halekauwila, Keawe, Pohukaina, and South Streets (West Kaka‘ako and Kaka‘ako Makai Geographic Zones)
TAX MAP KEYS:	[1] 2-1-030:001 (Pammer et al. 2011); [1] 2-1-030, [1] 2-1-030:001, [1] 2-1-031, [1] 2-1-051, and [1] 2-1-052 (within current project area)
LAND JURISDICTION:	Kamehameha Schools (Pammer et al. 2011); Bishop Estate (Waterpark Towers) and the City and County of Honolulu (within current project area)
TEST EXCAVATIONS:	T-130, T-132, T-134, T-138, T-140, T-231A, T-232, T-232A

SIHP # 50-80-14-7189 is a subsurface burnt trash deposit previously-identified within the block bounded by Halekauwila, Keawe, Pohukaina, and South Streets within the West Kaka‘ako and Kaka‘ako Makai Geographic Zones (Figure 1). This archaeological cultural resource was first identified by Pammer et al. (2011) during an archaeological inventory survey for the Block 2 Parking Lot located between the HRTP alignment along Halekauwila Street and an additional HRTP utility corridor along Pohukaina Street, as well as a portion of the Civic Center Station footprint (Figure 2). SIHP # -7189 was identified within T-130, T-132, T-134, T-138, T-140, T-231A, T-232, and T-232A during the current City Center AIS.

The Pammer et al. (2011) study identified the subsurface burnt trash deposit within 49 of 78 test excavations (Figure 3). SIHP # -7189 was described as “a layer of burnt historic debris, used to fill the unwanted wetlands of Kewalo, Kaka‘ako, and Waikīkī” (Pammer et al. 2011:283). The depth and content of the burnt trash deposit varied across the study area. In general, SIHP # -7189 ranged from 0.4 to 1.8 mbs. The general stratigraphic sequence consisted of historic and modern fill layers associated with various periods of urban development dating to the twentieth century overlying the burnt trash deposit (SIHP # -7189), overlying salt pan remnants (SIHP # -7190) and/or Jaucas sand atop the limestone coral shelf and natural marine clay (Figure 4, Figure 5, and Table 1).

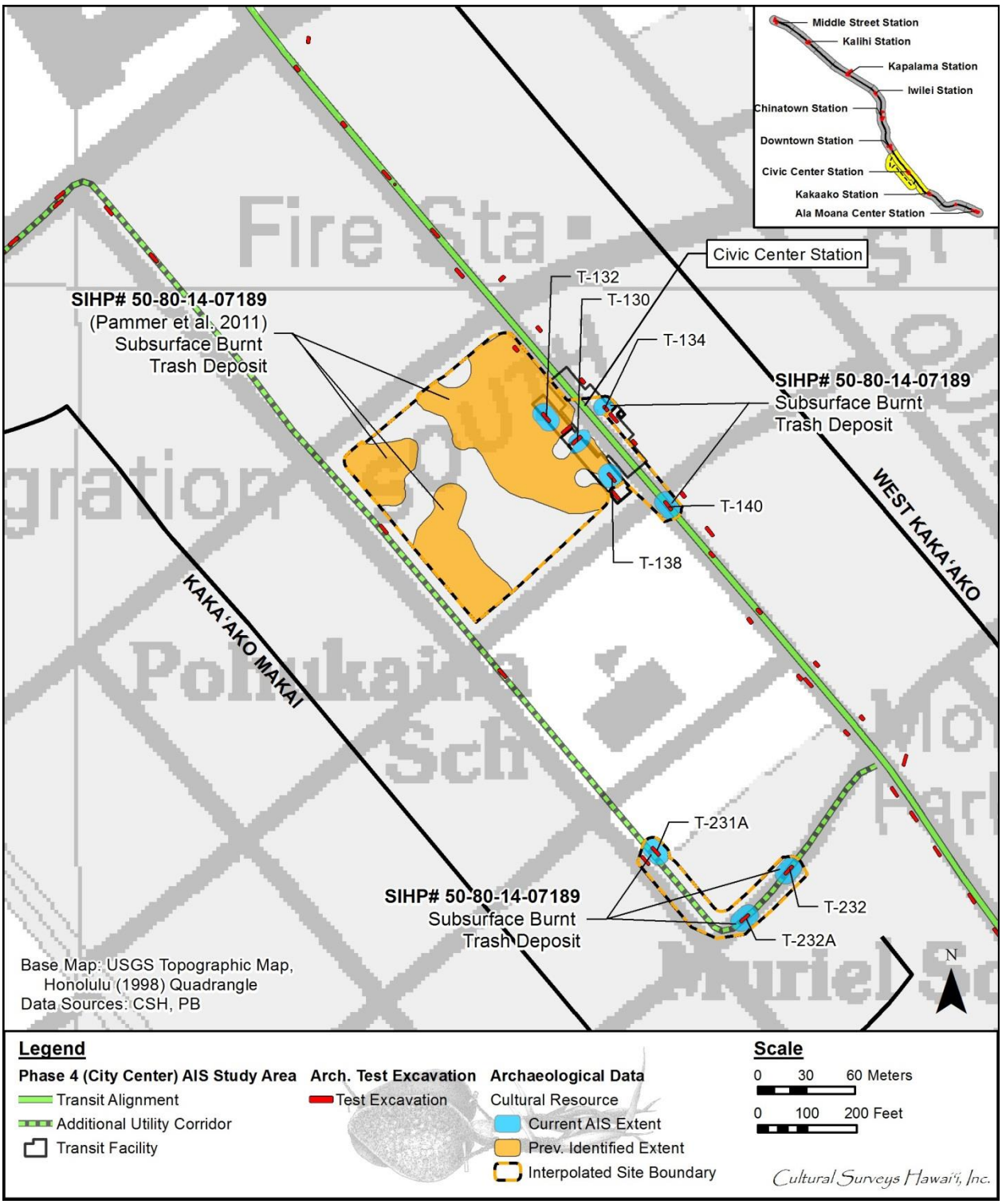


Figure 1. Location of SIHP # -7189 within the West Kaka‘ako and Kaka‘ako Makai Geographic Zones (base map: USGS 1998 Topographic Map of Honolulu Quadrangle)

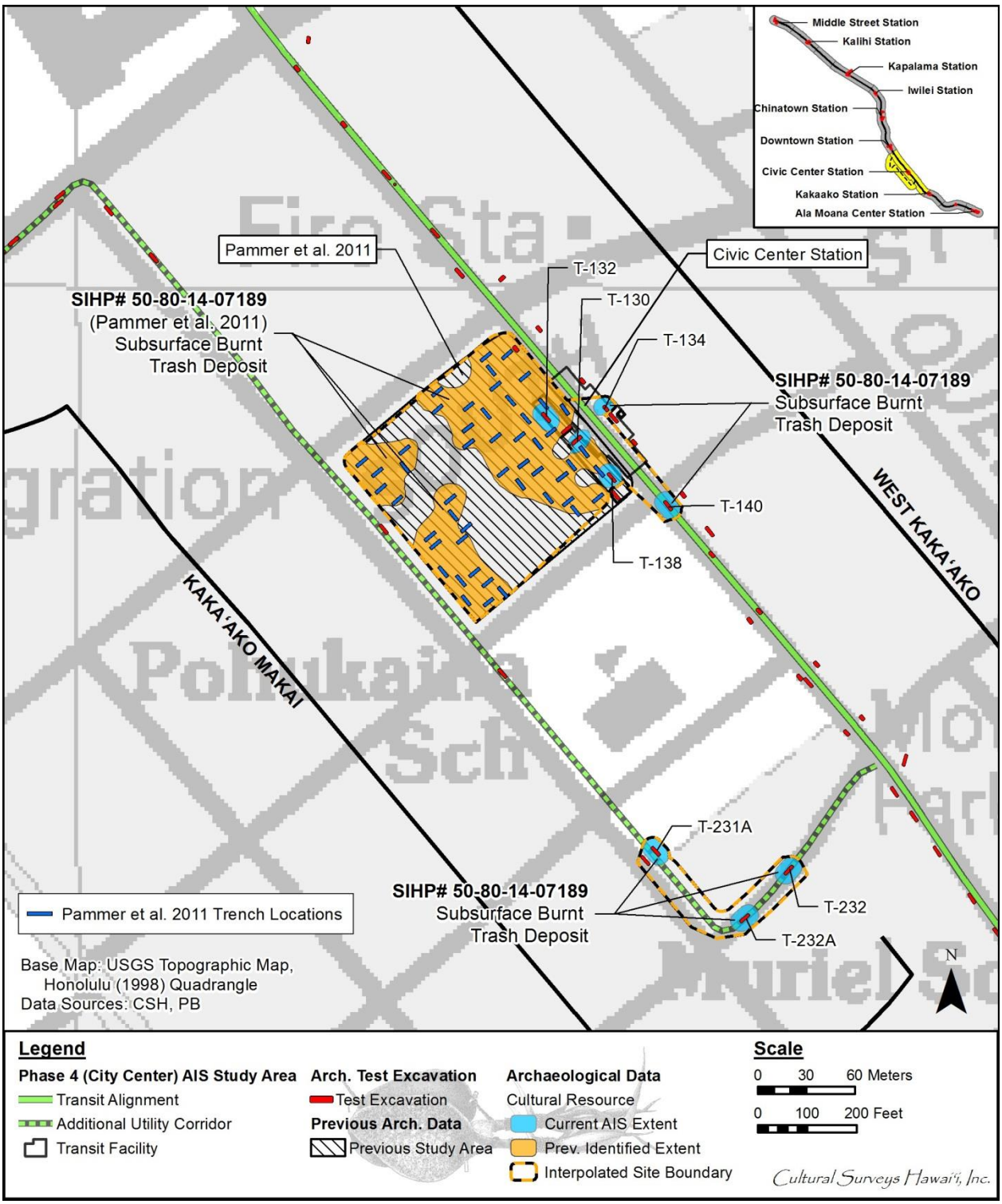


Figure 2. Location of SIHP # -7189 and the Pammer et al. (2011) study area within the West Kaka‘ako and Kaka‘ako Makai Geographic Zones (base map: USGS 1998 Topographic Map of Honolulu Quadrangle)

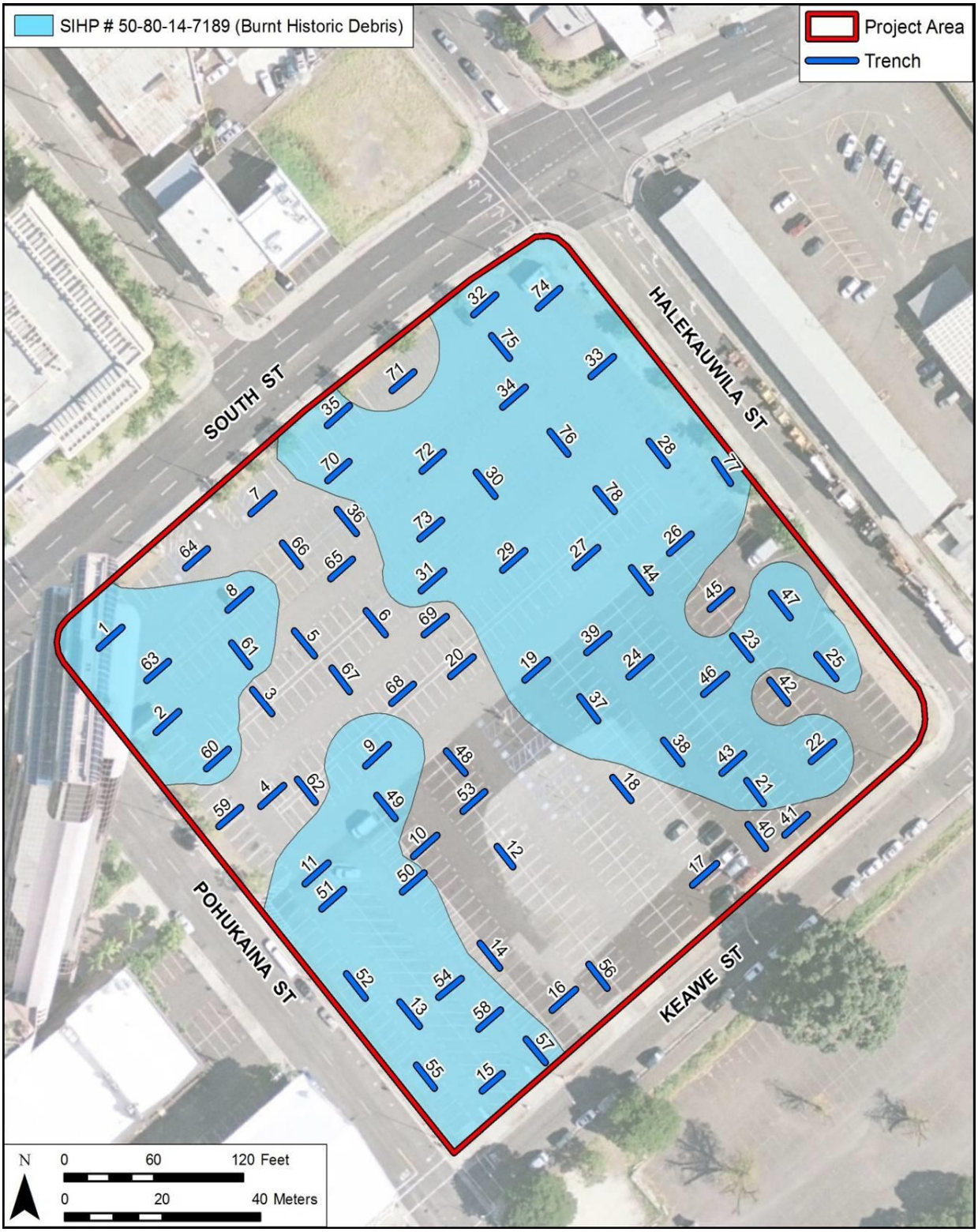


Figure 3. Aerial photograph (source: USGS Orthoimagery 2005) with an overlay of the estimated locations of SIHP # -7189 within the Pammer et al. (2011) study area

Figure 4. Northwest end of Test Trench 25 showing stratigraphic layers along southwest wall (from Pammer et al. 2011,Vol. II:106)

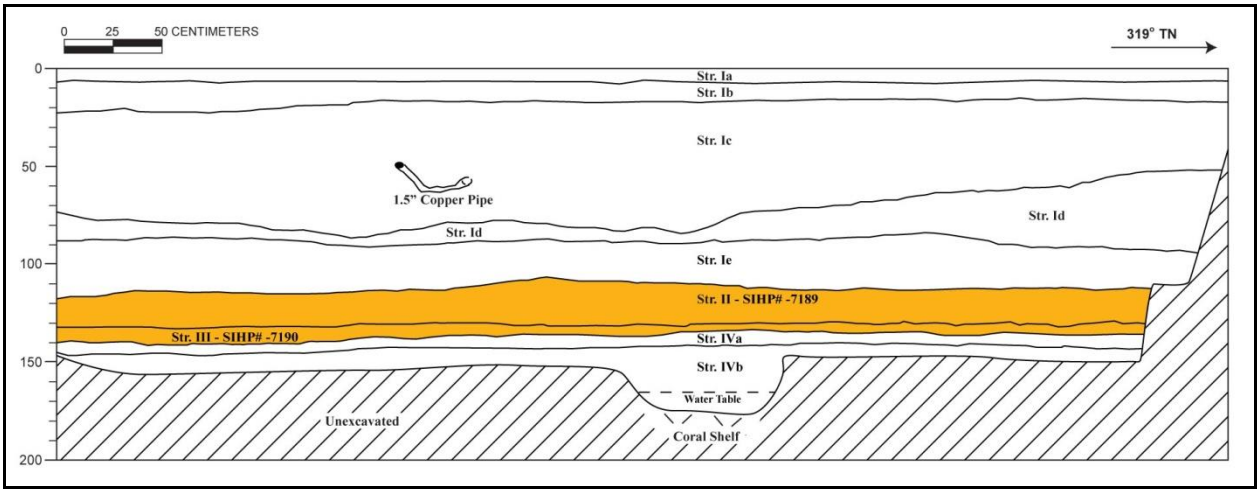


Figure 5. Pammer et al. (2011, Vol. II:104; color and label not in original) Test Trench 25 southwest wall profile, showing burnt trash layer (SIHP # -7189) overlying former salt pan deposit (SIHP # -7190)

Table 1. Stratigraphic Description of Test Trench 25 (adapted from Pammer et al. 2011, Vol. II: 102-103)

Stratum	Depth (cmbs)	Description
Ia	0-6	Asphalt; 10 YR 5/1 gray; structureless (massive); extremely hard dry consistency; indurated cementation; non-plastic; terrestrial origin; very abrupt, smooth lower boundary. Surfacing for parking lot
Ib	6-23	Fill; 10 YR 6/1 gray asphalt; structureless (massive); dry extremely hard consistency; indurated cementation; non-plastic; terrigenous origin; abrupt, smooth lower boundary. Former asphalt surfacing
Ic	15-86	Fill; 10 YR 5/3 brown silty clay loam; weak, fine, crumb structure; dry hard, moist friable consistency; non-plastic; mixed origin; abrupt, wavy lower boundary. Grading fill contains crushed coral, gravel and modern construction and domestic debris
Id	52-94	Fill; 10 YR 8/2 very pale brown crushed coral and very coarse sand; structureless (singlgrain); dry loose, wet loose consistency; non-plastic; marine origin; abrupt, wavy lower boundary. Marine based fill material
Ie	86-118	Fill; 10 YR 7/3 very pale brown sandy clay with multiple mottling of 10 YR 6/1 gray clay and 10 YR 7/6 yellow sand; structureless (singlgrain); moist firm, wet sticky consistency; slightly plastic; marine origin; very abrupt, smooth lower boundary. Hydraulic fill likely associated with dredging of Honolulu Harbor area for covering over Kaka‘ako wetlands
II	106-134	Fill; 10 YR 3/2 very dark grayish brown ash, clay, and burnt debris; weak, fine, crumb structure; moist firm, wet sticky consistency; plastic; terrigenous origin; abrupt, smooth lower boundary. Burnt waste from open air burning from the 1920s-1930s; landfill material overlying Kaka‘ako wetlands; component of SIHP # -7180
III	130-144	A horizon; 10 YR 3/4 dark yellowish brown clay loam ‘peat;’ weak, very fine, crumb structure; moist firm, wet slightly sticky consistency; non-plastic; mixed origin; diffuse, smooth lower boundary; contains high amount of fine roots; former historic surface layer, associated with the salt pans; component of SIHP # -7190
IVa	134-148	Gley 2 4/5BG dark greenish gray clay; moderate, fine, crumb structure; moist firm, wet sticky consistency; plastic; marine origin; diffuse, smooth lower boundary. Natural marine deposited clay
IVb	140-175 (BOE)	Gley 2 5/5BG greenish gray clayey sand; structureless (singlgrain); moist very friable, wet non-sticky consistency; non-plastic; marine origin; abrupt, smooth lower boundary. Natural (marine) clayey sand deposit overlying hard coral shelf, groundwater level at 178 cmbs

Historic artifacts observed during the Pammer et al. (2011) study consisted of various glass bottles, ceramic vessels, and butchered faunal remains. The glass bottles dated up to 1920. The ceramic assemblage largely consisted of British and Asian exported items dated to the late 1800s to early 1900s (Figure 6 to Figure 9).

During the current City Center AIS, a buried burnt trash deposit was identified in eight test excavations (T-130, T-132, T-134, T-138, T-140, T-231A, T-232, and T-232A) located within the West Kaka‘ako and Kaka‘ako Makai Geographic Zones. In general, the stratigraphic sequences within the eight test excavations were consistent with the Pammer et al. (2011) study. They included natural marine sediment at the base of excavation underlying the burnt trash layer (SIHP # -7189) and between four to seven additional overlying fill strata (Figure 10 to Figure 12 and Table 2). The subsurface burnt trash deposit was located within fill material that consisted of variations of black silty clays, sandy clays, silty loams, sandy loams, and clay loams. These deposits ranged in depth between 0.65 to 1.40 mbs.

The burnt trash deposit observed during the current City Center AIS contained a large quantity of glass bottles, ceramics, metal, miscellaneous items, and cut faunal bone. A total of 75 ceramic fragments were collected, representing 63 vessels, along with 74 glass bottles or bottle fragments. These materials dated from the late 1800s to early 1900s and included both Asian and Euro-American imports. A complete catalogue of cultural material collected from T-130, T-132, T-134, T-138, T-140, T-231A, T-232, and T-232A is presented in Volume V.

SIHP # -7189 is a previously-identified subsurface burnt trash deposit that was identified in 49 test excavations during the Pammer et al. (2011) study and eight test excavations (T-130, T-132, T-134, T-138, T-140, T-231A, T-232, and T-232A) during the current City Center AIS. The burnt trash deposit identified during the current study has been combined with the SIHP # -7189 trash deposit identified by Pammer et al. (2011) based upon similarities in their depositional sequence, stratigraphic location, content, and proximity. The total area of this cultural resource is approximately 6.32 acres and centers within or near the current urban block bounded by Halekauwila, Keawe, Pohukaina, and South Streets. Pammer et al. (2011) identified SIHP # -7189 at depths ranging from 0.4 to 1.8 mbs while the current AIS study identified SIHP # -7189 at depths ranging from 0.65 to 1.40 mbs. Both studies identified SIHP # -7189 beneath historic and modern fill deposits and atop natural sediments overlying the coral shelf. The burnt trash deposit consists of large quantities of glass bottles, ceramics, metal, and cut faunal bone within a sediment matrix that varies among black silty clays, sandy clays, silty loams, sandy loams, and clay loams. Historic artifacts collected from SIHP # -7189 date from the late 1800s to early 1900s. The burnt trash within SIHP # -7189 may be associated with open-air trash burning that occurred during the late nineteenth to early twentieth century. The subsurface burnt trash layer likely was deposited in the early twentieth century (ca. 1920s to 1930s) when low-lying areas in Kaka‘ako were infilled to advance urban development.

Based on the guidance of the National Register Bulletin No. 15, SIHP # 50-80-14-7189 retains its integrity of location, design, and materials. SIHP # -7189 was previously determined eligible to the Hawai‘i Register under Criterion A (associated with events that have made an important contribution to the broad patterns of our history) and Criterion D (has yielded, or is likely to yield information important for research on prehistory or history). Based on the results of the current archaeological inventory survey, and in consultation with SHPD, CSH

Figure 6. Sample of ink, household (i.e., shoe blackening, Acc. #138.1), and cosmetic/toiletry bottles collected from SIHP # -7189 during the Pammer et al. (2011, Vol. I:249) study

Figure 7. Sample of spirits and bitters bottles collected from SIHP # -7189 during the Pammer et al. (2011, Vol. I:249) study

Figure 8. Sample of food and medicine bottles collected from SIHP # 7189 during the Pammer et al. (2011,Vol. I:250) study

Figure 9. Sample of soda and mineral water bottles collected from SIHP # -7189 during the Pammer et al. (2011, Vol. I,:251) study

Figure 10. Northwest end of T-231A showing burnt trash deposit (SIHP # -7189), view to northwest

Figure 11. T-231A southwest profile, view to south

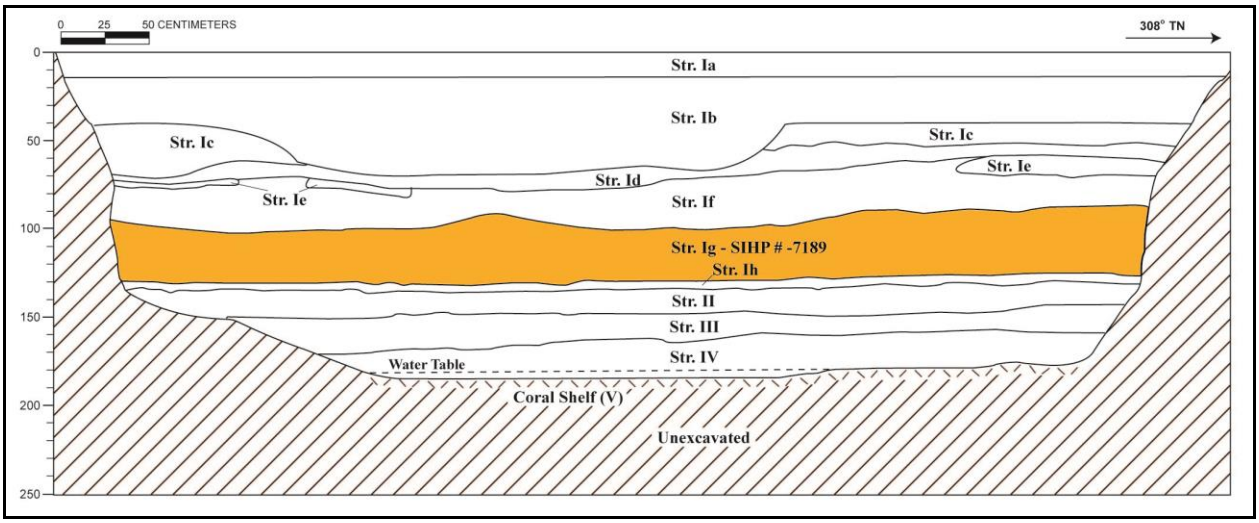


Figure 12. T-231A southwest profile, showing burnt trash deposit (SIHP # -7189) within fill sequence above natural sediments and coral shelf

Table 2. T-231A Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-15	Asphalt
Ib	15-70	Fill; 10 YR 5/2 (grayish brown); extremely gravelly silty loam; structureless, singlgrain; moist, loose consistency; non-plastic, terrigenous origin; abrupt, smooth lower boundary; gravel base course
Ic	42-72	Fill; 10 YR 8/2 (very pale brown); very gravelly sandy loam; structureless, singlgrain; moist, friable consistency; non-plastic; mixed origin; very abrupt, smooth lower boundary; contained faunal fragments; crushed coral
Id	63-75	Fill; 10 YR 4/2 (dark grayish brown); silty loam; weak, very fine, crumb structure; moist, friable consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary; contained faunal fragments
Ie	57-82	Fill; 10 YR 2/1 (black); gravelly sandy loam; weak, fine, crumb structure; moist, friable consistency; non-plastic; terrigenous origin; abrupt, broken/discontinuous lower boundary
If	61-103	Fill; 10 YR 3/2 (very dark grayish brown); sandy loam; weak, fine, crumb structure; moist, friable consistency; non-plastic; mixed origin; abrupt, smooth lower boundary
Ig	91-132	Fill; 10 YR 2/1 (black); sandy clay loam; structureless, singlgrain; moist, friable; mixed origin; clear, smooth lower boundary; contains glass bottles, faunal bone, fabric, wood, and shoe soles; burned trash layer; component of SIHP # -7189
Ih	132-136	Fill; 10 YR 2/1 (black); silty clay loam; structureless, massive; moist, friable to firm consistency; slightly plastic; terrigenous origin; abrupt, smooth lower boundary
II	136-150	Natural; 10 YR 8/4 (very pale brown); silty sand; structureless, singlgrain; moist, very friable consistency; non-plastic; marine origin; clear, smooth lower boundary
III	150-168	Natural; 2.5 Y 8/2 (pale yellow); very gravelly to cobbly loamy sand; structureless, singlgrain; moist, friable to firm consistency; non-plastic; marine origin; clear, smooth lower boundary; decomposing coral shelf
IV	168-185 (BOE)	Natural; GLEY 5GY 7/1 (light greenish gray); very gravelly loamy sand; structureless, singlgrain; moist, firm consistency; non-plastic; mixed origin; decomposing coral shelf; lower boundary not visible

recommends that SIHP # -7189 does not possess significance under Criterion A for either the Hawai‘i and National Registers. Accordingly, CSH recommends that this cultural resource maintains the integrity to support its historic significance only under Criterion D of the Hawai‘i Register and recommends eligibility to the National Register only under Criterion D, exclusively for its information potential.

SIHP # 50-80-14-7189 has provided information, and can potentially provide additional information, on nineteenth to early twentieth century material goods and early twentieth century land reclamation efforts. The potential for further identification and impact of additional exposures of subsurface burnt trash deposits within the current project APE warrants implementation of an archaeological monitoring program. Archaeological monitoring will recover data on all locations of SIHP # -7189 encountered during construction. If encountered documentation will include plan and/or profile maps, GPS locations, photographs, and sample collection. These data will be used to better characterize the content and depositional age of SIHP # -7189 and facilitate comparisons with other trash disposal features.

SIHP # 50-80-14-7190

FORMAL TYPE:	Subsurface salt pan remnants
FUNCTION:	Salt production
PREVIOUS DOCUMENTATION:	Pammer et al. (2011)
NUMBER OF FEATURES:	N/A
TYPES OF FEATURES:	N/A
AGE:	Potentially pr and post-Contact
DISTRIBUTION:	Approximately 0.05 acres (within current project area), 1.15 acres (total area)
LOCATION:	Southwest (*makai*) of Halekauwila Street, between Keawe and South Streets (West Kaka‘ako and Kaka‘ako Makai Geographic Zones) Pammer et al. (2011), within City and County road way of Pohukaina Street (current investigation)
TAX MAP KEY:	TMK [1] 2-1-030 (Pohukaina Street ROW por.); [1] 2-1-051 (Pohukaina Street ROW por.); [1] 2-1-030:001 and :043
LAND JURISDICTION:	Kamehameha Schools; City and County of Honolulu
TEST EXCAVATIONS:	T-229 and T-230

SIHP # 50-80-14-7190 consists of previously-identified subsurface salt pan remnants (including possible berms) located southwest (*makai*) of Halekauwila Street, between South and Keawe Streets within the West Kaka‘ako and Kaka‘ako Makai Geographic Zones (Figure 1). This archaeological cultural resource was first identified by Pammer et al. (2011) during an archaeological inventory survey for the Block 2 Parking Lot located between the HRTP alignment along Halekauwila Street and an additional HRTP utility corridor along Pohukaina Street, as well as a portion of the Civic Center Station footprint (Figure 2). SIHP # -7190 was also identified within T-229 and T-230 of the current City Center AIS.

Background information and historic maps indicate early historic salt production in Kaka‘ako and the use of salt pans. Captain Cook was the first to note the method of making salt in prepared salt pans.

> Amongst their arts, we must not forget that of making salt, with which we were amply supplied, during our stay at these islands, and which was perfectly good of its kind. Their saltpans are made of earth, lined with clay; being generally six or eight feet square, and about eight inches deep. They are raised upon a bank of stones near the high-water mark, from whence the salt water is conducted to the foot of them, in small trenches, out of which they are filled, and the sun quickly performs the necessary process of evaporation. . . . Besides the quantity we used in salting pork, we filled all our empty casks, amounting to sixteen puncheons, in the Resolution only. [Cook 1784:151]

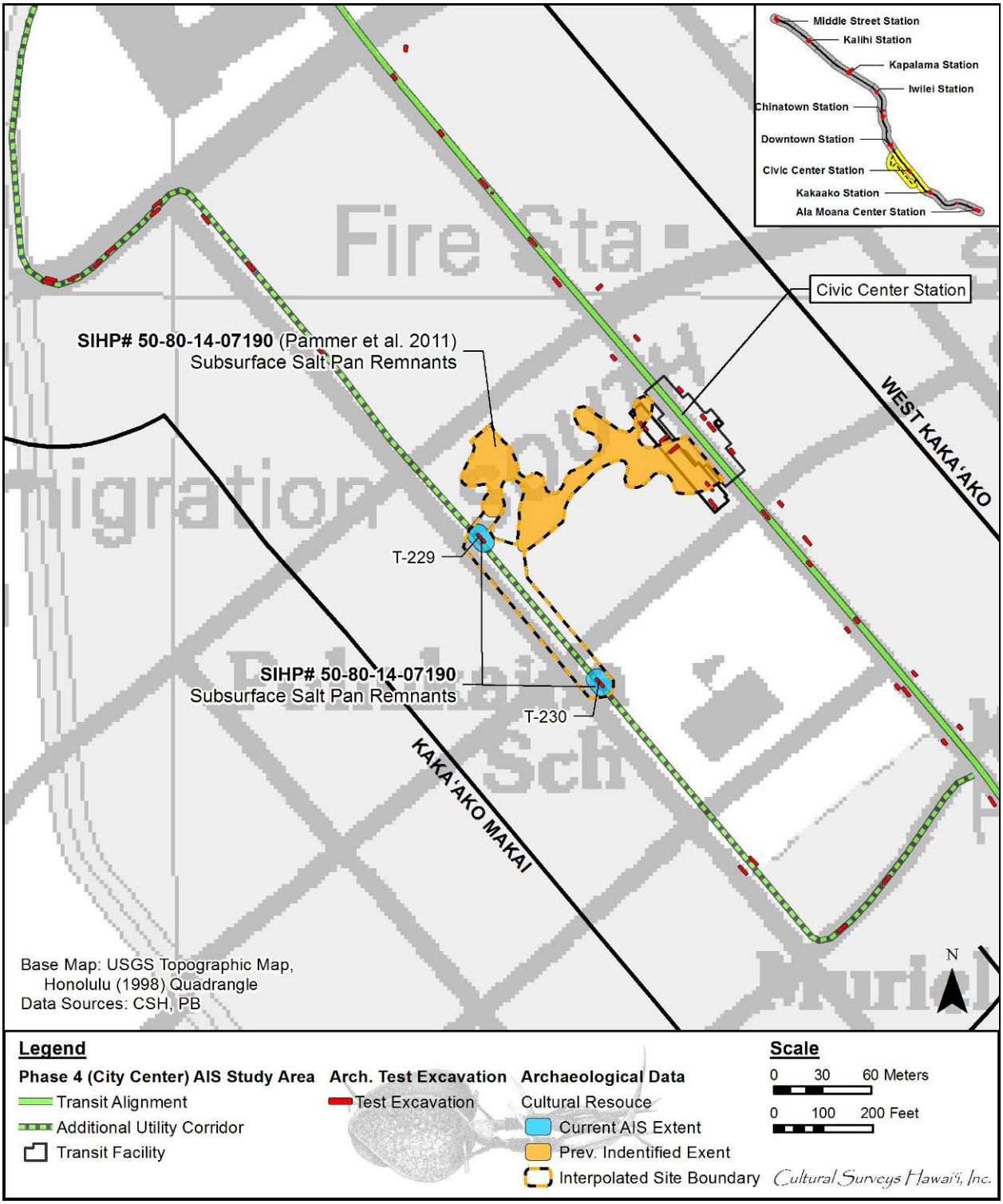


Figure 1. Location of SIHP # -7190 within the West Kaka‘ako and Kaka‘ako Makai Geographic Zones (base map: USGS 1998 Topographic Map of Honolulu Quadrangle)

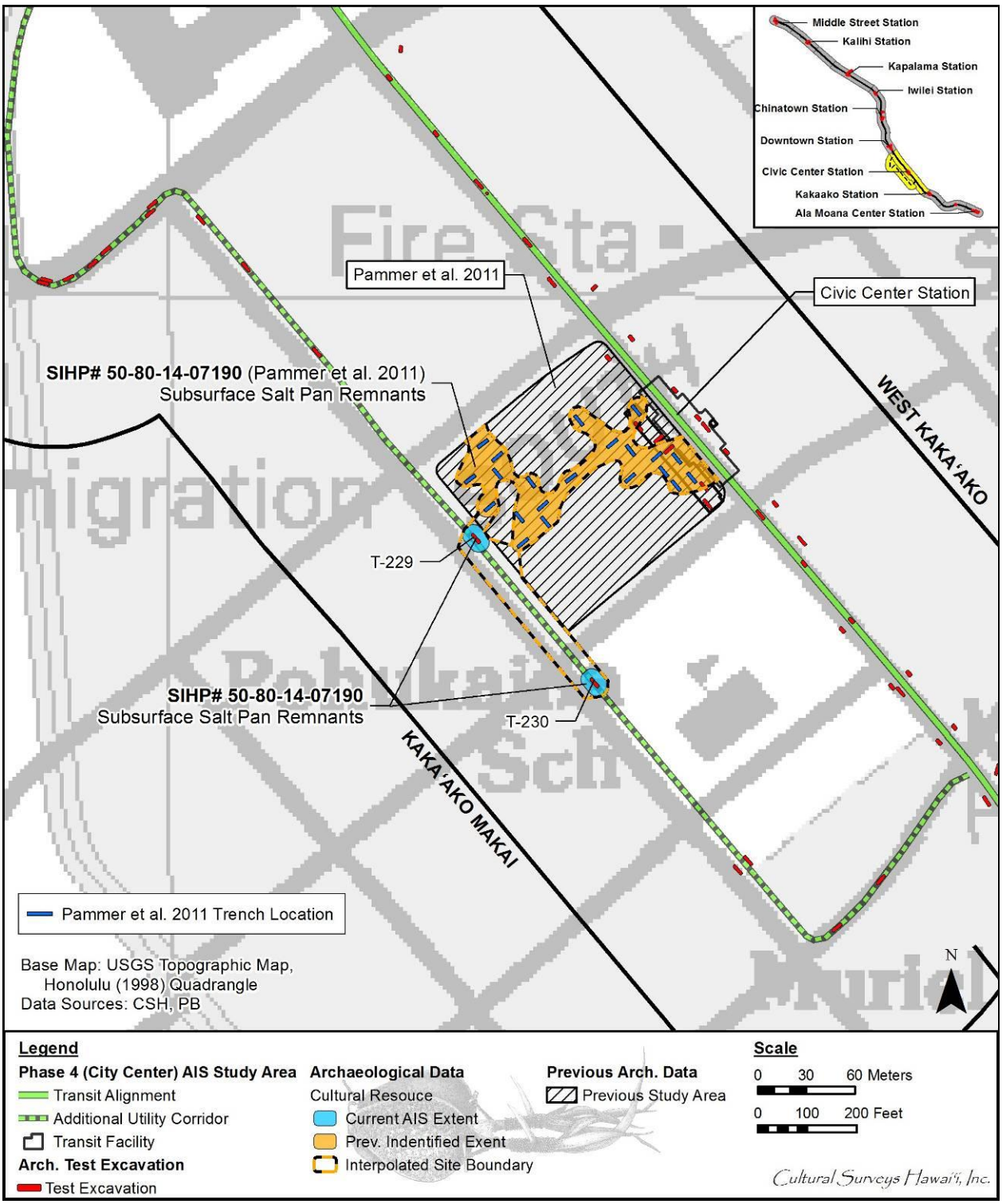


Figure 2. Location of SIHP # -7190 and the Pammer et al. (2011) study area within the West Kaka‘ako and Kaka‘ako Makai Geographic Zones (base map: USGS 1998 Topographic Map of Honolulu Quadrangle)

An 1838 sketch by Auguste Borget titled “Honolulu Salt Pan, near Kaka‘ako,” illustrates long, linear salt pans adjacent to habitation structures (Figure 3).

The 1876 Lyons map of Honolulu depicts 17.6 acres of salt pans that include the majority of the SIHP # -7190 interpolated boundary (Figure 4). Salt pans also are depicted to the northwest and southwest of SIHP # -7190, indicating extensive salt production in the immediate vicinity. In an article on Hawaiian salt works, Thomas Thrum mentions a salt works in Kaka‘ako:

> Honolulu had another salt-making section in early days, known as the Kakaako salt works, the property of Kamehameha IV, but leased to and conducted by E. O. Hall, and subsequently E. O. Hall & Son, until comparatively recent years. This enterprise was carried on very much after the ancient method of earth saltpans as described by Cook and Ellis. [Thrum 1924:116]

Pammer et al. (2011) identified buried salt pan remnants in 21 of 78 test excavations (Figure 5 and Figure 6). The buried salt pan remnants were designated Stratum II in Trench 62; Stratum III in Trenches 11, 24, 25, 27, 28, 30, 47, 60, 63, 64, and 67; Stratum IIIa in Trench 42; Stratum IIIb in Trenches 8, 9, and 20; Stratum IIIc in Trench 45; and Stratum IV in Trenches 23, 44, 49, 61. The salt pan remnants occurred at depths ranging from approximately 1.3 mbs to 1.65 mbs.

The general depositional sequence within test excavations containing SIHP # -7190 consisted of hydraulic fill, and numerous fill strata related to historic and modern land reclamation and urban development atop a burnt trash deposit (SIHP # -7189), atop salt pan remnants (SIHP # -7190), atop the coral shelf and marine sand or lagoonal deposits. Trench 25 by Pammer et al. (2011) illustrates the general depositional sequence above and below the salt pan sediments designated SIHP # -7190 (Figure 7, Figure 8, and Table 1).

Pammer et al. (2011:239) described SIHP # -7190 as follows:

> SIHP # 50-80-14-7190 consists of alternating layers of clay and peat, associated with the pre and post-contact salt pans previously located within the project area. The exact extent of SIHP # 50-80-14-7190 is unclear, as the layer is broken and discontinuous, and it is likely that it extends outside of the project area boundary.
>
> This A horizon was typically observed directly overlying the natural marine clay (gley) and commonly at the same level as the water table, if not slightly below it. The striations of clay and peat suggest that this area was repeatedly used as a land surface which was exposed long enough to accumulate organic debris before being covered with clay. Based on research of the project area, it is suggested that this A horizon is the result of the repeated flooding, drying, scraping and removal of salt during salt production. The clay observed within the peat may have been deliberately placed on the bottom of the salt bed to prevent the salty water from soaking into the ground.

Pammer et al. (2011) reported that wet screening of samples collected from the peat portion of the salt pan remnants yielded organics including two terrestrial snail shells, rootlets, small seeds, and other miscellaneous plant material. They also indicated the small black seeds appeared to come from the *‘Akulikuli* plant or the *olonā* plant (*Touchardia latifolia*).

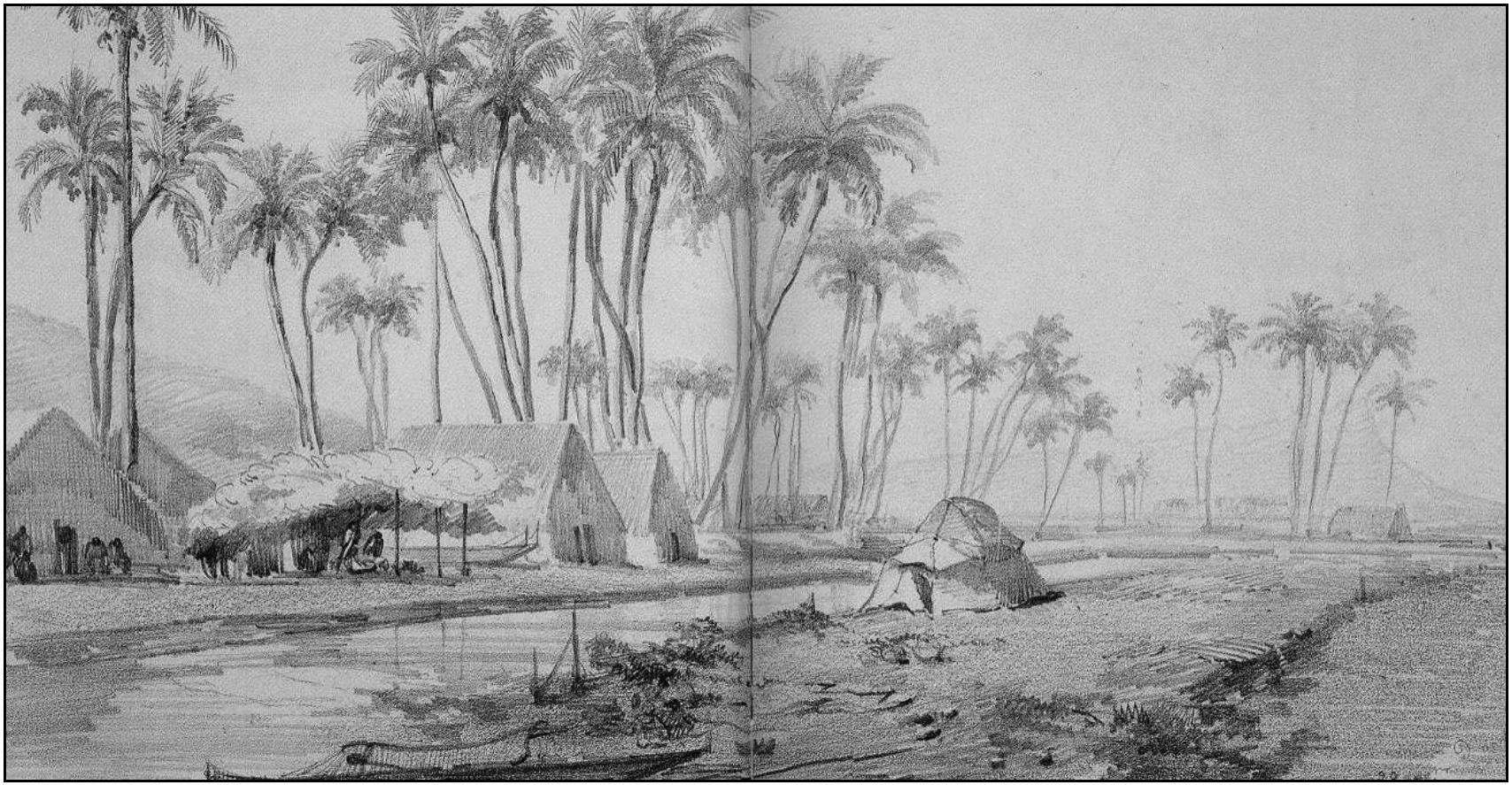


Figure 3. 1838 sketch of “Honolulu Salt Pan, near Kaka‘ako” drawn by a French visitor, Auguste Borget (original sketch at Peabody Essex Museum, Salem, Massachusetts; reprinted in Grant 2000:64-65)

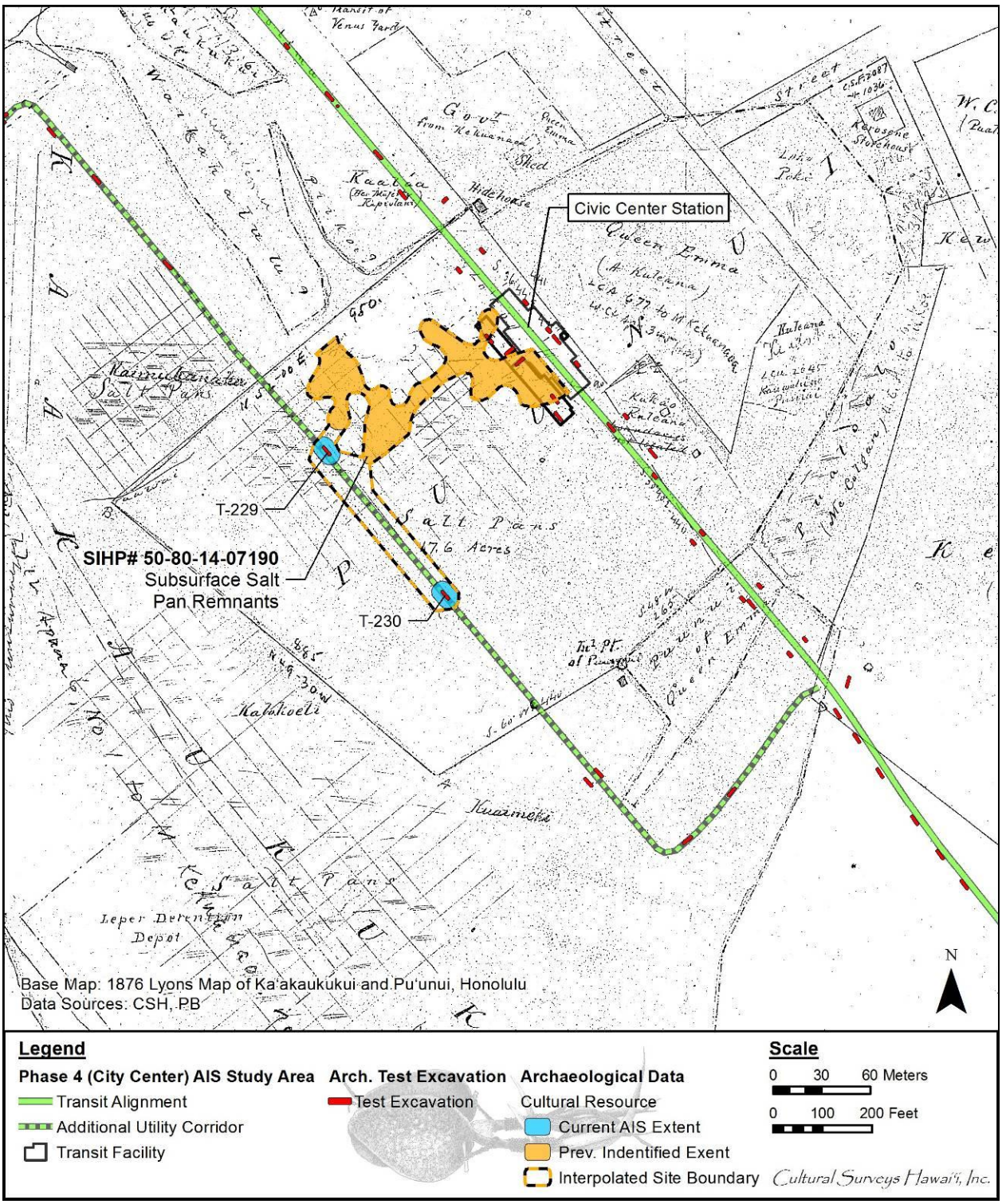


Figure 4. 1876 Lyons map of Honolulu showing salt pans within the SIHP # -7190 cultural resource boundary as well as within the surrounding area

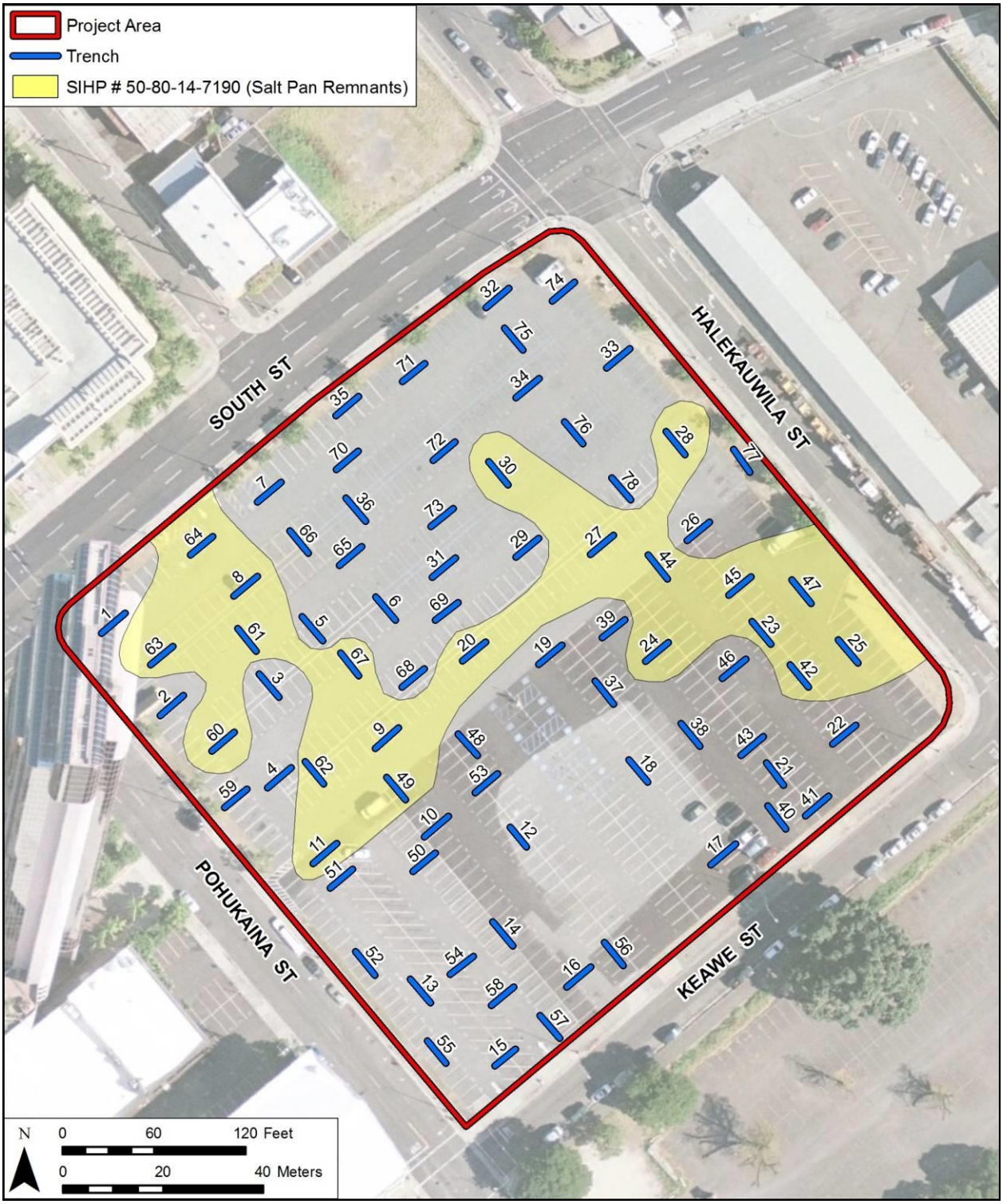


Figure 5. An aerial photograph (source: USGS Orthoimagery 2005) with an overlay of the estimated locations of SIHP # -7190 based on the Pammer et al. (2011, Vol. I:240) study

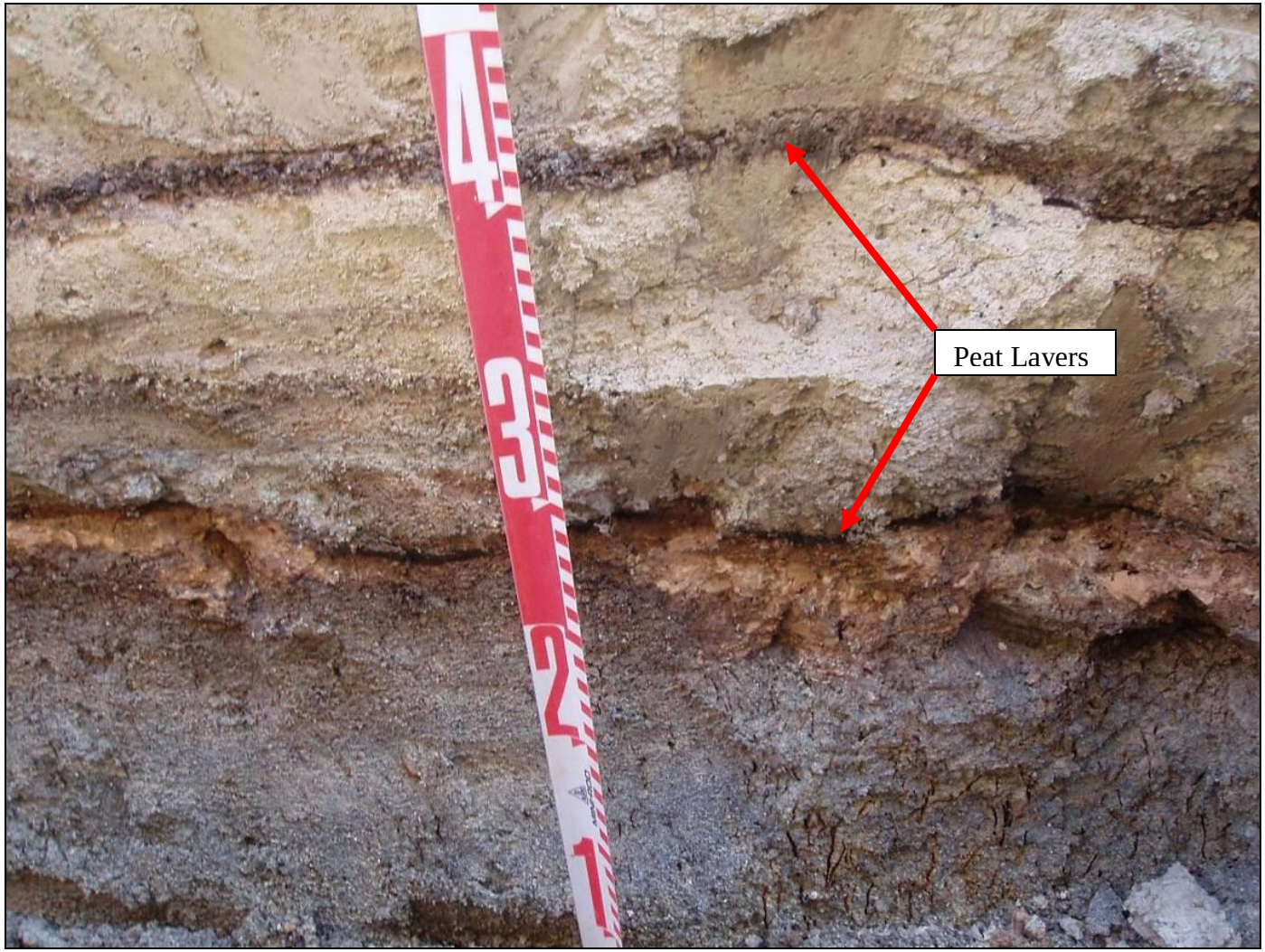


Figure 6. Representative photograph showing alternating clay and peat layers within Trench 45, view to northwest (Pammer et al. 2011, Vol. I:241)

Figure 7. Test Trench 25 southwest wall, view to northwest (Pammer et al. 2011,Vol. II:106)

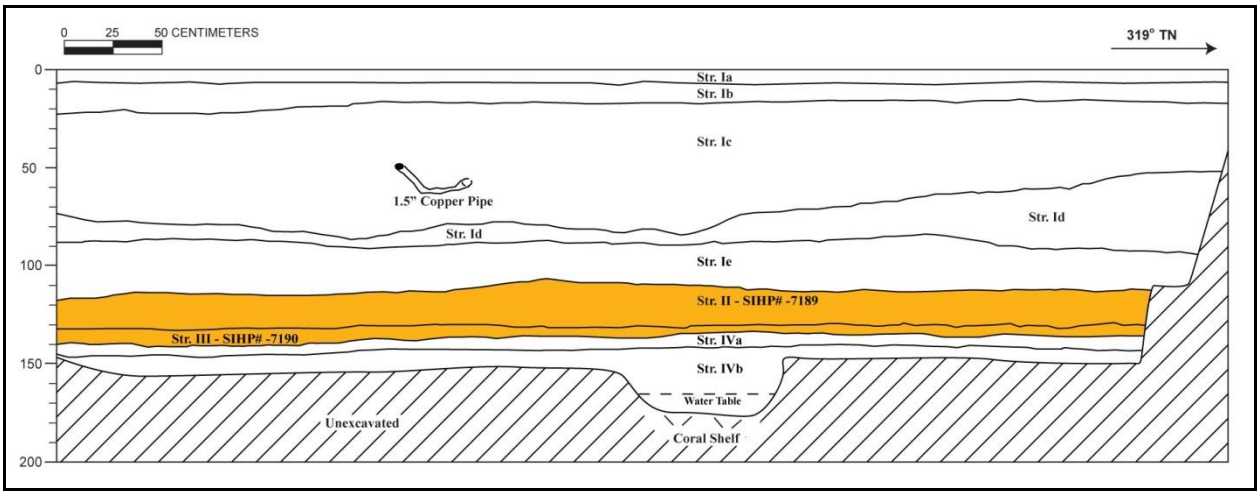


Figure 8. Pammer et al. (2011, Vol. II:104; color not in original) Test Trench 25 southwest wall profile, showing salt pan deposit (SIHP # -7190) overlying natural clay deposits (Strata IVa and IVb)

Table 1. Stratigraphic Description of Test Trench 25 (adapted from Pammer et al. 2011)

Stratum	Depth (cmbs)	Description
Ia	0-6	Asphalt; 10 YR 5/1 gray; structureless (massive); extremely hard dry consistency; indurated cementation; non-plastic; terrestrial origin; very abrupt, smooth lower boundary. Surfacing for parking lot
Ib	6-23	Fill; 10 YR 6/1 gray asphalt; structureless (massive); dry extremely hard consistency; indurated cementation; non-plastic; terrigenous origin; abrupt, smooth lower boundary. Former asphalt surfacing
Ic	15-86	Fill; 10 YR 5/3 brown silty clay loam; weak, fine, crumb structure; dry hard, moist friable consistency; non-plastic; mixed origin; abrupt, wavy lower boundary. Grading fill contains crushed coral, gravel and modern construction and domestic debris
Id	52-94	Fill; 10 YR 8/2 very pale brown crushed coral and very coarse sand; structureless (singlgrain); dry loose, wet loose consistency; non-plastic; marine origin; abrupt, wavy lower boundary. Marine based fill material
Ie	86-118	Fill; 10 YR 7/3 very pale brown sandy clay with multiple mottling of 10 YR 6/1 gray clay and 10 YR 7/6 yellow sand; structureless (singlgrain); moist firm, wet sticky consistency; slightly plastic; marine origin; very abrupt, smooth lower boundary. Hydraulic fill likely associated with dredging of Honolulu Harbor area for covering over Kaka‘ako wetlands
II	106-134	Fill; 10 YR 3/2 very dark grayish brown ash, clay, and burnt debris; weak, fine, crumb structure; moist firm, wet sticky consistency; plastic; terrigenous origin; abrupt, smooth lower boundary. Burnt waste possibly from open air burned debris from 1920s; used as landfill material for covering over Kaka‘ako wetlands; component of SIHP # -7189
III	130-144	A horizon; 10 YR 3/4 dark yellowish brown clay loam ‘peat’; weak, very fine, crumb structure; moist firm, wet slightly sticky consistency; non-plastic; mixed origin; diffuse, smooth lower boundary; contains high amount of fine roots. Possible former historic surface layer associated with the salt pans; component of SIHP # 7190
IVa	134-148	Gley 2 4/5BG dark greenish gray clay; moderate, fine, crumb structure; moist firm, wet sticky consistency; plastic; marine origin; diffuse, smooth lower boundary. Natural marine deposited clay
IVb	140-175 (BOE)	Gley 2 5/5BG greenish gray clayey sand; structureless (singlgrain); moist very friable, wet non-sticky consistency; non-plastic; marine origin; abrupt, smooth lower boundary. Natural (marine) clayey sand deposit overlying hard coral shelf, groundwater level at 178 cmbs

During the current City Center AIS, a natural silty clay deposit containing lenses of peat was identified within T-230 between 1.10 mbs and 1.37 mbs (Figure 9, Figure 10, and Table 2). T-230 was located approximately 76 meters southeast of the SIHP # -7190 cultural resource boundary established by Pammer et al. (2011) (see Figure 2). The silty clay with lenses of peat was designated Stratum II. This marshy deposit overlies marine sand (Stratum III) and the underlying decomposing coral shelf (Stratum IV) and coral shelf substrate (Stratum V). Numerous fill strata (Stratum Ia-Ie) overlie Stratum II. Stratum II of T-230 is consistent with the salt pan remnants described by Pammer et al. (2011).

During the current City Center AIS, a berm of sandy clay with root inclusions was identified within T-229 between 0.78 mbs and 1.35 mbs (Figure 11, Figure 12, and Table 3). T-229 was located approximately 15 m southwest of the SIHP # -7190 cultural resource boundary established by Pammer et al. (2011) (see Figure 2). The sandy clay berm was designated Stratum II and was observed overlying the coral shelf substrate (Stratum III). Asphalt and numerous fill strata (Stratum Ia-Ih) were observed overlying Stratum II. The sandy clay berm within T-229 is interpreted as a remnant salt pan-berm.

The silty clay with lenses of peat (Stratum II) in T-230 and the berm of sandy clay with root inclusions (Stratum II) in T-229 have been included within SIHP # 50-80-14-7190, the previously-identified remnants of salt pans first identified by Pammer et al. (2011). The 1876 Lyons map of Honolulu depicts salt pans present in the location of T-229 and in close proximity to T-230 (see Figure 4). The silty clay with lenses of peat (Stratum II) within T-230 is similar to the “alternating layers of clay and peat” described by Pammer et al. (2011:239) as evidence of repeated salt pan use. The depositional sequence and location of the salt pan remnants in the stratigraphic column are similar in T-229, T-230, and the Pammer et al. (2011) study. T-229 and T-230 have been combined into SIHP # -7190 based on historic documentation of salt pans in the vicinity of both test excavations and similarities to the findings of Pammer et al. (2011) including sediment description and depositional sequence.

SIHP # 50-80-14-7190 consists of previously-identified subsurface salt pan remnants identified in 21 test excavations during the Pammer et al. (2011) study and in two test excavations (T-229 and T-230) during the current City Center AIS. The salt pan remnants include alternating layers of clay and organic peat and one sandy clay berm. SIHP # -7190 was identified at depths ranging from 1.3 mbs to 1.65 mbs during the Pammer et al. (2011) study and between 0.78 mbs and 1.37 mbs during the current City Center AIS. Multiple fill strata were observed overlying the salt pan remnants including burnt trash fill and hydraulic fill strata associated with historic land reclamation as well as urban development. The salt pan remnants occur above the water table and overlie natural marine sediments and the coral shelf.

Based on the guidance of National Register Bulletin No. 15, SIHP # 50-80-14-7190 retains its integrity of location, materials, and workmanship. SIHP # 50-80-14-7190 was previously determined eligible to the Hawai‘i Register under Criterion A (associated with events that have made an important contribution to the broad patterns of our history) and D (has yielded, or is likely to yield information important for research on prehistory or history). Based on the results of the current City Center AIS, and in consultation with the SHPD, CSH recommends that SIHP # 50-80-14-7190 does not possess significance under Criterion A of either the Hawai‘i or National Registers. The salt pan remnants have been altered by historic and modern land reclamation and urban development activities. Accordingly, CSH recommends that this cultural

Figure 9. T-230, Stratum II clay and peat salt pan sediments (SIHP # -7190), view to northeast

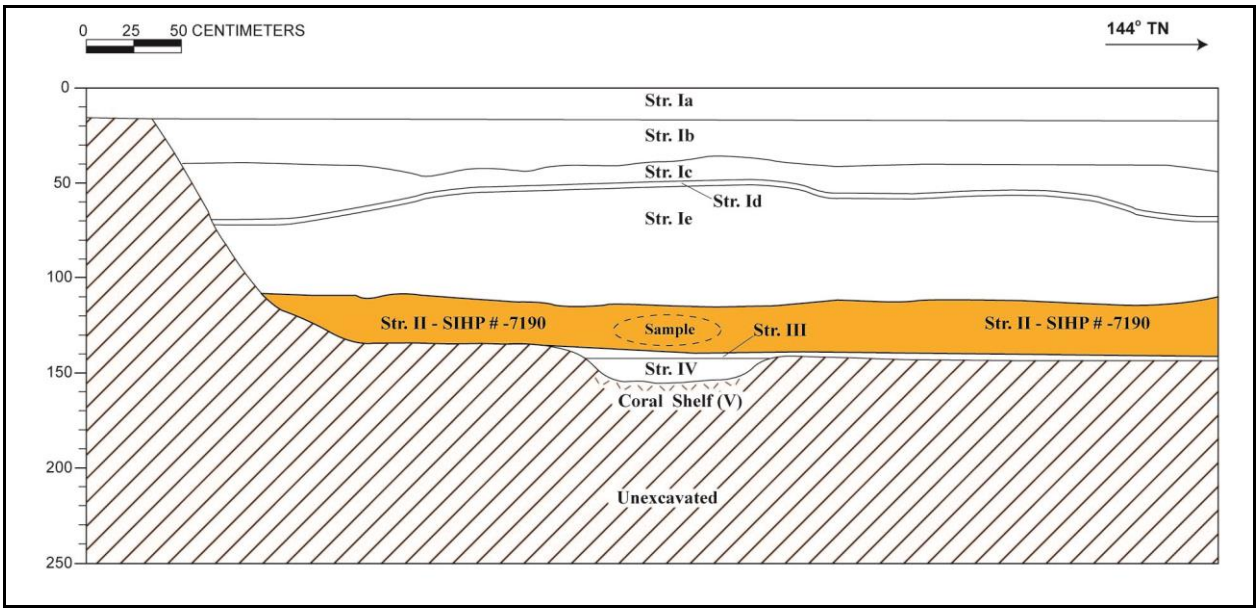


Figure 10. T-230 northeast wall profile, showing Stratum II salt pan sediments (SIHP # -7190)

Table 2. Stratigraphic description for northeast profile in T-230

Stratum	Depth (cmbs)	Description
Ia	0–16	Asphalt
Ib	16–46	Fill; 10 YR 5/1 (gray); extremely gravelly loam; structureless, singlgrain; moist, loose consistency; non-plastic, terrigenous origin; abrupt, smooth lower boundary; gravel base course
Ic	37–70	Fill; 10 YR 6/2 (light brownish gray), extremely gravelly sand; structureless; moist, loose consistence; non-plastic; marine origin; abrupt smooth lower boundary; crushed coral fill
Id	47–70	Fill; 10 YR 7/2 (light gray); clay; structureless, massive; moist, friable consistency; plastic; marine origin; abrupt smooth lower boundary; hydraulic fill and clay lens
Ie	50–115	Fill; 10 YR 5/2 (grayish brown); extremely gravelly sand; structureless, singlgrain; moist, loose consistency; slightly plastic; mixed origin; abrupt lower boundary; crushed coral basalt fill with faunal remains
II	110–137	Natural; GLEY 1 6/N (gray); silty clay; weak, very fine, blocky structure; moist, friable consistency; plastic; mixed origin; clear lower boundary; common, fine roots; low energy marshland sediments, contained lenses of peat and clay; component of SIHP # -7190
III	135–145	Natural; 10 YR 7/2 (light gray) sand; structureless, singlgrain; moist, loose consistency; non-plastic; marine origin; clear smooth lower boundary
IV	145–155	Natural; 10 YR 7/4 (very pale brown); bedrock-limestone; structureless, massive; moist, weakly to strongly cemented; discontinuous consistency; non-plastic; marine origin; lower boundary not observed; decomposing coral; Pleistocene coral shelf

Figure 11. Photograph of T-229, showing possible salt pan berm (component of SIHP # -7190)

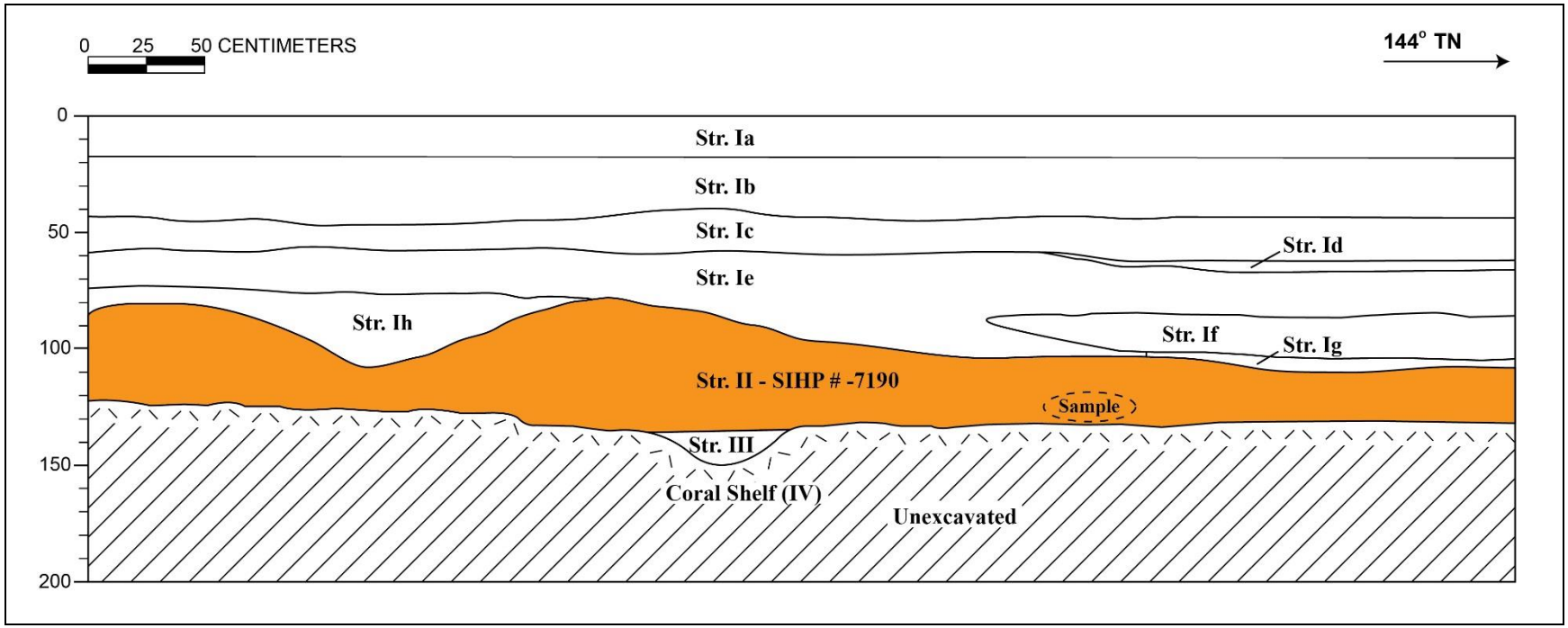


Figure 12. T-229 profile, showing a possible salt pan berm (Stratum II) designated as a component of SIHP # -7190

Table 3. Stratigraphic Description for Northeast Profile in T-229

Stratum	Depth (cmbs)	Description
Ia	0-17	Asphalt
Ib	17-47	Fill; basalt gravel; singlgrain structure; abrupt, smooth lower boundary; base course
Ic	40-63	Fill; 10 YR 3/1 (very dark gray); gravelly sandy loam; structureless, singlgrain; moist, very friable consistency; non-plastic; mixed origin; clear, smooth lower boundary; contained charcoal, glass and ceramic fragments, red brick; gravel and cobble inclusions, consisted of coral and basalt
Id	63-68	Fill; 10 YR 2/1 (black); structureless; burned layer; moist, very friable consistency; non-plastic; terrigenous origin; abrupt, broken/ discontinuous lower boundary; similar texture to trash layer observed in T-232
Ie	60-104	Fill; 10 YR 3/3 (dark brown); sandy clay loam; weak, fine, blocky structure; friable consistency; slightly plastic; mixed origin; clear, wavy lower boundary; contained red brick; contained small coral boulders, cobbles, and gravel
If	85-105	Fill; 10 YR 5/6 (yellowish brown) with 40%, small mottles 10 YR 3/3 (dark brown); extremely cobbly stony sandy silt; structureless, singlgrain; moist, loose consistency; non-plastic; mixed origin; clear, smooth lower boundary; contained coral cobbles and small boulders, red brick, glass and ceramic fragments
Ig	100-110	Fill; GLEY 1 3/5GY (very dark greenish gray); sandy clay; massive structure; slightly sticky consistency; plastic; terrigenous origin; clear lower boundary; contained charcoal/incinerated inclusions; interface with incinerated fill layers with natural gley clay
Ih	73-107	Fill; 2.5 Y 4/3 (olive brown) with 50% very large mottles of 7.5 YR 8/2 (pinkish white), 5% mottles of GLEY 1 3/2 (very dark grayish green clay), and 5% mottles of 5 YR 4/6 (yellowish red); clay loam sandy clay; moderate, medium, blocky structure; wet, slightly stick consistency; plastic; mixed origin; abrupt lower boundary; contained wood, 2 pieces of metal pipe; fill surrounding old pipe containing coral cobbles and boulder, and burn wood; GPR readout showed old excavation, likely for pipe
II	78-135	Natural; 2.5 Y 6/2 (light grayish brown) with mottles of GLEY 1 6/5GY (greenish gray); sandy clay; structureless, massive; moist, firm consistency; plastic; marine origin; clear, broken/discontinuous lower boundary; possible sand berm, natural layer overlying coral shelf with organic (roots) inclusions; component of SIHP # -7190
III	135-148	Natural, horizon; 2.5 Y 6/2 (light grayish brown); decomposing coral shelf; structureless, massive; indurated consistency; non-plastic; marine origin; lower boundary not visible; coral shelf-level

resource maintains integrity to support historic significance only under Criterion D of the Hawai‘i Register and recommends eligibility to the National Register under Criterion D, exclusively for its information potential.

SIHP # 50-80-14-7190 has provided information, and can potentially provide additional information, related to the construction, content, and distribution of buried salt pan remnants within Kaka‘ako. The potential for additional research of SIHP # 50-80-14-7190 warrants the implementation of a data recovery program. Data recovery will emphasize further identification of the buried salt pans including a long, linear excavation within the interpolated boundary of SIHP # -7190. This linear excavation will serve to potentially expose, in profile or cross-section, the full horizontal extent of one or more salt pans including associated raised berms (or partitions) and interior central pans or depressions. The salt pan topography exposed in the excavation walls will be mapped in detail and photographed. Data recovery also will include intensive sampling of salt pan sediments, including separate sampling of alternating layers of clay and peat. Sampling will include the collection of sediment column samples and/or sediment cores that will be incrementally partitioned (1-3 cm increments) and submitted for radiocarbon, palynological analysis, and resistivity testing. The radiocarbon data and/or palynological analysis will be used to interpret the age, content, and duration of use of the salt pan remnants comprising SIHP # 50-80-14-7190. Column samples submitted for resistivity testing will represent the uppermost, middle, and lowermost sections of salt pan sediments and, where possible, separate testing of clay and peat sediments. The uppermost, or evaporative surface, of the salt pan sediments are expected to yield a higher salinity content than the middle and lowermost sections. Following the data recovery program, an archaeological monitoring program at SIHP # 50-80-14-7190 is recommended. Archaeological monitoring will involve recovery of additional data on the depositional sequence and extent of SIHP # 50-80-14-7190 as well as of any exposed raised berms, partitions, or stratigraphic anomalies.

SIHP # 50-80-14-7193

FORMAL TYPE:	Subsurface trash deposit
FUNCTION:	Refuse disposal and possible land reclamation
PREVIOUS DOCUMENTATION:	Burke and Hammatt (2012)
AGE:	Post-Contact (ca. 1930s to late 1950s)
NUMBER OF FEATURES:	N/A
TYPES OF FEATURES:	N/A
DISTRIBUTION:	Approximately 0.03 acres (within current project area), 0.43 acres (total area)
LOCATION:	Within a block bounded by Kapi‘olani Boulevard, Kona, Kona Iki, and Ke‘eaumoku Streets (Kālia Geographic Zone)
TAX MAP KEY:	[1] 2-3-039:011
LAND JURISDICTION:	Samkoo Pacific, LLC
TEST EXCAVATIONS:	T-214

SIHP # 50-80-14-7193 consists of a previously-identified subsurface trash deposit initially identified by Burke and Hammatt (2012) during an archaeological inventory survey for a parcel located at 1391 Kapi‘olani Boulevard. SIHP # -7193 is located within a block bounded by Kapi‘olani Boulevard and Kona, Kona Iki, and Ke‘eaumoku Streets in the Kālia Geographic Zone (Figure 1).

Five of the trenches (Trenches 1-5) in the Burke and Hammatt (2012) AIS are designated as test excavations within the current City Center AIS (Figure 2) as they were placed specifically to maximize subsurface testing within or near the *mauka* portion of the Ala Moana Center Station footprint. Trenches 1 through Trench 5 (Burke and Hammatt 2012) were designated T-214, T-213, T-211, T-210, and T-209, respectively in the current AIS. Burke and Hammatt (2012) identified SIHP # -7193 in nine backhoe test excavations (Trenches 1, 14-17, and 19-22), only one (Trench 1 now T-214) of which is included in the City Center AIS.

Burke and Hammatt (2012) described the general depositional sequence within their archaeological inventory survey area (see Figure 2, Figure 3, and Table 1). The Late Pleistocene calcareous reef (coral reef) was identified at the base of excavation. No stratum designation was provided for the buried coral reef. Overlying the coral reef were natural gleyed and sandy clay layers and a buried A horizon, all of which were subdesignated under Stratum III. The natural gleyed and sandy clay deposits are components of the Kewalo wetland sediments (SIHP # -6636). The buried SIHP # -7193 trash deposit overlies the natural Kewalo wetland sediments (Stratum III). The trash deposit (generally designated as Stratum II) occurred between 0.2-1.71 mbs with

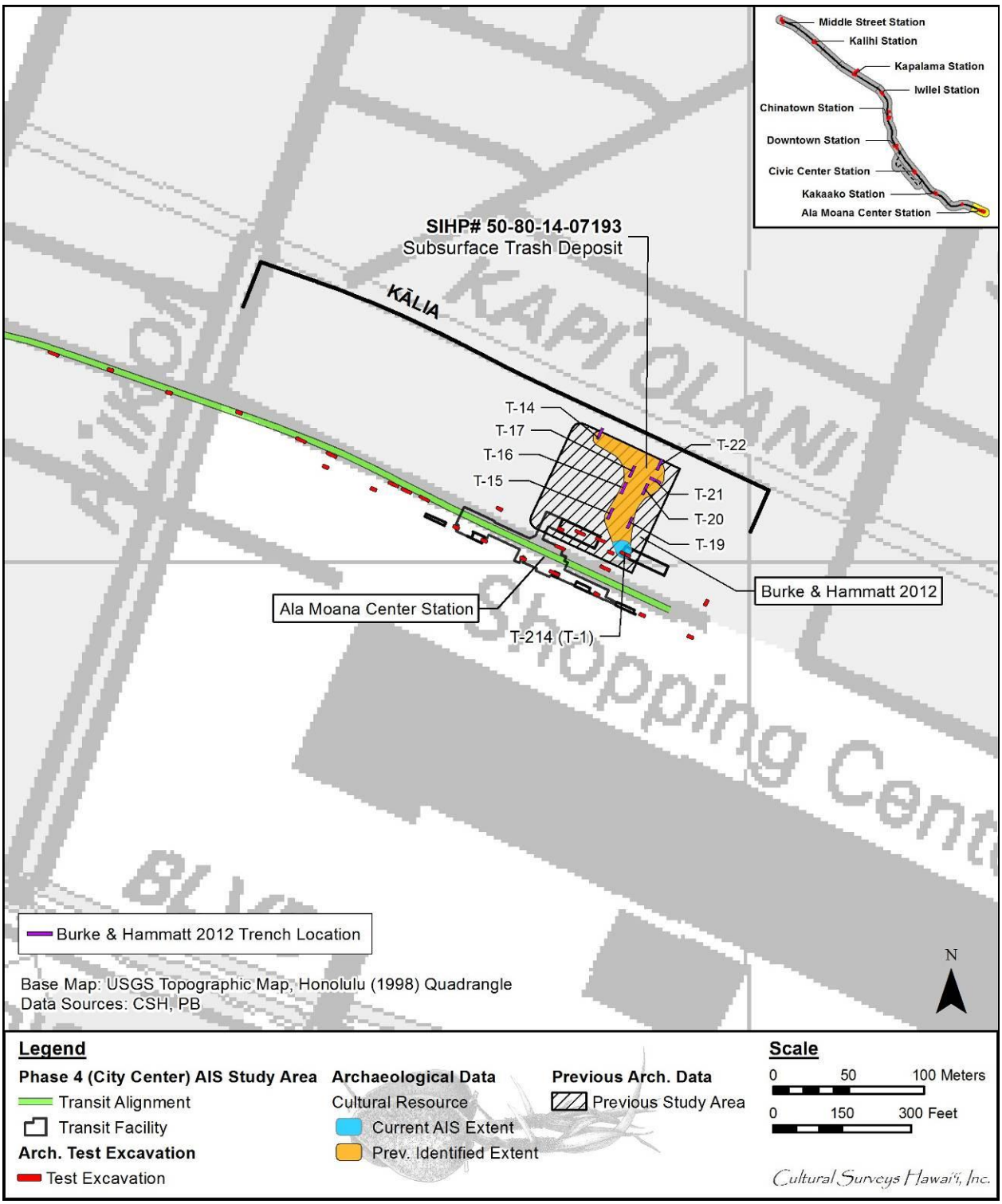


Figure 1. Locations of former- and newly-identified extents of SIHP # -7193 and the location of the Burke and Hammatt (2012) project area and trenches in the Kālia Geographic Zone (base map: 1998 USGS topographic map, Honolulu Quadrangle)

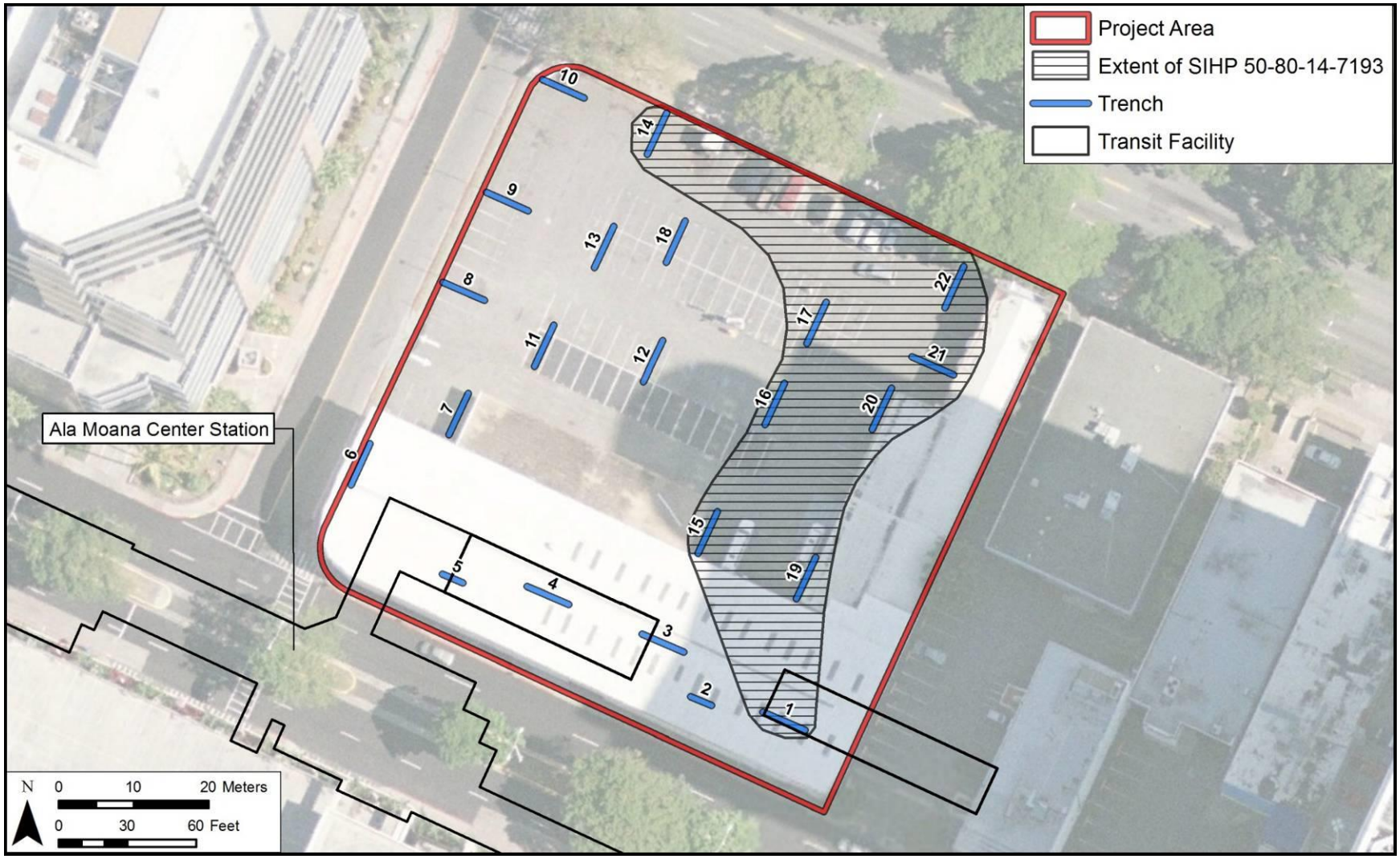


Figure 2. The location of the planned Ala Moana Center Station in relation to the Burke and Hammatt (2012) AIS project area (outlined in red), showing the extent of SIHP # -7193. Trenches 1-5 of the Burke and Hammatt (2012) study were designated as test excavations T-209, T-210, T-211, T-213, and T-214 within the current City Center AIS

Figure 3. North profile of Trench 21 (Burke and Hammatt 2012) showing historic and modern fill layers (Strata Ia-Ih) overlying the trash deposit (Stratum II; SIHP # -7193), view to north

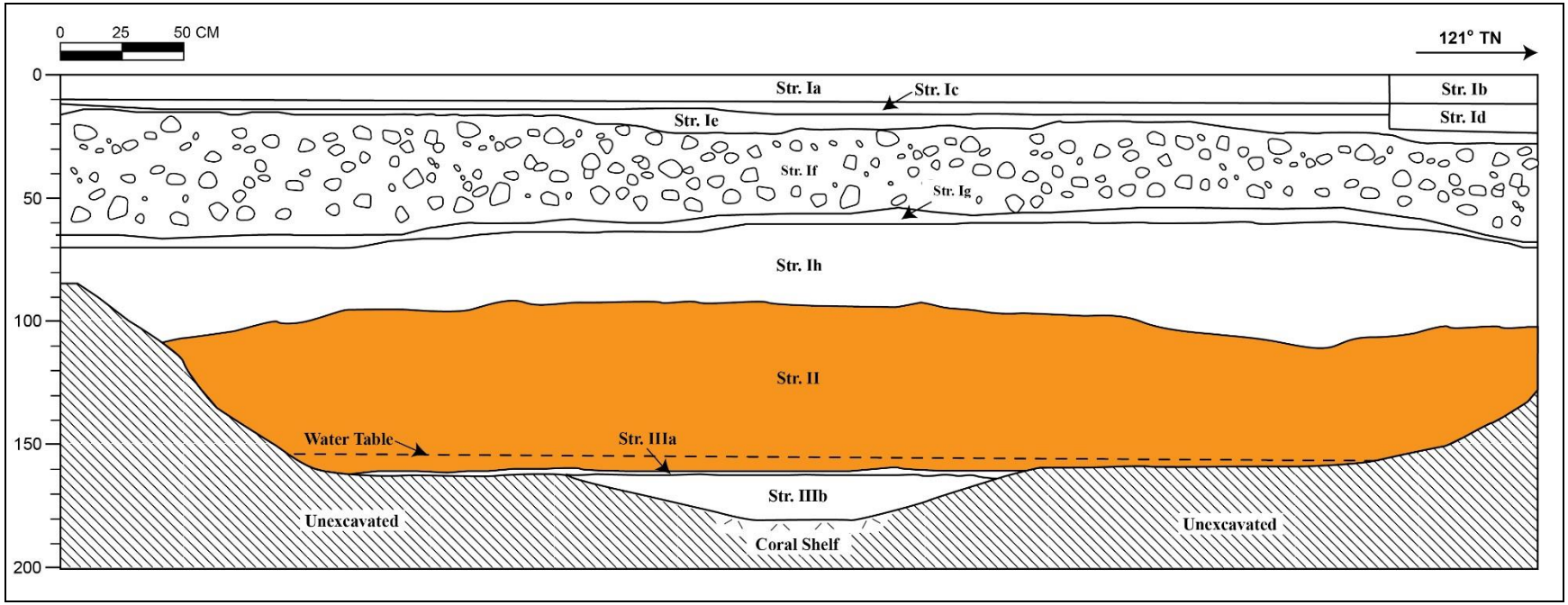


Figure 4. Burke and Hammatt (2012:155) Trench 21 north wall profile showing Stratum II trash deposit (SIHP # -7193) overlying Kewalo wetland sediments (SIHP # -6636), Strata IIIa-b

Table 1. Stratigraphic Summary of Trench 21 (adapted from Burke and Hammatt 2012)

Stratum	Depth (cmbs)	Description of Sediments
Ia	0-10	Asphalt
Ib	0-10	Concrete
Ic	10-14	Crushed coral grading fill; 10YR 8/2, very pale brown.
Id	10-20	Black sand grading fill; 10YR 2/1, black.
Ie	14-25	7.5YR 3/4, dark brown; clay loam; weak, fine, crumb structure; moist, friable consistency; slightly plastic; terrestrial origin; abrupt, smooth lower boundary.
If	16-66	Fill; 7.5YR 2.5/3, very dark brown; stony clay loam; weak, coarse, crumb structure; moist, friable consistency; slightly plastic; terrestrial origin; abrupt, smooth lower boundary; common subangular, basalt boulder inclusions.
Ig	52-71	Fill; 10YR 3/4, dark yellowish brown; sandy loam; weak, fine, crumb structure; moist, loose consistency; non-plastic; terrestrial origin; abrupt, smooth lower boundary.
Ih	56-108	Fill; 7.5YR 2.5/3, very dark brown; clay loam; weak, medium, crumb structure; moist, friable consistency; plastic; terrestrial origin; very abrupt, wavy lower boundary.
II	90-160	Fill; 7.5YR 2.5/3, very dark brown; silt loam; weak, fine, crumb structure; moist, friable consistency; non-plastic; terrestrial origin; abrupt, smooth lower boundary; contained substantial amount of historic debris: glass bottles and jars and ceramic fragments; component of SIHP # -7193.
IIIa	158-161	Natural; 10YR 2/1, black; loamy silt; weak, very fine, blocky structure; moist, very friable consistency; slightly plastic; terrestrial origin; diffuse, wavy lower boundary; consists of decaying organic material; peat; many land snail shell inclusions; old A horizon; component of SIHP # -6636.
IIIb	161-180 (BOE)	Natural; Gley 1 6/5GY, greenish gray; clay; weak, medium, platy structure; wet, sticky consistency; very plastic; mixed origin; lower boundary not visible; gley; overlies coral shelf; component of SIHP # -6636.

an average upper boundary of 0.71 mbs. The trash deposit matrix consisted of dark red, brown, or gray silt loams, loamy sands, loamy clays, or clays. The multiple fill deposits overlying SIHP # -7193 consisted of paved surfaces and construction and grading fills.

The SIHP # -7193 trash deposit contained a substantial amount of historic material (Figure 4 through Figure 6). Observed historic materials included whole and fragmentary glass bottles and jars, metal fragments, wire, ceramics, red bricks and cinder blocks, lumber, nails, metal barrel pieces, and tire remnants. The distribution of specific types of refuse items varied and appeared concentrated in some areas; for example several trenches contained a high percentage of only certain bottles (such as soda, beer, or milk) or telephone mouthpieces. A sample of artifacts was collected from individual test excavations. The collected items consist mainly of complete bottles or identifiable fragments with known datable attributes. Miscellaneous and unidentifiable artifacts were briefly described during subsurface excavations, but not collected.

Burke and Hammatt (2012) collected 115 historic artifacts from the buried SIHP # -7193 trash deposit during their archaeological inventory survey (Table 2 and Figure 7 through Figure 13). The artifacts consisted of 93 glass bottles and containers, 14 ceramic tiles, 2 glass telephone mouthpieces, 1 champagne glass stem, 1 glass jar lid, 1 metal spike, 1 metal washer, 1 metal tablespoon, and 1 ceramic bowl fragment. The telephone mouthpieces were identified as Red Cross germ proof glass mouthpieces designed for “candlestick” style phones used in the 1890s to 1930s. The embossing, “Red Cross Germ Proof Mouthpiece/Patented by E. & L. May 3, 1910,” on the pieces suggests a 1910 or later manufacturing date. The glass bottle assemblage provided a much broader time frame with a date range from post-1906 to ca. 1970. Overall, the majority of artifacts were dated from the ca. 1930s to 1950s.

Within the City Center AIS study, SIHP # -7193 occurs only within a single test excavation, T-214 which was excavated as Trench 1 during the Burke and Hammatt (2012) AIS study. The depositional sequence of T-214 is similar to the sequence described by Burke and Hammatt (2012) for excavations within the limits of SIHP # -7193. The coral reef was exposed at the base of excavation below natural Kewalo wetland sediments (Strata IIIe; components of SIHP#-6636). Overlying the Kewalo wetland sediments were natural sand (Stratum IIIa) and imported fill (Stratum IIb). The SIHP # -7193 trash deposit (Stratum IIa) was encountered between 0.42-1.44 mbs. Five historic or modern fill strata (Ia-Ie) overlie SIHP # -7193 (Figure 4, Figure 15, and Table 3).

A total of 17 artifacts from SIHP # -7193 were collected from T-214 (see Table 2). These artifacts consist of a cosmetic jar dated to 1920 to 1964, a sauce jar dated to 1938, an unidentified jar dated to 1951, and 14 fragmentary ceramic tiles (undated). Additional artifacts observed, but not collected from SIHP # -7193, include red brick tiles, metal fragments, red bricks, cinder blocks, and wires.

SIHP # -50-80-14-7193 is a buried trash deposit first documented by Burke and Hammatt (2012) during their AIS of the 1391 Kapi‘olani Boulevard parcel. They identified SIHP # -7193 within the eastern half and northern extent of their study area (measuring approximately 0.43 acres); the full extent of SIHP # -7193 remains unknown. SIHP # -7193 was observed within nine of their excavations (Trenches 1, 14–17, and 19–22) beneath historic and/or modern fills

Figure 5. Photograph of *mauka* end of Trench 20 showing SIHP # -7193; view to northeast (Burke and Hammatt 2012:150)

Figure 6. Photograph of portion of backdirt pile for Trench 21 showing bottles removed from SIHP # -7193 (Burke and Hammatt 2012:154)

Figure 7. Photograph of *mauka* end of Trench 22 showing material comprising SIHP # -7193, view to northeast (Burke and Hammatt 2012:158)

Table 2. Artifacts collected from SIHP # -7193 during the current City Center AIS (T-214) and during the Burke and Hammatt (2012) study (Trenches 15–22)

Trench #	Artifact Type	Material	Color	Date	Comments
T-214 (City Center)	Cosmetic jar	Glass	Milk glass	1920-1964	H.A. embossed mark (Hazel-Atlas Glass Co.), “Woodberry” mark
T-214 (City Center)	Sauce jar	Glass	Clear	1938	O-I mark (Owens-Illinois Glass Co.)
T-214 (City Center)	Jar	Glass	Clear	1951	O-I mark
T-214 (City Center)	Tile	Ceramic/mortar	9 blue, 2 yellow, 1 green	Unknown	12 tiles; 4.7-x-4.7-x-1.3 cm
T-214 (City Center)	Tile	Ceramic	Floral	Unknown	10-x-10-x-1 cm
T-214 (City Center)	Tile	Ceramic	Geometric	Unknown	10-x-10-x-1 cm
15	Jar	Glass	Clear	1920-1964	H.A. mark
15	Jar	Glass	Clear	Post-1906	
15	Soda bottle	Glass	Clear	Post-1910	“Pacific” embossed mark (Pacific Soda Works); narrow mouth ABM
15	Soda bottle	Glass	Clear	1946	“Royal Soda”
15	Soda bottle	Glass	Clear	Post-1910	Narrow mouth ABM
15	Soda bottle	Glass	Clear	1920-1940	“Kist” embossed mark
15	Quart spirits bottle	Glass	Clear	Post-1920	Narrow mouth ABM
15	Sauce bottle	Glass	Clear	1920-1964	H.A. markings
15	Soda bottle	Glass	Clear	1940s-1950s	Pyroglazed label (ACL)
15	Drinking glass	Glass	Clear	N/A	N.A. mark; long-stemmed champagne glass form

Trench #	Artifact Type	Material	Color	Date	Comments
15	Spirits pint flask	Glass	Clear	Post-1940	O-I mark; stippling
15	Spirits bottle	Glass	Clear	1943	O-I and Duraglas marks; stippling
15	Spirits bottle	Glass	Light green	1943	O-I mark, push up base; made in Cuba
15	Sauce bottle	Glass	Clear	Post-1910	Narrow mouth ABM, external thread; has heat deformation
15	Jar lid	Glass	Clear	Unknown	5.3 cm diameter
15	Medicine or toiletry bottle	Glass	Clear	1935 or 1945	O-I mark
15	Extract bottle	Glass	Clear	1925-1930	“I.P.G.” (Illinois Pacific Glass Corp.) and “J.A.F.” (J. A. Folger) embossed marks
15	Telephone mouthpiece	Glass	Clear	Post-1910	Red Cross Germ Proof Glass Mouthpiece Co.; 2 mouthpieces
15	Beer bottle	Glass	Emerald green	1944	Duraglas and O-I marks
15	Beer bottle	Glass	Emerald green	Post-1910	Narrow mouth ABM
15	4/5 quart spirits bottle	Glass	Clear	1920-1964	H.A. mark
15	Jar	Glass	Clear	1939	O-I and “Best Foods” marks
15	Jar	Glass	Clear	Unknown	“Best Foods” embossed mark; design patent: 80918
15	Soda bottle	Glass	Clear	1946	“Royal Soda”
15	Soda/beer bottle	Glass	Clear	1932 or 1942	O-I mark
15	Soda/beer bottle	Glass	Clear	1933 or 1943	O-I mark

Trench #	Artifact Type	Material	Color	Date	Comments
15	Soda/beer bottle	Glass	Clear	Post-1910	Narrow mouth ABM
15	Jar	Glass	Amber	1944	Duraglas and O-I marks
16	Ice cream jar	Glass	Clear	Post-1933	Pyroglazed
16	4/5 quart spirits bottle	Glass	Clear	Post-1940	O-I mark; stippling
16	4/5 quart spirits bottle	Glass	Clear	1938-1977	A.H. embossed mark (Anchor Hocking Glass Co.)
17	Half pint milk bottle	Glass	Clear	Post-1933	Pyroglazed; 2 bottles
17	Quart milk bottle	Glass	Clear	1944	“Dairymen’s Association” label; Duraglas and O-I marks
17	Quart milk bottle	Glass	Clear	Post-1940	Pyroglazed; Duraglas mark
17	Beer bottle	Glass	Clear	1937	O-I mark
17	Beer bottle	Glass	Clear	Post-1910	Narrow mouth ABM
17	Beer bottle	Glass	Clear	Post-1940	“Ball” embossed mark (Ball Glass Mfg. Co.); stippling
17	Soda bottle	Glass	Light green	1950s	“Royal Crown” embossed mark; O-I mark
17	Soda bottle	Glass	Light green	1950s	“Coca-Cola” embossed mark
17	Sauce jar	Glass	Clear	1920-1964	H.A. mark
17	Small jar	Glass	Clear	Post-1906	
17	Household bottle	Glass	Clear	1934-1968	Overlapping GC mark (Glass Containers Corp.)

Trench #	Artifact Type	Material	Color	Date	Comments
17	Spike	Metal	N/A	Unknown	Possibly railroad related; 7 1/2 in long
17	Washer	Metal	N/A	Unknown	2.1 cm diameter
17	Spoon	Metal	N/A	Unknown	Dinner-sized, 14.2 cm long
17	Bowl fragment	Ceramic	White	Unknown	Marking is unclear
20	Household bottle	Glass	Clear	1942	O-I mark
20	Beer bottle	Glass	Amber	1934 or 1944	O-I mark
20	Beer bottle	Glass	Clear	1942	O-I mark
20	Beer bottle	Glass	Dark green	1936 or 1946	O-I mark
20	Beer bottle	Glass	Amber	1934 or 1944	O-I mark
20	Beer bottle	Glass	Amber	1944	O-I mark
20	Beer bottle	Glass	Amber	1944	O-I mark
20	Beer bottle	Glass	Clear	1942	O-I mark
20	Beer bottle	Glass	Amber	1933 or 1943	O-I mark
20	Beer bottle	Glass	Amber	1937	O-I mark
20	Soda bottle	Glass	Clear	1934 or 1944	O-I mark
20	Beer bottle	Glass	Clear	1938-1969	Armstrong Cork Co. (Glass Division) embossed mark
20	Beer bottle	Glass	Clear	1940-1969	Armstrong Cork Co. (Glass Division) embossed mark; stippling
20	Beer bottle	Glass	Clear	1940-1969	“Ball” embossed mark; stippling
20	Soda bottle	Glass	Clear	1950-1955	“Coca-Cola” embossed mark

Trench #	Artifact Type	Material	Color	Date	Comments
20	Jar	Glass	Clear	Post 1906	Golden Mustard
20	Beer bottle	Glass	Clear	1934-1968	Overlapping GC mark (Glass Containers Corp.)
20	Soda bottle	Glass	Green	1939	O-I mark
21	Soda bottle	Glass	Emerald green	1943	“7-Up” ACL; bottled in Honolulu; O-I mark
21	Soda bottle	Glass	Aqua	Early to mi1950s	“Coca-Cola” embossed mark; 3 bottles
21	Soda bottle	Glass	Clear	1932 or 1942	O-I mark
21	Beer bottle	Glass	Clear	1915-1980	Obear Nestor mark; 2 bottles
21	Beer bottle	Glass	Clear	1941	“Regal Amber Brewing Co.” embossed mark; O-I mark; stippling
21	Beer bottle	Glass	Clear	Post-1910	“Primo Brewing Corp” mark; narrow mouth ABM
21	Jar	Glass	Clear	1920-1964	H.A. mark
21	Jug	Glass	Clear	Post-1906	Wide mouth
21	Quart bottle	Glass	Amber	Circa 1958	“Palolo” embossed mark; M.G. mark (Maywood Glass Co.)
21	Beer bottle	Glass	Amber	1938	O-I mark
21	Beer bottle	Glass	Amber	Circa 1970	N.W. mark (Northwestern Glass Co.)
21	Beer bottle	Glass	Clear	Post-1910	Narrow mouth ABM; double diamond mark
21	Beer bottle	Glass	Green	1936 or 1946	O-I mark
21	Beer bottle	Glass	Clear	1942	O-I and Duraglas marks; stippling

Trench #	Artifact Type	Material	Color	Date	Comments
21	Beer bottle	Glass	Amber	1942	O-I and Duraglas marks; stippling
21	Ice cream jar	Glass	Clear	1933	Pyroglazed “Dairymen’s Association”
22	1/2 pint milk bottle	Glass	Clear	1942	O-I mark
22	1/2 pint milk bottle	Glass	Clear	Post-1933	Pyroglazed “Dairymen’s Association”
22	1/2 pint milk bottle	Glass	Clear	Post-1940	Duraglas mark
22	1/2 pint milk bottle	Glass	Clear	Post-1933	Pyroglazed
22	Quart milk bottle	Glass	Clear	Post-1933	Pyroglazed
22	Beer bottle	Glass	Amber	1944	O-I mark
22	Beer bottle	Glass	Clear	1942	O-I mark
22	Beer bottle	Glass	Clear	1933-1954	O-I mark
22	Beer bottle	Glass	Clear	1942	O-I and Duraglas mark
22	Beer bottle	Glass	Clear	1942	O-I and Duraglas mark
22	Quart milk bottle	Glass	Clear	1931 or 1941	O-I and Duraglas mark; pyroglazed “Dairymen’s Association”
22	Beer bottle	Glass	Clear	1933-1954	O-I and Duraglas mark
22	Beer bottle	Glass	Clear	1920-1964	H.A. mark

Figure 8. Sample of soda bottles, from left to right: ca. 1958, clear, “Palolo” embossed, soda bottle; 1943, green, “7-Up” painted label, soda bottle (Canada Dry Bottling Co.); early to mi1950s, aqua, “Coca-Cola” embossed, soda bottle (Burke and Hammatt 2012:169)

Figure 9. Sample of soda bottles, from left to right: 1950s, clear, “Royal Crown” painted label, soda bottle; 1920-1940, clear, “Kist” embossed, soda bottle; 1946, clear, “Royal Soda” embossed, soda bottle; post ca. 1920, green, “Pacific Soda Works” embossed, soda bottle (Burke and Hammatt 2012:170)

Figure 10. Sample of spirits (ale, beer, whiskey, etc.) bottles, from left to right: post-1940, clear, spirits bottle; 1942, amber, long-neck beer bottle; 1936/1946, green, short-neck, beer bottle; post-1940, clear, short-neck, beer bottle with stippling; 1948, amber, short-neck, beer bottle (Burke and Hammatt 2012:171)

Figure 11. Sample of milk bottles, from left to right: post-1933, “Dairymen’s Ice Cream” painted label, milk bottle fragment; post-1933, one half pint, pyroglazed, “Dairymen’s Association,” milk bottle; post-1940, one quart, pyroglazed, “Dairymen’s Association,” milk bottle; 1944, one quart, pyroglazed, “Dairymen’s Association” milk bottle (Burke and Hammatt 2012:172)

Figure 12. Sample of wide mouth jars, from left to right, top to bottom: 1925-1930, clear, rectangular jar embossed “JAF” for J. A. Folgers spices and extracts; 1939, clear, round jar, embossed “Best Foods;” 1920-1964, milk glass, round jar, probably cold cream, embossed “Woodbury;” post-1906, clear, barrel-shaped jar (Burke and Hammatt 2012:173)

Figure 13. Sample of “Red Cross Germ Proof Mouthpiece/Patented by E. & L. May 3, 1910” for use with candlestick telephones (Burke and Hammatt 2012:173)

Figure 14. Photograph of a candlestick phone with a Red Cross germ-proof mouthpiece (from Wolff 1996)

Figure 15. Southwest profile of T-214, view to south

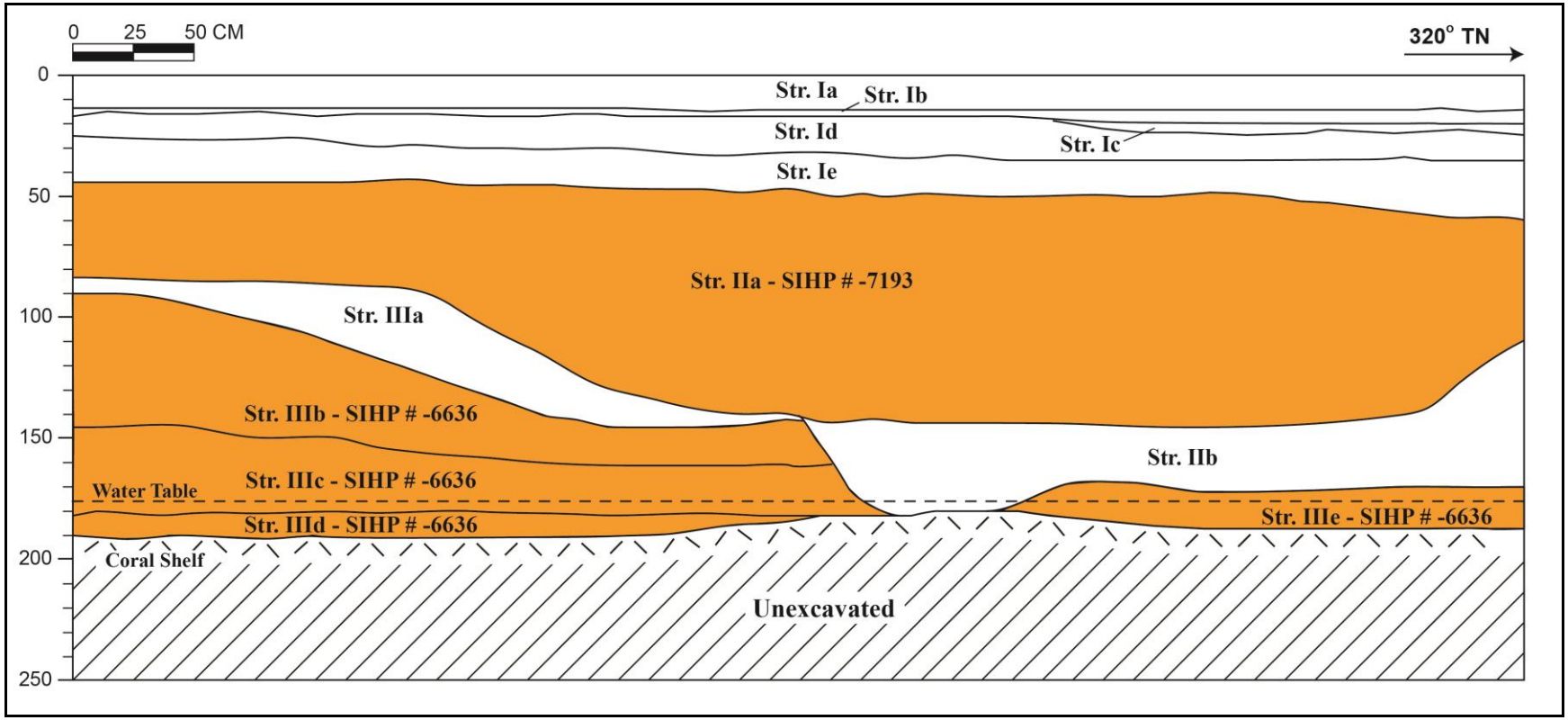


Figure 16. T-214 southwest wall profile, showing buried trash deposits (SIHP # -7193), Stratum IIa

Table 3. Stratigraphic Description of the Southwest Profile of T-214

Stratum	Depth (cmbs)	Description
Ia	0-14	Concrete
Ib	25-59	Fill; 7.5 YR 3/3, dark brown; silt loam; weak, fine, crumb structure; moist, friable consistency; non-plastic; terrestrial origin; very abrupt, wavy lower boundary; crushed coral inclusions; grading fill.
Ic	19-24	Asphalt
Id	15-35	Fill; 5 Y 8/2 (very pale brown); extremely gravelly sand; structureless, singlgrain; moist, friable consistency; non-plastic; abrupt, smooth lower boundary; crushed coral base course
Ie	14-19	Fill; 5 YR 3/3, dark reddish brown; gravelly silt loam; weak, very fine, crumb structure; moist, very friable consistency; slightly plastic; terrestrial origin; abrupt, wavy lower boundary; imported fill.
IIa	42-144	Fill; 5 YR 4/2, dark reddish gray; gravelly sand; fine to coarse; singlgrain; moist, loose consistency; non-plastic; marine origin; clear, wavy lower boundary; contains red brick tiles, metal fragments, ceramic tiles, glass jars, red bricks, cinder blocks, and wires; component of SIHP # -7193.
IIb	109-180	Fill; 5 YR 3/3, dark reddish brown; gravelly silt loam; moderate, fine, crumb structure; moist, friable consistency; slightly plastic; terrestrial origin; diffuse, wavy lower boundary; imported fill.
IIIa	83-145	Natural; 10 YR 6/3, pale brown; sand; fine; singlgrain; moist, loose consistency; non-plastic; marine origin; diffuse, wavy lower boundary; partially disturbed.
IIIb	89-161	Natural; 10 YR 5/2, grayish brown; clay; moderate, medium, platy structure; moist, friable consistency; very plastic; mixed origin; diffuse, wavy lower boundary. Component of SIHP # -6636.
IIIc	144-180	Natural; Gley 2 6/10 G, greenish gray; clay; weak, medium, platy structure; moist, very friable consistency; plastic; mixed origin; diffuse, smooth lower boundary; gley. Component of SIHP # -6636.
IIId	180-190	Natural; Gley 1 7/5 GY, light greenish gray; sandy clay; fine; weak, medium, platy structure; moist, friable consistency; slightly plastic; mixed origin; lower boundary not visible; gley; overlies coral shelf. Component of SIHP # -6636.
IIIe	168-186	Natural; 10 YR 2/1, black; silt loam; weak, fine, platy structure; wet, slightly sticky consistency; non-plastic; terrestrial origin; abrupt, wavy lower boundary; many fine to medium roots; consists of decaying organic material; peat; old A horizon; overlies coral shelf. Component of SIHP # -6636.

and overlying the natural Kewalo wetland sediments (SIHP # -6636). Burke and Hammatt (2012) collected 115 artifacts indicating that SIHP # -7193 likely was used as a trash disposal area through the late 1950s. SIHP # -7193 was represented within only one of the City Center excavations (T-214). It was encountered at 0.42 mbs and the diagnostic artifacts were identified as dating from the early- to mid-twentieth century. SIHP # -7193 is interpreted as a buried remnant trash deposit likely related to land reclamation activities dating from the early- to mid-twentieth century.

SIHP # 50-80-14-7193 was previously determined ineligible for listing on either the Hawai‘i or National Registers by Burke and Hammatt (2012). However, SIHP # -7193, a buried trash deposit, maintains the same integrity of location, design, and materials as SIHP # 50-80-14-7189. Based on the results of the current City Center AIS study, and in consultation with SHPD, CSH recommends that SIHP # -7193 retains sufficient integrity to recommend eligibility to both the Hawai‘i Register and the National Register under Criterion D, exclusively for its information potential.

SIHP # 50-80-14-7193 has provided information, and can provide additional information, on early-to mid-twentieth century reclamation and large scale municipal trash disposal efforts. The potential for further identification and impact of additional exposures of this and other buried burnt trash deposits within the project APE warrants implementation of an archaeological monitoring program. Archaeological monitoring will recover data on all locations of SIHP # -7193 encountered during construction. If encountered, documentation will include plan and/or profile maps, GPS location, photographs, and sample collection. These data will be used to better characterize the content and depositional age of SIHP # -7193 and facilitate comparison with other trash disposal features.

SIHP # 50-80-14-7197

FORMAL TYPE:	Subsurface cultural deposit and pit feature
FUNCTION:	Habitation and former land surface
PREVIOUS DOCUMENTATION:	Pammer et al. (2011)
AGE:	Late pre-Contact to early post-Contact
NUMBER OF FEATURES:	1
TYPES OF FEATURES	1 fire pit
DISTRIBUTION:	Approximately 0.03 acres (previously identified)
LOCATION:	Southwest (*makai*) of Halekauwila Street, between South and Keawe Streets (West Kaka‘ako Geographic Zone)
TAX MAP KEY:	[1] 2-1-030: 001 (Pammer et al. 2011)
LAND JURISDICTION:	Kamehameha Schools
TEST EXCAVATIONS:	None

SIHP # 50-80-14-7197 is a previously-identified buried culturally-enriched A horizon and an associated firepit feature located southwest (*makai*) of Halekauwila Street, between South and Keawe Streets within the West Kaka‘ako Geographic Zone (Figure 1). This archaeological cultural resource was first identified by Pammer et al. (2011) during an archaeological inventory survey for the Block 2 Parking Lot located between the HRTP alignment along Halekauwila Street and an additional HRTP utility corridor along Pohukaina Street as well as a portion of the Civic Center Station footprint (Figure 2).

Pammer et al. (2011) identified a portion of a subsurface clayey sand A horizon (designated as SIHP # -7197) within Test Trench 26 (Figure 3). A fire pit was identified beneath the A horizon (Stratum III) in a clayey sand deposit (Stratum Iva). The firepit was designated SIHP # -7197 Feature 1 (see Figure 3).

The stratigraphy documented in Trench 26 consisted of historic and modern fill deposits (Strata Ia-Id) overlying a burnt trash deposit (Stratum IIa), overlying several earlier historic fill deposits (Strata IIb and IIc). A truncated A horizon (Stratum III) occurred below the lower fills. Below Stratum III the deposits consisted of natural marine sediments (Strata Iva and IVb) and the coral shelf at the base of excavation (Figure 4, Figure 5, and Table 1).

Pammer et al. (2011:243) described SIHP # 50-80-14-7197 as a late pre-Contact/early post-Contact cultural layer (Stratum III) and associated firepit (Feature 1). This historic property was observed only within Test Trench 26, overlying a pocket of undisturbed sand (Stratum Iva). This cultural layer represents one of only a few portions of the project area not disturbed by post-Contact activities, including the salt pans (SIHP # - 7190). Feature 1 is of a firepit containing fircracked rock, minimal shell, and a high concentration of charcoal. It was identified within Stratum IVa between 0.87 and 1.02 mbs. The firepit likely originated from the cultural layer (Stratum III); its upper matrix was lighter in color than the more charcoal-rich lower matrix. The firepit measured about 0.4 m across in profile. A charcoal sample from Feature 1 was identified as a probable fern stem (likely a native, short-lived shrub), or a longer-lived palm (not coconut or

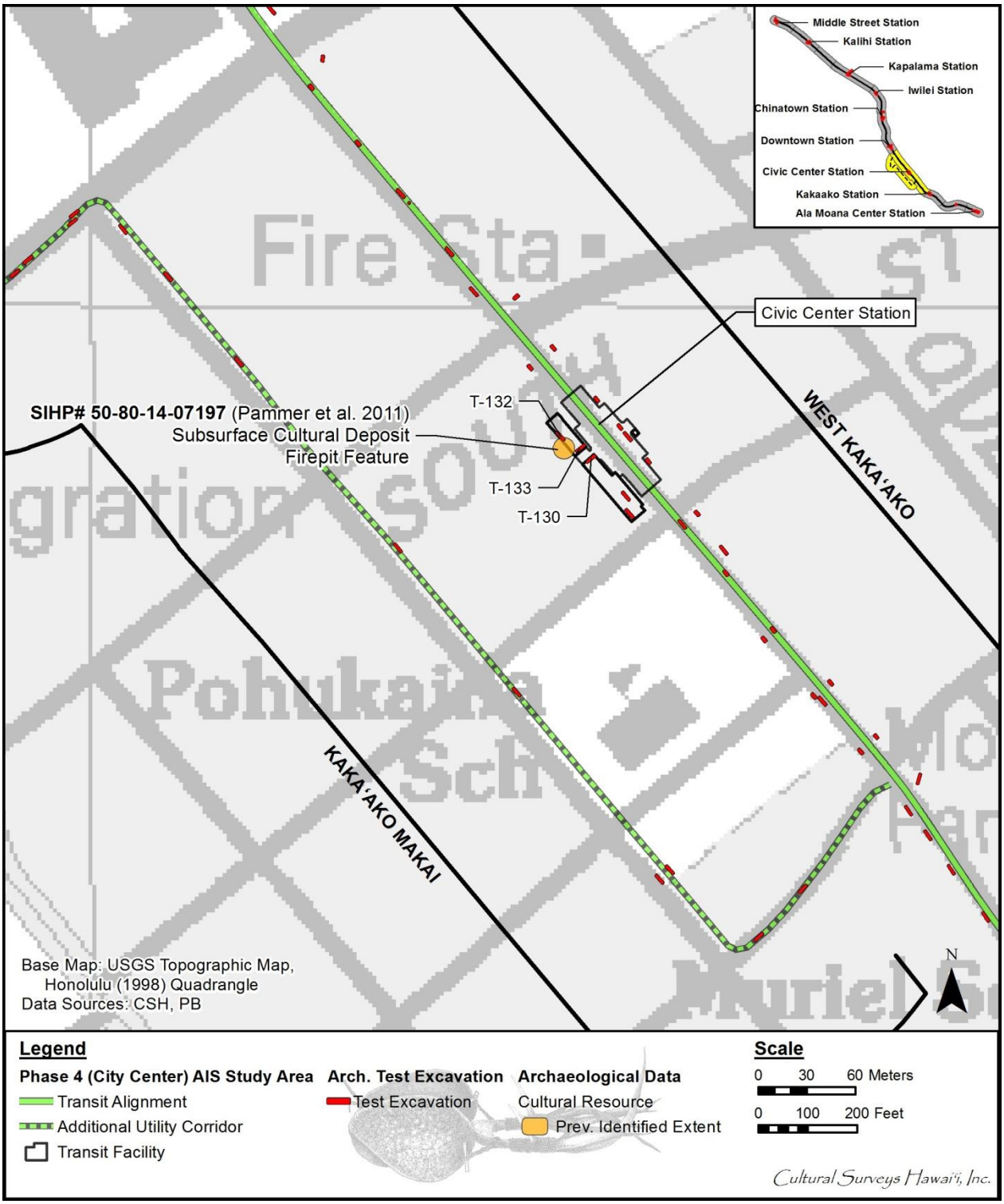


Figure 1. Location of SIHP # -7197 within the West Kaka‘ako Geographic Zone (base map: USGS 1998 Topographic Map of Honolulu Quadrangle)

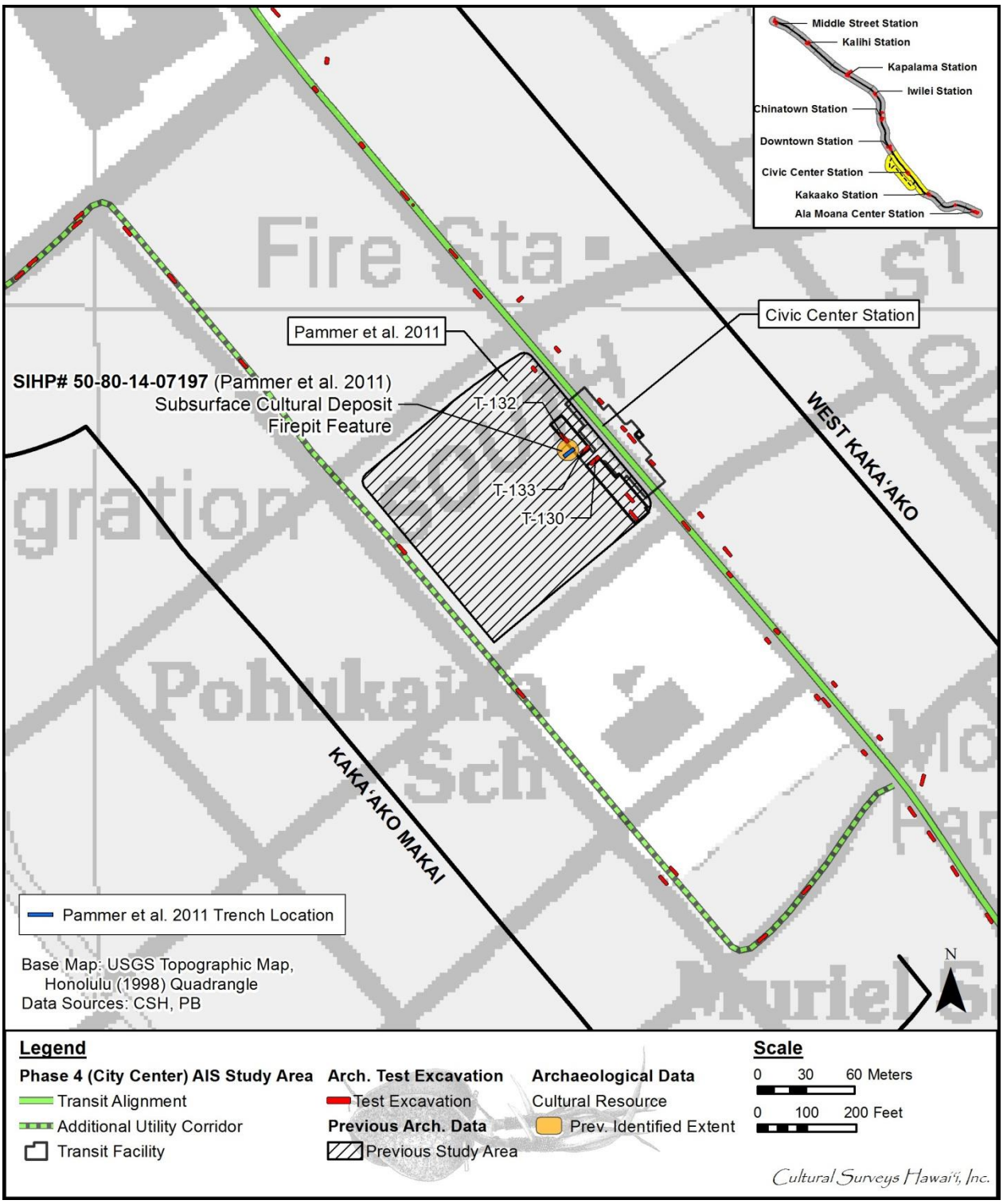


Figure 2. Location of SIHP # 50-80-14-7197 and the Pammer et al. (2011) study area within the West Kaka‘ako Geographic Zone (base map: USGS 1998 Topographic Map of Honolulu Quadrangle)

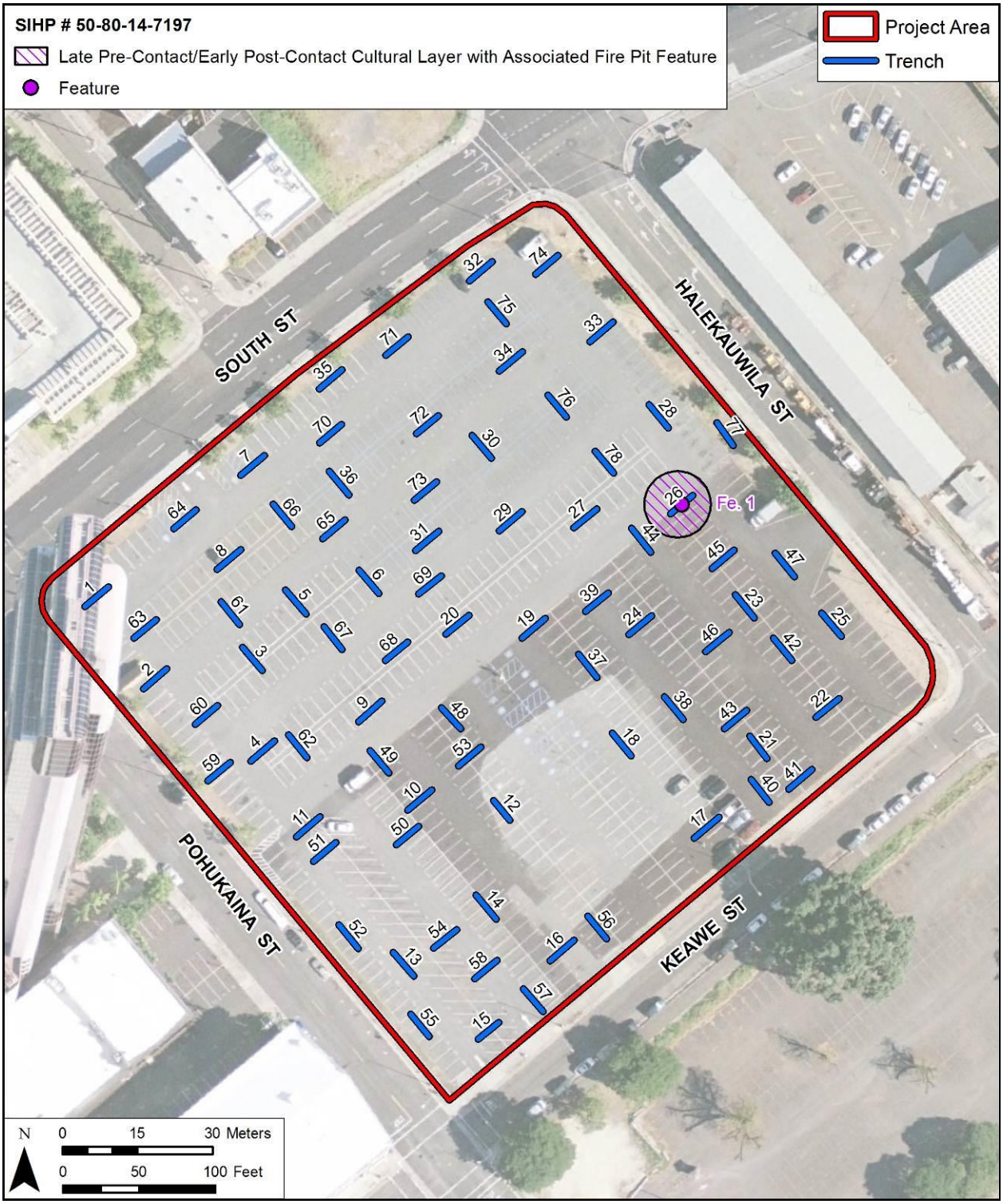


Figure 3. Pammer et al. (2011, Vol. I:244) study area showing the location of buried cultural layer (SIHP # -7197) and firepit (SIHP # -7197 Feature 1)

Figure 4. Photograph of northeast end of Test Trench 26 (adapted from Pammer et al. 2011, Vol. II:111)

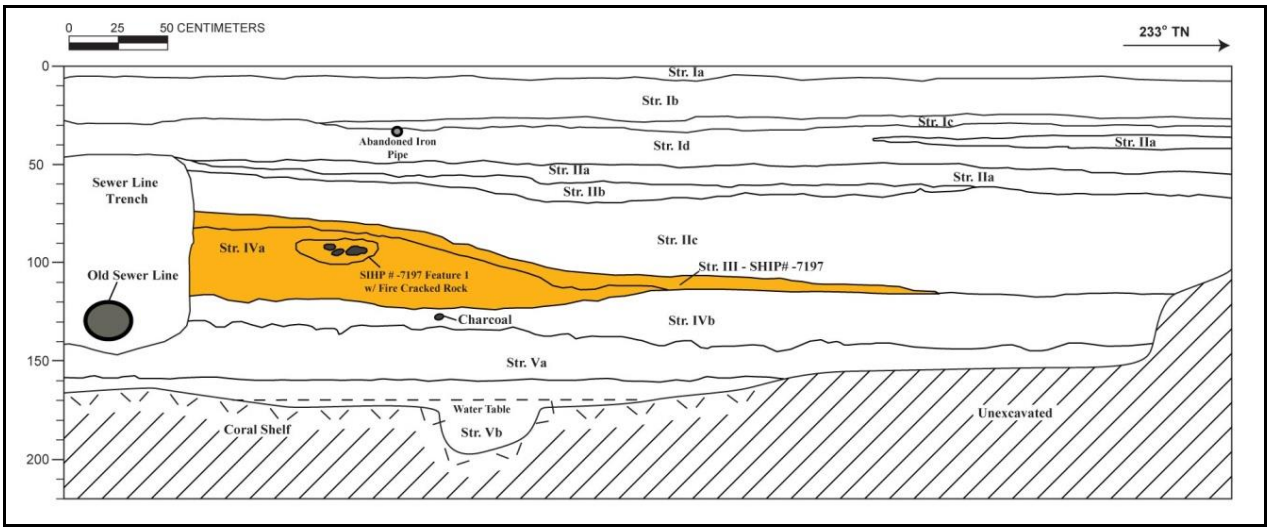


Figure 5. Pammer et al. (2011, Vol. II:109; color not in original) Test Trench 26 southwest wall profile, showing cultural layer (SIHP # -7197), Stratum III, and associated firepit (SIHP # -7197 Feature 1)

Table 1. Test Trench 26 Stratigraphic Description (adapted from Pammer et al. 2011)

Stratum	Depth (cmbs)	Description
Ia	0-6	Asphalt; 10 YR 5/1 gray; structureless (massive); extremely hard dry consistency; indurated cementation; non-plastic; terrestrial origin; very abrupt, smooth lower boundary. Surfacing for parking lot
Ib	6-30	Fill; 10 YR 5/3 brown gravelly silt loam; structureless (singlgrain); dry loose consistency; non-plastic; terrigenous origin; clear, smooth lower boundary. General grading fill material
Ic	25-32	Fill; 2.5 YR 3/2 very dark grayish brown very gravelly clay loam; structureless (singlgrain); moist friable consistency; slightly plastic; terrigenous origin; abrupt, smooth but broken/discontinuous lower boundary. Grading fill
Id	30-55	Fill; 10 YR 7/3 very pale brown crushed coral and medium grained sand; structureless (singlgrain); dry weakly coherent consistency; non-plastic; marine origin; abrupt, wavy smooth but irregular lower boundary. Marine based fill material
IIa	50-65	Fill; 2.5 YR 3/2 very dark grayish brown clay loam; structureless (singlgrain); moist firm consistency; slightly plastic; terrigenous origin; clear, smooth but broken/discontinuous lower boundary. A thin layer of disturbed burnt waste, possibly containing material related to open air burned debris from 1920s
IIb	50-70	Fill; 10 YR 3/1 very dark gray clayey sand; structureless (singlgrain); moist friable consistency; slightly plastic; mixed origin; abrupt, wavy lower boundary. Intermixture of Stratum IIb and Stratum IId contains some charcoal flecking, former historical surface layer
IIc	60-115	Fill; 10 YR 6/4 light yellowish brown clayey sand; structureless (singlgrain); moist very friable consistency; slightly plastic; marine origin; abrupt to clear, wavy lower boundary; contains some very fine roots. Hydraulic fill likely associated with dredging of Honolulu Harbor area for covering over Kaka‘ako wetlands
III	75-115	A horizon; 10 YR 4/2 dark grayish brown clayey sand; structureless (singlgrain); moist very friable consistency; non-plastic; marine origin; clear, wavy but broken/discontinuous lower boundary; contains some very fine roots, charcoal flecking; cultural layer; designated SIHP # 50-80-14-7197
IVa	85-120	10 YR 6/4 light yellowish brown clayey sand; structureless (singlgrain); moist very friable consistency; slightly plastic; marine origin; abrupt to clear, wavy lower boundary. Natural marine deposited clayey sand. Contained firepit designated SIHP # 50-80-14-7197 Feature 1
IVb	115-145	10 YR 4/6 dark yellowish brown coarse sand; moist loose consistency; non-plastic; marine origin; diffuse, irregular lower boundary; contains some charcoal. Natural sand deposit

Stratum	Depth (cmbs)	Description
Va	130-160	Gley 1 5/5G greenish gray clayey sand; structureless (singlgrain); wet slightly sticky consistency; marine origin; clear, smooth lower boundary. Marine clayey sand deposit overlying coral cobble shelf
Vb	160-190 (BOE)	Gley 1 5/5G greenish gray coral cobbles with sandy clay; structureless (massive); wet sticky consistency; slightly plastic; marine origin; bottom of excavation. Coral cobble shelf, groundwater level at 170 cmbs

Loulu). This sample was sent to Beta Analytic, Inc. for radiocarbon dating. The Feature 1 sample (Beta-303200) yielded a most likely date range of A.D. 1735–1805 (calibrated 2-sigma, 44.5% probability).

During the City Center (Section 4) AIS, three test excavations (T-130, T-132, and T-133) were investigated in close proximity to the previously-identified location of SIHP # -7197 based on Pammer et al. (2011) (see Figure 1 and Figure 2). However, none of the three test excavations yielded evidence of SIHP # -7197. The stratigraphy in each consisted mainly of fill strata overlying natural marine deposits and the coral shelf. A burned trash fill layer (SIHP # -7189) also was identified in T-130 and T-132. Although SIHP # -7197 was not encountered during the current subsurface testing, previous data indicates SIHP # -7197 extends into the Civic Center Station footprint. It is anticipated that SIHP # -7197 may be encountered during future project excavation in this vicinity.

Based on the guidance of National Register Bulletin No. 15, SIHP # -7197 retains its integrity of location, design, and materials. SIHP # -7197 was previously determined eligible to the Hawai‘i Register under Criterion A (associated with events that have made an important contribution to the broad patterns of our history) and D (has yielded, or is likely to yield information important for research on prehistory or history) by Pammer et al. (2011). Based on the results of the current archaeological inventory survey, and in consultation with SHPD, CSH recommends that SIHP # -7197 does not to convey its significance under Criterion A for either the Hawai‘i or National Registers. The SIHP # -7197 former land surface and associated firepit are buried, and their surroundings have been completely altered by historic and modern fill, grading, and development. Accordingly, CSH recommends that this cultural resource maintains the integrity to support its historic significance only under Criterion D of the Hawai‘i Register and recommends eligibility to the National Register under Criterion D, exclusively for its information potential.

SIHP # -7197 has provided information, and could potentially provide additional information, on late pre- to early post-Contact land use within Kaka‘ako. The potential for further identification of and impact to this buried A horizon during project construction within the current project APE warrants the implementation of an archaeological monitoring program. Archaeological monitoring will focus on identifying the extent of SIHP # -7197 within the current project APE. If SIHP # -7197 is identified within the project APE, the buried A horizon and any potential archaeological features will be mapped in plan and/or profile, photographed, located by GPS, and sampled for wood taxa identification, radiocarbon and/or palynological analysis. The analysis of samples from SIHP # -7197 will facilitate documentation of the content and age of the buried A horizon and associated features, as well as comparisons with other culturally-enriched A horizon deposits in the vicinity.

SIHP # 50-80-14-7425

FORMAL TYPE:	Subsurface fire feature remnant (interpreted as the remains of a single *imu* or earth oven)
FUNCTION:	Cooking
AGE:	Pre-Contact
NUMBER OF FEATURES:	N/A
TYPES OF FEATURES:	N/A
DISTRIBUTION:	Point feature in T-020. Observed dimensions within T-020 were about 90 cm in length and 10 cm in thickness
LOCATION:	Located in the right lane of the eastbound lanes of Kamehameha Highway (West Kalihi Geographic Zone)
TAX MAP KEY:	Kamehameha Highway ROW, TMK [1] 1-2-013
LAND JURISDICTION:	City and County of Honolulu
TEST EXCAVATIONS:	T-020

SIHP # 50-80-14-7425 consists of a single feature identified as a pronounced lens of wood charcoal and water-rounded, fist-sized basalt cobbles. It was located in the Kamehameha Highway Right-of-Way, approximately 60 m southwest of the Laumaka Street intersection in the easternmost section of the West Kalihi Geographic Zone (Figure 1). This feature was discovered within Test Excavation 20 (T-020) during subsurface testing for the City Center AIS (see Volume IVA). It clearly represents the remains of a human-induced fire feature (e.g. hearth, firepit, or earth oven). Based on available evidence, the feature is interpreted as the remains of a traditional Hawaiian *imu* (earth oven).

SIHP # -7425 is located between 2.35 and 2.50 mbs within Stratum II, a thick, naturally-deposited silty clay loam alluvium (Figure 2 and Table 1). T-020 sectioned a portion of this shallow, bowl-shaped feature and all interpretation is based on the documentation and sampling of this exposed feature section. The exposed section measures 0.90 m in length, 0.10 m in thickness, and contained a 0.10-m thick dense lens of charcoal. Sampling of the exposed section yielded 11 fist-sized, reddish colored water-rounded basalt cobbles (Figure 3 and Figure 4). These uniformly-sized cobbles clearly related to the construction and use of the feature as the surrounding fine grained alluvium contained no water-rounded basalt cobbles. Additionally, the presence of the cobbles amid the dense charcoal lens and the fire-reddened appearance of most of the cobbles indicates they were central components of the feature’s use.

Although dimensions of the exposed feature section (length and width) were measured, this exposed section may not represent the overall diameter of the feature. The feature clearly extended beyond the northeast sidewall of T-020. Field observations indicated that more charcoal and fire-reddened basalt stones likely extended beyond the T-020 sidewall.

In general, the depositional sequence within T-020 reflects a change from natural sediments deposited along a broad coastal alluvial plain, to the fill and base course materials associated with later developments. Originally used for marine resource cultivation, occasional house sites,

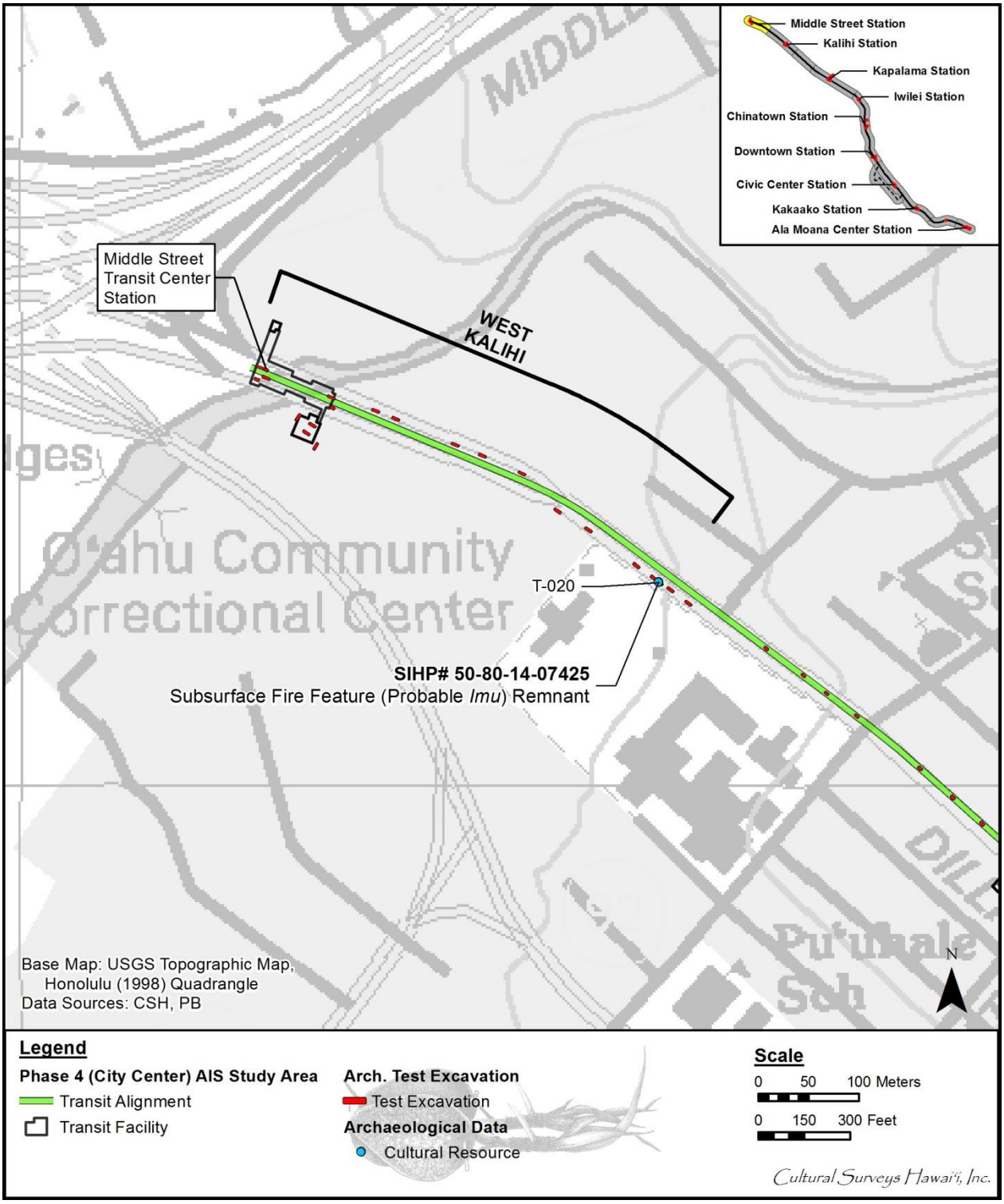


Figure 1. Location of the probable *imu* remnant (SIHP # -7425) in the West Kalihi Geographic Zone (Base Map: USGS 1998 Topographic Map of Honolulu Quadrangle)

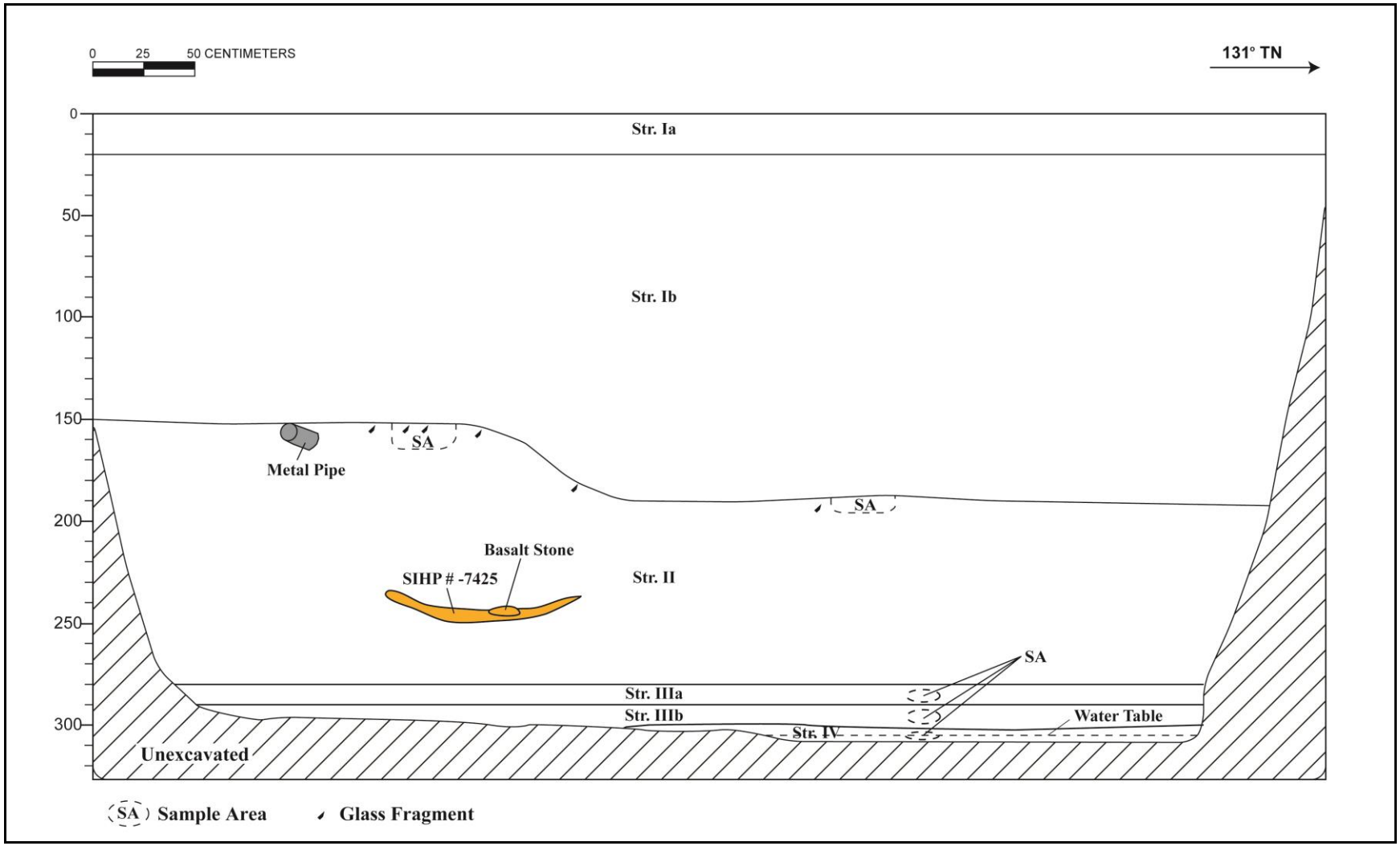


Figure 2. T-020 northeast wall profile showing the subsurface probable *imu* (SIHP # -7425)

Table 1. T-020 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-20	Asphalt; road surface
Ib	20-195	Fill; 10 YR 7/4 (very pale brown); extremely gravelly cobbly sand; structureless, singlgrain, coarse; dry, very hard consistency; non-plastic; marine origin; abrupt lower boundary; imported crushed coral fill consisting of gravel and cobbles
II	150-280	Natural; 10 YR 4/2 (dark grayish brown); silty clay loam; weak, very fine, blocky structure; moist, firm consistency; plastic; terrigenous origin; contains moderate charcoal flecking. Glass fragments observed and collected from the upper portion of this layer, also a metal pipe fragment; contained fire feature (probable *imu*) between 2.35 and 2.50 mbs; designated as SIHP # 7425
IIIa	280-290	Natural; 2.5 YR 4/2 (dark grayish brown); gravelly clay loam; structureless, massive; moist, friable consistency; plastic; mixed origin; clear, smooth lower boundary; few, fine roots
IIIb	290-300	Natural; 2.5 YR 4/2 (dark grayish brown); clay loam; structureless, massive, moist, friable consistency; plastic; mixed origin; clear, smooth lower boundary; few, fine roots
IV	300-310	Natural; 10 YR 7/4 (very pale brown); cobbles and gravels; structureless, massive; moist, extremely firm consistency; non-plastic; marine origin; lower boundary not visible; decomposing coral shelf

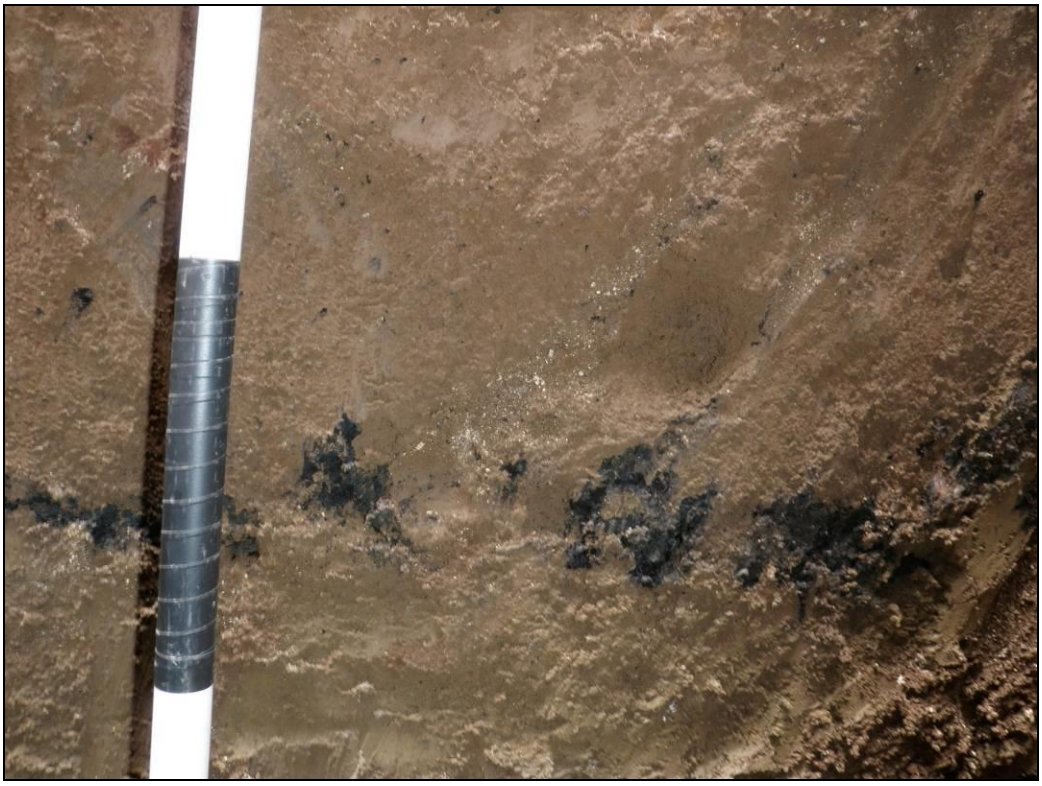


Figure 3. Close-up photograph of T-020 northeast wall, showing charcoal within probable *imu* (SIHP # -7425)

Figure 4. Water-rounded basalt cobbles collected from probable *imu* (SIHP # -7425) in T-020

and agricultural activities, the coastal areas of Kalihi Ahupua‘a (and much of the formal Kalihi area) experienced expanding development and urbanization by the early 20th century. This period of development, particularly during the construction of Kamehameha Highway, may have disturbed or reworked the upper most natural sediments (Stratum II) and introduced historic materials into the upper portion of Stratum II.

Four natural sediments were observed beginning from 1.50 mbs and extending to the base of excavation at 3.10 mbs. The lowest stratum was Stratum IV, the buried late Pleistocene calcareous reef (coral reef). Overlying the coral shelf was Stratum IIIb, a natural clay loam sediment. Above Stratum IIIb was Stratum IIIa, a gravelly clay loam deposit. SIHP # -7425 was observed in Stratum II, a natural silty clay loam. Historic material was observed only near the upper boundary of Stratum II and not within the lower portions of Stratum II. No historic material occurred in the samples collected from the probable *imu* (SIHP # -7425), or in the exposed sediments surrounding SIHP # -7425.

Two fill layers overlay the natural sediments (Strata Ia and Ib). Stratum Ia was the current asphalt road surface and Stratum Ib was a thick sequence of crushed coral base course. Both fill sediments correlate with construction of the current Kamehameha Highway.

A total of six bulk sediment samples were collected from T-020. One sample each was collected from Strata IIIa, IIIb, and IV. Two were collected from Stratum II and one from the probable *imu* (SIHP # -7425). No significant finds were recovered from Strata IIIa, IIIb, or IV.

The Stratum II samples consisted of one collected between 1.55-1.70 mbs and a second from 1.83-1.93 mbs (see Figure 2). The sample from 1.55–1.70 mbs contained clear and green glass bottle fragments (1.8 g), two coke bottle fragments (61.0 g), organics (0.1 g), non-cultural shell (0.3 g), and water-rounded gravels. The sample from 1.83-1.93 contained terrestrial snails (0.9 g), Tellinidae (1.1 g), glass fragments (<0.1 g), fish remains (0.1 g), and water-rounded gravels.

SIHP # -7425 was sampled between 2.35-2.50 mbs. The sample yielded substantial charcoal (119.2 g). Wood taxa analyses of the charcoal identified the following five species of Native Hawaiian trees and shrubs: *Lama* (*Diospyros sandiwicensis*), ‘*Akoko* (*Chamaesyce* sp.), *‘A‘ali‘i* (cf. *Dodonaea viscose*), *‘Ūlei* (cf. *Osteomeles anthyllidifolia*), and *Hō‘awa* (cf. *Pittosporum* sp.). The *Lama* is a small endemic tree and its wood was often used by the native Hawaiians for houses (Pukui and Elbert 1986:192), enclosures for idols (Malo 1951:21), chisel handles (Buck 1957:38), and as offerings (Rock 1974:395). *‘Akoko* is an endemic shrub and small tree that was highly valued as firewood (Hillebrand 1888:396). *‘A‘ali‘i* is an indigenous shrub or small tree that produced a hard wood often used for digging sticks, house posts, and weapons (Abbott 1992:68; Krauss 1993:56; Lamb 1981:78). *‘Ūlei* is an indigenous woody shrub to small tree used for a variety items, including digging sticks, spears, and scoop-net handles (Neal 1965:387). *Hō‘awa* is an endemic small tree that was used for medicinal purposes to ward off evil spirits (Ka‘aiakamanu and Chun 2003). The presence of only native and PolynHaesian-introduced species in the charcoal samples indicates that the charcoal within the probable *imu* likely predates post-Contact introductions of alien woody plants.

The *‘Ūlei* charcoal was submitted for radiocarbon analysis which yielded two possible date ranges, with a calibrated 2-sigma date of AD 1440 to AD 1530 (61.6%) being the most probable.

Radiocarbon results indicate that the dated charcoal material from SIHP # -7425 is pre-Contact in age. The probable *imu* was constructed and used in the sixteenth century.

Based on morphology and content SIHP # -7425 is consistent with a cooking function and the shape and contents of the feature appear consistent with Hartzell and McPherron's (1997:223) definition of an *imu*:

> "…a pit with the following characteristics: diameter of at least a meter, substantial amount of charcoal, substantial amount of fire-affected rock (usually in cobble to small boulder range), and burned earth lining. An *imu* can have a variety of profile shapes, the most common being bowl-shaped…Artifacts may or may not be present."

David Malo (1951:110) similarly describes the traditional Hawaiian *imu* as a hollow in the ground that was lined with stones. Food placed in the *imu* was often covered with leaves and *tapa*. Buck (1964:18-19) relates that *imu* were shallow holes and that building an *imu* involved placing kindling wood in the center of the hole with larger pieces of wood built up around the kindling. Stones would be placed over the wood before lighting the kindling. Stones are described as being the "size of a closed fist" and should be of material which would not fracture upon heating. Food was typically covered with layers of leaves or old mats and *tapas* for protection from the heat.

SIHP # -7425 has characteristics often attributed to traditional Hawaiian *imu*. The observed feature section exhibits a shallow bowl shape that contained charcoal and fire-affected stones; the feature also likely extended some distance into the northeastern sidewall. The total dimensions and shape of SIHP # -7425 is unknown. As such the feature may be smaller in extent than a traditional Hawaiian *imu*, nor can we rule out the possibility it represents the remains of a hearth or firepit. However, from the descriptions of traditional *imu*, results of radiocarbon and wood taxa analysis, and the abundant charcoal (119.2 g) and fire-affected basalt cobbles collected from the feature, SIHP # -7425 is interpreted as a probable *imu* used for cooking activities during pre-Contact habitation of the coastal areas within Kalihi Ahupua‘a.

Based on the guidance of the National Register Bulletin No.15, SIHP # 50-80-14-7425 retains its integrity of location, design, materials, and workmanship. Based on the results of this investigation, CSH recommends that this cultural resource maintains sufficient integrity to support its historic significance under Criterion D (has yielded, or is likely to yield information important for research on prehistory or history) of the Hawai‘i and National Register, exclusively for its information potential.

SIHP # -7425 has provided information, and has potential to provide additional information, on pre-Contact land use within the Kalihi Ahupua‘a. Archaeological monitoring is recommended for SIHP # -7425 to recover additional data on the probable *imu* feature, and to mitigate potential impacts to SIHP # -7425 during construction. Should SIHP # -7425 be encountered during monitoring, additional mapping and sampling will be conducted to further assess feature size, morphology, content, and function.

SIHP # 50-80-14-7426

FORMAL TYPE:	Subsurface wetland deposit
FUNCTION:	Agriculture
PREVIOUS DOCUMENTATION:	Pammer and Monahan (2011); Tulchin and Hammatt (2013); Medina et al. (2013)
AGE:	Pre- and post-Contact
NUMBER OF FEATURES:	N/A
TYPES OF FEATURES:	N/A
DISTRIBUTION:	2.47 acres (within current project area), approximately 24.81 acres (total interpolated area)
LOCATION:	Along Dillingham Boulevard between Waiakamilo Road to near Ka‘aahi Street (East Kapālama Geographic Zone)
TAX MAP KEYS:	[1] 1-5-015, [1] 1-5-015:008, [1] 1-5-017, [1] 1-5-017:006, [1] 1-5-020, [1] 1-5-020:003, and 1-5-022 (within current project area); [1] 1-5-022:001 and 002 (Pammer and Monahan 2011); [1] 1-5-022 003-006, 008, 010, 011, [1] 1-5-03:001 and 002, and [1] 1-5-019:001-09 (Tulchin and Hammatt 2013); [1] 1-5-020 (Medina et al. 2013)
LAND JURISDICTION:	City and County of Honolulu, Bishop Estate, the University of Hawai‘i, and DTC Investments LLC (within current project area); Kamehameha Schools (Pammer and Monahan 2011 and Tulchin and Hammatt 2013); City and County of Honolulu (Medina et al. 2013)
TEST EXCAVATIONS:	T-054 through T-082

SIHP # 50-80-14-7426 is a previously-identified subsurface wetland deposit that spans most of the East Kapālama Geographic Zone between two raised Pleistocene limestone shelves (Figure 1). This archaeological cultural resource was first assigned an SIHP number during the current City Center AIS. However, it appears that Pammer and Monahan (2011), Tulchin and Hammatt (2013), and Medina et al. (2013) have identified the same cultural resource within their study areas. Pammer and Monahan (2011) documented buried wetland sediments that showed evidence of having been used for agriculture, but did not designate them as a historic property. Tulchin and Hammatt (2013) and Medina et al. (2013) are ongoing projects that have documented similar buried wetland deposits. The wetland deposits from those three studies have been incorporated into this cultural resource description and into the interpolated boundaries of SIHP # -7426 shown in Figure 1.

E. S. Craighill Handy, who gathered information on former planting areas from local informants in the 1930s and 1940s, reported the following:

> Kapalama had two streams watering its terrace area [for taro], which was almost continuous from Iwilei up to the foothills above School Street, an area measuring about three quarters of a mile both in depth inland and in breadth [Handy 1940:79].

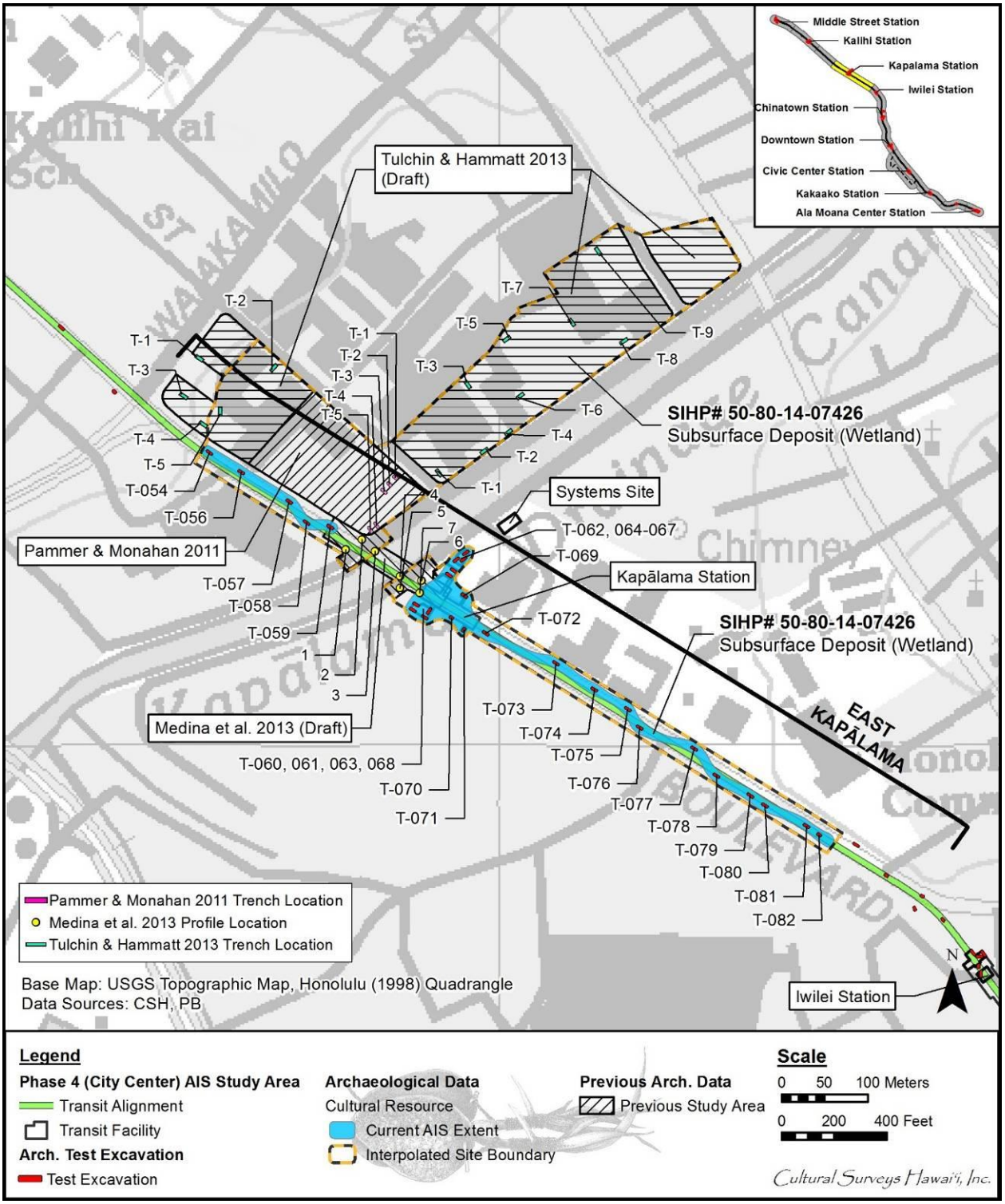


Figure 1. Location of the subsurface wetland deposits (SIHP # -7426) and previous archaeological studies in the East Kapālama Geographic Zone (base map: USGS 1998 Topographic Map of Honolulu Quadrangle)

The 1855 LaPasse map (Figure 2) also indicates that this area was extensive “champs de taro” (taro fields).

In 2011, CSH completed a limited subsurface testing program for the Kapālama Shopping Center Redevelopment Project (Pammer and Monahan 2011) located immediately adjacent to and *mauka* of the City Center AIS project corridor (see Figure 1). During this study, Pammer and Monahan (2011) documented *lo‘i* sediments in all five of their test excavations at depths ranging from 1.85 to 2.40 mbs, with an average upper boundary of 2.03 mbs. The *lo‘i* deposits were located beneath multiple fill layers at and below the water table and were represented primarily by very dark terrestrial clay containing decomposing organic material. Wet screening of the natural sediments did not reveal cultural material or evidence of human occupation, although LCA documents indicated that the area was previously cultivated with taro *lo‘i* and contained house lots and ponds (Pammer and Monahan 2011:98). Although Pammer and Monahan (2011) did not designate the *lo‘i* sediments as an historic property, they are included within SIHP # -7426 in this current City Center AIS study based on similarities of sediment composition and location.

The general stratigraphic sequence documented by Pammer and Monahan (2011) consisted of the coral shelf underneath clay *lo‘i* sediments (SIHP # -7426), followed by varying layers of fill associated with the different periods of development within the project area, followed by a base course layer (not always present) and an existing paved asphalt parking lot (Figure 3, Figure 4, and Table 1).

Similar deposits were observed during ongoing subsurface testing for Kamehameha Schools (Tulchin and Hammatt 2013) *mauka* of the City Center AIS project area and adjacent to the Pammer and Monahan (2011) study (see Figure 1). Tulchin and Hammatt (2013) identified both the former land surface, consisting of wetland deposits, and a limestone bedrock ridge (the Pleistocene shelf). Eleven of their 13 test excavations were located within the boundary of SIHP # -7426, in the former low-lying wetlands between the Pleistocene limestone shelves. The remaining two test excavations were located on the westernmost Pleistocene shelf.

The general stratigraphic sequence of the lowland wetland area documented by Tulchin and Hammatt (2013) consisted of naturally deposited clay wetland sediments (SIHP # -7426) underlying multiple thick fill deposits (Figure 5, Figure 6 and Table 2). The fill deposits are associated with intensive land reclamation activities in which low-lying wetland areas were filled in to create stable level surfaces for urban development (Tulchin and Hammatt 2013:89). In all but one case, excavation ceased at the water table and the coral shelf was not encountered.

The documented wetland sediments consisted primarily of dark alluvial clay observed at depths ranging from 1.60 to 2.75 mbs, with an average upper boundary of 1.97 mbs. Freshwater snails, organics, and charcoal flecking were observed in the wetland deposits. Tulchin and Hammatt (2013:89, 129) suggested that the wetland deposits “were utilized by pre-Contact Hawaiians for the cultivation of taro and then utilized by post-Contact populations for the cultivation of rice.”

Medina et al. (2013), also documented a wetland deposit associated with SIHP # -7426 during archaeological monitoring for traffic control signal improvements along Dillingham Boulevard on both sides of Kapālama Canal (within the City Center AIS corridor) (see Figure 1).

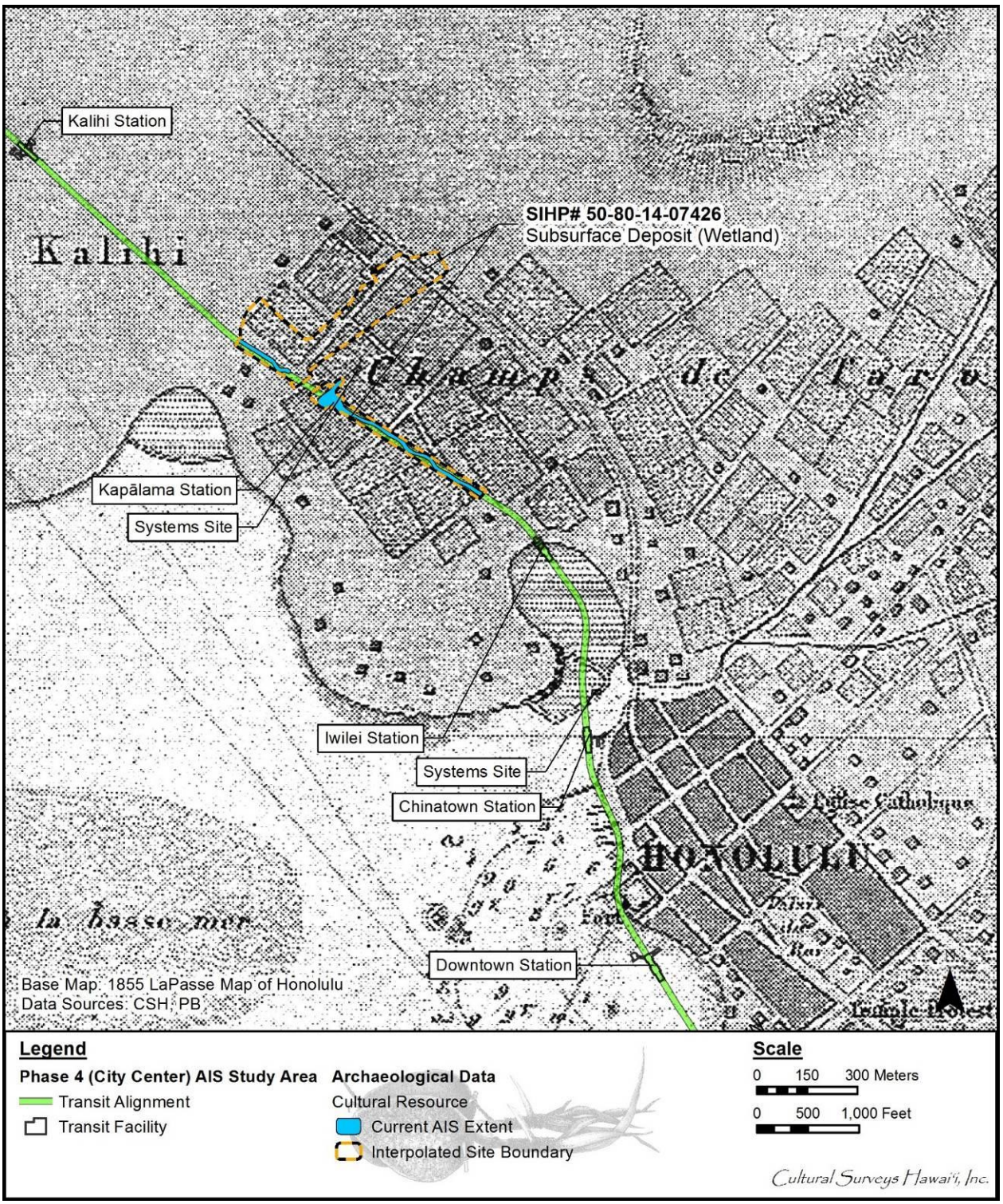


Figure 2. 1855 map of Honolulu by Lt. Joseph de LaPasse of the French vessel, *L'Eurydice* (map reprinted in Fitzpatrick 1986:82-83), showing the "*Champs de Taro*" (taro fields) of East Kapālama with an overlay of SIHP # -7426

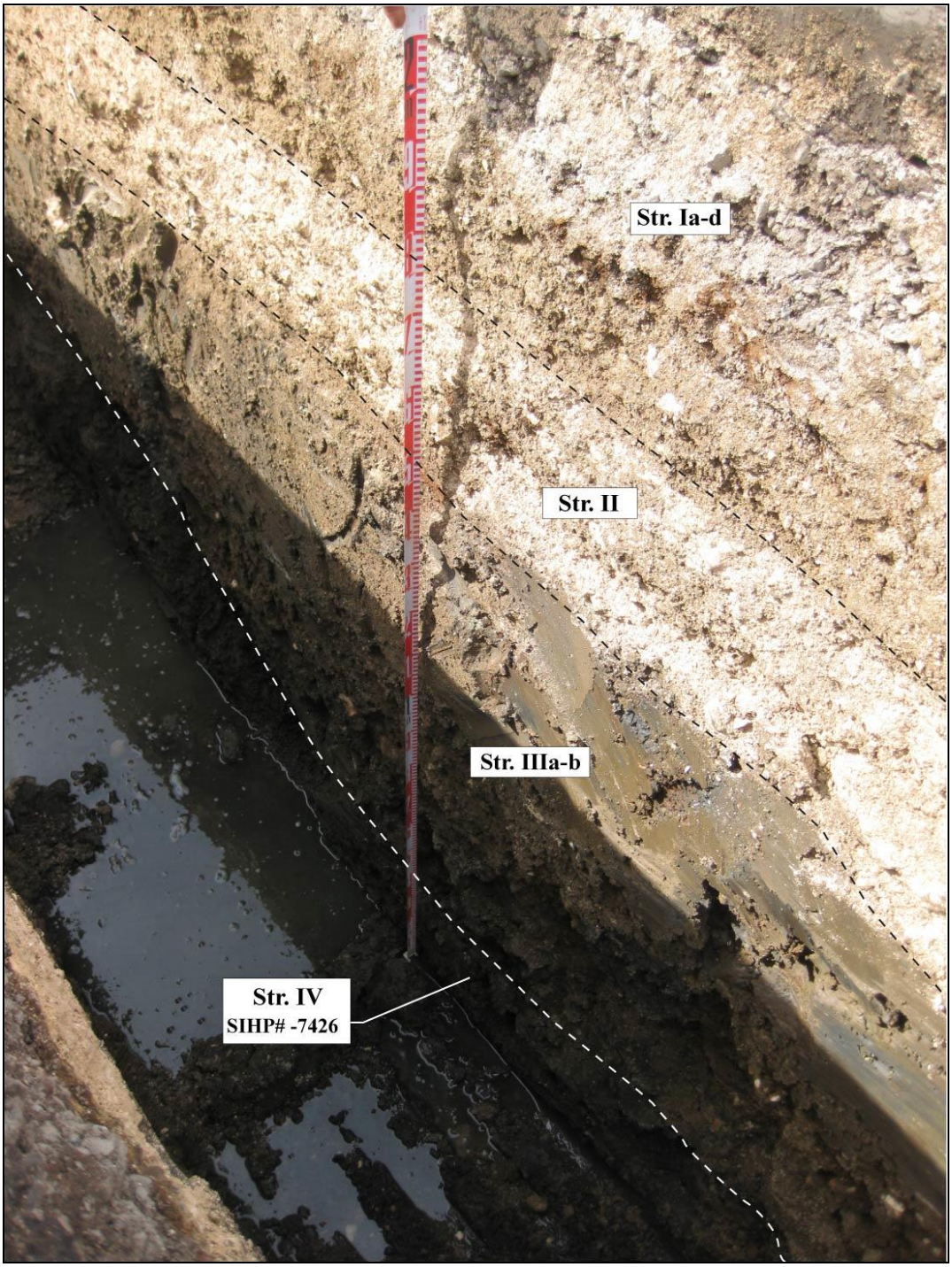


Figure 3. Pammer and Monahan (2011:95; labels not in original)Test Trench 5 northwest wall, showing wetland deposit (SIHP # -7426) beneath fill strata, view to north

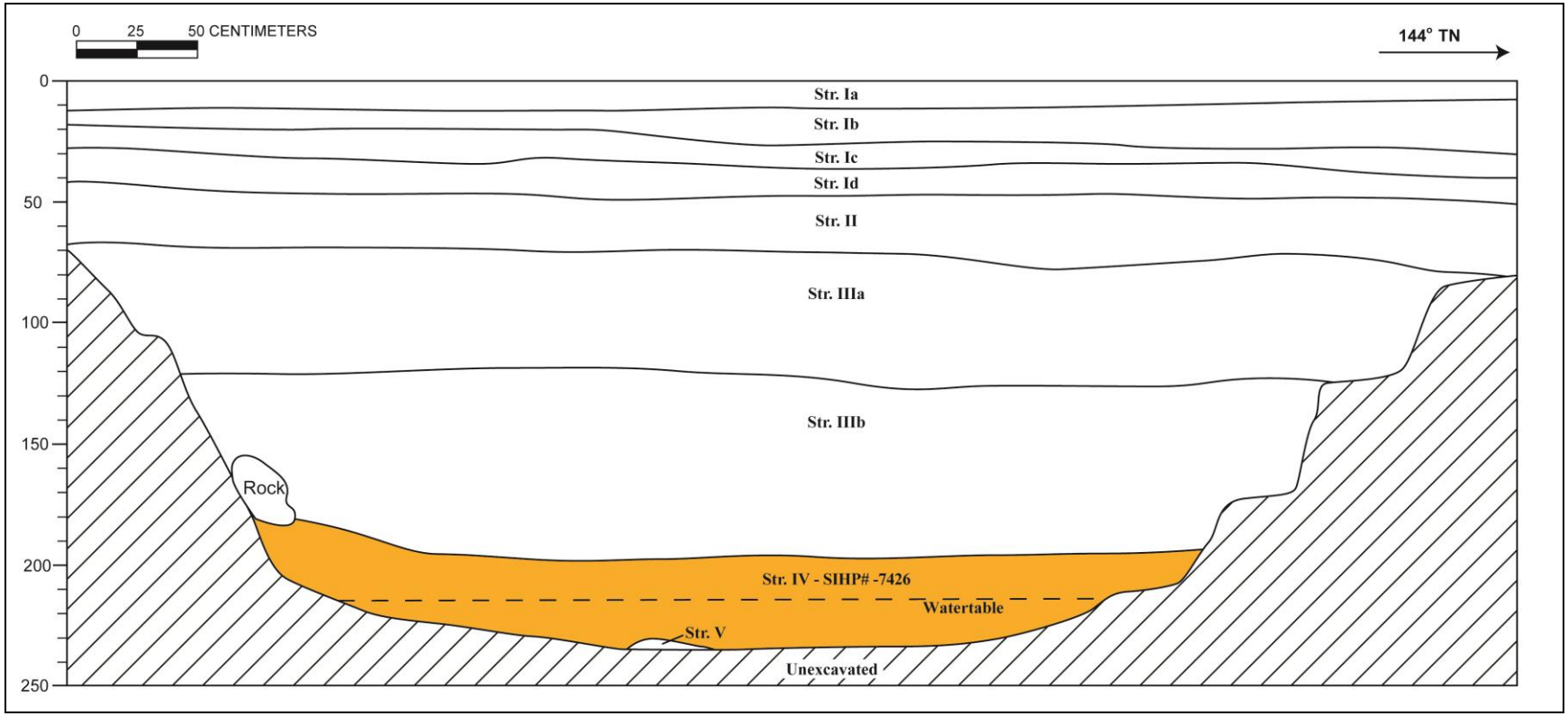


Figure 4. Pammer and Monahan (2011:94; color and SIHP # -7426 not in original) Trench 5 northwest wall profile, showing wetland deposit (Stratum IV, SIHP # -7426)

Table 1. Trench 5 Stratigraphic Summary (adapted from Pammer and Monahan 2011)

Stratum	Depth (cmbs)	Description
Ia	0-13	Asphalt; 10 YR 2/1 black; structureless (massive); extremely hard dry consistency; indurated cementation; non-plastic; terrigenous origin; very abrupt, smooth lower boundary; surfacing for parking lot
Ib	10-30	Fill; 5 YR 4/4 reddish brown, gravel; moderate, medium, blocky structure; moist, friable consistency; weak cementation; non-plastic; terrigenous origin; clear, smooth lower boundary; basalt gravel base course
Ic	20-35	Fill; 10 YR 3/4 dark yellowish brown, clay loam; moderate, medium, blocky structure; moist, friable consistency; weak cementation; slightly plastic; terrigenous origin; clear, smooth lower boundary; imported fill
Id	30-50	Fill; 10 YR 5/4 yellowish brown, crushed coral; structureless; dry, weakly coherent consistency; weak cementation; non-plastic; mixed origin; abrupt, smooth lower boundary; imported crushed coral fill
II	40-80	Fill; 10 YR 7/3 very pale brown, crushed coral; structureless; dry, hard consistency; strong cementation; non-plastic; marine origin; abrupt, smooth lower boundary; imported crushed coral fill
IIIa	67-215	Fill; 10 YR 4/3 brown, clay; moderate, coarse, blocky structure; moist, friable consistency; weak cementation; plastic; mixed origin; abrupt, wavy lower boundary; mixed imported clay fill
IIIb	120-200	Fill; 10 YR 3/1 very dark gray, gravelly clay; weak, medium, blocky structure; moist, friable, firm consistency; no cementation; plastic; mixed origin; clear, smooth lower boundary. Similar to stratum IIIa. Loose and gravelly with modern debris including an aquamarine glass bottle. A multitude of branch coral fragments observed within this layer, mixed in with the reddish brown clay and trash
IV	185-235	10 YR 2/1 black, clay; moderate, fine, blocky structure; wet, sticky consistency; weak cementation; slightly plastic; mixed origin; diffuse, smooth lower boundary. Very dark *lo‘i* sediments, located at the water table. Clay is similar to the marine clay typically overlying the coral shelf within the nearby Kaka‘ako area, but is darker with a higher organic content. This clay is likely primarily terrestrial, associated with the nearby stream; wetland deposit; component of SIHP # -7426
V	230-235 (BOE)	10 YR 6/3 pale brown, crumbly coral shelf; weak, medium, blocky structure; wet, non-sticky consistency; weak cementation; non-plastic; marine origin; cobbly coral shelf consisting of cemented shell and coral fragments

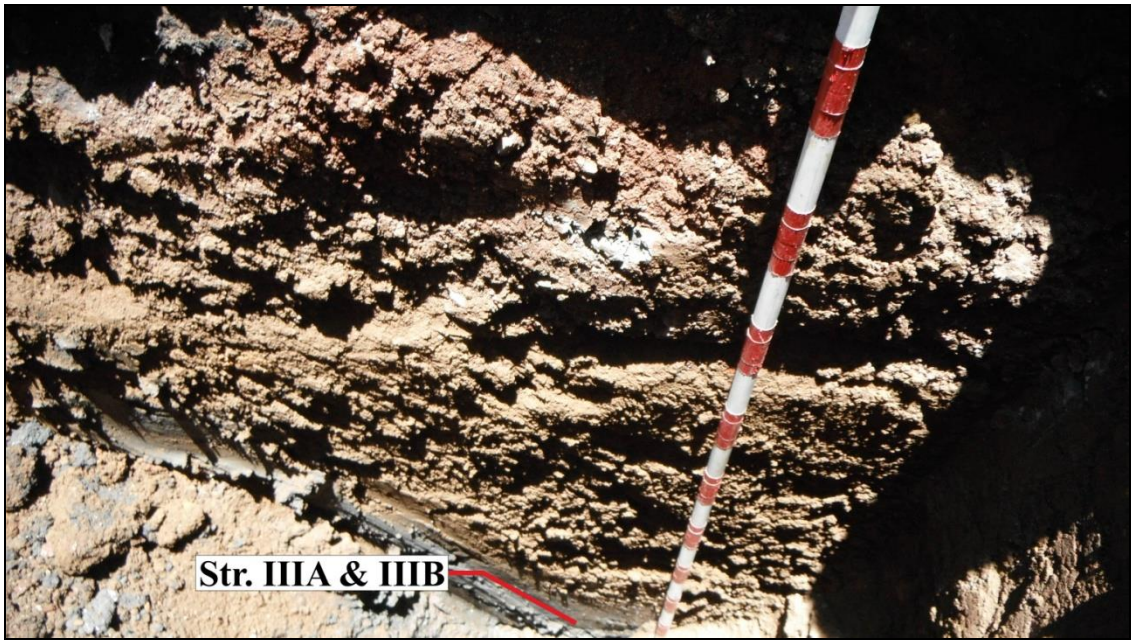


Figure 5. Tulchin and Hammatt (2013; label not in original) Trench 7 southwest wall, showing wetland sediments (SIHP # -7426) below fill strata, view to southwest

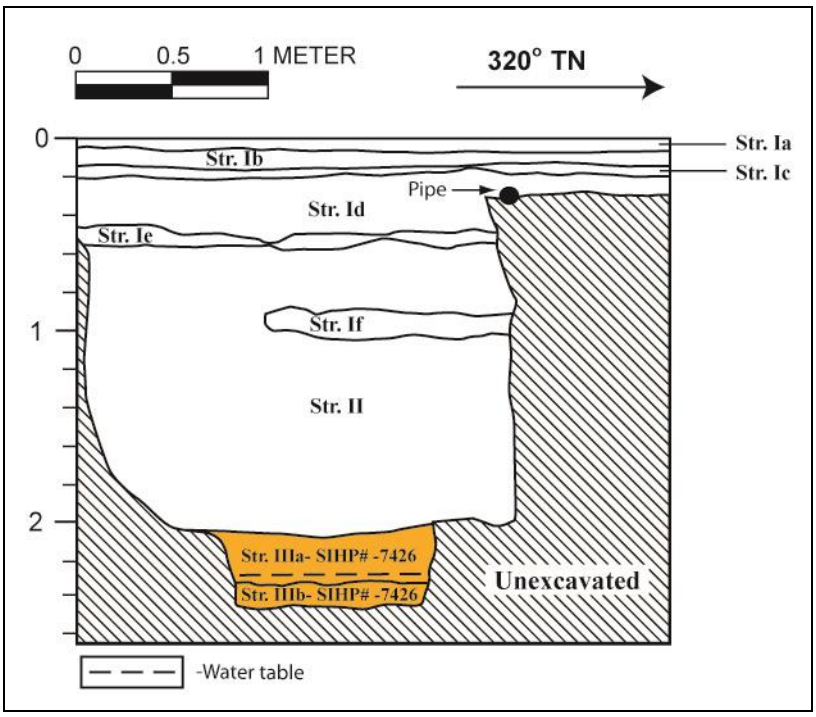


Figure 6. Tulchin and Hammatt (2013; color and label not in original) Trench 7 southwest wall profile, showing wetland sediments (Strata IIIa-Strata IIIb of SIHP # -7426)

Table 2. Trench 7 Stratigraphic Summary (adapted from Tulchin and Hammatt 2013)

Stratum	Depth (cmbs)	Description
Ia	0-5	Basalt gravel ground cover
Ib	5-15	10 YR 4/4, dark yellowish brown; silt loam; weak, fine, crumb structure; moist, friable consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary; Imported fill material
Ic	15-25	10 YR 8/2, very pale brown; crushed coral fill; structureless, singlgrain; moist, loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary; crushed coral in coarse sand matrix fill material
Id	20-55	5 YR 3/4, dark reddish brown; clay loam; weak, fine, crumb structure; moist, friable consistency; slightly plastic; terrigenous origin; abrupt, smooth lower boundary; Imported fill material
Ie	45-57	10 YR 3/1, very dark gray; sandy loam; weak, fine, crumb structure; moist, loose consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary; compacted coarse sandy loam containing modern refuse: metal, glass, etc. 35% basalt boulders
II	50-207	10 YR 4/4, dark yellowish brown; clay loam; weak, fine, crumb structure; moist, friable consistency; slightly plastic; terrigenous origin; abrupt, smooth lower boundary; locally procured fill material
IIIa	195-235	10 YR 2/1, black; clay; structureless, massive; wet, sticky consistency; plastic; terrigenous origin; abrupt, smooth lower boundary; natural clay deposit containing marsh remnants with fresh water snails and organically enriched material; wetland deposit; component of SIHP # -7426
IIIb	232-245 (BOE)	10 YR 3/1, very dark gray; clay; structureless, massive; wet, sticky consistency; plastic; terrigenous origin; abrupt, smooth lower boundary; natural clay deposit containing marsh remnants with fresh water snails and organically enriched material; wetland deposit; component of SIHP # -7426

Seven sediment profiles were recorded, six of which documented fill layers over locally-procured silty clay loam sediment that was likely the result of dredging Kapālama Canal. Profile 7 revealed a wetland deposit (SIHP # -7426). It should be noted that each of the six profiles that did not document wetland deposits had relatively shallow bases of excavation that were typically higher than the upper level of the wetland deposits. Therefore, it is possible that those six profile locations contain wetland deposits at deeper depths than were excavated.

The depositional sequence of Profile 7 consisted of the coral shelf at the base of excavation. Naturally-deposited wetland sediments (SIHP # -7426) occur atop the shelf beneath two fill layers of locally procured silty clay loam (dredged sediment from Kapālama Canal). Atop these fills is modern imported sod (Figure 7, Figure 8, and Table 3). The documented wetland sediments consisted of very dark greenish gray sandy clay, with an abundance of decomposing organic material. These sediments were encountered between 1.70 and 2.20 mbs (Medina et al. 2013:58).

During the current City Center AIS, subsurface wetland sediments were observed in 28 sequential test excavations (T-054 through T-082) within the East Kapālama Zone. The general depositional sequence consisted of the coral shelf (generally designated as Stratum III; not always reached), with the naturally deposited wetland/agricultural sediments (generally designated as Stratum II, IIa, or IIb – identified as SIHP # -7426) overlying it. Above the wetland sediments, multiple historic era fill layers (generally designated as substrata of Stratum I) were present, followed by more modern fill events (including asphalt, base courses, and landscaping fill; also designated as substrata of Stratum I). Although the coral shelf was not encountered, documentation of T-080 depicts the general depositional sequence observed in T-054 through T-082 within the East Kapālama Zone (Figure 9, Figure 10, and Table 4).

The wetland sediments observed during the current City Center AIS consisted primarily of very dark gray to black clays and silty clays containing fine roots, decomposing organics, charcoal, and shells (Figure 11). These sediments were documented at depths ranging from 1.10 to 2.45 mbs, with an average upper boundary of 1.46 mbs. These naturally-deposited sediments were located beneath multiple fill layers associated mainly with land reclamation activities during the early to mid-twentieth century.

A Pleistocene limestone shelf is exposed on the current land surface at either end of the East Kapālama Geographic Zone (Figure 11). These slightly raised shelves represent the eastern and western boundaries of SIHP # -7426, which encompasses the intervening lowland wetlands.

A total of five test excavations (T-055, T-056, T-072, T-074, and T-082) within the interpolated boundary of SIHP # -7426 did not contain wetland sediments; however, they are included within the boundaries of the cultural resource. It seems likely that the wetland sediments were originally present, but have been previously removed from these test excavations and replaced with fill sediments. The area traversed by the Kapālama Canal is also excluded from the interpolated boundary of SIHP # -7426.

A single glass medicine bottle (Acc. #060-A-1 from T-060) was collected from the former wetland surface during the City Center AIS (Figure 13). The medicine bottle was manufactured for a drug store in Manila, Philippines, which opened in the 1930s or possibly slightly earlier.

Figure 7. Medina et al. (2013; label not in original), Profile 7, southwest wall, view to southwest

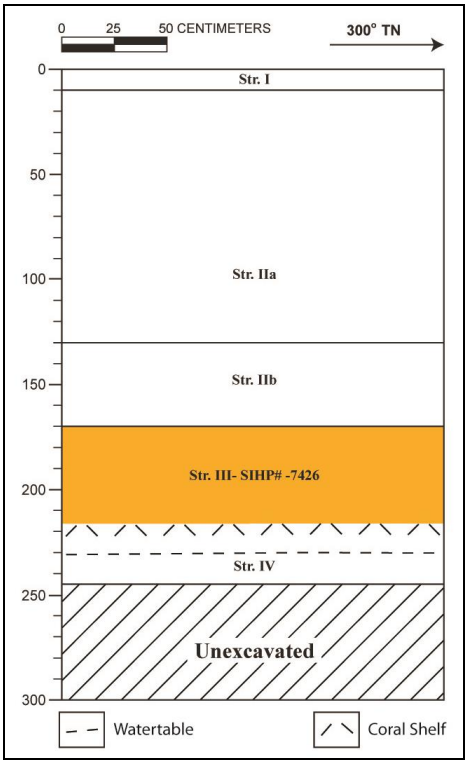


Figure 8. Medina et al. (2013; color and SIHP # -7426 label not in original) Profile 7, southwest wall, showing wetland deposits (Stratum III, SIHP # -7426)

Table 3. Profile 7 Stratigraphic Summary (adapted from Medina et al. 2013)

Stratum	Depth (cmbs)	Description
I	0-10	Modern imported sod
IIa	10-130	10 YR 5/4; yellowish brown silty clay loam; medium to coarse single grain structureless; dry, loose consistency; non-plastic; mixed sediment; abrupt, smooth lower boundary; locally procured silty clay loam fill with 35 percent coral pebbles and cobbles; sediment dredged from Kapālama Canal
IIb	130-170	10 YR 6/4; light yellowish brown silty clay loam; very coarse single grain structureless; moist, firm consistency; non-plastic; mixed sediment; clear, smooth lower boundary; locally procured silty clay loam fill with 50 percent coral cobbles and boulders; sediment dredged from Kapālama Canal
III	170-220	Gley 2 3/5BG; very dark greenish gray with 20 percent 10 YR 2/1 black mottles sandy clay; moderate grade, medium blocky structure; wet, slightly sticky consistency; very plastic; mixed sediment; clear, smooth lower boundary; organically-enriched wetland sediment; component of SIHP # -7426
IV	220-245 (BOE)	Gley 2 3/5B; very dark bluish gray coral; coarse massive structureless; wet, slightly sticky consistency; non-plastic; marine sediment; natural coral shelf

Figure 9. T-080 northeast wall, showing wetland sediments (Stratum II, SIHP # -7426) at and above the water table, view to northeast

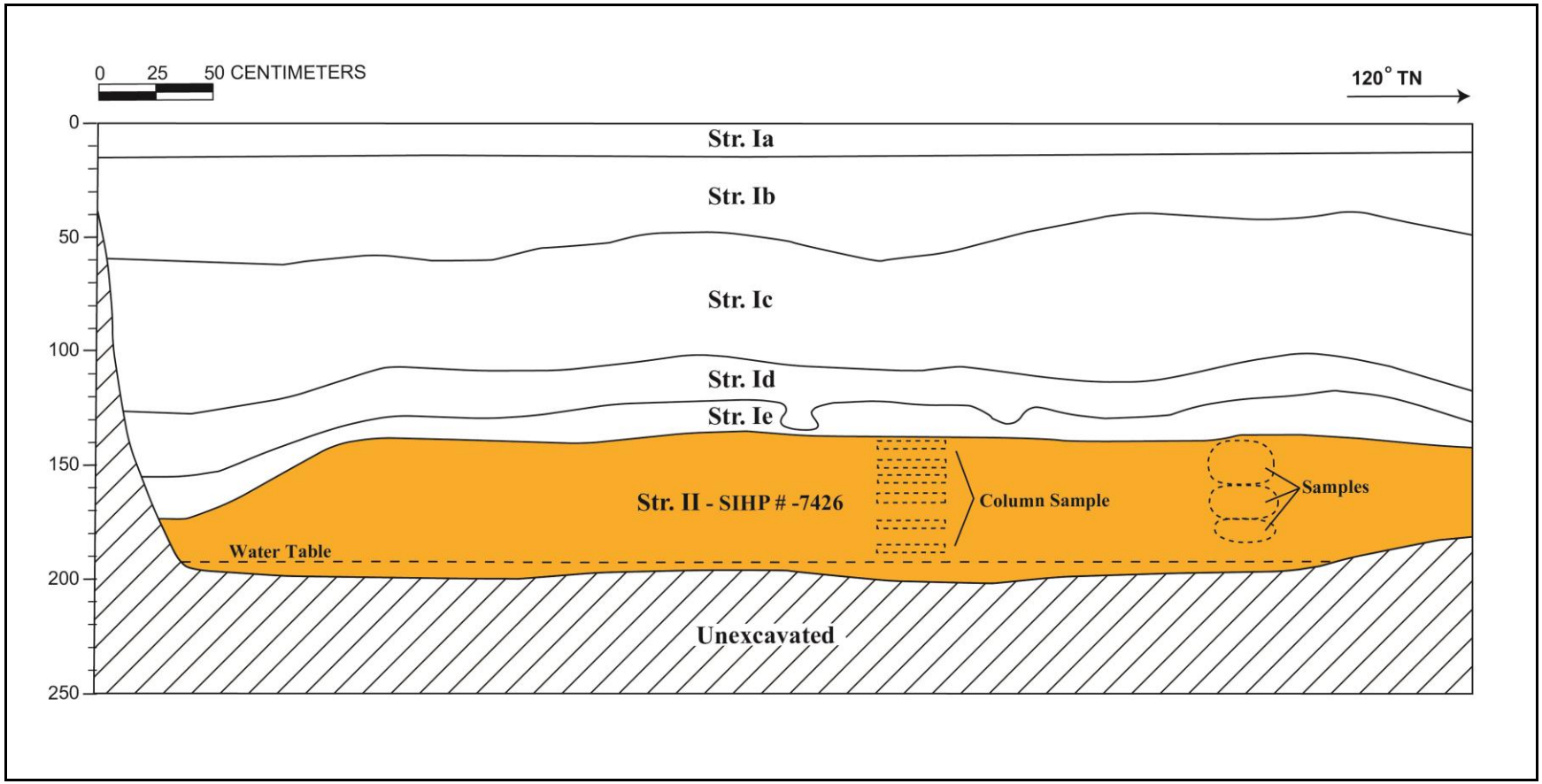


Figure 10. T-080 northeast wall profile

Table 4. T-080 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-14	Asphalt (road surface)
Ib	14-60	Fill; 10 YR 5/1 (gray); extremely gravelly sand; structureless, singlgrain; dry, loose consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; contains 90 percent basalt gravel; base course
Ic	40-127	Fill; 10 YR 8/3 (very pale brown); extremely gravelly sand; structureless, singlgrain; dry, loose, consistency; non-plastic; marine origin; clear, smooth lower boundary; contains 90 percent coral gravel; crushed coral fill
Id	103-155	Fill; 10 YR 6/3 (pale brown); fine to medium sandy clay; structureless, massive; moist, friable consistency; plastic; mixed origins; very abrupt, wavy lower boundary; hydraulic fill
Ie	120-175	Fill; Gley2 4/10B (dark bluish gray); silty clay; structureless, massive; wet, sticky consistency; non-plastic; marine origin; very abrupt, smooth lower boundary; hydraulic fill
II	137- 201 (BOE)	Natural, buried A horizon; Gley2 3/10B (very dark bluish gray); silty clay loam; moderate, very fine, blocky structure; wet, sticky consistency; terrigenous origin; lower boundary not visible; natural wetland sediment; component of SIHP # -7426

Figure 11. Subsurface wetland sediment collected from T-078 showing plant leaves and stems (possibly rice) and other organic matter

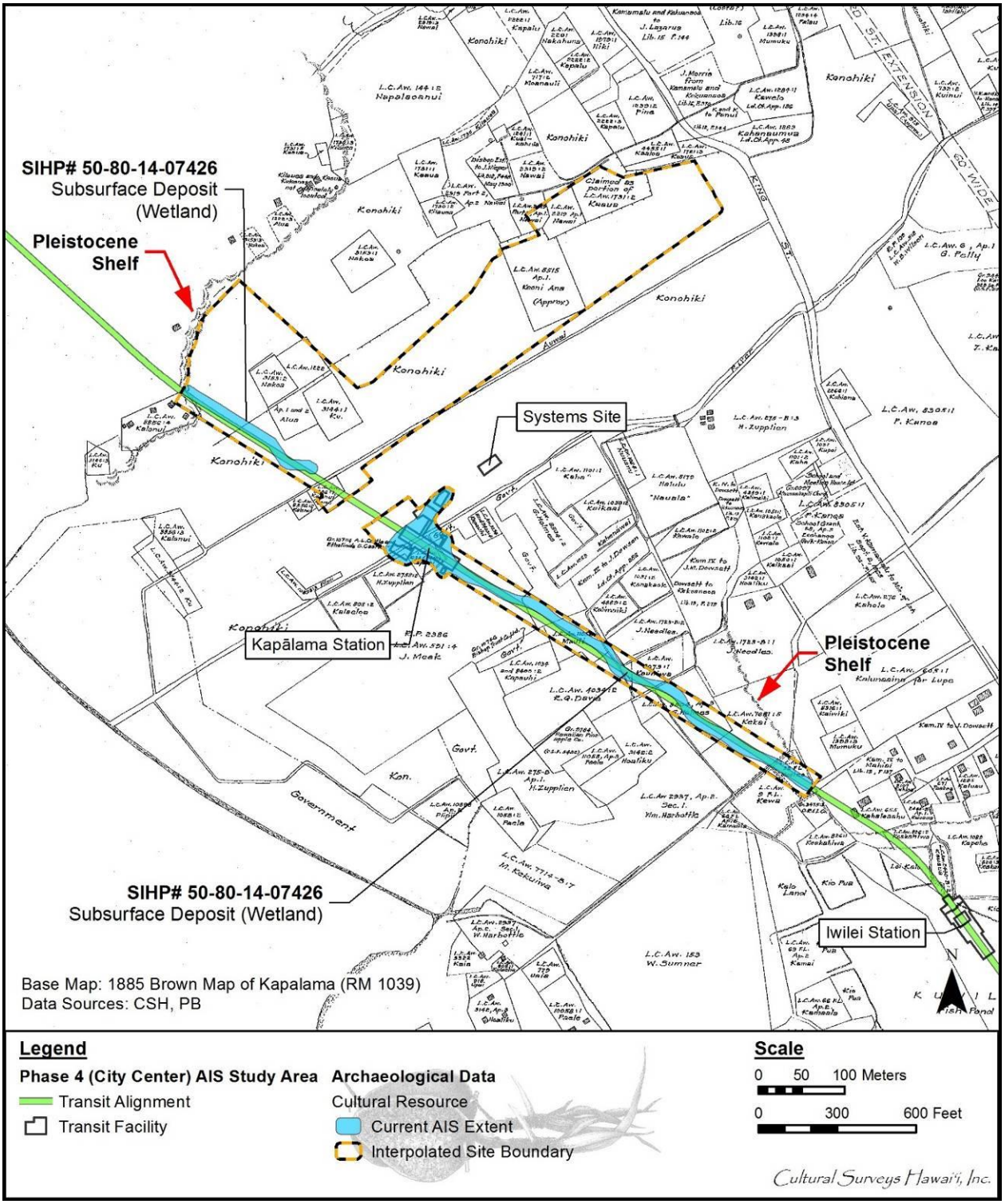


Figure 12. 1885 map of Kapālama by J. F. Brown (RM 1039), depicting the Pleistocene shelf (red arrows) at the east and west boundaries of the East Kapālama Geographic Zone

Bulk sediment sample analysis from the wetland deposits yielded marine shells, non-marine snail shells, charcoal, pollen, seeds, wood fragments, *kukui* nut shells, and fish bone, with the most common items being charcoal and shells. Specialized analyses were performed on snail shells from three test excavations, pollen samples from two test excavations, and charcoal fragments from two test excavations. These results are presented below.

Snail shells were identified in T-057, T-075, and T-078. The presence of an estuarine, strandline, and shoreline dwelling species (*A. parvula*) is consistent with a coastal location. A permanent fresh- or brackish water environment was indicated by the presence of *M. tuberculata*. The presence of truly terrestrial mollusks (*H. minuscula* and *B. similaris*) suggests that these specimens may have been washed in from adjacent upland localities. The presence of historically-introduced alien species (*L. viridis* and *H. minuscula*) indicates that two of the samples (from T-057 and T-078) date to the historic period (or were subject to contamination from more recent sediments); this would be consistent with mi to late nineteenth century (or later) rice cultivation.

Pollen analysis on six column samples (T-067 Sample Nos. 1, 2, 3 and T-080 Sample Nos. 4, 5, 6) also indicates that the East Kapālama Zone and adjacent areas formerly consisted of a wetland environment that was modified for agriculture. Cyperaceae pollen was dominant in the T-067 samples, suggesting that this location was a well-developed wetland with a large sedge population. Small quantities of *Vigna sinensis* (cowpea) pollen may indicate that the area was used for the cultivation of these edible beans. The pollen record from T-067 also included significant quantities of *Oryza*-type pollen, indicating that rice fields were probably located in this wetland environment. Possible rice leaves and stalks were identified within the wetland sediment of T-078 (see Figure 1). Charred grass pollens (Poaceae) may represent the burning of rice or sugar cane fields in the vicinity. Non-agricultural wetland vegetation included cattails (*Typha angustifolia*) and an abundance of ferns.

The pollen record from T-080 is also indicative of a wetland environment dominated by sedges and a variety of marsh grasses (Poaceae). Cattails (*Typha*), a variety of endemic vine (*Sicyos*), and an array of ferns made up the local vegetation of the marsh. Coconut (*Cocos nucifera*) and either sugar cane or *pili* grass (Poaceae) grew in the vicinity, while *‘āheahea* shrubs probably grew in the drier areas of the landscape. The presence of *honohono* (*Commelina*), a non-native plant that flourishes in disturbed areas such as agricultural fields, provides a possible date of mid- to late nineteenth century or later for T-80 Sample 4. The uppermost sample from this test excavation contained *Colocasia* pollen, suggesting that this portion of the wetland was used in more recent times for taro cultivation. *Kiawe* (*Prosopis*) pollen in the upper two samples supports a historic date for the agricultural activity in this wetland environment. The quantities of microscopic charcoal in the samples appear to increase through time, perhaps indicating the burning of agriculture fields.

Taxa identification on charcoal fragments collected from the wetland deposits in T-075 and T-078 revealed a mix of native and introduced trees. T-075 contained fragments of *naio*, *‘ōhi‘a lehua*, and conifer trees, while T-078 wood fragments consisted of *‘ōhi‘a lehua*, *niu* or coconut, and conifer trees. The presence of conifer in the wetland sediments from both test excavations

Figure 13. A ca. 1930s medicine bottle (Acc. #060-A-1) from SIHP # -7426 in T-060

may indicate that the wetland, or at least the uppermost portion of it, dates to the historic period. Conifer (Pinaceae) trees are winpollinated and their pollen is very resilient and can travel long distances. The minute amount of Pinaceae in the pollen record indicates that these trees were not part of the local vegetation.

Macro remains from wetland samples from T-064, T-068, and T-076 included *Ruppia maritima* seeds, indicating that this variety of sea grass was part of the aquatic vegetation. The seeds were collected from depths ranging between 1.30 and 1.91 mbs, with an average upper depth of 1.63 mbs.

SIHP # -7426 consists of subsurface wetland sediments that were identified in three previous archaeological studies and 28 contiguous test excavations (T-54 to T-82) during the City Center (Section 4) AIS. The buried wetland spans a low-lying area between two raised Pleistocene limestone shelves that are located at either end of the East Kapālama Geographic Zone. The wetland sediments generally consist of dark-colored clay and silty clay. Several defining characteristics of these wetland deposits are the presence of marine invertebrates, non-marine snails, charcoal, and a high percentage of organic material, including peat. Pollen present in the analyzed wetland sediment samples indicates cultivation of several plants (rice, taro, and possibly cowpeas) suggesting an agricultural function. Additionally, LCA documents and historic maps indicate that the area was previously cultivated. The wetland agricultural deposits are located more than one meter below the current ground surface beneath thick fill layers. Background research indicates that these fill layers are likely associated with land reclamation activities during the early to mid-twentieth century, when the former low-lying wetland surface was filled in for urban development.

Within the current project area, SIHP # -7426 extends for approximately 2.47 acres between two Pleistocene limestone shelves. Within the Tulchin and Hammatt (2013) project area, the cultural resource extends over an area of 12.84 acres. The cultural resource encompasses the entire project areas of both the Pammer and Monahan (2011) and the Medina et al. (2013) project areas, 4.13 acres and 1.34 acres, respectively. In total, SIHP # -7426 covers an area of approximately 24.81 acres between the four investigations.

Based on the guidance of National Register Bulletin No. 15, SIHP # 50-80-14-7426 retains its integrity of location and materials. CSH recommends that this cultural resource maintains the integrity to support its historic significance under Criterion D (has yielded, or is likely to yield, information important for research on prehistory or history) of the Hawai‘i and the National Registers, exclusively for its information potential.

SIHP # 50-80-14-7426 has provided, and could potentially provide, additional information regarding the geographic extent, paleoenvironment, and cultural modification of the pre- and post-Contact wetlands of coastal Kapālama. Evidence from previous studies indicates that these subsurface deposits extended well outside of the current City Center project area. The possibility of encountering additional wetland/agricultural deposits during future project-related ground disturbance warrants the implementation of an archaeological monitoring program. Archaeological monitoring will provide further stratigraphic exposures that may reveal structural remains, such as berms of *‘auwai* (irrigation channels), and opportunities for additional collection of column samples and detailed specialized macro- and micro-analyses.

SIHP # 50-80-14-7427

FORMAL TYPE:	Subsurface infrastructure remnants, cultural deposits, human skeletal element
FUNCTION:	Habitation and commercial infrastructure
PREVIOUS DOCUMENTATION	N/A
AGE:	Post-Contact
NUMBER OF FEATURES:	14
TYPES OF FEATURES:	12 buried structural remnants, 1 historic refuse pit, and 1 human talus bone
DISTRIBUTION:	Approximately 0.25 acres (total area)
LOCATION:	Located at the corner of Nimitz Highway and Kekaulike Street intersection (Downtown Waterfront Geographic Zone)
TAX MAP KEY:	TMK [1] 1-5-002:026; and [1] 1-5-002 (Nimitz Highway ROW por.)
LAND JURISDICTION:	City and County of Honolulu
TEST EXCAVATIONS:	T-096 through T-101 and bores 1 through 6

SIHP # 50-80-14-7427 is a newly-identified cultural resource consisting of subsurface infrastructure remnants, cultural deposits, and a human skeletal element located 3 m east of Nimitz Highway near the Kekaulike Street intersection (Figure 1). The cultural resource includes archaeological features and deposits that were identified within six test excavations (T-096 through T-101) and six geotechnical test bores (1 through 6) dug within the Chinatown Transit Station footprint (Figure 2).

The depositional sequence observed throughout SIHP # -7427 generally consists of a buried late Pleistocene calcareous reef (coral reef) identified at the base of T-096, T-097, 1, and 3 through 6. Natural sandy loam or clay loam sediment was observed overlying the coral shelf within T-096 and T-097, at the base of excavation within T-100 and T-101, and at or above the water table within each of the cores (1 through 6). The natural sediment was designated Stratum II within each of the test excavations except within T-097 where the sediment is subdivided into Stratum II (previously-disturbed upper portion) and Stratum III (in situ lower portion). The natural sediment (II and III) contained both traditional Hawaiian and historic artifacts, faunal remains, shell midden, and charcoal, and is considered a component of SIHP # -7427.

Multiple fill strata overlie the natural sediment in each of the test excavations (T-096 through T-101) and cores (1 through 6), ranging from four fill deposits within T-098 and T-099 to eleven fill deposits within T-100. Three of the fill strata (Id, If, and Ii in T-096) were identified as culturally-enriched deposits and were considered, along with the natural sediment, to be components of SIHP # -7427. In addition, the 14 archaeological features (1–14) identified within

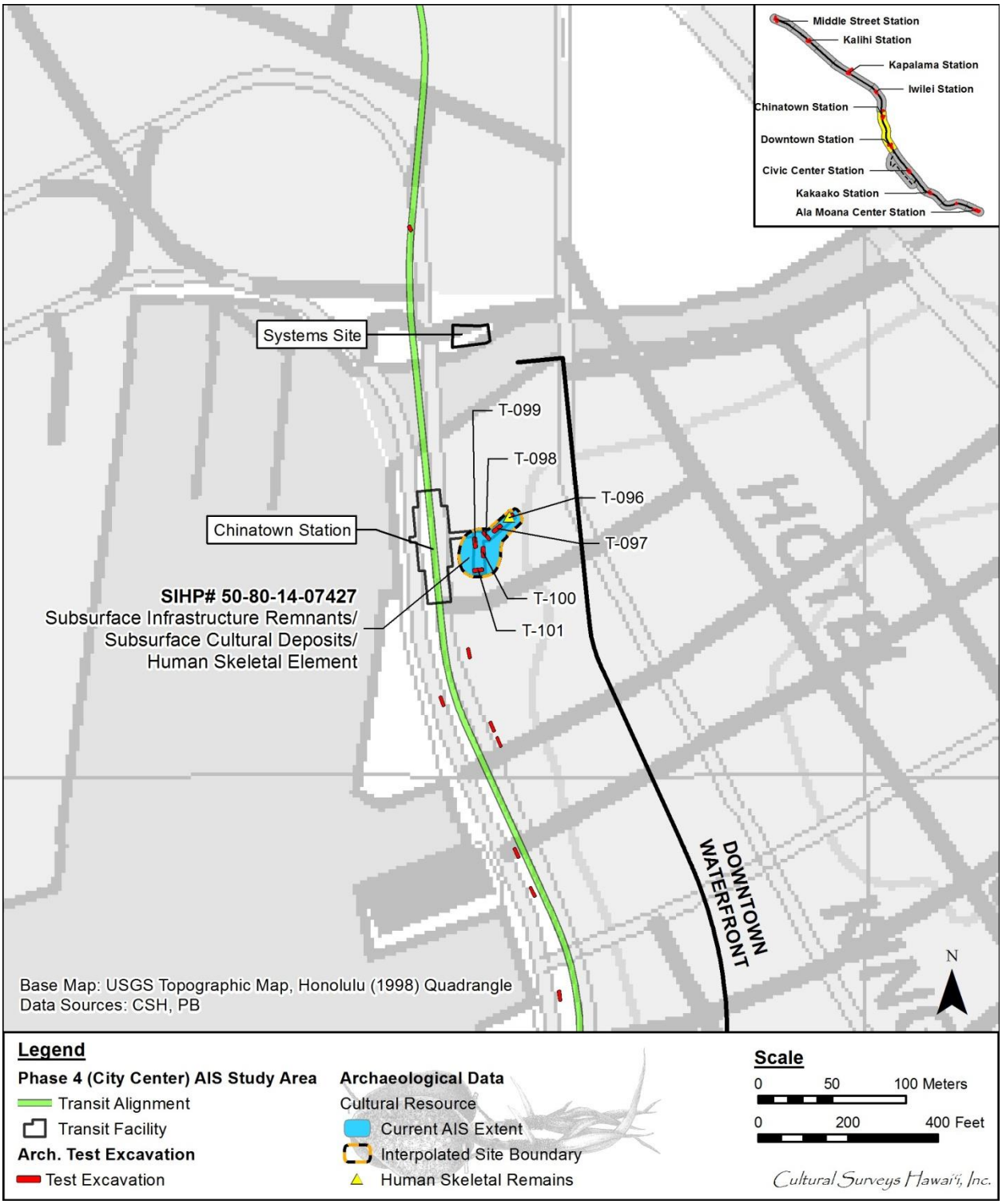


Figure 1. Location of SIHP # -7427 within the Chinatown Transit Station footprint (Base Map: 1998 USGS Topographic Map of Honolulu)

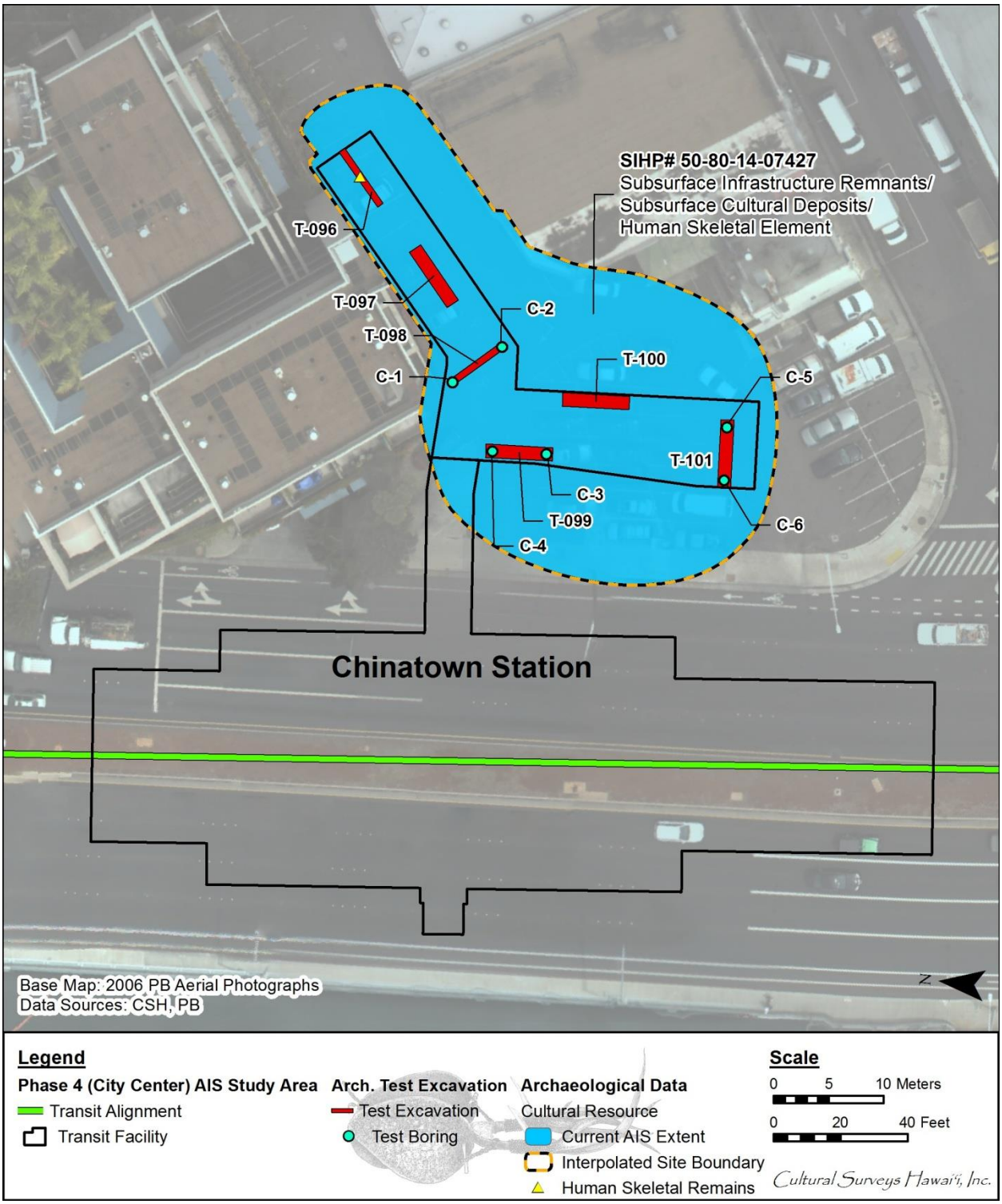


Figure 2. Location of the test excavations (T-096 through T-101) and geotechnical test bores (1 through 6) where SIHP # -7427 was identified within Chinatown Transit Station footprint (Base Map: 2006 PB Aerial Photograph)

fill deposits above the natural sediment were designated as components of SIHP # -7427. These features consist of 12 historic structural remains (mainly concrete slabs, walls, and foundation remnants), 1 historic refuse pit, and 1 human skeletal element.

In T-096, SIHP # -7427 consists of the natural sediment (Stratum II), three culturally-enriched fill strata (Id, If, and Ii), two structural features (Features 1 and 2) and a single human skeletal element (Feature 3) (Figure 3, Table 1). Feature 1 (wall and foundation remnant) predates Stratum Ig and may be contemporaneous with Stratum Ih, however the base of the wall was not fully exposed. Feature 2 was identified within the culturally-enriched Stratum Id, while Feature 3, found in the backdirt, is believed to be from Stratum If.

In T-097, SIHP # -7427 consists of the natural sediments (Strata II and III) and four structural features (Features 4–7) (Figure 4, Table 2). Feature 4 (wall and slab) is founded in Stratum Ie and appears to have been constructed immediately atop Feature 6. Feature 5 (slab) abuts the Feature 4 wall, postdates deposition of Stratum Ie, and thus appears to postdate Feature 4. Feature 6 (slab) possibly was constructed atop Stratum II, however the base of the slab was not fully exposed. Feature 7 (wall and slab) may have been constructed during deposition of Stratum If, but this is uncertain as the base was not fully exposed.

In T-098, SIHP # -7427 consists only of a single structural feature (Feature 8) (Figure 5, Table 3). Although assumed present, excavation was terminated prior to exposing the natural sediment in T-098. Feature 8 consists of two components, a concrete wall remnant and a concrete slab remnant. The wall appears to predate the slab remnant, having been constructed possibly prior to the initial deposition of Stratum Ie. In contrast, the concrete slab is founded in the upper Stratum Ie deposit.

In T-099, SIHP # -7427 consists of a single structural feature (Feature 9) (Figure 6, Table 4). Like T-098, excavation was terminated prior to exposing the natural sediment. Feature 9 consists of a concrete slab and a concrete block that sits atop a possibly uplifted section of the slab. Along its length, several fill strata (IIg) underlie the concrete slab.

In T-100, SIHP # -7427 consists of natural sediment (Stratum II) and three structural features (Features 10–12) (Figure 7, Table 5). Feature 12 (basalt pavement) predates Features 10 (slab) and 11 (drainage channel). Feature 12 was constructed during the deposition of Stratum Ig. Feature 11 was constructed during deposition of Stratum Ie and predates Feature 10 which is situated in the upper portion of Stratum Ie.

In T-101, SIHP # -7427 consists of natural sediment (Stratum II), one structural element (Feature 13), and a large infilled trash pit (Feature 14). Feature 13 (slab) underlies Stratum Ib, the base course below the modern asphalt parking surface (Stratum Ia). Feature 14 is intrusive into the natural sediment (Stratum II) and likely was truncated by later fill strata Ie and Ic.

In Cores C–1 through C–6, SIHP # -7427 consists only of natural sediment (Stratum II). These six geotechnical test bores were drilled near the west (C–1) and east (C–2) ends of T-098, the south (C–3) and north (C–4) ends of T-099, and the east (C–5) and west (C–6) ends of T-101 (Figure 8 and Table 6). No structural remnants were identified and the diameter of the cores was too small to identify possible culturally-enriched fills below the upper “drill through” section. The culturally-enriched natural sediment (SIHP # -7427) and additional fill deposits were also documented.

The culturally-enriched natural sediment (SIHP # -7427) within T-096, T-097, T-100, T-101, and Cores C–1 through C–6 contained both traditional Hawaiian and historic artifacts, faunal remains, shell midden, and charcoal. The artifacts collected during excavation consist of four pieces of volcanic glass debitage, one bone net mender, one boar tusk ornament, six Asian and Euro-American ceramic fragments, and 17 bottle glass fragments from T-096; one basalt adze flake, four basalt flakes, and a complete spirits bottle with an applied lip from T-100; and three Asian and Euro-American ceramic fragments and eight bottle/bottle fragments from T-101. Artifacts collected from the Stratum II bulk sediment samples consist of ceramic fragments (T-096 and T-097) and bottle glass fragments (T-097). The bulk samples collected from the natural sediment also yielded shell midden and charcoal. Faunal remains collected from Stratum II of T-096 include *Sus scrofa, Canis lupus familiaris,* and other medium mammal skeletal elements. Faunal remains collected from the Stratum II/III interface of T-097 consisted of *Equus ferus caballus*.

The three culturally-enriched fill strata designated as components of SIHP # -7427 consist of Strata Id, If, and Ii in T-096. Stratum Id occurs below the modern asphalt surface (Ia) and gravel base course (Ib); a crushed coral grading fill (Ic) is present within the boundaries of Id. It is identified as dark gray (2.5 Y 4/1) very gravelly sandy loam containing historic artifacts and architectural and a single structural remnant, a poured concrete slab (Feature 2). The architectural items collected from Stratum Id consist of red, yellow, and tan-yellow machine-made bricks, a large possible iron spike, and machine-cut nail fragments. Also collected was a ceramic architectural item fragment.

Stratum If in T-096 immediately underlies fill Stratum Ie, a gravelly sandy loam, and overlies fill Stratum Ig, a gravelly silty loam, and a portion of fill Stratum Ih, a silty clay loam. No structural remains were identified within Stratum If which contained historic artifacts and debris, and a single human talus bone (Feature 3). Although not collected, the artifacts and debris were recorded as including ceramic and glass fragments, as well as nails and burnt inclusions. The human skeletal element, found in the backdirt, is believed to be from the Stratum If deposit. Because of this probable association, fill Stratum If was designated as a culturally-enriched deposit and as a component of SIHP # -7427.

Stratum Ii in T-096 underlies fill Stratum Ih, a silty clay loam, and overlies both portions of fill Stratum Ij, a very gravelly loam, and Stratum II, natural gravelly sandy loam. Fill Stratum Ii contained both historic artifacts and mammal faunal remains suggestive of habitation or possible commercial activities (e.g., grocery, butchery). The artifacts collected from Stratum Ii include two Euro-American yellowware vessel fragments, one undecorated whiteware vessel fragment, and two Chinese porcelain vessel fragments. Also collected are 17 fragments from amber, clear, and dark olive bottles. The artifacts date from the late nineteenth to early twentieth century. Faunal remains collected from Stratum Ii include *Canis lupus familiaris, Sus scrofa, Bos taurus* and medium mammal skeletal elements.

The fourteen features (Features 1–14) identified as components of SIHP # -7427 consist of 12 historic building foundations, 1 historic refuse pit, and 1 human talus bone (Table 7). These features are briefly described in numerical order below.

SIHP # -7427 Feature 1 is a structural remnant identified in T-096 between 0.30 mbs and 1.10 mbs. Although the base was not exposed, this feature appears to correlate with the deposition of

the lower portion of fill Stratum Ih. SIHP # -7427 Feature 1 consists of the following three components: (1) two courses of mortared, machine-made red brick overlying and secured to (2) a poured concrete foundation that overlies (3) dry-laid basalt boulders (Figure 9). The exposed portion measured more than 1.4 m long by more than 0.15 m wide. This structural remnant extended into the northwest sidewall of the excavation. SIHP # -7427 Feature 1 is a possible late nineteenth century building foundation.

SIHP # -7427 Feature 2 is a structural remnant identified in T-096 between 0.27 mbs and 0.43 mbs. This poured concrete slab occurs within culturally-enriched Stratum Id, a very gravelly sandy loam fill. Stratum Id was designated a component of SIHP # -7427. The exposed portion of the slab measured over 2.33 m in length and more than 0.65 m in width. It extended into both the northwest and southeast side walls. SIHP # -7427 is a possible building floor, walkway, or foundation remnant, believed to date to the late 1800s or early 1900s.

SIHP # -7427 Feature 3 is an isolated human talus bone identified during excavation within the backfill pile from T-096. The talus bone was estimated to have originated from approximately 0.70 mbs – possibly from a gravelly sandy loam layer (Stratum If). The artifacts observed but not collected from Stratum If include nails, small ceramic vessel sherds, and bottle glass fragments; as noted above, fill Stratum If was designated a component of SIHP # -7427 due to the presence of the human skeletal element.

SIHP # -7427 Feature 4 is a structural remnant identified within T-097. This structural remnant consists of two components. The upper portion is a mortared, machine-made red brick wall, while the lower portion is a poured concrete slab. In turn, the lower portion of SIHP # -7427 Feature 4 sits directly atop a second concrete slab designated SIHP # -7427 Feature 6. The base of SIHP # -7427 Feature 4 (concrete slab) dates to the deposition of Stratum Ie. The exposed portion of the structural remnant components collectively measured 0.91 m in length and 0.20 m in width. The feature continues into the southeast sidewall. A machine-made brick fragment collected from Feature 4 dated from the 1918 to 1978 period. Feature 4 is a possible building foundation.

SIHP # -7427 Feature 5 is a structural remnant identified within T-097. This structural remnant consists of a poured concrete slab that abuts the upper brick wall portion of SIHP # -7427 Feature 4 (Figure 12). The exposed portion of the slab measured 3.23 m long by more that 1.22 m wide; the slab extended beyond the width of the test excavation. SIHP # -7427 Feature 5 is a possible building floor or foundation.

SIHP # -7427 Feature 6 is a structural remnant identified within T-097. Although the base of this poured concrete slab was not exposed, this structural remnant likely was constructed atop the culturally-enriched natural sediment (Stratum II; SIHP # -7427). The exposed portion of the slab measured 1.47 m long by more than 1.22 m wide; the slab extended beyond the width of the test excavation. SIHP # -7427 Feature 6 is a possible building foundation.

SIHP # -7427 Feature 7 is a structural remnant identified within T-097. Although the base of the lower portion was not exposed, SIHP # -7427 Feature 7 appears to date to Stratum If. The feature consists of two components, the upper is two courses of dry-stacked subangular cobbles, while the lower consists of a basalt slab (Figure 14). The exposed portion measured more than 0.87 m long by more than 1.22 m wide. The remainder extended beyond the width of the

excavation and into the southern end of T-097. SIHP # -7427 Feature 7 is a displaced remnant of a possible building foundation.

SIHP # -7427 Feature 8 is a structural remnant identified within T-098. It consists of a poured concrete slab and a nearby concrete wall (Figure 15). The concrete slab occurs within the upper portion of Stratum Ie between 0.60 mbs and 0.75 mbs. The base of the concrete wall was not reached at the base of excavation at 1.05 mbs. The wall extends to at least the lower portion of Stratum Ie, possibly earlier. It remains unknown whether the slab and wall remnants are components of a single building. SIHP # -7427 Feature 8 is a possible building floor and foundation wall.

SIHP # -7427 Feature 9 is a structural remnant identified within T-099. It consists of a concrete slab and a concrete block that overlies an uplifted section of the slab (Figure 16). The slab overlies several fill strata, the lowest of which is Stratum Ig, while the concrete block is overlain only by Stratum Ia, the modern asphalt parking lot surface. The exposed portion measured over 6.10 m long and 1.22 m wide; the feature extended beyond the T-099 excavation in all directions. SIHP # -7427 Feature 9 is a possible building foundation.

SIHP # -7427 Feature 10 is a structural remnant identified within T-100. This poured concrete slab dates to the upper deposition of fill Stratum Ie (Figure 17). It postdates both SIHP # -7427 Feature 11 (drainage channel) also founded in Stratum Ie and SIHP # -7427 Feature 12 (basalt pavement) founded in underlying fill Stratum Ig. The exposed portion of SIHP # -7427 measured over 2.74 m long by more than 1.24 m wide; the feature extended beyond the T-100 excavation in all directions. SIHP # -7427 Feature 10 is a possible building foundation.

SIHP # -7427 Feature 11 is a structural remnant identified within T-100. This poured concrete drainage channel predates SIHP # -7427 Feature 10, also founded in fill Stratum Ie, and postdates SIHP # -7427 Feature 12 identified in underlying fill Stratum Ig (Figure 18). The concrete drainage channel measured 0.15 m long by over 1.24 m wide; it continued beyond the width of the test excavation. SIHP # -7427 Feature 11 is a former building drainage channel.

SIHP # -7427 Feature 12 is a structural remnant identified within T-100. It is identified as a mortared, cut basalt pavement exposed in fill Stratum Ig (Figure 19). It predates SIHP # -7427 Features 10 (concrete slab) and 11 (concrete drainage channel), both exposed in overlying fill Stratum Ie. The exposed portion of SIHP # -7427 Feature 12 measured over 0.29 m long by 0.26 m wide; the pavement extended into the west excavation sidewall. SIHP # -7427 Feature 12 is a possible building foundation, floor, or walkway.

SIHP # -7427 Feature 13 is a structural remnant identified within T-101. This concrete slab was overlain by Strata Ia (modern asphalt pavement) and Ib (base course). This small exposed poured concrete slab remnant overlies fill Stratum Id in the southern portion of T-101 (Figure 20). The exposed slab remnant measured over 1.80 m long by 1.20 m wide; it extended beyond the width of the excavation and into the southern wall. SIHP # -7427 Feature 13 is a possible building foundation.

SIHP # -7427 Feature 14 is a historic refuse pit identified within T-101 between 0.60 and 1.15 mbs (Figure 21, Figure 22, and Table 8). SIHP # -7427 Feature 14 is intrusive into the natural sediment (Stratum II; SIHP # -7427). The upper limits of SIHP # -7427 Feature 14 likely was truncated by both fill Strata Ic and Ie. The exposed portion of the historic refuse pit measured

2.91 m long by over 1.20 m wide; it extended beyond the width of the test excavation. Historic artifacts collected above the feature from within Stratum Ic included an aqua bottle fragment with a possible Asian character stamped on the base. Historic artifacts observed within Stratum Ie, also above the pit, included red brick, charcoal, and faunal bone, of which only the faunal bone was collected. Fourteen historic artifacts were collected from within SIHP # -7427 Feature 14. They include a Japanese cup with a “Dashed Line” transferprint Phoenix design, two Euro-American whiteware fragments, four bottles/bottle fragments dated between the 1860s and the 1920s, one bottle fragment embossed with a trademark used from 1885 to 1900, one bottle fragment dated between 1883 and 1896, one bottle fragment dated post-1800s, a bone bead, a fired brick, a metal strap, and a fragment of window glass. The sediment matrix within the pit was gravelly sandy loam. SIHP # -7427 Feature 14 is late nineteenth- to early twentieth- century historic refuse pit.

SIHP # -7427 consists of 12 buried structural remnants, 1 human talus bone, 1 historic refuse pit, and three culturally-enriched strata. The 12 buried structural remnants include SIHP # -7427 Features 1, 2, and 4 through 13, which were identified within T-096 through T-101. The human talus bone was identified as an isolated human skeletal element within the backfill pile of T-096 and was designated as SIHP # -7427 Feature 3. The talus bone was estimated to have originated from approximately 0.70 mbs from a very gravelly sandy loam fill layer (Stratum If). The historic refuse pit was identified within T-101 was designated SIHP # -7427 Feature 14. Three culturally-enriched fill strata were designated as components of SIHP # -7427: Strata Id, If and Ii in T-096. The natural sediment (Stratum II) was identified within T-096, T-097, T-100, T-101 and 1 through 6. Both Stratum II and the additional natural sediment (Stratum III) within T-097, were designated as components of SIHP # -7427.

At the time of Western contact, the area that comprises SIHP # -7427 was known as part of the settlement of Kou. Background research indicates that this coastal landscape consisted of house sites, agricultural fields, and gaming areas for the chiefs. Stratum II (and Stratum III in T-096), the culturally-enriched sandy loam or clay loam sediment identified within T-096, 097, 100, and 101 and 1 through 6, may correspond to the pre- and/or early post-Contact settlement of Kou. Kou rapidly evolved into a bustling port following Captain William Brown’s Western discovery of Honolulu Harbor in 1793. Honolulu became more populated during the nineteenth century as the areas surrounding Honolulu Harbor increased in commercial importance. The buried structural remnants, historic refuse pit, associated culturally-enriched natural and fill strata, and datable artifacts within SIHP # -7427 are evidence of mid-nineteenth to early twentieth century habitation and commercial infrastructure development near Honolulu Harbor.

Based on the guidance of the National Register Bulletin No.15, SIHP # 50-80-14-7427 retains its integrity of location, materials, and workmanship. Based on the results of the current City Center archaeological inventory survey, CSH recommends that this cultural resource maintains sufficient integrity to support its significance under Criterion D (has yielded, or is likely to yield information important for research on prehistory or history) and E (has cultural significance to an ethnic group) of the Hawai‘i Register. Additionally, this cultural resource meets Criterion D of the National Register, exclusively for its information potential.

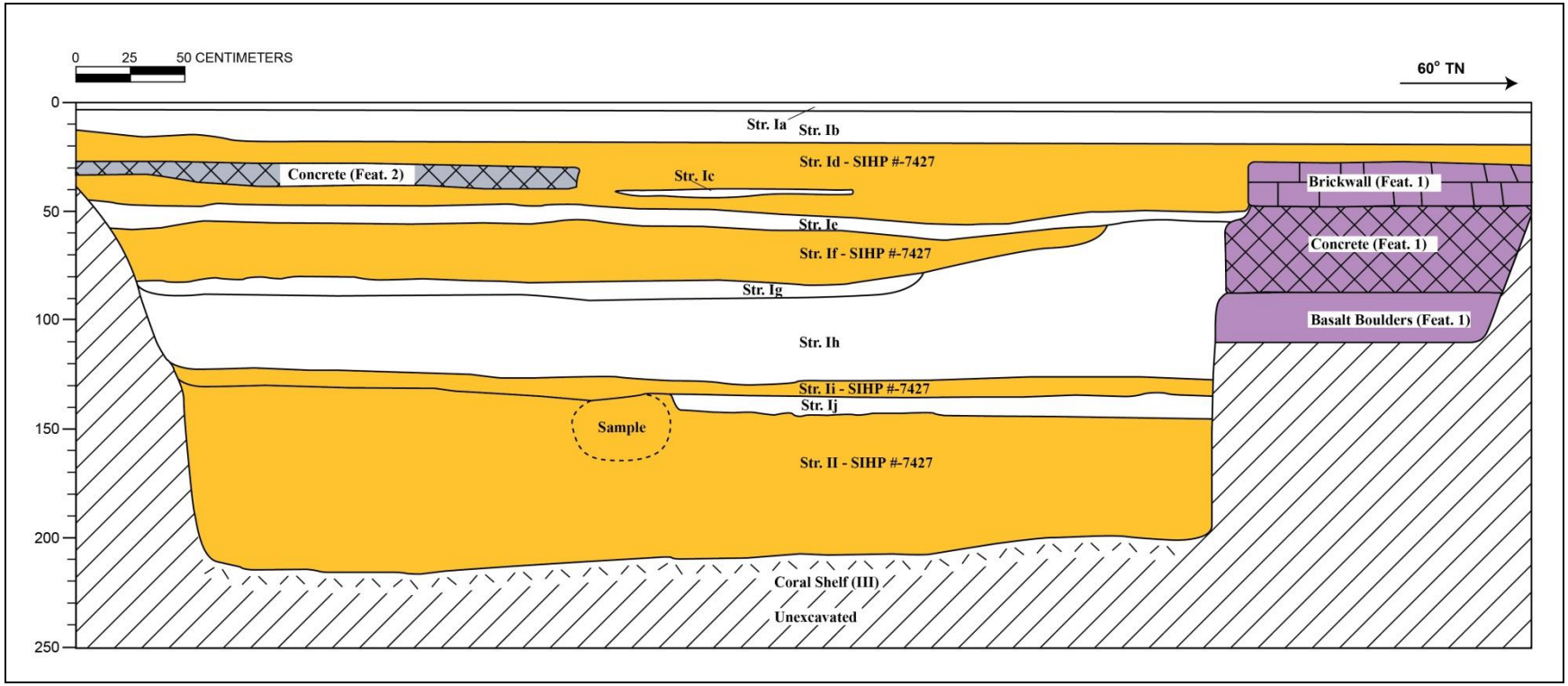


Figure 3. T-096 northwest wall profile

Table 1. T-096 Stratigraphic Description, northwest wall

Stratum	Depth (cmbs)	Description
Ia	0-3	Asphalt
Ib	3-20	Fill; 10 YR 5/1 (gray); very gravelly loam; structureless, singlgrain; moist, loose consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary; gravel base course
Ic	35-40	Fill; 2.5 Y 8/1 (white); very gravelly loam; weak, medium, blocky structure; moist, friable consistency; non-plastic; mixed origin; abrupt, broken/discontinuous lower boundary; crushed coral grading fill with concrete fragments
Id	20-46	Fill; 2.5 Y 4/1 (dark gray); very gravelly sandy loam; weak, fine, crumb structure; moist, loose consistency; non-plastic; mixed origin; abrupt, broken/discontinuous lower boundary; contained concrete and brick wall structures (SIHP # -7427 Feature 1), and concrete slab in southwest end (SIHP # -7427 Feature 2)
SIHP # -7427 Feature 2	27-43	Concrete slab; SIHP # -7427 Feature 2
Ie	46-55	Fill; 2.5 Y 8/1 (white); very gravelly loam; week, medium, blocky structure; moist, friable consistency; non-plastic; mixed origin; abrupt, broken/discontinuous lower boundary; crushed coral fill
If	55-81	Fill; 2.5 Y 4/1 (dark gray); gravelly sandy loam; structureless, singlgrain; moist, loose consistency; non-plastic; mixed origin; abrupt, broken/discontinuous lower boundary; contained nails, and very small glass and ceramic fragments (not collected);
SIHP # -7427 Feature 3	~70	A single human talus bone; found within backdirt believed to belong to Stratum If; SIHP # -7427 Feature 3
Ig	81-90	Fill; 10 YR 2/2 (very dark brown); gravelly silty loam; weak, medium, blocky structure; moist, friable consistency; slightly plastic; terrigenous origin; abrupt, smooth lower boundary; contained nails, glass, ceramics and burnt inclusions (not collected)
Ih	90-126	Fill; 7.5 YR 3/3 (dark brown); silty clay loam; structureless, singlgrain; moist, friable consistency; slightly plastic; terrigenous origin; abrupt, smooth lower boundary; had bands of stream-deposited soil—some very sandy, some more clayey
SIHP # -7427 Feature 1	30-110	Building remnant consisting of a brick wall overlying concrete and a layer of basalt boulders; SIHP # -7427 Feature 1
Ii	126-140	Fill; 10 YR 2/2 (very dark brown); gravelly silty clay loam; weak, medium, blocky structure; moist, friable consistency; slightly plastic; terrigenous origin; abrupt, smooth lower boundary; contained faunal remains, rusted metal, slag inclusions, ceramic and glass (collected); designated as a component of SIHP # -7427

Ij	135-145	Fill; 2.5 Y 8/1 (white); very gravelly loam; weak, medium, blocky structure; moist, friable consistency; non-plastic; mixed origin; abrupt, broken/discontinuous lower boundary; crushed coral
II	129-216	Natural; 10 YR 2/2 (very dark brown); gravelly sandy loam; weak, fine, crumb structure; moist, friable consistency; non-plastic; mixed origins; contained faunal bone and light shell midden (collected); previously disturbed natural sediment; designated as a component of SIHP # -7427

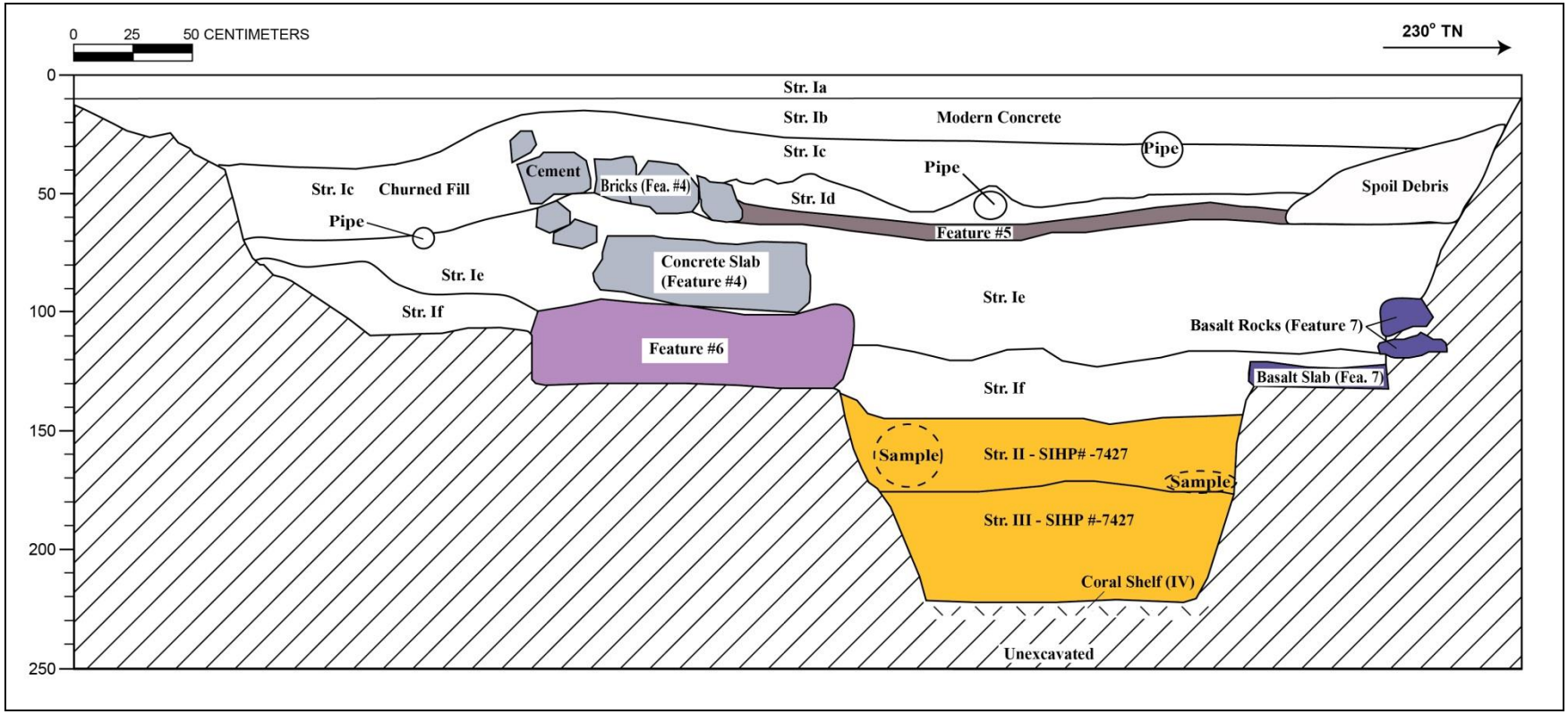


Figure 4. T-097 southeast profile wall

Table 2. T-097 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–10	Asphalt
Ib	10–35	Fill; 5 YR 4/1 (dark gray); extremely gravelly sandy loam; structureless, singlgrain; dry loose consistency; non-plastic; terrigenous origin; abrupt, wavy lower boundary; contained concrete utility jacket; base course imported fill
Ic	35–60	Fill; 10 YR 4/2 (light gray); gravelly sandy loam; weak, medium, blocky structure; moist, friable consistency; non-plastic; mixed origin; broken/discontinuous lower boundary; appeared to be associated with metal pipe remains; contained ceramics, bottle glass, and miscellaneous historics (collected)
Id	40–60	Fill; 10 YR 3/2 (very dark gray brown); gravelly sandy loam; weak, fine, crumb structure; moist, loose consistency; non-plastic; contained ceramics and glass jar (collected), bottle glass fragments and metal (not collected); upper boundary consisted of a thin layer of burnt trash
SIHP # -7427 Feature 5	50–65	Concrete slab; possible building foundation remnant; SIHP # -7427 Feature 5
Ie	60–123	Fill; 10 YR 3/3 (dark brown); very gravelly sandy loam; weak, medium to coarse, crumb structure; moist, very friable consistency; non-plastic; mixed origin; abrupt, wavy lower boundary; contained glass and ceramics; includes SIHP # -7427 Feature 4
SIHP # -7427 Feature 4	35–70	Mortared red brick wall overlying a concrete slab; possible building foundation remnant underlying Stratum Id; SIHP # -7427 Feature 4
If	80–145	Fill; 7.5 YR 3/3 (dark brown); silty clay loam; structureless, massive; moist, very firm consistency; plastic; terrigenous origin; abrupt, smooth lower boundary; contained metal, a rounded fiberglass dish (bowl/cup); distinct striations present, possibly caused by water; includes SIHP # -7427 Feature 6 and Feature 7
SIHP # -7427 Feature 6	70–136	Concrete slab; possible building foundation remnant; SIHP # -7427 Feature 6
SIHP # -7427 Feature 7	95–130	Stacked basalt cobbles overlying a basalt slab; possible building foundation remnant; SIHP # -7427 Feature 7
II	135–180	Natural; 10 YR 2/2 (very dark brown); sandy loam; structureless, singlgrain; moist, firm consistency; non-plastic; mixed origin; clear, smooth lower boundary; contained abundant charcoal and shell fragments, faunal bone; previously disturbed or reworked natural sediment; component of SIHP # -7427

III	175–222	Natural; 10 YR 4/3 (brown); sandy loam; structureless, singlgrain; moist, loose to very friable consistency; non-plastic; mixed origin; abrupt lower boundary; in situ natural sediment; designated a component of SIHP # -7427
IV	222 (BOE)	Natural; 10 YR 7/4 (very pale brown); bedrock-limestone; structureless, massive; moist, weakly to strongly cemented; discontinuous consistency; non-plastic; marine origin; lower boundary not observed; Pleistocene coral shelf

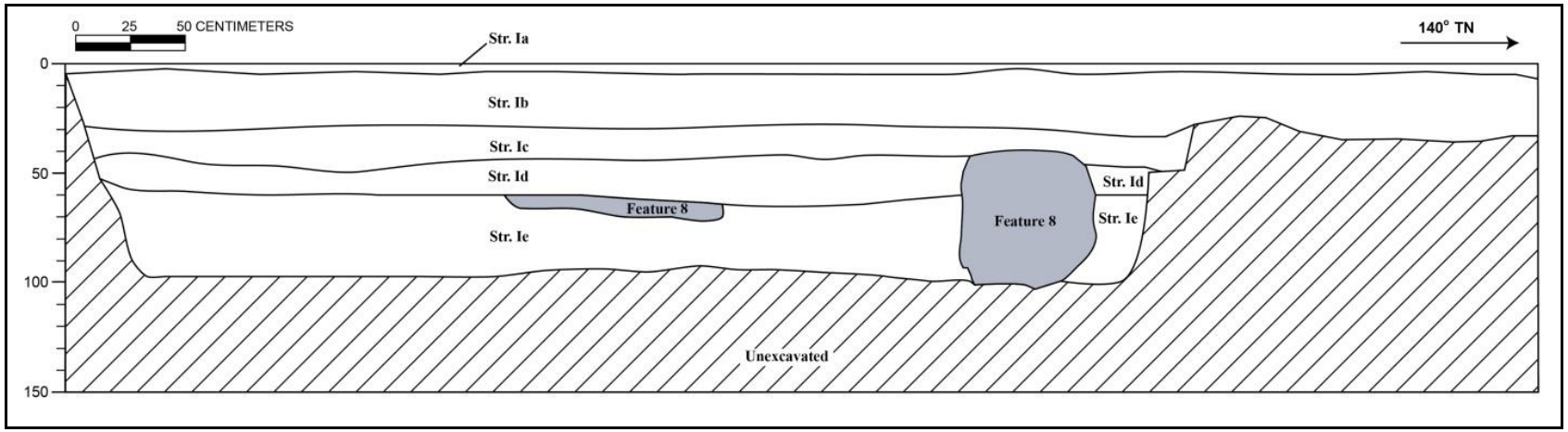


Figure 5. T-098 northeast profile wall

Table 3. T-098 Stratigraphic Description, northeast wall

Stratum	Depth (cmbs)	Description
Ia	0–5	Asphalt
Ib	5–30	Fill; 5 YR 4/1 (dark gray); extremely gravelly sandy loam; structureless, singlgrain; dry loose consistency; non-plastic; terrigenous origin; abrupt, wavy lower boundary
Ic	30–45	Fill; 7.5 YR 3/2 (dark brown) with mottles of 7.5 YR 8/1 (white); gravelly loam; moderate, medium, crumb structure; moist, very friable consistency; slightly plastic; terrigenous origin; diffuse, smooth lower boundary; contained construction gravel
Id	40–65	Fill; 2.5 YR 3/3 (dark reddish brown), with mottles of 10 YR 2/1 (black); clay; moderate, fine, blocky structure; moist, firm consistency; slightly plastic; terrigenous origin; diffuse, smooth lower boundary
Ie	55–110 (BOE)	Fill; 2.5 YR 2.5/1 (reddish black), with mottles of 7.5 YR 8/1 (white); very gravelly clay loam; medium, crumb structure; moist, very friable consistency; slightly plastic; terrigenous origin; contained red brick fragments, cement fragments, and a rusted metal nail; included SIHP # -7427 Feature 8
SIHP # -7427, Feature 8	45–105	Concrete slab and formed concrete structure; possible building foundation remnants; SIHP # -7427 Feature 8

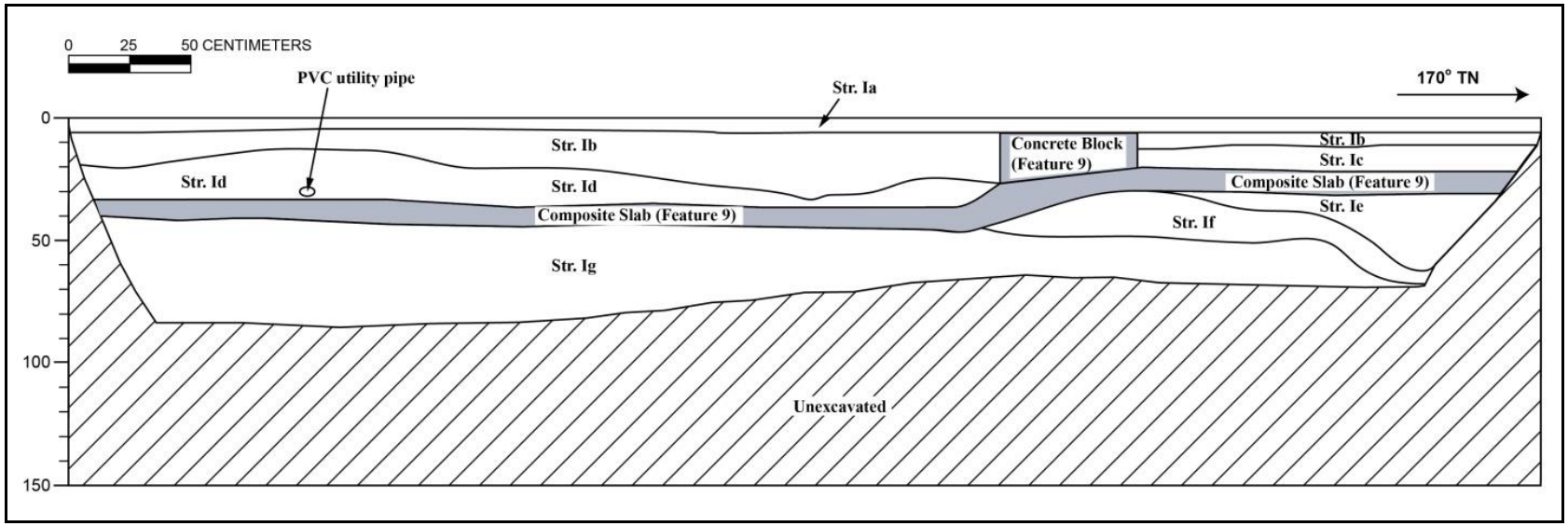


Figure 6. T-099 east profile wall

Table 4. T-099 Stratigraphic Description, east wall

Stratum	Depth (cmbs)	Description
Ia	0–5	Asphalt
Ib	5–26	Fill; 5 YR 4/1 (dark gray); extremely gravelly sandy loam; structureless, singlgrain; dry loose consistency; non-plastic; terrigenous origin; abrupt, wavy lower boundary; contained concrete utility jacket; base course imported fill
Ic	12–23	Fill; 10 YR 4/2 (dark grayish brown); extremely gravelly sandy loam; structureless, singlgrain; moist, loose consistency; non-plastic; terrigenous origin; imported fill
Id	12-35	Fill; 7.5 YR 4/2 (brown); extremely stony clay; structureless, massive; moist, firm consistency; very plastic; terrigenous origin; lower boundary not visible; contained coral cobbles and small boulders
SIHP # -7427 Feature 9	5–46	Composite tile and concrete slab and overlying concrete block; possible building foundation remnants; SIHP # -7427 Feature 9
Ie	40-60	Fill; 10 YR 4/2 (dark grayish brown); extremely gravelly sandy loam; structureless, singlgrain; moist, loose consistency; non-plastic; terrigenous origin; imported fill
If	30–68	Fill; 7.5 YR 4/2 (brown); extremely stony clay; structureless, massive; moist, firm consistency; very plastic; terrigenous origin; lower boundary not visible; contained coral cobbles and small boulders
Ig	40–88 (BOE)	Fill; 10 YR 4/3 (brown); extremely stony silt loam; structureless, singlgrain; moist, loose structure; non-plastic; terrigenous origin; lower boundary not visible; imported fill

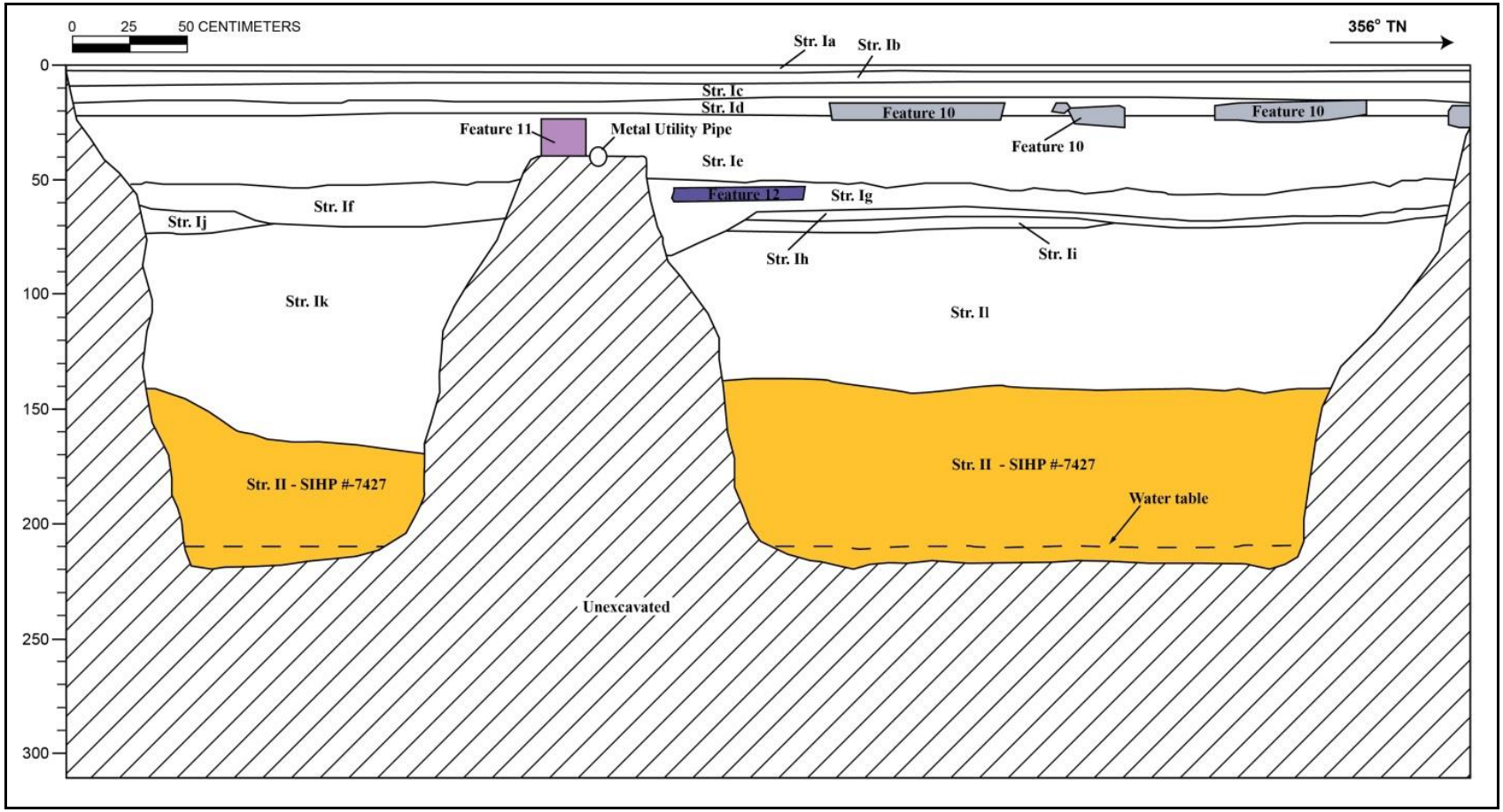


Figure 7. T-100 west profile wall

Table 5. T-100 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-3	Asphalt
Ib	3-9	Fill; 5 YR 4/1 (dark gray); extremely gravelly sandy loam; structureless, singlgrain; dry loose consistency; non-plastic; terrigenous origin; abrupt, wavy lower boundary; contained concrete utility jacket; base course imported fill
Ic	9-17	Buried asphalt surface
Id	15-23	Fill; 5 YR 4/1 (dark gray); extremely gravelly sandy loam; structureless, singlgrain; dry loose consistency; non-plastic; terrigenous origin; abrupt, wavy lower boundary; base course imported fill; contains SIHP # -7427 Feature 10
SIHP # -7427 Feature 10	19-28	Concrete slab; possible building foundation remnant; SIHP # -7427 Feature 10
Ie	23-58	Fill; 10 YR 8/2 (very pale brown) with mottles of 10 YR 4/2 (dark grayish brown); very gravelly sandy loam; strong, fine, blocky structure; moist, firm, strong consistency; non-plastic; mixed origin; diffuse, smooth lower boundary; contained utilities; includes SIHP # -7427 Feature 11
SIHP # -7427 Feature 11	24-40	Concrete drainage channel; possible building foundation remnant; SIHP # -7427 Feature 11
If	52-71	Fill; 10 YR 3/2 (very dark grayish brown) with mottles of 10 YR 8/2 (very pale brown); very gravelly loam; weak, fine, granular structure; moist, very friable, weak consistency; slightly plastic; mixed origin; lower boundary visible; contained rusted nail and charcoal (not collected); ceramic (collected)
Ig	51-84	Fill; 10 YR 3/1 (very dark gray); loam; weak, fine, crumb structure; moist, very friable, weak consistency; slightly plastic; terrigenous origin; very abrupt, smooth lower boundary; includes SIHP # -7427 Feature 12
SIHP # -7427 Feature 12	55-60	Mortared cut basalt stone slab; possible building foundation remnant; SIHP # -7427 Feature 12
Ih	59-70	Fill; 10 YR 3/1 (very dark gray) with (C, 1) mottles 10 YR 8/2 (very pale brown); loam; weak, fine, crumb structure; moist, friable, weak consistency; slightly plastic; mixed origin; abrupt, smooth lower boundary
Ii	64-86	Fill; 7.5 YR 4/4 (brown); loam; weak, fine, crumb structure; moist, very friable, weak consistency; slightly plastic; mixed origin; diffuse, smooth lower boundary

Stratum	Depth (cmbs)	Description
Ij	62-75	Fill; 10 YR 4/4 (dark yellowish brown); gravelly sandy clay loam; weak, fine, crumb structure; moist, very friable, weak consistency; non-plastic; terrigenous origin
Ik	70-170	Fill; 2.5 Y 3/2 (very dark grayish brown); very gravelly sandy loam; weak, fine, crumb structure; moist, very friable, weak consistency; non-plastic; mixed origin; clear, wavy lower boundary; marine shell fragments
Il	65-145	Fill; 10 YR 3/2 (very dark grayish brown) with mottles of 10 YR 8/2 (very pale brown); sandy loam; moderate, coarse, blocky structure; moist, firm, strong consistency; slightly plastic; clear, smooth lower boundary; contained ceramic fragments (collected), bottle glass (not collected)
II	141-220 (BOE)	Natural; 10 YR 4/2 (dark grayish brown); gravelly sandy loam; structureless, singlgrain; moist, friable consistency; slightly plastic; mixed origin; abrupt, smooth lower boundary; contained glass bottle, rusted metal, glass (collected), charcoal flecks; previously disturbed natural sediment; component of SIHP # -7427

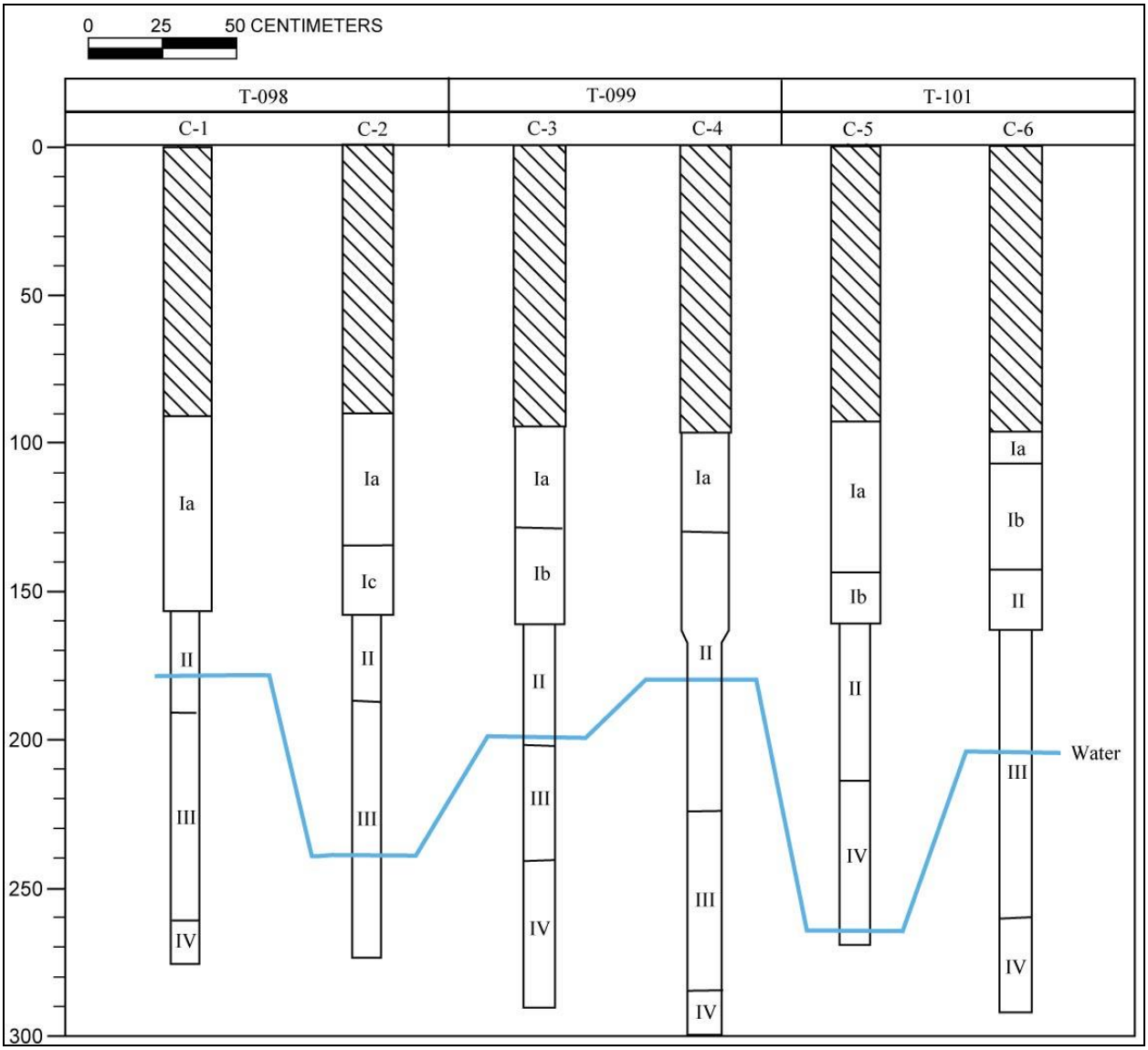


Figure 8. Stratigraphic profiles collected from 1 to 6 from T-098, T-099, and T-101 (note: hatched area represents drill through above strata and blue line represents the water table)

Table 6. 1 through 6 Stratigraphic Description

Stratum	Depth (cmbs)	Description
N/A	0-95	Drill Through
Ia	90-157	Fill; 10 YR 5/2 (grayish brown); extremely gravelly silty sand; structureless, singlgrain; moist, loose consistency; non-plastic; mixed origin; contains 80% angular basalt gravel; possible basalt gravel base course
Ib	109-162	Fill; 10 YR 8/2 (very pale brown); very gravelly sandy loam; structureless, singlgrain; moist, loose consistency; non-plastic; mixed origin; contains 40% angular coral gravel and sparse charcoal flecking; possible crushed coral fill
Ic	136-160	Fill; 10 YR 3/2 (very dark grayish brown); clay; structureless, massive; wet, sticky consistency; slightly plastic; terrigenous origin
II	130-225	Natural; 10 YR 3/2 (very dark grayish brown); sandy loam; weak, medium, crumb structure; moist, firm consistency; slightly plastic; mixed origin; contained charcoal flecking and shell fragments (not collected); subsurface culturally-enriched deposit; designated a component of SIHP # -7427
III	167-288	Natural; 10 YR 3/1 (very dark grey); loamy clay; strong, medium, crumb structure; moist, firm consistency; plastic; terrigenous origin; contained organic material (peat)
IV	215-300	Natural; decomposed coral shelf

Table 7. Features of SIHP # -7427

Feature	Test Excavation	Depth (mbs)	Description
1	T-096	0.30-1.10	Structural Remnant; in situ building foundation comprised of two courses of mortared, machine-made red brick overlying and secured to a poured concrete foundation atop dry-laid basalt boulders
2	T-096	0.27-0.43	Structural Remnant; in situ poured concrete slab
3	T-096	0.70	Human Remain; a single isolated human talus bone in backfill
4	T-097	0.35-1.00	Structural Remnants; in situ mortared, machine-made red brick wall overlying a poured concrete slab
5	T-097	0.50-0.65	Structural Remnant; in situ poured concrete slab that abuts Feature 4
6	T-097	0.90-1.36	Structural Remnant; in situ poured concrete slab underlying Feature 5
7	T-097	0.95-1.30	Structural Remnants; displaced, dry-stacked, subangular basalt cobbles overlying a basalt slab
8	T-098	0.45-1.05	Structural Remnants; in situ poured concrete slab and an adjacent in situ concrete wall
9	T-099	0.05-0.46	Structural Remnant; in situ concrete block overlying an in situ poured concrete slab
10	T-100	0.19-0.28	Structural Remnant; fragmented in situ poured concrete slab
11	T-100	0.24-0.50	Structural Remnant; in situ poured concrete drainage channel
12	T-100	0.55-0.60	Structural Remnant; in situ mortared, cut basalt pavement
13	T-101	0.10-0.28	Structural Remnant; in situ poured concrete slab
14	T-101	0.60-1.15	Refuse pit; contained late nineteenth century artifacts, charcoal, and faunal bone

Figure 9. SIHP # -7427 Feature 1 (wall and concrete slab remnants) within T-096, view to east

Figure 10. SIHP # -7427 Feature 2 (concrete slab) within T-096, view to southwest

Figure 11. SIHP # -7427 Feature 4 (red brick wall and concrete slab remnants) within T-097, view to southeast

Figure 12. SIHP # -7427 Feature 5 (concrete slab remnant) within T-097, view to northeast

Figure 13. SIHP # -7427 Features 5 and 6 (concrete slabs) within T-097, view to southeast

Figure 14. SIHP # -7427 Feature 7 (dry-stacked basalt cobbles atop concrete slab) within T-097, view to southwest

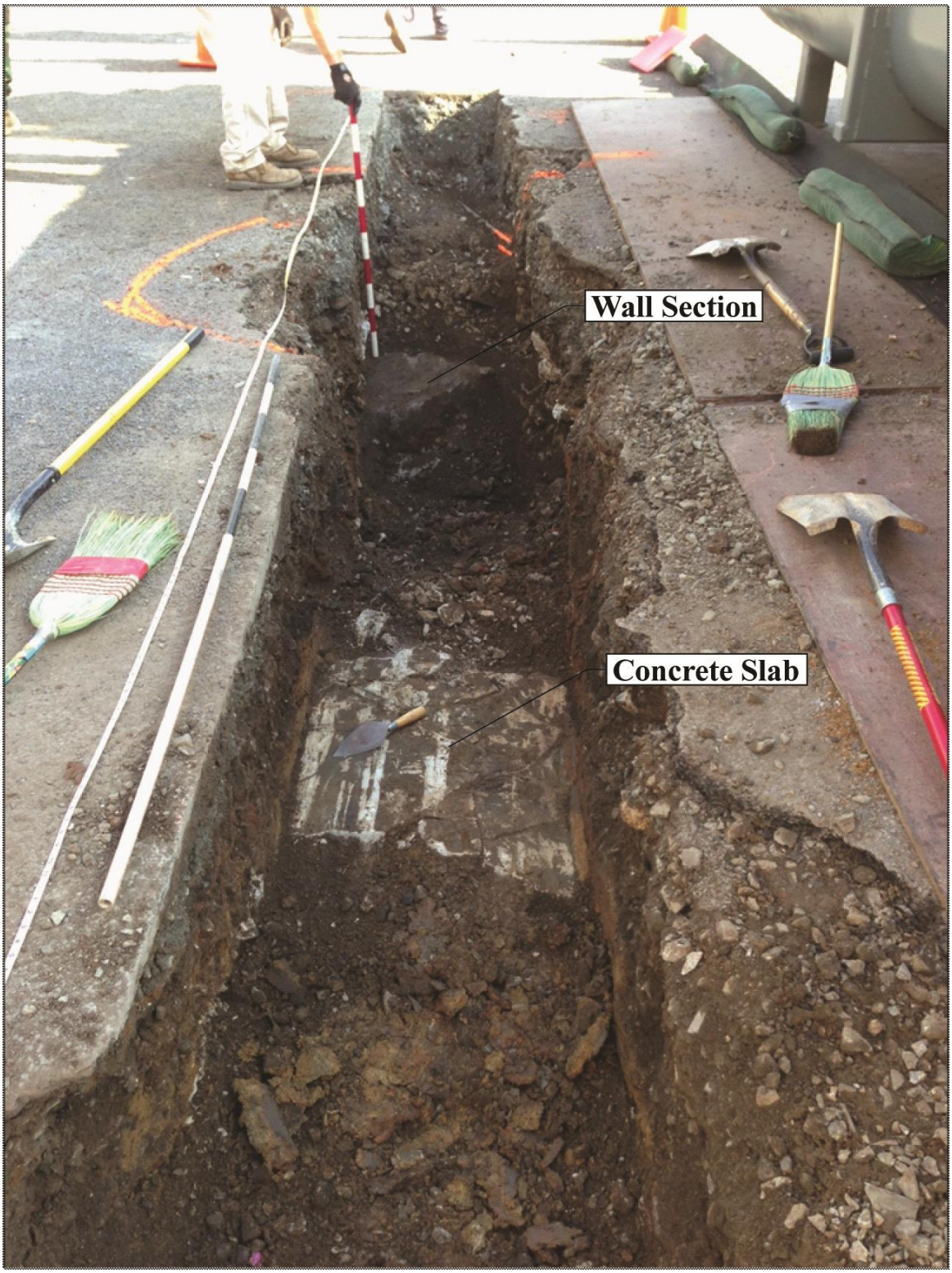


Figure 15. SIHP # -7427 Feature 8 (concrete slab and wall section) within T-098, view to southeast

Figure 16. SIHP # -7427 Feature 9 (concrete slab and concrete block) within T-099, view to north

Figure 17. SIHP # -7427 Feature 10 (concrete slab) within T-100, view to south

Figure 18. SIHP # -7427 Feature 11 (concrete drain) within T-100, view to north

Figure 19. SIHP # -7427 Feature 12 (mortared cut-basalt pavement) within T-100, view to north

Figure 20. SIHP # -7427 Feature 13 (poured concrete slab) within T-101, view to southwest

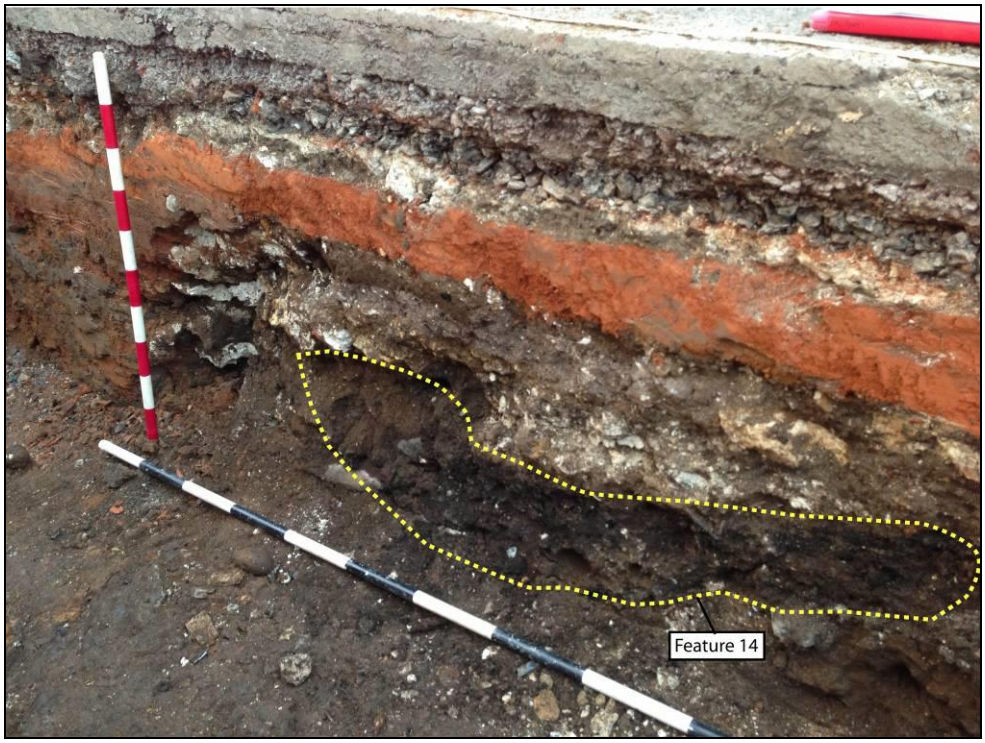


Figure 21. SIHP # -7427 Feature 14 (historic refuse pit) within T-101, view to northwest

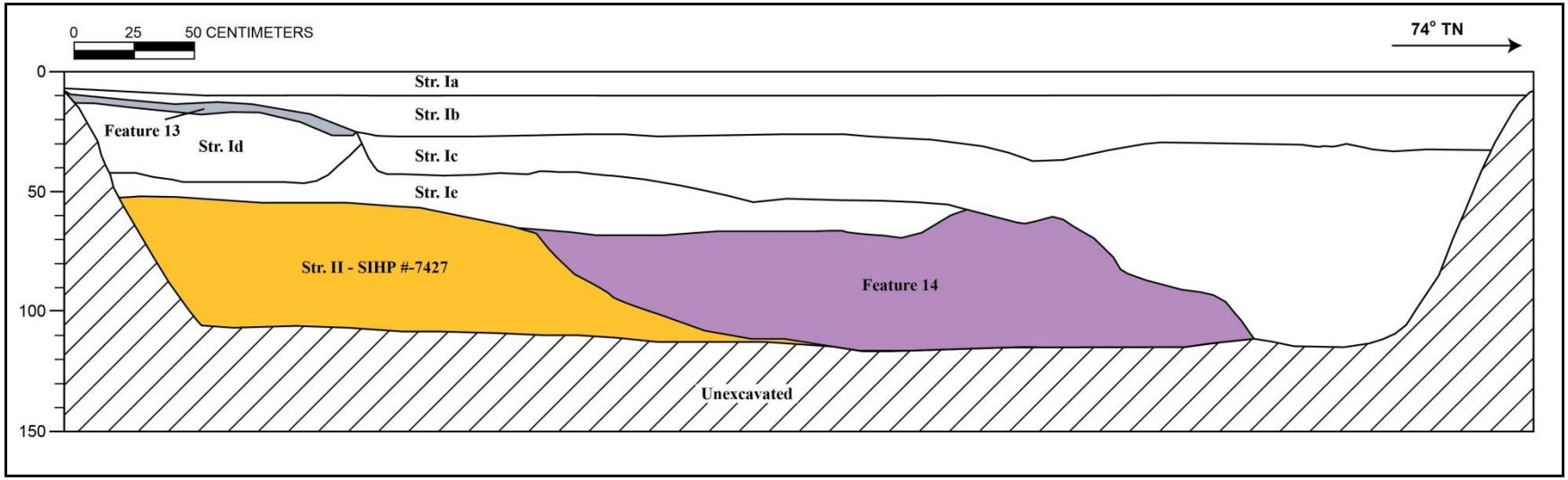


Figure 22. T-101 northwest wall profile

Table 8. T-101 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-11	Asphalt
Ib	11-37	Fill; 5 YR 4/1 (dark gray); extremely gravelly sandy loam; structureless, singlgrain; dry loose consistency; non-plastic; terrigenous origin; abrupt, wavy lower boundary; contained concrete utility jacket; imported base course fill; insulator and brick (collected)
Ic	26-115	Fill; 2.5 YR 4/1 (dark reddish gray), with common, fine mottles of 2.5 YR 4/8 (red); clay; structureless, massive; moist, very firm consistency; very plastic; terrigenous origin; diffuse, irregular lower boundary; clay fill; bottle glass, porcelain insulator, faunal (collected); SIHP # -7427 Feature 13 overlies Stratum Id
SIHP # -7427 Feature 13	10-28	Building remnant consisting of an in situ poured concrete slab; likely a building floor or foundation
Id	15-47	Fill; 7.5 YR 3/2 (dark brown), with mottles of 7.5 YR 6/3 (light brown); sandy loam; structureless, singlgrain; friable consistency; non-plastic; mixed origin; diffuse lower boundary; coral inclusion
Ie	30-69	Fill; 5 YR 3/1 (very dark gray), with mottles of 5 YR 8/1 (white); sandy loam; structureless, singlgrain; moist, friable consistency; non-plastic; mixed origin; clear lower boundary; contained red brick (not collected), charcoal flakes, fill deposit
SIHP # -7427 Feature 14	50-127	Fill; 10 YR 5/1 (gray), gravelly sandy loam; weak, fine, crumb structure; moist, loose consistency; non-plastic; mixed origin; lower boundary not observed; truncated by Strata Ic and Ie; intrusive into Stratum II; contained historic refuse; designated SIHP # -7427 Feature 14
II	52-112	Natural; 5 YR 2.5/1 (black); loamy clay; moderate, medium, blocky structure; moist, firm consistency; slightly plastic; mixed origin; lower boundary not visible; contains charcoal flaking; natural sediment; designated a component of SIHP # -7427

SIHP # 50-80-14-7427 has provided information, and can potentially provide additional information, on nineteenth and twentieth century habitation at the previous settlement of Kou and historic development of Chinatown near Honolulu Harbor. The potential for additional research warrants the implementation of a data recovery program. The primary focus of data recovery at SIHP # -7427 will be on the in situ deposits present beneath the structural remnants in an effort to better define land use in the pre- and/or early post-Contact periods. Data recovery will include exposing and mapping, in plan and profile, any additional buried structural remnants in an effort to correlate these remnants and associated fill strata with historic maps and specific historic events. Data recovery will involve screening efforts aimed at identifying any additional human skeletal remains that may be present at SIHP # -7427. In addition, data recovery will involve further excavation of in situ cultural deposits and features that may be identified as possible components of SIHP # -7427. Following the data recovery, archaeological monitoring will be conducted during construction to further collect data on the nature and distribution of additional buried structural remnants, the extent of culturally-enriched strata associated with SIHP # 7427, and related features through mapping, recordation, and sample collection. The previously-identified human remain associated with SIHP # 50-80-14-7427, will be treated in accordance with HAR Chapter 13-13-300 and HRS Chapter 6E-43. In order to alleviate the project’s effect on human burials, a project-specific burial treatment plan (a requirement of HAR Chapter 13-13-300) will be prepared for consideration of the OIBC and recognized descendants. The agreed upon treatment is preservation in place, the details of which will be documented in the burial treatment plan.

SIHP # 50-80-14-7428

FORMAL TYPE:	Subsurface cultural deposit and historic building foundations
FUNCTION:	Habitation, Commercial Infrastructure
PREVIOUS DOCUMENTATION:	None
AGE:	Pre- and post-Contact
NUMBER OF FEATURES:	14
TYPES OF FEATURES:	12 pits (including 3 postmolds, and 9 indeterminate),1 buried wall remnant, 1 builder’s trench
DISTRIBUTION:	0.2 acres (total area)
LOCATION:	Located northeast (*mauka*) of Halekauwila Street between Punchbowl Street and Mililani Street (West Kaka‘ako Geographic Zone)
TAX MAP KEY:	TMK [1] 2-1-026:001, 022; and [1] 2-1-026 (Halekauwila Street ROW por.)
LAND JURISDICTION:	State of Hawai‘i and the City and County of Honolulu
TEST EXCAVATIONS:	T-119, T-119A, T-120, T-120A, and T-120B

SIHP # 50-80-14-7428 is a newly-identified subsurface culturally-enriched deposit and fourteen associated features located northeast (*mauka*) of Halekauwila Street between Punchbowl Street and Mililani Street within the West Kaka‘ako Geographic Zone (Figure 1). This archaeological cultural resource was identified within five test excavations (T-119, T-119A, T-120, T-120A, and T-120B) during the current City Center archaeological inventory survey.

The depositional sequence was similar in each of the five test excavations in which SIHP # -7428 was identified (Figure 2). The buried Late Pleistocene calcareous reef (coral reef) was identified at the base of excavation in T-119, T-119A, T-120A, and T-120B, and is presumed to be beneath the water table and base of excavation within T-120. Where present in the excavation sidewall, the coral reef was designated Stratum IV. Natural calcareous Jaucas sand was present at the base of the excavation in each of the five test excavations, overlying the coral shelf. The Jaucas sand was designated Stratum III.

A culturally-enriched A horizon, exhibiting both pre- and post-Contact land usage, directly atop the natural Jaucas sand surface, was designated Stratum II. The texture of this A horizon varied from loamy silt and loamy sand in T-119 and T-120 to sandy loam in T-119A and T-120A and sandy clay loam in T-120B. The culturally-enriched A horizon was designated SIHP # 50-80-14-7428.

Fourteen features were identified as components of SIHP # -7428 (Table 1). Of these, 12 (SIHP # -7428 Features 2–13)originated in the A horizon and intruded into the underlying Jaucas sand. They consist of 3 postmolds and 9 indeterminate pits. Two additional features were

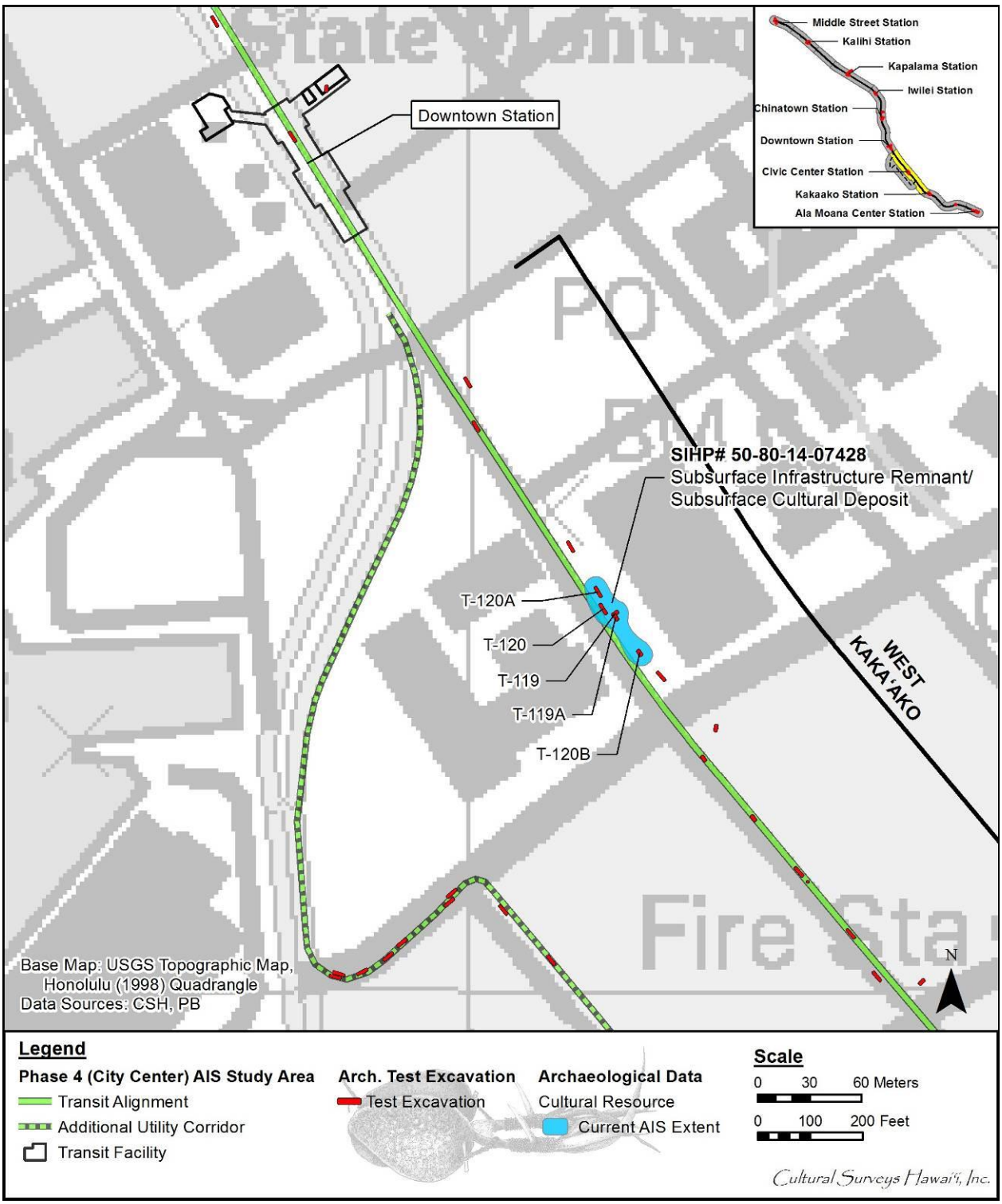


Figure 1. Location of subsurface cultural deposits (SIHP # -7428) in the West Kaka‘ako Geographic Zone (Base Map: 1998 USGS Topographic Map of Honolulu)

Table 1. Archaeological features of SIHP # -7428 Documented During the Current AIS

Feature	Test Excavation	Depth (cmbs)	Radiocarbon Date (C14)	Type/Function	Contents
1	T-119, T-119A	130-190	-	Buried Wall Remnant/Structural Foundation	Historic wall constructed of basalt stone and mortar
1a	T-119A	47-168	AD 1160-1890 (78.2%) and AD 1800-1940 (65.6%)	Builder’s Trench/Excavation	Builder’s trench associated within the construction of Feature 1;contained charcoal (*kolomona*, *‘ōhi‘a lehua, kukui, kōpiko, ipu, ‘āheahea*, *‘āweoweo,* and *‘ōhi‘a ai*), naturally-occurring marine shell, marine shell midden, organics, ceramics, metal tag, possible bone pipe stem, bottle glass, metal, slag, vesicular basalt, coral gravel, and faunal bone (*Canis lupus familiaris*, medium mammal, and fish)
2	T-120	112-129	-	Pit/Postmold	Charcoal, naturally-occurring marine shell, marine shell midden, faunal bone (shark tooth, fish)
3	T-120	112-116	-	Pit/Postmold	Charcoal, naturally-occurring marine shell, marine shell midden, and faunal bone (medium mammal, fish)
4	T-120	112-126	AD 1790-1940 (62.7%)	Pit/Indeterminate	Charcoal (*kukui*, *kolomona*, *kōpiko*, roseapple/Java plum/*‘ōhi‘a ‘ai*, *hau*, *‘ilima*, *loulu*, *‘ākia ipu*, *pilo*, *akoko*, *‘ahakea*, *‘āheahea*, *‘āweoweo*, *‘ūlei*), naturally-occurring marine shell, marine shell midden, organics, volcanic glass, basalt manuport fragment, and faunal remains (medium mammal, *Rattus* sp., fish)
5	T-120	110-118	AD 1810-1920 (67.1%)	Pit/Indeterminate	Charcoal (*kukui*, *akoko*, *‘ōhi‘a lehua*, *hau*, *‘ilima*, roseapple/Java plum/*‘ōhi‘a ‘ai*, *pilo*), naturally-occurring marine shell, marine shell midden, organics, volcanic glass, burned *kukui* nut shell, and faunal bone (medium mammal, burned *Canis lupus familiaris*, burned Aves, *Rattus* sp., fish, shark tooth)

Feature	Test Excavation	Depth (cmbs)	Radiocarbon Date (C14)	Type/Function	Contents
6	T-120	107-120	-	Pit/Indeterminate	Charcoal (*kukui*, fern, *kolomona*, *‘ilima*, *‘āheahea*, *‘āweoweo*, *‘a‘ali‘i*), burned *kukui* nut shell, organics, basalt fragment, fircracked rock, volcanic glass, plastic filament, and faunal bone (three shark teeth, burned *Canis lupus familiaris*, *Sus scrofa*, *Rattus* sp., fish)
7	T-120	104-107	AD 1800-1930 (68.9%)	Pit/Indeterminate	Charcoal, naturally-occurring marine shell, marine shell midden, fircracked rock, vesicular basalt, and faunal bone (*Canis lupus familiaris*, *Rattus* sp., shark tooth, fish)
8	T-120	104-117	-	Pit/Indeterminate	Charcoal, naturally-occurring marine shell, marine shell midden, burned *kukui* nut shell, and faunal bone (*Canis lupus familiaris*, *Rattus* sp., shark tooth, fish)
9	T-120A	118-136	AD 1660-1890 (77.3%)	Pit/Indeterminate	Charcoal (*kōpiko*, *hau*, *pilo*), naturally-occurring marine shell, and marine shell midden
10	T-120A	128-137	AD 1660-1890 (77.3%)	Pit/Postmold	Charcoal (*‘āheahea*, *‘āweoweo*, roseapple/Java plum/*‘ōhi‘a ‘ai*, *kukui*, *lama*, *kolomona*, *kōpiko*, *‘a‘ali‘i*), shell midden, *kukui* nut shell, coral fragments, and faunal bone (fish)
11	T-120A	130-140	-	Pit/Indeterminate	Charcoal, naturally-occurring marine shell, marine shell midden, organics, glass, ceramic fragment, water-worn basalt cobble, and faunal bone (medium mammal, shark tooth)
12	T-120A	128-132	AD 1720-1820 (50.7%)	Pit/Indeterminate	Charcoal (*akoko*, *kolomona*, *‘a‘ali‘i*, *‘ōhi‘a lehua*, *‘ulu*, palm, *kukui*, grass), naturally-occurring marine shell, marine shell midden, volcanic glass, and fircracked rock
13	T-120A	128-132	-	Pit/Indeterminate	Charcoal and marine shell midden

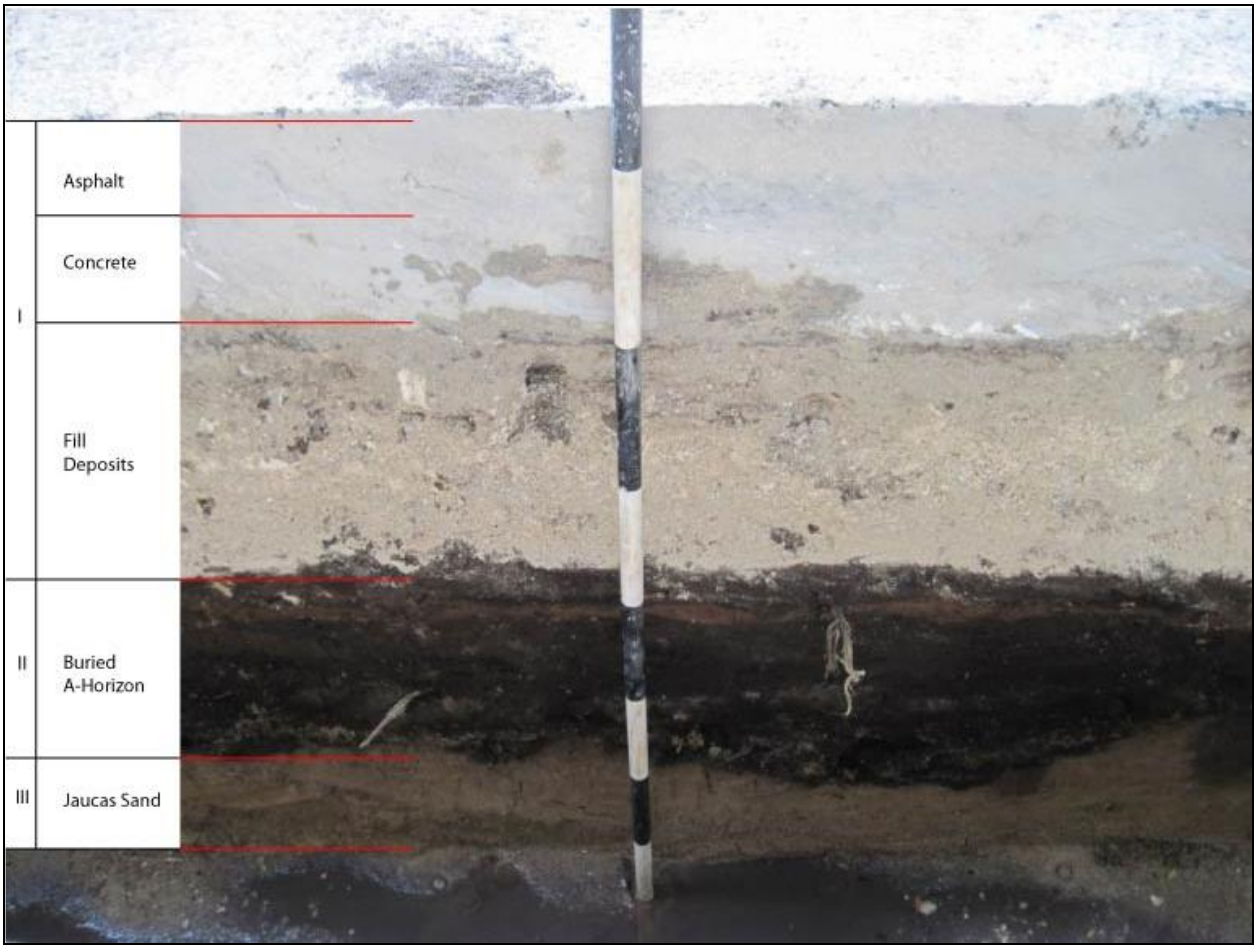


Figure 2. T-120 northeast wall profile, showing the general depositional sequence observed in T-120 and nearby T-119, T-119A, T-120A, and T-120B, view to northeast

identified in T-119 and T-119A. They are a buried basalt stone and mortar wall (SIHP # -7428 Feature 1) with an associated builder’s trench (SIHP # -7428 Feature 1a).

SIHP # -7428 Feature 1 was identified within T-119 and T-119A (Figure 3, Figure 4, Table 2, Figure 5 through Figure 7, and Table 3). SIHP # -7428 Feature 1 was the remnants of a historic wall constructed of basalt stone and mortar. Sections of this wall were observed down to the coral shelf, at depths of 1.30-1.90 mbs (T-119) and 0.47-1.68 mbs (T-119A). In both test excavations, the wall was observed below multiple fill layers and a culturally enriched A horizon. The physical dimensions of the wall in T-119 were 0.6 m high, 0.5 m wide, and 1.0 m in length, extending into both the northeast and southwest walls. The physical dimensions of the portion of wall in T-119A were approximately 1.20 m high, 0.20 m wide, and 2.60 m in length. Several red brick fragments dated ca. 1807–1860 were collected from the fill deposits directly overlying the wall in T-119 (Stratum Ic) and T-119A (Stratum Id). In addition to these red bricks, two fragments of Asian dinnerware (Acc. # 119A-A-1 and A-2) were collected from Stratum Id in T-119A at depths of 0.40 and 0.90 mbs. The wall appears to correspond with the *makai* foundation a storage warehouse depicted on the 1914 Sanborn fire insurance map (Figure 8). SIHP #7428 Feature 1 is a buried wall remnant.

SIHP # -7428 Feature 1a was identified in T-119A. This feature is an infilled trench of mixed sediment (sandy loam) containing historic material, shell midden, and faunal remains. The trench abuts the SIHP # -7428 Feature 1 wall. The northern portion of the wall was originally recorded within T-119. Feature 1a originates at 0.47 mbs at the interface of Strata Ib and Ic and terminates at 1.68 mbs at the coral shelf (see Figure 7 and Table 3). The exposed dimensions of SIHP # -7428 Feature 1a were 2.85 m in length and 0.70 m in width. The trench, however, extends beyond the northeast profile wall. Artifacts collected from the trench include two Chinese porcelain flatware vessels. One exhibits an “Om” motif (Sino-Sanskrit Om) and the other exhibits an “Allah” (Sino-Islamic Allah) motif. Also collected from inside the trench was a metal tag with a “Body Fisher” logo from the Fisher Body (automobile) Company, dating post-1908. A 3.0-liter bulk sample was collected from within SIHP # -7428 Feature 1a at 1.25–1.55 mbs. The sample yielded charcoal (2.8 g), shell midden (11.6 g), naturally-occurring shell (0.3 g) and medium mammal remains (0.1 g). SIHP #7428 Feature 1a was interpreted as an infilled builder’s trench.

SIHP # -7428 Feature 2 was identified within T-120. This pit originated at the base of Stratum II at 1.12 mbs and terminated at 1.29 mbs (Figure 10 and Table 4). The feature was circular in plan view, measured 0.25 m in diameter, and extended into the northeast sidewall. The sediment matrix within the pit was fine loamy sand with similar characteristics to Stratum II. An 11.4-liter screened sample was collected from SIHP # -7428 Feature 2 at 1.12-1.29 mbs. The sample contained charcoal (1.9 g), naturally-occurring shell (10.5 g), fish remains (0.1 g), a shark tooth (0.1 g), and shell midden (8.2 g). SIHP #7428 Feature 2 was interpreted as a possible postmold.

SIHP # -7428 Feature 3 was identified within T-120. This pit originated at the base of Stratum II at 1.12 mbs and terminated at 1.16 mbs (see Figure 10, Figure 11, and Table 4). The feature was circular in plan view. It measured 0.4 m long by 0.15 m wide and extended into the northeast sidewall. The sediment matrix within the pit was fine loamy sand with similar characteristics to Stratum II. An 11.4-liter screened sample was collected from SIHP # -7428 Feature 3 at 1.12-1.16 mbs. The sample yielded charcoal (6.9 g), naturally-occurring shell (1.8 g), fish remains (0.1 g), medium mammal remains (0.1 g), and shell midden (6.4 g). SIHP #7428 Feature 3 was interpreted as a possible postmold.

Figure 3. SIHP # -7427 Feature 1, a portion of the basalt stone and mortar wall within T-119, view to southwest

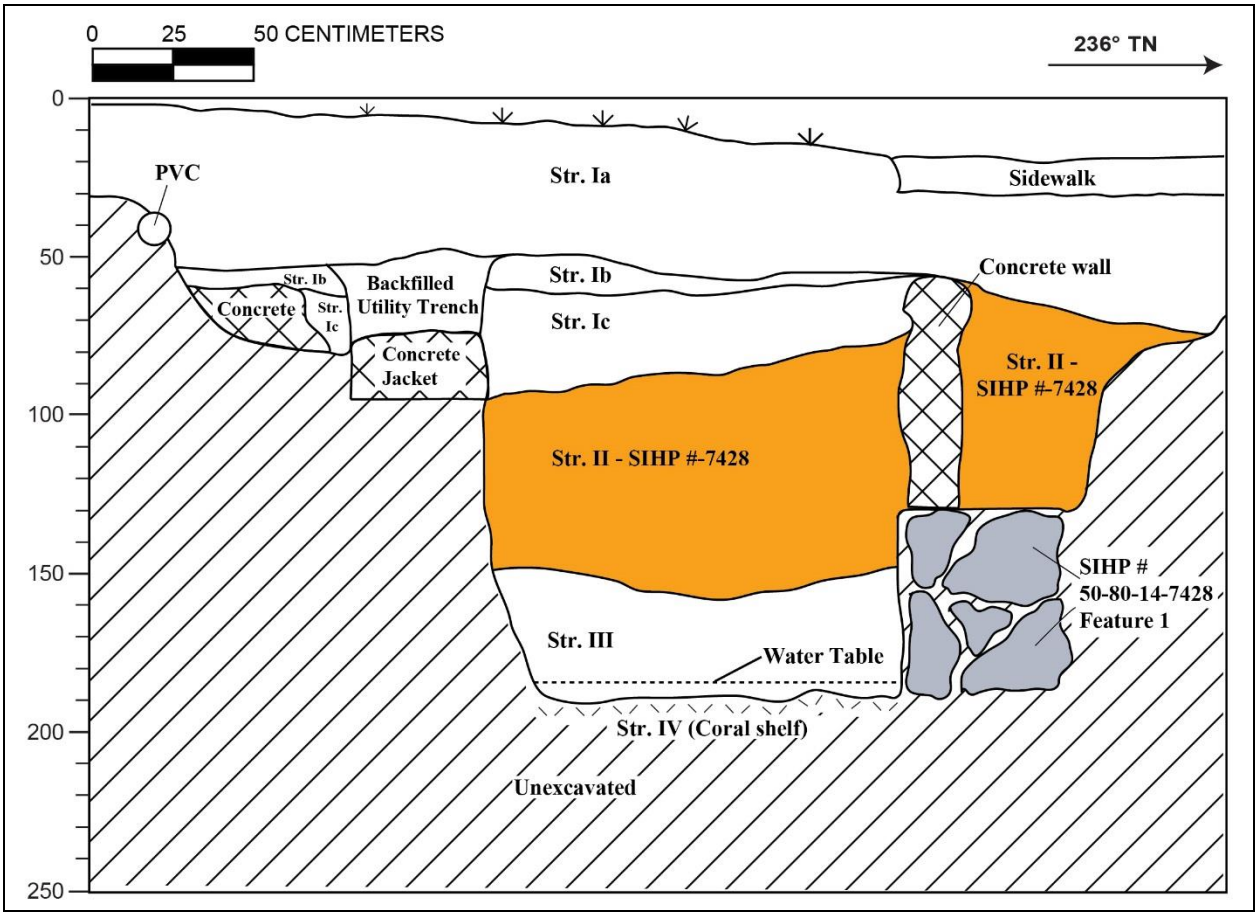


Figure 4. T-119 northwest wall profile, showing the basalt stone and mortar wall, SIHP # -7428 Feature 1

Table 2. T-119 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–75	Fill; 7.5 YR 2.5/2 (very dark brown); silty clay; moderate, medium to coarse, blocky structure; moist, firm consistency; slightly plastic; terrigenous origin; abrupt, smooth lower boundary; common, fine roots; landscape, top soil
Utility	30–95	PVC pipe, modern concrete wall, utility trench, and concrete jackets
Ib	50–60	Fill; 10 YR 7/4 (very pale brown); very gravelly sandy loam; weak, fine, crumb structure; moist, loose consistency; non-plastic; abrupt, smooth lower boundary; crushed coral fill
Ic	60–95	Fill; 10 YR 6/1 (gray); gravelly sand; weak, medium crumb structure; dry, loose, strong consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; red bricks; pea pebble fill, cement
II	65–157	Natural; 10 YR 2/2 (very dark brown); loamy silt; weak, fine crumb structure; moist, loose consistency; non-plastic; terrigenous origin; clear, smooth lower boundary; fircracked rock, charcoal staining, cane slag, marine shell midden; reworked cultural layer, designated a component of SIHP # -7428
SIHP # -7428 Feature 1	130–190	Historic mortared basalt stone wall; SIHP # -7428 Feature 1
III	145–190	Natural; 10 YR 5/4 (yellowish brown); medium sand; structureless, singlgrain; moist, loose consistency; non-plastic; marine origin; lower boundary not visible; natural sand over coral shelf, water table
IV	190 (BOE)	Natural; 10 YR 7/4 (very pale brown); bedrock-limestone; structureless, massive; moist, weakly to strongly cemented; discontinuous consistency; non-plastic; marine origin; lower boundary not observed; Pleistocene coral shelf

Figure 5. SIHP # -7428 Feature 1, basalt stone and mortar wall within T-119A, view to northwest

Figure 6. SIHP # -7428 Feature 1, basalt stones in T-119, view to northeast

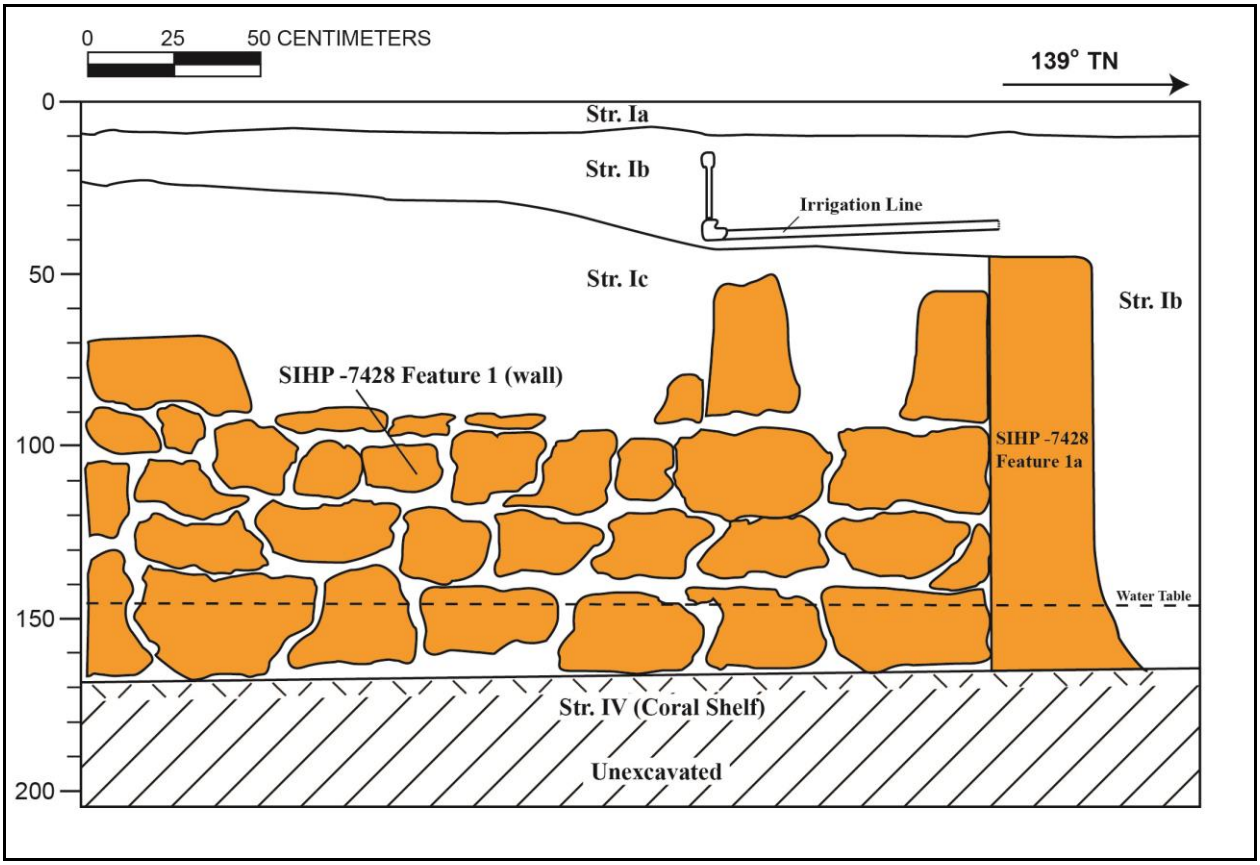


Figure 7. T-119A northeast profile showing SIHP # -7428 Features 1 and 1a

Table 3. T-119A Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-10	Fill; 10 YR 2/2 (very dry brown); loam; weak, medium, granular structure; dry, weakly coherent consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary; few fine to coarse roots; imported fill, basalt gravel, inclusions
Ib	10-165	Fill; 10 YR 3/2 (very dark gray brown); loam; weak, medium, granular structure; dry, weakly coherent consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary; few, fine to coarse roots; contained irrigation line; imported fill, basalt gravel inclusions
Ic	25-90	Fill; 10 YR 5/3 (brown); gravelly, medium sand; structureless, singlgrain; loose, dry consistency; non-plastic; marine origin; abrupt, smooth lower boundary; crushed coral and sand fill
SIHP # -7428 Feature 1	47-165	Historic mortared basalt boulder wall; SIHP # -7428 Feature 1
SIHP # -7428 Feature 1a	45-165	Builders trench; 10 YR 3/2 (very dark grayish brown); sandy loam; weak, medium, granular structure; moist, loose consistency; non-plastic; terrigenous origin; abrupt lower boundary; few fine, medium and coarse roots; contained ceramics , a metal tag (collected), and red brick (not collected);sample contained charcoal, marine shell midden , naturally-occurring shell, organics, burned bottle glass, rusted metal fragments, vesicular basalt, coral gravel, faunal (*Canis lupus familiaris* and *Pervagor spilosoma* (Fantail Filefish); infilled builders trench consisting of likely locally procured A horizon utilized as fill; SIHP # -7428 Feature 1a
IV	165 (BOE)	Natural; 10 YR 7/4 (very pale brown); bedrock-limestone; structureless, massive; moist, weakly to strongly cemented; discontinuous consistency; non-plastic; marine origin; lower boundary not observed; Pleistocene coral shelf

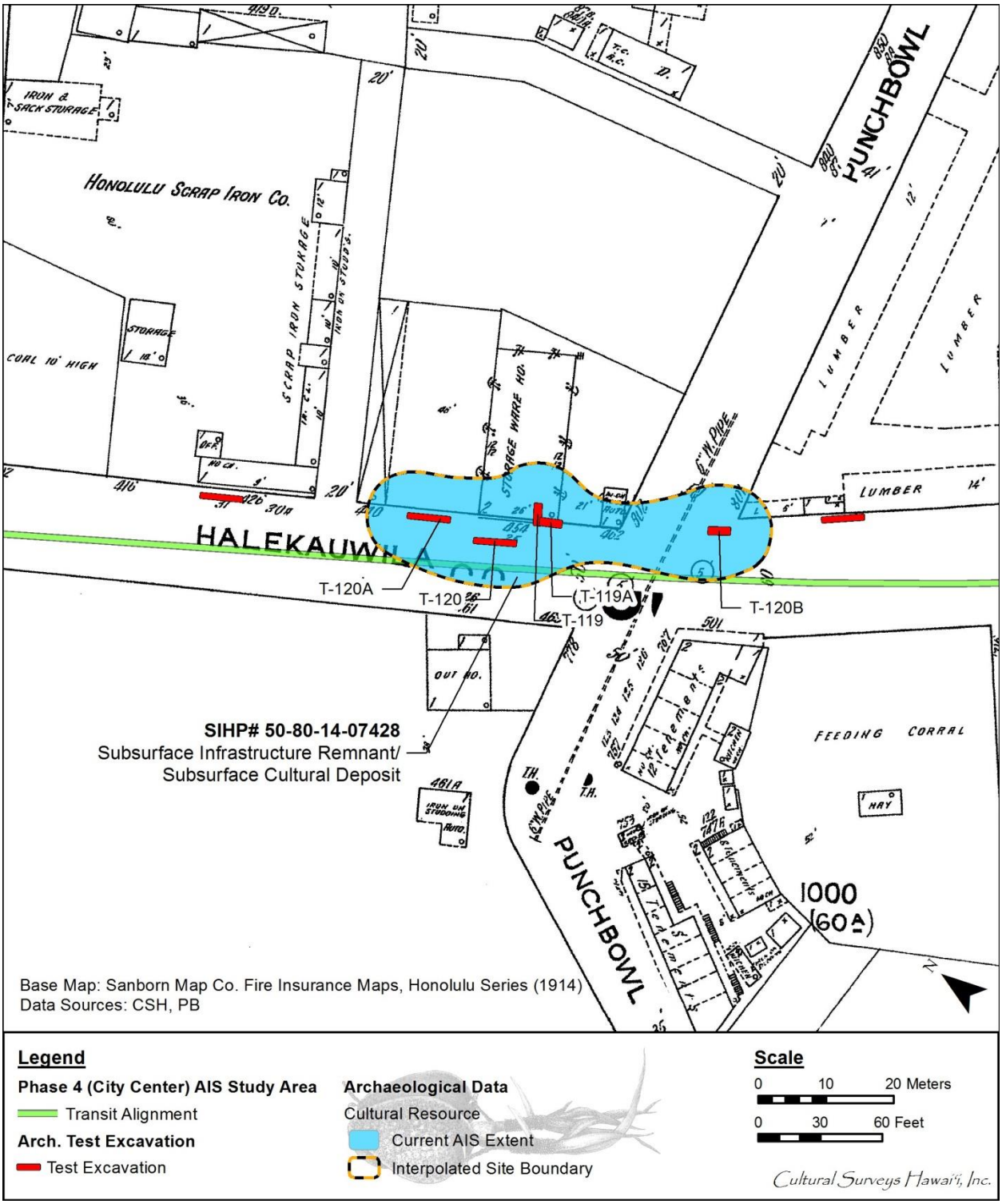


Figure 8. Portion of the 1914 Sanborn Fire Insurance Map depicting the relationship between the wall remnant (SIHP # -7428 Feature 1) and associated builder’s trench (SIHP # -7428 Feature Ia) within T-119 and T-119A and the southwestern edge of a former storage warehouse

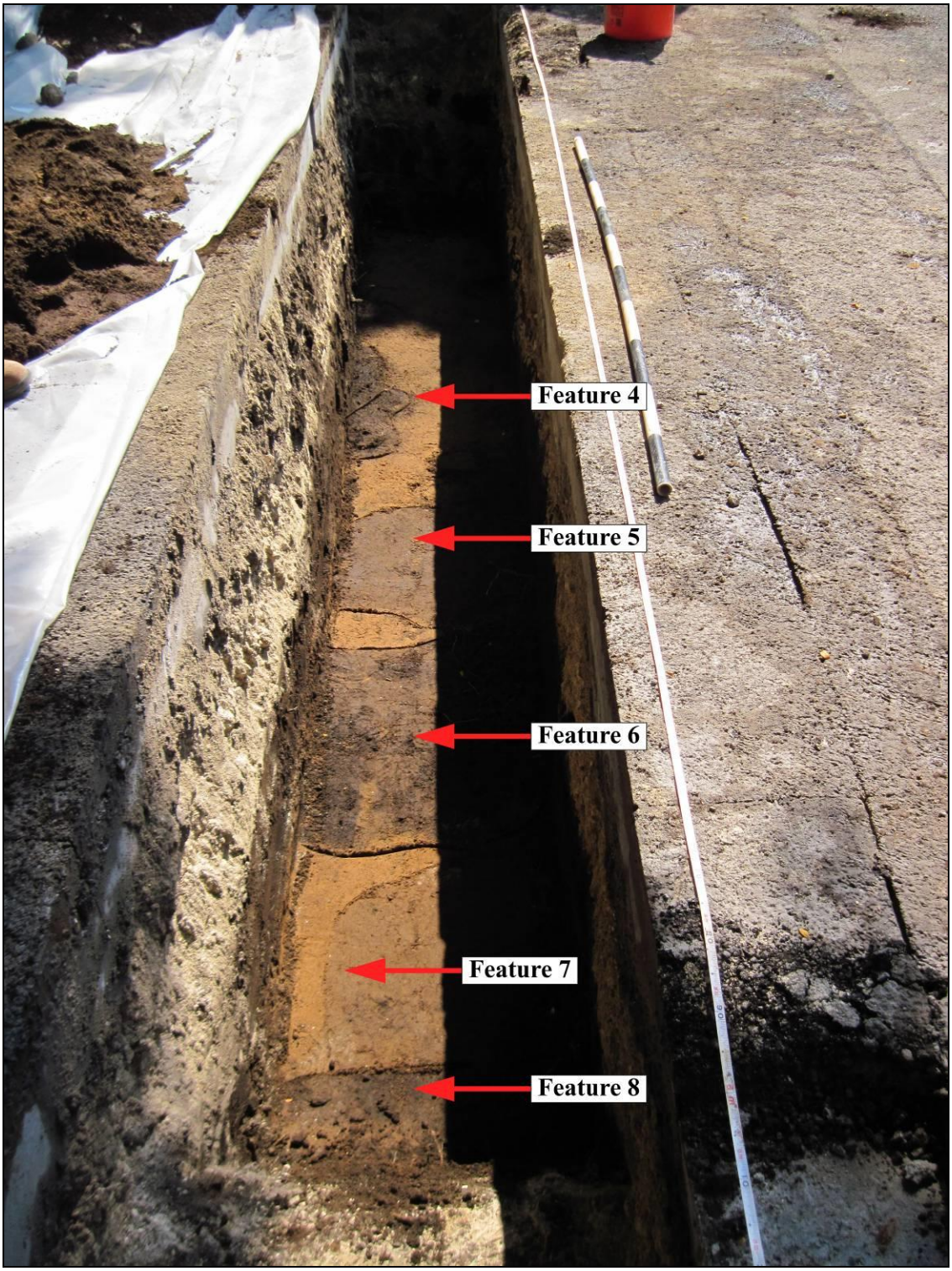


Figure 9. Overview of T-120 showing SIHP # -7428 Features 4–8, view to southeast

Figure 10. T-120 northeast wall profile, view to east

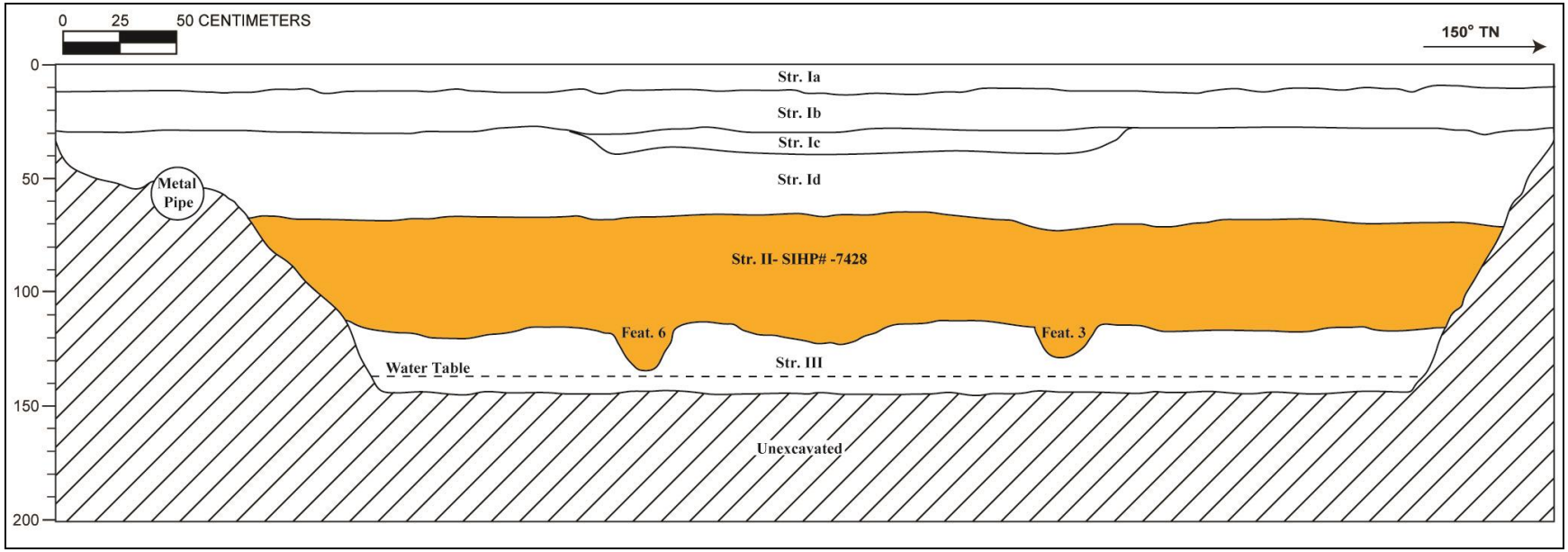


Figure 11. T-120 northeast wall profile

Table 4. T-120 Stratigraphic Description, northeast wall

Stratum	Depth (cmbs)	Description
Ia	0–14	Asphalt
Ib	14–30	Concrete
Ic	30–40	Fill; 10 YR 4/1 (dark gray); gravelly sandy clay; weak, fine, crumb structure; moist, friable consistency; plastic; mixed origin; clear, broken/discontinuous lower boundary; fill, crushed coral gravel
Id	30–73	Fill; 10 YR 7/3 (very pale brown); extremely gravelly sand; structureless, singlgrain; moist, friable consistency; non-plastic; marine origin; very abrupt, smooth lower boundary
II	65–135	Natural; 10 YR 2/2 (very dark brown); fine loamy sand; weak, fine, crumb structure; moist, very friable consistency; non-plastic; mixed origin; wavy lower boundary; common, fine, medium roots; contained Features 2-8, faunal remains, ceramic, marine shells (collected); buried A horizon; designated a component of SIHP # -7428
SIHP # -7428 Feature 2	112–129	Natural; 10 YR 2/2 (very dark brown); fine loamy sand; weak, fine, crumb structure; moist, very friable consistency; non-plastic; mixed origin; possible postmold originating in Stratum II; sample contained charcoal, marine shell midden, fish bone, a shark tooth, and naturally-occurring marine shell; SIHP # -7428 Feature 2
SIHP # -7428 Feature 3	112–116	Natural; 10 YR 2/2 (very dark brown); fine loamy sand; weak, fine, crumb structure; moist, very friable consistency; non-plastic; mixed origin; pit feature originating in Stratum II; sample contained charcoal, marine shell midden, fish bone, medium mammal bone, and naturally-occurring marine shell; SIHP # -7428 Feature 3
SIHP # -7428 Feature 4	112–126	Natural; 10 YR 2/2 (very dark brown); fine loamy sand; weak, fine, crumb structure; moist, very friable consistency; non-plastic; mixed origin; pit feature originating in Stratum II; sample contained one piece of volcanic glass debitage, a basalt manuport fragment, charcoal, marine shell midden, fish bone (including *Pervagor spilosoma*, or Fantail Filefish), rat bone, medium mammal bone, and naturally-occurring marine shell; SIHP # -7428 Feature 4
SIHP # -7428 Feature 5	110–118	Natural; 10 YR 2/2 (very dark brown); fine loamy sand; weak, fine, crumb structure; moist, very friable consistency; non-plastic; mixed origin; pit feature originating in Stratum II; sample contained one piece of volcanic glass debitage, charcoal, marine shell midden, pig bone, medium mammal bone, dog bone, rat bone, bird bone, fish bone (*Pervagor spilosoma*, or Fantail Filefish, and *Scarus perspicillatus*, or Spectacled parrotfish), a shark tooth, burned *kukui* nutshell, and naturally-occurring marine shell; SIHP # -7428 Feature 5

SIHP # -7428 Feature 6	107–120	Natural; 10 YR 2/2 (very dark brown); fine loamy sand; weak, fine, crumb structure; moist, very friable consistency; non-plastic; mixed origin; pit feature and subfeature originating in Stratum II; sample contained one piece of volcanic glass debitage, basalt, charcoal, marine shell midden, three shark teeth, pig bone, dog bone, rat bone, fish bone (*Pervagor spilosoma*, or Fantail Filefish), burned *kukui* nutshell, fircracked rock, a plastic filament, and naturally-occurring marine shell; SIHP # -7428 Feature 6
SIHP # -7428 Feature 7	104–107	Natural; 10 YR 2/2 (very dark brown); fine loamy sand; weak, fine, crumb structure; moist, very friable consistency; non-plastic; mixed origin; pit feature originating in Stratum II; sample contained charcoal, marine shell midden, dog bone, rat bone, a shark tooth, fish bone (*Pervagor spilosoma*, or Fantail Filefish, and *Bilunulatus albotaeniatus*, or Hawaiian hogfish), fircracked rock, and naturally-occurring marine shell; SIHP # -7428 Feature 7
SIHP # -7428 Feature 8	104–117	Natural; 10 YR 2/2 (very dark brown); fine loamy sand; weak, fine, crumb structure; moist, very friable consistency; non-plastic; mixed origin; pit feature originating in Stratum II; sample contained charcoal, marine shell midden, dog bone, rat bone, a shark tooth, fish bone (*Pervagor spilosoma*, or Fantail Filefish), burned *kukui* nutshell, and naturally-occurring marine shell; SIHP # -7428 Feature 8
III	113–145 (BOE)	Natural; 10 YR 5/4 (yellowish brown); fine grain sand; structureless, singlgrain; moist, loose consistency; non-plastic; marine origin; lower boundary not visible; natural Jaucas sand

SIHP # -7428 Feature 4 was identified within T-120. It originated from the base of Stratum II at 1.12 mbs and terminated at 1.26 mbs (Figure 9 to Figure 11 and Table 4). The pit was irregularly shaped in plan view, measured 0.95 m long by 0.22 m wide, and extended into the northeast sidewall. The sediment matrix within the pit was fine loamy sand with similar characteristics to Stratum II. An 11.4-liter screened sample was collected from SIHP # -7428 Feature 4 at 1.12-1.26 mbs. The sample yielded charcoal (7.2 g), naturally-occurring shell (18.3 g), small roots (0.1 g), a piece of volcanic glass debitage (0.3 g), a basalt manuport fragment (0.2 g), medium mammal remains (0.9 g), *Rattus* sp. remains (0.1 g), unidentified fish remains (0.3 g), Monacanthidae *Pervagor spilosoma* (Fantail Filefish; 0.1 g), and shell midden (50.6 g). SIHP # -7428 Feature 4 was interpreted as a pit of indeterminate function.

SIHP # -7428 Feature 5 was identified within T-120 originating from the base of Stratum II at 1.10 mbs and terminating at 1.18 mbs (see Figure 9 to Figure 11 and Table 4). The pit was irregularly shaped in plan view, measured 0.65 m long by more than 0.75 m wide, and extended into the northeast and southwest excavation sidewalls. The sediment matrix within the pit was fine loamy sand with similar characteristics to Stratum II. An 18.9-liter screened sample collected from SIHP # -7428 Feature 5 yielded charcoal (66.2 g), naturally-occurring marine shell (1.3 g), volcanic glass (1.5 g), burned *kukui* (1.6 g), roots and leaves (0.4 g), medium mammal long bone fragments (2.2 g), burned *Canis lupus familiaris* long bone (0.6 g), burned Aves remains (0.1 g), *Rattus* sp. remains (0.1 g), *Scarus perspicillatus* (Parrot fish) and *Pervagor spilosoma* (Fantail file fish) (0.3 g), a shark tooth (0.1 g), and marine shell midden (64.3 g). SIHP # -7428 Feature 5 was interpreted as a pit of indeterminate function.

SIHP # -7428 Feature 6 was identified within T-120 originating from the base of Stratum II at 1.07 mbs and terminating at 1.20 mbs. The pit contained a circular component that extend into the northeast wall between 1.17–1.37 mbs (see Figure 9 to Figure 11 and Table 4). SIHP # -7428 Feature 6 was irregularly shaped in plan view. It measured 0.85 m long by more than 0.75 m wide and extended into the northeast and southwest excavation sidewalls. The sediment matrix of within the pit was fine loamy sand with similar characteristics to Stratum II. An 18.9-liter screened sample collected from SIHP # -7428 Feature 6 contained charcoal (28.1 g), burned *kukui* nut shell (1.8 g), organic filaments (0.5 g), a basalt fragment (3.9 g), volcanic glass debitage (<0.1 g), a plastic filament (<0.1 g), fircracked rock fragments (148.3 g), *Canis lupus familiaris* juvenile molars, metatarsus, burned fragments (8.3 g), *Sus scrofa* molar fragments (0.5 g), *Rattus* sp. mandible, long bone, and other fragments (0.9 g), *Pervagor spilosoma* (Fantail Filefish; 5.5 g), and marine shell midden (236.5 g). SIHP # -7428 Feature 6 was interpreted as a pit of indeterminate function.

SIHP # -7428 Feature 7 was identified within T-120. It originated from the base of Stratum II at 1.04 mbs and terminated at 1.07 mbs (see Figure 9 to Figure 11 and Table 4). The pit was irregularly shaped in plan view, measured 0.5 m long by more than 0.53 m wide, and extended into the southwest sidewall. The sediment matrix within the feature was fine loamy sand with similar characteristics to Stratum II. An 18.9-liter screened sample collected from SIHP # -7428 Feature 7 contained charcoal (8.6 g), naturally-occurring shell (3.3 g), fircracked rock and vesicular basalt (17.9 g), *Canis lupus familiaris* molar and long bone fragments (1.2 g), *Rattus* sp. maxilla and long bone fragments (0.1 g), a shark tooth (0.1 g), *Bilunulatus albotaeniatus* (Hawaiian hogfish) and *Pervagor spilosoma* (Fantail Filefish; 0.6 g), and marine shell midden (129.5 g). SIHP # -7428 Feature 7 was interpreted as a pit of indeterminate function.

SIHP # -7428 Feature 8 was identified within T-120 originating from the base of Stratum II at 1.04 mbs and terminating at 1.17 mbs (see Figure 9 to Figure 11 and Table 4). The pit was irregularly shaped in plan, and measured 0.45 m long by more than 0.75 m wide, and extended into the northeast and southwest sidewalls. The sediment matrix within the feature was fine loamy sand with similar characteristics to Stratum II. An 18.9-liter screened sample collected from SIHP # -7428 Feature 8 yielded charcoal (15.1 g), naturally-occurring marine shell (2.1 g), burned *kukui* nut (3.6 g), *Canis lupus familiaris* (13.6 g), *Rattus* sp. (0.1 g), a shark tooth (0.1 g), *Pervagor spilosoma* (Fantail Filefish) and *Scarus* sp. (Parrotfish; 0.3 g,), and marine shell midden (38.0 g). SIHP # -7428 Feature 8 was interpreted as a pit of indeterminate function.

SIHP # -7428 Feature 9 was identified within T-120A originating from the base of Stratum II at 1.18 mbs and terminating at 1.36 mbs (Figure 12 to Figure14 and Table 5). The pit was oval shaped in plan, measured 0.30 m by more than 0.15 m, and extended into the northeast side wall of T-120A. The sediment matrix within the feature was gravelly sandy loam with similar characteristics to Stratum II. A 1-liter screened sample collected from SIHP # -7428 Feature 9 contained charcoal (0.3 g), marine shell midden (1.9 g), and naturally-occurring marine shell (0.4 g). SIHP # -7428 Feature 9 is interpreted as a pit of indeterminate function.

SIHP # -7428 Feature 10 was identified within T-120A originating from the base of Stratum II at 1.28 mbs and terminating at 1.37 mbs (see Figure 12 to Figure14 and Table 5). The pit was circular in plan and measured 0.25 m in diameter. The sediment matrix within the pit was gravelly sandy loam with similar characteristics to Stratum II. A 3-liter bulk sample collected from SIHP # -7428 Feature 10 contained charcoal (2.9 g), marine shell midden (10.5 g), *kukui* nutshell (0.1 g), fish fragments (2.2 g), and coral fragments (12.8 g). SIHP # -7428 Feature 10 is interpreted as a pit of indeterminate function or a possible postmold.

SIHP # -7428 Feature 11 was identified within T-120A. It originated from the base of Stratum II at 1.30 mbs and terminated at 1.40 mbs (see Figure 12 to Figure14 and Table 5). The pit was linear in shape in plan view, measured 0.67 m long by more than 0.65 m wide, and extended into both the northeast and southwest excavations sidewalls. The sediment matrix within the feature was gravelly sandy loam with similar characteristics to Stratum II. A 6-liter bulk sample and a 9.5-liter screened sample collected from SIHP # -7428 Feature 11 collectively yielded charcoal (45.1 g), marine shell midden (12.2 g) naturally-occurring marine shell (0.1 g), roots (1.2 g), glass (0.2 g), a white ceramic fragment (14.1 g), medium mammal remains (0.3 g), a shark tooth (0.1 g), and a basalt water worn cobble (18.8 g). SIHP # -7428 Feature 11 is interpreted as a pit of indeterminate function.

SIHP # -7428 Feature 12 was identified within T-120A originating from the base of Stratum II at 1.28 mbs and terminating at 1.32 mbs (see Figure 12 to Figure14 and Table 5). The pit was irregular shaped in plan. It measured 1.75 m in length by more than 0.40 m wide and extended into the southwest excavation sidewall. The sediment matrix within the feature was gravelly sandy loam with similar characteristics to Stratum II. A 2-liter bulk sample was collected from SIHP # -7428 Feature 12. It contained charcoal (16.1 g), marine shell midden (37.7 g), naturally-occurring marine shell (1.8 g), volcanic glass (0.1 g), and fircracked rock (17.7 g). SIHP # -7428 Feature 12 is interpreted as a pit of indeterminate function.

SIHP # -7428 Feature 13 was identified within T-120A. The pit originated the base of Stratum II at 1.28 mbs and terminated at 1.32 mbs (see Figure to Figure and Table). The circular pit measured approximately 0.15 m in diameter and slightly extended into the northeast

Figure 12. Overview of T-120A showing SIHP # -7428 Features 9 through 13, view to southeast

Figure 13. T-120A northeast wall profile, view to southeast

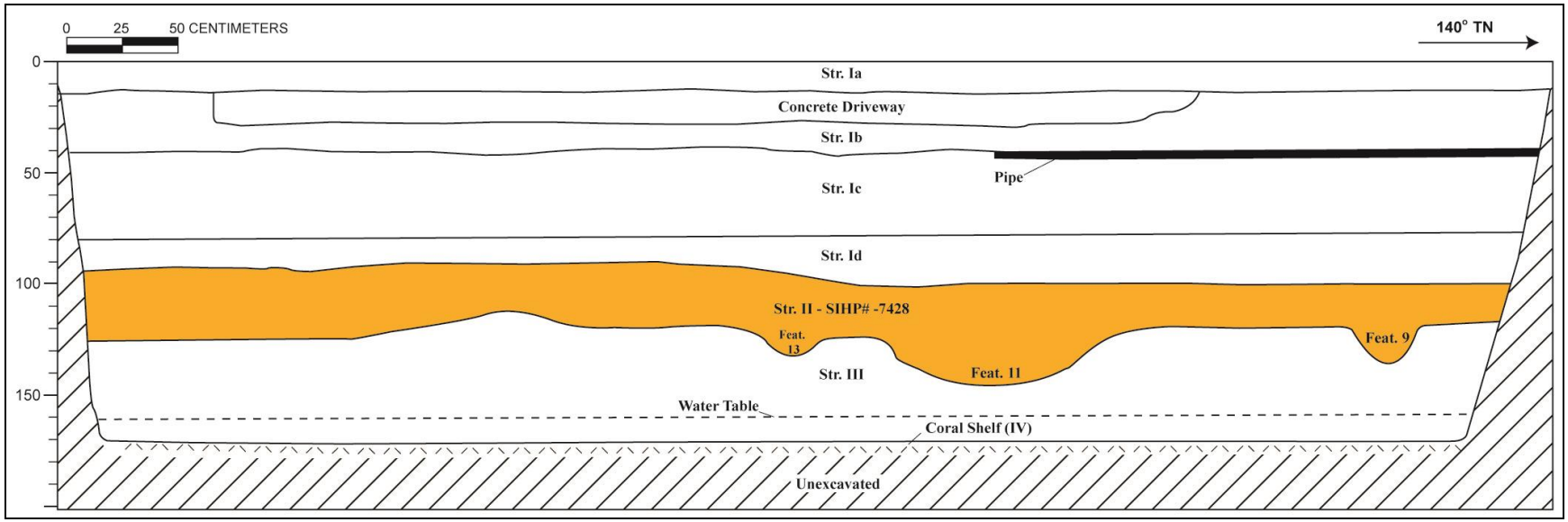


Figure 14. T-120A northeast wall profile

Table 5. T-120A Stratigraphic Description, northeast wall

Stratum	Depth (cmbs)	Description
Ia	0–15	Asphalt; fill
Ib	15–40	Fill; 10 YR 7/4 (very pale brown); very gravelly sandy loam; medium, crumb structure; moist, loose, weak consistency; non-plastic; mixed origin; clear, smooth lower boundary; common, fine roots; coral gravel, large coral cobbles, very gravelly sandy loam
Ic	40–80	Fill; 10 YR 7/4 (very pale brown); very gravelly loamy sand; structureless, singlgrain; weak, fine, medium, granular structure; moist, loose, weak consistency; non-plastic; mixed origin; clear, smooth lower boundary; common, fine roots; coral gravel, large coral cobbles, very gravelly loamy sand
Id	80–100	Fill; 10 YR 2/2 (very dark brown); gravelly loamy sand; structureless, singlgrain; moist, friable consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; bulk sample contained faunal, midden, charcoal (collected)
II	90–125	Natural; 10 YR 2/2 (very dark brown); gravelly sandy loam; structureless, singlgrain; moist, friable consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; common, fine roots; bulk and/or screened samples contained bovine, glass, marine mollusk shell, *Mytilidae, Neritidae, Tellinidae* (collected); contains five pit features (Features 9-13) designated as components of SIHP # -7428
SIHP # -7428 Feature 9	118–136	Natural; 10 YR 2/2 (very dark brown); gravelly sandy loam; structureless, singlgrain; moist, friable consistency; non-plastic; mixed origin; pit feature; sample contained charcoal, marine shell midden, and naturally-occurring marine shell; SIHP # -7428 Feature 9
SIHP # -7428 Feature 10	128–137	Natural; 10 YR 2/2 (very dark brown); gravelly sandy loam; structureless, singlgrain; moist, friable consistency; non-plastic; mixed origin; pit feature; sample contained charcoal, marine shell midden, *kukui* nutshell, and fish bone; SIHP # -7428 Feature 10
SIHP # -7428 Feature 11	130–140	Natural; 10 YR 2/2 (very dark brown); gravelly sandy loam; structureless, singlgrain; moist, friable consistency; non-plastic; mixed origin; pit feature; sample contained charcoal, marine shell midden, glass fragments, one white ceramic fragment, one basalt water-worn cobble, medium mammal bone, one shark tooth, and naturally-occurring marine shell; SIHP # -7428 Feature 11
SIHP # -7428 Feature 12	128–132	Natural; 10 YR 2/2 (very dark brown); gravelly sandy loam; structureless, singlgrain; moist, friable consistency; non-plastic; mixed origin; pit feature; sample contained charcoal, marine shell midden, one piece of volcanic glass debitage, fircracked rock, and naturally-occurring marine shell; SIHP # -7428 Feature 12

Stratum	Depth (cmbs)	Description
SIHP # -7428 Feature 13	128–132	Natural; 10 YR 2/2 (very dark brown); gravelly sandy loam; structureless, singlgrain; moist, friable consistency; non-plastic; mixed origin; pit feature; sample contained charcoal and marine shell midden; SIHP # -7428 Feature 13
III	125–170	Natural; 10 YR 5/4 (yellowish brown); sand; structureless, singlgrain; moist, friable consistency; non-plastic; marine origin; abrupt, smooth lower boundary
IV	170 (BOE)	Natural; 10 YR 7/4 (very pale brown); bedrock-limestone; structureless, massive; moist, weakly to strongly cemented; discontinuous consistency; non-plastic; marine origin; lower boundary not observed; Pleistocene coral shelf

excavation sidewall. The sediment matrix within the feature gravelly sandy loam with similar characteristics to Stratum II. A 1-liter bulk sample collected from the pit yielded charcoal (0.1 g) and marine shell midden (1.0 g). SIHP # -7428 Feature 13 is interpreted as a pit of indeterminate function.

The buried A horizon (Stratum II; SIHP # -7428) has been capped by layers of locally-procured and imported fill, and the modern asphalt road and cement sidewalk, all of which have been subdesignated under Stratum I. The fill sediments that cap the former land surface are considered to be late nineteenth century to modern deposits related to land reclamation, grading, and the construction of Halekauwila Street.

The buried culturally-enriched A horizon (SIHP # -7428) identified in T-119, T-119A, T-120, T-120A, and T-120B contained both traditional Hawaiian and post-Contact cultural material, vertebrate and invertebrate faunal material, and charcoal.

Traditional cultural material within the buried culturally-enriched A horizon (SIHP # -7428) included a single slingstone (Acc. # 119A-H-1; Figure 15) within T-119A, two volcanic glass flakes (120A-H-1, H-2) within T-120A, and two basalt flakes and one volcanic glass flake (120H-1 to H-3) within T-120B. Energy-Dispersive X-ray Fluorescence (EDXRF) analysis of the volcanic glass flakes indicates that these fragments are from a local O‘ahu provenance.

Historic cultural material within the buried culturally-enriched A horizon included historic glass bottle fragments (21 total), dated between 1800 and 1920, ceramics, and other miscellaneous artifacts (Table 6).

Vertebrate faunal remains were collected from the buried culturally-enriched A horizon (Stratum II) and SIHP # -7428 Features 1a, 2, 3, 4, 5, 6, 7, 8, 10, and 11. In general, the faunal remains that were collected were either unmodified, or they exhibited evidence of butchering (i.e. metal saw blade). The faunal remains consist of *Canis lupus familiaris*, *Bos taurus*, *Sus scrofa*, *Equus ferus caballus*, and several varieties of fish. Several of the *Bos Taurus* and *Sus scrofa* elements display evidence of butchering with a metal saw blade. This particular butchering practice is specific to the historic time period. Horses (*Equus ferus caballus*) were not introduced to Hawai‘i until the early 1800s.

Invertebrate faunal remains were predominately collected from screened and bulk sediment samples of the buried culturally-enriched A horizon. Invertebrate fauna included naturally-occurring shell and shell midden similar in quantity and taxa to the naturally-occurring shell and shell midden described within SIHP # -7428 Features 2, 3, 5, and 7-13.

Wood taxa analysis on select charcoal fragments from SIHP # -7428 Features 1a, 4, 5, 7, 9, 10, and 12 identified 19 species of trees and shrubs including 14 native species, 3 Polynesian-introduced species, and 2 historically-introduced species (see Table 1). While the analysis indicated a predominance of native and Polynesian-introduced species, the presence of historically-introduced species reflects the continued use or occupation of the buried A horizon (SIHP # -7428) during the post-Contact era. Radiocarbon results of taxa-identified charcoal fragments include date ranges that span form the pre-Contact to the mid-twentieth century (see Table 1).

SIHP # -7428 is a buried, culturally-enriched A horizon and 14 associated archaeological features. Twelve of these features (SIHP # -7428 Features 2–13) consist of 3 postmolds, and 9

Figure 15. Photograph of slingstone (Acc. # 119A-H-1) collected from Stratum IIa in T-119A

Table 6. Historic Cultural Material Identified From SIHP # -7428

Acc. #	Prov.	Ceramic Vessel Type	Portion	No.	Paste	Origin; Age	Comments
119A-A-1	T-119A, SIHP # -7428 Feature 1a	Flatware -plate or dish	Body and rim	2	Porcelain	Chinese	“Om” motif, blue painted underglaze; two blue bands (int.)
119A-A-2	T-119A, SIHP # -7428 Feature 1a	Flatware -plate or dish	Base	1	Porcelain	Chinese	“Allah” motif, blue painted underglaze
119A-A-3	T-119A, SIHP # -7428 St. IIa	Hollowware - rice bowl	Body	1	Porcelain	Asian, probably Japanese	Asian style, blue floral exterior design
Acc. #	**Prov.**	**Misc. Type**	**Portion**	**No.**	**Material**	**Origin; Age**	**Comments**
119A-A-6	T-119A, SIHP # -7428 Feature 1a	Tag	Complete	1	Metal	Post-1908	Thin oval metal plate with two holes; has a picture of a carriage and “FISHER” (post-1908)
119A-A-7	T-119A, SIHP # -7428 St. IIa	Cobble	Complete	1	Stone	-	Waterworn cobble, tabular, polished; possible cobblestone or ballast stone?
119A-A-8	T-119A, SIHP # -7428 St. IIa	Pebble, rounded	Complete	1	Stone	-	Waterworn pebble, unpolished, round

Acc. #	Prov.	Misc. Type	Portion	No.	Material	Origin; Age	Comments
119A-A-9	T-119A, SIHP # -7428 St. IIa	Pebble, rounded	Complete	1	Stone	-	Waterworn pebble, slightly polished, oblate
119A-A-10	T-119A, SIHP # -7428 St. IIa	Stone/ Marble mass	Fragment	1	Stone	-	-
120A-A-1	T-120A, SIHP # -7428 Feature 11	Glass, worked	Fragment	1	Glass	Post-1870	Glass chipped for cutting edge; clear glass; post-1870

indeterminate pits. The other two were identified in T-119 and T-119A and consist of a basalt stone and mortar wall (SIHP # -7428 Feature 1) with an associated builder’s trench (SIHP # -7428 Feature 1a). SIHP # -7428 contained both traditional Hawaiian and post-Contact cultural material, vertebrate and invertebrate faunal material, and charcoal. Laboratory analysis of the material collected from SIHP # -7428 indicated that the former land surface was utilized from the pre- and/or early post-Contact period to the mid-twentieth century, prior to being capped by historic fill deposits.

Based on the guidance of the National Register Bulletin No.15, SIHP # 50-80-14-7428 retains its integrity of location, design, materials, and workmanship. Based on the results of this investigation, CSH recommends that this cultural resource maintains sufficient integrity to support its historic significance under Criterion D (has yielded, or is likely to yield information important for research on prehistory or history) of the Hawai‘i and the National Registers, exclusively for its information potential.

SIHP # 50-80-14-7428 has provided information, and can potentially provide additional information, on late pre- to early post-Contact habitation and historic land use within Kaka‘ako. The potential for additional research warrants the implementation of a data recovery program. Data recovery at SIHP # -7428 will focus on data collection from the buried, culturally-enriched sandy loam A horizon and associated features, and any discrete features within fill layers, such as wall remnants. It also will include a more intensive regime of strata- and feature specific radiocarbon, palynological, and botanical analyses to further clarify use and function of the culturally-enriched strata and features, and to temporally distinguish between traditional Hawaiian versus historic deposition. Following the data recovery program, archaeological monitoring program will be conducted to collect further data on the nature, content, sequence, and extent of SIHP # 50-80-14-7428.

SIHP # 50-80-14-7429

FORMAL TYPE:	Subsurface cultural deposit, human skeletal element
FUNCTION:	Habitation
PREVIOUS DOCUMENTATION:	N/A
AGE:	Undetermined, potentially pre- and post-Contact
NUMBER OF FEATURES:	7
TYPES OF FEATURES:	6 pits (2 possible postmolds, 4 indeterminate) and 1 human skeletal element
DISTRIBUTION:	0.05 acres (total area)
LOCATION:	Located near the corner of Ward Avenue and Queen Street (Kewalo Geographic Zone)
TAX MAP KEY:	TMK [1] 2-3-002:059 and 001
LAND JURISDICTION:	Victoria Ward Ltd.
TEST EXCAVATIONS:	T-167, T-168, T-168A, T-168B, T-169, T-170, and T-170A

SIHP # 50-80-14-7429 is a newly-identified subsurface cultural deposit (A horizon) and seven associated features identified in the Ross Dress for Less store parking lot and adjacent throughway parking lot near the intersection of Ward Avenue and Queen Street (Figure 1 and Figure 2). This archaeological cultural resource was identified in the Kewalo Geographic Zone during the current City Center archaeological inventory survey.

The buried, culturally-enriched A horizon containing seven archaeological features was identified in seven test excavations (T-167, T-168, T-168A, T-168B, T-169, T-170, and T-170A). The features consist of six pits and one isolated human cranial fragment.

The depositional sequence in each of the seven test excavations was generally similar (Figure 3, Table 1). The buried Late Pleistocene calcareous reef (coral shelf) was reached in T-168A and T-168B and is presumed to be beneath the water table and base of excavation within T-167, T-168, T-169, T-170, and T-170A. The coral shelf was overlain by natural gleyed marine sand at the water table in T-168, T-170, and T-170A.

Natural calcareous sand, termed Jaucas sand and designated Stratum III, was present at the base of excavation in each of the seven test excavations and overlying the coral shelf and gleyed sediments in T-168, T-168A, T-168B, T-170, and T-170A.

The buried culturally-enriched silty sand or loamy sand A horizon (SIHP # -7429), exhibited both pre- and post-Contact land usage, and was designated Stratum II. It overlies the natural Jaucas sand surface in all seven test excavations. The six pit features (Features 1–5 and 7) originated from the A horizon and were observed to be intrusive into the underlying Jaucas sand. Two pit features were interpreted as possible postmolds (Features 2 and 4), while the other four pits (Features 1, 3, 5, and 7) were of indeterminate function. Feature 6, an isolated human cranial fragment, was identified in T-170 within the buried A horizon; no pit outline was evident.

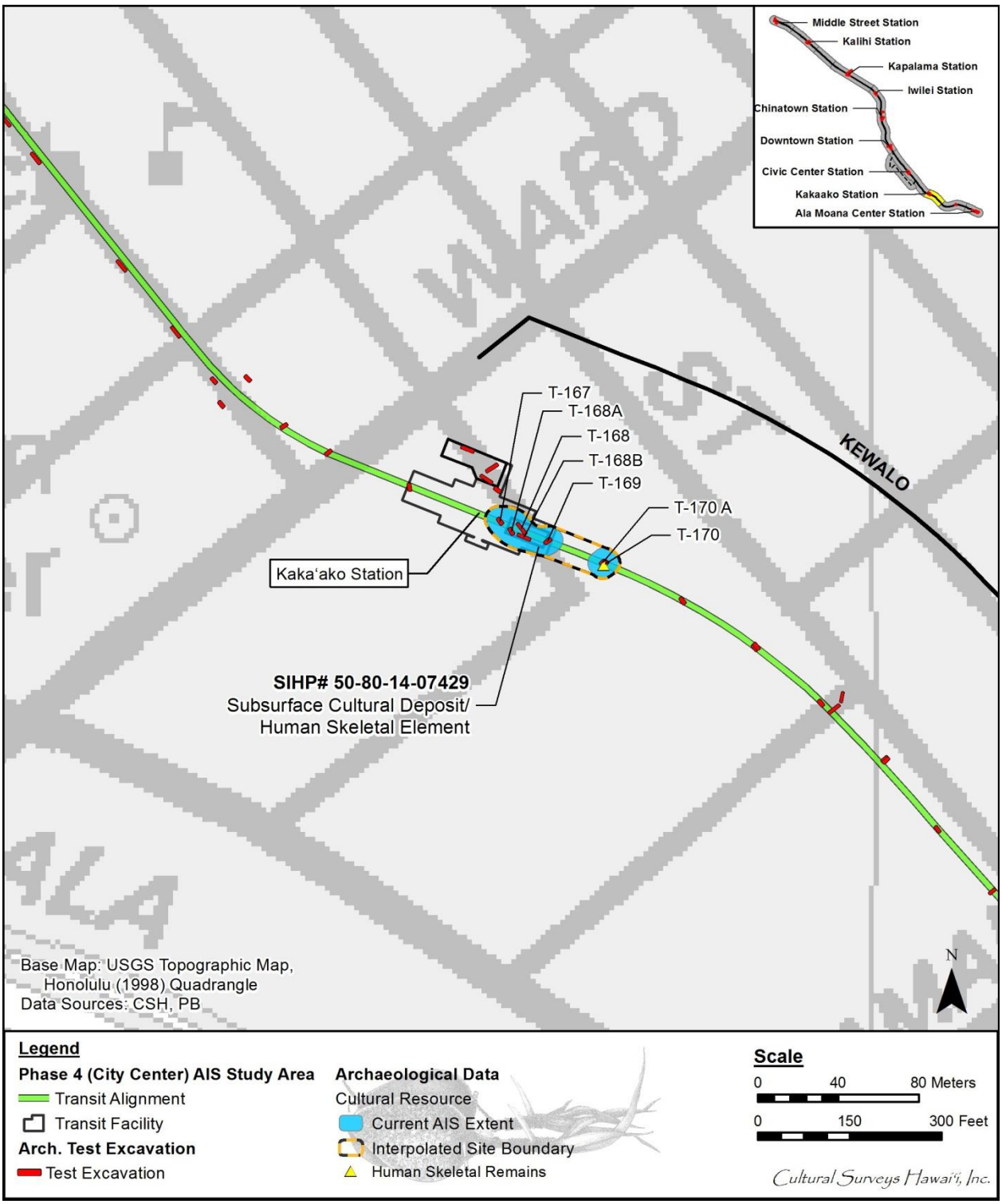


Figure 1. Location of the subsurface cultural deposits (SIHP # -7429) in the Kewalo Geographic Zone (Base Map: 1998 USGS Topographic Map of Honolulu)

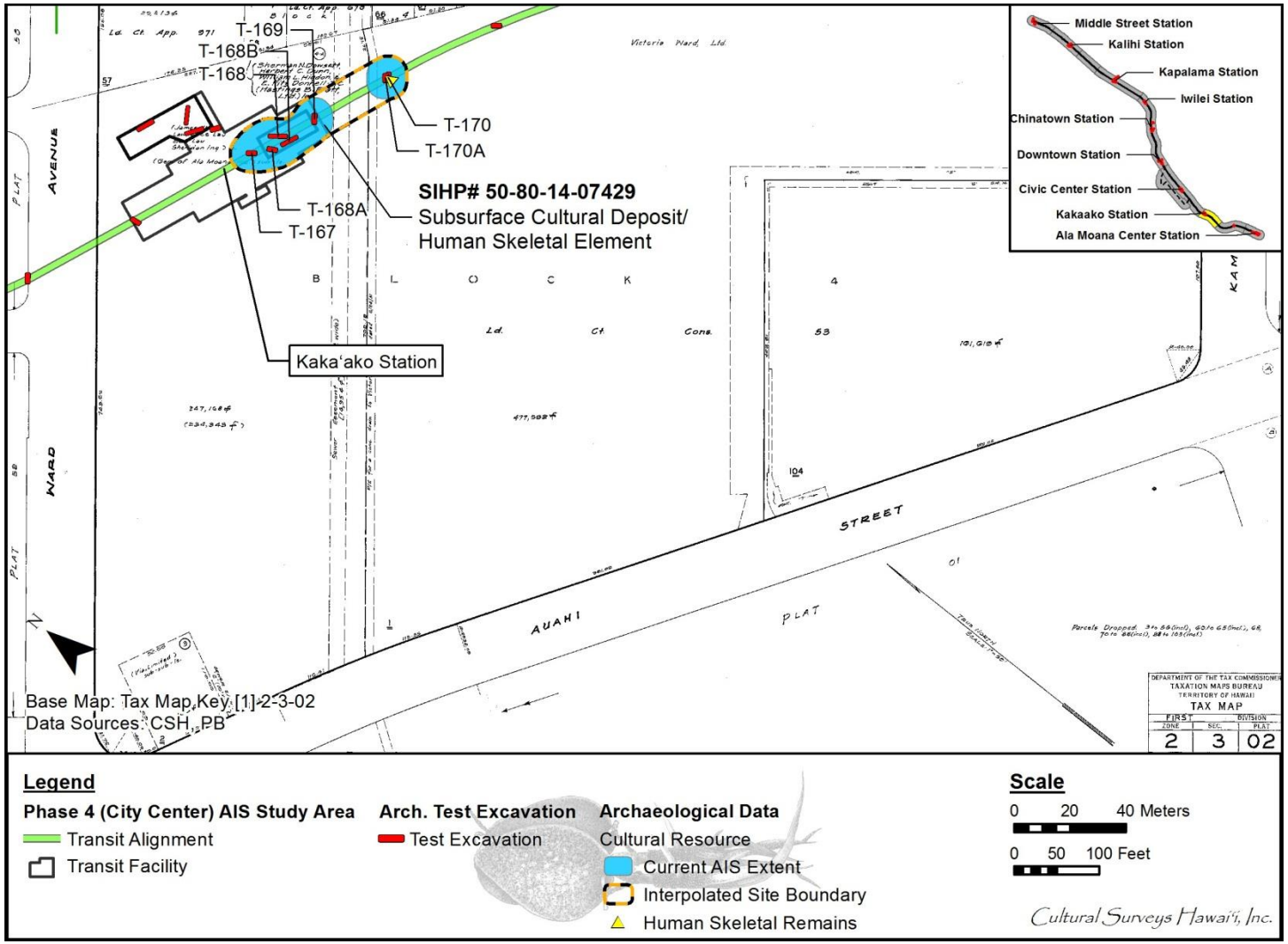


Figure 2. Location of the subsurface cultural deposit and isolated human remains (SIHP # -7429) in the Kewalo Geographic Zone (Base Map: Tax Map Key [1] 2-3-2)

Figure 3. T-170A northwest wall profile, showing the general depositional sequence observed in the vicinity, including the buried culturally-enriched sand A horizon (SIHP # -7429), view to west

Table 1. T-170A Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-15	Asphalt
Ib	12-25	Fill; 10 YR 3/3 (dark brown); very gravelly loam; weak, fine, crumb structure; moist, friable consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary; basalt base course
Ic	25-30	Fill; 10 YR 8/2 (very pale brown); extremely gravelly sand; structureless, singlgrain; moist, loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary; crushed coral fill
Id	30-52	Fill; 10 YR 7/2 (light gray); very fine sand; structureless, singlgrain; moist, loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary
II	52-60	Natural, 10 YR 4/2 (dark grayish brown); silty sand; structureless, singlgrain; moist, loose consistency; non-plastic; diffuse, smooth lower boundary; buried A horizon; contained glass, marine shells, and faunal bone (collected); SIHP # -50-80-14-7429; contains Feature 7
SIHP # -7429 Feature 7	56-60	Pit feature originating in Stratum II; silty sand; contained marine shell midden, fish bone, faunal remains, fircracked rock, and glass fragments; SIHP # -7429 Feature 7
III	60-123	Natural; 10 YR 7/4 (very pale brown); medium to coarse grain sand; structureless, singlgrain; moist, loose consistency; non-plastic; marine origin; diffuse, smooth lower boundary; natural Jaucas sand
IV	123-132 (BOE)	Natural; GLEY 1 5GY 7/1 (light greenish gray); coarse sand; structureless, singlgrain; moist, loose consistency; non-plastic; marine origin; lower boundary not visible; natural marine sand

SIHP # -7429 Feature 1 was identified within T-167 at or near the base of Stratum II at 1.40 mbs. The pit was intrusive into Stratum III where it terminated at 1.45 mbs. The feature was irregularly shaped in plan view and measured over 0.94 m long and 0.87 m wide. It was observed at the northwestern end of the excavation and extended beyond the excavation sidewalls (Figure 4). The sediment matrix within the pit was silty sand with similar characteristics to Stratum II. An osseous fragment from a medium mammal was collected from during excavation. A 4-gallon bulk sediment sample collected from within the pit was screened and yielded charcoal (0.2 g), *Nerita picea* (1.9 g), possibly burned crustacean (0.7 g), naturally-occurring, water-rounded marine shell (non-midden) (0.8 g), and a metal fragment (0.4 g). SIHP # -7429 Feature 1 is interpreted as a pit of indeterminate function.

SIHP # -7429 Feature 2 was identified within T-167 at or near the base of Stratum II at 1.41 mbs. The pit was intrusive into Stratum III where it terminated at 1.49 mbs. The feature was ovoid in plan view, measured 0.32 m long and over 0.15 m wide, and extended into the south sidewall (see Figure 4). The sediment matrix with the pit was silty sand with similar characteristics to Stratum II. Burned osseous fragments from an unidentified medium mammal were collected from Feature 2 during excavation. A 1.5 gallon screened bulk sediment sample from SIHP # -7429 Feature 2. It contained charcoal (0.3 g), naturally-occurring, water-rounded marine shell (2.8 g), rusted metal fragments (4.1 g), and fish bone (0.1 g). SIHP # -7429 Feature 2 is interpreted as a possible postmold.

SIHP # -7429 Feature 3 was identified within T-167 at or near the base of Stratum II at 1.32 mbs. The pit was intrusive into Stratum III where it terminated at 1.48 mbs. The feature was roughly rectangular in plan view. It measured over 0.95 m long and over 0.64 m wide and extended into the south and southeast sidewalls (Figure 5). The sediment matrix within the pit was silty sand with similar characteristics to Stratum II. Burned osseous fragments from an unidentified medium mammal and *Sus scrofa* (pig) were collected from the upper portion of SIHP # -7429 Feature 3 during excavation. One of the fragments, a pig rib, also exhibited cut marks characteristic of butchering. Two glass insulator fragments also were collected from the upper portion of the pit feature during excavation. The insulator was embossed with a “B” referring to Bushwick/Brookfield Glass Works, which was in operation from 1864-1921 (Whitten 2013). A canine tooth from a *Canis lupus familiaris* (dog) with a drilled hole through the end of the root (Acc. # 167-H-1) was discovered near the faunal remains and glass fragments. The drilled tooth is considered a Traditional Hawaiian artifact and may have been part of a dog tooth necklace (*lei ‘ilio*) or leg ornament (*kupe‘e niho ‘ilio*). A 12-gallon screened bulk sediment sample collected from within the pit yielded charcoal (0.2 g), rusted metal fragments (4.1g), an unidentified fish bone (0.1 g), unidentified medium mammal bone (0.3 g), and marine shell midden consisting of *Nerita picea* (4.7 g), Isognomidae (1.2 g), *Isognomon* sp. (0.3 g), burned *Conus* sp. (0.9 g), *Strombus* sp. (0.3 g), Mitridae (0.3 g), crustacean (2.2 g), Echinoidea spp. (1.7), and *Brachidontes crebristriatus* (1.3 g). The charcoal collected from Feature 3 was submitted for wood taxa analysis identified cf. Conifer (pine, fir), a historically-introduced tree, as well as cf. *Metrosideros polymorpha* (*‘ōhi‘a lehua*), a native tree, and four unidentified species. The contents of Feature 3 indicate post-Contact influence. SIHP # -7429 Feature 3 is interpreted as a pit of indeterminate function.

Figure 4. T-167 interface of Strata II/III, showing SIHP # -7429 Features 1 and 2, view to northwest

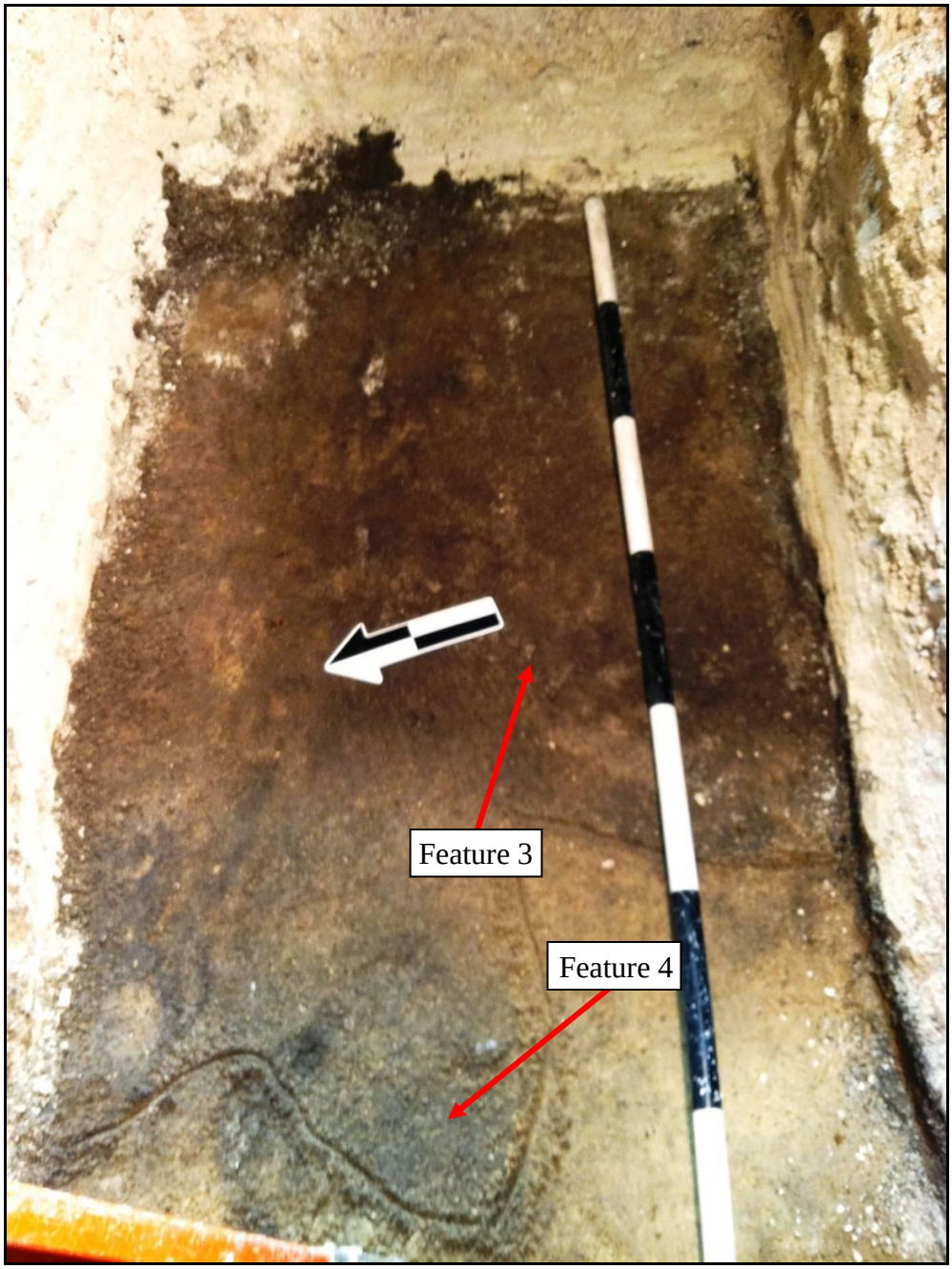


Figure 5. T-167 interface of Strata II/III, showing SIHP # -7429 Features 3 and 4, view to southeast

SIHP # -7429 Feature 4 was identified within the central portion of T-167, originating from the base of Stratum II at 1.54 mbs and terminating at 1.66 mbs within Stratum III. This pit was mostly circular in plan view and measured 0.31 m long and 0.28 m wide (see Figure 5). The sediment matrix within the feature was silty sand with similar characteristics to Stratum II. No bulk sample was collected, and no artifacts or faunal remains were observed, during the excavation of the feature. SIHP # -7429 Feature 4 is interpreted as a possible postmold.

SIHP # -7429 Feature 5 was identified in the western portion of T-168B, originating from the base of Stratum II at 1.50 mbs and terminating at 1.65 mbs within Stratum III. This pit was ovoid in plan view, measured over 0.60 m long and 0.30 m wide, and extended into the south sidewall (Figure 6). The sediment matrix within the feature was loamy sand with similar characteristics to Stratum II. SIHP # -7429 Feature 5 contained a noticeable deposit of charcoal flecking. A 4-liter bulk sediment sample and a 3-gallon screened sediment sample collected from SIHP # -7429 yielded charcoal (43.2 g), various shell midden (5.4 g), various non-cultural shell (2.5 g), rusted metal (3.0 g), *Rattus* sp. (rat) bone (0.1 g), and fircracked rock (43.1 g), and possible marine shell midden. The possible marine shell midden included crustacean (1.6 g), *Nerita picea* (1.5 g), *Isognomon* sp. (1.4 g), Echinoidea (0.2 g), *Ctena bella* (0.1 g), *Brachidontes crebristriatus* (0.1 g), and *Strombus* sp. (0.5 g). A sample of charcoal (4.2 g) was submitted for wood taxa analysis and identified as cf. *Metrosideros polymorpha* (*‘ōhi‘a lehua*) and conifer (i.e., pine, fir, or other cone-bearing variety). SIHP # -7429 Feature 5 is interpreted as a pit of indeterminate function.

SIHP # -7429 Feature 6 was identified in T-170. Feature 6 consists of a single isolated human cranial fragment, identified as a left temporal bone portion, including the mastoid process and the root of the zygomatic arch. The previously-disturbed human cranial fragment was discovered in situ within the buried A horizon (Stratum II) near the southern end of the southeast sidewall and at 0.65 mbs (Figure 7). A limited investigation was performed by an osteologist to identify the remains discovered in situ, and no additional human remains were detected. The fracture margins of the fragment were of similar color as the adjacent bone, which indicates that the temporal portion was not fractured recently. The mastoid process was notably gracile which suggests a possible female or young adult individual. An assessment of ancestry was indeterminate due to the lack of supporting traits. SIHP # -7429 Feature 6 is interpreted as a human skeletal fragment.

SIHP # -7429 Feature 7 was identified in T-170A, originating within Stratum II at 0.56 mbs and terminating at 0.60 mbs near the base of Stratum II. Feature 7 was mostly square shaped in plan view and measured 0.35 m long and 0.25 m wide (Figure 8). The sediment matrix of discovered SIHP # -7429 Feature 7 was silty sand with similar characteristics to Stratum II. A 2-liter screened bulk sediment sample yielded various shell midden (13.5 g), bottle glass fragments (0.3 g), a fish spine (0.1 g), and fircracked rock (25.8 g). The shell midden was identified as *Strombus* sp. (8.5 g), *Nerita picea* (2.6 g), burned *Natica* sp. (2.0 g), burned crustacean (0.3 g), and *Isognomon* sp. (0.1 g). Faunal remains from the screened bulk sediment sample were identified as *Canis lupus familiaris* (dog), *Rattus* sp. (rat), and an unknown medium mammal, not consistent with human. The presence of historic material indicates post-Contact influence to the feature. SIHP # -7429 Feature 7 is interpreted as a pit of indeterminate function.

Detailed information regarding the location, type, function and content of each archaeological feature is provided in Table 2. No radiocarbon dating analysis was performed on the contents from SIHP # -7429.

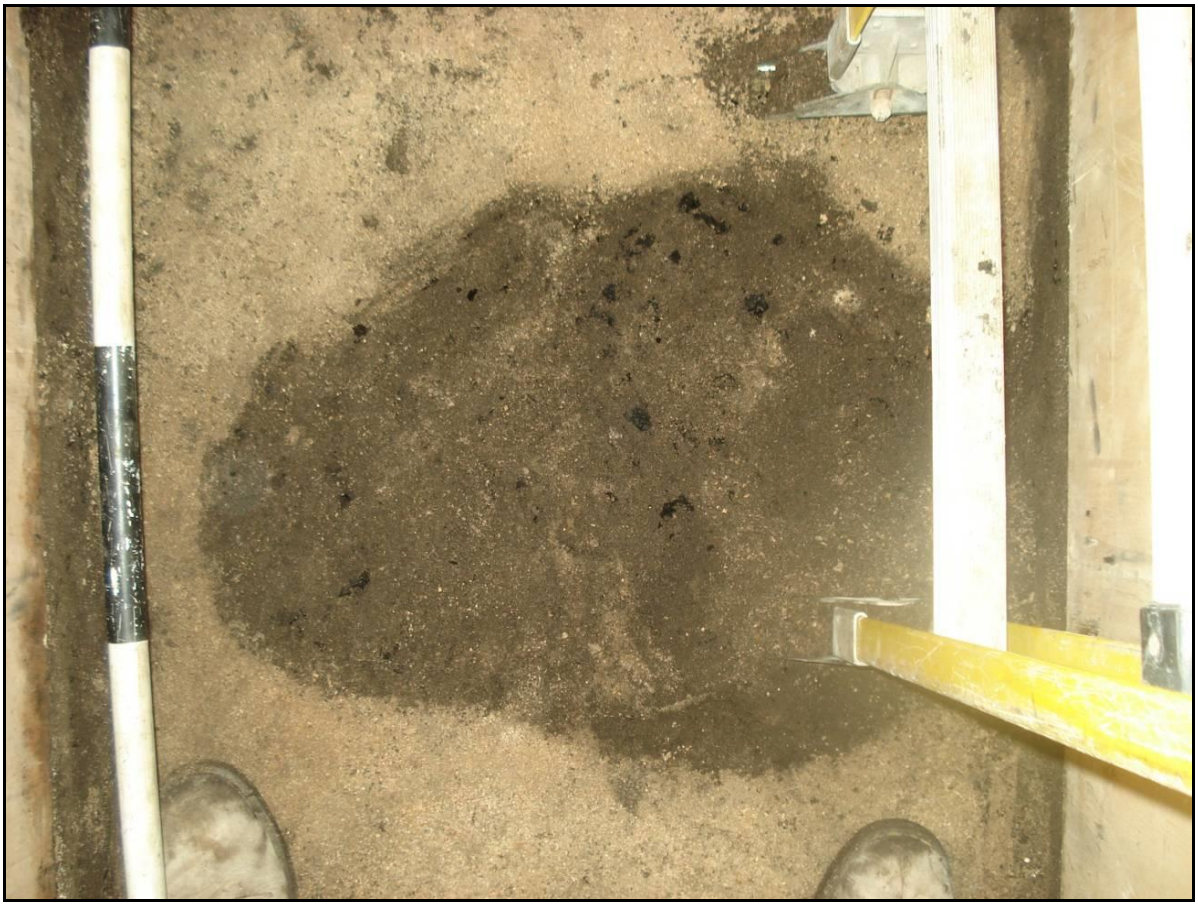


Figure 6. T-168B interface of Strata II/III, showing SIHP # -7429 Feature 5; note charcoal flecking within feature, view to southeast

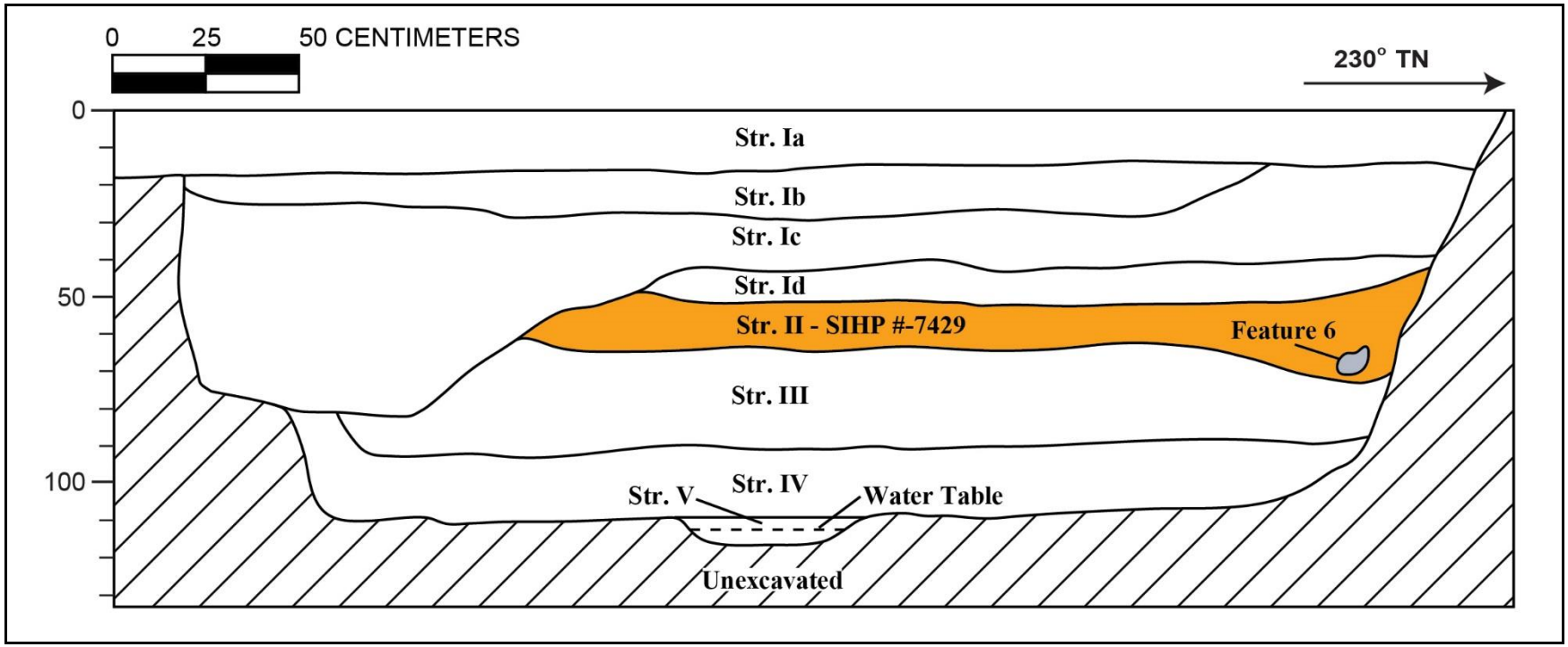


Figure 7. T-170 southeast wall profile, showing the location of SIHP # -7429 Feature 6, human cranial fragment

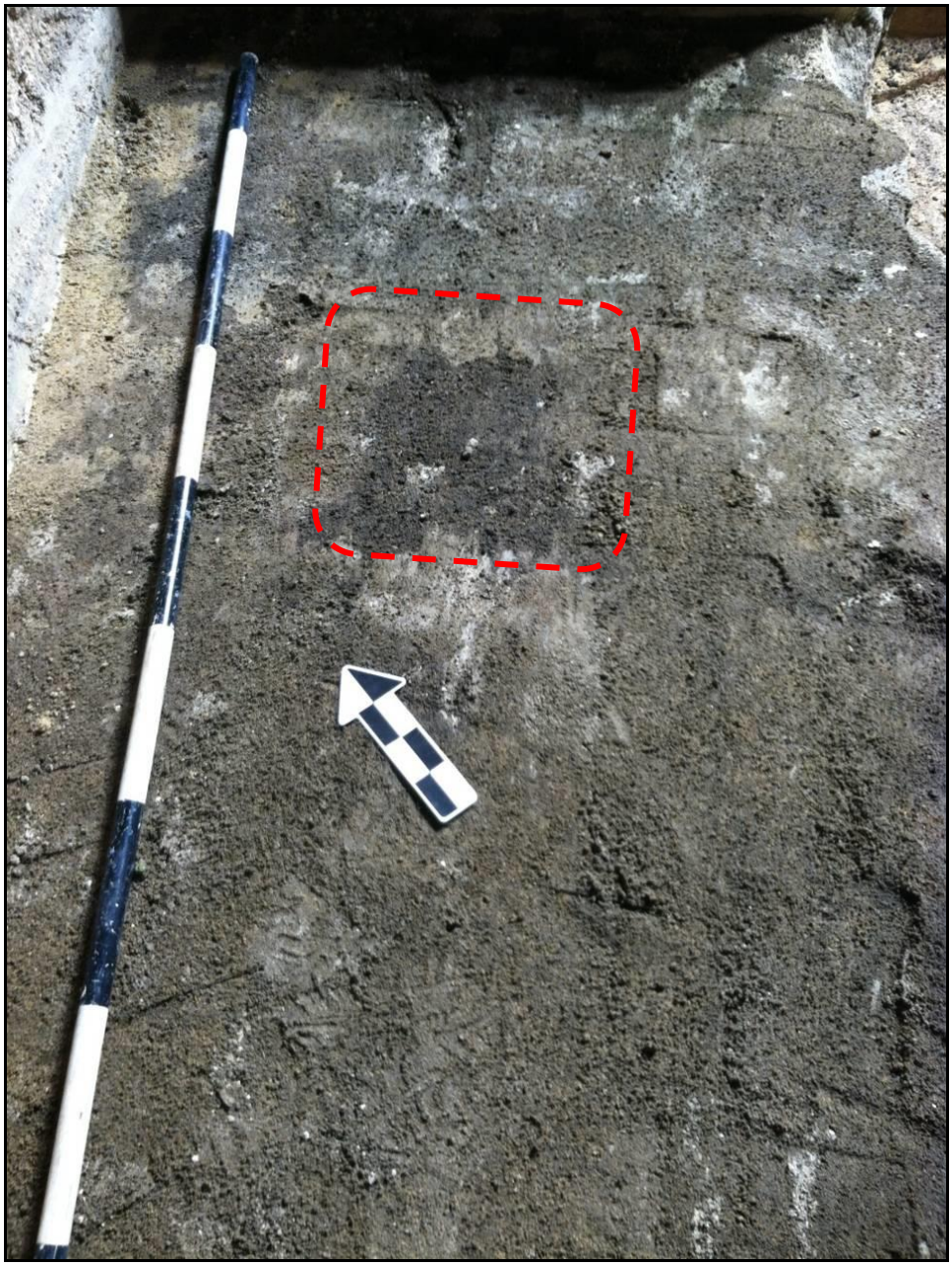


Figure 8. T-170A interface of Strata II/III, showing SIHP # -7429 Feature 7 (outlined), view to northeast

Table 2. Archaeological Features of SIHP # -7429 Identified during the City Center Section 4 AIS

Feature	Test Excavation	Depth (cmbs)	Type/Function	Contents
1	T-167	140-145	Pit/Indeterminate	*Nerita picea* shell, burned crustacean, non-cultural shell, a metal fragment, a single fragmentary medium mammal skeletal element
2	T-167	141-149	Pit/Possible postmold	Burned osseous fragments from an unidentified medium mammal, naturally-occurring, water-rounded marine shell, rusted metal fragments, and fish bone
3	T-167	140-148	Pit/Indeterminate	Drilled *Canis lupus familiaris* tooth, burned osseous fragments from an unidentified medium mammal and a *Sus scrofa*, also a butchered pig rib, Bushwick/Brookfield Glass Works glass insulator (1864-1921), charcoal (native *‘ōhi‘a lehua* and conifer), shell midden, rusted metal fragments, and an unidentified fish bone
4	T-167	140-166	Pit/Possible postmold	Possible postmold
5	T-168B	150-165	Pit/Indeterminate	Charcoal (native *‘ōhi‘a lehua* and conifer), shell midden, non-cultural shell, rusted metal, *Rattus* sp., and fircracked rock
6	T-170	65-71	Isolated human remains	Isolated human cranial fragment identified as a left temporal portion including the mastoid process and root of the zygomatic arch. Gracile mastoid process indicates possible female or young adult. No pit outline
7	T-170A	56-60	Pit/Indeterminate	Shell midden, bottle glass fragments, a fish spine, fircracked rock, and faunal remains from a *Canis lupus familiaris*, *Rattus* sp., and unknown medium mammal

The buried A horizon has been capped by layers of locally-procured and imported fill, base course, and the modern asphalt surface of the Ross Dress for Less store and throughway parking lots, all of which have been subdesignated under Stratum I. The fill sediments that cap the former land surface are considered to be late nineteenth century to modern deposits related to land reclamation, grading, and the construction of the parking lots.

The buried A horizon (SIHP # -7429) identified in T-167, T-168, T-168A, T-168B, T-169, T-170, and T-170A contained both Traditional Hawaiian and post-Contact cultural material, human skeletal remains, vertebrate and invertebrate faunal material, and charcoal.

Historic cultural material within the buried culturally-enriched A horizon of SIHP # -7429 was collected from four test excavations. A bulk sediment sample of Stratum II/III from T-167 included a bottle glass and rusted metal fragment. Bulk sediment samples of Stratum II from T-168 included metal fragments and a nail, a small blue glass bead, and a glass fragment. A bulk sediment sample of Stratum II from T-168B included large rusted metal fragments and bottle glass fragments. Stratum II from T-169 contained one glass marble, three clay marbles, a piece of worked glass, and corroded metal and glass fragments. A bulk sediment sample of Stratum II from T-170A contained a refined earthenware ceramic fragment, metal fragments, and bottle glass fragments. A single canine tooth of a dog (*Canis lupus familiaris*) with a drilled hole through the end of the root (Acc. #167-H-1) was collected from SIHP # -7429 Feature 3 (Figure 9). The tooth may have been part of a dog tooth necklace (*lei ‘ilio*) or leg ornament (*kupe‘e niho ‘ilio*). The drilled dog tooth was found near faunal remains and a Bushwick/Drookfield Glass Works glass insulator dating around 1864-1921. Historic artifacts collected from five of the pit features included metal fragments from SIHP # -7429 Features 1-3 and 5, and bottle glass fragments from Feature 7.

Human skeletal remains were encountered within the culturally-enriched A horizon (SIHP # -7429) in T-170. They were identified between 0.65 mbs and 0.71 mbs. The human skeletal remains were identified as an isolated left temporal bone portion within Stratum II. No pit outline was present. The fracture margins indicated that the fragmentation of the portion had not been recent and was likely a result of previous disturbance. The gracile size of the mastoid process on the temporal bone suggests it was from a female or young adult. An assessment of ancestry was indeterminate. SIHP # -7429 Feature 6 was preserved in situ.

Vertebrate faunal remains were collected from the buried culturally-enriched A horizon from T-168B, T-169, and T-170A and from SIHP # -7429 Features 2, 3, and 7. In general, the faunal remains include unmodified, burned, and/or butchered fragments (i.e., exhibited characteristic cut marks). Faunal remains collected from the buried A horizon included *Bos taurus* (cow), *Sus scrofa* (pig), *Canis lupus familiaris* (dog), *Rattus* sp.(rat), as well as unidentified medium mammal fragments possibly from *Ovis aries* (sheep) or *Felis catus* (cat), and unidentified fish remains. Faunal remains from SIHP # -7429 Features 2, 3, and 7 included *Sus scrofa*, *Canis lupus familiaris Rattus* sp., and several unidentified medium mammal fragments, in addition to unidentified fish remains.

Invertebrate faunal remains were predominately collected from screened and bulk sediment samples of the buried SIHP # -7429 culturally-enriched A horizon and associated features. Invertebrate fauna included non-cultural shell and shell midden (see Table 2).

Figure 9. Drilled dog tooth (Acc. #167-H-1) (obverse and reverse) that may have been part of a dog tooth necklace (*lei ‘ilio*) or part of a dog tooth leg ornament (*kupe‘e niho ‘ilio*), collected from the buried culturally-enriched A horizon (SIHP # -7429) of T-167, scale blocks are in cm

SIHP # 50-80-14-7429 is a newly-identified subsurface cultural deposit. SIHP # -7429 includes a buried, culturally-enriched silty sand/loamy sand A horizon containing seven archaeological features (Features 1 to 7). Two pit features were interpreted as possible postmolds (SIHP # -7429 Features 2 and 4), four pit features were of indeterminate function (SIHP # -7429 Features 1, 3, 5, and 7), and one feature consisted of an isolated human cranial fragment (SIHP # -7429 Feature 6). SIHP # -7429 contained both traditional and post-Contact cultural material, human skeletal remains, vertebrate and invertebrate faunal material, and charcoal. Laboratory analysis of material collected from SIHP # -7429 indicates that the former land surface was likely utilized from the pre- and/or early post-Contact period to the early twentieth century, prior to being capped by historic fill deposits.

Background research indicates that the coastal lands of Kewalo were sparsely populated during the pre- and early post-Contact time periods. This coastal area largely consisted of wetlands that were utilized for aquaculture, salt pans, occasional taro *lo‘i*, and habitation. Many of the Kewalo wetlands were reclaimed for urban development during the late nineteenth century.

Based on the guidance of the National Register Bulletin No. 15, SIHP # 50-80-14-7429 retains its integrity of location, design, and materials. Based on the results of this investigation, CSH recommends that this cultural resource maintains the integrity to support its historic significance under Criterion D (has yielded, or is likely to yield, information important for research on prehistory or history) and E (has cultural significance to an ethnic group) of the Hawai‘i Register, and Criterion D of the National Register, exclusively for its information potential.

SIHP # 50-80-14-7429 has provided information, and can potentially provide additional information, on late pre- to early post-Contact habitation, historic land use, and pre- and post-Contact burial practices and distribution within Kaka‘ako. The potential for additional research warrants the implementation of a data recovery program focusing on data collection from the buried, culturally-enriched A horizon and associated features. Additionally, discrete features within fill layers will be identified and documented. Data recovery will include a more intensive regime of strata- and feature specific radiocarbon, palynological, and botanical analysis. The analysis will seek to indicate use, function, and potentially the geographic distribution/extent of culturally-enriched strata and features, and attempt to temporally categorize subsurface deposits to distinguish between traditional Hawaiian versus historic deposition. Data recovery will also seek to identify additional burials or human skeletal remains that may be present within SIHP # -7429. Data recovery will include detailed stratigraphic documentation of identified burial pits or human skeletal remains. Following data recovery, archaeological monitoring will be conducted to further recover data on the depositional sequence and extent of SIHP # -7429 through documentation and sample collection. The previously-identified human remain associated with SIHP # -7429, will be treated in accordance with HAR Chapter 13-13-300 and HRS Chapter 6E-43. In order to alleviate the project’s effect on human burials, a project-specific burial treatment plan (a requirement of HAR Chapter 13-13-300) will be prepared for consideration of the OIBC and recognized descendants. The agreed-upon treatment is preservation in place, the details of which will be documented in the burial treatment plan.

SIHP # 50-80-14-7430

FORMAL TYPE:	Subsurface privy remnant
FUNCTION:	Toilet
PREVIOUS DOCUMENTATION:	N/A
AGE:	Post-Contact
NUMBER OF FEATURES:	2
TYPES OF FEATURES:	1 privy remnant, 1 builder’s trench
DISTRIBUTION:	T-202 (presently less than 0.9 m²)
LOCATION:	Located in the eastbound lane of Kona Street, *mauka* of Ala Moana Shopping Center (Kālia Geographic Zone)
TAX MAP KEY:	TMK [1] 2-3-038:006
LAND JURISDICTION:	General Growth Properties
TEST EXCAVATIONS:	T-202

SIHP # 50-80-14-7430 is a newly-identified cultural resource consisting of a subsurface privy remnant and associated builder’s trench located in the eastbound lane of Kona Street, *mauka* of Ala Moana Shopping Center (Figure 1). This cultural resource was encountered in T-202 within the Kālia Geographic Zone of the City Center AIS.

Historically, Kālia and the surrounding landscape were coastal flats comprised of marshland or wetland with limited habitation (Figure 2 and Figure 3). An 1884 map by S.E. Bishop depicts the extent of marshland in the vicinity of SIHP # -7430 as well as several LCAs (Figure 4). LCA records document in-use fishponds, taro patches, house lots, and pasture land. LCA records for 100 Fort Lands (F.L.), located approximately 45 m northeast of SIHP # -7430, describe two ponds, five fry ponds (*ki‘o pua*), one taro patch (*lo‘i*), one house lot, and one pasture (*kula* land). LCA records for 101 F.L., located approximately 56 m northwest of SIHP # -7430, also document two ponds and three *ki‘o pua*. The presence of such resources indicates the area was tended to by individuals living within or just outside the wetland areas. A 1927 aerial photograph and a 1926 land court application map provide evidence of habitation within a still extant wetland agricultural and aquacultural environment (Figure 5 and Figure 6). The aerial photograph and map also indicate that SIHP # -7430 is located immediately adjacent to the southern side of a structure (see Figure 5 and Figure 6).

By the mid-twentieth century, lowland Kālia was filled as part of extensive dredging and land reclamation efforts (Figure 7). By 1952, the area surrounding and including SIHP # -7430 was filled and graded for the construction of the Ala Moana Shopping Center (Figure 8).

The depositional sequence observed within T-202 and nearby test excavations includes wetland sediments developed over decomposed coral reef, underlying fill associated with land reclamation and development (Figure 9 to Figure 12 and Table 1). The depositional sequence reflects twentieth century change from a wetland environment to the present-day developed land surface. The depositional sequence within T-202 included natural silty clay wetland sediment (Stratum II) underneath 1.2 meters of fill (Ia-Ie). Stratum II is considered to be the buried remnants of the former Kewalo wetland surface and has been designated as SIHP # 50-80-14-6636. The fill depositional sequence consisted of sandy clay (Stratum Ie) and crushed coral (Stratum Id and Ic) associated with mid twentieth-century dredging and land reclamation,

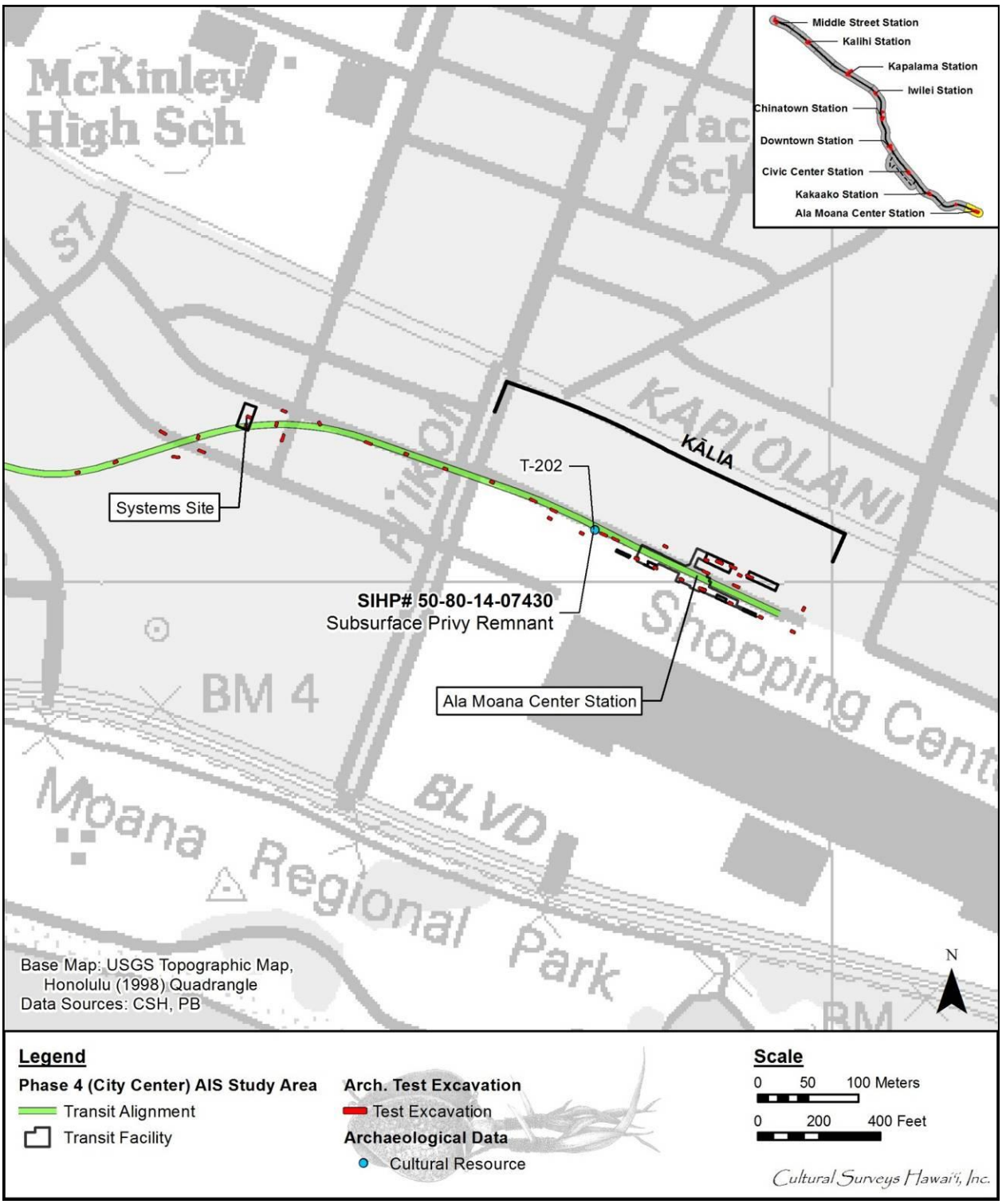


Figure 1. Location of the privy and associated builder’s trench (SIHP # -7430) in the Kālia Geographic Zone (Base Map: USGS 1998 Topographic Map of Honolulu Quadrangle)

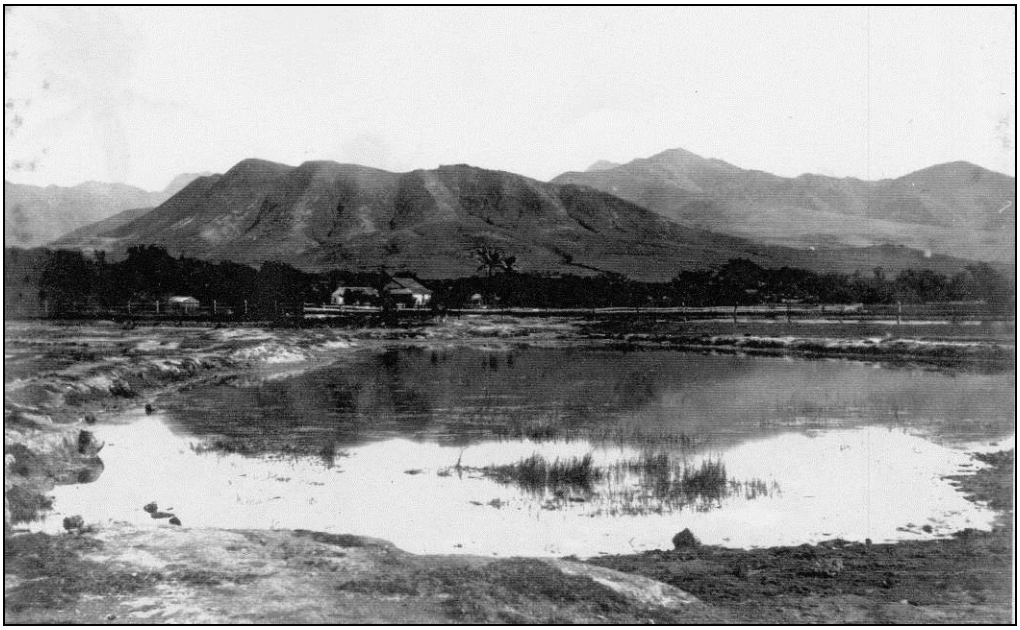


Figure 2. Kewalo wetland in 1890 showing house structures in the background (Hawai‘i State Archives)

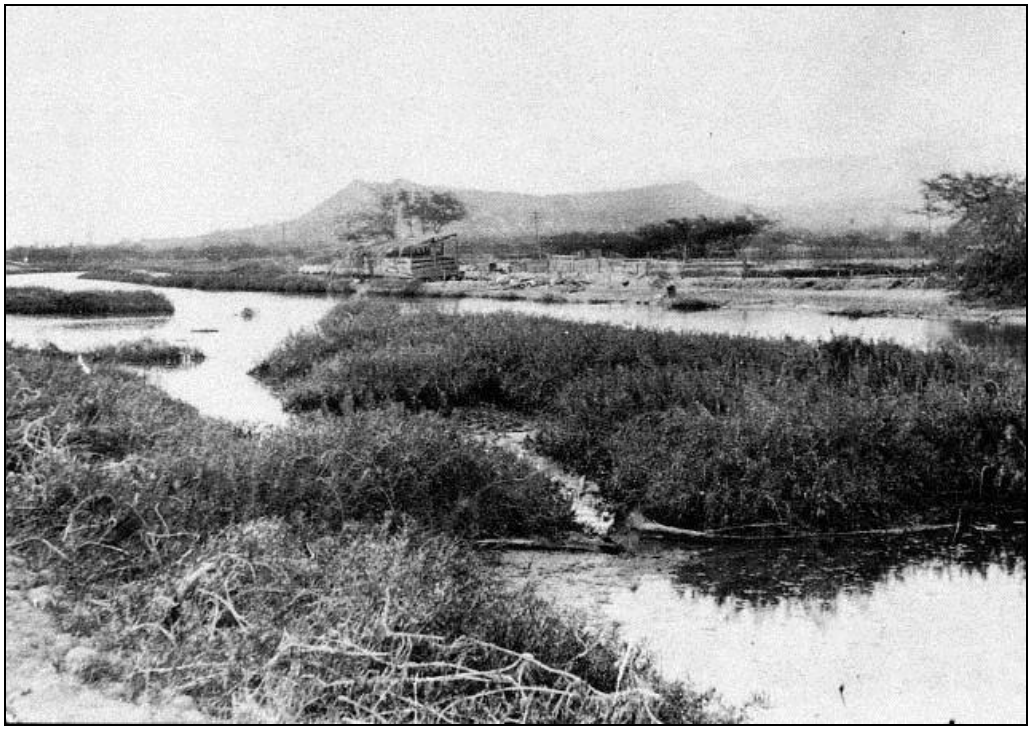


Figure 3. Kewalo wetland in 1909 (Hawai‘i State Archives)

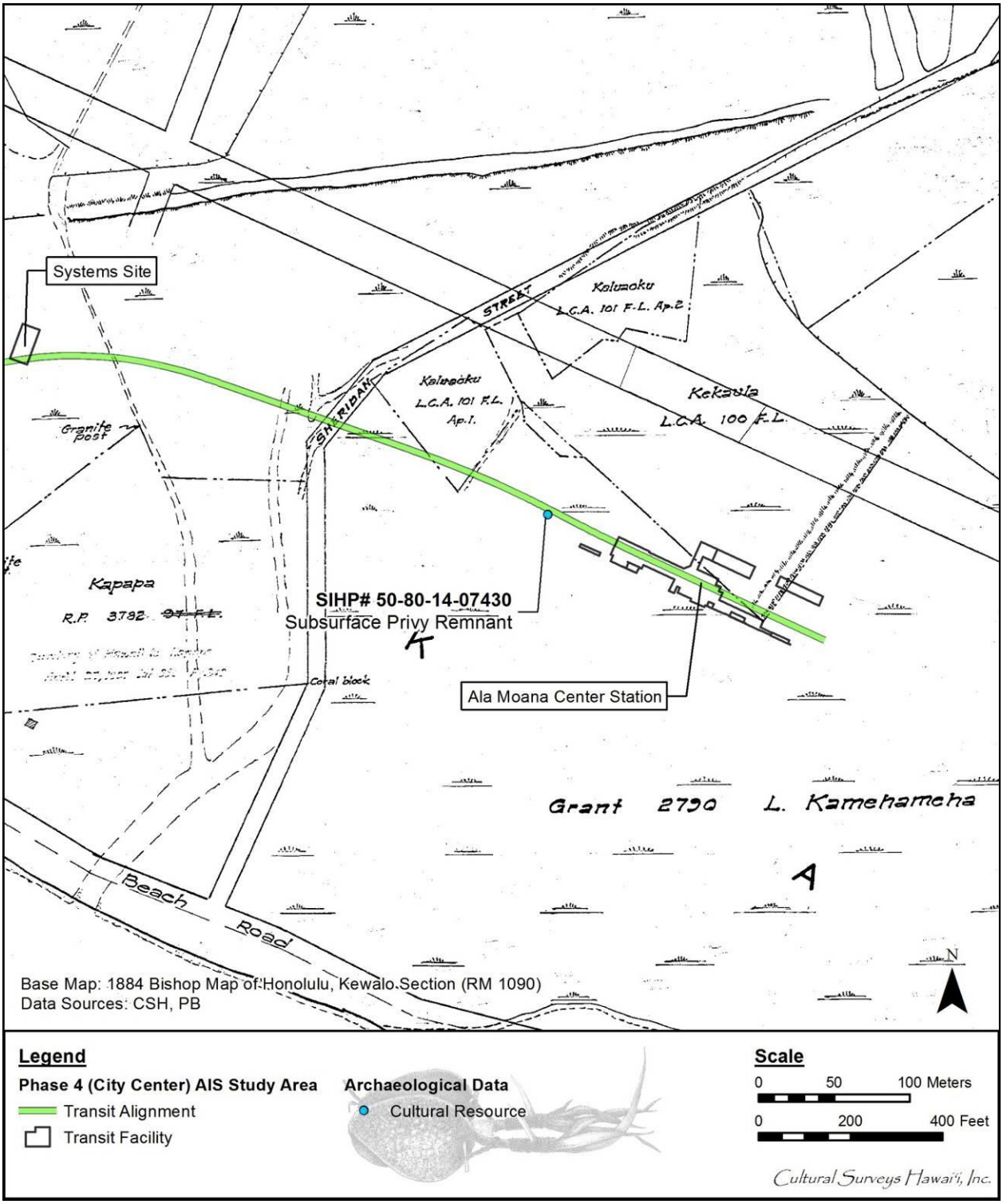


Figure 4. 1884 Map of Honolulu, Kewalo Section, by S. E. Bishop (Reg. Map 1090), showing the Kālia Zone amidst marshland and the adjacent LCAs 100 FL and 101 FL.

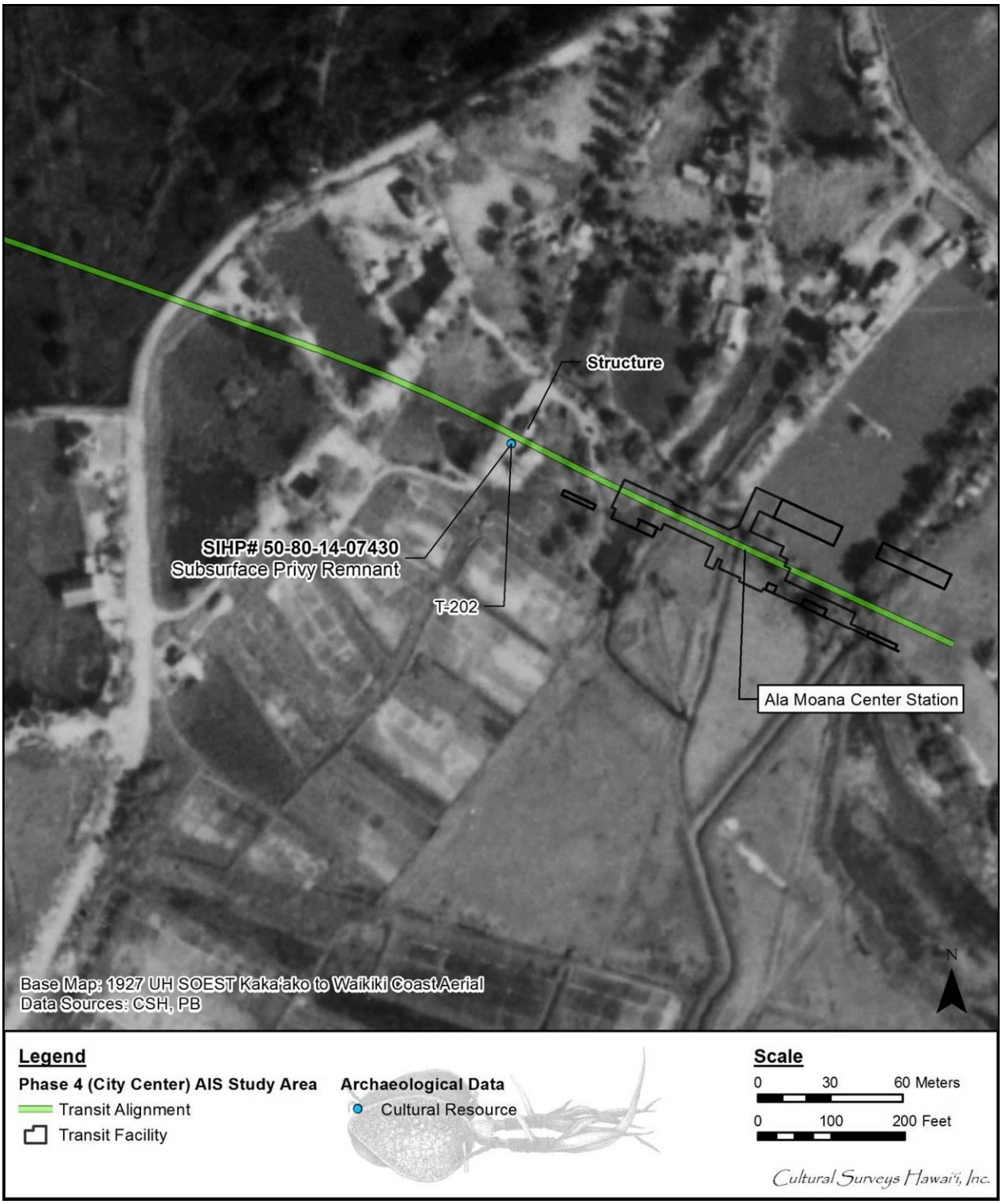


Figure 5. Portion of the 1927 UH SOEST aerial of the Kaka‘ako coast showing the location of SIHP # -7430 adjacent to a structure surrounded by ponds and salt pans

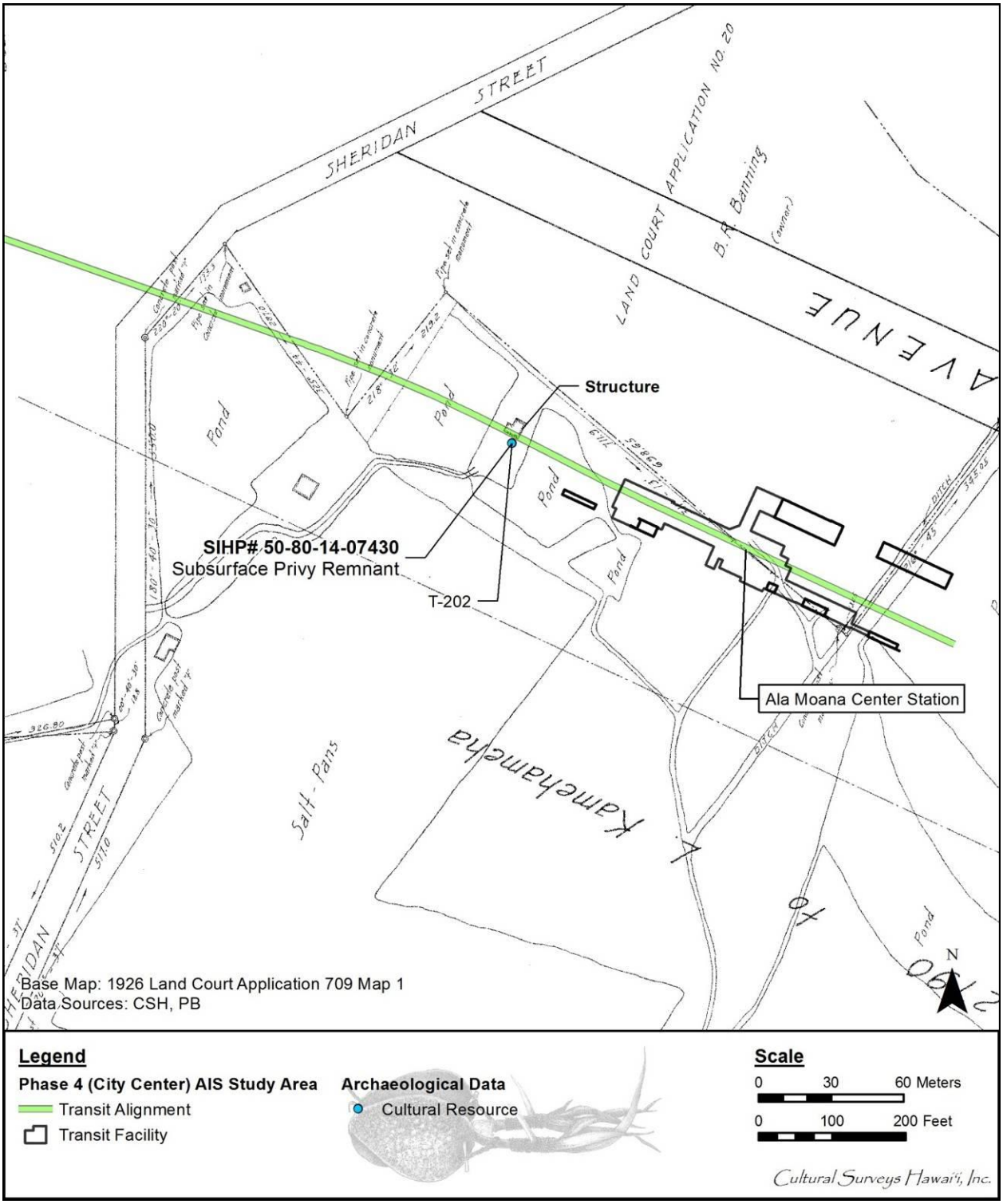


Figure 6. Portion of the 1926 Land Court Application 709 Map 1 showing the location of SIHP # -7430 adjacent to a structure surrounded by ponds and salt pans

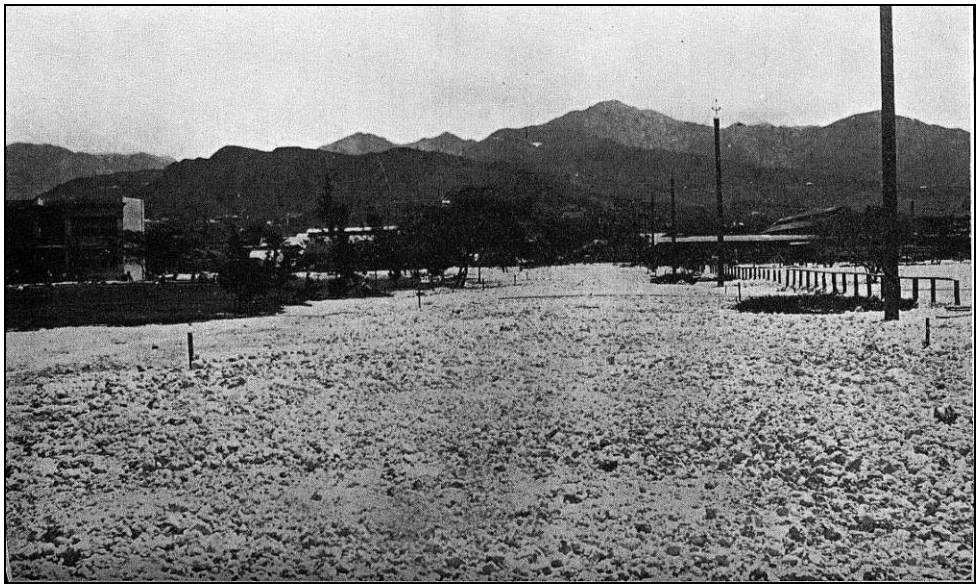


Figure 7. 1914 photograph showing the Kewalo wetlands filled in with coral material (Hawai‘i State Archives)

Figure 8. 1959 photograph showing the development of Ala Moana Center, the former wetlands having been filled in

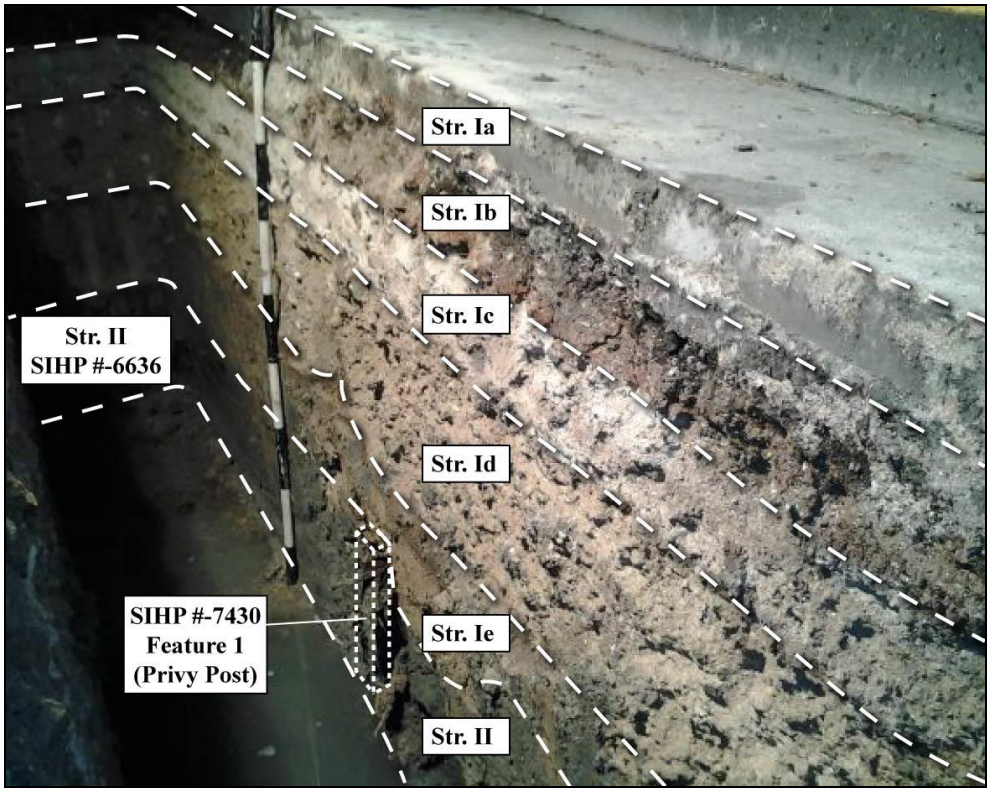


Figure 9. T-202 north wall, view to north

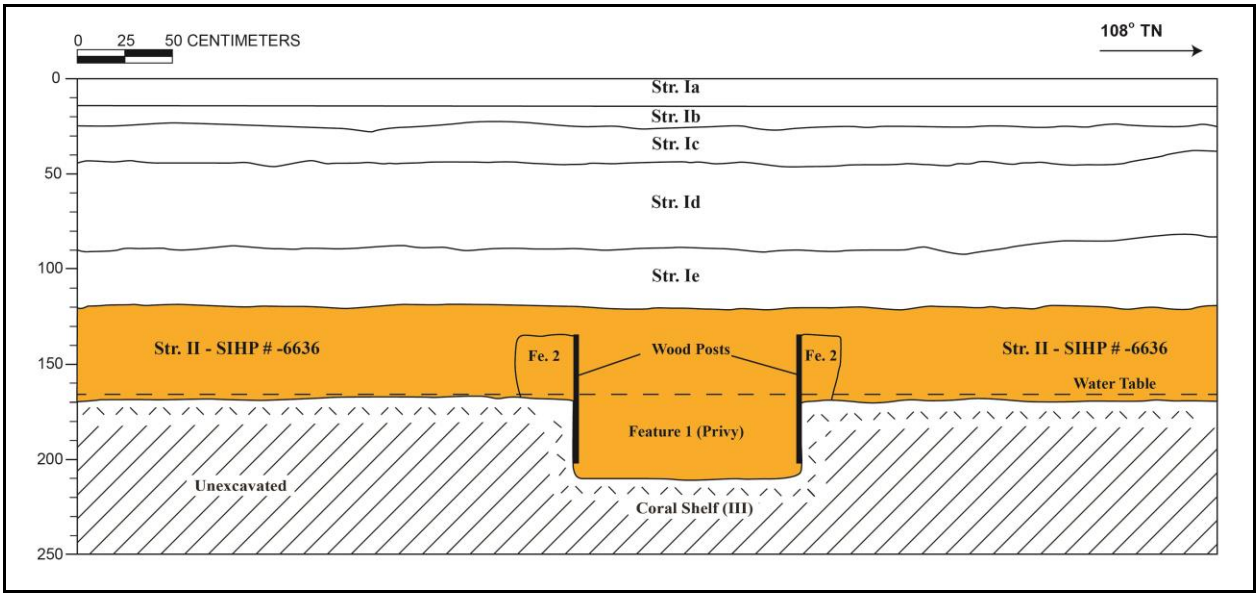


Figure 10. T-202 north wall profile, showing SIHP # -7430 Feature 1 (privy) and Feature 2 (builder’s trench)

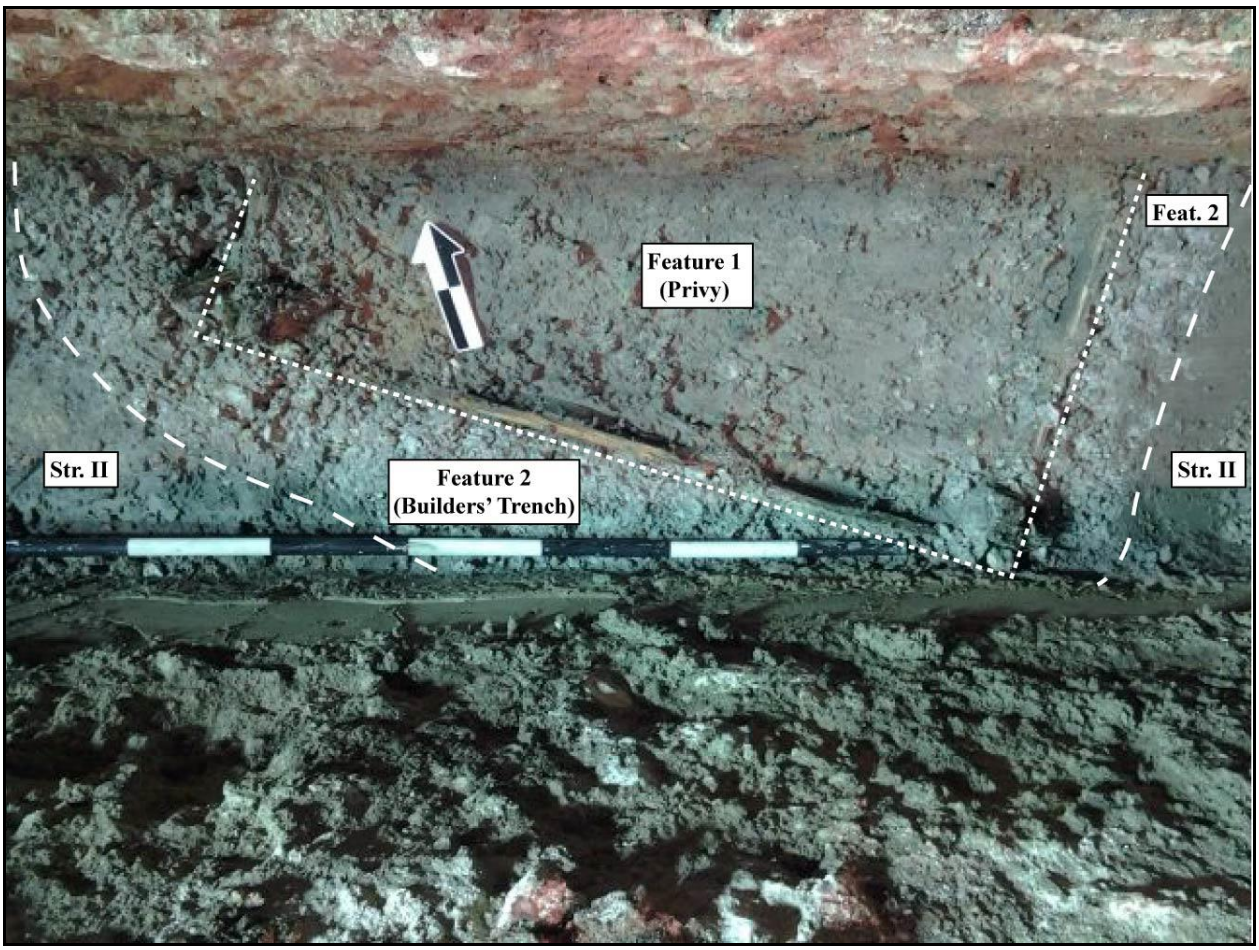


Figure 11. T-202 plan view of SIHP # -7430, showing the privy structure (Feature 1) and associated builders trench containing coral gravel fill (Feature 2)

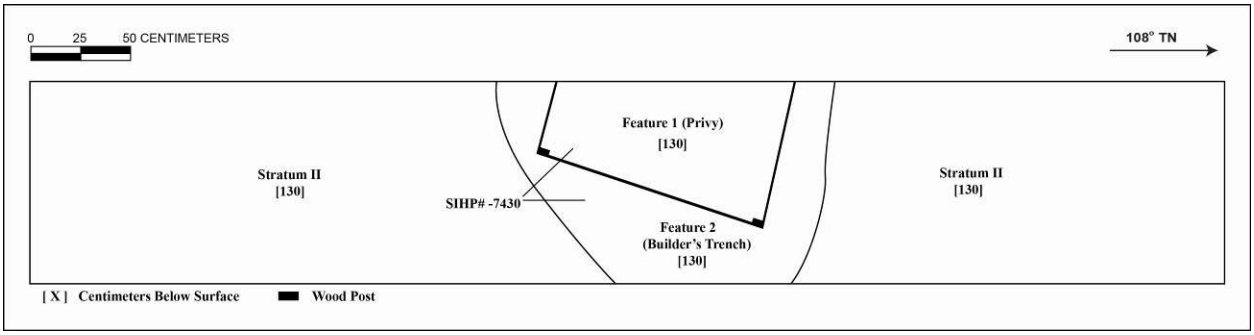


Figure 12. T-202 plan view of SIHP # -7430, showing the privy structure (Feature 1), consisting of a rectangular alignment of single, 1 by 10 inch milled boards, and two 2 by 4 inch wooden posts located at each of the two exposed corners, and the associated builder's trench (Feature 2), consisting of excavated coral material from inside the area of Feature 1 which was then deposited outside the privy structure to form a collar.

Table 1. T-202 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–15	Concrete curb and gutter
Ib	15–25	Fill; 10 YR 4/4 (dark yellowish brown) with 20% fine to coarse mottles of 10 YR 8/1 (white); gravelly sandy clay loam; weak, fine, crumb structure; moist, friable consistency; slightly plastic; mixed origin; abrupt, smooth lower boundary; few fine roots; gravelly fill material deposited during curb and gutter installation
Ic	25–45	Fill; 10 YR 8/2 (very pale brown); extremely gravelly silty sand; structureless, singlgrain; moist, loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary; crushed coral fill
Id	45–90	Fill; extremely gravelly silty sand; structureless, singlgrain; loose consistency; non-plastic; marine origin; very abrupt, smooth lower boundary; crushed coral fill
Ie	90–120	Fill; 10 YR 5/4 (yellow brown); sandy clay; weak, medium, blocky structure; moist, friable consistency; plastic; mixed origin; abrupt, smooth lower boundary;
II	120–210	Natural; 10 YR 5/1 (gray); silty clay; weak, medium, blocky structure; wet, very sticky consistency; plastic; mixed origin; abrupt lower boundary; natural remnant marsh sediment; component of SIHP # -6636, Kewalo wetland sediment
SIHP # -7430 Feature 1	135–210	Privy structure remnant; consisted of a rectangular alignment of single, 1 x 10 inch milled boards, and two 2 x 4 inch wooden posts located at each of the two exposed corners
SIHP # -7430 Feature 2	135–177	Builder’s trench; consisted of coral material excavated from inside the area of Feature 1 and deposited on the outside of Feature 1 to form a collar
III	170–210 (BOE)	Natural; coral shelf

and gravelly sandy clay loam (Stratum Ib) and a concrete curb and gutter (Stratum Ia) associated with the construction of Ala Moana Shopping Center.

SIHP # -7430 consisted of a remnant historic privy structure and an associated builder’s trench. The historic privy (SIHP # -7430 Feature 1) was constructed within the natural Kewalo wetland sediment (Stratum II, SIHP # -6636). The method of construction is postulated based on field observations and stratigraphic associations. First, the natural sediment was excavated and removed along with portions of the underlying decomposed coral shelf material. Following excavation or incrementally during excavation, the privy structure was erected. The remnant privy structure included milled wood board sides and milled wood posts connected by metal fasteners at each exposed corner. An open area was left circumscribing the privy structure which was likely utilized as a builder’s trench for the construction of the privy. This builder’s trench (SIHP # -7430 Feature 2) was then infilled with the excavated coral shelf material, serving as a brace for the structure. A ferrous bar or spike may also have served to support the structure. The interior of the privy then remained hollow, extending beneath the present water table. It is further postulated that an additional outhouse structure was constructed overtop the now remnant privy. The evidence of the use of the privy included the deposition of malodorous night soil containing historic artifacts within the interior of the privy that were collected during fieldwork. It Later, the privy likely was abandoned, the overlying outhouse structure was removed, the privy interior was filled naturally or manually with locally available wetland sediment (Stratum II), and the entire area was covered over by land reclamation deposits.

Schmitt (1982:150) describes a first-hand account of a mid-nineteenth century privy as follows:

> Both Hawaiian and Foreign dwellings in the 19th Century usually included a backyard hale li‘ili‘i (little house). The native facilities were especially primitive; an 1852 visitor wrote, ‘Their water closets are excavations covered in atop, leaving a small square hole for business. I took them for wells!!’.

Outhouse structures are pictured on an 1854 photograph by Hugo Stangenwald outside associated main house structures (Figure 13). The construction of such outside toilet facilities was still common until the 1880s as indoor bathrooms were met with initial skepticism and considered to be “risking the family health in establishing bath and toilet in the main house instead of an out-house” (Schmitt 1982:154).

SIHP # -7430 was encountered between 1.35 mbs and 2.10 mbs within Stratum II. The exposed portion of the privy within T-202 included two corners of a rectangular wooden structure that measured 1.20 m by 0.75 m and extend into the north sidewall of the excavation. The overall dimensions of the exposed privy structure may not necessarily represent an equal bisection through the feature and no absolute measurements on total feature dimensions are possible. No clear top surface structure was present and the original structure (outhouse) may have been taller than the remnants observed. The structure had a relatively shallow depth of about 0.80 m (2.6 ft) to its base. The shallow depth may be a result of the water table being present 1.67 mbs and the coral shelf at approximately 1.70 mbs. However, the coral shelf in the feature’s interior appeared to have been deliberately excavated out to provide an adequate depth for the facility. Sediment samples were not collected from within the privy.

Structural remnants collected from the privy (SIHP # -7430 Feature 1) consisted of two boards, two posts, a ferrous object and metal fasteners or nails (Figure 14 through Figure 18). The boards each measured 1 x 10 x 50 inches, while the two posts measured 2 x 4 x 58 inches.

Figure 13. 1854 photograph by Hugo Stangenwald showing various buildings with small, rectangular privy structures (circled) visible in some lots (Hawai‘i State Archives)

The function of the ferrous bar or spike collected from the privy structure is unclear, however, it may have acted as a type of structural support.

Artifacts collected from the privy sediment (SIHP # -7430 Feature 1) included four ceramic fragments (Asian and English types), 11 moldblown bottles and/or bottle fragments, and miscellaneous wood fragments and metal artifacts (Figure 19 through Figure 26 and Table 2). The ceramic manufacturing dates were between 1840 and 1910, and the glass bottle assemblage was dated to between the 1870s and 1920s. The dates from the artifact assemblage are consistent with the dates of the metal fasteners from the privy. Metal fasteners collected appear to be machine-headed cut nails and date to between ca. 1835 and 1890. Collectively, the historic artifacts provide a relative date range for the privy between the mid-nineteenth to early twentieth century.

SIHP # -7430 is interpreted to be the remnants of a historic privy that was utilized in the early twentieth century or prior. It includes the remnant wooden privy structure and interior night soil sediment containing historic cultural material (SIHP # -7430 Feature 1) and an associated builder’s trench (SIHP # -7430 Feature 2) that was infilled with decomposed coral. The determination of the function of SIHP # -7430 as a privy (toilet) is based on the presence of odorous night soil in the privy interior, the design of the exterior wooden structure around a pit, and the possible association of the privy with at least one historic structure that is depicted on a 1927 aerial photograph and 1926 land court application map (see Figure 5 and Figure 6). The night soil sediment within SIHP # -7430 was noticeably different from the wetland sediment (Stratum II) observed outside the structure.

Based on the guidance of the National Register Bulletin No.15, SIHP # 50-80-14-7430 retains its integrity of location, design, materials, and workmanship. Since its time of construction and period of use the remnant privy has been buried and its surroundings completely altered by modern development. Based on the results of this investigation, CSH recommends that this cultural resource maintains the integrity to support its historic significance under Criterion D (has yielded, or is likely to yield information important for research on prehistory or history) of the Hawai‘i and the National Registers, exclusively for its information potential.

SIHP # 50-80-14-7430 has provided information, and can potentially provide additional information, related to the location, design, and contents of historic privies within Kālia and the surrounding area. The contents of the privy may yield further insight into the lives of those individuals who utilized it during the mid-nineteenth to early twentieth century. Due to the possibility of encountering SIHP # -7430 (privy structure) during future project-related ground disturbance, CSH recommends the implementation of an archaeological monitoring program. Archaeological monitoring will seek to recover additional data regarding the overall extent and function of SIHP # -7430, as well as document any remaining structural elements of the privy. Provisions of the archaeological monitoring plan will include that, if encountered, additional exposed portions of SIHP # -7430 be cordoned off to allow for intensive sampling of privy sediments for macro-botanical analysis.

Figure 14. T-202, a (1 x 10 x 50 inch) plank (Acc. #202-A-25) that was part of the privy wall structure (SIHP # -7430 Feature 1)

Figure 15. T-202, remnants of another board (Acc. #202-A-25) that was part of the privy wall structure (SIHP # -7430 Feature 1)

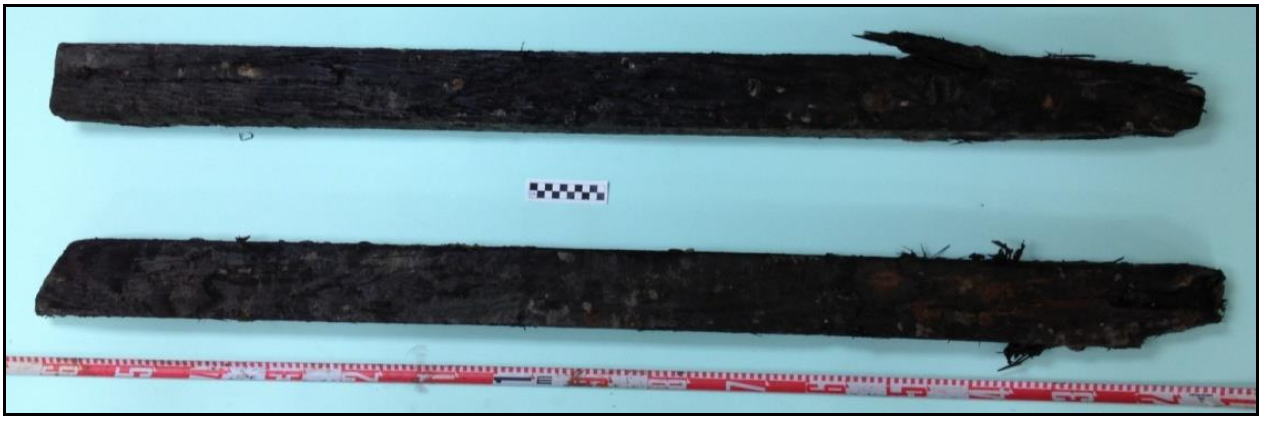


Figure 16. T-202, two (2 x 4 x 58) inch posts (Acc. #202-A-25) that were part of the privy structure (SIHP # -7430 Feature 1)

Figure 17. T-202, metal artifact (Acc. #202-A-23) collected from the privy (SIHP # -7430 Feature 1)

Figure 18. T-202 machine-headed cut nail (Acc. #202-A-24, ca. 1835-1890) collected from the privy wood (SIHP # -7430 Feature 1)

Figure 19. T-202 ceramic vessel fragments, exterior; Chinese “Four Flower” porcelain bowl (Acc. #202-A-1; upper left), Japanese porcelain sake cup (Acc. #202-A-2; upper right), and Euro-American ironstone bowl fragments (Acc. #202-A-3; bottom) from SIHP # -7430 Feature 1

Figure 20. T-202 intact glass bottles (Acc. #s 202-A-6, A-7, and A-13, bottom to top) collected from SIHP # -7430 Feature 1

Figure 21. Glass boot polish bottle (Acc. #202-A-6) embossed “FRANK MILLER’S CROWN DRESSING NEW YORK USA” collected from SIHP # -7430 Feature 1

Figure 22. T-202 glass bottle fragments (Acc. #s 202-A-4, A-5, and A-8 through A-12, left to right, top to bottom) collected from SIHP # -7430 Feature 1

Figure 23. T-202 Sample of small metal and wood artifacts (Acc. #s 202-A-14 through A-16) collected from SIHP # -7430 Feature 1

Figure 24. T-202 miscellaneous metal artifacts (Acc. #s 202-A-17 and A-18) collected from SIHP # -7430 Feature 1

Figure 25. T-202 miscellaneous metal artifacts (Acc. #s 202-A-19 and A-20) collected from SIHP # -7430 Feature 1

Figure 26. T-202 miscellaneous metal artifacts (Acc. #s 202-A-21 and A-22) collected from SIHP # -7430 Feature 1

Table 2. SIHP # -7430 Historic Artifacts Analysis

Acc. #202-A-	Prov.	Ceramic Vessel Type	Portion	No.	Paste	Origin; Age	Comments
1	T-202, Feature 1 SIHP # -7430	Hollowware – large bowl	Body–rim	1	Porcelain	Chinese	Four Flowers motif, painted overglaze
2	T-202, Feature 1 SIHP # -7430	Hollowware – sake cup	Base–body	1	Porcelain	Japanese	Red base mark; floral, painted underglaze
3	T-202, Feature 1 SIHP # -7430	Hollowware – large bowl	Base	2	Refined earthenware (ironstone)	Euro-American	Base mark: “PATENT I…;” may be two vessels
Acc. #202-A-	**Prov.**	**Glass Bottle Type**	**Portion**	**No.**	**Color**	**Origin; Age**	**Comments**
4	T-202, Feature 1 SIHP # -7430	Bottle, beverage	Body	2	Amber		
5	T-202, Feature 1 SIHP # -7430	Bottle	Lip	1	Aqua	1880s–1920s	Tooled lip
6	T-202, Feature 1 SIHP # -7430	Bottle, boot polish	Complete	1	Clear	American; 1870s–1900	“Frank Millers Crown Dressing New York, USA” embossed horizontally on body; “25” embossed on base (Edwards and Critten 1885:146)
7	T-202, Feature 1	Bottle, medicine	Complete	1	Clear	American; 1887–	“Rubifoam for the teeth

	SIHP # -7430					1920s	by E.W. Hoyt & Co. Lowell, Mass” embossed on body horizontally
8	T-202, Feature 1 SIHP # -7430	Bottle	Body	1	Green		
9	T-202, Feature 1 SIHP # -7430	Bottle	Body	1	Clear	1870s – post	
10	T-202, Feature 1 SIHP # -7430	Bottle, spirits	Lip	1	Green	1880–1920s	Tooled lip
11	T-202, Feature 1 SIHP # -7430	Bottle, beverage	Base–body	1	Olive	pr1900	Base: push up
12	T-202, Feature 1 SIHP # -7430	Bottle, beverage	Base–body	1	Olive	pr1900	Base: push up
13	T-202, Feature 1 SIHP # -7430	Bottle, spirits	Complete	1	Green	1880s–1920s	Base: kick up
Acc. #202-A-	**Prov.**	**Miscellaneous Type**	**Portion**	**No.**	**Material**	**Origin; Age**	**Comments**
14	T-202, Feature 1 SIHP # -7430	Milled block	Fragment	9	Wood		
15	T-202, Feature 1 SIHP # -7430	Insulation item?	Fragment	1	Leather		
16	T-202, Feature 1 SIHP # -7430	Building material	Fragment	1	Stone		Mortar on surface

17	T-202, Feature 1 SIHP # -7430	Machine part – ring	Fragment	1	Metal		Recessed interior
18	T-202, Feature 1 SIHP # -7430	Housing box?	Fragment	1	Metal		Thin plates bent into open box shape
19	T-202, Feature 1 SIHP # -7430	Machine part – rod and wheel	Fragment	1	Metal		Wood at base
20	T-202, Feature 1 SIHP # -7430	Machine part – ring	Fragment	3	Metal		Thin metal
21	T-202, Feature 1 SIHP # -7430	Housing Metal?	Fragment	4	Metal		Thin curved plates
22	T-202, Feature 1 SIHP # -7430	Machine part – wire	Fragment	1	Metal		White with knobs on each end
23	T-202, Feature 1 SIHP # -7430	Machine part – attachment	Fragment	1	Metal		
24	T-202, Feature 1 SIHP # -7430	Nail	Complete	1	Metal	1835–1890	Machine-headed cut nail from privy wood
25	T-202, Fea. 1 SIHP # -7430	Milled planks	Fragment	10	Wood		

SIHP # 50-80-14-7506

FORMAL TYPE:	Subsurface incinerated trash deposit
FUNCTION:	Refuse disposal
PREVIOUS DOCUMENTATION:	N/A
AGE:	Post-Contact (mid-twentieth century)
NUMBER OF FEATURES:	N/A
TYPES OF FEATURES:	N/A
DISTRIBUTION:	Approximately 0.11 acres
LOCATION:	Southern bank of Kapālama Drainage Canal at the corner of Dillingham Boulevard and Kokea Street (East Kapālama Geographic Zone)
TAX MAP KEY:	[1] 1-5-017:006
LAND JURISDICTION:	The University of Hawai‘i
TEST EXCAVATIONS:	T-064, T-066, and T-067

SIHP # 50-80-14-7506 is a newly-identified subsurface incinerated trash deposit located near the southern bank of Kapālama Drainage Canal at the corner of Dillingham Boulevard and Kokea Street (Figure 1). The incinerated trash deposit was found in only three test excavations during the City Center AIS (T-064, T-066, and T-067).

The depositional sequence in these three test excavations consisted of natural sediments deposited atop the coral shelf which were later truncated and overlain with historic and/or modern fill deposits. The buried Late Pleistocene calcareous reef was identified at the base of excavation in T-067 (Stratum III) while natural silty to sandy clays were observed at the base of excavation in T-064 and T-066. The coral shelf was not reached in these latter two trenches. The natural clays (designated Stratum II) are interpreted as remnant wetland, agricultural sediments (SIHP # 50-80-14-7426; see separate site description provided this volume).

SIHP # -7506 is an incinerated trash deposit estimated to extend 0.11 acres in area. The trash deposit was observed between 0.38 to 1.60 mbs. Historic artifacts observed within SIHP # -7506 include ceramic vessels, whole and fragmentary glass bottles and jars, melted metal, insulators, miscellaneous household items, and terrestrial faunal remains.

Within T-064, the incinerated trash deposit was identified as Stratum Ie, a dark reddish brown silty sandy loam that extended between 0.46 and 1.60 mbs (Figure 2 and Table 1). The deposit, exposed beneath four layers of fill material, likely truncated the upper extent of the underlying natural wetland/agricultural sediments (SIHP # -7426). A total of 17 artifacts were collected from the trash deposit. They consist of one porcelain cup, 12 glass fragments (from 12 bottles), an earthenware fragment and three insulator fragments (Table 2 and Figure 3 through Figure 5). The diagnostic American-made porcelain cup was manufactured between 1909 and 1914.

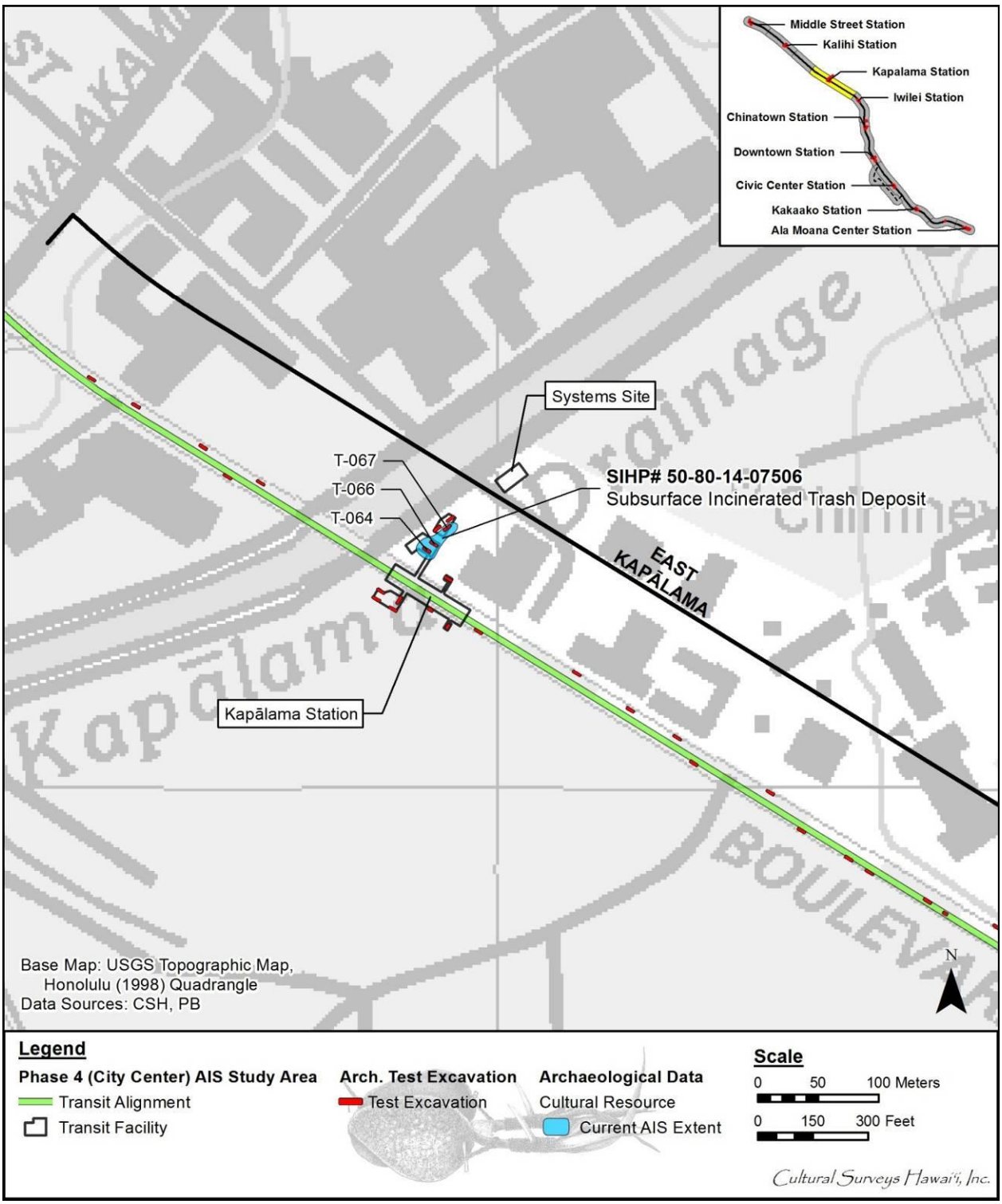


Figure 1. Location of incinerated trash deposit (SIHP # -7506) near the intersection of Kapālama Drainage Canal and Dillingham Boulevard (base map: 1998 USGS Topographic Map of Honolulu)

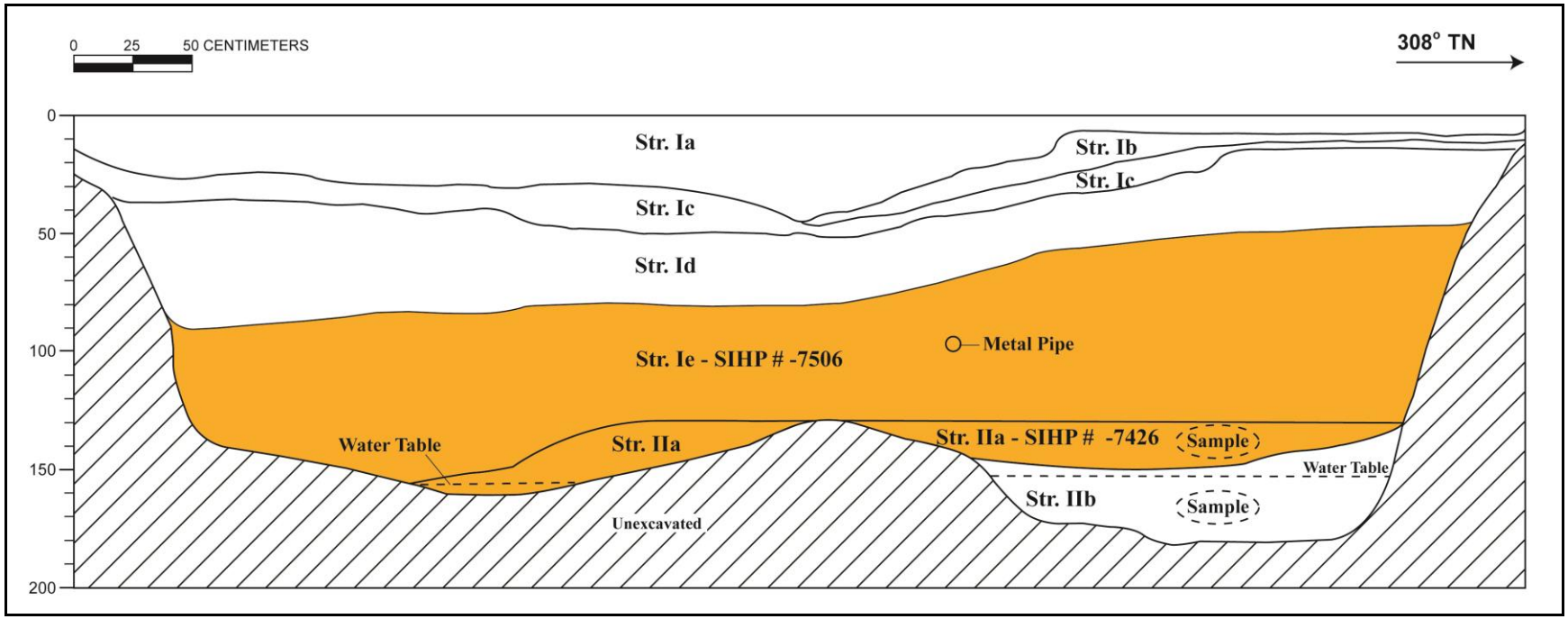


Figure 2. T-064 southwest wall profile, showing several fill layers (Strata Ia-Id) overlying the incinerator trash deposit (Stratum Ie, SIHP # -7506), which overlies wetland agricultural deposits (Stratum IIa, SIHP # -7426) and natural gley (Stratum IIb)

Table 1. T-064 Stratigraphic Description of the Southwest Wall

Stratum	Depth (cmbs)	Description
Ia	0-46	Fill; 5 YR 3/4 (dark reddish brown); silty loam; fine, crumb structure; moist, very friable consistency; non-plastic; terrigenous origin; abrupt, irregular lower boundary; many, very fine to medium roots; landscaping fill
Ib	9-48	Fill; 10 YR 6/1 (light gray); gravelly fine silty sand; structureless; moist, loose consistency; non-plastic; mixed origin; abrupt, broken/discontinuous lower boundary; fill deposit
Ic	12-51	Fill; 7.5 YR 7/8 (reddish yellow); very fine sand; structureless, moist, loose consistency; non-plastic; marine origin; abrupt; smooth lower boundary; fill deposit
Id	15-90	Fill; 10 YR 5/4 (yellowish brown); extremely gravelly very fine silty sand; structureless; moist, loose consistency; non-plastic; mixed origin; clear, smooth lower boundary; contains concrete chunks and rebar
Ie	46-160	Fill; 5 YR 3/2 (dark reddish brown); silty sandy loam; moist, friable consistency; non-plastic; mixed origin; clear lower boundary; contained clear glass fragments, glass bottles, ceramics, faunal remains (collected), melted metal pieces (not collected); incinerated trash fill layer; designated a component of SIHP # -7506
IIa	130-160	Natural; 2.5 Y 3/1 (very dark gray); clay; massive, structureless; wet, slightly sticky consistency; very plastic; terrigenous origin; diffuse lower boundary; many, very fine roots; natural clay layer associated with wetland/agricultural sediment, designated a component of SIHP # -7426
IIb	130-180 (BOE)	Natural; GLEY 1 3/N (very dark gray); sandy clay; massive, structureless; wet, sticky consistency; slightly plastic; marine origin; lower boundary not visible

Table 2. Historic Artifacts from the Incinerated Trash Deposit (SIHP # -7506) in T-064 (note that the gap in the accession numbers reflects artifacts that were not part of SIHP # -7506)

Acc. #064-A-	**Prov.**	**Ceramic Vessel Type**	**Portion**	**No.**	**Paste**	**Origin; Age**	**Comments**
1	T-064, St. Ie, SIHP # -7506	Hollowware – cup	Complete	1	Porcelain	Euro-American; 1909–1914	Floral design, painted underglaze; Buffalo China Co., New York
Acc. #064-A-	**Prov.**	**Glass Bottle Type**	**Portion**	**No.**	**Color**	**Origin; Age**	**Comments**
2	T-064, St. Ie, SIHP # -7506	Bottle, soda	Base–body	1	Green, light	American; 1945	Seven-Up bottle; Owens-Illinois Glass Co. base mark; bottler, Sunrise Soda Works, Kalihi-Pālama, O‘ahu
3	T-064, St. Ie, SIHP # -7506	Bottle, cosmetic	Body	1	White		Milk glass
4	T-064, St. Ie, SIHP # -7506	Bottle, beer	Complete	1	Amber	American; 1945	Anchor-Hocking Glass Co. base mark
5	T-064, St. Ie, SIHP # -7506	Bottle, beer	Complete	1	Amber	American; 1946	Owens-Illinois Glass Co. base mark
6	T-064, St. Ie, SIHP # -7506	Bottle, beer	Base	1	Amber	American; 1945	Anchor-Hocking Glass Co. base mark

7	T-064, St. Ie, SIHP # -7506	Bottle, beverage	Base	1	Clear	American; 1944	Hazel-Atlas Glass Co. base mark
8	T-064, St. Ie, SIHP # -7506	Bottle, medicine	Complete	1	Brown	American; 1945	H. Clay Glover Co., New York patent medicine; Owens-Illinois Glass Co. base mark
9	T-064, St. Ie, SIHP # -7506	Bottle, medicine	Complete	1	Clear	American; 1941	Owens-Illinois Glass Co. base mark
10	T-064, St. Ie, SIHP # -7506	Bottle, medicine	Complete	1	Clear	1920s – post	Date based on color
11	T-064, St. Ie, SIHP # -7506	Bottle, condiment	Complete	1	Clear	1920s – post	ABM bottle
12	T-064, St. Ie, SIHP # -7506	Jar, cosmetic	Complete	1	Clear	American; 1920s – post	“Seventeen” on base; ABM jar
13	T-064, St. Ie, SIHP # -7506	Bottle, beverage	Complete	1	Clear	American; 1945	Owens-Illinois Glass Co. base mark and date code

Acc. #064-A-	Prov.	Misc. Type	Portion	No.	Material	Origin; Age	Comments
19	T-064, St. Ie, SIHP # -7506	Ceramic item	Complete	1	Refined Earthenware	Unknown	Reddish brown slip glaze molded piece shaped like a horn with a hole
20	T-064, St. Ie, SIHP # -7506	Insulator	Fragment	1	Ceramic (porcelain)	American; 1915 – post	Made by Pyrex, G.E. U.S.A.
21	T-064, St. Ie, SIHP # -7506	Insulator	Fragment	1	Composite		Porcelain and metal
22	T-064, St. Ie, SIHP # -7506	Insulator cleat	Fragment	1	Ceramic (porcelain)	American; 1919 – post	Made by Universal Clay Products Co., Sandusky, OH

Figure 3. American porcelain cup (Acc. #064-A-1; left) and earthenware item (Acc. #064-A-2; right) from SIHP # -7506 in T-064

Figure 4. Glass bottles and bottle fragments (Acc. #064-A-3 to A-13, shown from left to right and top to bottom) from SIHP # -7506 in T-064

Figure 5. Glass beverage bottle (Acc. #064-A-14) from SIHP # -7506 in T-064

The two porcelain insulators post-date 1915, and the glass bottles are mainly American-made and date to the 1940s. Five terrestrial faunal fragments (possible Aves and *Bos taurus*) were collected.

Within T-066, the incinerated trash deposit was identified as Stratum Ic, a brown very gravelly silty loam, that extended between 0.45 and 1.55 mbs (Figure 6, Figure 7, and Table 3). The deposit, located beneath two fill layers, likely truncated the underlying natural wetland/agricultural sediments (SIHP # 50-80-14-7426). The 30 accessioned artifacts collected from SIHP # -7506 within T-066 consist of 12 ceramic fragments (minimum of 9 vessels) and 23 glass fragments (minimum of 8 bottles) (Table 4, Figure 8, and Figure 9). The ceramics include both Asian and Euro-American wares. One American ironstone toiletry item was made by the Hall China Co. of Ohio, sometime after 1903. Another fragment is from an American fiestaware vessel most common from the 1930-1950s period. The bottles were all made post-1860s, with many dating after the mi1920s. A 1948 bottle was collected, indicating that deposition within SIHP # -7506 continued until at least 1948, but possibly later. Terrestrial faunal remains (*Bos taurus* and *Sus scrofa*) also were collected from the trash deposit. The *Bos taurus* remains had evidence of being butchered and/or cut with a metal blade, indicating they were food remnants.

Within T-067, the incinerated trash deposit was identified as Stratum Ib, a very dark brown very gravelly loamy sand, that extended between 0.38 and 1.56 mbs (Figure 10, Figure 11, and Table 5). The deposit, overlain by landscaping fill, likely truncated the natural wetland/agricultural sediments (SIHP # -7426). A total of 20 accessioned artifacts were collected from the trash deposit within T-067. These consist of 3 ceramic fragments (from 2 spoons and 1 tableware piece), 7 complete glass bottles and 2 glass bottle fragments (minimum of 9 bottles), and 10 miscellaneous artifacts, including a bullet, a metal cup, a fork, and a spoon. (Table 6 and Figure 12 through Figure 14). All of the bottles were made in an Automatic Bottle Machine (post-1903), all dated after 1920, and seven were identified to specific American companies, including several 1940s beverage and medicine bottles. Also collected were three terrestrial faunal remains (possible *Bos Taurus* and *Felis catus*).

The historic items observed within SIHP # -7506 appear to have been heated to high temperatures, consistent with incineration rather than open-air burning. Overall, most of the artifacts were dated to the early 1900s, with a number dating from the 1930s to 1950s. The latest precisely-dated artifact was manufactured in 1948, indicating SIHP # -7506 deposition continued until at least 1948.

The dates of the artifact assemblage suggest some material may have come from the nearby City and County of Honolulu Kapalama Incinerator (Figure 15). A growing urban population and accumulating trash led the Public Works Agency to promise federal funds to build two new incinerators in 1942 (Johnson 1991). The new Kapalama incinerator was built alongside Kokea Street in Kalihi while its twin, the Kewalo incinerator, was built further east. Both incinerators were completed at the end of World War II and remained in use until 1977. The Kapalama incinerator is present on a 1950 Sanborn Fire Insurance Map and labeled as fire proof and built in 1945. The time frame provided by dateable artifacts is consistent with the Kapalama incinerator’s period of operation.

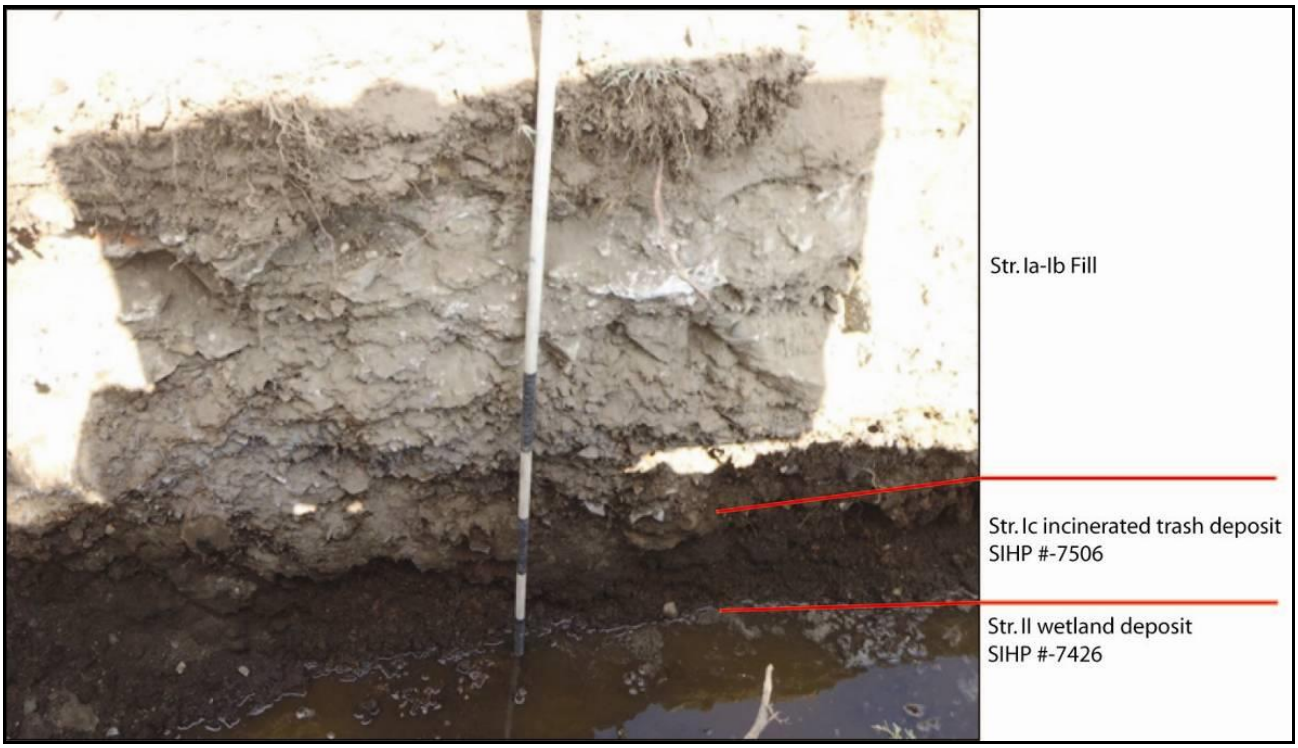


Figure 6. T-066 northeast wall profile, view to northeast

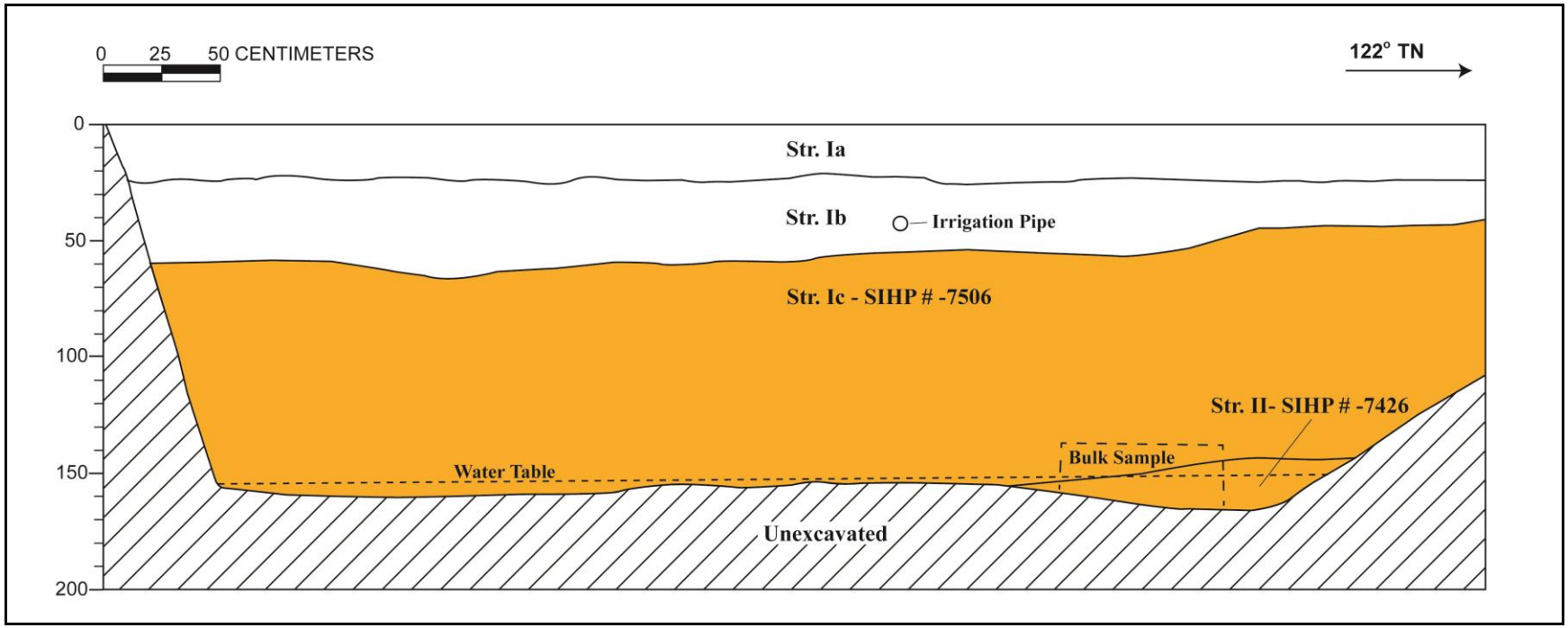


Figure 7. T-066 northeast wall profile, showing two fill layers (Strata Ia and Ib) overlying the incinerator trash deposit (Stratum Ic, SIHP # -7506), which overlies the wetland agricultural deposits (Stratum IIa, SIHP # -7426)

Table 3. T-066 Stratigraphic Description of the Northeast Wall

Stratum	Depth (cmbs)	Description
Ia	0-27	Fill; 10 YR 4/2 (dark grayish brown); gravelly sandy loam; structureless, singlgrain; dry, loose consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary; many, fine roots; modern A horizon, landscape fill
Ib	25-66	Fill; 10 YR 5/3 (brown); very gravelly clay loam; structureless, massive, moist, firm consistency; slightly plastic; mixed origin; diffuse, smooth lower boundary; common, fine roots; contained coral cobbles
Ic	45-155	Fill; 10 YR 5/3 (brown); very gravelly silty loam; moist, friable consistency; clear, smooth lower boundary; contained faunal, bottle, glass, ceramic, metal; incinerated historic refuse deposit; designated a component of SIHP # -7506
II	146-168 (BOE)	Natural; 10 YR 3/1 (very dark gray); clay; weak, fine, blocky structure; wet, slightly sticky consistency; plastic; terrigenous origin; lower boundary not visible; peaty substance present; designated a component of SIHP # -7426

Table 4. Historic Artifacts from the Incinerated Trash Deposit (SIHP # -7506) in T-066

Acc. #066 -A-	Prov.	Ceramic Vessel Type	Portion	No.	Paste	Origin; Age	Comments
1	T-066, St. Ic, SIHP # -7506	Hollowware – chamber pot or wash basin	Body (2); base (1)	3	Refined earthen-ware	American; post-1903	Ironstone; Hall China Co., Ohio base mark
2	T-066, St. Ic, SIHP # -7506	Hollowware – bowl	Base to rim	1	Refined earthen-ware	Euro-American	Ironstone; one brown rim band
3	T-066, St. Ic, SIHP # -7506	Flatware – plate	Rim	1	Refined earthen-ware	Euro-American	Ironstone; two green rim bands
4	T-066, St. Ic, SIHP # -7506	Flatware	Base	1	Refined earthen-ware	Euro-American	Ironstone; no decoration on fragment
5	T-066, St. Ic, SIHP # -7506	Flatware	Rim	1	Refined earthen-ware	Euro-American	Whiteware; relief molded
6	T-066, St. Ic, SIHP # -7506	Tableware	Rim to body	1	Refined earthen-ware	Euro-American; post-1930	Yellow Fiestaware; relief molded
7	T-066, St. Ic, SIHP # -7506	Hollowware	Rim, body	2	Porcelain	Asian	Blue floral, painted underglaze
8	T-066, St. Ic, SIHP # -7506	Flatware	Rim	1	Refined earthen-ware	Euro-American	Whiteware; relief molded; polychrome floral, painted underglaze
9	T-066, St. Ic, SIHP # -7506	Hollowware – bowl	Base to body	1	Porcelain	Asian	High foot; no decoration on fragment

Acc. #066 -A-	Prov.	Glass Bottle Type	Portion	No.	Color	Origin; Age	Comments
10	T-066, St. Ic, SIHP # -7506	Bottle, medicine	Complete	1	Blue, cobalt	American; post-1920	Vicks Vapo-rub
11	T-066, St. Ic, SIHP # -7506	Bottle	Complete	1	Green, light	American; 1920 – post	“DE S PAT” “9248” embossed
12	T-066, St. Ic, SIHP # -7506	Bottle, cosmetic	Complete	1	White	American; 1920–1950s	Milk glass; “WOODBURY”
13	T-066, St. Ic, SIHP # -7506	Bottle	Body	2	Amber		
14	T-066, St. Ic, SIHP # -7506	Bottle	Base	1	Aqua	1860s – post	Fragment embossed “6”
15	T-066, St. Ic, SIHP # -7506	Bottle	Body	1	Blue, cobalt		
16	T-066, St. Ic, SIHP # -7506	Bottle, beverage	Base	1	Clear	1932 – post	Glenshaw Glass Co. base mark
17	T-066, St. Ic, SIHP # -7506	Bottle, beverage	Body	1	Clear	American; 1933–1955	Delaware Punch; bottled by Nesbitt Bottling Co., O‘ahu
18	T-066, St. Ic, SIHP # -7506	Bottle	Body	2	Clear	1870s – post	Fused (heat-altered) fragments
19	T-066, St. Ic, SIHP # -7506	Bottle	Body	1	Clear	1870s – post	

20	T-066, St. Ic, SIHP # -7506	Vial, medicine	Body	1	Clear	1870s – post	
21	T-066, St. Ic, SIHP # -7506	Bottle, beverage	Lip	1	Clear	1907 – post	
22	T-066, St. Ic, SIHP # -7506	Bottle, beverage	Neck–lip	1	Clear	1907 – post	Letters on fragment “NOT”
23	T-066, St. Ic, SIHP # -7506	Bottle	Neck–lip	1	Clear	1920 – post	Narrow-mouth
24	T-066, St. Ic, SIHP # -7506	Bottle	Neck–lip	1	Clear	1920 – post	Narrow-mouth
25	T-066, St. Ic, SIHP # -7506	Bottle, beverage	Neck–lip	1	Clear	1907 – post	
26	T-066, St. Ic, SIHP # -7506	Bottle	Complete	1	Clear	1920 – post	Diamond shape, wide mouth; embossed on base “28 1405”
27	T-066, St. Ic, SIHP # -7506	Bottle, beverage	Complete	1	Clear	American; 1930s–1940s	Owens Illinois Glass Co. base mark for 1930s or 1940s
28	T-066, St. Ic, SIHP # -7506	Bottle	Base–body	1	Green, light	American; 1948	Owens Illinois Glass Co. base mark
29	T-066, St. Ic, SIHP # -7506	Bottle, beverage	Body	1	Green, light	American; 1917 – post	Hobble skirt Coca-Cola bottle
30	T-066, St. Ic, SIHP # -7506	Bottle, beverage	Neck–lip	1	Green, light	1907 – post	

Figure 8. Ceramic fragments from SIHP # -7506 in T-066; American ironstone toiletry item (post-1903) (Acc. #066-A-1; top); Euro-American earthenware vessels (Acc. #s 066-A-2 to A-6, A-8, left to right; middle row and middle bottom); Asian ceramics (Acc. #s 066-A-7, A-9, left, bottom)

Figure 9. Glass bottles and bottle fragments (Acc. #s 066-A-10 to A-30) from SIHP # -7506 in T-066

Figure 10. Northwest profile of T-067 depicting one fill layer (Stratum Ia) overlying the incinerated trash deposit (Stratum Ib, SIHP # -7506), which overlies the wetland agricultural sediments (Stratum II, SIHP # -7426) and the decomposing coral shelf (Stratum III; not visible), view to west

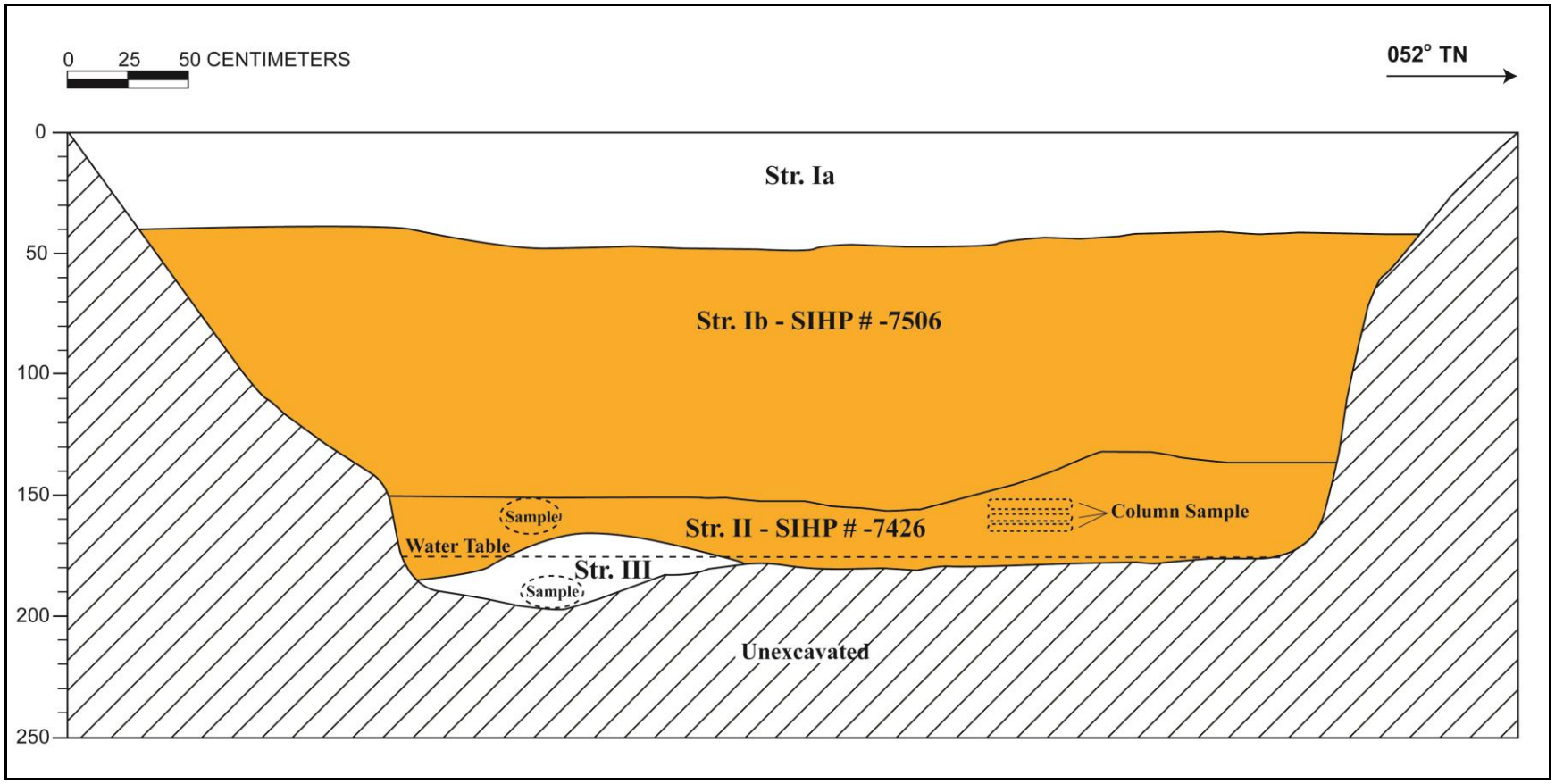


Figure 11. T-067 northwest wall profile, showing one fill layer (Stratum Ia) overlying the incinerated trash deposit (Stratum Ib, SIHP # -7506), which overlies the wetland agricultural sediments (Stratum II, SIHP # -7426) and the decomposing coral shelf (Stratum III)

Table 5. T-067 Stratigraphic Description of the Northwest Wall

Stratum	Depth (cmbs)	Description
Ia	0-50	Fill; 10 YR 4/3 (brown); very gravelly sandy loam; weak, medium, crumb structure; dry, weakly coherent consistency; non-plastic; mixed origin; clear, smooth lower boundary; many, medium to coarse roots; landscaping fill with organics and medium trash
Ib	38-156	Fill; 10 YR 3/2 (very dark grayish brown); very gravelly loamy sand; structureless, singlgrain; dry, loose consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; few, medium roots; contained glass bottles, ceramics, metal, miscellaneous items, faunal (collected); incinerated historic refuse deposit; designated a component of SIHP #-7506
II	132- 180	Natural; GLEY 2 2.5/1 (bluish black); silty clay; structureless, massive; wet, slightly sticky consistency; very plastic; mixed origin; abrupt, smooth lower boundary; few, very fine roots; contained some historic trash, glass bottles, ceramic, metal; possible rice paddy/taro field/sugar cane sediments, designated a component of SIHP # -7426
III	165-198 (BOE)	Natural; 10 YR 3/6 (dark yellowish brown); extremely gravelly clayey sand; structureless, singlgrain; wet, slightly sticky consistency; slightly plastic; marine origin; lower boundary not visible; decomposing coral gravels

Table 6. Historic Artifacts from SIHP # -7506 in T-067 (note that the gap in the accession numbers reflects artifacts that were not part of SIHP # -7506)

Acc. #067-A-	Prov.	Ceramic Vessel Type	Portion	No.	Paste	Origin; Age	Comments
1	T-067, St. Ib, SIHP # -7506	Serving utensil – spoon	Body	1	Refined earthe-ware	Euro-American	Whiteware; no decoration; broken slotted spoon
2	T-067, St. Ib, SIHP # -7506	Serving utensil – spoon	Body	1	Porcelain; painted	Asian	Asian-style soup spoon; white with blue flowers, painted underglaze
3	T-067, St. Ib, SIHP # -7506	Table-ware	Base–body	1	Refined earthen-ware	Euro-American	Whiteware, blue floral, painted underglaze
Acc. #067-A-	**Prov.**	**Glass Bottle Type**	**Portion**	**No.**	**Color**	**Origin; Age**	**Comments**
4	T-067, St. Ib, SIHP # -7506	Bottle, soda	Complete	1	Clear	American; 1934/1944	Bireley’s Soda; Owens- Illinois Glass Co. base mark
5	T-067, St. Ib, SIHP # -7506	Bottle, medicine	Complete	1	Clear	American; 1938–1969	Armstrong Cork Co. base mark
6	T-067, St. Ib, SIHP # -7506	Bottle, medicine	Complete	1	Clear	American; 1942 – post	“NEUTRA GLAS” “N – 51A” “ U.S.A.” “4” – melted neck (Myers 2010)
7	T-067, St. Ib, SIHP # -7506	Bottle, medicine	Complete	1	Clear	American; 1942 – post	Embossed on base: “NEUTRA GLAS” “N – 51A” “ U.S.A.” “21” (Myers 2010)

8	T-067, St. Ib, SIHP # - 7506	Bottle, cleaner	Neck–lip	1	Amber	American; 1940–1962	Half gallon neck and handle; possible Clorox bottle
9	T-067, St. Ib, SIHP # - 7506	Jar, Food/ cosmetic	Complete	1	Clear	American; 1943	Owens-Illinois Glass Co. base mark
10	T-067, St. Ib, SIHP # - 7506	Bottle, cosmetic	Complete	1	White	1920 – post	Milk glass
11	T-067, St. Ib, SIHP # - 7506	Bottle, cosmetic	Complete	1	White	1920 – post	Milk glass
12	T-067, St. Ib, SIHP # - 7506	Bottle, food	Base	1	Clear	American; 1936/1946	Owens-Illinois Glass Co. base mark
Acc. #067-A-	**Prov.**	**Misc. Type**	**Portion**	**No.**	**Material**	**Origin; Age**	**Comments**
15	T-067, St. Ib, SIHP # - 7506	Cup	Complete	1	Metal		Plain metal cup, rusted and very bent
16	T-067, St. Ib, SIHP # - 7506	Un-known metal item	Fragment	1	Metal		
17	T-067, St. Ib, SIHP # - 7506	Ceramic item	Fragment	1	Stoneware		Possible architectural or electrical

18	T-067, St. Ib, SIHP # - 7506	Animal statuette	Fragment	1	Earthen-ware		Leg of small animal statuette
19	T-067, St. Ib, SIHP # - 7506	Glass item	Fragment	1	Glass		Looks like a hand
20	T-067, St. Ib, SIHP # - 7506	Fork	Complete	1	Metal		Plain dinner fork with 4 tines; metal extremely rusted and warped
21	T-067, St. Ib, SIHP # - 7506	Spoon	Complete	1	Metal		Small, plain baby spoon; metal rusted and warped
22	T-067, St. Ib, SIHP # - 7506	Cylindric object	Fragment	1	Unknown		Black, light-weight material; clean edges
23	T-067, St. Ib, SIHP # - 7506	Screw	Complete	1	Metal		Hollow metal screw
24	T-067, St. Ib, SIHP # - 7506	Bullet cartridge	Complete	1	Metal		Rusted, hollow opening at bottom that is bent in

Figure 12. Ceramic artifacts from SIHP # -7506 in T-067; Euro-American whiteware slotted spoon (Acc. #067-A-1; left); Asian porcelain spoon (Acc. #067-A-2; upper right); Euro-American whiteware tableware (Acc. #067-A-3; lower right)

Figure 13. Glass bottles and glass bottle fragments (Acc. s# 067-A-4 to A-12, shown from left to right and top to bottom) from SIHP # -7506 in T-067

Figure 14. Miscellaneous artifacts (Acc. #s 067-A-15 to A-24, shown from left to right and top to bottom) from SIHP # -7506 in T-067

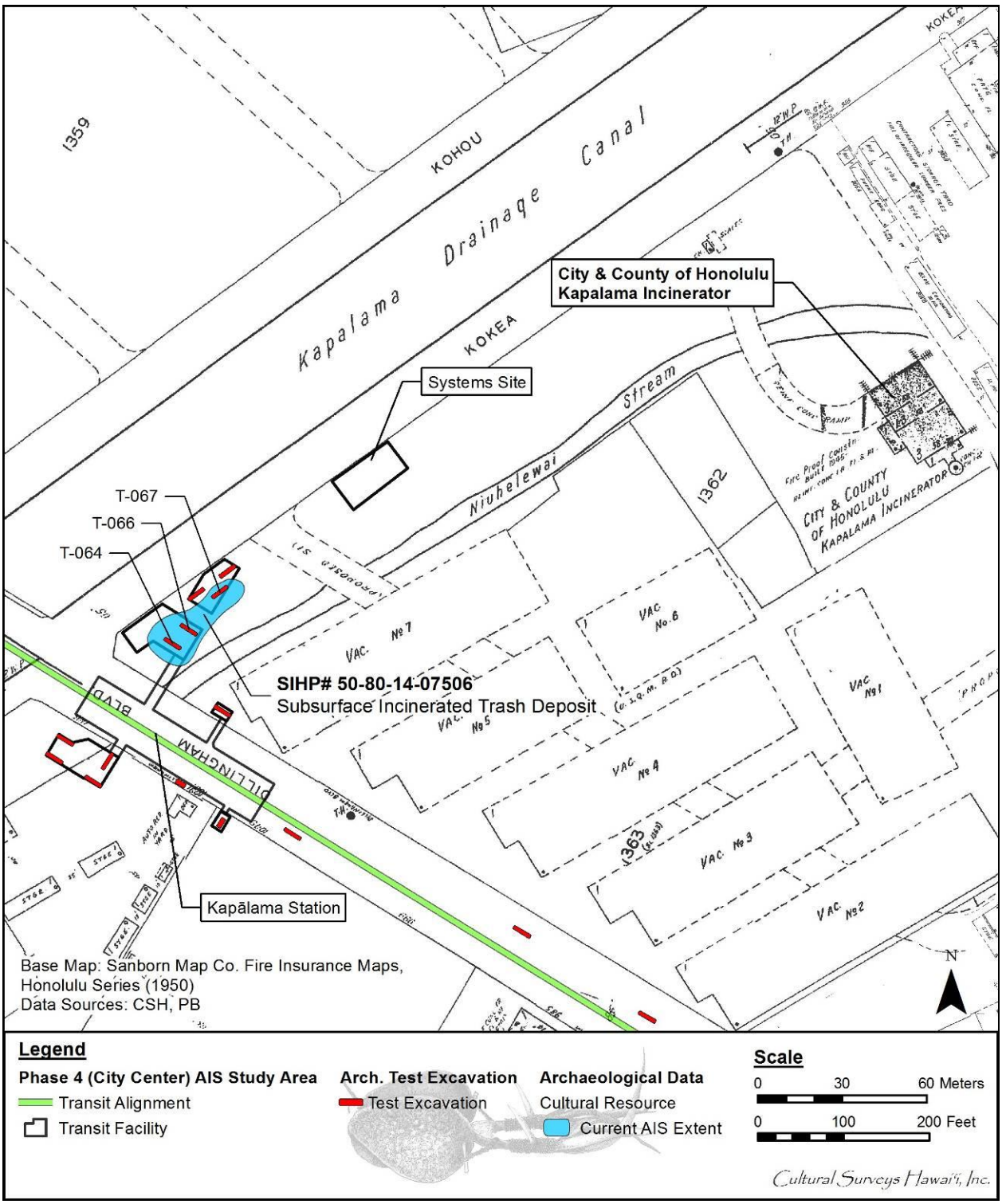


Figure 15. Portion of the 1950 Sanborn Fire Insurance Map showing SIHP # -7506 in relation to the Kapalama incinerator

SIHP # -7506 is a historic era incinerated trash deposit identified in three test excavations (T-064, T-066, and T-067) in the City Center (Section 4) AIS study area. SIHP # -7506 was observed beneath more recent fill layers and atop natural wetland agricultural sediments (SIHP # 50-80-14-7426). The trash deposit may have truncated the upper limits of SHIP #-7426. The trash remains include ceramic vessel fragments, glass bottles and bottle fragments, melted metal, insulators, miscellaneous household items, and faunal remains. Historic maps and artifact analysis suggest deposition continued to 1948 or later, with material likely being locally obtained from the Kapalama incinerator. Based on the presence of wetland sediments below SIHP # -7506, the trash deposit is interpreted as a localized deposit related to land reclamation activities dating to the mid-twentieth century.

Based on the guidance of National Register Bulletin No. 15, SIHP # 50-80-14-7506 retains its integrity of location and materials. The incinerated trash deposit is buried and its surroundings (the land above and post-dating the trash deposit) have been completely altered by modern development since the trash was deposited. Based on the results of this investigation, CSH recommends that this cultural resource only maintains sufficient integrity to support its historic significance under Criterion D (has yielded, or is likely to yield, information important for research on prehistory or history) of the Hawai‘i and the National Registers, exclusively for its information potential.

SIHP # 50-80-14-7506 has provided, and can potentially provide additional information, related to the geographic distribution and materials of twentieth century refuse disposal and land reclamation efforts in the East Kapālama Geographic Zone. The possibility of encountering additional incinerated trash deposits during future project-related ground disturbance warrants the implementation of an archaeological monitoring program. Archaeological monitoring is expected to provide further stratigraphic exposures that may yield additional information concerning SIHP # -7506 and to provide opportunities for further sampling and comparison of this trash deposit with others present within the area (e.g., SIHP # -7189 and -7193).

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Appendix C AIS Test Excavation Summaries for T-111 and T-172

The following test excavation summaries for T-111 and T-172 are copied from the City Center (Section 4) AIS report, Volume IVC (Hammatt 2013):

Test Excavation 111 (T-111)

***Ahupua‘a*:**	Honolulu
LCA:	N/A
TMK #:	2-1-013[Plat]
Elevation Above Sea Level:	2.0m
UTM:	617803.43 mE, 2356638.96 mN
Max Length/Width/Depth:	7.30 m/0.80 m/1.05 mbs
Orientation:	328/148° TN
Targeted Project Component:	Utility Relocation
USDA Soil Survey Designation:	Fill land (FL)

Setting: Test Excavation 111 (T-111) was located within the southeast-bound lane of Nimitz Highway, 100 m northwest of Bishop Street on property owned by the State of Hawai‘i. T-111 was located 16 m north of a sewage utility and 12 m south of a water utility. The excavation surface was level with the surrounding land surface.

Summary of Background Research and Land Use: The 1810 Rockwood map shows T-111 was located near “The Fort.” The 1847 Metcalf map illustrated T-111 as being about 25 m east of the shoreline and within “The Fort.” Between 1887 and 1943, T-111 was located at the corner Fort Street and Halekauwila Street where some urbanization had occurred (1887 Wall map, 1897 Monsarrat; 1904 Newton map, and the 1919, 1933, and 1943 U.S. Army War Department maps). By 1953, the present day Nimitz Highway and a park (now The Irwin Memorial park) were constructed and the area had undergone massive industrialization (1953 Army Mapping Service map). The 1886 Wall map shows T-111 located near three LCAs: 44 m southeast of LCA 784 granted to James Robinson; 105 m southwest of LCA 247, one of 12 house lots and store lots claimed for Wm. C. Lunalilo by C. Kanaina; and 80 m northwest of LCA 164 which included one house lot awarded to Mataio Kekūanao‘a for Victoria Kamāmalu.
Several historic properties were located near T-111. Historic Piers 8-11 (SIHP # 50-80-14-9829) were located about 45 m northwest of T-111. The Irwin Memorial Park was 20 m southwest of T-111. T-111 was located within an area monitored for the Nimitz Highway and Ala Moana Boulevard Resurfacing Project (Petrey et al. 2009). No historic properties were encountered during monitoring.
Documentation Limitations: T-111 was excavated to depth of 1.05 mbs. At the south end of the excavation three large concretcovered basalt blocks, observed at 0.47 mbs, prevented safe

excavation. Three more large basalt blocks were observed in the north end of T-111 between 0.7–0.9 mbs. Due to safety concerns and to preserve the integrity of the sidewalls excavation was terminated at 1.05 mbs.

Stratigraphic Summary: The stratigraphy of T-111 consisted of fill strata to the base of excavation. Observed strata were asphalt (Ia), and sandy loam fill (Ib). The stratigraphy conformed to the USDA soil survey designation of Fill land (FL).

Artifacts Discussion: No artifacts were observed.

Features Discussion: No features were observed.

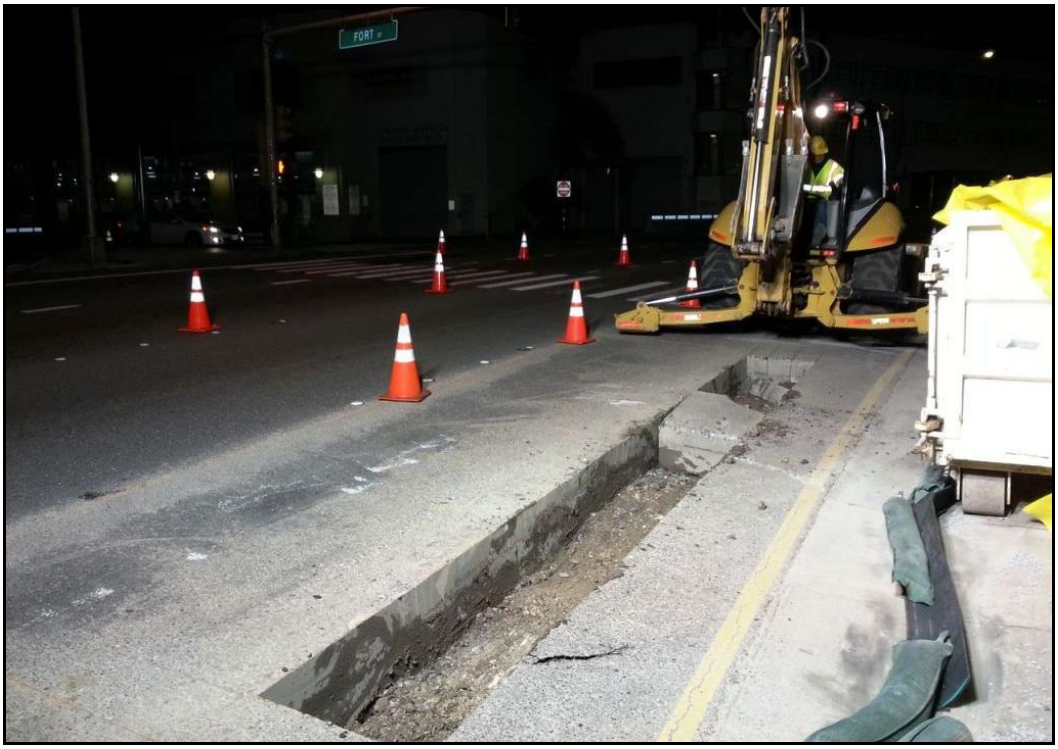
Terrestrial Faunal Remains Discussion: No terrestrial faunal remains were collected individually during excavation.

Sample Results: No sample analysis was conducted.

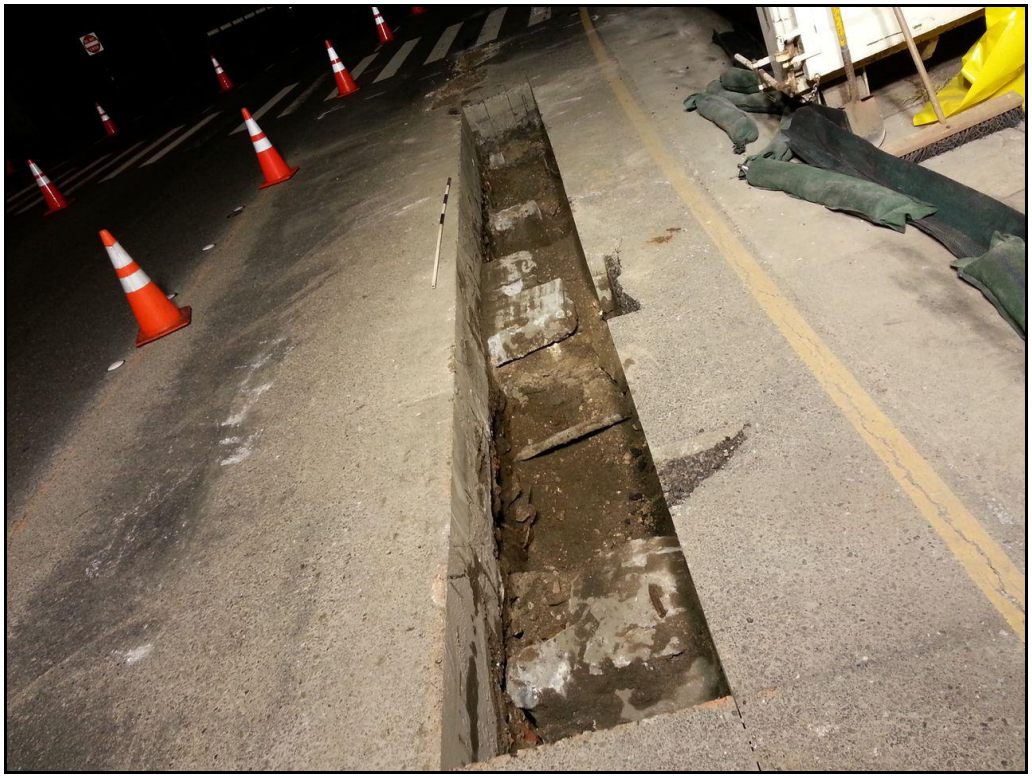
GPR Discussion: A review of amplitude slice maps indicated several linear features but not within excavation boundaries and none correspond to the utility pipe encountered during excavation. Reflectivity was relatively uniform throughout the grid and decreases with depth except for the linear features. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.75 mbs.

GPR depth profiles for T-111 identified horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.15 mbs and again around 0.40 mbs. An anomaly was observed in the profile and it corresponds to the utility that was encountered during excavation. The maximum depth of clean signal return was approximately 1.25 mbs.

Summary: T-111 was excavated to depth of 1.05 mbs. The stratigraphy of T-111 consisted of fill strata (Ia–Ib) to the base of excavation. The stratigraphy conformed to the USDA soil survey designation of Fill land (FL). No natural sediments were observed. Large concretcovered basalt blocks were documented just below the asphalt pavement. The blocks were scattered within the test excavation length and appeared to have been placed. The blocks may represent a modern structural remnant, however this is still indeterminate.

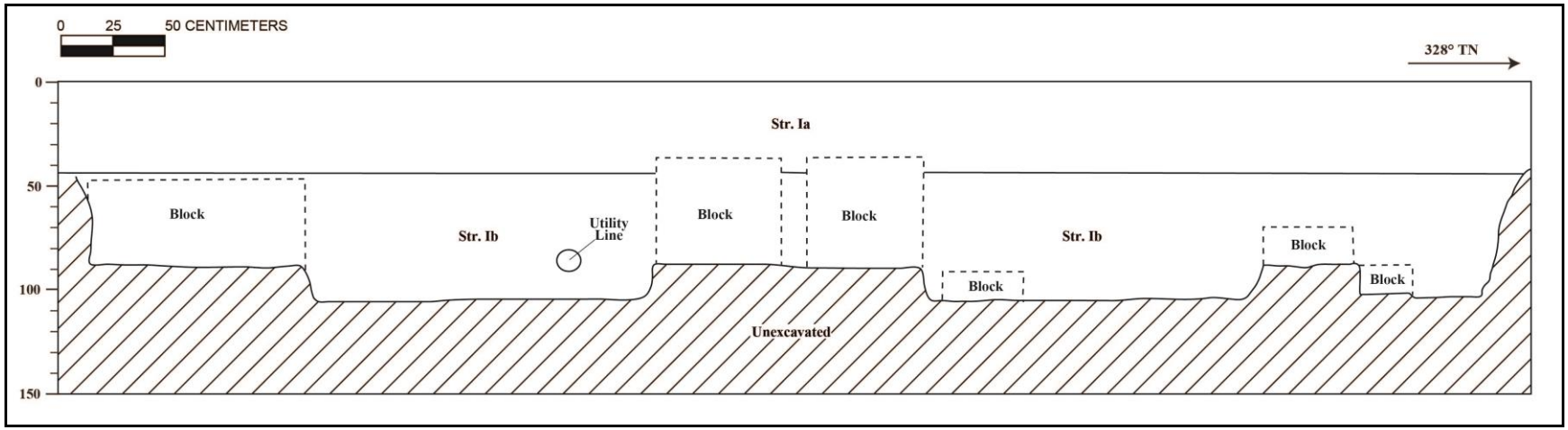


T-111 general location, view to northwest



T-111 southwest profile wall, showing basalt blocks, view to northwest

T-111 showing in situ basalt blocks, view to west



T-111 southwest profile wall

T-111 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-44	Asphalt/concrete, road surface
Ib	44-105 (BOE)	Fill; 10 YR 3/3 (dark brown); sandy loam; structureless, singlgrain; dry, loose consistency; non-plastic; mixed origin; lower boundary not visible; contained red brick, construction debris, metal pieces (not collected); contained concrete covered basalt blocks

Test Excavation 172 (T-172)

***Ahupua‘a*:**	Honolulu
LCA:	387
TMK #:	2-3-002:001
Elevation Above Sea Level:	1.53 m
UTM:	618940 mE, 2355339 mN
Max Length/Width/Depth:	3.15 m/0.97 m/1.57 mbs
Orientation:	320/140° TN
Targeted Project Component:	Guideway Column
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 172 (T-172) was located approximately 30 m southwest of the Queen Street and Cummins Street intersection within the DKKY Architecture Studio parking lot. T-172 was located on private property owned by Victoria Ward Ltd. No utilities were noted in the general vicinity. The excavation surface was level with the surrounding land surface.

Summary of Background Research and Land Use: Land Court Application 670 map 1 indicates that T-172 was originally situated on a large parcel of land awarded to the American Board of Commissioners for Foreign Missions (ABCFM) as part of LCA 387. The LCA testimonies indicated taro cultivation, fishpond farming, and salt production in the region. The 1884 Bishop map of Honolulu to Kewalo indicates that T-172 was located within marsh land called Kukuluaeo, 130 m southeast of LCA 10463:1, awarded to Napela. An unimproved or planned roadway is also depicted, extending northeast (*mauka*) to southwest (*makai*) within 100 m of T-172. The roadway is also depicted on the 1887 Wall map of Honolulu along with three structures in the vicinity of T-172. The structures were located approximately 229 m northwest, 150 m west, and 270 m southwest of T-172. The 1897 Monsarrat map of Honolulu depicts infrastructure development immediately north of T-172 including a near-modern street grid with the closest intersection being Queen Street and Cummins Street less than 15 m northeast and the Cyclomere bicycle track 360 m north. Expanded urbanization in the vicinity of T-172 is depicted throughout the series of twentieth century topographic maps and Sanborn fire insurance maps.

Several archaeological studies have been conducted in the vicinity of T-172. In 2000, CSH conducted archaeological monitoring for Ward Village Phase II (Ward Theaters), approximately 100 m south of T-172. A buried A horizon and naturally-occurring pond sediments were documented in portions of the project area but, no cultural resources were designated (Winieski and Hammatt 2001). In 2002, CSH conducted archaeological monitoring for the Kaka’ako Improvement District 7 (I7) Project along Kamake‘e Street from Queen Street to Ala Moana Boulevard. Three human burials (SIHP # 50-80-14-6376, -6377, and -6378) were inadvertently discovered during the project, one of which was encountered within a beach sand deposit (Souza et al. 2002). In 2004, Pacific Consulting Services, Inc. conducted a subsurface archaeological inventory survey at Kapi‘olani Boulevard and Kamake‘e Street and noted remnants of the Kewalo wetlands surface (SIHP # 50-80-14-6636) (Clark and Gosser 2005). In 2005, CSH conducted an archaeological inventory survey for the Moana Vista Project on Kapi‘olani

Boulevard, located approximately 180 m northeast of T-172. No cultural resources were encountered (O'Leary and Hammatt 2006). In 2010, CSH conducted archaeological monitoring for a Traffic Signal Project around the intersection of Queen Street and Kamake‘e Street, which was located approximately 90 m southeast of T-172. Portions of a truncated buried A horizon overlying Jaucas sand were documented, and no cultural resources were encountered (Yamauchi et al. 2011).

Documentation Limitations: T-172 was excavated to a depth of 1.57 mbs. The water table was encountered at 1.48 mbs. There were no factors that limited documentation of T-172.

Stratigraphic Summary: The stratigraphy of T-172 consisted of fill strata overlying natural sediment to the water table. Observed strata were parking lot surface (Ia), gravelly silt loam (Ib), asphalt (Ic), silty loam (Id), asphalt (Ie), gravelly silty sand (If), very gravelly sand (Ig), and clay fill (Ih), overlying natural silty sand (II), and natural sands (III and IV) to the coral shelf (V) below the water table. The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL) above Strata II-V.

Artifacts Discussion: Two historic artifacts (Acc. #s 172-A-1 and A-2) were collected from Stratum Id, 0.27–0.32 mbs, a machinblown glass bottle fragment, dated post-1907, and a machinmade red brick fragment. Artifacts collected from Stratum Id indicated that the stratum post-dates the early twentieth century.

Feature Discussion: No features were observed.

Terrestrial Faunal Remains Discussion: No terrestrial faunal remains were collected individually during excavation.

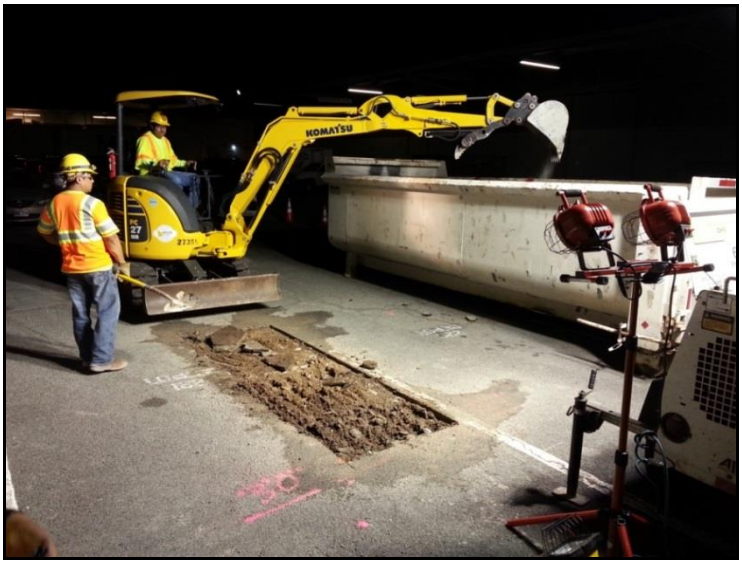
Sample Results: A total of three bulk sediment samples were collected, one each from Stratum II between 0.84 and 0.86 mbs, Stratum III between 1.00 and 1.10 mbs, and Stratum IV between 1.25 and 1.35 mbs. These samples were wet screened. The sample from Stratum II contained charcoal (1.3 g), marine shell midden (*Nerita picea* 0.2 g), a small glass bead (0.1 g), burned fish bone (0.2 g), and burned medium mammal bone (0.2 g). The sample from Stratum III contained naturally-occurring marine shell (2.4 g). The sample from Stratum IV did not contain significant material. The results of the sample analysis documented the presence of a historic artifact and terrestrial and marine content within Stratum II, and no significant material within Stratum III or IV.

GPR Discussion: A review of amplitude slice maps indicated no linear features which might indicate the presence of utilities. Reflectivity was relatively uniform throughout the grid and decreases with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.75 mbs.

GPR depth profiles for T-172 identified horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.2 mbs. No utilities were observed in the profile. The maximum depth of clean signal return was approximately 1.0 mbs.

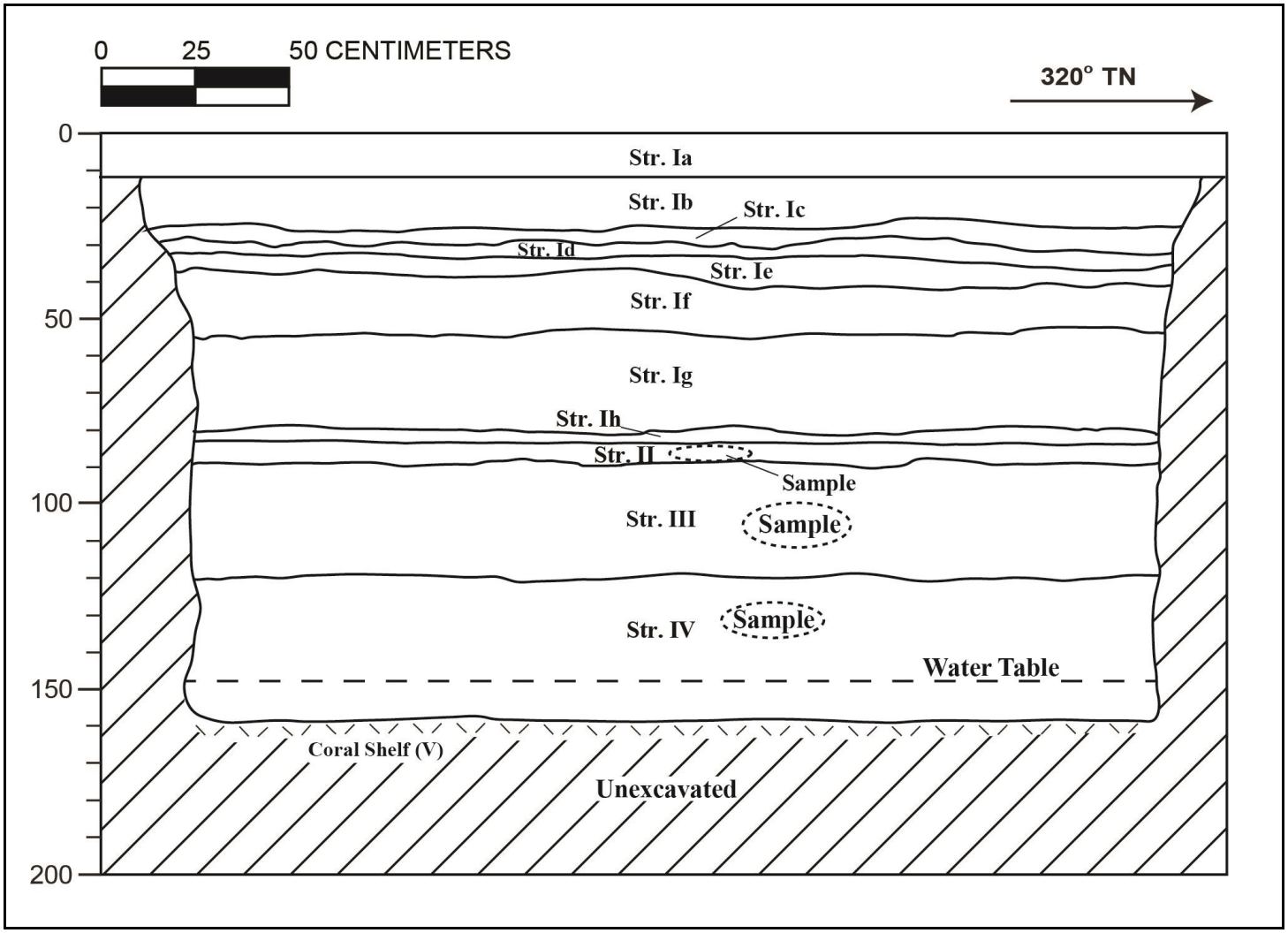
Summary: T-172 was excavated to a depth of 1.57 mbs. The water table was encountered at 1.48 mbs. The stratigraphy of T-172 consisted of fill strata (Ia–Ih) overlying natural sediment (II-IV) to the coral shelf (V). The stratigraphy generally conformed to the USDA soil survey

designation of Fill land (FL) above Strata II-V. Artifacts collected from Stratum Id indicated that the stratum post-dates the early twentieth century. The sample analysis documented the presence of a historic artifact and terrestrial and marine content within Stratum II, and no significant material with Stratum III or IV. No archaeological cultural resources were identified within T-172.



T-172 general location, view to south

T-172 southwest wall profile, view to west



T-172 southwest wall profile

T-172 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-12	Asphalt
Ib	12-25	Fill; 10 YR 5/4 (yellowish brown); slightly gravelly silt loam; structureless, singlgrain; moist, very friable consistency; non-plastic; terrigenous origin; clear, smooth lower boundary; imported fill
Ic	25-27	Asphalt; abrupt, wavy lower boundary
Id	27-32	Fill; 10 YR 5/3 (brown); silty loam; structureless, singlgrain; dry, loose consistency; non-plastic; terrigenous origin; abrupt, wavy lower boundary; contained two historic artifacts
Ie	32-46	Asphalt; abrupt, wavy lower boundary
If	40-54	Fill; 10 YR 6/1 (gray); slightly gravelly silty sand; structureless, singlgrain; loose consistency; non-plastic; mixed origin; abrupt lower boundary; imported fill
Ig	54-80	Fill; 10 YR 8/2 (very pale brown); very gravelly sand; structureless, singlgrain; wet, very sticky consistency; very plastic; terrigenous origin; very abrupt, smooth lower boundary; crushed coral fill
Ih	80-83	Fill; 10 YR 7/1 (light gray); clay; structureless, massive; wet, sticky consistency; plastic; terrigenous origin; very abrupt, smooth lower boundary; hydraulic fill
II	83-89	Natural, buried A horizon; 10 YR 3/3 (dark brown); silty sand; structureless, singlgrain; loose consistency; non-plastic; mixed origin; abrupt lower boundary; contained some wetland organic sediment intermixed
III	89-120	Natural; 10 YR 6/4 (light yellowish brown); sand; structureless, singlgrain; non-sticky consistency; non-plastic; marine origin; clear, smooth lower boundary; Jaucas sand
IV	120-157	Natural; 10 YR 6/2 (gray); sand; structureless, singlgrain; wet, non-sticky consistency; non-plastic; marine origin; lower boundary not visible; lagoonal sediment
V	157 (BOE)	Natural; 10 YR 7/4 (very pale brown); bedrock-limestone; structureless, massive; moist, weakly to strongly cemented; discontinuous consistency; non-plastic; marine origin; lower boundary not observed; Pleistocene coral shelf

Appendix D Traditional and Historical Background

The following traditional and historical background research has been copied from the City Center (Section 4) AIS report, Volume II (Hammatt 2013):

Section 1 Mythological and Traditional Accounts

In 1873, S. K. Kuhano described the ancient O‘ahu land divisions (from Kame‘elehiwa 1992:330). O‘ahu was divided into six *moku* (districts), consisting of Kona, ‘Ewa, Wai‘anae, Waialua, Ko‘olauloa, and Ko‘olaupoko. These *moku* were further divided into 86 *ahupua‘a* (land division within a *moku*). The Honolulu Rail Transit Project (HRTP) City Center (Section 4) corridor extends from Kalihi Stream in the west to the Ala Moana Center in the east and is entirely in Kona District. The HRTP City Center section traverses the *ahupua‘a* of Kalihi, Kapālama, Honolulu, and Waikīkī (the Kālia land section, or *‘ili*) (Figure 1). The latter two *ahupua‘a* are more modern districts and may traditionally have been part of the *ahupua‘a* of Pauoa, Makiki, and Mānoa. An overview of the mythological and traditional accounts pertinent to the City Center section is presented below by land area. The popular and convenient designation “Kaka‘ako” is used for an area between Honolulu and Waikīkī that may traditionally have been part of Makiki Ahupua‘a (see Figure 1).

1.1 Kalihi

1.1.1 Kalihi-Uka

Many of the stories of upland Kalihi concern the goddess Haumea, who is thought of as the progenitor of the Hawaiian race (Malo 1951:5). She is a sister of the gods Kāne and Kanaloa and the mother of the Hawaiian goddess Pele and her sisters and brothers. Kalihi Valley was the first earthly residence of Papa, the human form of the goddess Haumea (Beckwith 1970:276).

> In her human body as Papa, Haumea lives on Oahu as the wife of Wakea; in her spirit body as Haumea she returns to the divine land of the gods in Nu‘umealani [a legendary place] and changes her form from age to youth and returns to marry with her children and grandchildren. Some place these transformations on Oahu at the heiau of Ka-ieie (the pandanus vine) built for her worship in Kalihi valley [Beckwith 1970:278].

According to Beckwith (1970:278), the *heiau* (place of worship) at which Papa transformed into Haumea was Ka‘ie‘ie Heiau in the uplands of Kalihi Valley, well north of the project alignment. She lived there with one of her sons, whom she did not marry, named Ki‘o. He was “named for the deposits (*ki‘o*) of gum on the *kukui* trees above Kalihi” (Kamakau 1991:134).

Haumea was known for her regeneration abilities, whether this is manifested as food for the people or the powers of female reproduction to secure the existence of humankind. Because of these powers, she is often considered the goddess of childbirth (Beckwith 1970:283).

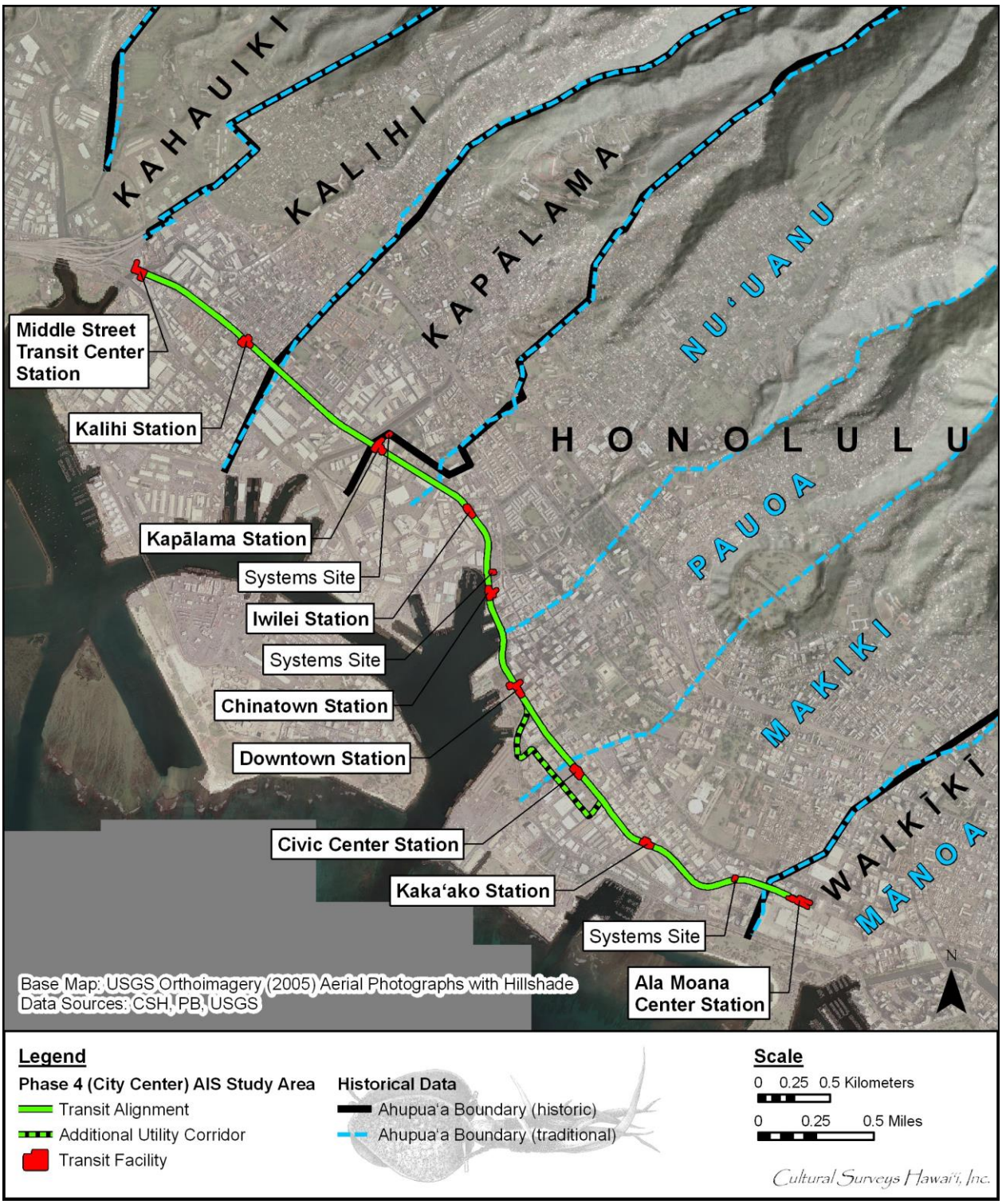


Figure 1. U.S. Geological Survey Orthoimagery (2005) aerial photographs, showing the boundaries of the *ahupua‘a* traversed by the City Center (Section 4) project area

1.1.2 Kalihi-Kai

Most of the recorded myths for Kalihi are situated in the *mauka* (inland) areas of Kalihi Uka, and there is very little documented information for the *makai* (seaward) areas. One story for the Kalihi Kai area provides an account of a shark guardian named Makali‘i, known to frequent the

waters of Kalihi Kai, particularly near Kahaka‘aulana, the little islets off Sand Island (Oppenheimer 1976:15). These islets can be seen in an 1817 map of South O‘ahu (Figure 2) by Otto von Kotzebue, commander of the Russian ship *Rurick*, who had visited O‘ahu during the previous year.

It was at Kahaka‘aulana that Makali‘i had his cave. Native Hawaiians (*Kānaka maoli*) who inhabited Mokauea in the 1970s noted that during the time of Makali‘i’s residence in his cave at Kahaka‘aulana, the sand patterns changed above his cave and that fishing was good for the *akule* (bigeye scad, *Trachurops crumenophthalmus*) (Oppenheimer 1976:15). Kahaka‘aulana was also noted as a place in Kalihi Harbor that was used as a passage for travelers going from Kou (adjacent to Nu‘uanu Stream and Honolulu Harbor) toward Pu‘uloa (Pearl Harbor).

> Kahakaaulana: The narrow place in the Kalihi harbour inlet, and formerly the place where travelers used to swim across to Kalaekao or Puuloa to avoid the long detour by way of Moanalua [Sterling and Summers 1978: 322].

In *Place Names of Hawai‘i*, Kahaka‘aulana is listed as the old name for Sand Island (Pukui et al. 1974:62). As a literal translation, Kahaka‘aulana means “the floating swimmers pass by,” perhaps referring to the travelers who would make their way to or from Pu‘uloa by swimming through the channels of Moanalua, Kalihi, and Kapālama instead of walking. As an alternative, this may refer to the fishermen’s containers that float by as fishermen fished for crabs and seaweed (Pukui et al. 1974:62).

1.1.3 Kalihi Place Names

The project corridor cuts a narrow swath across the lower portion of Kalihi (Kalihi Kai) Ahupua‘a. A broad overview of place names in the vicinity of the project corridor in Kalihi Ahupua‘a is summarized below:

Apili Fishpond	Fishpond located at western tip of Alexander Adams LCA No. 803 *‘āpana* 5 (see Figure 16 and Figure 18) and 250 m south of the Middle Street Transit Center. Apili was the closest of the many fishponds of coastal Kalihi to the project corridor (approx. 200 m *makai*). It appears an area inland of the fish pond was also known as Apili (see Figure 14).
Kaliawa (Kaliheawa)	Name of George Beckley’s (LCA 818) Kalihi farm and fishing grounds – understood to lie northeast of the Middle Street Transit Center (see Figure 14).
Kaluapulu	Name associated with Hewahewa’s LCA 3237 Kalihi lands 300 m east of the mouth of Kalihi Stream (see Figure 14).
Kaluaopalena	Place name on Monsarrat map (see Figure 8) in the vicinity of Hewahewa’s “Kaluapulu” near the mouth of Kalihi Stream.

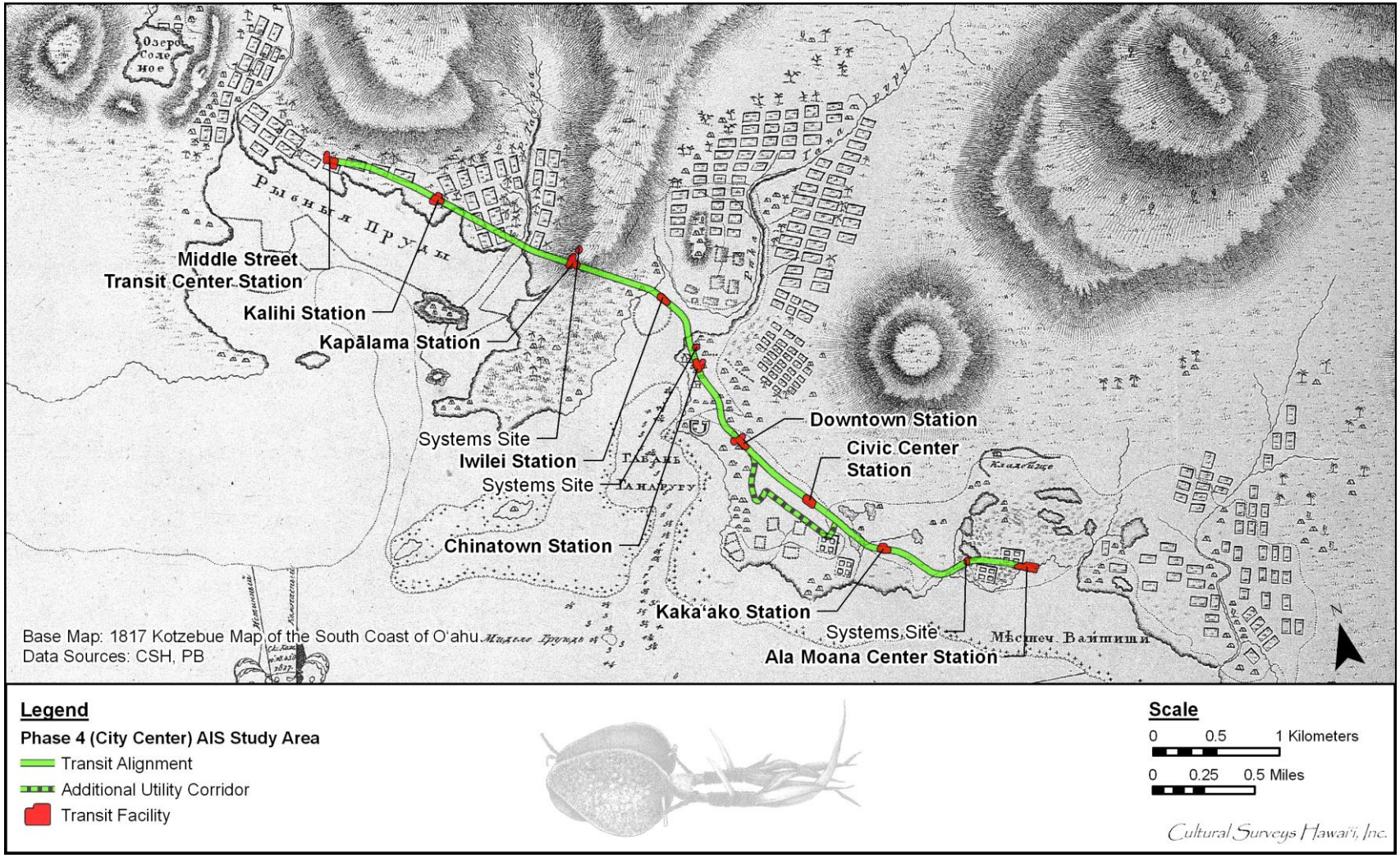


Figure 2. This Kotzebue 1817 map of South O‘ahu with an overlay of the City Center project corridor shows the density of habitations, agriculture, and fishponds (“*Рыбныя Пруды*”) around Kalihi Stream. Note the islands off Kalihi Basin (this early map should be understood as a “sketch”).

Kawaiholo	Name associated with Alexander Adams LCA No. 803 *‘āpana* 5 (elongated *mauka/makai*) traversed by the transit corridor 300 m northwest of Kalihi Station (Figure 8 and Figure 9).
Kiona (Kionawawana)	Name associated with Nahinu’s LCA 10498 located 100 m *mauka* of the Middle Street Transit Center (Figure 9).
Mokauea	Lands on the east edge of Alexander Adams LCA No. 803 *‘āpana* 5. Seemingly a large *‘ili* of land running *mauka/makai*, including the vicinity of Kalihi Station (see Figure 8) (and also Mokauea Island).
Niau	Lands on edge of Alexander Adams LCA No. 803 *‘āpana* 5 (Figure 9).
Pāhounui	Name of coastal fishpond, but the place name may have included land immediately *mauka* (see Figure 8 and Figure 14).
‘Umi	Name of Alexander Adams LCA No. 803 *‘āpana* 3 located 100 m northeast of the Middle Street Transit Center (see Figure 8 and Figure 9). It appears the ‘Umi land area was bound on the west and north by a major curve of Kalihi Stream.
Wanana (Kionawawana)	Name associated with Nahinu’s LCA 10498 (see Figure 9) located 100 m *mauka* of the Middle Street Transit Center.

1.2 Kapālama

The place name Kapālama is often understood to refer to an enclosure (*pā*) of *lama* wood that surrounded the place of residence of high ranking *ali‘i* (chiefs) (Pukui et al. 1974:87). McAllister (1933:88) relates: “Kapalama is said to have obtained its name from an establishment in which the young *ali‘i* were kept just before pairing off for offspring.” This information probably came from Nathaniel Emerson, who translated David Malo’s “*Ka Mo‘olelo Hawai‘i*.” Emerson added many notes to his English translation, including the following:

> *Hoonoho ia* means put in an establishment, placed under the care of a guardian or duenna [chaperone]. Such an establishment was surrounded by an enclosure, *pa*, made of the sacred *lama* . . . Hence this special care or guardianship was called *palama*. It is said that an establishment of this kind was anciently placed at that suburb of Honolulu which to this day bears the name of *Ka-pa-lama* [Malo 1951:139; note by N. B. Emerson].

Westervelt (1923:165) attributes the O‘ahu place name to a chiefess of O‘ahu who lived in that area. This chiefess was named Kapālama, the grandmother of Lepeamoa (Hawaiian for “cockscomb”). A chief of Kaua‘i, named Keāhua, traveled to O‘ahu to take Kauhao, the daughter of Kapālama, as his wife. He angered a *kupua* (supernatural being that can change form) called Akuapehuale (god of swollen billows [surges or waves]), who forced the couple to hide in the uplands of the Wailua River valley of Kaua‘i.

Keāhua’s daughter was born as an egg and was adopted by the chiefess Kapālama to raise on O‘ahu at her home, also named Kapālama. When the egg hatched, Lepeamoa was a bird with feathers all the colors of the rainbow. She became able to turn herself into a beautiful young woman wearing a feather *lei*. The girl was so beautiful that a rainbow was always present above her. The girl was guarded by her ancestress, Keaolewa (“the moving cloud”), who could also

change forms between human and bird. The lower ridge separating Kapālama and Nu‘uanu (‘Ālewa Heights) may have been named for this ancestress.

The parents of Lepeamoa had another child, a son called Kau‘ilani, who was so strong that he was able to defeat the *kupua* who had threatened his parents. After Kau‘ilani’s victory over the *kupua*, he went to find his sister, searching for the rainbow sign of her presence. In her compound, he found Kapālama, who advised him to hide in Lepeamoa’s house, wait until she was asleep in her bird form, and catch and hold her until she acknowledged him as her brother. Her advice worked, and Lepeamoa lived with her brother thereafter (Westervelt 1923:164-184).

1.2.1 Fishponds of Kapālama and Iwilei

The Iwilei Station is understood as at least partly within the former location of Kūwili Fishpond (see Figure 12). According to Māhele documents, Kūwili Pond (Kūwili I), Kawa Pond, and the land surrounding them in the ‘*ili* of Kūwili were considered part of the *ahupua‘a* of Honolulu, not Kapālama. However, these ponds are surrounded by Kapālama lands and were an important resource for the inhabitants of the area.

Kūwili literally means “stand swirling” (Pukui et al. 1974:125). Kūwili [Kūwili I] Pond is mentioned in the legend of Kū‘ula, the fish god of Hawai‘i. As related by Moke Manu, ‘Ai‘ai, son of Kū‘ula, gave the sacred *pā* (fishhook), called Kahuai, to his son, Puniaiki, who used it to summon a school of *aku* (ocean bonito, *Katsuwonus pelamys*) in Honolulu Harbor. The *aku* “unprecedented in number, fairly leaped into the canoes . . . and the shore people shouted as the *akus* which filled the harbor swam toward the fishpond of Kuwili and on to the mouth of Leleo stream” (Manu 1998:247-248). No oral traditions, legends, or other ethnographic information have been found regarding Kawa Fishpond. The Hawaiian word “*kawa*” literally translates as a precipice or leaping place or the pool below a precipice into which swimmers leap (Pukui and Elbert 1986:139).

Three other ponds in the vicinity were Loko Kūwili II and Loko Kapukui in Kapālama and Loko Kealia in Iwilei. Pukui et al. (1974) do not give meanings for Loko Kapukui or Loko Kealia, but *keālia* is the Hawaiian word for salt bed, which may indicate that at least one of these ponds was used for salt collection.

1.2.2 Traditional Accounts of Battles at Niuhelewai Stream in Kapālama

Two accounts of traditional Hawaiian warfare suggest mass killings in the vicinity of “Niuhelewai,” which is the stream generally now known as Kapālama Canal (flowing past the Kapālama Transit Center). These slaughters may have occurred far from the project corridor.

1.2.2.1 Kahahawai‘a’s defeat of Kahāhana (AD 1780-1783)

Niuhelewai Stream was the location for a famous battle between Kahahawa‘i, the war chief of Kahekili, king of Maui, and the O‘ahu ruling chief Kahāhana. Fornander (1919:498) states in a footnote to a story that Niuhelewai was the name of the locality of the Pālama cane field between the fire and pumping stations. Ross Cordy (2002:19) places Kahāhana’s reign of O‘ahu around the year 1780 to his death in 1783 after this battle.

> *I ka wa e noho ana o Kahekili he ‘lii no Maui, a o Kahahana he ‘lii no Oahu nei iloko oia kau i holo mai ai o Kahahawai me na koa e kaua ia Oahu. Ma keia kaua ana ua hee a ua luku ia na kanaka Oahu, ma Niuhelewai, a ua hoi ka wai i uka o ka muliwai, no ka piha i na kanaka.*

Translation:

When Kahekili was reigning as king of Maui, and Kahahana was king of Oahu, it was during this period that Kahahawai with a number of warriors came to make war on Oahu. In this battle the people of Oahu were defeated and slaughtered at Niuhelewai, and the waters of the stream were turned back, the stream being dammed by the corpses of the men (Fornander 1919:498-499).

1.2.2.2 The Rebellions of the ‘Ewa and Kona Chiefs (post 1783)

After Kahāhana’s death, the chiefs of Maui took over O‘ahu. Some of the chiefs from the O‘ahu districts of ‘Ewa and Kona conceived a plot to murder their new overlords, but the Maui chiefs were warned. Although the main backers of the plot were the chiefs of Waipi‘o and ‘Ewa, they were temporarily able to convince Kahekili that the conspiracy originated on Kaua‘i, thus the phrase, *Waipi‘o kīmopō*, “Waipi‘o of the secret rebellion” (Pukui 1983: #2918). Eventually the truth was revealed and:

A no kēia mea, ulu maila ke kaua kūloko o Kona me ‘Ewa, nā moku o O‘ahu i luku nui ‘ia; ua luku ‘ia nā moku o O‘ahu i luku nui ‘ia; ua luku ‘ia nā kāne, nā wāhine a me nā keiki, a ua pani kūmano ‘ia nā kahawai a me nā muliwai i nā heana o nā kānaka o Kona a me ‘Ewa. ‘O nā kahawai i ‘oi aku ka nui o nā heana, a ho‘i hou ka wai i uka, ‘o ia nō ‘o Makaho a me Niuhelewai ma Kona, a ‘o Kaho‘ā‘ia‘i ho‘i ko ‘Ewa. He kūmukena ka nui o nā mea he make, ke lilo ka wai i mea ‘awa-‘awa ke inu aku. Ua ‘ōlelo mai ho‘i ka po‘e ‘ike maka “O ka lolo ka mea i ‘awa-‘awa ai ‘o ka wai” (Kamakau 1996:91, Ka Nūpepa Kū‘oko‘a, March 30, 1867).

Translation:

. . . the districts of Kona and ‘Ewa were attacked, and men, women, and children were massacred, until the streams of Makaho and Niuhelewai in Kona [in Kapālama] and of Kahoa‘ai‘ai in ‘Ewa were choked with the bodies of the dead, and their waters became bitter to the taste, as eyewitnesses say, from the brains that turned the water bitter. All the Oahu chiefs were killed and the chiefesses tortured (Kamakau 1992:138).

1.2.3 Kapālama Place Names

The project corridor cuts a narrow swath across the lower portion of Kapālama Ahupua‘a. A broad overview of place names in the vicinity of the project corridor in Kapālama Ahupua‘a is summarized below:

Iwilei	Famous as a former center of prostitution and the home of Sadie Thompson (Somerset Maugham’s character in the short story *Rain*); Lit. “collarbone or a unit of measurement” (Pukui et al. 1974:57).
Kahololoa	Coastal area on west side of mouth of Nu‘uanu Stream.
Kalaepōhaku	A higher, rocky area (“the stone promontory”) in southeast Kapālama.

Kanāueue	Name of a fishpond near the site of the old O‘ahu Railway Station at Iwilei; Lit. “the rotating.” This name was used in a risqué song: “*Aia i Kūwili ‘o Kanāueue, nāue a‘e kāua ‘eā i ka ‘ai ho‘opau*: There at Stand Aswirl is Rotation, we rotate and eat everything up” (Pukui et al. 1974:84).
Kaukahōkū	An *‘Ili* of Kapālama near Dillingham Boulevard and Ala Kawa Street; Lit. “the stars have arisen” (Thrum 1922:640).
Kawa	Name of large fishpond and surrounding area.
Kealia	Name of fishpond and surrounding area near west side of the mouth of Nu‘uanu Stream.
Kumuhahani	An *‘Ili* of Kapālama *makai* of Dillingham Boulevard across from central Honolulu Community College; Lit. “just cause of pursuit” (Thrum 1922:655).
Kumupali	An *‘Ili* of Kapālama in Central Honolulu Community College; Lit. “cliff base” (Thrum 1922:654).
Kumuulu	An *‘Ili* of Kapālama *mauka* of Dillingham Boulevard and just east of Kapālama Canal; Lit. “breadfruit tree” (Thrum 1922:654).
Kūwili	Name of large fishpond and surrounding area; Lit. “stand swirling” (Pukui et al. 1974:125).
Niuhelewai	Former name of stream (now Kapālama Canal; see and an adjacent area mentioned in two accounts of slaughter.
Poepoe; Kapoepoe	An *‘Ili* of Kapālama *makai* of Dillingham Boulevard and just east of the Kapālama Canal; Lit. “circular” (Thrum 1922:666).
Pulehu; Kapulehu	An *‘Ili* of Kapālama in southeast Honolulu Community College; Lit. “to roast on coals” (Thrum 1922:668).

1.3 Honolulu

The area that today comprises the portion of Downtown Honolulu that surrounds Honolulu Harbor was known to the Hawaiians as “Kou,” a center of population and activity, similar to Waikīkī, its preeminent neighbor to the southeast. Kou stretched from “Nu‘uanu to Alakea Streets and from Hotel Street to the sea” (McAllister 1933:80) and possessed shoreward fishponds and irrigated fields fed by streams descending from the Nu‘uanu and Pauoa Valleys (see Figure 2).

Kou was “noted for *kōnane* (pebble game, like checkers) and for *ulu maika* (bowling), and is said to be named for the executive officer (*ilāmuku*) of Chief Kākuhihewa of O‘ahu” (Pukui et al. 1974). Pukui (1983: saying # 1128) relates the poetical saying, *Hui aka nā maka i Kou* (“the faces will meet at Kou”) in reference to Kou as a place where chiefs gathered to play games and sport, and where the people gathered to watch them. In the accounts of the Pele and Hi‘iaka saga (Emerson 1915:168; Nogelmeier 2006:402-420), Hi‘iaka from Hawai‘i Island and Lohi‘au, chief of Kaua‘i, joined with Pele‘ula, chiefess of O‘ahu, for pleasure at Kou. This vignette probably

was based on a long tradition of Kou as a royal center where the *ali‘i* [chiefly class] would meet and entertain.

1.3.1 Honolulu Place Names

The HRTP City Center Section corridor cuts a narrow swath across the lower portion of Honolulu Ahupua‘a. Much of the project corridor lies on reclaimed land that was open sea until near the end of the 1800s. Undoubtedly, many traditional place names were lost owing to early replacement with new place names (see “Nihoa” below) and Western street names. A broad overview of place names in the vicinity of the project corridor in Honolulu Ahupua‘a is summarized below:

Honoka‘upu	Former land section along the waterfront beyond the seaward end of Alakea Street, Downtown Honolulu; it was an old surfing area and ontime site of a coconut grove named for a chief. Lit. “the albatross bay” (Pukui et al. 1974:49).
Honuakaha	Old section of Honolulu where there was a coconut grove and where Kīna‘u and Keōpūolani resided (Barrere 1957); particularly associated with a smallpox hospital and an attendant cemetery circa 1853.
Ho‘okuku	Liholiho Kamehameha resided there (Barrere 1957).
Kapu‘ukolo	Old section of Honolulu bounded by Nu‘uanu Stream and Honolulu Harbor (Pukui et al. 1974:90) “where white men and such dwelt” (Barrere 1957)).
Ke kai o Māmala	The surf in the outer entrance of Honolulu Harbor named for the chiefess Māmala who loved to play *kōnane*, drink *‘awa*, and ride the surf (Pukui et al. 1974:106).
Kou	Old name until 1800 for Honolulu Harbor and vicinity, including the area from Nu‘uanu Avenue to Alakea Street and from Hotel Street to the sea, noted for *kōnane* (pebble game, like checkers) and *ulu maika* (bowling), and said to be named for the executive officer (*ilāmuku*) of Chief Kākuhihewa of O‘ahu. (Pukui et al. 1974:117-118).
Kuloloia	Former beach extending from about the foot of Fort Street to Kaka‘ako, Honolulu (Pukui et al. 1974:175; ‘Ī‘ī 1959:65, 90). “Ku-lolo-ia was a beautiful sand beach below Halkauila [Halekauwila] St., extending as far as the present Bishop Street. A big pond also named Ku-lolo-ia adjoined Halkauila St. at a point above the present Honolulu Iron Works at Kākā-‘ako. A stream from it flowed down right where the old Inter-Island dry-dock was” (Kekahuna 1958:5). This place name is refered to in LCA records associated S. Kaunuohua, who had ties to the Kamehameha royal line (LCA 738), LCA records associated with M. Kekauonohi (LCA 191, ‘Āpana 3), and Native Hawaiian chants, for example: “*He a wale no ke kai o Kuloloia-e*,” from *He Kanikau No Ka Moi Iolani Kamehameha* IV—B. Pauahi, dirge (*kanikau*) Haleakala, Honoulu, Jan. 19, 1864*; Ka Nupepa Kuokoa*, Janary 23, 1964, and “*Mai ka pa-ana laau mua ana i ka wai o Keomo a ka hui lokahi ana a na mokupuni i ke Kai o Ku-loloia*” –D.

	Kalākaua, Dec. 28, 1878 campaign broadside against W. Lunalilo—from the T.C. Heuck Collection.
Moku‘aikaua	Name of residence of Kalanimōkū, south of Fort Street and approx. 120 m north of the Downtown Station (also called “Papakenene”), “the land long bore the name of Moku‘aikaua” (Barrere 1957) for location of residence of Kalanimōkū).
Nihoa	Waterfront area in Downtown Honolulu formerly owned by Ka‘ahumanu and named by her in honor of her visit to Nihoa Island (‘Ī‘ī 1959:166). Bareere states that “on the shore at Nihoa …was a shipyard where foreign style vessels were being made by Hawaiians under the tutelage of whites” (Barrere 1957).
Pākākā	Old canoe landing, Honolulu Harbor. Wharf built in 1827 at the same site. Lit. “to skim” (as stones over water) (Pukui et al. 1974:175).
Pāpū	Fort formerly at the foot of Fort Street built in 1816 and destroyed in 1857 (Pukui et al. 1974:30).

1.4 Kaka‘ako and Vicinity

1.4.1 Overview

The southeastern portion of the project area largely lies within the urban district currently known as “Kaka‘ako.” Late nineteenth-century maps indicate that this area was traditionally broken down into several traditional land units (*‘ili*) known as Ka‘ākaukukui, Kukuluāe‘o, and Kewalo (Figure 3 and Figure 4).

The original location and extent of an area called Kaka‘ako is discussed by the knowledgeable Native Hawaiian Henry Kekahuna (1958:4), who was born on Hawai‘i Island in 1891 but was a long-time resident of O‘ahu. He placed it “on the ‘Ewa side of Kwalo to Ku-lolo-ia Stream, where the Honolulu Iron Works and Fort Armstrong are now.” Kekahuna (1958:4) further noted that in Kaka‘ako “there were formerly scattered dunes of white sand there . . . Gilbert Islanders (*Kilipaki*) squated there, and made a living by fishing, collecting coral for curios, and catching octopus.” Kekahuna’s description refers to the area that now includes One Waterfront Plaza (between South and Punchbowl Streets). The 1884 map of the “Kewalo” section of Honolulu by S. E. Bishop (see Figure 3) does not show an area named Kaka‘ako at all. On an 1897 map of Honolulu by M. D. Monsarrat, the area near the wharfs is labeled Kaka‘ako (see Figure 4).

Until well into the twentieth century (see Figure 49), Kaka‘ako and the surrounding area were sometimes referred to as something of a wasteland, or empty space, between the better-known locations of Kou (modern-day Honolulu) and Waikīkī. This area was known traditionally for its low-lying marshes, fishponds, and salt making.

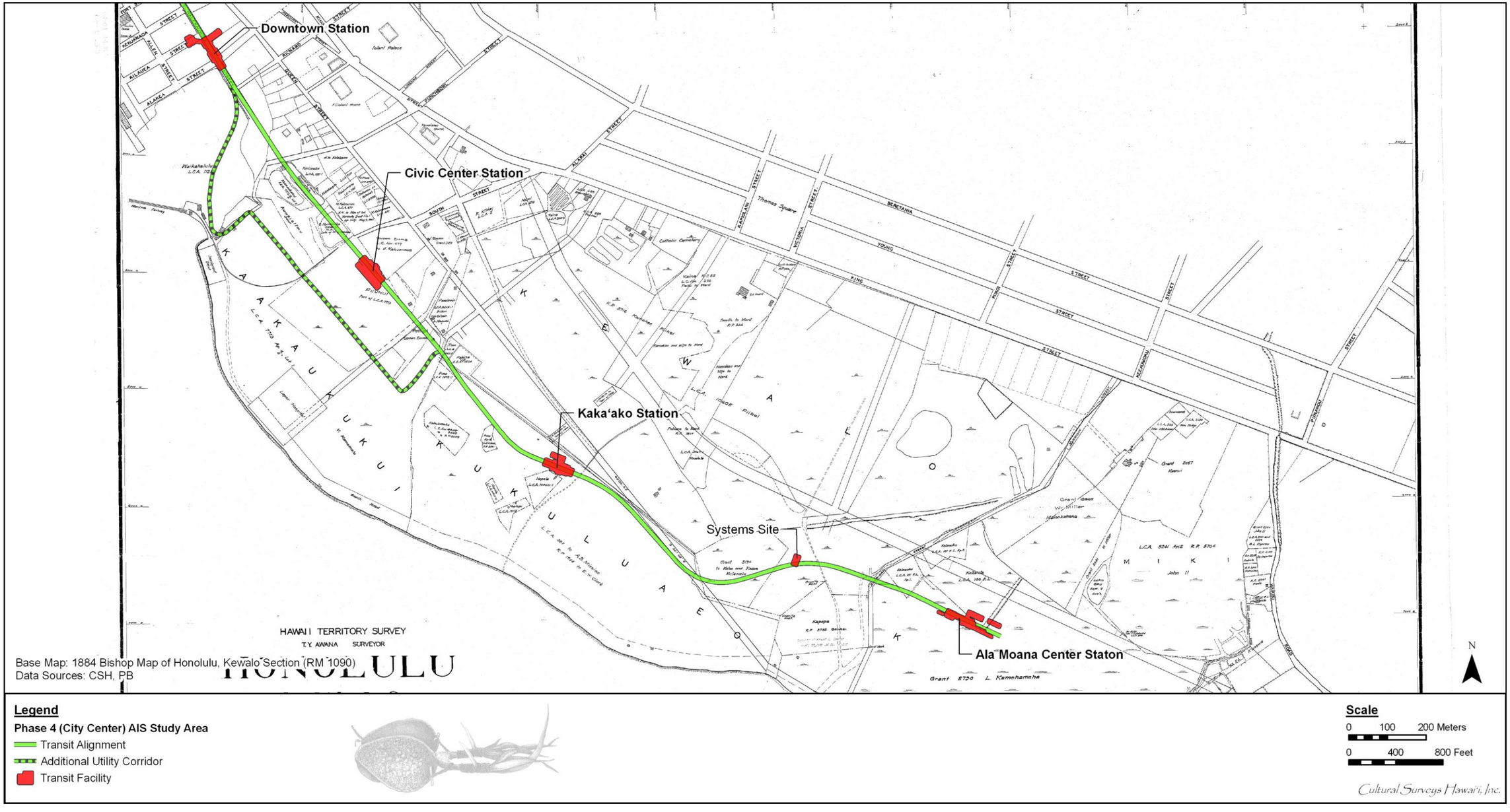


Figure 3. 1884 Map of Honolulu, Kewalo Section, by S. E. Bishop (Reg. Map 1090), showing the location of the City Center project corridor and traditional place names in the vicinity

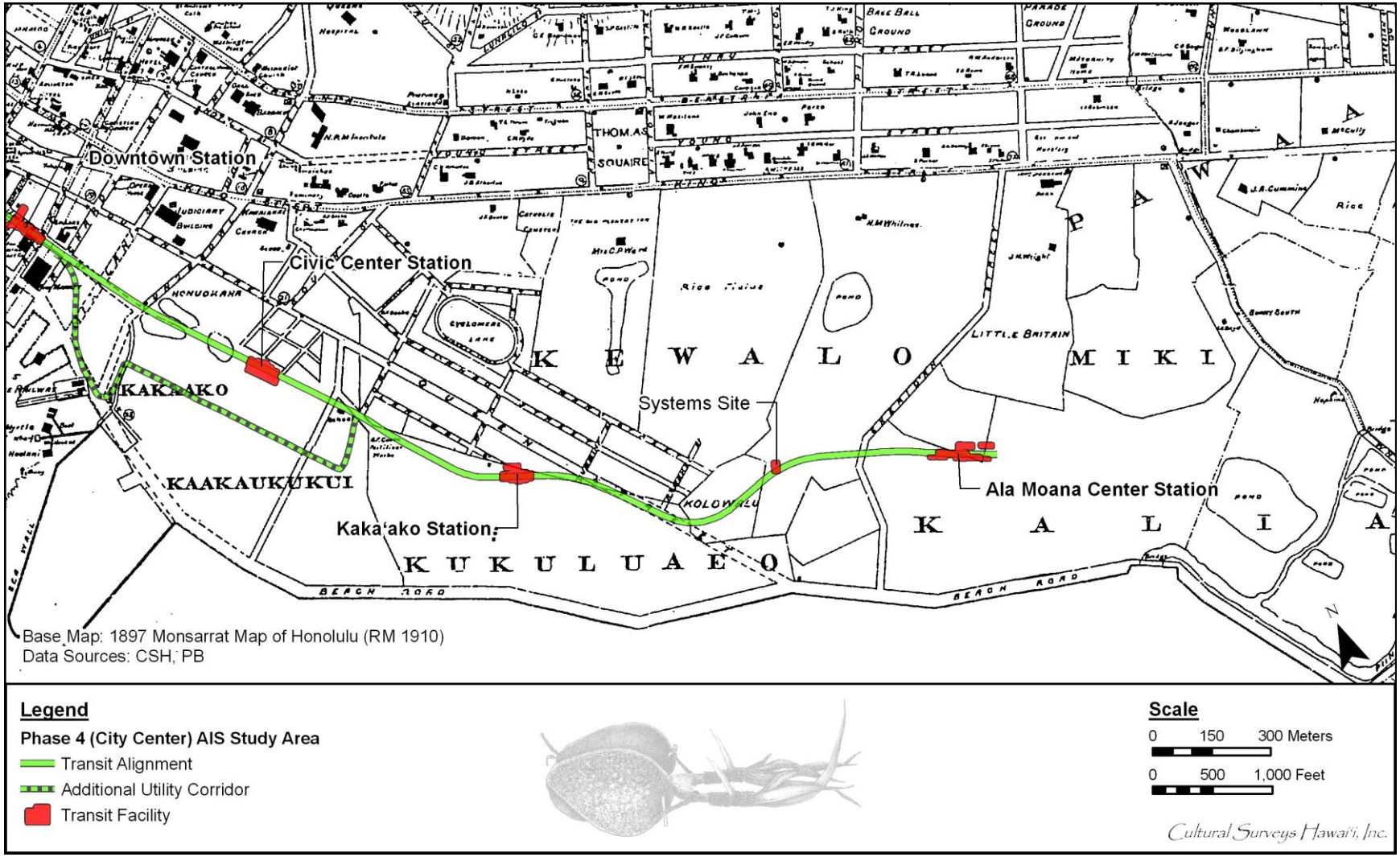


Figure 4. 1897 Map of Honolulu by M. D. Monsarrat (Reg. Map 1910), showing the location of the southeastern portion of the City Center project corridor and traditional place names in the vicinity

1.4.2 Place Names

Place name translations presented without attribution in this subsection are from *Place Names of Hawai‘i* (Pukui et al. 1974), unless indicated otherwise. The researchers for *Place Names* based their interpretations not only on literal (phonetic) translations of the words, but also on oral traditions and historic documents. In this work, the place names of geographic features and *ahupua‘a* names are translated; however, *‘ili* names are not usually presented.

Pukui et al. (1974) do not give a meaning for the place name Kaka‘ako, but the Hawaiian word *kākā‘āko* can be translated as “dull, slow” (Pukui and Elbert 1986:110). Thrum (1923:639) translated the word as “prepare the thatching” (*kākā* = to chop, beat, or thresh; *ako* = thatch). If Thrum’s translation is correct, it could be related to the fact that coastal plains, like Kaka‘ako, were excellent places to gather tall *pili* grass (which grows “close to ocean exposure” – Wagner et al. 1990:1551), which the Hawaiians traditionally used to thatch their houses.

According to Kekahuna (1958:4), Ka‘ākaukukui was “a beautiful sand beach that formerly extended along Ala Moana Park to Kewalo Basin, a quarter mile long reef extended along the shore.” The 1884 Bishop map (see Figure 3) shows Ka‘ākaukukui extending from Punchbowl to Cooke Street, *makai* of Queen Street. Pukui et al. (1974) describe Ka‘ākaukukui as a “fillein reef,” and literally translate the name as “the right (or north) light,” possibly referring to a maritime navigation landmark.

Kaholoakeāhole was the name of an old waterfront section of Honolulu, south of Kaka‘ako, literally “the running of the *āhole* fish” (Pukui et al. 1974:65) (see Figure 22).

Kukuluāe‘o, translated literally, is the “Hawaiian stilt (bird),” *Himantopus himantopus*, and from the word *kukuluāe‘o,* which means “to walk on stilts.” Pukui et al. (1974) described the area as “formerly fronting Kwalo Basin” and “containing marshes, salt ponds, and small fishponds,” an environment well-suited for this type of bird (Griffin et al. 1987:36). Kekahuna (1958:4) described it as “the land on the upland side of Ka‘ākaukukui. Salt was formerly made there.”

Kewalo literally means “the calling (as an echo).” Land Commission Award and other historiera documents identify it as the area between Cooke and Sheridan Streets, *mauka* of Queen Street (see Figure 3 and Figure 4) and inland of the coastal sections of Ka‘ākaukukui, Kukuluāe‘o, and Kālia. According to Pukui et al. (1974:109), “outcasts (*kauwā*) intended for sacrifice were drowned here” (see *mo‘olelo* below). Kekahuna said that at one time, it also had a sand beach as a part of the area, where various sports, such as surfing, were held.

1.4.3 Mo‘olelo Associated with Place Names

The names Ka‘ākaukukui and Kukuluāe‘o do not appear in any citations in the *Hawaiian Legends Index* (Gotanda 1989), nor in the index to *Fornander’s Collection of Hawaiian Antiquities and Folklore*. A few mentions occur of the place names “Kewalo” and “Kaka‘ako” in various legends and traditions. Kaka‘ako and Kukuluāe‘o are mentioned in some post-Contact chants.

From the legendary accounts (provided below) it can be seen that Kaka‘ako, Ka‘ākaukukui, Kukuluāe‘o, and Kewalo were traditionally noted for their fishponds and salt pans; the marsh lands where *pili* grass and other plants could be collected; ceremonial sites such as Pu‘ukea Heiau, Kewalo Spring, and Kawailumalumai Pond, at which sacrifices were made; and their trails (see Figure 22) that allowed transport between the more populated areas of Waikīkī and

Honolulu. Important chiefs were born in the area and conducted religious rites, and *maka‘āinana* (commoners) traveled to the area to procure food and other resources. Some *maka‘āinana* probably also lived in the area, with a higher likelihood adjacent to ponds and trails.

1.4.3.1 Kaka‘ako

Kaka‘ako is mentioned in Thrum’s version of the legend of Kū‘ula, the god presiding over the fish, and his son ‘Ai‘ai, who was the first to teach the Hawaiians how to make various fishing lines and nets, the first to set up a *ko‘a kū‘ula*, a rock shrine (first in Hāna Maui) on which the fishermen would place their first catch as an offering to Kū‘ula, and the first to set up *ko‘a ia*, fishing stations where certain fish were known to gather. Leaving his birthplace in Maui, ‘Ai‘ai traveled around the islands, establishing *ko‘a kū‘ula* and *ko‘a ia*. On O‘ahu, he landed first at Makapu‘u in Ko‘olaupoko then traveled clockwise around the island.

> Aiai came to Kalia [Waikīkī] and so on to Kakaako. Here he was befriended by a man named Apua, with whom he remained several days, observing and listening to the murmurs of the chief named Kou. This chief was a skillful aku [bonito (*Katsuwonus pelamis*)] fisherman, his grounds being outside of Mamala until you came to Moanalua. There was none so skilled as he, and generous withal, giving akus to the people throughout the district [Thrum 1998:242].

1.4.3.2 Kewalo

Kewalo was famous for freshwater springs, as seen in the proverb “*Ka wai huahua‘i o Kewalo*,” which translates as “the bubbling water of Kewalo.” Two springs are mentioned in a traditional story of the Waters of Ha‘o. This legend tells of two children of the chief Ha‘o who ran away from their cruel stepmother. They stayed a time with the caretakers of Kewalo Spring, which may have been located close to the trail that connected Waikīkī and Honolulu. The children then left when they heard that the chiefess had sent men to look for them. The two children followed the moonlit trail across the plain toward Kou (Honolulu), but finally collapsed from weariness and thirst. In a dream, the boy’s mother told him to pull up a plant close to his feet. When he did, he found a spring under the plant, which was called the Water of Ha‘o, or Kawaiaha‘o. This spring was located at the western end of the trail, near Kawaiaha‘o Church in Kaka‘ako (Pukui 1988:87-89).

Kewalo also once had a famous fishpond that was used to drown members of a pariah caste (*kauwā*) or *kapu* (taboo) breakers as the first step in a sacrificial ritual known as *Kānāwai Kaihehe‘e* (Kamakau 1991:6) or *Kkai-he‘ehe‘e*, which translates as “sea sliding along,” suggesting the victims were slid under the sea (Westervelt 1963:16). Kewalo is described as:

> A fishpond and surrounding land on the plains below King Street, and beyond. It contains a spring rather famous in the times previous to the conversion to Christianity, as the place where victims designed for the Heiau of Kanelaau on Punchbowl slopes, was first drowned. The priest holding the victim’s head under water would say to her or him on any signs of struggling, “Moe malie i ke kai o ko haku.” “Lie still in the waters of your superiors.” From this it was called Kawailumalumai, “Drowning waters” [Sterling and Summers 1978:292].

Kewalo is mentioned in legend as a place resorted to for thatch. A man named Kapoi “went to the Kewalo marsh near the beach, where tall pili grass was growing, to get a bundle of the grass to use as thatching.” (Westervelt 1963:133). While there, Kapoi found seven owl eggs and took

them home to cook for his supper. An owl perched on the fence surrounding his house cried out "O Kapoi, give me my eggs!" After several such pleas, Kapoi eventually returned the eggs. In return, the owl became his *‘aumakua* (family god) and instructed him to build a *heiau* (prChristian place of worship) named Mānoa. Kapoi built the *heiau*, placed some bananas on the altar as a sacrifice, and set the *kapu* days for its dedication. The king of O‘ahu, Kākuhihewa, who was building his own *heiau* in Waikīkī, had made a law that if any man among his people erected a *heiau* and set the *kapu* before him, that man should die. Kapoi was seized and taken to the *heiau* of Kūpalaha, at Waikīkī. Kapoi's ‘*aumakua* owl asked for aid from the king of the owls at Owl's Hill (Pu‘u Pu‘eo) in Mānoa, who gathered all of the owls of the islands. They flew to Kūpalaha and battled the king's men, who finally surrendered. From this time, the owl was considered a powerful *akua* (god). The battle area was known as Kukaeunahio-ka-pueo, which means "the confused noise of owls rising in masses" (Westervelt 1963:135-137; Thrum 1998:200-202).

Kewalo was the birthplace of the great chief Hua-nui-ka-la-la‘ila‘i, as mentioned in this *mele* (story) chanted by Kamakau (1991:24):

‘O Hua-a-Kamapau ke ‘li‘i	Hua-a-Kamapau the chief
O Honolulu o Waikīkī	O Honolulu, of Waikīkī
I hanau no la i kahua la i Kewalo,	Was born at Kewalo,
‘O Kālia la kahua	Kālia was the place [the site]
O Makiki la ke ēwe,	At Makiki the placenta,
I Kānelā‘au i Kahehuna ke piko,	At Kānelā‘au at Kahehuna the navel cord,
I Kalo i Pauoa ka ‘a‘a;	At Kalo at Pauoa the caul;
I uka i Kaho‘iwai i	Upland at Kaho‘iwai, at
Kanaloaho‘okau . . .	Kanaloaho‘okau. . .

The chief Hua was famous for his love of cultivation and his care for the people. His *heiau*, called Pu‘ukea, was in Kukuluāe‘o in Honolulu (exact location unknown); it is mentioned in a traditional *wānana* (prophecy) recorded by Kamakau (1991:24-25).

[Ka makaua ua kahi o ‘Ewa]	[The increasing "first rain" of ‘Ewa]
Ua puni ka i‘a o Mokumoa,	Overcomes the fish of Mokumoa,
Ua kau i‘a ka nene;	Washes up fish to the nene plants;
Ua ha‘a kalo ha‘a nu;	Lays low the taro as it patters down;
Ha‘a ka i‘a o kewalo,	Lays low the fish of Kewalo,
Ha‘a na ‘ualu o Pahua,	Lays low the sweet potatoes of Pahua,
Ha‘a ka mahiki i Pu‘ukea,	Lays low the mahiki grass at Pu‘ukea,
Ha‘a ka unuunu i Pele‘ula,	Lays low the growing things at Pele‘ula
Ha‘a Makaaho i ke ala.	Lays low Makaaho [Makāho] in its path
E Kū e, ma ke kaha ka ua, e Kū,	O Kū, the rain goes along the edge [of the island], O Kū
[*I ‘ai ‘na ka i‘a o Maunalua*] . . .	[Eating" the fish of Maunalua] . . .

The chant above mentions the *mahiki* grass of Pu‘ukea Heiau. The Hawaiian term *mahiki* means "to peel off" (Andrews 2003:369). The word was also used to describe a rite to exorcise an evil spirit, as the skilled *kahuna* (priest) "peeled" the malicious spirit from the afflicted (Pukui et al. 1972:75-77). Used in the ritual was a shrimp called *mahiki* or a native grass called *mahiki*

(Pukui and Elbert 1986:202). *Mahiki*, (also called *‘aki‘aki*, is a tufted rush (*Sporobolos* sp.) found near the seashore. The ethnologist, Mary Pukui, states that even during her youth, parents put “*tī* leaves, or *hala*, or *‘aki‘aki* grass, in a little sea-salt water and [would] have the child drink it” (Pukui et al. 1972:163) to rid them of badly behaving spirits. The use of this grass in a ritual may explain its association with a ceremonial *heiau*, or it may simply be that the Kukuluāe‘o coast was a good habitat and thus a favored place for healers to collect this type of grass.

1.4.3.3 Ka‘ākaukukui

Ka‘ākaukukui is briefly mentioned in the legend of Hi‘iaka, beloved sister of the Hawaiian volcano goddess, Pele. Hi‘iaka and her companions had been traveling around O‘ahu on the land trails, but decided to travel from Pu‘uloa (on the west side of the Pearl Harbor entrance in ‘Ewa) to Waikīkī by canoe. At Pu‘uloa, Hi‘iaka met a party who were planning on traveling to the house of the chiefess Pele‘ula in Waikīkī. Hi‘iaka recited a chant, telling the people although they were going by land and she was going by sea, they would meet again in Kou (ancient name of Honolulu). One portion of the chant mentions the place Ka‘ākaukukui, with reference to a pool, possibly a reference to the salt ponds of the area:

A pehea lā au, e Honoka‘upu, ku‘u aloha	And what of me, O Honoka‘upu, my love
I ka welelau nalu kai o Uhi, o ‘Ōa	Upon the crest of the surf at Uhi and ‘Oā
‘O nā makai ke ao (pō) o poina	Eyes in the living realm (night) of oblivion
Ma hea lā wau, e ke aloha lā	Where am I, O my love
‘O Kou ka papa	Kou is the coral flat
‘O Ka‘ākaukukui ka loko	Ka‘ākaukukui is the pool
‘O ka ‘alamihi a‘e nō	Some ‘*alamihi* indeed
‘O ka lā a pō iho	Wait all day until night
Hui aku i Kou nā maka.	Friends shall meet in Kou.

(Ho‘oulumāhiehie 2006a:297; Ho‘oulumāhiehie 2006b:277)

The exact meaning of the word *alamihi* within this chant is unknown. ‘*Alamihi* is the name of a native Hawaiian small black crab (*Metopograpsus thukuhar*), a scavenger that is often associated in Hawaiian sayings with corpse eating (Pukui and Elbert 1986:18). *Alamihi* is also used as a place name that can mean “path [of] regret” (Pukui et al. 1974:9).

1.5 Kālia

Kālia was traditionally the name of the western-most of the lands of Waikīkī extending as far west as the *makai* end of old Sheridan Street (present day Pi‘ikoi Street) (see Figure 4). Kālia was relatively well-watered by Pi‘inaio Stream (at the present *mauka/makai* eastern portion of Ala Moana Blvd. approximately 800 m southwest of the Ala Moana Station) and was a land of *lo‘i kalo*, fish ponds and denser habitations than the bleaker lands of Kewalo and Kukuluāe‘o to the west. According to Martha Beckwith (1970), by the end of the fourteenth century, Waikīkī had become "the ruling seat of the chiefs of O‘ahu." George Kanahele relates that the ruling chief Ma‘ilikūkāhi made the decision:

> ..to move his capital from ‘Ewa to Waikīkī around 1400. As a result, for the next 400 years – and until Honolulu became the trading center of the Kingdom of Hawai‘i in the early 1800s – Waikīkī remained one of the main political and economic centers of O‘ahu. (Kanahele 1995:62)

Chiefly residences, however, were only one element of a complex of features which were able to sustain a large population that characterized Waikīkī in late pre-Contact times. Beginning in the fifteenth century, a vast system of irrigated taro fields was constructed, extending across the littoral plain from Waikīkī to lower Mānoa and Pālolo valleys. This field system - an impressive feat of engineering, the design of which is traditionally attributed to the chief Kalamakua - took advantage of streams descending from Makiki, Mānoa, and Pālolo valleys, which also provided ample fresh water for the Hawaiians living in the *ahupua‘a*. Water was also available from springs in nearby Mō‘ili‘ili and Punahou. Closer to the Waikīkī shoreline, coconut groves and fishponds dotted the landscape. A sizeable population developed amidst this Hawaiian-engineered abundance. Captain George Vancouver, arriving at "Whyteete" in 1792, captured something of this profusion in his journals:

> On shores, the villages appeared numerous, large, and in good repair; and the surrounding country pleasingly interspersed with deep, though not extensive valleys; which, with the plains near the sea-side, presented a high degree of cultivation and fertility.
>
> [Our] guides led us to the northward through the village, to an exceedingly well-made causeway, about twelve feet broad, with a ditch on each side.
>
> This opened our view to a spacious plain, which, in the immediate vicinity of the village, had the appearance of the open common fields in England; but, on advancing, the major part appeared to be divided into fields of irregular shape and figure, which were separated from each other by low stone walls, and were in a very high state of cultivation. These several portions of land were planted with the eddo or taro root, in different stages of inundation; none being perfectly dry, and some from three to six or seven inches under water. The causeway led us near a mile from the beach, at the end of which was the water we were in quest of. It was a rivulet five or six feet wide, and about two or three feet deep, well banked up, and nearly motionless; some small rills only, finding a passage through the dams that checked the sluggish stream, by which a constant supply was afforded to the taro plantations.
>
> [We] found the plain in a high state of cultivation, mostly under immediate crops of taro; and abounding with a variety of wild fowl, chiefly of the duck kind...The sides of the hills, which were at some distance, seemed rocky and barren; the intermediate vallies, which were all inhabited, produced some large trees, and made a pleasing appearance. The plain, however, if we may judge from the labour bestowed on their cultivation, seemed to afford the principal proportion of the different vegetable productions on which the inhabitants depend for their subsistence (Vancouver, 1798: I, 161-164).

Further details of Hawaiian use of the lands that included the *ahupua‘a* of Waikīkī are given by Archibald Menzies, a naturalist accompanying Vancouver's expedition:

> The verge of the shore was planted with a large grove of cocoanut palms, affording a delightful shade to the scattered habitations of the natives. Some of those near the beach were raised a few feet from the ground upon a kind of stage, so as to admit the surf to wash underneath them. We pursued a pleasing path back

> to the plantation, which was nearly level and very extensive, and laid out with great neatness into little fields planted with taro, yams, sweet potatoes and the cloth plant. These, in many cases, were divided by little banks on which grew the sugarcane and a species of Draecena without the aid of much cultivation, and the whole was watered in a most ingenious manner by dividing the general stream into little aqueducts leading in various directions so as to be able to supply the most distant fields at pleasure, and the soil seemed to repay the labour and industry of these people by the luxuriancy of its productions. Here and there we met with ponds of considerable size, and besides being well stocked with fish, they swarmed with water fowl of various kinds such as ducks, coots, water hens, bitterns, plovers and curlews. (Menzies 1920:23-24)

However, the traditional Hawaiian focus on Waikīkī as a center of chiefly and agricultural activities on southeastern O‘ahu was soon to change, disrupted by the same Euro-American contact which produced the first documentation (including the records cited above) of that traditional life. The *ahupua‘a* of Honolulu, with the only sheltered harbor on O‘ahu, became the center for trade with visiting foreign vessels, drawing increasing numbers of Hawaiians away from their traditional environments. The shift in preminence is illustrated by the fact that Kamehameha moved his residence from Waikīkī to Honolulu. Indeed, by 1828, Levi Chamberlain describing a journey into Waikīkī would note:

> Our path led us along the borders of extensive plats of marshy ground, having raised banks on one or more sides, and which were once filled with water, and replenished abundantly with esculent fish; but now overgrown with tall rushes waving in the wind. The land all around for several miles has the appearance of having once been under cultivation. I entered into conversation with the natives respecting this present neglected state. They ascribed it to the decrease of population (Chamberlain 1957:26).

Waikīkī was famous for its fishponds with one listing (drawn from the Bishop Museum 1989: III 8 fishpond study) citing 45 ponds – several of which were at Kālia. John Papa ‘Ī‘ī (1959:49) relates an account from the early 1800s of a catch at a Kālia fishpond: “so large that a great heap of fish lay spoiling upon the bank of the pond.” The waste was disapproved of. This abundance of fishponds may have required significant maintenance and would have provided a potentially huge source of food for distribution at chiefly discretion. While the abundance of fishponds suggest a potentially quite large pre-Contact population, the demographics of pre-Contact Waikīkī remain uncertain (see Kanahele 1995:32-33). The missionary census of 1831/1832 lists a relatively large population for “Waikiki” of 2,571 (Schmitt 1973:19), but this appears to include all land between Honolulu and Waimanalo (including, for example, Mānoa and Pālolo), and the population of Kālia remains uncertain.

Other than the names of Kālia, Pi‘inaio, and the fishponds, we know of no other place names in the immediate vicinity.

Section 2 Historic Background

An overview of the historical background pertinent to the City Center section is presented below by land area for Kalihi, Kapālama, Honolulu, Kaka‘ako and vicinity, and the Kālia portion of Waikīkī. The popular and convenient designation “Kaka‘ako” is used for an area between Honolulu and Waikīkī that may traditionally have been part of Makiki Ahupua‘a (see Figure 1).

2.1 Kalihi

2.1.1 Early Historic Period

By the time the islands were found by European explorers, Kalihi Valley had a large resident population supporting themselves by extensive agricultural developments along the valley floodplains. Evidence of the religious and political aspects of Hawaiian society are noted in the descriptions of various Kalihi *heiau*, trails connecting Kalihi to other O‘ahu population centers and island districts, and fishponds along the shoreline where Kalihi Stream meets Ke‘ehi Lagoon.

Otto von Kotzebue’s journal and map of Honolulu provide one of the earliest accounts of the environs of seaward Kalihi circa 1817. The following account is of a trip toward Pearl Harbor commencing near the mouth of Nu‘uanu Stream:

> The way now lies to the west, through a beautifully cultivated valley, which is bounded towards the north by romantic scenery of woody mountains, and on the south by the sea. The artificial taro fields, which may justly be called taro lakes, excited my attention. Each of them forms a regular square of 160 feet, and is enclosed with stone all round like our basins. This field, or rather this pond . . . contains two feet of water. In the spaces between the fields, which are from three to six feet broad, there are very pleasant shady avenues, and on both sides bananas and sugarcane are planted. . . . [T]he fish which are caught in distant streams thrive admirable when put into them. In the same manner as they here keep river-fish, they manage in the sea with sea-fish, where they sometimes take advantage of the outward coral reefs, and draw from them to the shore a wall of coral stone. Such a reservoir costs much labor, but not so much skill as the taro fields, where both are united, I have seen whole mountains covered with such fields, through which the water gradually flowed; each sluice formed a small cascade, which ran through avenues of sugarcane, or banana into the next pond, and afforded an extremely picturesque prospect. Sugar plantations and taro fields alternately varied our way, with scattered habitations, and we had gone unawares five miles to the large village of Mouna Roa [Moana-lua]. . .” (Kotzebue 1967:339-341).

Kotzebue’s map of Honolulu (see Figure 2), although undoubtedly somewhat schematic, shows large taro fields (and trees) similar to his written description on both sides of the mouth of Kalihi Stream extending to the coast. The Kotzebue map also appears to show a network of fishpond walls completely sealing off the shallows in the vicinity of the mouth of Kalihi Stream. If the fishpond wall to the southwest of Kalihi Stream, corresponding to the wall of the Loko Weli fishpond, is drawn fairly accurately, then the coastal area may have been mostly impounded coastal shallows in 1817. While Kotzebue appears to show no houses amongst the *lo‘i kalo* (irrigated taro patches) at the mouth of Kalihi Stream, he does show four huts on the islet (Moku

Moa) just offshore. The path shown was probably the main trail and the route traveled by Kotzebue himself.

In his history of Hawai‘i, written in the 1860s, John Papa ‘Ī‘ī describes the appearance of the trail (around the year 1810) from Nu‘uanu to Moanalua:

> When the trail reached a certain bridge, it began going along the banks of taro patches, up to the other side of Kapalama, to the plain of Kaiwiula on to the taro patches, up to the other side of Kapalama, to the plain of Kaiwiula; on into Kahauiki and up to the other side; turned right to the houses of the Portuguese people. . . . (‘Ī‘ī 1959:95).

While somewhat general, the ‘Ī‘ī account supports that of von Kotzebue in relating an abundance of *lo‘i* where the main trail crossed Nu‘uanu Stream, a relatively uncultivated plain as the trail traversed Kapālama and Kaiwi‘ula, and then more *lo‘i* on Kalihi Stream.

E. Craighill Handy noted the presence of these taro fields still existing in the 1930s. These fields would have been mainly in Kalihi Kai and Kalihi Waena.

> Extensive terraces covered all the flatland in lower Kalihi Valley for approximately 1.25 miles on both sides of the stream. Above this the valley is too narrow for terraces for a mile or more; but in upper Kalihi there are numerous small areas that were developed in terraces (Handy 1940:79).

Charles R. Malden mapped the south coast of O‘ahu and Honolulu Harbor in 1825 (Figure 5), depicting the coast of Kalihi (which he labels “Kariki”). He shows three fishponds, which probably correspond to (from west to east) Apili Pond, Pāhou Pond, and Pāhouiki Pond. His map illustrates the very extensive coastal flats with a wide expanse “dry at half tide,” but through which there was “a passage for canoes at H. W. [high water].” He shows a hut located nearly a mile off shore on the intertidal shallows of Kalihi.

Frederick Debell Bennett offered the following account of Kalihi Valley in 1834:

> The valley of Kalihi succeeds to that of Anuuana [Nu‘uanu], but is less bold and diversified in its scenery. Human dwellings and cultivated lands are here very few, or scattered thinly over a great extent of, probably, the finest soil in the world. The commencement of the valley is a broad pasturplain, the tall grass waving on every side, and intersected by a foot-path, reminding one forcibly of the rural scenes which precede the hay-harvest in England. Kalihi has a pass to the vale of Kolau similar to the pari [pali] of Anuuana, though more precipitous, and only employed by a few of the islanders who convey fish from Kolau to Honoruru. . . (Bennett 1840:Vol. I: 202)

Numerous taro pond fields, or *lo‘i*, were claimed during the *Māhele*, particularly along the Kalihi and Niuhelewai Streams, which served as the eastern and western boundaries of Kalihi.

However, on the flat of Kaluapuhi where Kalihi Kai meets the ocean, there is no indication of taro *lo‘i* or fresh water sources.

E. S. Craighill and Elizabeth Handy supply the following description of Kalihi in the time of native planters:

> Kalihi had a shallow seaside area, now the shore of Kalihi Basin, that was, like that of Moanalua, ideal for the building of fishponds, of which there were six. On the flatlands below the valley there were extensive terraces on both sides of the stream, while along the stream in the lower valley there were numerous areas with small terraces. The interior valley was rough and narrow and not suitable for *lo‘i,* but it would have been good for sweet potatoes yams, wauke, and bananas which probably were planted there (Handy and Handy 1972:475).

Several early photographs (Figure 6 and Figure 7) show habitations along the streams.

The United States Fish Commission Report for 1903 (Cobb 1905:748) lists 12 fishponds on the periphery of Ke‘ehi Lagoon that were in operation in 1901, with a total of 857 acres. Cobb lists the acreage of the five Kalihi Ponds as follows:

Kalihi Fishponds	Acreage
Apili	28
Pāhounui	26
Pāhouiki	14
Auiki (partially filled)	12
Ananoho	52

These fishponds are shown on an M. D. Monsarrat 1897 map of Honolulu (Figure 8). A paleo-environmental study of Auiki and Ananoho *loko* (ponds) (Athens and Ward 2002) concluded that the fishponds were probably constructed sometime between the sixteenth and seventeenth centuries. Toward the end of the nineteenth century, their use became more commercial. By 1901, Loko Auiki had been partially filled. This may have been the result of lack of maintenance or reflect patterns of infilling, as was beginning to occur at the nearby Kewalo Basin (Honolulu Harbor). Ananoho and Auiki were completely filled during World War II, at which time an Army port and warehouse complex was built (Athens and Ward 2002:1). Later, this became part of the Kapālama Military Reservation.

LCA Documentation

Records of the Land Commission Awards associated with the Kuleana Act of 1850 allow us to partially reconstruct the land use pattern in Kalihi at that time. Undoubtedly, residential patterns had changed from pre-Contact times as a result of massive depopulation owing to introduced diseases on the one hand and in-migration into greater Honolulu from out-lying areas on the other. The pattern of land holdings in circa 1850 suggest that the majority of Hawaiians in the *ahupua‘a* were living relatively close to Kalihi Stream, inland of present day Dillingham Boulevard and seaward of the confluence of Kalihi and Kamanaiki Streams. Coastal habitation was somewhat less than might have been expected. This may have been because the coast was exposed to occasional storm surf, high winds, tsunami, and hurricanes or it may simply have been an avoidance of the low-lying coastal mudflats that were close to the water table.

Most Kalihi LCAs consisted of four to seven *lo‘i* (irrigated taro ponds), *kula* (dry fields for pastures and dry-land crops), and a house lot. The gardens described are predominantly *lo‘i*, etched into the surface of the alluvial stream terraces and interconnected by elaborate systems of ‘*auwai* (ditches). Ocean resources were farmed as well; five of the twelve large fishponds bordering Ke‘ehi Lagoon were located along the Kalihi shore. In addition, salt was harvested on

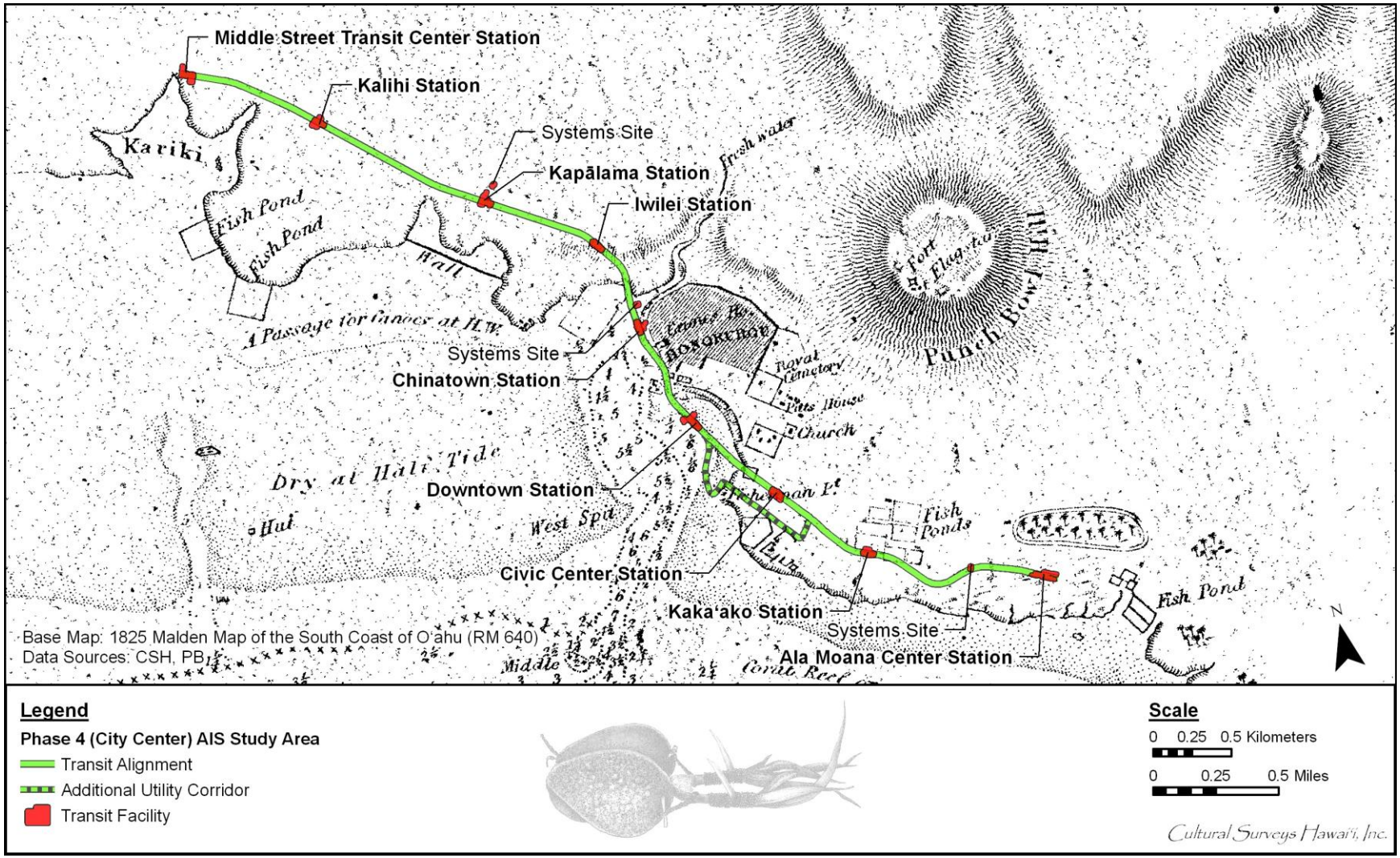


Figure 5. 1825 map of the South Coast of Woahoo [O‘ahu] by Charles R. Malden, a lieutenant on the English ship, H.M.S. *Blonde* with an overlay of the City Center project corridor

Figure 6. 1884 (circa) photograph of grass shacks in Kalihi Valley (colorized in Photoshop software for contrast) (Hawai‘i State Archives)

Figure 7. Photograph of Kalihi Valley, taken between 1883-1905 (Hawai‘i State Archives)

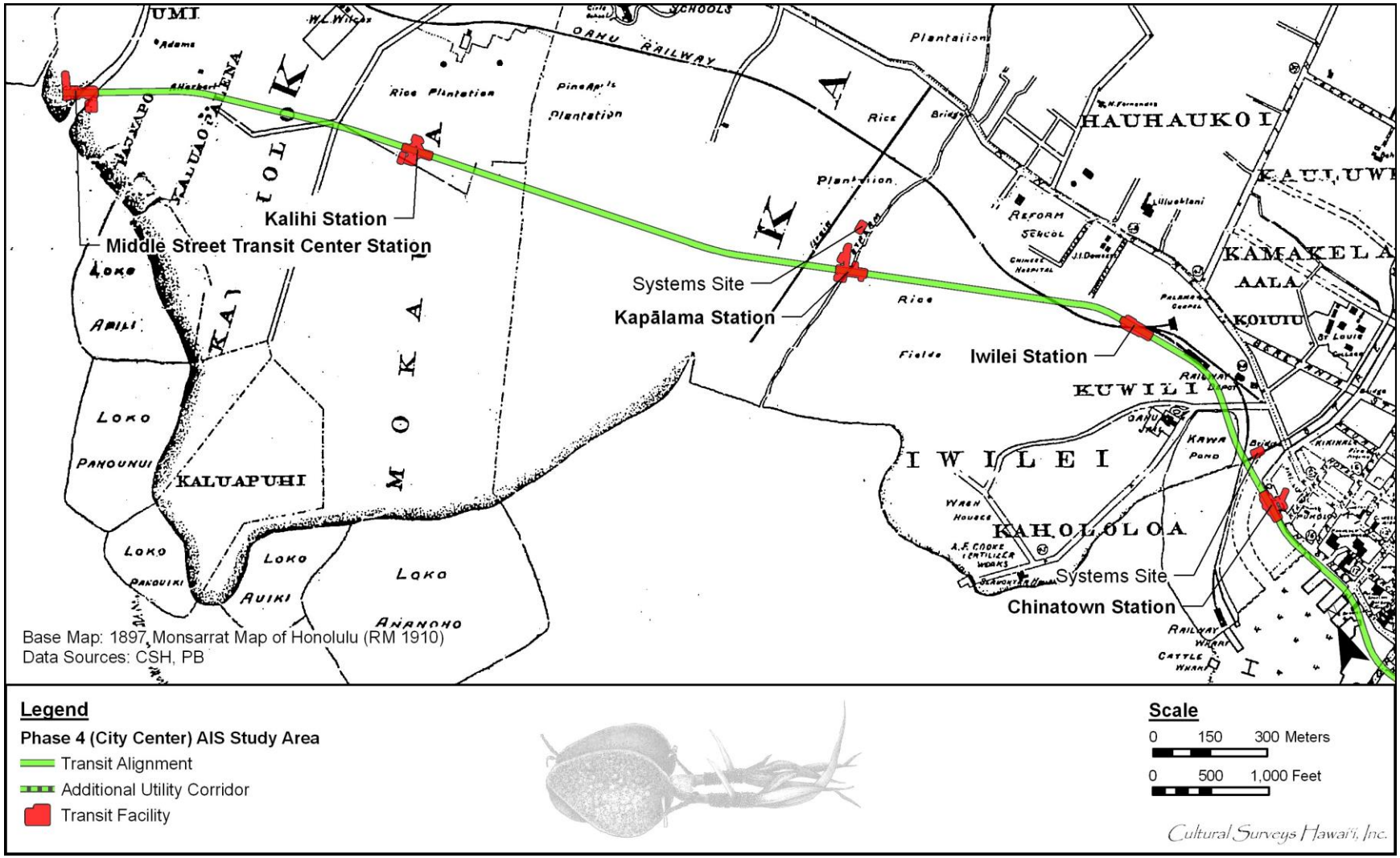


Figure 8. 1897 Map of Honolulu by M. D. Monsarrat (Reg. Map 1910), showing the location of the northwestern portion of the City Center project corridor and traditional Hawaiian fishponds (*loko*) in the vicinity

lands just Koko Head (east) of Kalihi Stream. The pattern of land award distribution shown in the LCAs implies that the traditional Hawaiian practice of maintaining residences dispersed within and throughout their agricultural fields continued in Kalihi at least until the minineteenth century.

Lands in Kalihi Kai, the area which encompasses the western end of the project corridor, were awarded to advisors to the Kamehameha line and members of royalty (*ali‘i*). This trend is reflected in the LCAs in the vicinity of the project alignment; land awards along the corridor between the Middle Street Transit Center and Kalihi Station consist of large parcels of land granted to *ali‘i* and to foreign advisors to the throne (Figure 9 and Table 1). Land use indicated in the LCA documentation consisted of *lo‘i*, *kula*, and fishponds (*loko*). Of note is the mention of *pō‘alima* (land worked for the *ali‘i*) within LCA 10498, further illustrating the presence of high-ranking government officials and *ali‘i* in this area.

LCA 6450 was awarded to Kaunuohua, a high-ranking female *ali‘i* of Hawai‘i Island, and the guardian of Kamehameha IV. Although she had many lands prior to the *Māhele*, or the division of lands in 1848, most of these were lost. The three exceptions were Pu‘ulena in Waikīkī, Mokauea in Kalihi, and Kalaupapa on Moloka‘i (Kame‘eleihiwa 1992:249).

Hewahewa, a descendant from the Paoa priestly class who served three of the Kamehameha line, was awarded the *‘ili* of Kaluapulu in Kalihi, which included fishponds at Kalihi Kai (Kamakau 1992; LCA 3237). A second *kahuna* (priest; expert) of the same Hewahewa line, Nahinu, was also awarded lands in Kalihi (LCA 10498) near the outlet of Kalihi Stream (Bushnell and Hammatt 2002:6). Nahinu also served as *konohiki* (foreman) for Kalihi Kai during the time of the Māhele (Landrum and Klieger 1991:22-23). Kamakau mentions the two *kahuna* as contemporaries skilled in diagnosis of illness:

> Boki returned and lived at his place at Beretania and devoted himself to medicine, in which he was proficient, and all those joined him who were skilled in placing pebbles [in diagnosis], such as Kaao, Kuauau, Kinopu, Kahiole, Nahinu, Kekaha, Hewahewa, and their followers and other kahunas besides [Kamakau 1992:291].

Apparently, *kahuna* were given lands near fresh water because it was important for them to practice their *ho‘oponopono* (spiritual consultations) there (Bushnell and Hammatt 2002:6).

Captain Alexander Adams (LCA 803) and George Beckley (LCA 818) were also awarded large parcels of land in Kalihi Kai. Adams befriended Kamehameha I, who made him the captain of his personal fleet of ships. In 1816, he sailed the *Kaahumanu* to Kaua‘i to expel the Russians from their forts on that island. In 1817, he sailed to Canton on the *Forrester* to sell a load of sandalwood for the king. During Kamehameha II’s reign, he encouraged the king to allow the first American missionaries to stay in the islands and helped design the Hawaiian flag, placing the Union Jack in one corner. In 1823, he became the first official pilot for Honolulu Harbor, a job he held for 30 years.

Beckley, like Adams, had served under Kamehameha I and II as a harbor pilot and as the commander of the Honolulu Fort from 1816. He died in 1826, but his heirs were awarded 70 acres. An interesting aspect of George Beckley’s land documents is the assertion in the *Foreign*

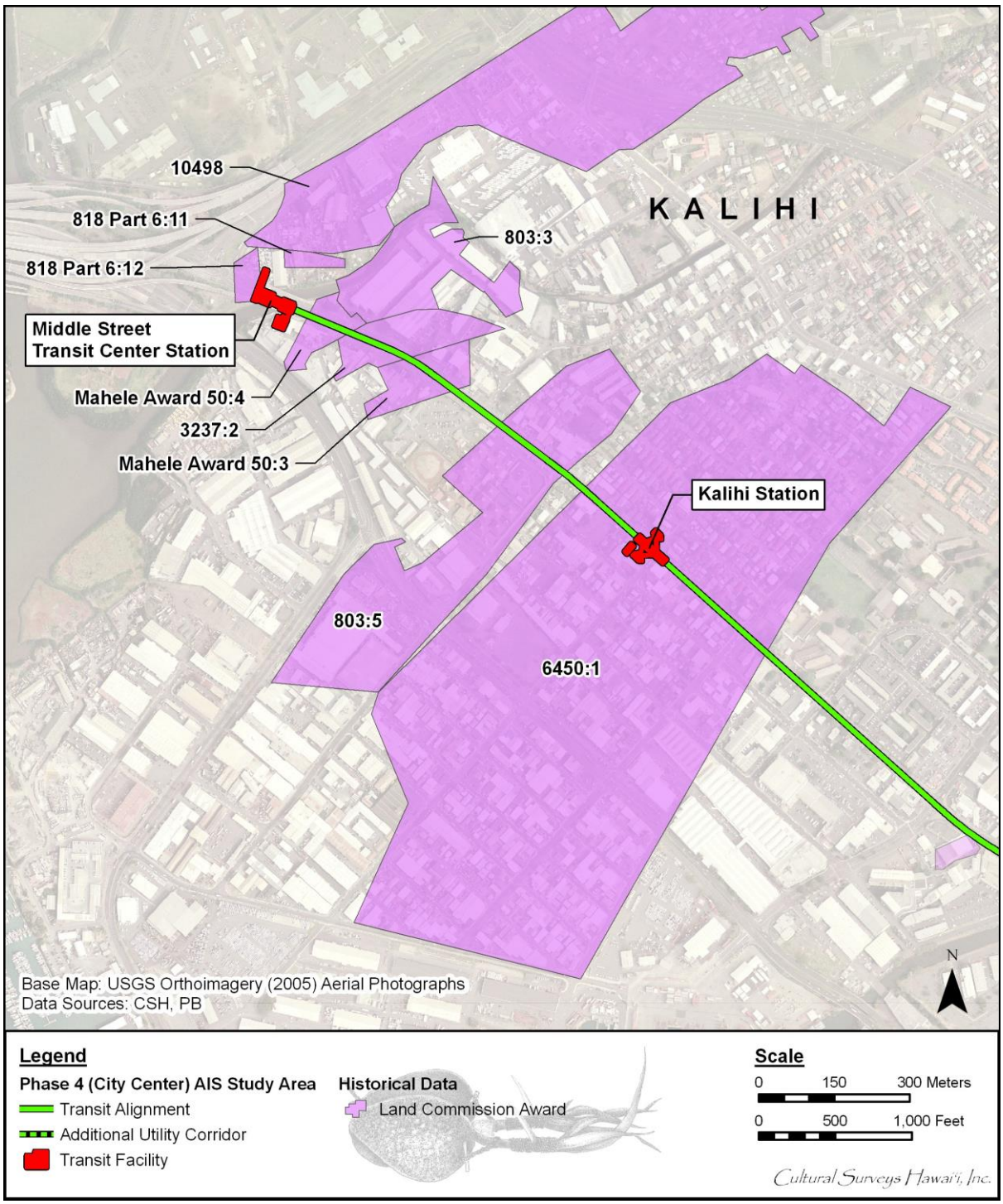


Figure 9. Aerial photograph (source: U.S. Geological Survey Orthoimagery 2005), showing the locations of Land Commission Awards (LCAs shown in purple shading) in Kalihi bisected by, or near, the City Center project corridor

Table 1. LCAs in Kalihi Bisected by, or Near, the Vicinity of the City Center Project Corridor (in numeric order)

LCA Number	Contents of Award
Māhele Aw. 50	*‘Ili* of Haunapo (approximately six acres) awarded to Laumaka
803	*Lo‘i*, pastures (*kula* land), and *loko* (fishpond) (292.41 acres). Awarded to Alexander Adams
818	One farm with the fishing grounds called Kaliheawa, situated in Kalihi. Awarded to George Beckley
3237	Lot awarded to Hewahewa. No description of land use in award
6450	‘*Ili* of Mokauea (737.76 acres) awarded to Kaunuohua. No description of land use in award
10498	Six *pō‘alima* [land worked for the *ali‘i*] *kalo* patches and one pasture. Awarded to Nahinu

Testimony for LCA No. 818 that "…I request my executor to have my body decently interred in the house I have commenced building…". It seems most likely that this was in reference to his "premises situated at Honolulu" and not to his Kalihi "farm."

2.2 Kapālama

2.2.1 Early Post-Contact Period

The *ahupua‘a* of Kapālama is between the *ahupua‘a* of Nu‘uanu to the east and Kalihi to the west. Although Kapālama is not a major river valley like Nu‘uanu or Kalihi, it is watered by two smaller streams, the Kapālama and Niuhelewai. The shore frontage (presently "Kapālama Basin") is part of the Honolulu Harbor protected shoreline. Kapālama Ahupua‘a offered desirable environmental conditions for traditional Hawaiian subsistence practices. The well-watered floodplain would have allowed for the development of an extensive *lo‘i* system, and the protected shoreline and fringing reef would have allowed for ease of ocean access to the productive near-shore fisheries. E. S. Craighill Handy, who gathered information on former planting areas from local informants in the 1930s and 1940s, reported the following:

> Kapalama had two streams watering its terrace area [for taro], which was almost continuous from Iwilei up to the foothills above School Street, an area measuring about three quarters of a mile both in depth inland and in breadth [Handy 1940:79].

The lower lands were used for taro cultivation; the uplands also had considerable resources. In the early nineteenth century, sandalwood trees were still present in the forests. These trees were extensively harvested between 1810 and 1830, as the fragrant wood could be sold to ship captains sailing to China to trade for exotic Asian goods.

Otto von Kotzebue's journal and map of Honolulu provide one of our earliest accounts of the environs of seaward Kapālama circa 1817. Kotzebue's 1817 map of Honolulu (see Figure 2), shows large taro fields (and trees) on both sides of the mouth of Kalihi and Nu‘uanu Streams extending to the coast. The path shown was probably the main trail and the route traveled by

Kotzebue himself. The 1817 map does not show any taro fields in Kapālama, but a later 1855 map by La Passe (Figure 10) does show extensive taro *lo‘i* (irrigated patches) in the *makai* section of Kapālama. La Passe’s map also shows two fishponds, Kūwili I and Kawa. These ponds are on the eastern side of Kapālama, but the land around it was considered part of Kūwili, an *‘ili* of Honolulu rather than Kapālama. Note that the project corridor traverses both of these fishponds.

Kūwili [Kūwili I] Pond is classified as a Type II pond (Kikuchi 1973), a *loko pu‘one* or *loko hakuone,* an isolated shore fishpond usually formed by the development of a barrier beach building a single, elongated sand ridge (*pu‘one* or *hakuone*) parallel to the coast. It was adjacent to Kawa Fishpond, a Type I pond, a *loko kuapā*, a fishpond of littoral water whose side or sides facing the sea consist of a stone or coral wall containing one or more sluice grates (Kikuchi 1973:227-228).

> Fishponds of Types I and II had the largest variety of fish as food resources. The most common ones were the fish called *āholehole* (*Kuhlia taeniura*, *Kuhlia sandwichensis*, etc.); mullet; tenpounder; milkfish, ‘*awa‘aua*; barracuda (*Sphryaena barracuda*), *kākū*, anchovy (*Anchoviella purpirea*), *nehu*, the fish identified by the Hawaiians as ‘*o‘opu*; and the eel, *puhi*. The uncommon fish were: amber fish (*Caranx mate*), *kahala*; goatfish (*Upeneus prophyreus*), *kūmū*, three surgeonfish called *manini*, *palani*, and *puwalu*; bonefish; parrot fish, and crevally (Kikuchi 1973:93).

In 1869, Samuel Kamakau described the *loko pu‘one:*

> The *pu‘one* ponds near the sea (*loko kai pu‘uone*) were much desired by farmers, and these ponds they stocked (*ho‘oholo*) with fish. *Pu‘uone* ponds were close to shore ponds, *loko kuapa*, or to the seashore, and next to the mouths (*nuku*) of streams. The farmer cleared away the *mokae* sedges, ‘*aka‘akai* bulrushes, and the weeds, and deepened the pond, piling up the muck on the sides, until he had a clean pond. Then he stocked it with *awa* fish. After two or three years the fish from the first gourd would have grown to a *ha‘ilima* (18inches) in length (Kamakau 1976:49).

Kamakau noted that there were often structures on or near the ponds, *hale kia‘i,* or guard houses, where the fishpond keepers would stay on certain nights to deter poachers.

> On the nights when the tide was high every *kia‘i* (keeper) slept by the *mākaha* (sluice gate) of which he had charge, and it was the *kia‘i loko* (keeper of the pond) custom to build small *hale kia‘i* from which to guard the fish from being stolen or from being killed by pigs and dogs (Kamakau 1976:48).

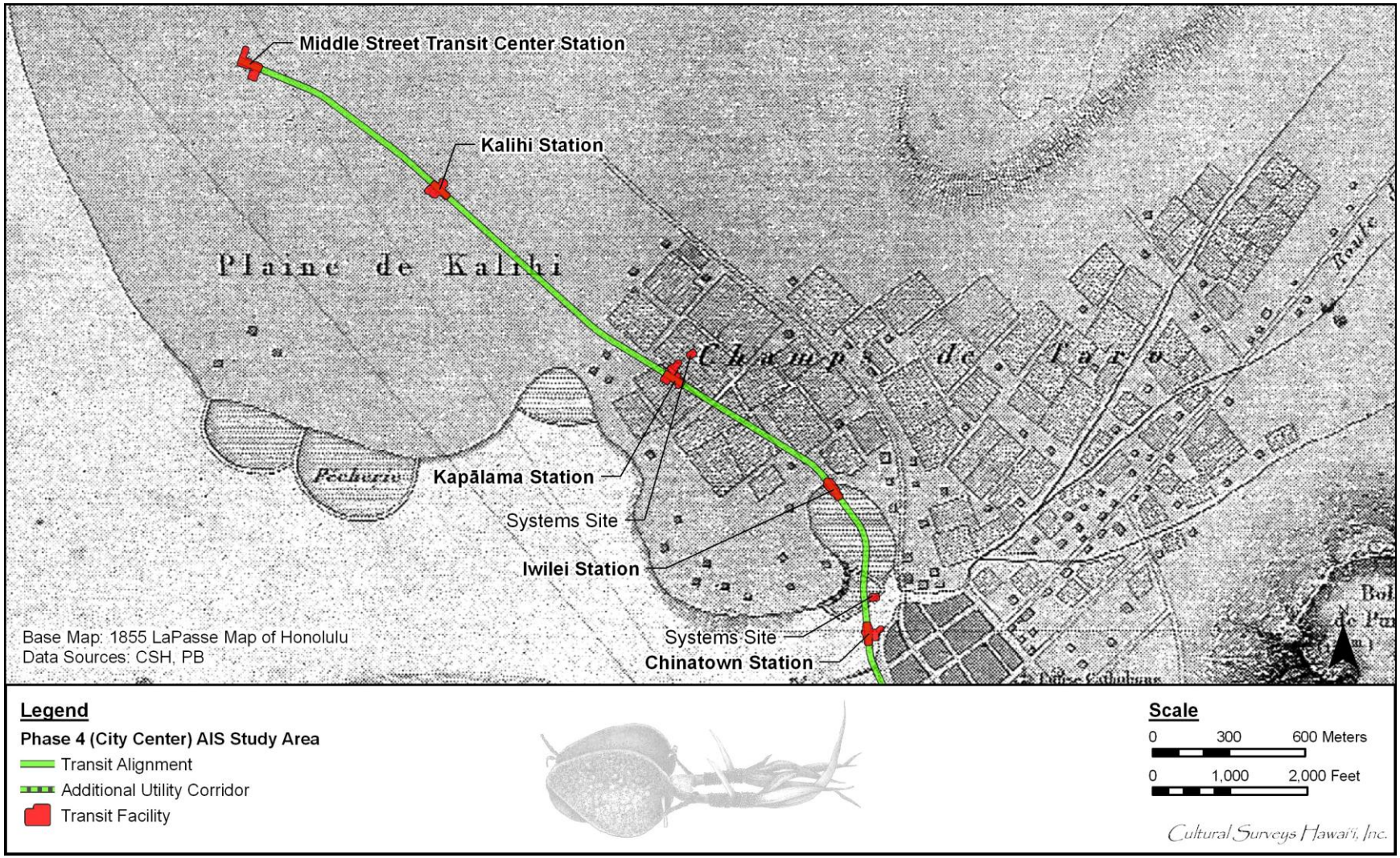


Figure 10. 1855 Map of Honolulu by Lt. Joseph de La Passe of the French vessel, *L`Eurydice* (map reprinted in Fitzpatrick 1986:82-83), showing *lo‘i*, habitations, and fishponds (including Kūwili and Kawa ponds between the Iwilei and Chinatown Stations) in the vicinity of the northwestern portion of the City Center project corridor

Robert Dampier’s ca. 1825 pencil sketch “Fishponds of Honoruru, Oahu” (Figure 11) documents a rather idyllic collection of grass huts scattered along the lower portions of Nu‘uanu Stream and along Honolulu Harbor. The fishponds depicted in the center foreground of the painting are in the right geographical position to be Kawa and Kūwili I fishponds. In 1828, the fishponds were described by a Dutch merchant:

> . . .we arrived at the beach and came upon a small hamlet of several scattered fishermen’s huts. The whole arrangement of the place seemed pleasant and cozy.
>
> Now we had to wade through the water and our horses along the banks of the fish ponds of the king of these islands, situated north of the port of Honoruru. These ponds are irregularly shaped basins enclosed by walls of stone from the coral banks. These walls have openings through which the fish can enter the pond, but not, I was assured, leave it again to seek their freedom in the sea. When we approached this part of our trip, it happened to be at low tide so it was very easy to step through the water with the horse. (Broëze 1988:69).

Kamehameha I, after the devastations to the population caused by the wars of conquest and a circa 1804 epidemic (called *oku‘u* or *ahulau*, this epidemic may have been Asiatic Cholera), encouraged people to replant the land and set aside several large tracts, including tracts in Kapālama, to grow crops for their own use and for trade with visiting ships. The Hawaiian historian, Samuel Kamakau, noted the following:

> After the pestilence had subsided the chiefs again took up farming, and Kamehameha cultivated land at Waikiki, Honolulu, and Kapalama, and fed the people. (Kamakau 1992:190)

Another early Hawaiian historian, John Papa ‘Ī‘ī, knew personally that:

> He [Kamehameha] also lived in Honolulu, where his farms at Kapālama, Keoneula, and other places became famous. These tasks Kamehameha tended to personally, and he participated in all the projects. (‘Ī‘ī 1959:69)

Rev. Hiram Bingham, arriving in Honolulu in 1820, described a predominantly native Hawaiian environment—still a “village”—on the brink of western-induced transformation:

> We can anchor in the roadstead abreast of Honolulu village, on the south side of the island, about 17 miles from the eastern extremity. . . . Passing through the irregular village of some thousands of inhabitants, whose grass thatched habitations were mostly small and mean, while some were more spacious, we walked about a mile northwardly to the opening of the valley of Pauoa, then turning south-easterly, ascending to the top of Punchbowl Hill, an extinguished crater, whose base bounds the north-east part of the village or town . . .

Figure 11. ca. 1825 pencil sketch “View of Saltwater Fish Ponds near Honoruru, Sandwich Islands,” by Robert Dampier, artist on the HMS *Blonde* shows fishponds in the foreground that are probably Kawa and Kūwili I ponds (original at Bernice Pauahi Bishop Museum; reprinted in Forbes 1992:76).

> Below us, on the south and west, spread the plain of Honolulu, having its fish-ponds and salt making pools along the sea-shore, the village and fort between us and the harbor, and the valley stretching a few miles north into the interior, which presented its scattered habitations and numerous beds of kalo (arum esculentum) in its various stages of growth, with its large green leaves, beautifully embossed on the silvery water, in which it flourishes. (Bingham 1981:92-93)

2.2.2 Mi1800s and the Māhele

In the 1790s, after Kamehameha had conquered O‘ahu, Kapālama is specifically mentioned, along with Nu‘uanu, Mānoa, and Waikīkī, as having been “farmed” by Kamehameha. The desirability of Kapālama Ahupua‘a is evidenced in that Kamehameha “kept of himself” the *ahupua‘a* during the post-1795 division of O‘ahu lands (Kame‘eleihiwa 1992:59). Kapālama remained with the Kamehameha Dynasty through his grandchildren Moses Kekūāiwa, Victoria Kamāmalu, and Lot Kamehameha, eventually becoming part of the Bernice Pauahi Bishop Estate.

At the minineteenth century Māhele, the *ahupua‘a* of Kapālama, along with many other lands in the islands, was awarded as part of LCA 7714-B to Moses Kekūāiwa, son of Kekūanao‘a and Kīna‘u, the latter who had earlier been married to Kamehameha I. The land passed down in turn to his sister Victoria Kamāmalu, to her brother Lot Kamehameha, to his half-sister Ruth Ke‘elikōlani, and then to her first cousin, Bernice Pauahi Bishop. The will of Mrs. Bishop set many of her lands aside as a trust to provide financial aid to educational and charitable institutions, including the founding of Kamehameha Schools to educate Hawaiian youth (Mitchell 1993:9).

Of note is the documentation for LCA 1723B:1, located just *mauka* of the project corridor, which mentions the presence of two brick tombs. It appears most likely the tombs were in the larger, most *mauka* of John Neddles’ two parcels (that named “Pulehu”), which is not contiguous with Dillingham Boulevard and the project corridor.

Also of note is the documentation for LCA 3142, located just *makai* of the project corridor, which mentions the presence of a sand dune (a potential location for human burials).

Subsequent to the Māhele award for the bulk of the *ahupua‘a*, individual *kuleana* (commoner) lots were awarded pursuant to the 1850s Kuleana Act. The first detailed map of Kapālama, made by J. F. Brown in 1885, shows a traditional Hawaiian landscape of small *kuleana* LCA parcels extending across the Kapālama plain (Figure 12 and Figure 13). This area was clearly intensively used for both permanent habitation and agriculture. Minineteenth century Māhele documents identify these *kuleana* parcels as comprising house sites and irrigated taro fields. The map also indicates large areas set aside for rice fields near the central ‘*auwai* in land managed by the *konohiki* (land agent for the *ali‘i*; in this case, Moses Kekūāiwa).

The LCA testimony for Kapālama in the vicinity of the project corridor (Table 2) indicates that there was intensive cultivation of taro in the area, maintenance of fishponds, habitation, and some indication of the use of the *kula* (pasture, plain or open country). The *kuleana* to Hawaiian *maka‘āinana* were located on the floodplain to the east of Waiakamilo/Houghtailing Street and included house and *lo‘i* (pond fields) for the cultivation of *kalo* (taro). Roughly 100 *kuleana* lots were awarded in Kapālama. The claimants were generally awarded one to six separate ‘*āpana*

(lots), sometimes contiguous or in the same ‘*ili*, but also sometimes scattered through several ‘*ili*. LCA documentation notes the presence of house sites, irrigated taro fields (*lo‘i*), and aquaculture via fishponds in the immediate vicinity. The pattern of lanaward distribution shown in the LCAs infers that the traditional Hawaiian practice of maintaining residences dispersed within and throughout their agricultural fields continued in Kapālama at least until the minineteenth century.

One interesting *‘ili* name listed in the LCAs is “Pelekane,” meaning “British” or “Britannia,” which is located along the entire *makai* boundary of the *ahupua‘a* and mentioned in LCA 1222, located immediately *mauka* of the project corridor. Pukui et al. (1974:183) say that Pelekane was the nickname of Captain James Isaac Dowsett, who was a playmate of Kamehameha III, Kamehameha IV, and Lunalilo. He was the son of Samuel Dowsett, an English sea captain who came to the islands in 1822, when he helped deliver the vessel *King Regent* to Kamehameha I, which had been promised to the king by George Vancouver. As an adult, James Dowsett ran a fleet of whaling vessels based in Hawai‘i and also became involved in the lumber, steamer, and ranch businesses, eventually owning the large ‘Ulupalakua Ranch on Maui (Day 1984:37). While Dowsett was not listed as a claimant in the LCA testimony, the Pelekane ‘*ili* name may instead have been used to note that there were early residents of English/Scottish descent in Kapālama. These include William Harbottle, awarded LCA 2937, and George Pelly, awarded LCA 6. William Harbottle was the son of John Harbottle, a Scottish sea captain who came to Hawai‘i in 1794, married the Hawaiian chiefess Papapaupu, fathered 15 children, and worked as a Honolulu harbor pilot. T. George Pelly was a cousin to the British governor of Canada and an early agent for the Hudson Bay Company, based in Hawai‘i at Honolulu Harbor.

2.2.3 Nineteenth Century

An 1881 map of O‘ahu (Figure 14) by the Hawaiian Government Survey shows the entire Kapālama Ahupua‘a. Only one road was mapped, the main road parallel to the coast that would become King Street. The only prominent structures noted were the O‘ahu Prison (Figure 15), built in Iwilei, and the Insane Asylum on the eastern boundary of Kapālama.

2.2.3.1 The O‘ahu Prison

The O‘ahu Prison (previously located just south of the proposed Iwilei Station) was completed in 1857. It was built on a small island off the Iwilei mainland. Because the prison was built from cut coral blocks, it became known as “The Reef.” The central building was a dwelling for the overseer and guards and was flanked by two two-story wings housing 32 cells in each wing. Also constructed was a new road between Kūwili I and Kawa fishponds, which connected the prison to North King Street. The new road, a causeway between the two fishponds, is first identified on other contemporary maps as simply “Prison Road.” However, by the end of the nineteenth century, maps identified it as Iwilei Street. Mark Twain visited the prison in 1866 and wrote:

> . . .we presently arrived at a massive coral edifice which I took for a fortress at first, but found out directly that it was the government prison. A soldier at the

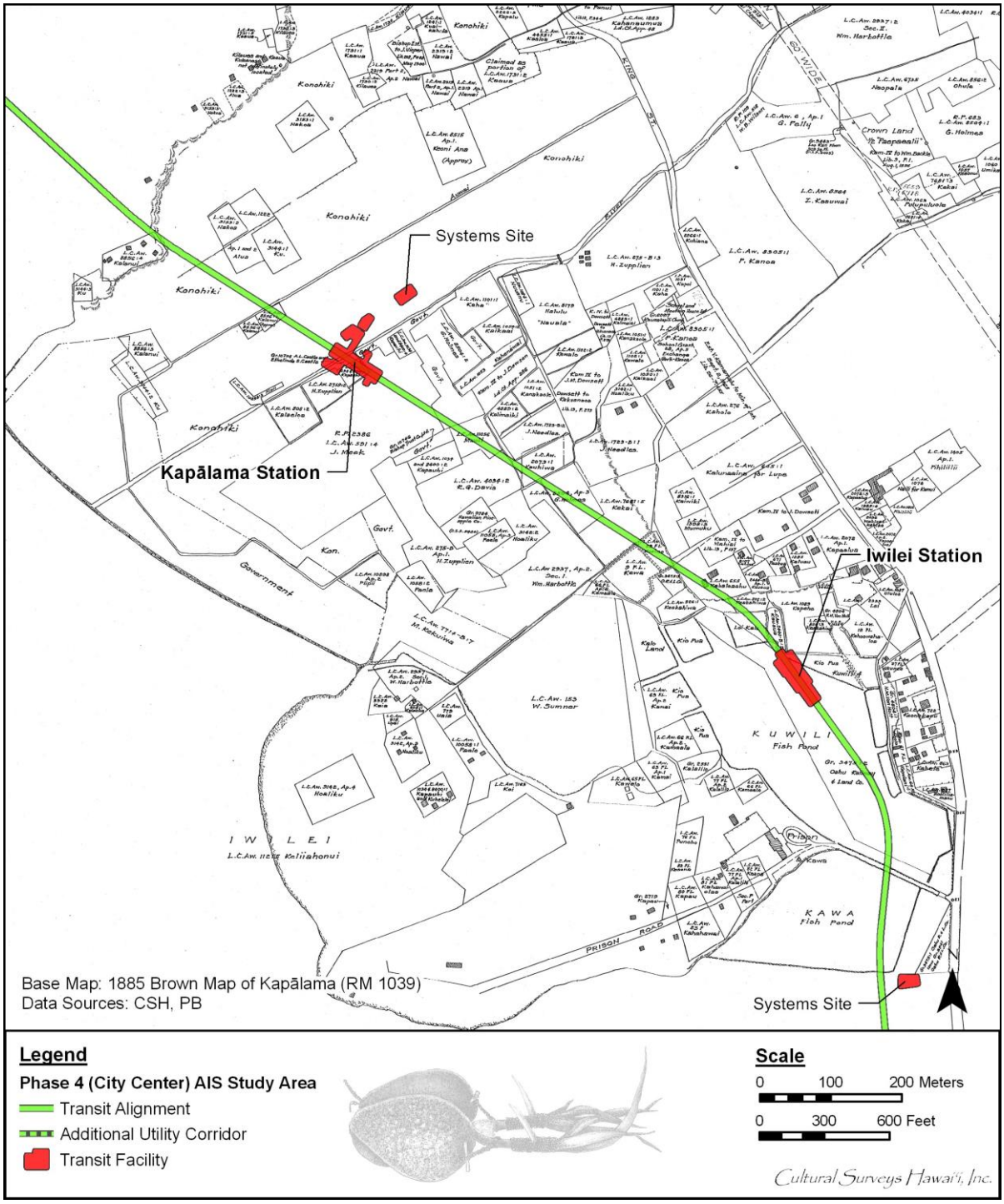


Figure 12. This 1885 map of Kalihi and Kapālama, *makai* sections, by J.F. Brown shows a traditional Hawaiian landscape of small *kuleana* LCA parcels extending across the Kapālama plain near the City Center project corridor. Note that much of the Iwilei Station and HRTP alignment to the southeast is located in the former Kūwili Fishpond.

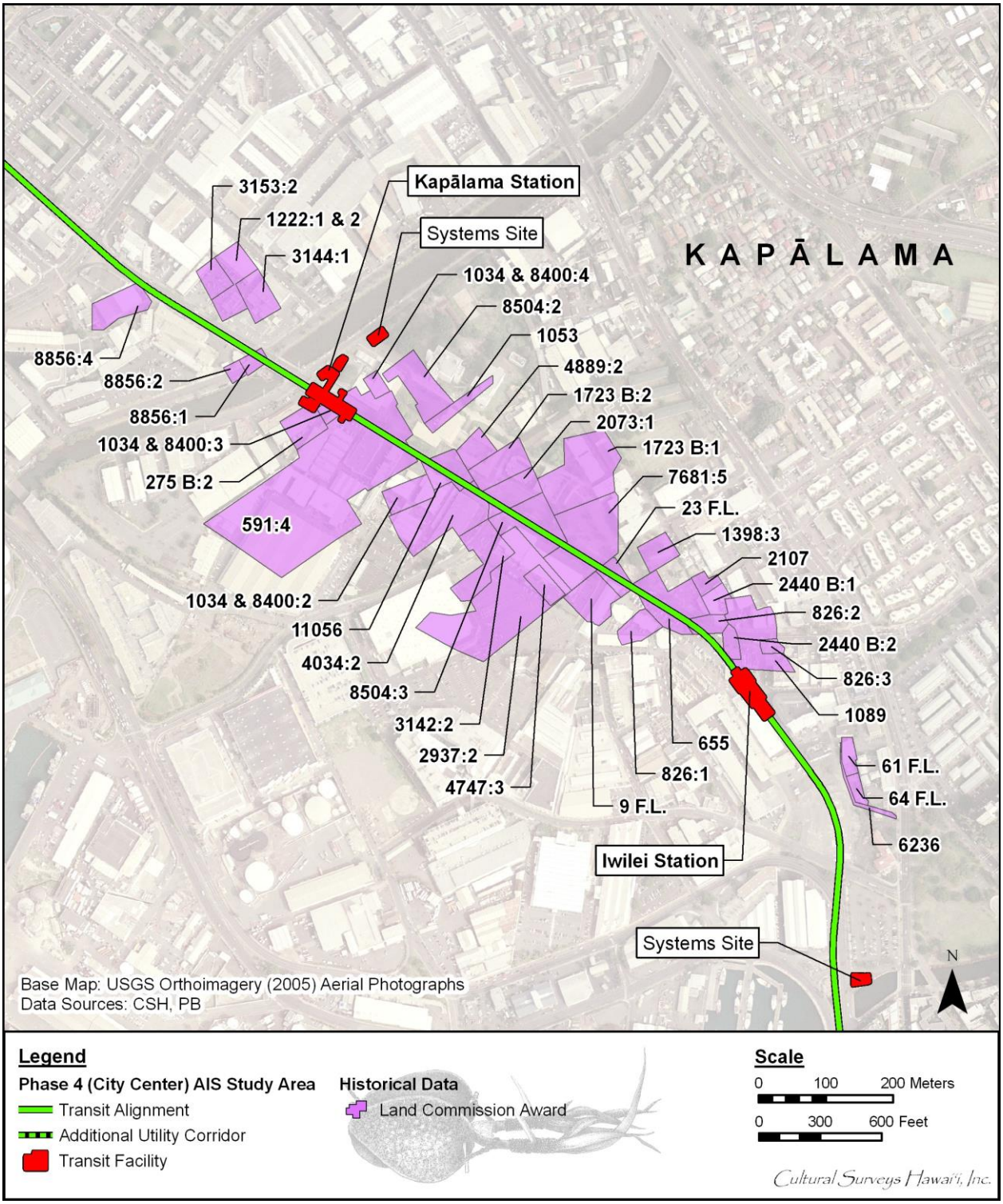


Figure 13. Aerial photograph (source: U.S. Geological Survey Orthoimagery 2005), showing the locations of Land Commission Awards (LCAs) in Kapālama bisected by, or near, the City Center project corridor

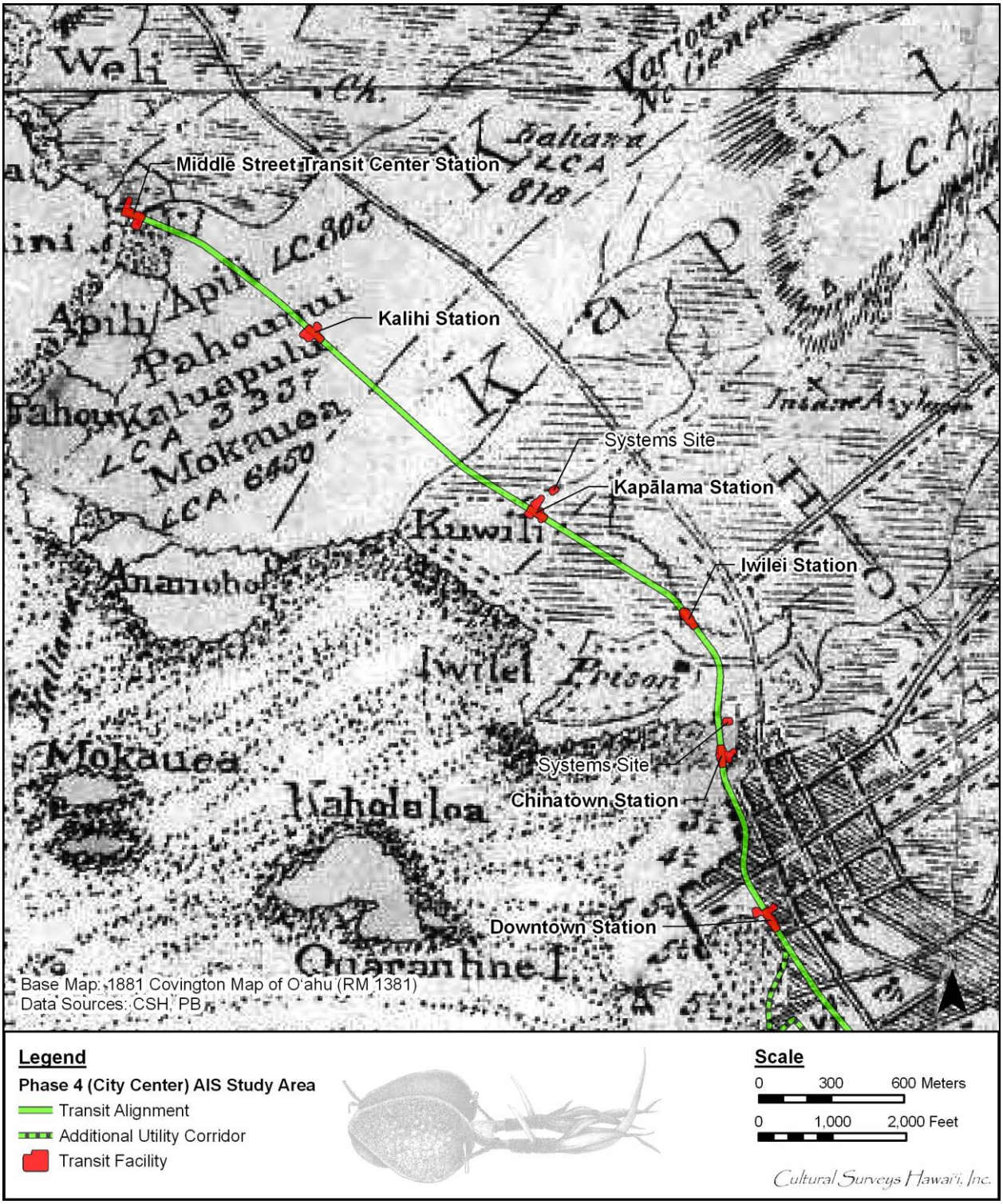


Figure 14. This 1881 map of O‘ahu by the Hawaiian Government Survey shows that much of the vicinity of the Chinatown Station was still offshore in 1881

Table 2. LCAs in Kāpalama, Bisected by, or Near, the Project Corridor (in numeric order)

LCA Number	Contents of Award
9 FL	[East of Kapālama Canal] Fort Lands, two *lo‘i* to Kewa
23 FL	[East of Kapālama Canal] Fort Lands, one house lot (one house), five *lo‘i*, and one hog sty to Moeino
61 FL	[East of Kapālama Canal] one house lot
64 FL	[East of Kapālama Canal] Fort Lands, one house lot, and one *lo‘i* to Kapulani
275 B	[East of Kapālama Canal] 19 or more taro patches at Poe Poe belonging to Henry Zupplein
591	[East of Kapālama Canal] (9.58 acre) lot to John Meek
655	[East of Kapālama Canal] one house lot (three houses) to John Kahaleaahu
826	[East of Kapālama Canal] two *lo‘i* to Keakahiwa
1034 and 8400:2, 8400:3, and 8400:4	[East of Kapālama Canal] three *lo‘i* to Kuhelelei
1053	[East of Kapālama Canal] three *lo‘i* and an ‘*auwai* at Nauala to Kanahenawai
1089	[East of Kapālama Canal] one house lot (one house) and eight taro patches (*lo‘i*) at Kealia to Kapehe
1222	[West of Kapālama Canal] one house lot, five *lo‘i*, and two coconut trees. Pelekane ‘*ili*; awarded to Alua; also notes the presence of an ‘*auwai* and stream
1398	[East of Kapālama Canal] three *lo‘i* and two ‘*auwai* to Mumuku
1723 B:1 and 1723 B:2	[East of Kapālama Canal] one house lot (two houses, two tombs), three *lo‘i* to John Neddles
2073	[East of Kapālama Canal] 5½ *lo‘i* to Kauhiwa
2107	[East of Kapālama Canal] one house lot (one house) and eight *lo‘i* to Kahina
2440 B:1 and 2440 B:2	[East of Kapālama Canal] two house lots (one house on each), one *lo‘i*, and one sand pond to Kauaua
2937	[East of Kapālama Canal] one pasture (*kula* land) with taro to William Harbottle
3142	[East of Kapālama Canal] one house lot, two *lo‘i*, and one sand dune to Hooliku
3144	[West of Kapālama Canal] one house lot and two *lo‘i*; awarded to Noah; also notes the presence of a fishpond
3153	[West of Kapālama Canal] one house lot and three *lo‘i*. Kahope ‘*ili*. Awarded to Nakoa. Also notes the presence of an ‘*auwai* and stream
4034	[East of Kapālama Canal] one *lo‘i* to Robert G. Davis

LCA Number	Contents of Award
4747	[East of Kapālama Canal] one house lot (two houses), five *lo‘i* to Kama
4889	[East of Kapālama Canal] one house lot, four *lo‘i* to Kalimaiki
6236	[East of Kapālama Canal] six house lots to Kaaiawaawa
7681	[East of Kapālama Canal] ½ of Kaukahoku *ili* (four acres) to Kekai
8504	[East of Kapālama Canal] 11 *lo‘i*, one fish pond to George Holmes
8856	[West of Kapālama Canal] one house lot and three *lo‘i*; awarded to Kalanui
11056	[East of Kapālama Canal] four *lo‘i* at Kaukahoku to Mauli

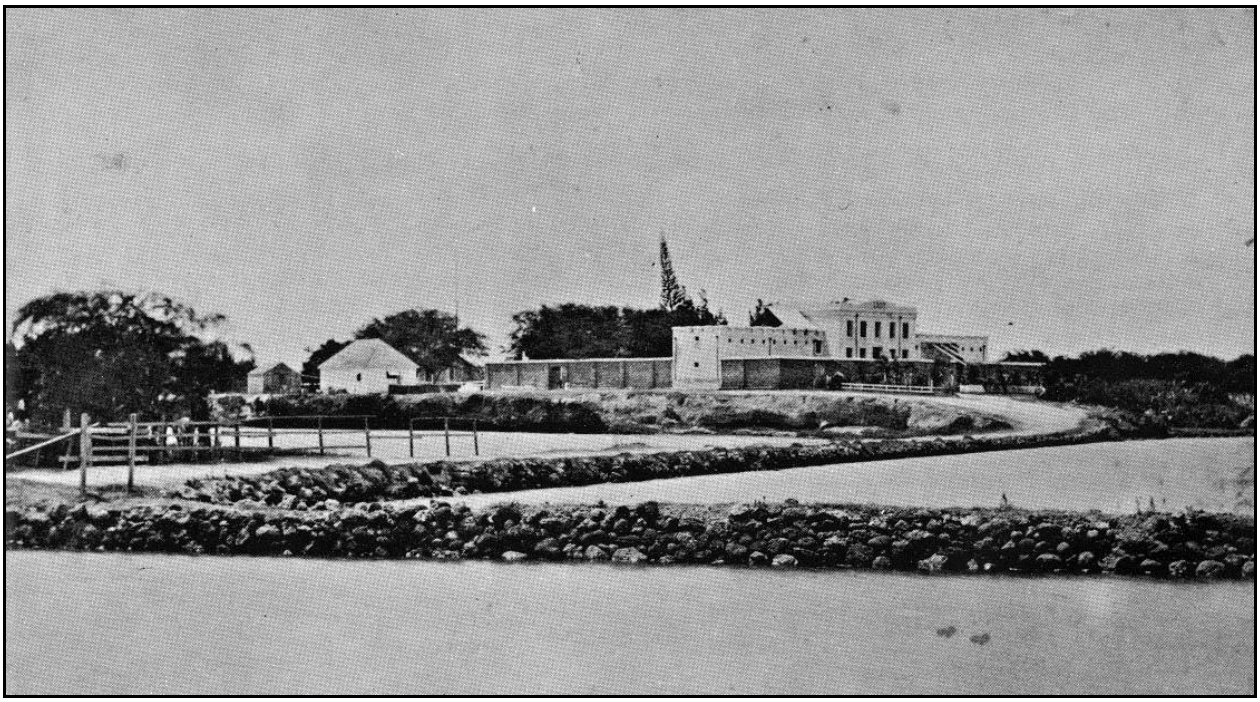


Figure 15. ca. 1866 photograph of O‘ahu Prison (Bishop Museum photograph; reprinted in Scott 1968:855)

> great gate admitted us without further authority than my countenance, and I supposed he thought he was paying me a handsome compliment when he did so; and so did I until I reflected that the place was a penitentiary. (Twain 1966:71-72)

2.2.4 Twentieth-Century Development (Kalihi and Kapālama)

In the twentieth century, the coastal and central sections of Kalihi and Kapālama became a suburb of Honolulu. Seaward of the valleys, these lands were often grouped together as Kalihi-Kapālama or Kalihi-Pālama. Thus the twentieth-century developments of these two *ahupua‘a* will be discussed together. Historic maps document the traditional Hawaiian landscape of Kalihi-Kapālama and development in the vicinity of the project corridor in the twentieth century.

An 1897 map of Honolulu by M. D. Monsarrat (see Figure 8) shows that King Street is the main east-west thoroughfare through the area, paralleled by the tracks of the Oahu Railway and Land Company railroad, both located *mauka* of the current project corridor. The fishponds on the Kalihi Coast are still in use, but the area inland has been converted from taro fields to rice fields.

A noteworthy aspect of the map specific to the Kalihi-Kapālama portion of the project corridor is that a majority of the area is still rural. Most of this area is shown to be cultivated with either rice or pineapple. Both the proposed Middle Street and Kapālama Station locations are bisected by streams, Kalihi Stream and Niuhelewai Stream, respectively. Niuhelewai Stream is of particular interest, as it is mentioned as the site where the Maui Chief Kahekili defeated Kahāhana of O‘ahu (Alexander 1891:123). Niuhelewai Stream is noted as being “choked up with the corpses of the slain” (Alexander 1891:123).

The 1919 U.S. Army War Department Fire Control map, Honolulu Quadrangle, shows major development within the Kalihi-Kapālama area (Figure 16). By this time, an extensive grid of roads and structures is present throughout the Kalihi-Kapālama portion of the project area with just a small portion between the Kalihi and Kapālama Stations remaining un-urbanized. Also of note is the addition of a new section of Oahu Railway and Land Company railroad track located primarily *makai* of the Kalihi-Kapālama portion of the project corridor, but shown crossing the project corridor at the southeastern edge of the proposed Middle Street Station location.

The 1919 U.S. Army War Department Fire Control map also shows a large square structure labeled as a “jail” located *makai* of the project corridor between the Middle Street and Kalihi Station locations. This represents the new location of the O‘ahu Prison, originally located in Iwilei and then relocated in Kalihi and renamed O‘ahu Jail between 1916 and 1918 (Figure 16 and Figure 17). This area is now occupied by the O‘ahu Community Correctional Facility. A visitor in 1921 was impressed with its “library with more than 1,000 books, a cheery visitors' room and well-kept cells and dormitories. . . . Indeed, one of the most vivid impressions one gets is that of brightness, airiness and spotless cleanliness: how different from the noisome, dank penal institutions of a generation or so back” (Bolante 1921).

The 1933 U.S. Army War Department Fire Control map, Honolulu Quadrangle, shows an expansion of the grid of streets that first appeared in the 1919 U.S. Army War Department Fire Control map (Figure 18). The number of structures located along the grid of streets has increased. Also, the present road alignment known as Dillingham Boulevard is now shown to be completely constructed.

The 1943 U.S. Army War Department Terrain map (Figure 19), Honolulu Quadrangle, shows little change in the Kalihi-Kapālama area from what was shown on the 1933 U.S. Army War Department Fire Control map. However, by the 1950s, all of the Kalihi-Kapālama area fishponds have been filled in, associated with intensive urban/industrial expansion into the coastal portions of the area (Figure 20). This trend appears to continue into the 1970s, as a 1978 U.S. Geological Survey orthophoto shows urban/industrial development up to the edge of the existing coastline, with streets and structures covering virtually the entire Kalihi-Kapālama area (Figure 21).

2.3 Honolulu

2.3.1 Early Post-Contact

A major factor for the delay in the development of Honolulu as a major population center and port was the relatively late discovery of Honolulu Harbor, attributed to Captain William Brown in early 1793. Additionally, foreigners were wary of landing at O‘ahu due to the fear of attack and the difficulty of getting water and food, particularly yams (Portlock 1968).

Another factor deterring foreigners from O‘ahu was the island’s political instability. The ruling chief Peleiōhōlani died around 1780, and his heir, Kumuhana, was almost immediately deposed in a *coup d’etat*. A period of political unrest followed that included the successful invasion by Kahekili of Maui in 1783, the bloody crushing of the O‘ahu rebellion in 1786, the invasion by the Kaua‘i ruler, Ka‘eokūlani in 1791, the passing of the rule following Kahekili’s death in 1794 to Kalanikūpule, and finally, his defeat by Kamehameha I in 1795 (Alexander 1891). These events all contributed to the island’s instability and delayed the development of Honolulu as a major port. Honolulu’s prominence had to await the peace established by Kamehameha I and his encouragement of trade there. Kamehameha defeated Kalanikūpule at the battle of Nu‘uanu in 1795 and, in 1809, moved his court, government, and residence from Waikīkī to Honolulu.

Kamehameha I was known to have taken a special interest in farming and would work in the fields alongside the *maka‘āinana* to demonstrate the importance of agriculture. Crops such as yams were developed under Kamehameha and were often sold to the captains of foreign ships in need of provisions at Honolulu Harbor (Dockall 2003:43). John Papa ‘Ī‘ī recalls the fields of Kamehameha in Nu‘uanu, and refers to the places where Kamehameha farmed and resided as “show places” (‘Ī‘ī 1959: 69).

Francisco de Paula Marin, a Spaniard who arrived in the Hawaiian Islands in 1793 or 1794 and had become a confidante of Kamehameha, recorded in his journal, “In the end of 1809 and beginning of 1810 I was employed building a stone house for the King” (Gast and Conrad 1973:200). This was the first stone structure in Honolulu, a town that, according to Marin, was:

> …[by 1810] a village of several hundred native dwellings centered around the grass houses of Kamehameha on Pākākā Point near the foot of what is now Fort Street. Of the sixty white residents on Oahu, nearly all lived in the village, and many were in the service of the king. (Gast and Conrad 1973:29)

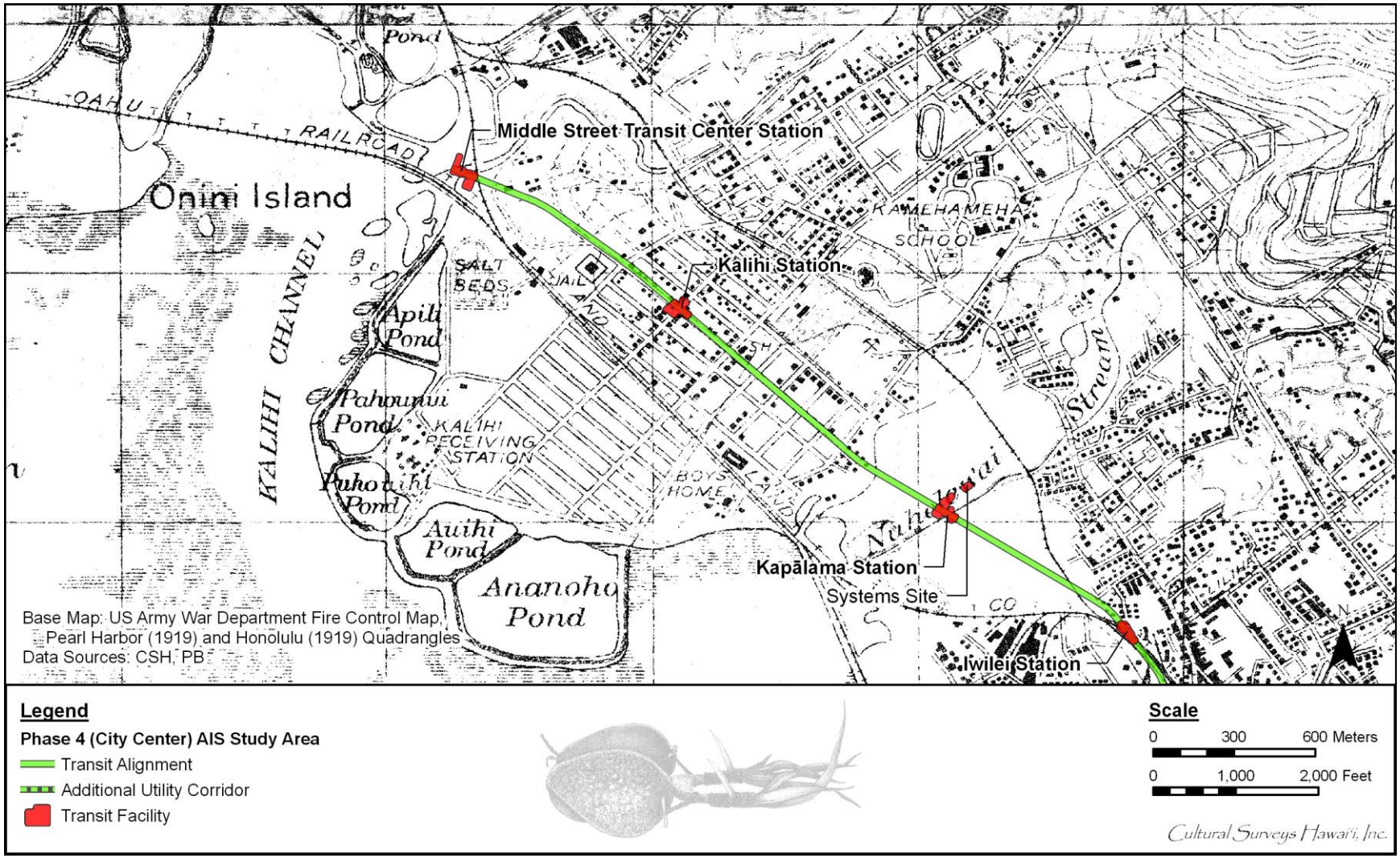


Figure 16. 1919 U.S. Army War Department Fire Control map, Pearl Harbor and Honolulu Quadrangles, showing the Kalihi-Kapālama portion of the City Center project corridor

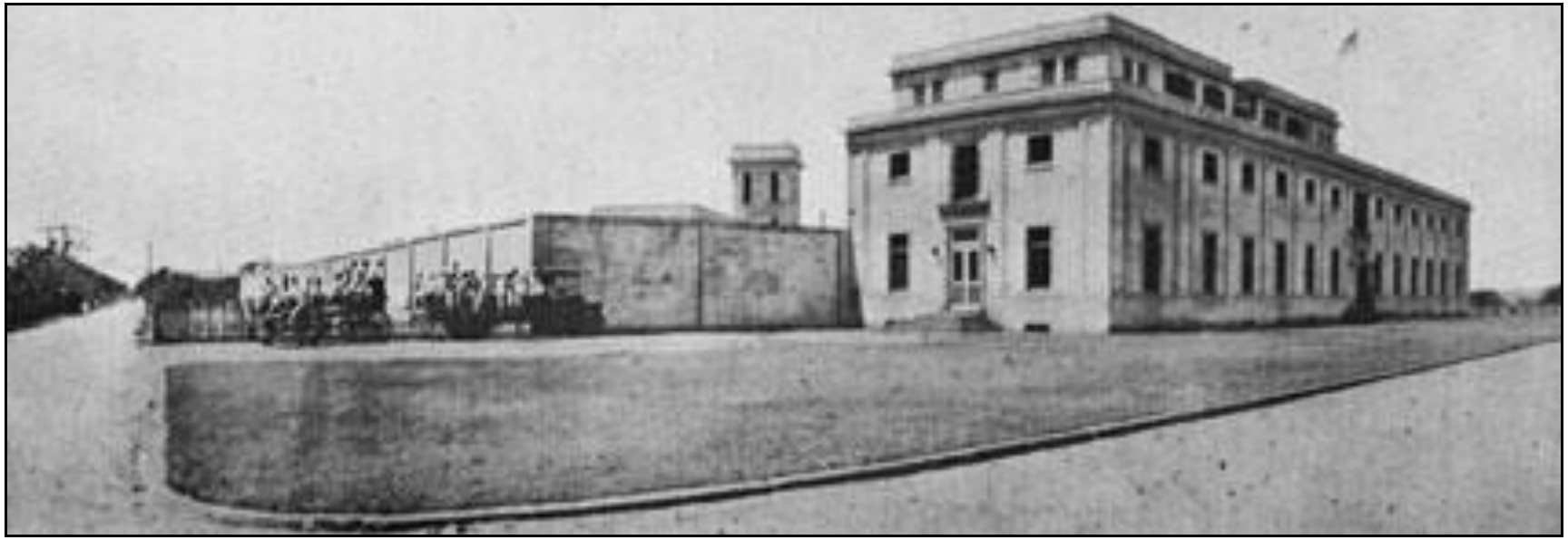


Figure 17. O‘ahu Jail at Kalihi ca. 1921 – photo from the May 1921 issue of *Paradise of the Pacific*, reprinted by *Honolulu Magazine* (*Honolulu Magazine* 2006)

Figure 18. 1933 U.S. Army War Department Fire Control map, Honolulu Quadrangle, showing the Kalihi-Kapālama portion of the City Center project corridor

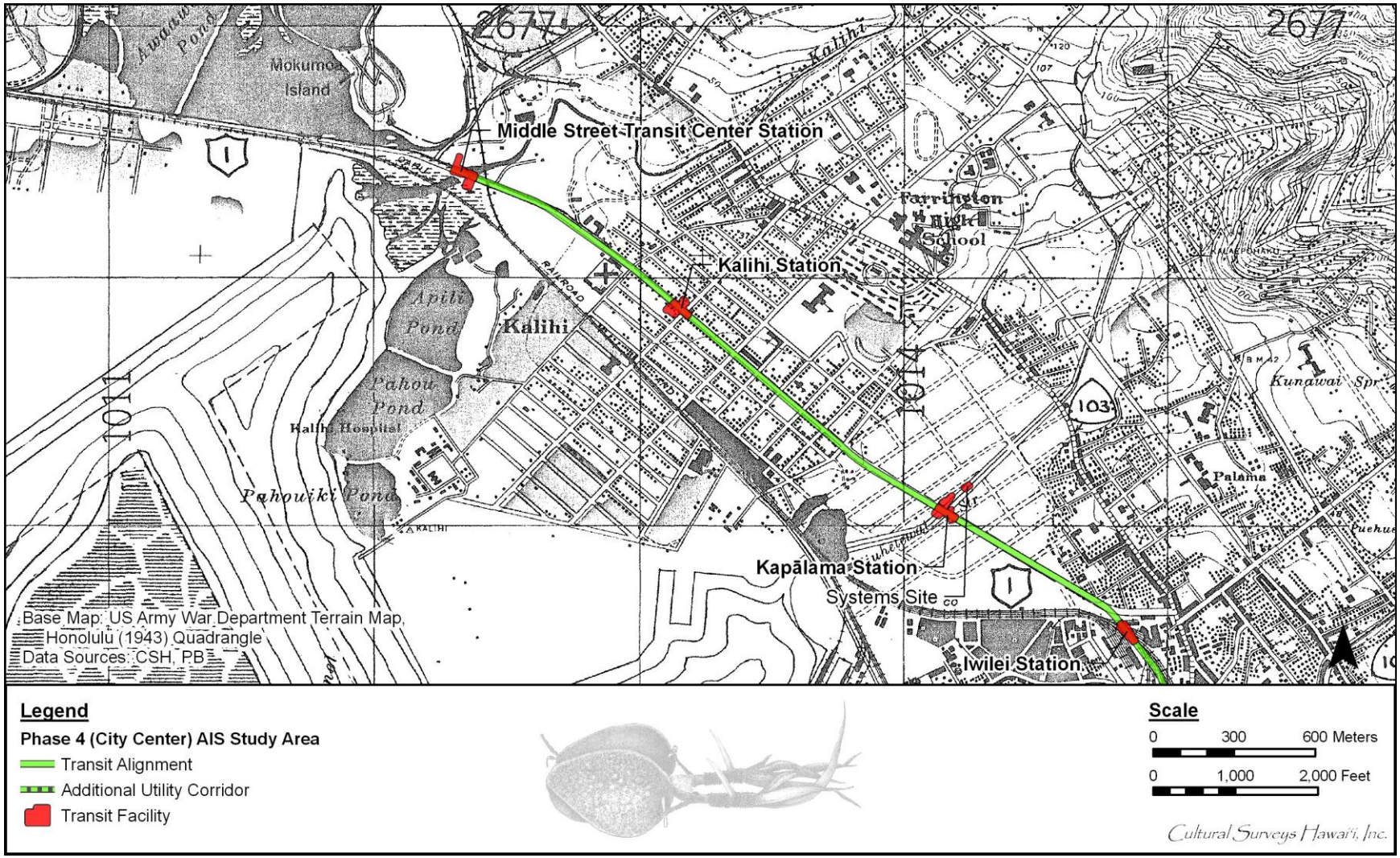


Figure 19. 1943 U.S. Army War Department Terrain map, Honolulu Quadrangle, showing the Kalihi-Kapālama portion of the City Center project corridor

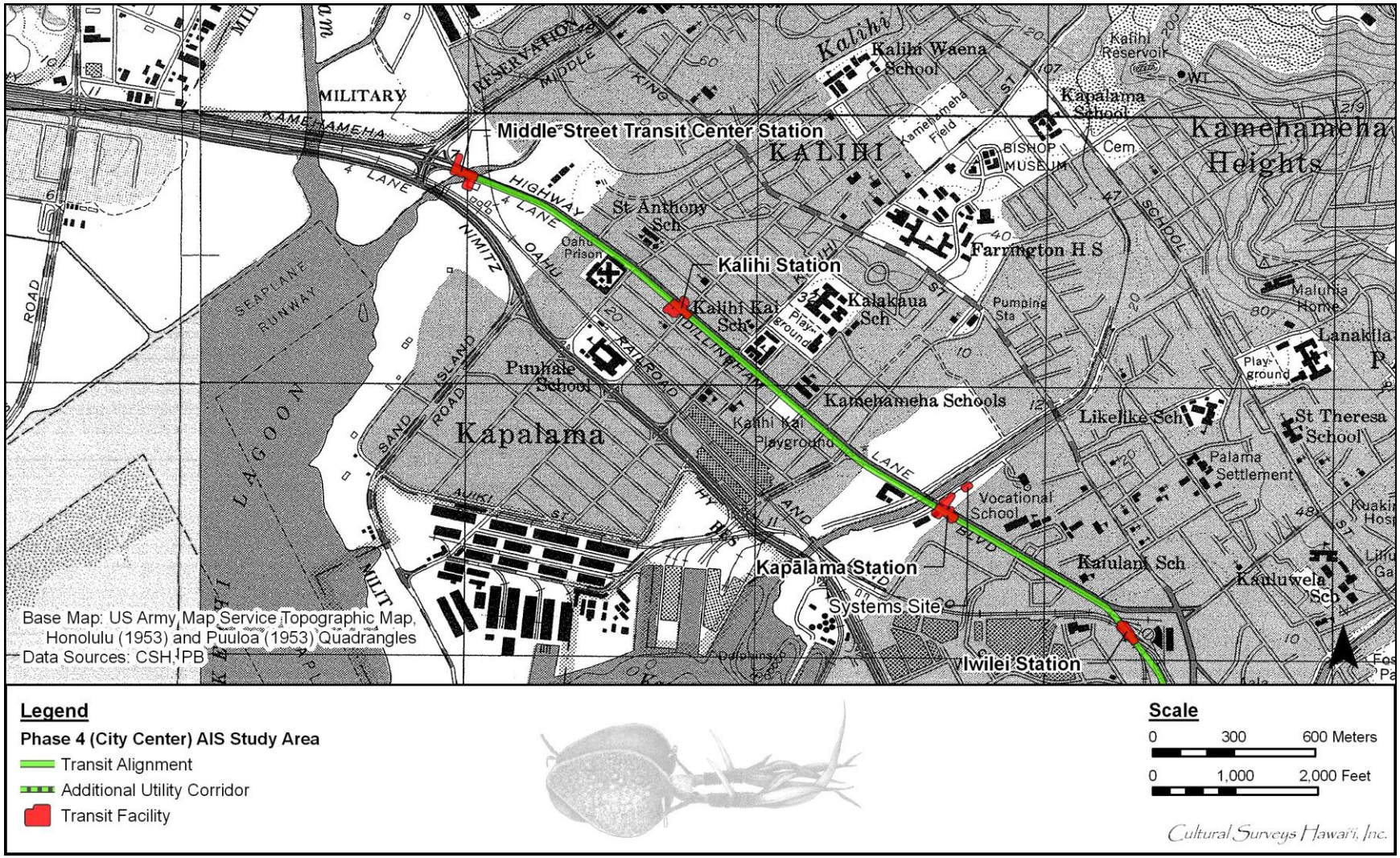


Figure 20. 1953 U.S Army Mapping Service topographic map, Honolulu and Puuloa Quadrangles, showing the Kalihi-Kapālama portion of the City Center project corridor

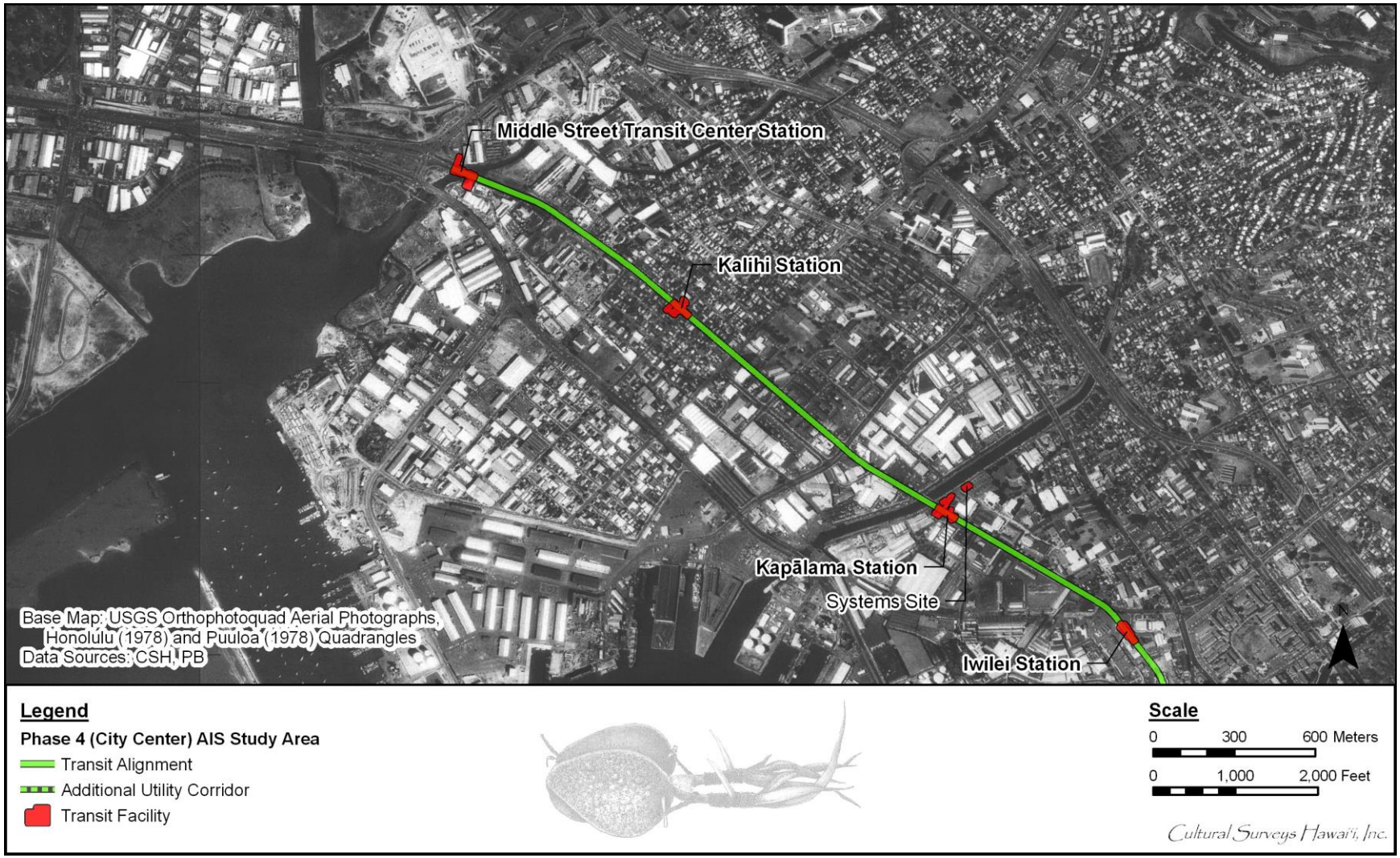


Figure 21. 1978 U.S. Geological Survey Orthophotoquad aerial photographs, Honolulu and Puuloa Quadrangles, showing the Kalihi-Kapālama portion of the City Center project corridor

It is unclear whether Kamehameha himself ever resided in the completed house, as in 1810 he returned to Hawai‘i island where he lived the remainder of his life, traveling intermittently back to O‘ahu. Building in Honolulu, however, continued apace with Marin and other foreign residents building their own stone houses and buildings during the ensuing decade.

2.3.2 1800 to 1850: Honolulu in Transition

A visitor to Honolulu in 1819 notes the expanding western presence within the traditional Hawaiian landscape writes:

> The port of Onorourou, generally frequented today by all the European vessels that come to the islands, is without doubt the most favorable location with respect to shelter, commerce, and resources for the supply of ships. The town of Onorourou is located on a large, flat plain. It is on the shores of a bay of the same name. The houses, similar to the most part to those of Owhyhi [Hawai‘i] and of Mowi [Maui], are however interspersed with a certain number of houses built of stone that belong for the most part to Europeans or to Anglo-Americans. (Freycinet 1978:42)

According to John Papa ‘Ī‘ī (1959), at this time the chiefs were living along the beach of the harbor of Honolulu (Figure 22). In the same area, located at the end of Fort Street, a large fort was constructed. This fort served as a military post, as well as a government center, prison, and asylum. The first capital punishment was administered in the fort on October 20, 1840, when chief Kamanawa was hanged for poisoning his wife, Kamokuiki (Judd 1975:50). The gallows were set up on the parapet just east of the main gate, and the execution was attended by some 10,000 viewers (Judd 1975:50). In reference to this fort, ‘Ī‘ī (1959:145) writes:

> It was Boki’s privilege to assign work, for he had been governor of the island of O‘ahu from the time Kamehameha I ordered all the chiefs to O‘ahu in 1816 to expel the Russians. It was then that the Fort was begun.

Judd’s (1975) *Palaces and Forts of the Hawaiian Kingdom* describes the creation of Honolulu Fort:

> The Russian Trading vessels “Ilmena” and “Kadiak” arrived in Honolulu in the summer of 1816 with a complement of 80 to 90 men, and as was normal practice for the Russians (i.e., in Alaska), they began to build a blockhouse trading post near the entrance to the harbor and ran up the Russian flag. [. . . .] After a small contingent of Russians awoke one morning and found themselves surrounded by a large number of armed and hostile warriors, they left Honolulu and the island of O‘ahu in a hurry. Once he had evicted the Russians, Kalanimoku began to build a fort to protect the harbor on the same location as the partially constructed [Russian] blockhouse. This fort was variously known to the Hawaiians as Kekuanohu (the Thorny Back, because of the bristling guns on the walls) or Kepapu (the Gun Wall). The location of Honolulu Fort was just makai of the present location of Fort St. Mall and Queen St. Fort St. at the time the fort was constructed was only a trail to the Pakaka canoe landing at the water’s edge; in

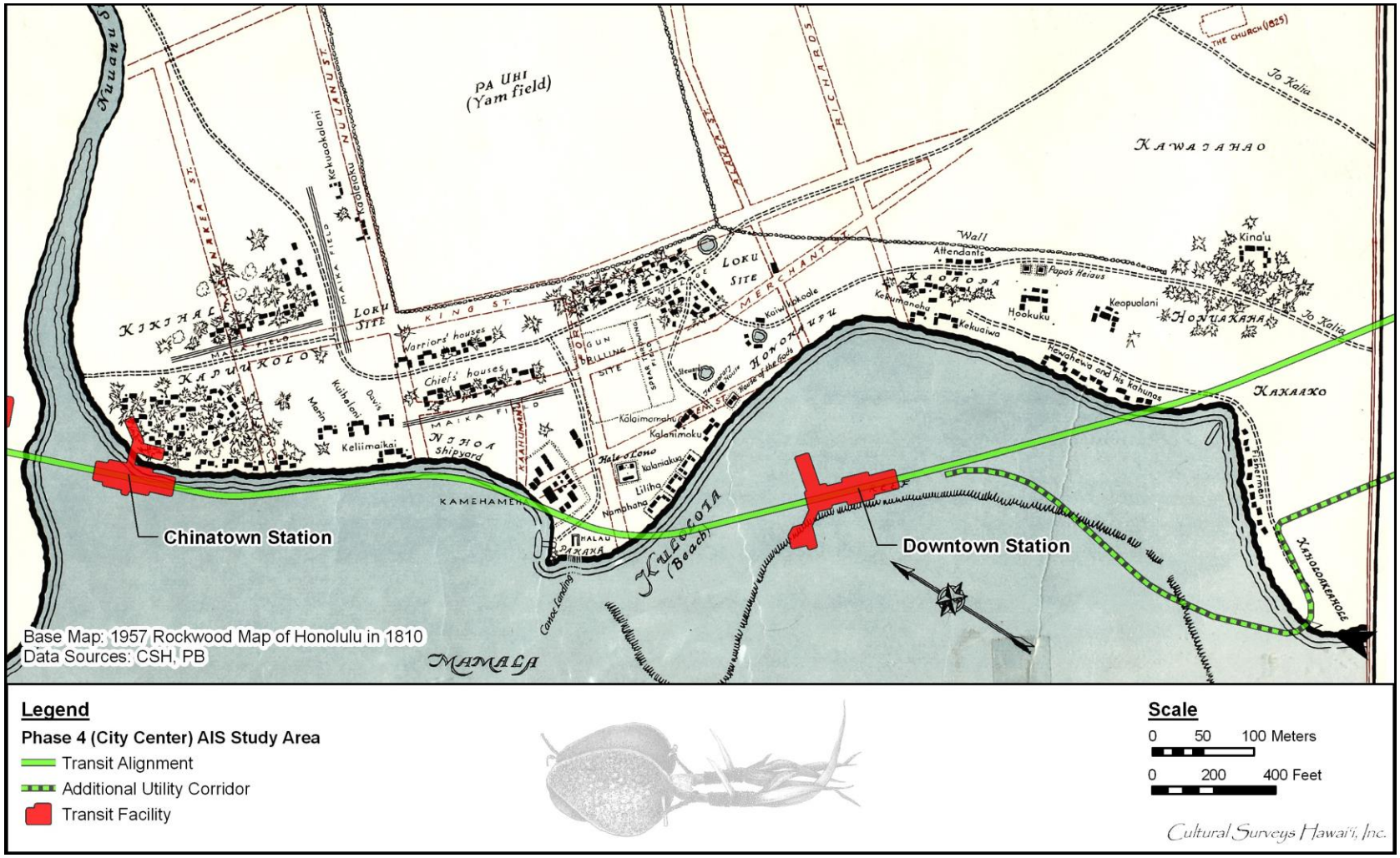


Figure 22. This Paul Rockwood drawing (from ‘Ī‘ī 1959), adapted from the compiliation by Dorothy Barrere (1957) of the layout of early Honolulu (circa 1810) between Nu‘uanu Stream and Kaka‘ako, features an overlay of the project alignment. (The Rockwood reconstruction should be understood as schematic.)

> time it grew to a road known as Alanui Papu (street to the Gun Enclosure), and in more modern times received its present name. Queen St. was a path along the shore at the time of the fort's construction. (Judd 1975:41-2)

The presence of the Protestant missionary church and residences (Kawaiaha‘o Church and the Mission Houses) in the area now known as Kaka‘ako, as well as the establishment of the royal court in Honolulu, appear to have been major factors focusing the development of Honolulu east, away from Nu‘uanu Stream into an area that appears to have been relatively little previously (see Bingham's description of the vicinity of the mission station below).

In 1820, the American Board of Commissioners for the "Foreign Missions Sandwich Islands" arrived in Hawai‘i and quickly made Honolulu its headquarters. As a member of that mission, Reverend Hiram Bingham, writing in 1847, describes Honolulu as viewed from "Punchbowl Hill" in 1820 contrasting the verdure of Nu‘uanu and Honolulu to the aridity and lack of habitation to the east:

> From the highest part of the rim we had a beautiful view of the village and valley of Honolulu, the harbor and the ocean, and of the principal mountains of the island…Below us, on the south and west, spread the plain of Honolulu, having its fishponds and salt making pools along the seashore, the village and fort between us and the harbor, and the valley stretching a few miles north into the interior, which presented its scattered habitations and numerous beds of kalo (Arum esculentum) in its various stages of growth, with its large green leaves, beautifully embossed on the silvery water, in which it flourishes…Through this valley, several streams descending from the mountains in the interior, wind their way, some six or seven miles, watering and overflowing by means of numerous artificial canals, the bottoms of kalo patches, and then, by one mouth, fall into the peaceful harbor. (Bingham 1981:92-93)

In contrast to this idyllic evocation is Bingham's record of the land, today the site of the Mission Houses Museum and the Kawaiaha‘o Church (250 m *mauka* of the project alignment), designated by the *ali‘i* for the missionaries' use in 1820:

> Boki [governor of O‘ahu] at length, by the order of the king, gave the mission a building spot for the Honolulu station, on the arid plain, about a half a mile east of the landing, then some distance from the village, but now [1847] included in it. (Bingham 1981:112)

Bingham's characterization of the Honolulu mission site is seconded by another early missionary, C. S. Stewart, who, arriving in Lahaina on Maui, proclaimed it "so refreshing an asylum [after] four weeks' residence on the dreary plain of Honoruru" (Stewart 1970:177).

Another visitor to Honolulu in the 1820s, Jacobus Boelen, notes the cultivation to the north and west in contrast to the lack of cultivation towards Waikīkī:

> It would be difficult to say much about Honoruru. On its southern side is the harbor or the basin of that name... The landlocked side in the northwest consists mostly of tarro fields. More to the north there are some sugar plantations and a

> sugar mill, worked by a team of mules. From the north toward the east, where the beach forms the bight of Whytetee [Waikīkī] the soil around the village is less fertile, or at least not as greatly cultivated. (Boelen 1988:62),

In 1846, Honolulu was made the capitol of the Hawaiian Kingdom and was well on its way to becoming the commercial and political hub of the islands. By 1850, Honolulu was, as described by Charles Wilkes, “very conspicuous from the sea and has more the appearance of a civilized land, with its churches and spires, than any other island in Polynesia” (Wilkes 1844, in Fitzpatrick 1986:69). During this period there was an obvious increase in density of land use and urbanization.

2.3.3 The Māhele

A review of historic maps of Honolulu indicate 19 LCAs in the vicinity of the project corridor (Figure 23 and Table 3). Historic maps and documents indicate that LCAs in the present Downtown Honolulu area were awarded to a variety of Native Hawaiians and foreign settlers who had moved into Honolulu as the city developed (see Volume III). Most of the LCAs in the vicinity of the project corridor were small awards consisting of house lots, but there were also agricultural lands, commercial properties, and several awards to the.

On March 8, 1848, Kamehameha III divided his property in the islands of Hawai‘i reserved for him through the Māhele into two parts: the smaller portion he retained for himself and his heirs, while the larger portion was given “…to his Chiefs and People.” The latter became known as “Government Lands” (Chinen 1958: 26). Fifty-two ‘*ili* in Honolulu, Kalihi, and Waikiki were set aside from the Government Lands as “Fort Lands” for the support of the garrison of the Fort at Honolulu. A distinct series of LCAs was issued marked F.L. (Fort Land), to distinguish them from other awards. The Fort Land *kuleana* were granted free of charge to the awardees. Four of these Fort Land awards were granted near this section of the project corridor. All four awards included either house lots or *lo‘i* or included both.

2.3.4 1850-1900s

By 1850, Honolulu was described by Charles Wilkes as, “very conspicuous from the sea and has more the appearance of a civilized land, with its churches and spires, than any other island in Polynesia” (Wilkes 1844, in Fitzpatrick 1986:69). An 1855 map by Lt. Joseph de La Passe of the French vessel, *L`Eurydice,* shows urban development centered at Honolulu, the area currently known as Downtown Honolulu (Figure 24). The map also shows large portions of the project area to be either at the edge of the coastline or completely offshore.

The waterfront of Honolulu changed significantly during this period. Experiencing the peak of the whaling industry, around 1850, the harbor area became crowded with trading and whaling vessels and required additional wharfs to accompany them.

2.3.4.1 Growth of Honolulu Harbor and Sand Island

The first harbor facilities were developed on the shore of “Honoruru” town in 1825, when the hulk of an old ship was sunk to create a small wharf (Alexander 1908). This wharf served the growing sandalwood trade and the subsequent whaling industry. Through the 1850s, the

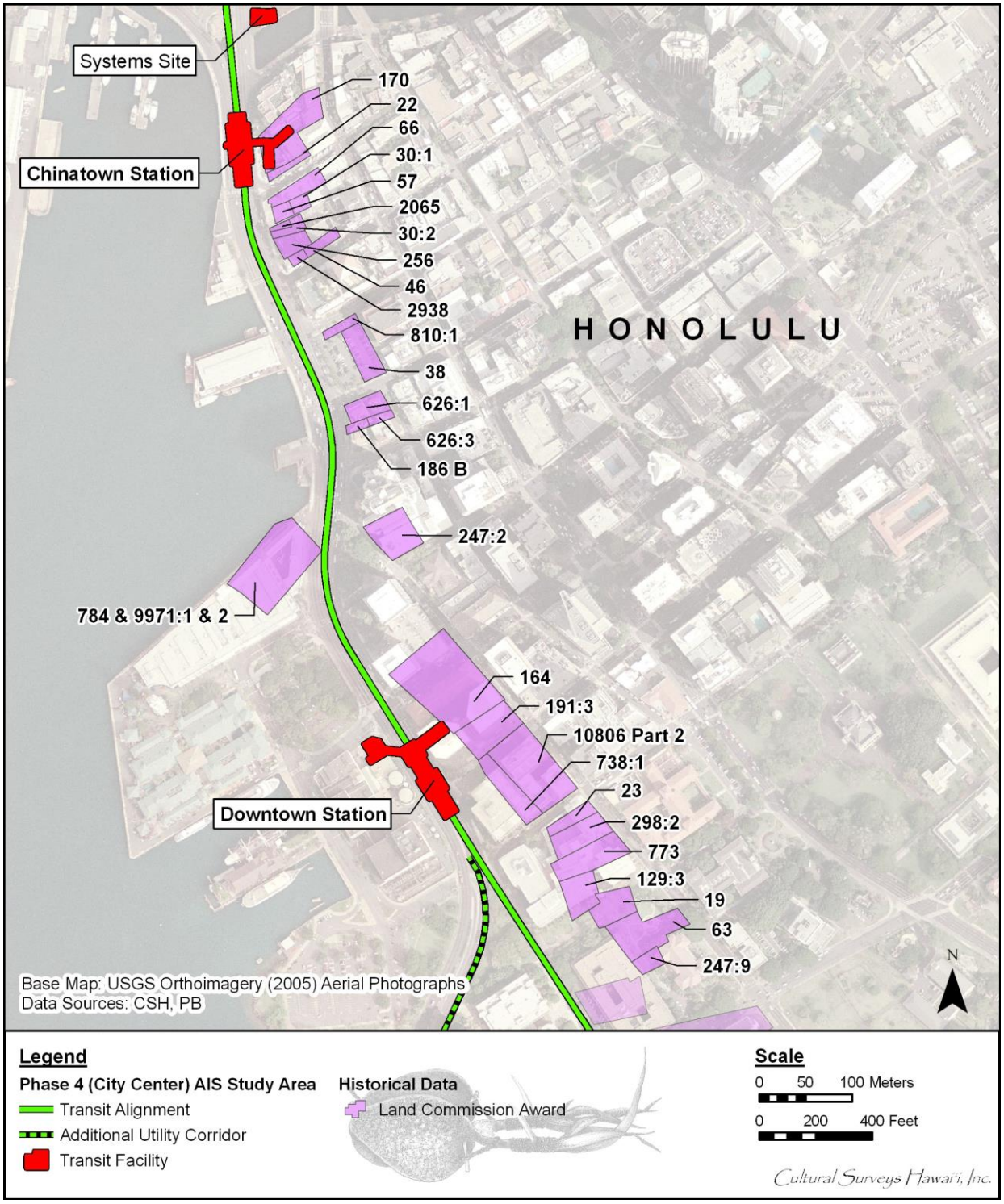


Figure 23. Aerial photograph (source: U.S. Geological Survey Orthoimagery 2005), showing the locations of LCAs (shown highlighted in purple) within and in the immediate vicinity of the east Kapālama and Downtown Honolulu portion of the City Center project corridor

Table 3. LCAs in Honolulu within and in the Vicinity of the Project Corridor (in numeric order)

LCA Number	Contents of Award
19	One house lot to Naahu
22	One house lot to G. Kauwaina
23	Six *kalo lo‘i* and one house lot to Moeino
30	One house lot (six houses) to Kaho‘owaha
38	One house lot (including wharf and dwelling) to Elias and Hiram Grimes
46	Former (Marin) cow yard, small yard, and house to Joseph Maughan for his wife, Cruz (Marin’s daughter)
57	One house lot to Simeona Kau
63	Two house lots to Namauu
66	One house lot to Napahi
129	Three house lots to Kinimaka
164	One house lot to Mataio Kekūanao‘a for Victoria Kamāmalu
170	One house lot to Mataio Kekūanao‘a
186 B	Market House, this place is for M. Kekuanaoa. The claim for this place is that it was Keaumoku's own place, and on his death it went to Kaahumanu, and on her death, to Kinau, on her death to V. Kamamalu….a lot between the lot of John Mana and the Hotel. [Award 186B; R.P. 4872; Queen St. (Aienui) Honolulu Kona; 1 ap.; .06 Ac.; for V. Kamamalu]
191	One house lot to Kekauonohi
247	One of 12 house lots and store lots claimed for Wm. C. Lunalilo by C. Kanaina
256	One house lot to Kalukini
298	Two house lots to B. Namakeha
626	(0.49-acre) lot at Nu‘uanu and Merchant Streets, (0.06-acre) lot on Merchant Street to Stephen Reynolds (who was awarded 17 lots in the Downtown area)
738	One house lot to Kaunuohua
773	One house lot to Kealoha
784 & 9971	The wharf commonly called the point and granted to James Robinson and William Pitt by Karaimoku
810	Two house lots to Francis C. Jones, Rosalie Jones, and John Jones (heirs to Lahilahi, daughter of Francisco Marin)
10806: Part 2	One house lot to Kamehameha III
2065	One house lot to Keo Bolabola for Kawai‘i
2938	One vineyard (planted by Francisco Marin) to Juan Marin (grandson of Marin)

commercial development of Honolulu and its harbor facilities appears to have been concentrated above the southeast side of Nu‘uanu Stream, far removed from Kalihi Kai.

Following the demolition of the fort in 1857 (Judd 1975:50), its walls became a 2,000-foot retaining wall used to extend the land out onto the shallow reef in the harbor; the remaining fort materials were used as fill to create what came to be known as the Esplanade (Judd 1975:50). Between 1857 and 1870, 22 acres of reef land between Fort Street and Alakea Street was filled in with material dredged from the harbor (Bush 1957:14).

A ca. 1880s photograph of Honolulu Harbor shows the Esplanade at the base of Fort Street (Figure 25). The dredging of Honolulu Harbor that would expand the Esplanade soon followed:

> Major alteration of Honolulu from its natural configuration began in 1890 with the dredging of the main channel to 60 m (200 ft) width by 9 m (30 ft) deep for about 303 m (1000 ft) through the sand bar at the entrance. . . Dredging required two years to complete. . . Many dredging and filling operations soon followed, and the 1890s and 1900s saw the construction of many new piers and channels in the harbor, the dredged material going to create new dry land areas. . . Further dredging was conducted at the base of Alakea Street in 1906. . . Piers were constructed at the base of Richards Street in 1896, at the site of Piers 17 and 18 in 1901 to accommodate sugar loading in 1901, and at Piers 7 and 12 in 1907. (Coles et al. 1999:10)

An 1887 W. A. Wall Hawaiian Government Survey map of Honolulu shows continued urban expansion of the Downtown Honolulu area. Of particular note is the dredging and land reclamation associated with the development of Honolulu Harbor (Figure 26).

Following the initiation of Dillingham’s Oahu Railway and Land Company (OR&L), a railroad track was built across Kūwili Fishpond in 1889. This and the construction of associated infrastructure such as a depot, buildings, store houses, and stations would eventually lead to the expansion of Honolulu Harbor toward Kapālama Basin and Iwilei. John Hungerford writes of OR&L’s influence on the harbor:

> Honolulu in the years to follow was outgrowing its small harbor where, according to an entry on company records, on a single day in 1901 were 24 deepwater sailing vessels, six of them unloading coal and four loading sugar at railroad wharves. The company had led the way, in conjunction with other private interests, in creating some 500 acres of waterfront land. (Hungerford 1963:14)

The increasing prominence of the harbor and its activities over the traditional use of the fishponds and adjoining *kalo* patches becomes apparent in 1896 when an outbreak of cholera led the Republic of Hawaii to move forward with the filling-in of standing bodies of water including

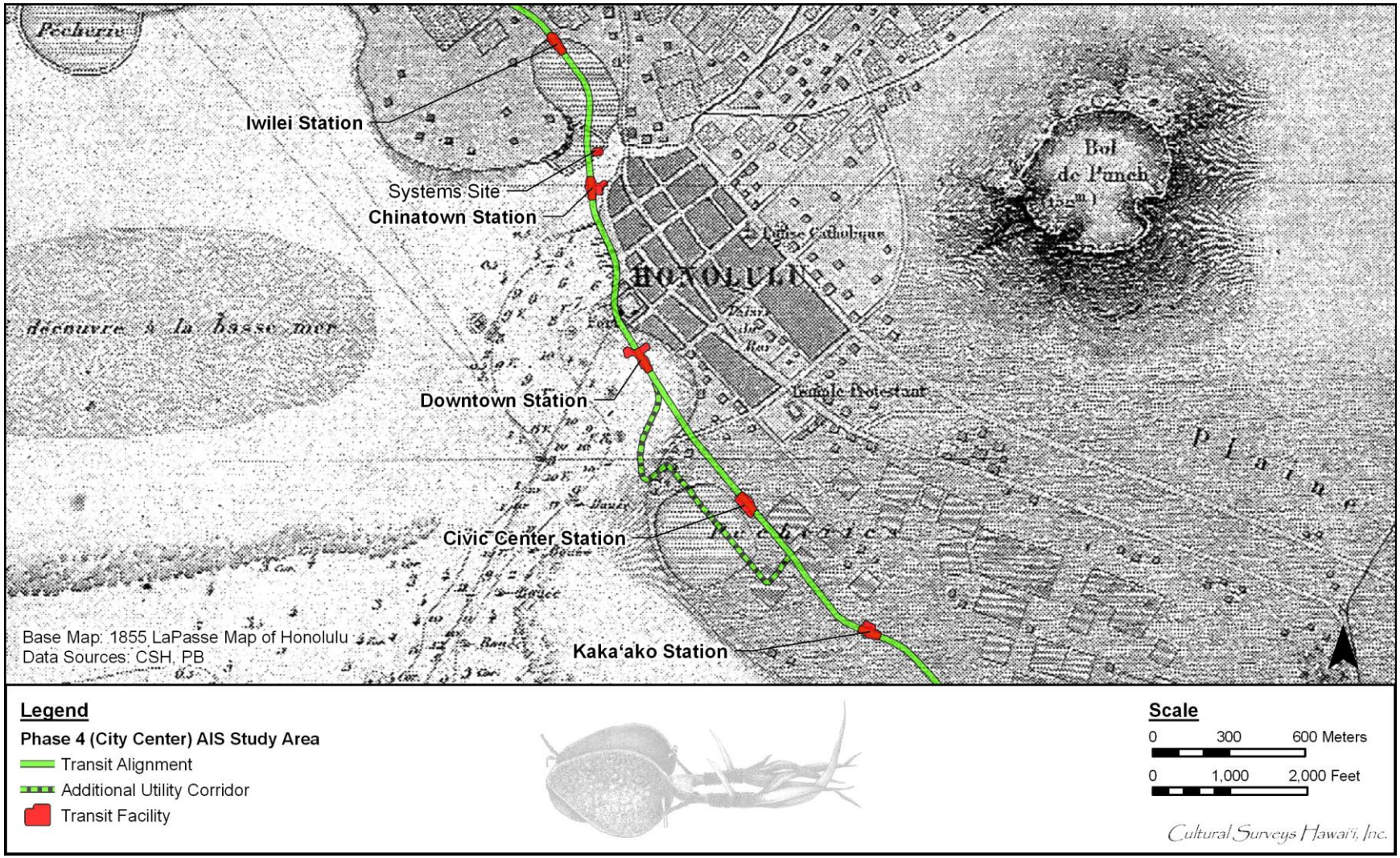


Figure 24. This 1855 Map of Honolulu by Lt. Joseph de La Passe of the French vessel, *L`Eurydice* (source: Fitzpatrick 1986:82-83), shows urban development in the vicinity of the Downtown Honolulu portion of the project corridor. Note that large portions of the project corridor are indicated to be either at the edge of the coastline or are completely offshore

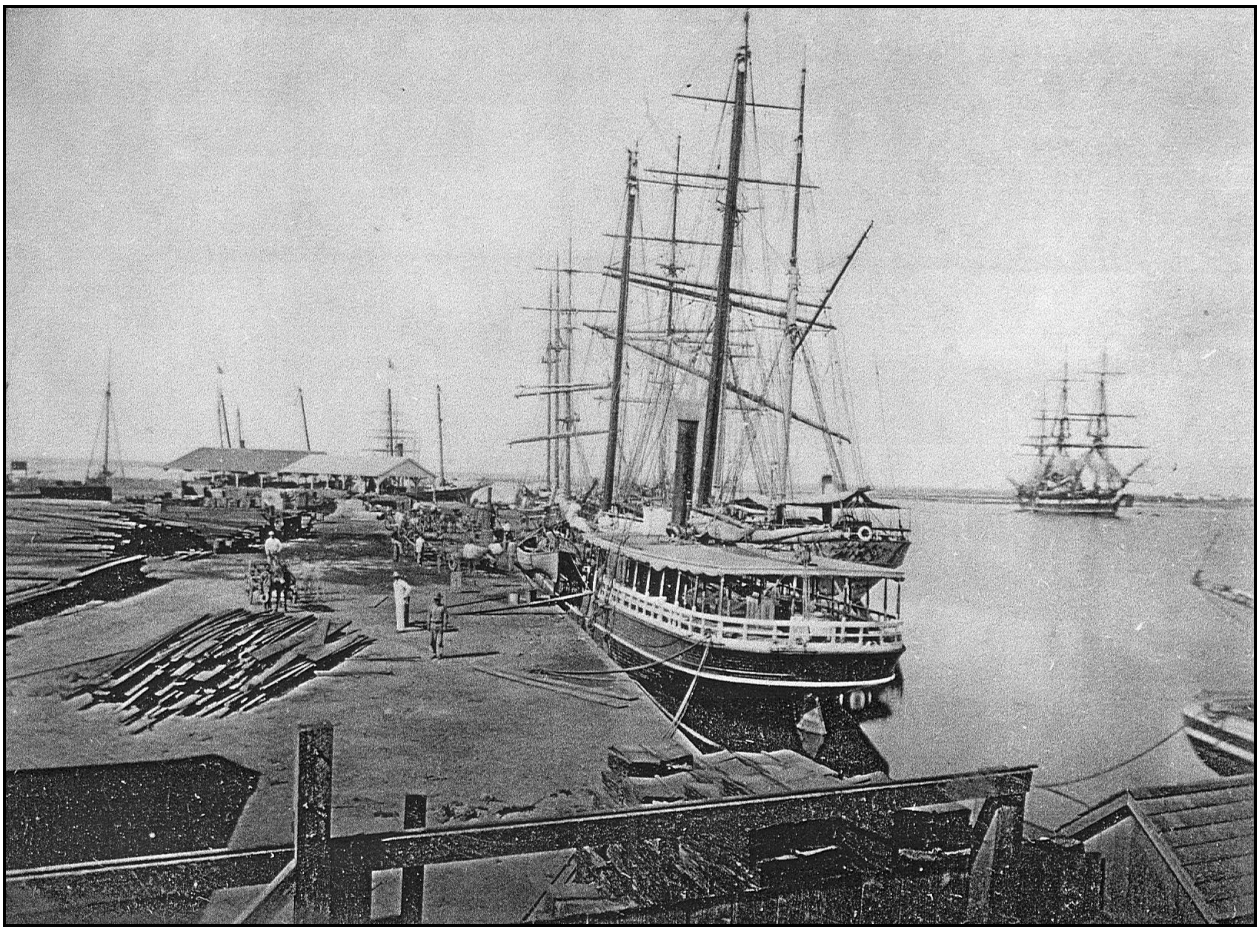


Figure 25. Honolulu Harbor Esplanade at the base of Fort Street, ca. 1880 (Bishop Museum Archives)

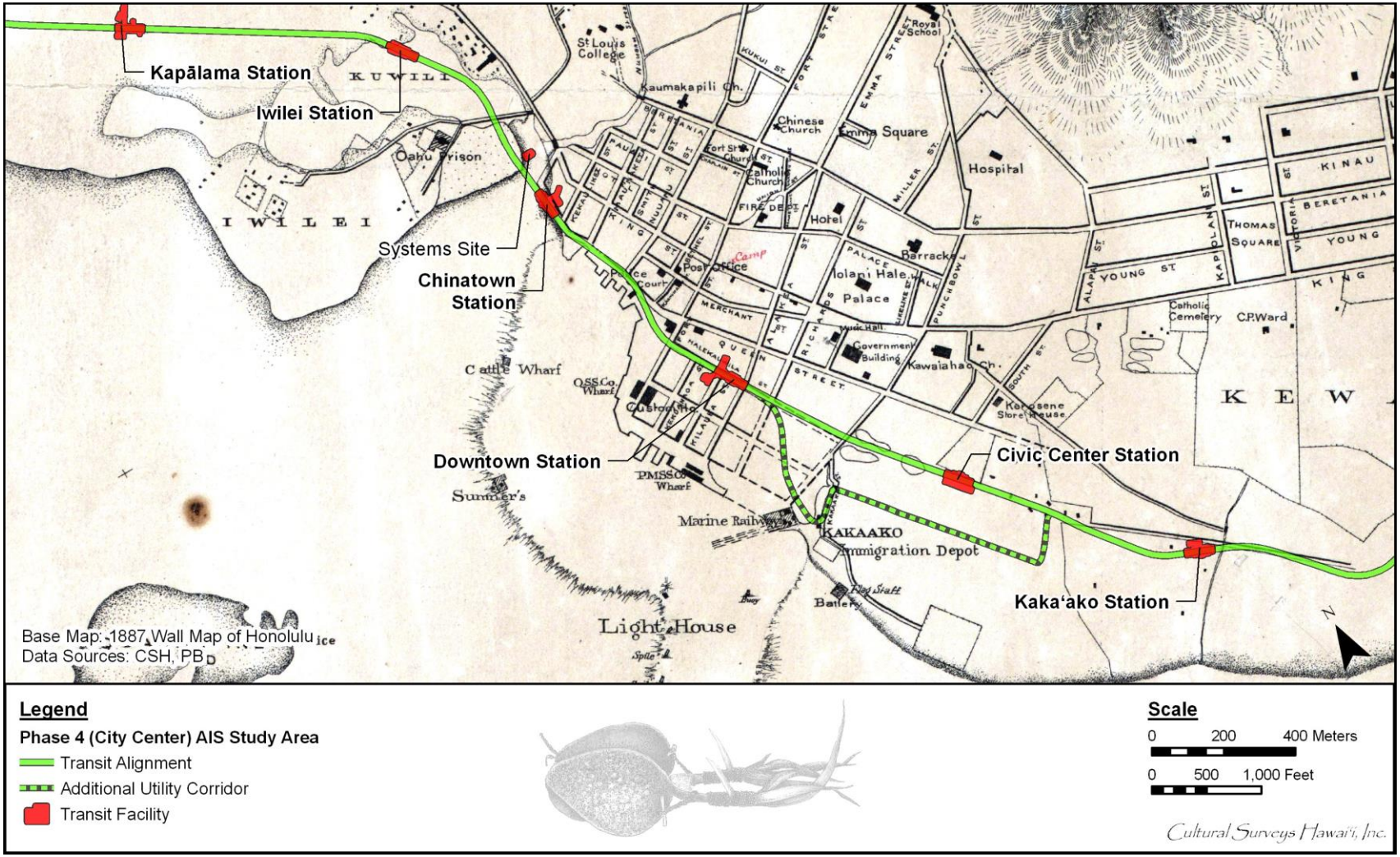


Figure 26. 1887 W. A. Wall Hawaiian Government Survey Map of Honolulu and Vicinity, showing continued urban expansion of the Downtown Honolulu area, particularly dredging and land reclamation associated with Honolulu Harbor along the City Center project corridor

Kawa Pond. Between 1895, at the beginning of OR&L's development of their railroad, and 1901, Kūwili Pond was filled, and an estimated 6,000,000 cubic yards of mud, sand, loose coral, and blasted hard coral were used to fill low land near the harbor and terminal (McGerty et al. 1997:20).

Dredging of the harbor continued into the twentieth century. Following the annexation of the Hawaiian Islands in 1898 and the establishment of the Honolulu Engineer District in 1905, federally-funded dredging of the harbor was initiated and completed in December 1908. It was at this time that reclamation projects would create Sand Island. As a history of the Honolulu Engineer District notes:

> As anticipated, enlarging the small island just seaward of the lighthouse calmed the entire harbor; indeed reclamation of this land, today known as Sand Island, has eliminated the need for a breakwater in Honolulu Harbor…A separate project to reclaim Quarantine Island, a low, swampy area on a reef in the harbor, was adopted in February 1906 and was carried out by contract until funds were exhausted in March 1908. Continued reclamation over the next four decades would result in the absorption of Quarantine Island into an enlarged Sand Island. (Van Hoften 1970:3)

In 1872, the small island off Iwilei—"Ka-moku-‘ākulikuli"—became the site of a quarantine station used to handle the influx of immigrant laborers drawn to the islands' developing sugar plantations. The site is described as "little more than a raised platform of sand and pilings to house the station, with walkways leading to the harbor edge wharf, where a concrete sea wall had been constructed" (Beechert 1991:105) and as "a low, swampy area on a reef in the harbor" (Van Hoften 1970:3). By 1888, Kamoku‘ākulikuli Island had been expanded and was known as "Quarantine Island", a name that remained popular until approximately 1942, when the present name "Sand Island" became the norm (named after the artillery battery and camp there). A pier and tramway had been built connecting the island to Honolulu Harbor (Renard 1975:A4) (Figure 27). If vessels arrived at the harbor after 15 days at sea and contagious disease was aboard, quarantine and disinfecting procedures were required at Quarantine Island (Renard 1975:A3).

Quarantine Island became the largest United States quarantine station of the period, accommodating 2,255 individuals (Renard 1975:A6). This space included two hospitals and a crematorium. Besides operating as a quarantine, the station had other objectives, such as implementing plaguprevention measures, immigration inspection, and serving as a marin hospital relief (Renard 1975:A9). During President Wilson's administration in 1920, Sand Island was taken under the control of the War Department. Despite this, quarantine measures continued there until 1927.

Before World War II, the military used the island as a gun emplacement (Battery Sand Island) and for a small military camp (Camp Sand Island) (Bennett 2002:66-68). After the attack on Pearl Harbor in 1941, 400 Japanese were rounded up in the immediate aftermath and placed at the Honolulu Immigration Station. By May 1942, an internment camp had been built at Sand Island, but the military decided that this installation was too difficult to guard during a feared second attack, so the detainees were moved to an inland camp at Honouliuli on March 1, 1943 (Bernardo 2004).

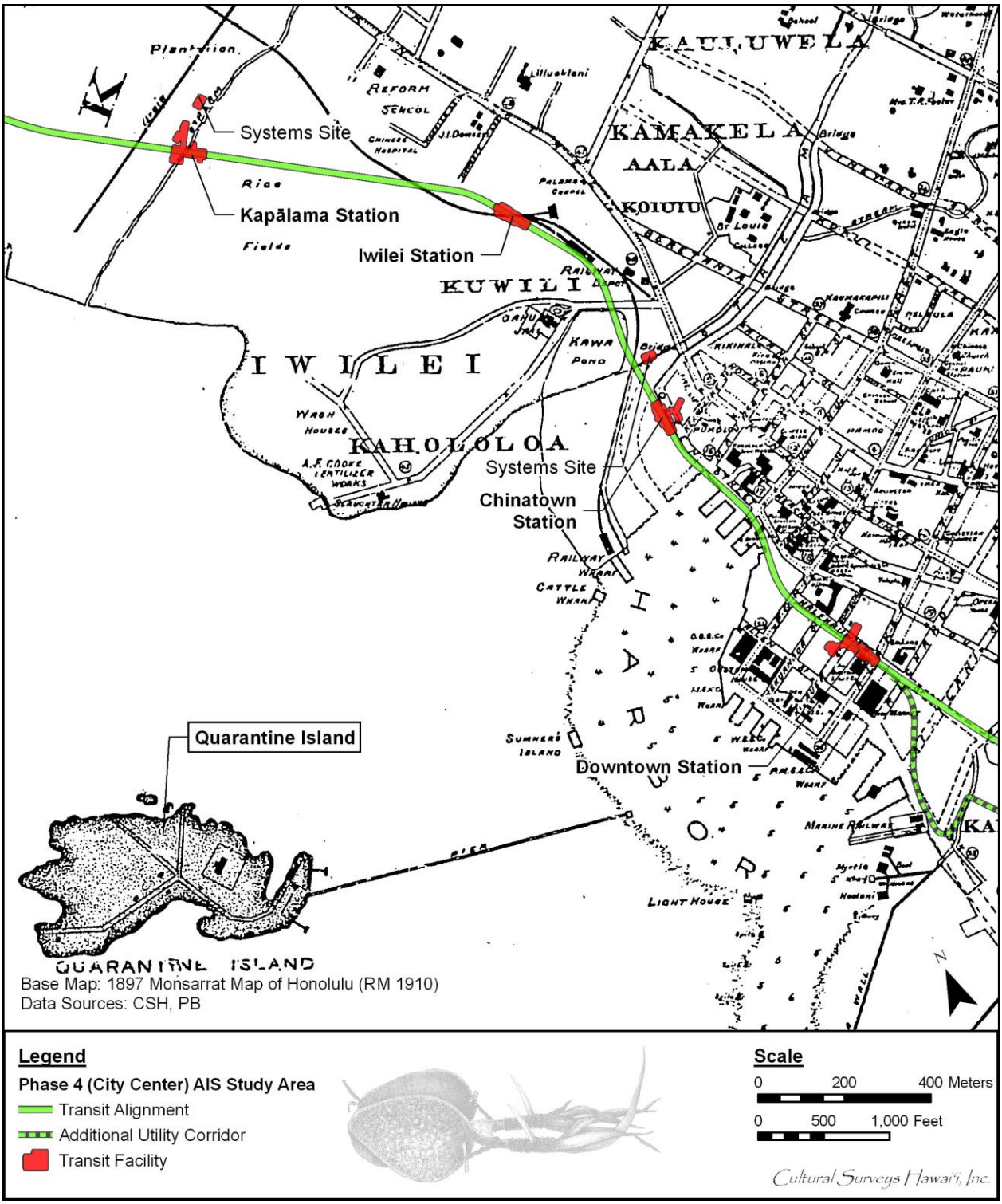


Figure 27. 1897 Map of Honolulu by M.D. Monsarrat (Reg. Map 1910), showing the location of Quarantine Island, site of the modern-day Sand Island

During reclamation projects in the first two decades of the twentieth century, Sand Island and Quarantine Island were joined to the Kalihi Kai peninsula. In 1925 and 1926, a channel was dug from the Kalihi Channel into Kapālama Basin creating a true island out of “Sand Island.” By 1941, reclamation projects and dredging of the harbor had enlarged Sand Island to 410 acres (Renard 1975:A20). Another 100+ acres were added to Sand Island between 1940 and 1945 from the spoils of Ke‘ehi Lagoon’s seaplane channel, located on the western seaward boundary of the project area. Between 1946 and 1952, the Ke‘ehi seaplane channels were used by Naval air squadrons for transporting “Mars” flying boats between Hawai‘i and the continental U.S. A dirt cuseway was constructed connecting Sand Island to the mainland in 1943 (Renard 1975:A29).

2.3.4.2 Public Transportation Systems

The first public transport system in Honolulu was the Spring Pioneer Omnibus Line, established in 1868 as a horse and wagon operation in Downtown Honolulu, extending up to Nu‘uanu and School Streets (Simpson and Brizdle 2000:11).

In 1884, the first rail system was developed by an English firm called Skinner and Company, who called their company Hawaiian Tramways Limited. This company utilized muldrawn tramway cars pulled along steel rails, as shown in a turn-of-thcentury photograph (Figure 28). The company had 12 miles of rail in Honolulu by 1888, and by 1896 the railway system extended to Nu‘uanu Valley and the “native settlements at Palama” (Simpson and Brizdle 2000:18).

In 1901, electric streetcars were introduced by the Honolulu Rapid Transit Co. The muldrawn trams could not compete, and the transit company bought the Tramways Co. firm in 1903. The rails were soon dismantled and the horses and mules were sold. The majority of people greatly approved of the change, as shown in this remembrance from 1903:

> There was the horrid pipe smoked by the man on the front platform that the ladies will never miss, nor will they grieve over the loss of the profane man on the rear platform, the intoxicated man snoring in the corner, the Chinaman with a basket of ducks, the ponderous native woman with a game rooster in her lap and the wet passenger just come in out of the rain. The long—O, how long—pauses on switches will have to be endured no more. Those rainy day episodes, when the car would run off the track and every man would get out in the mud and work the plaguey thing forward and backward till it got on the rails again, are thought of now only with smiles. The balking of the mules, the jolting and pitching of the car and the acrimonious debates with the driver were harmless incidents that will eventually be forgotten. (*Paradise of the Pacific*, Oct. 1903, in Simpson and Brizdle 2000:19)

2.3.4.3 Oahu Railway and Land Company

A consortium of businessmen, led by Benjamin Dillingham, created the Oahu Railway and Land Company (OR&L) in February 1889. The railroad officially opened on November 16, 1889. At that time, the line extended only between ‘Aiea and Honolulu.

The company’s Honolulu depot was constructed on land between Kūwili I Pond and North King Street, just west of the intersection of North King Street and Iwilei Road (100 m southeast

Figure 28. 1898 photograph of the Hawaiian Tramways, Ltd. muldrawn tram cars on steel rails on the corner of Fort and Hotel Streets (view to the south), Honolulu (J.J. William Private Collection, reprinted in Simpson and Brizdle 2000:16)

of the proposed Iwilei Station). An 1890 photograph (Figure 29) shows the new depot, built on pilings on top of a portion of the recently filled Kūwili I Pond. An 1897 M.D. Monsarrat map of Honolulu shows the depot infrastructure adjacent to the north of the City Center project corridor immediately southeast of the Iwilei Station (Figure 30).

John Hungerford describes the railroad’s Honolulu facilities:

> The first right-of-way from Honolulu station was only two feet above high tide. It, with the six acres of yards and station site, was mud fill taken from the salt marsh of Kuwili Pond or brought in from Moanalua. Discarded ship’s ballast was also used as footing for the emerging ground [Hungerford 1963:13].

In 1899, through an agreement with the Hawaiian Government, the OR&L Co. exchanged land in the vicinity of Honolulu Harbor for Kawa Pond, which had recently been filled, and a large portion of the adjacent Kūwili I Pond. Between 1899 and 1901, ongoing Honolulu Harbor improvements created 6,000,000 cubic yards of mud, sand, and loose coral through dredging. Additionally, several thousand cubic yards of hard coral were blasted. This material was used to fill the low areas of the former Kawa and Kūwili I Ponds that were adjacent to the OR&L harbor facilities and terminal. In 1903, subsequent to the reclamation of Kawa Pond (1895-1897) and Kūwili I Pond (1895-1901), OR&L Co. announced that it had moved and greatly expanded its terminal (McGerty et al. 1997:21-23). The new passenger and cargo station was located on the former Kūwili I Pond, immediately north of Iwilei Road. The expansion of the OR&L Co.’s transportation and cargo routes, with the associated harbor traffic, was one of the primary factors behind the industrial development of the Iwilei area of Honolulu.

2.3.4.4 The 1900 Chinatown Fire

In 1852, there were only about 71 Chinese living around Honolulu, most of whom had come to the islands as merchants and continued to carry out this trade. In 1852, sugar planters began to import large numbers of Chinese “coolies” to work on their sugar plantations. Once their contracts were filled, some of the workers moved to Honolulu to open their own businesses in the area, that soon came to be known as Chinatown. The unsanitary and over-populated area alarmed the white business class who noted that “Most Chinese businesses were housed in decaying buildings on the depressed lower blocks of Nu‘uanu and Maunakea Street, and in Chinatown the womanless coolies congregated to gamble, smoke opium or simply pass the time” (Daws 2006:300).

In 1899, the first case of bubonic plague was identified in Hawai‘i, in a Chinese bookkeeper named You Chong. Two other cases were reported on the same day, and the Board of Health laid down a strict quarantine for Chinatown, that area of Honolulu bound by Nu‘uanu Street, Kukui Street, River Street, and Queen Street. Within this area, about 7,000 people, primarily Chinese and Japanese immigrants, lived and worked (Iwamoto 1969:122-124). Since the disease had broken out in the immigrant’s area of Honolulu, all Chinese and Japanese were barred from leaving Honolulu for other ports.

From December 12, 1899 to March 31, 1900, 71 cases of bubonic plague were reported, with 61 deaths, 41 of whom lived within the established Chinatown quarantine area. The Board of Health concluded that they could not contain the plague and decided the best remedy was to set

Figure 29. 1890 photograph of the O‘ahu Railway and Land Company Depot built on the filled in Kūwili I Pond (John Cotton Wright collection; photo reprinted in Scott 1968:858)

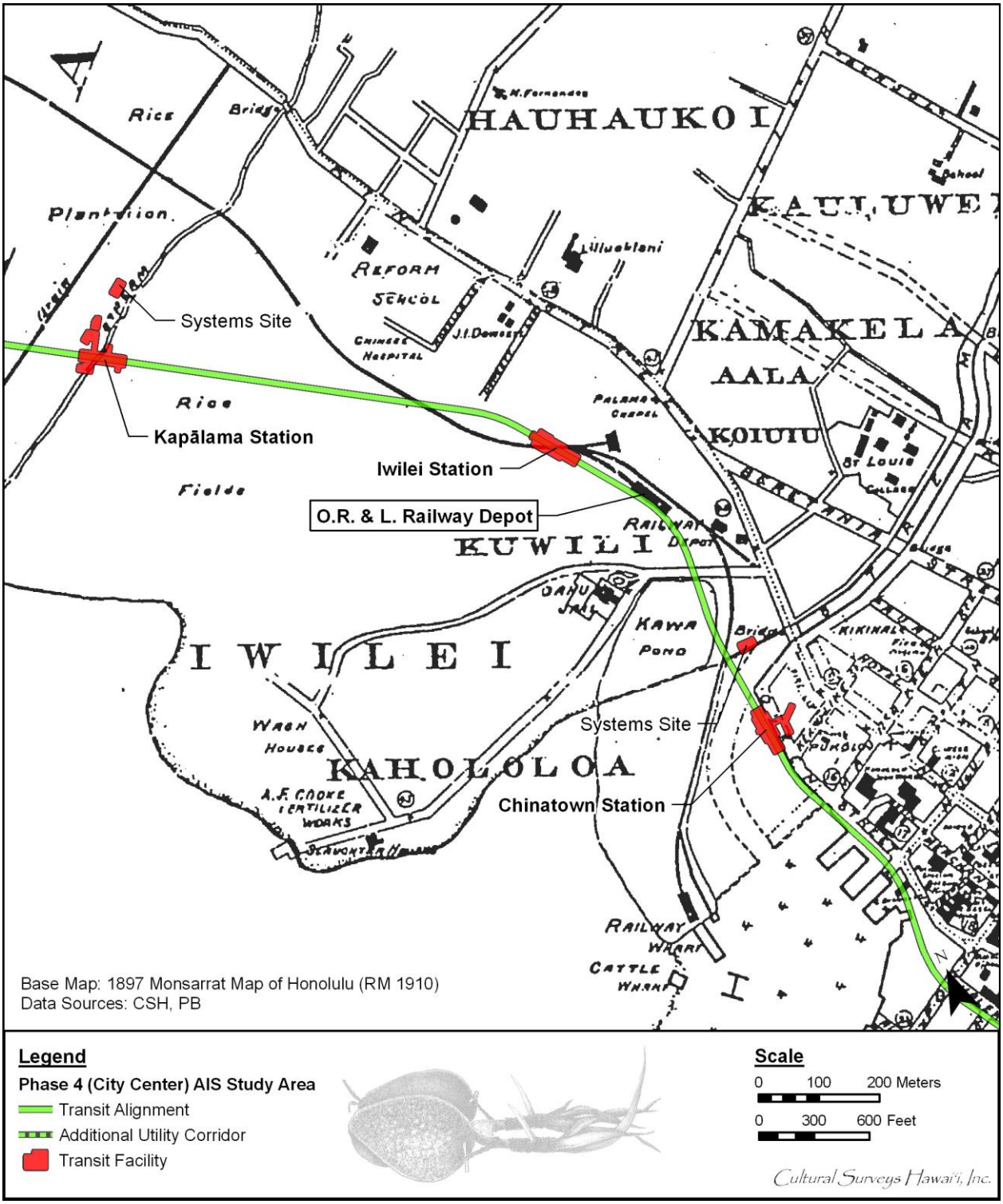


Figure 30. 1897 Map of Honolulu by M.D. Monsarrat (Reg. Map 1910) showing the location of the Honolulu OR&L Co. railway depot in relation to the project corridor

“sanitary fires” to infected wooden buildings. A total of 41 controlled fires were set between December 31, 1899 and August 13, 1900:

> [O]n December 30, after careful deliberation, the Board of Health chose fire as the ‘surest, most thorough, and most expeditious’ method. Fire would destroy the plague germs, kill rats, cleanse the soil and open it up to the purifying influence of sun and air, and would prevent any occupancy of the premises until a safe period of time had elapsed. (Iwamoto 1969:124)

Infected patients were moved to a quarantine camp at Kaka‘ako (a quarantine camp for local leprosy cases). Some people, not necessarily patients, whose houses were burned were housed at the barracks of the Kaka‘ako Rifle Range. Their belongings were stored in the cellars of Kaumakapili Church.

On January 20, 1900, a fire was set between Kaumakapili Church and Nu‘uanu Avenue (in what was then known as “Block 10”), which quickly got out of control. Rising winds swept burning embers to the roof of the church; the fire then jumped to several other blocks and then to the wharves:

> By 1:30 p.m. the fire began making its way from Beretania Street along Achi Lane toward Kukui Street. People feared that the mauka section of the city would be destroyed. Chinatown refugees rushed back to save belongings, but were driven back by fire and smoke; they formed a seething mob near the bridge and Kukui Street. . . . The Chinese consul and vice consul also circulated among the people and tried to pacify them, since at this time the Chinese believed that the Board of Heath had purposely burned their homes. (Iwamoto 1969:130-131)

No one was killed in the fire, but much of Chinatown was destroyed. Many people were homeless and bereft of all belongings, which were lost when Kaumakapili Church burned to the ground. No additional patients were identified with the disease in April 1900, and the Hawaiian Islands were declared free of plague (Iwamoto 1969:125, 129).

The Hawai‘i Chinatown Historic District (District No. 73000658) was placed on the National Register of Historic Places in 1973. The Chinatown Historic District also has been designated as site 50-80-14-9905 on the [Hawai‘i] State Inventory of Historic Places (SIHP).

2.3.5 Twentieth-Century Development

As Honolulu became more populated throughout the twentieth century, the areas surrounding the harbor became increasingly important for commercial construction. A review of historic maps spanning from 1919 to 1953 indicates that major development in the Downtown Honolulu area was focused around Honolulu Harbor and Sand Island (Figure 31 through Figure 34). This entailed extensive dredging for harbor improvements and land reclamation into coastal tidal flats.

Today, the harbor area still functions as the state’s major port facility. Additionally, this area includes the Aloha Tower Marketplace and the Maritime Museum. Farther inland lies a dense commercial area, as well as several government buildings, including the Federal Building, State Court, City Hall, and the State Capitol. Significant historic resources in the general vicinity of the archaeological project corridor include Washington Place, Mission Houses Museum, and ‘Iolani Palace.

2.4 Kaka‘ako

2.4.1 Early Post-Contact History

The modern urban district known as Kaka‘ako is significantly larger than the traditional area of the same name, which is described in minineteenth century documents and maps as a small *‘ili* (traditional land unit) within the *ahupua‘a* (traditional land division) of Honolulu. In addition to the *‘ili* of Kaka‘ako, the modern Kaka‘ako area also includes lands once known as Ka‘ākaukukui, Kukuluāe‘o, and Kewalo (see Figure 3 and Figure 4).

The modern Kaka‘ako is located between two longtime centers of population: Honolulu, known as Kou in older times, and Waikīkī. In Waikīkī, a system of taro *lo‘i* (irrigated terraces) fed by streams descending from the Makiki, Mānoa, and Pālolo Valleys covered the coastal plain, and networks of fishponds dotted the landscape. Similarly, Kou—the area of Downtown Honolulu surrounding the harbor—possessed shoreward fishponds and irrigated fields watered by streams descending from the Nu‘uanu and Pauoa Valleys. Unlike these two densely populated areas, Kaka‘ako had no large expanse of irrigated taro patches; instead, the area consisted of exposed coral flats dotted with salt pans and fishponds with habitations scattered along the shore and along trails that connected Honolulu to Waikīkī.

An early, somewhat generalized, depiction of the early post-Contact Kaka‘ako area is shown on an 1817 map (Figure 2) by Otto von Kotzebue (1821), commander of the Russian ship *Rurick*, who had visited O‘ahu the previous year. Kotzebue’s map illustrates that the land between Pūowaina (Punchbowl Crater) and the shoreline, which would include the Kaka‘ako area, formed a “break” between the heavily populated and cultivated centers of Honolulu and Waikīkī. The area is characterized by fishponds, salt ponds, trails connecting Honolulu and Waikīkī, and occasional taro *lo‘i* and habitation sites.

In the early post-Contact period, Kaka‘ako was a portion of the area called the “salt plains of Honolulu” (Bingham 1981:92-93). The Protestant missionary church, established in 1820 (Kawaiaha‘o Church and the Mission Houses), was built at the edge of this dry plain. Converted Hawaiians, including many Hawaiian chiefs and members of the monarchy, began to build houses in the same area to be near the mission. This appears to have been a major factor pulling the development of Honolulu toward Koko Head (eastward), away from Nu‘uanu Stream and into an area that presumably had been relatively less inhabited in pre-Contact times.

Gilman (1904) describes the area around Kawaiaha‘o Church as a “barren and dusty plain” and further elaborates that:

> Beyond the street [east of Punchbowl Street] was the old Kawaiahao church and burying ground. A more forsaken, desolate looking place than the latter can scarcely be imagined. One, to see it in its present attractiveness of fences, trees and shrubbery, can hardly believe its former desolation, when without enclosure, horses and cattle had free access to the whole place. (Gilman 1904:89)

That the environs of the missionary enclave and Kawaiaha‘o Church were indeed “forsaken” and “desolate looking” in the 1820s when the missionaries first settled there is also noted in the memoirs of the American missionary C. S. Stewart who, arriving on Maui after living at the

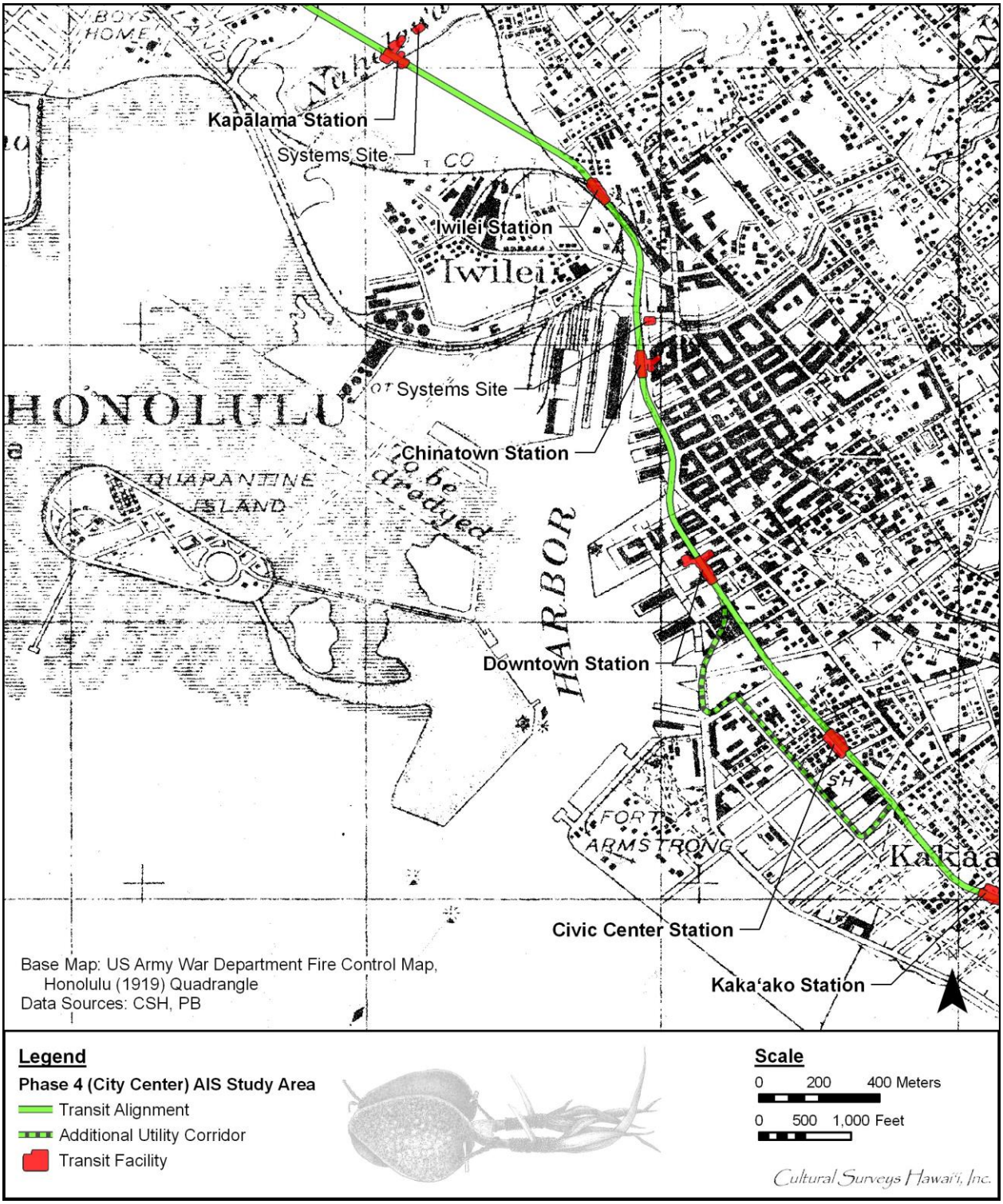


Figure 31. 1919 U.S. Army War Department Fire Control map, Honolulu Quadrangle, showing the Downtown Honolulu portion of the City Center project corridor

Figure 32. 1933 U.S. Army War Department Fire Control map, Honolulu Quadrangle, showing the Downtown Honolulu portion of the City Center project corridor

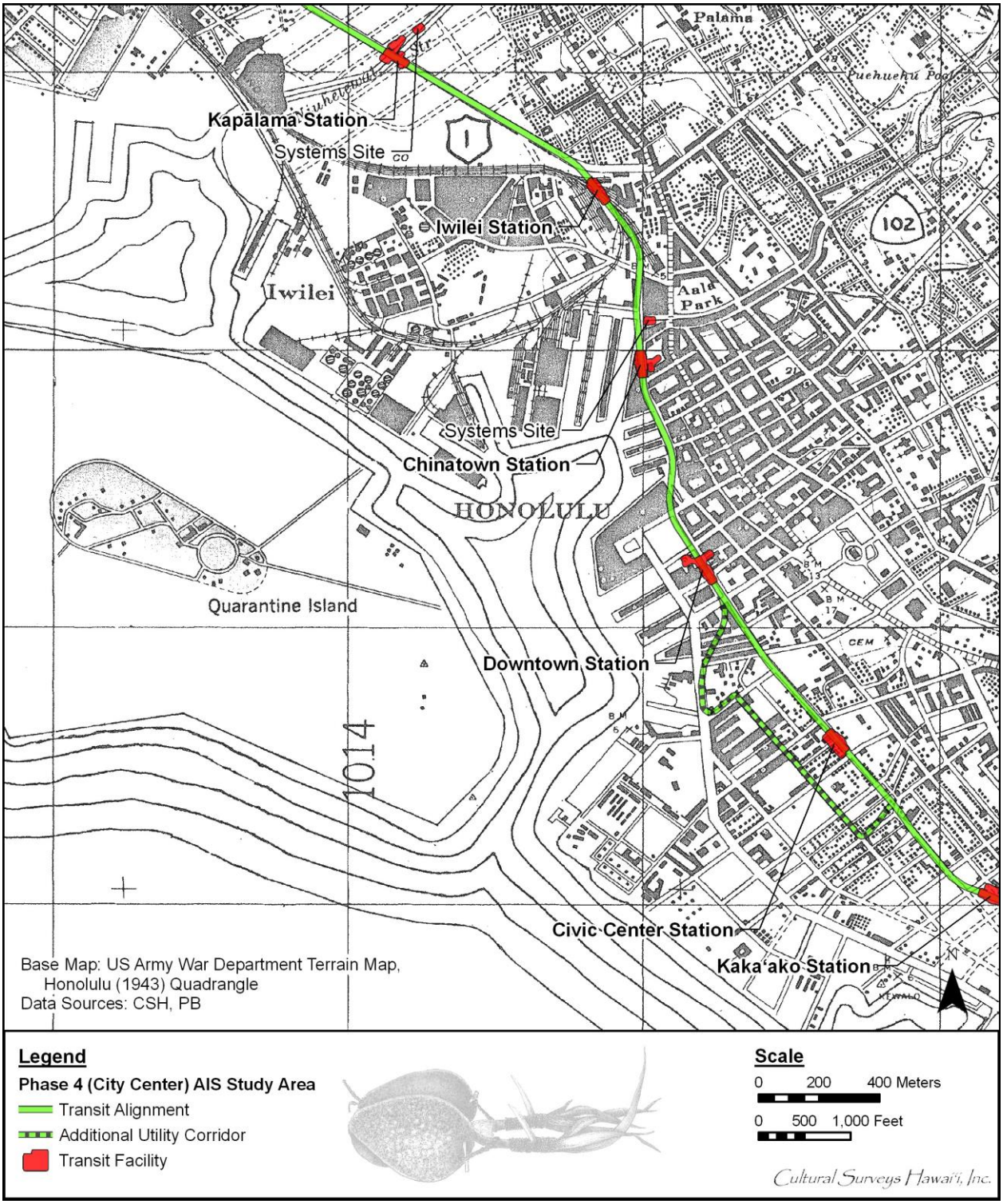


Figure 33. 1943 U.S. Army War Department Terrain map, Honolulu Quadrangle, showing the Downtown Honolulu portion of the City Center project corridor

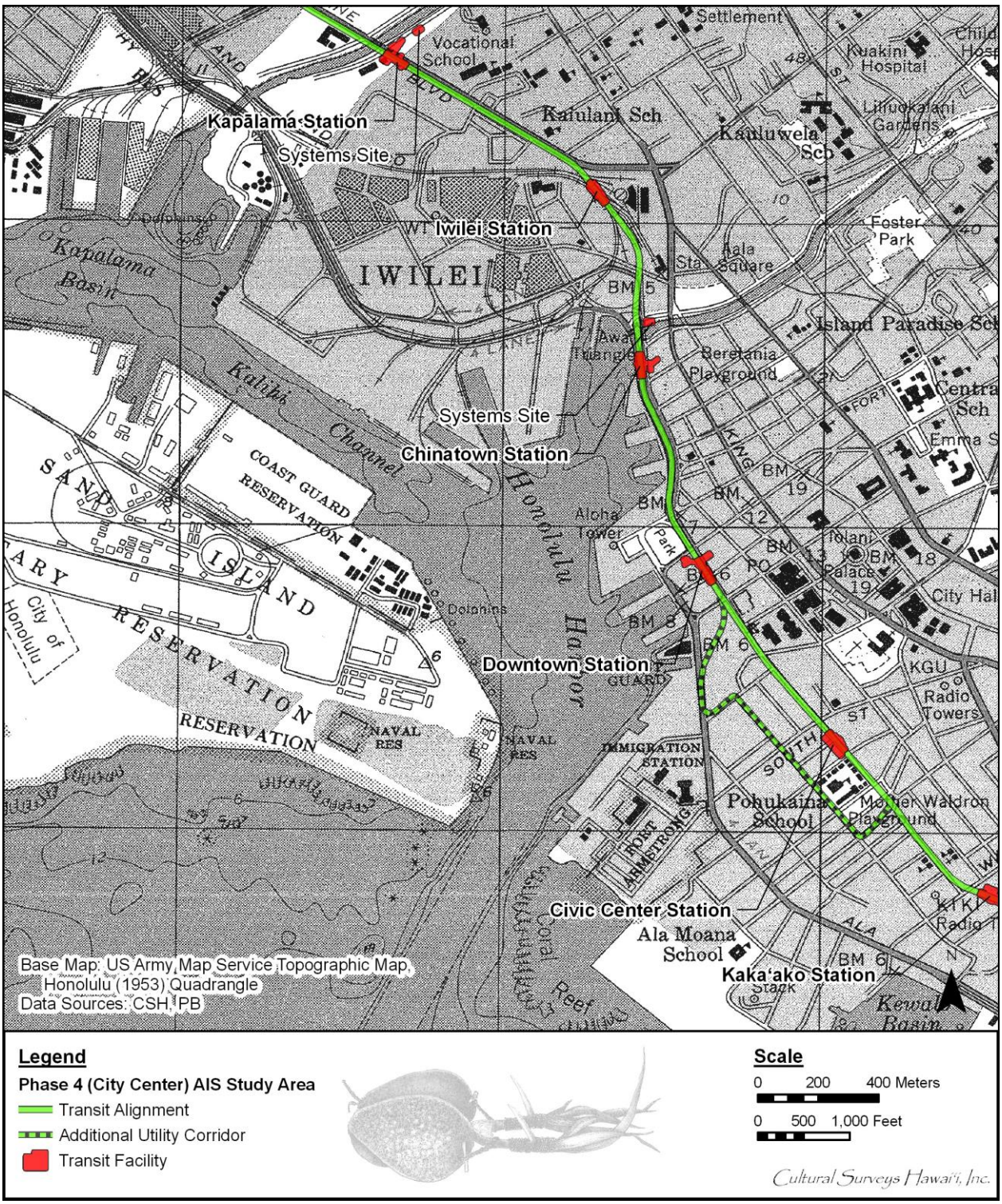


Figure 34. 1953 U.S. Army Mapping Service topographic map, Honolulu Quadrangle, showing the Downtown Honolulu portion of the City Center project corridor

mission, declared Lahaina to be “like the delights of an Eden” after “four weeks residence on the dreary plain of Honoruru” (Stewart 1970:177).

The barrenness of the Kaka‘ako area is also illustrated in two sketches, one made in 1834 when Kawaiaha‘o Church was still a long, grass-thatched building (Figure 35), and one made in 1850 after the grass hut had been replaced by a large coral stone structure with a steeple (Figure 36). Between Kawaiaha‘o Church and the sea, which is the Kaka‘ako area, there are only a few scattered huts along the shore and aligned along the inland trail (now covered by King Street). An 1887 photograph also shows the marshy nature of the area, with only scattered houses near the ponds or near the shore *makai* of Kawaiaha‘o Church (Figure 37).

2.4.2 MiNineteenth Century and the Māhele

Among the first descriptions of Kaka‘ako by the Hawaiians themselves are the testimonies recorded during the 1840s in documents associated with LCA and awardees of the Māhele (see Volume III). The LCA records indicate that the traditional Hawaiian usage of the region and its environs may have been confined to salt making and farming of fishponds, with some wetland agriculture in those areas *mauka* or toward Waikīkī at the very limits of the field system descending from the Makiki and Mānoa Valleys. However, the testimonies do indicate that the area was lived on and was shaped by Hawaiians before the nineteenth century. The LCA records also reveal that midway through the nineteenth century, taro cultivation, traditional salt making, and fishpond farming activities continued in the Kaka‘ako area. These activities and the land features that supported them would later be eliminated or buried during the remainder of the nineteenth century by the urbanization of Honolulu.

By the time of the Māhele, Honolulu was firmly established as the capital of the Hawaiian Islands, and the city boundaries were spreading out to encompass Kaka‘ako. The marginal swamp and intertidal lands in the *makai* portion of Kaka‘ako became more valuable, and more than a third of the awards in this suarea were to the royal family, loyal retainers, and other important people. The LCAs near Downtown were for large house sites, many with multiple dwellings. The LCAs closer to Waikīkī were smaller and were for house lots with adjacent *lo‘i* and the rights to fishponds and salt lands.

A review of historic maps of Kaka‘ako indicate 16 LCAs in the vicinity of the project corridor (Figure 38 and Table 4). Most of the LCAs in the vicinity of the project corridor were small awards containing house lots, *lo‘i*, and ponds (used for salt procurement or aquaculture. However, a few of the LCAs in the vicinity (LCAs 677, 7712, 7713, and 10605) consist of portions of large awards that were given to *ali‘i*.

LCAs 677 and 7712 were awarded to Matio Kekūanao‘a, a high *ali‘i* who was a close friend to Kamehameha II and was married to Kīna‘u, the daughter of Kamehameha I**.**

The ‘*ili* of Ka‘ākaukukui (LCA 7713) was awarded to Victoria Kamāmalu, the sister of Kamehameha IV and Kamehameha V. Ka‘āaukukui consisted of three non-contiguous sections, a type of ‘*āina* (land) called a *lele*.

The ‘*ili* of Kewalo (LCA 10605) was awarded to Kamake‘e Pi‘ikoi, wife of Jonah Pi‘ikoi (awardee of Pualoalo ‘Ili), as part of LCA 10605, ‘*āpana* (lot) 7. The award was shared between

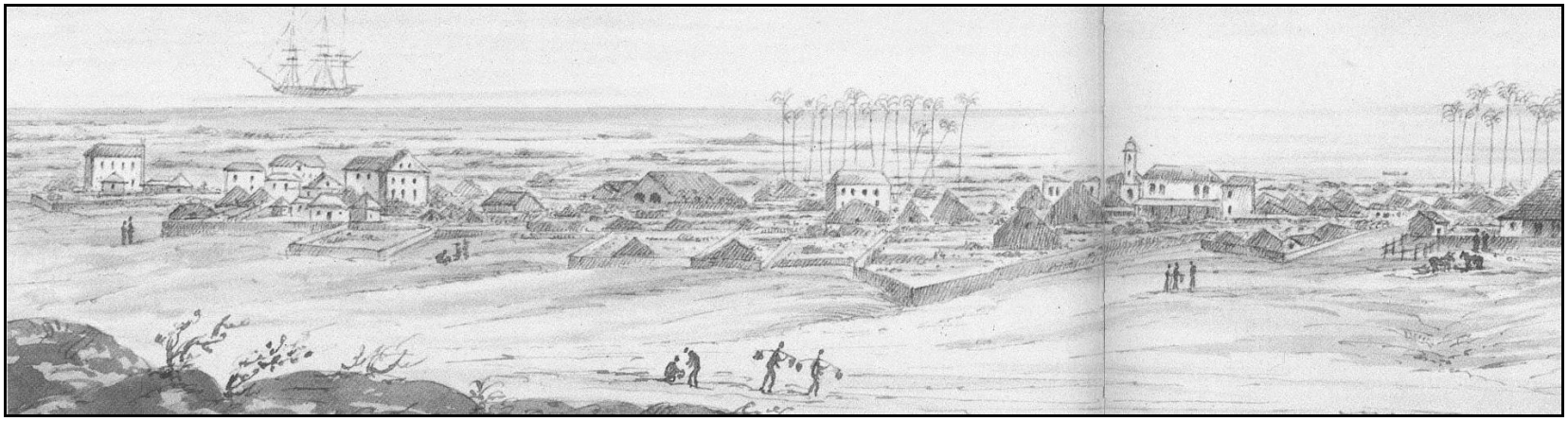


Figure 35. Portion of 1834 sketch by anonymous illustrator entitled “Town of Honolulu: Island of Woahoo: Sandwich Islands” – the central large thatched structure is an earlier Kawaiah‘o Church (original sketch at Bernice P. Bishop Museum; reprinted in Grant et al. 2000:64-65)

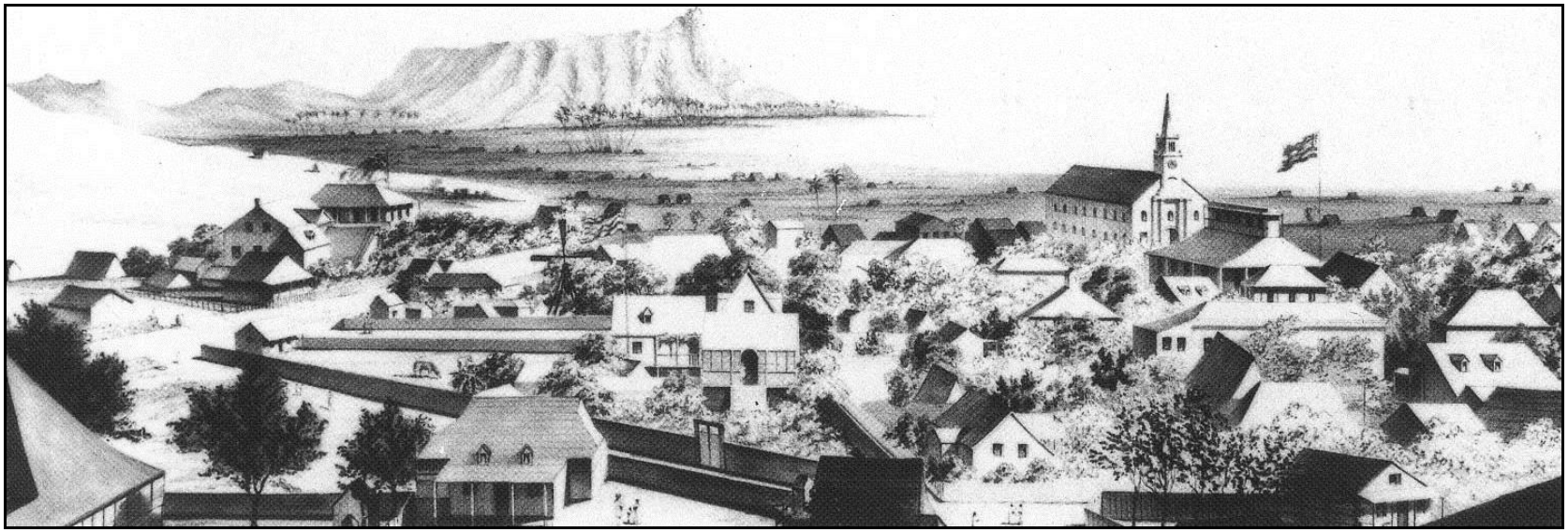


Figure 36. 1850 sketch by Paul Emmert (original sketch at Hawaiian Historical Society; reprinted in Grant et al. 2000:5)

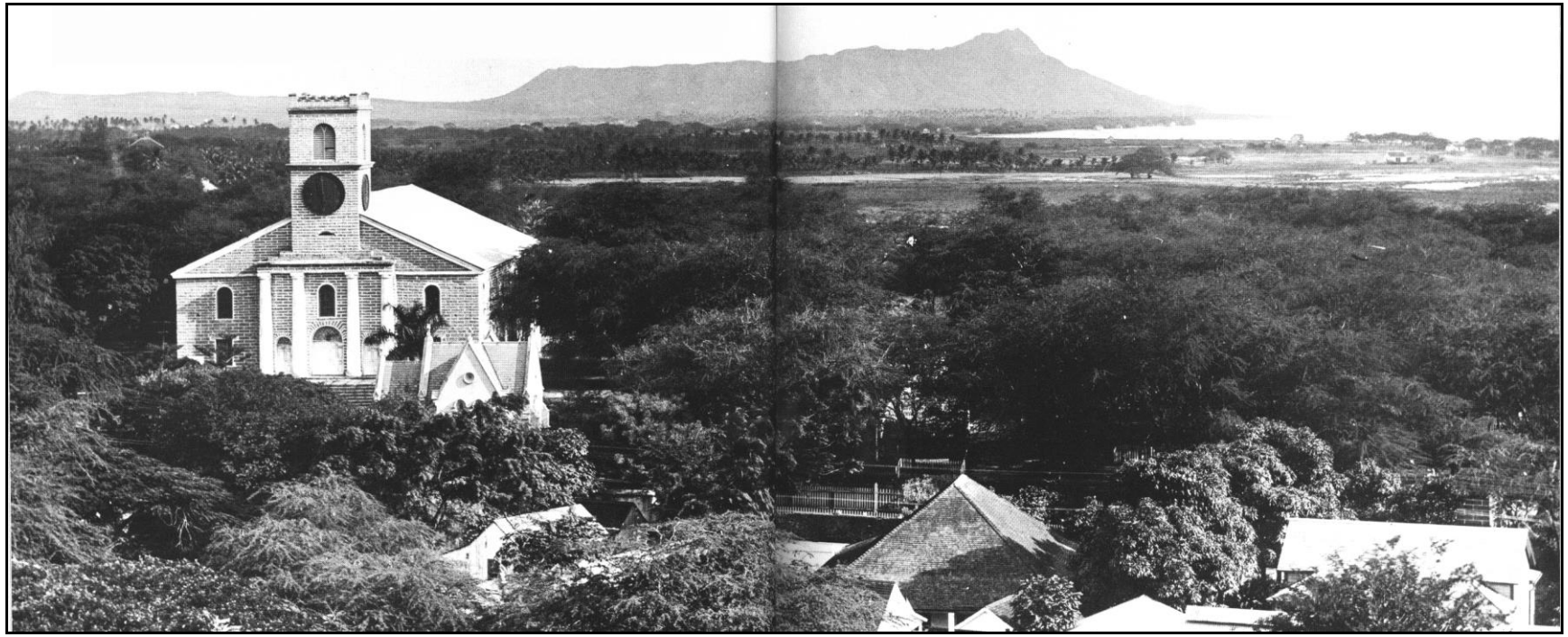


Figure 37. Circa 1887 photograph of Honolulu and Waikīkī; Kawaiaha‘o Church in left foreground; the Kaka‘ako area within the marshlands seen in the right upper background (original photograph at Hawai‘i State Archives, Henry L. Chase Collection; reprinted in Stone 1983:84-85)

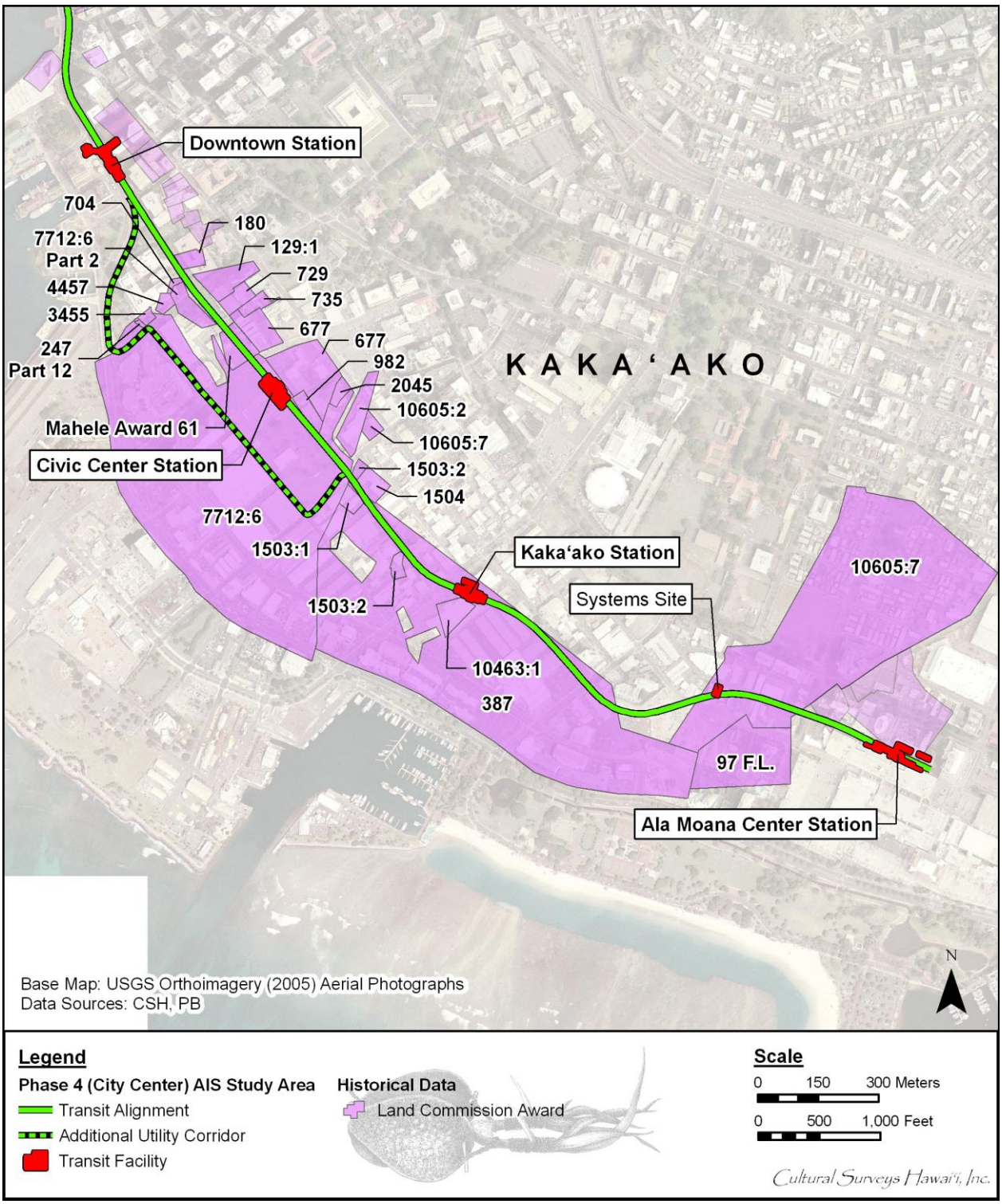


Figure 38. Aerial photograph (source: U.S. Geological Survey Orthoimagery 2005), showing the locations of LCAs (shown highlighted in purple) within and in the immediate vicinity of the Kaka‘ako portion of the City Center project corridor

Table 4. LCAs in Kaka‘ako within and in the Vicinity of the Project Corridor (in numeric order)

LCA Number	Contents of Award
Māhele Aw. 61	One house lot to Namakeha
97 F.L.	Two ponds, three fry patches, a patch, and a house lot to Kapapa
129:1	One house lot (house, fence) to Kinimaka
180	One house lot to Mataio Kekūanao‘a for Lot Kamehameha
247: Part 12	House lot to Charles Kana‘ina for W.C. Lunalilo
387	ABCFM (contained salt ponds)
677	One house lot (two houses) to Mataio Kekūanao‘a
704	One house lot (three houses) to Honaunau
729	One house lot (three houses) to Kekuhaupio
735	One house lot (two houses, partially fenced) to Ka‘ahumanu
982	One house lot (four houses) to Kukao
1503:1 and 1503:2	One house lot (a house and a fish pond) and two fish ponds to Puaa
1504	One house lot (house, pond, and salt land), two taro patches (*lo‘i*) to Pahiha
2045	One house lot to Kauwahi no Puniai
3455	One house lot to Kaule for Liliha
4457	One house lot (one house and four fish ponds) to Ana Kaloa
7712:6 Part 2	Lands to Mataio Kekūanao‘a
10463:1	One house lot, two ponds, and a salt land to Napela
10605:7	Lands to Iona Pi‘ikoi and Kamake‘e (no land description)

husband and wife (Kame‘eleihiwa 1992:269). The names “Pi‘ikoi” and “Kamake‘e” are remembered in two prominent, roughly parallel, streets in the Kewalo area to this day. Kewalo was a large 270.84-acre land section extending from Kawaiaha‘o Church to Sheridan Street. This land section had numerous large fishponds, which were awarded as part of the claim to Pi‘ikoi.

Two of the LCAs in the vicinity of the project corridor consisted of “Fort Lands” (F.L.) that were set aside from the Government Lands for the support of the garrison of the Fort at Honolulu. Only one *lo‘i* and one house lot were noted, but numerous ponds were listed: four ponds (function not listed) and eight *ki‘o pua* (ponds for raising fry or fish hatchlings).

2.4.3 Late Nineteen*th* Century

2.4.3.1 The 1874 Transit of Venus Observatory at ‘Āpua

On the 1884 map of Kewalo (Figure 39), an area called “Transit of Venus Observatory” is labeled for a lot just *mauka* of the project corridor, located northwest of the Civic Center Station. This lot was used to house a large portable observatory in 1874, an event of so much interest that

the lot continued to be labeled as the Transit of Venus yard many years after the portable observatory had been dismantled (Figure 40 and Figure 41).

In 1874, several astronomical teams from Great Britain traveled to different parts of the world to observe a rare transit of the planet Venus across the sun. The “purpose of the observations was to better determine the value of the astronomical unit (AU)—the earth-sun distance—and thereby the absolute scale of the solar system” (Chauvin 2004:xii). This project attracted enormous interest in Hawai‘i, and members of the Hawaiian Government Survey worked with the British team who set up observatories on Hawai‘i, Kaua‘i, and O‘ahu Islands. Each station needed an equatorial telescope, other telescopes, a transit instrument, an altazimuth (surrounded by a portable wooden observatory with a revolving dome), and several clocks, chronometers, compasses, micrometers, reflecting circles, and artificial horizons (Chauvin 2004:51, 60).

The land in question was a 0.3-acre “open piece of grass land in the district called Apua, south of Punchbowl Street and west of Queen Street.” Several buildings were erected, including a barracks and workshop, a cookhouse, a photo hut thatched with grass, the stages (platforms) for the instruments, and a wooden palisade to enclose the lot. The observations of the Transit of Venus on December 8, 1874 in Honolulu were a great success, and the British party was feted by the king and other prominent families of Hawai‘i. All that was left was to dismantle the temporary buildings at ‘Āpua. Tupman wrote:

> Mar. 13. The sale. Our household goods sold well, many friends desiring to obtain a memento of our visit. The long shed, Cook house, walls of huts, transit hut complete, water pipes & taps, 6-foot fencing and a large pile of lumber were knocked down to His Majesty the King for a very small sum, as no one would bid against him. We were not altogether sorry for this as His Majesty has given us the land rent free & had aided us in many ways tending to save expense to the British Government. (cited in Chauvin 2004:124)

2.4.3.2 Salt Production in Kaka‘ako

As noted in the Land Commission Award testimony, a large portion of Kaka‘ako was used to produce salt. The Hawaiians used *pa‘akai* (salt) for a variety of purposes: to flavor food, to preserve fish by salting, for medicines, and for ceremonial purposes.

In 1903, Nathaniel Emerson translated David Malo’s articles on early Hawaiian life. The following is Emerson’s translation of David Malo’s description of the traditional method of making salt:

> Salt was one of the necessities and was a condiment used with fish and meat, also as a relish with fresh food. Salt was manufactured in certain places. The women brought sea-water in calabashes, or conducted it in ditches to natural holes,hollows and shallow ponds (*kekaha*) on the sea-coast, where it soon became strong brine from evaporation. Thence it was transferred to another hollow or shallow vat, where crystallization into salt was completed. (Malo 1951:123)

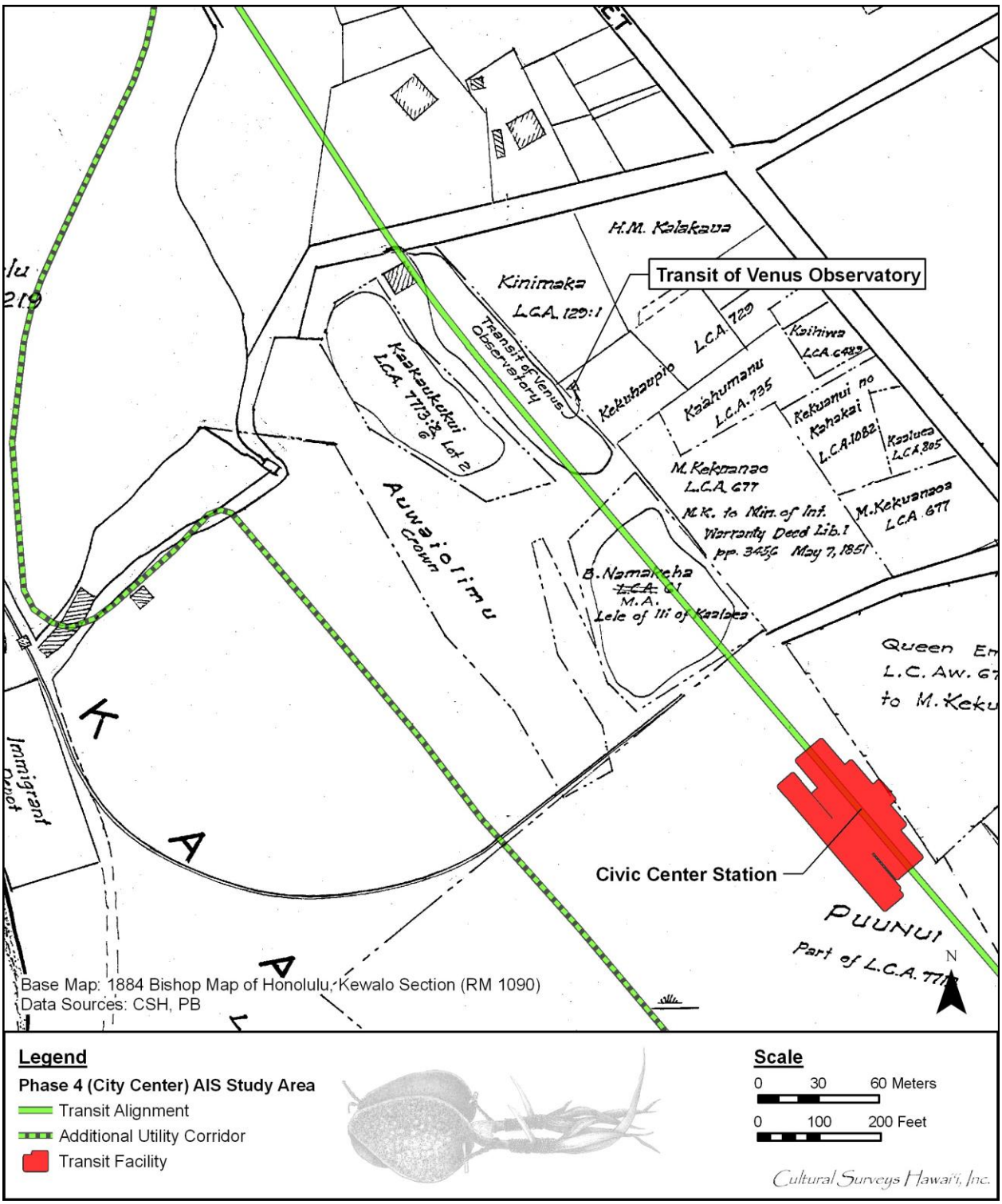


Figure 39. 1884 map of Honolulu, Kewalo section, by S. E. Bishop (Reg. Map 1090), showing the location of the Transit of Venus Observatory site (150 m northwest of the Civic Center Station on the *mauka* side of the corridor) in relation to the City Center project corridor

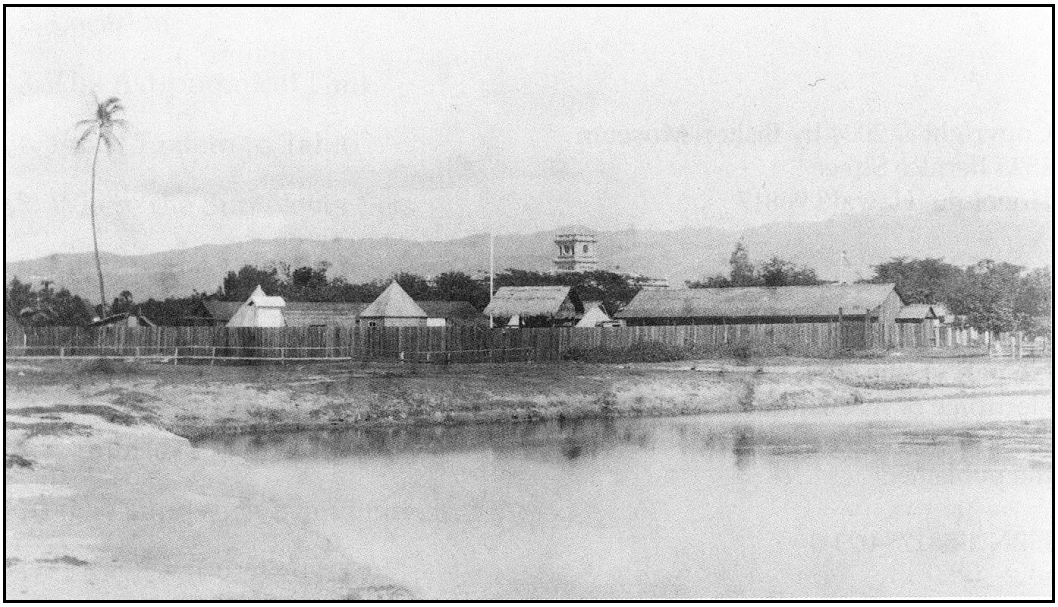


Figure 40. This 1874 photograph of Transit of Venus station at ‘Āpua, near Honolulu, view to north (Bishop Museum Archives, reprinted in Chauvin 2004:iii) shows the pond (part of ‘Auwaiolimu) in the foreground, the long barracks/workshops and other buildings of the station in the migground, and the spire of Kawaiaha‘o Church in the background.

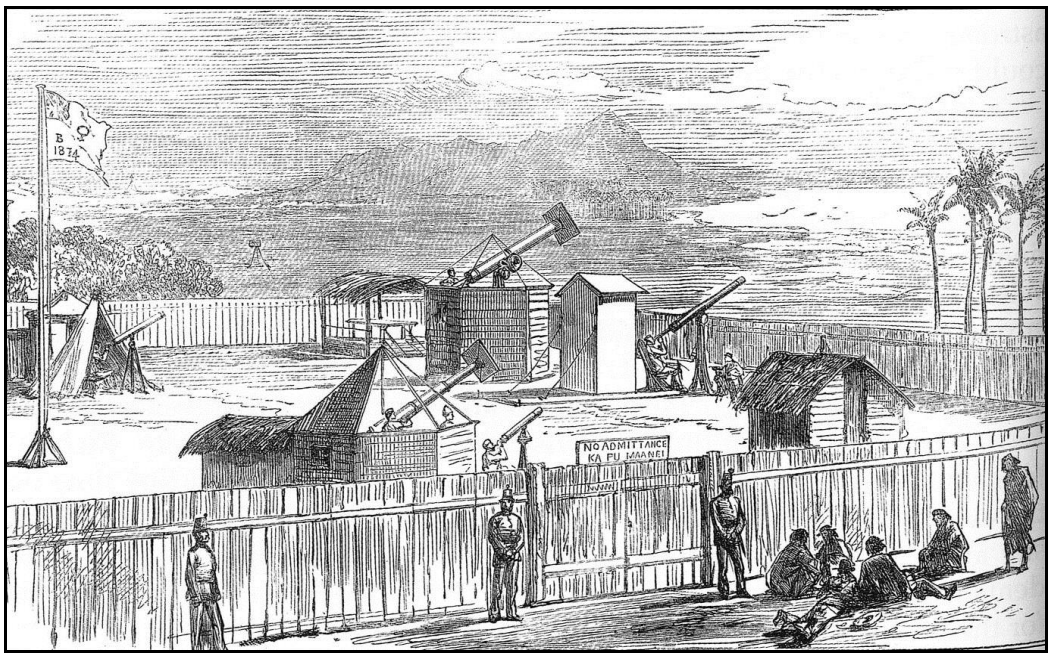


Figure 41. This sketch of the Transit of Venus station at ‘Āpua, near Honolulu, view to east (sketch from *Illustrated London News*, January 23, 1875; reprinted in Chauvin 2004:108) depicts armed guards keeping curious onlookers outside the fenced enclosure.

Captain Cook was the first to note the method of making salt in prepared “saltpans”:

> Amongst their arts, we must not forget that of making salt, with which we were amply supplied, during our stay at these islands, and which was perfectly good of its kind. Their saltpans are made of earth, lined with clay; being generally six or eight feet square, and about eight inches deep. They are raised upon a bank of stones near the high-water mark, from whence the salt water is conducted to the foot of them, in small trenches, out of which they are filled, and the sun quickly performs the necessary process of evaporation…Besides the quantity we used in salting pork, we filled all our empty casks, amounting to sixteen puncheons [“puncheon” sizes varied but were on the order of 500 liters], in the Resolution only. (Cook 1784:151)

In the next years after the first sightings of the Hawaiian Islands by Captain Cook in 1778, most visitors to the islands were British and American fur traders who stopped at Hawai‘i on their way to China. One reason for their visit was to stock up on food and water, but another concern was to buy or trade for salt, which was used to cure the seal and mammal pelts collected from the Northwest Coast. During Kotzebue’s visit in 1816 and 1817, he noted that “Salt and sandalwood were the chief items of export” (in Thrum 1905:50).

> The journals of none mention the object of call other than for refreshments, though one, 3 some years later, records the scarcity and high price of salt at the several points touched at, with which to serve them in the curing of furs obtained on the coast. In all probability salt was the first article of export trade of the islands and an object, if not the object, of these pioneer fur-traders’ call. (Thrum 1905:45)

The missionary William Ellis, on a tour of the Hawaiian Islands in 1822 and 1823, also noted these salt pans and recorded the final step of crystallization:

> The natives of this district (Kawaihae) manufacture large quantities of salt, by evaporating the sea water. We saw a number of their pans, in the disposition of which they display great ingenuity. They have generally one large pond near the sea, into which the water flows by a channel cut through the rocks, or is carried thither by the natives in large calabashes. After remaining there for some time, it is conducted into a number of smaller pans about six or eight inches in depth, which are made with great care, and frequently lined with large evergreen leaves, in order to prevent absorption. Along the narrow banks or partitions between the different pans, we saw a number of large evergreen leaves placed. They were tied up at each end, so as to resemble a narrow dish, and filled with sea water, in which the crystals of salt were abundant. (Ellis 1827:403-404)

In an article on Hawaiian salt works, Thomas Thrum (1924) discusses a salt works in Kaka‘ako:

> Honolulu had another salt-making section in early days, known as the Kakaako salt works, the property of Kamehameha IV, but leased to and conducted by E.O. Hall, and subsequently E.O. Hall & Son, until comparatively recent years. This

> enterprise was carried on very much after the ancient method of earth saltpans as described by Cook and Ellis. (Thrum 1924:116)

An 1883 map of the Honolulu Water Works System shows the extent of salt production within the Kaka‘ako area (Figure 42). The area of salt pans is marked out as a large grid of contiguous squares located within the vicinity of the Kaka‘ako Station.

An 1838 sketch of “Honolulu Salt Pan, near Kaka‘ako” drawn by French visitor Auguste Borget and an 1845 sketch of “Native Church, Oahu, from the Old Salt Pans,” drawn by John B. Dale, from the U.S. Exploring Expedition led by Lt. Charles Wilkes, show the traditional, long salt ponds constructed parallel to the shore in Kaka‘ako (Figure 43 and Figure 44).

The traditional method of salt production was gradually replaced by the more labor-intensive Chinese method, as the Chinese immigrants began to take over the traditional salt and fish ponds of Honolulu in order to grow rice, to raise ducks, and to make salt.

In a 1906 article, Rev. Westervelt (1906:43-46) explained the Chinese method of salt evaporation for the Honolulu salt beds. The Chinese worker first used a water pump to draw the seawater from the larger ditch below to the salt-evaporation beds above. The man moved the two handles back and forth to work the pump. The evaporation beds were lined with clay, wet with sea water, and tramped and pounded down. Each pan was about 20 feet square, covered with about two inches of water, and bound by an earth dyke, as shown in a 1902 photograph of the Kewalo salt brine beds (Figure 45). After allowing the sun to evaporate some of the water, the worker stepped into the evaporation pan and scraped the salt into a pile in the center with a simple wooden scraper. The worker then threw a large basket-shaped scoop into the brine and used a tin dipper to move the salt to the basket. Two baskets, one on each side of a pole, were then carried on the back of a worker across the thin earth dykes between the salt pans. The baskets were dumped into large drying piles where the remaining water seeped out into the ground. The salt was then sewn into gunny sacks and sent to the market for sale.

By 1901, most of the fishponds and salt pans *makai* of King Street were reported as abandoned. In that year, the Hawaii Legislature (1901:185) proposed to build a ditch to drain away the “foul and filthy water that overflows that district at the present time.”

The export of salt declined in the late nineteenth century. Thrum (1924:116) states that the apex of the trade was in 1870, but by 1883 he noted that “pulu, salt and oil have disappeared entirely” from the list of yearly exports (Thrum 1884:68). By 1916, only one salt works, the Honolulu Salt Co., was still in operation.

2.4.3.3 Human Quarantine and Cemeteries

The city block now bounded by Punchbowl Street, Pohukaina Street, South Street, and Ala Moana Boulevard (now covered by the Waterfront Plaza complex), approximately 150 m southwest of the current project corridor, was used as a cemetery from the 1700s (or earlier) up to the early 1800s. This is based on an analysis of artifacts from eight burials disinterred at the site (Griffin et al. 1987:4). The burial ground is currently referred to as the “Ka‘ākaukukui Cemetery,” but its ancient name, if it had one, is unknown.

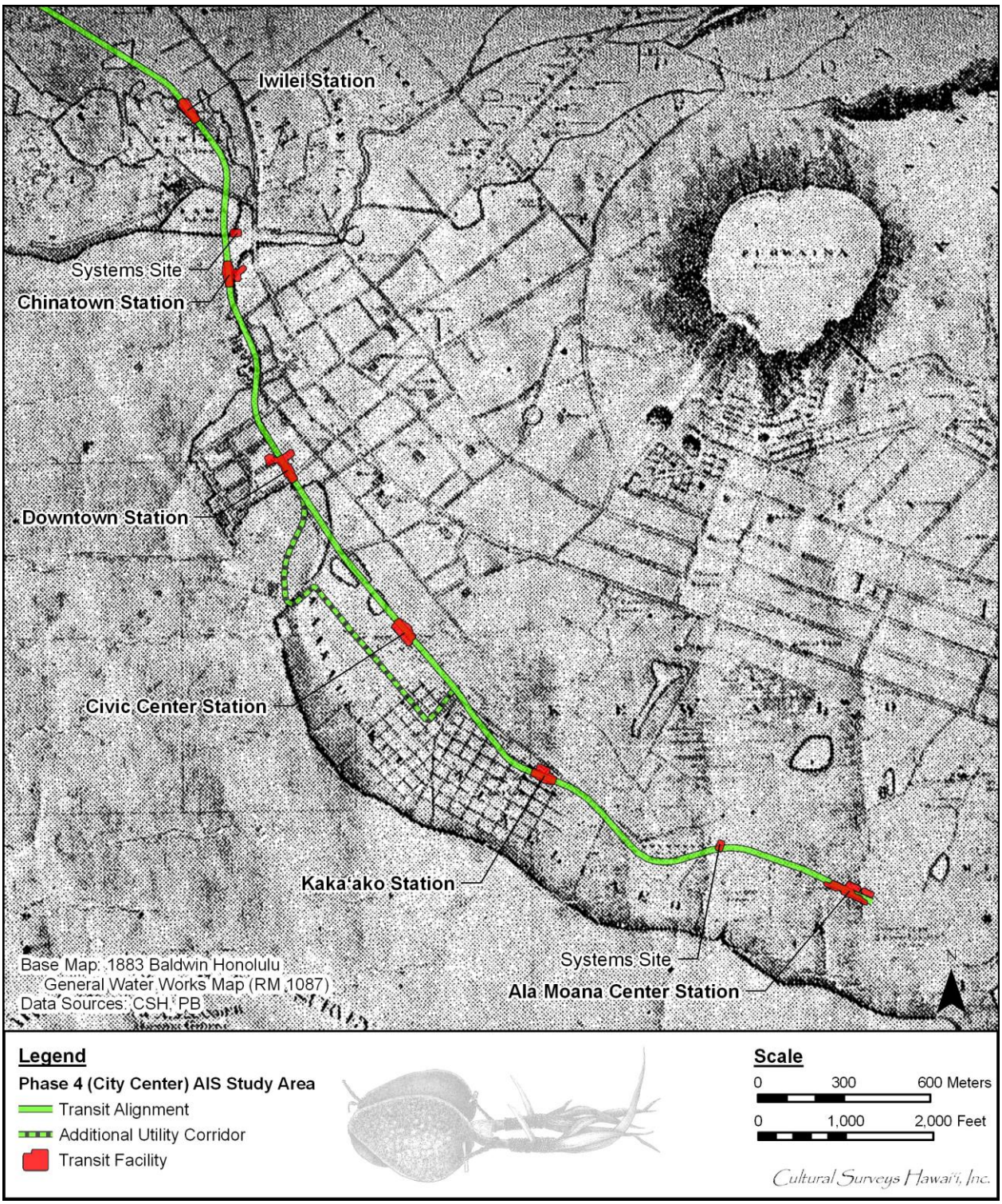


Figure 43. This 1883 Hawaiian Government Survey map of the Honolulu Water Works System by E.D. Baldwin shows the grid system in the vicinity of the Kaka‘ako Station, which represent salt pans.

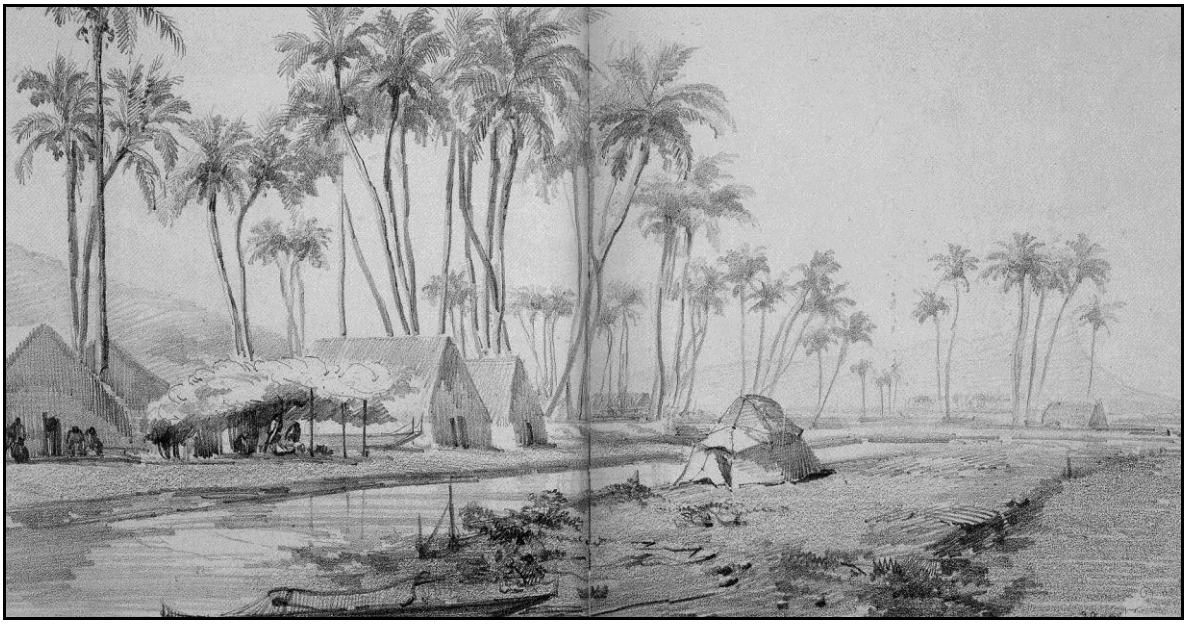


Figure 43. 1838 sketch of “Honolulu Salt Pan, near Kaka‘ako” drawn by French visitor Auguste Borget (the salt pans were long linear depressions as shown in foreground) (original sketch at Peabody Essex Museum, Salem, Mass; reprinted in Grant et al. 2000:64-65)

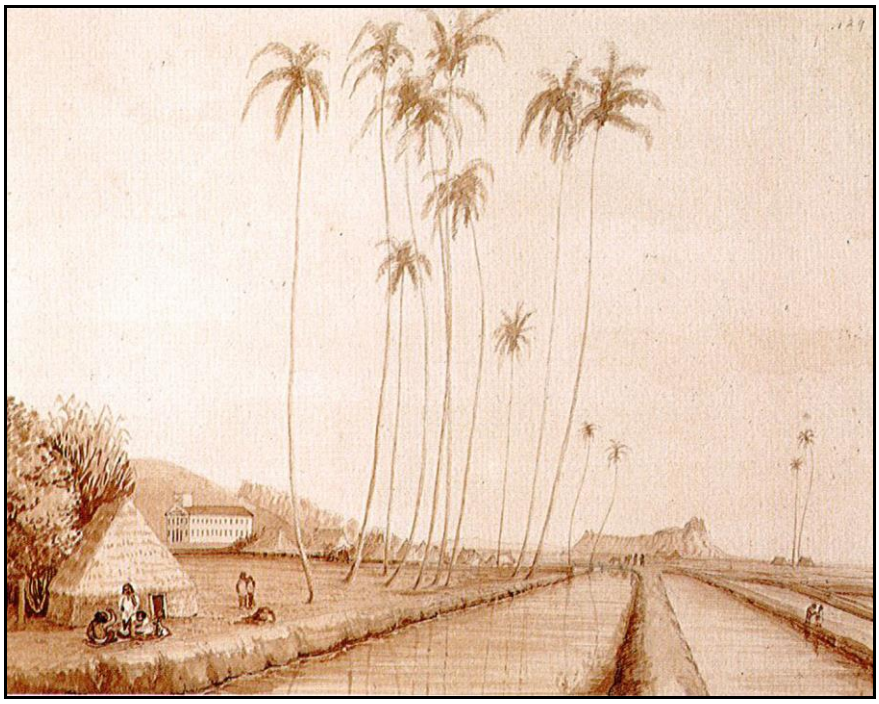


Figure 44. This 1845 sketch of “Native Church [Kawaiaha‘o Church], Oahu, from the Old Salt Pans,” drawn by John B. Dale, from the U.S. Exploring Expedition led by Lt. Charles Wilkes (J. Welles Henderson Collection, reprinted in Forbes 1992:126) very likely depicts the salt pans in the Ka‘ākaukukui area.

Figure 45. 1902 photograph of Kewalo brine basins (original photograph at Bernice P. Bishop Museum; reprinted in Scott 1968:579)

During the 1853 smallpox epidemic, patients were isolated at a temporary quarantine camp and hospital at Kaka‘ako (Thrum 1897:98). The small pox hospital is understood to have been *makai* of Queen Street and *‘ewa* of South street in the vicinity of the Honolulu Brewery Building (see Pfeffer et al. 1993:59-65). Victims of the disease were later buried at the Honuakaha Cemetery near the modern junction of Quinn Lane and South Street, located approximately 30 m northeast of the current project corridor (Griffin et al. 1987:13; Pfeffer et al. 1993; Hammatt and Pfeffer 1993), and discussed further in the previous archaeological research section, below.

Hansen’s Disease (i.e., leprosy) was first reported in Hawai‘i 1840, and positively identified in 1853. During the next 25 years (i.e., 1853-1878), there were approximately 160 cases per year, and 80 cases per year over the next 50 years (i.e., 1878-1928). The number of cases later decreased to 60 in 1931 and 20 in 1951 (Arnold 1956:317). In 1865, a receiving hospital in Kalihi, west of Honolulu (near the south end of Pu‘uhale Road, well south of the City Center project corridor), was set up to examine suspected lepers. If the diagnosis was confirmed, the patients were forcibly exiled to the Kalaupapa colony on Moloka‘i. In cases where it was uncertain if the patient had leprosy or some other type of skin disease, the stay at the hospital could extend into weeks while the doctors waited for definite symptoms of leprosy to develop. A branch hospital and receiving station for cases of Hansen’s Disease was opened in 1881 at

Kaka‘ako, within the city block now bound by Ala Moana Boulevard, Keawe Street, Auahi Street, and Coral Street (Griffin et al. 1987:55), with 48 patients tended by Dr. George L. Fitch (Hanley and Bushnell 1980:112). This land, at “Fisherman’s Point,” was donated by Princess Ruth Ke‘elikōlani. The “Leper Hospital” is indicated on the 1884 map of Honolulu (Figure 46).

One of the main purposes of the Kaka‘ako Detention Center was to keep suspected lepers isolated from the general public. Sister Leopoldina, a Franciscan sister, described the Kaka‘ako Hospital in 1885 as being like a prison, enclosed by:

> . . .a high close board fence and large strong locked gates…A large building [sat] over those gates where the lepers were allowed to talk with their relatives through prison bars. No one was allowed to enter without a permit from the Board of Health. (cited in Hanley and Bushnell 1980:114)

In 1888, the Board of Health decided to close the Kaka‘ako Branch, moving the receiving station to Kalihi. They determined that “the buildings at Kakaako should be entirely removed” (Hanley and Bushnell 1980:275). The hospital and several of the larger buildings were dismantled and transported for use at Moloka‘i (Daws 1984:xxiii). A few buildings remained and the Kaka‘ako site continued to be used as a temporary leprosy receiving station. Thrum (1897:101) reports that victims of the cholera epidemic of 1895 were treated at the Kaka‘ako Hospital, indicating the remaining buildings were modified or a new hospital was built during this time.

During the bubonic plague epidemic of 1899 infected patients were moved to a quarantine camp at Kaka‘ako. Some people whose houses were burned, not necessarily patients, were housed at the barracks of the Kaka‘ako Rifle Range, and their belongings were stored in the cellars of Kaumakapili Church.

2.4.3.4 Pohukaina School and Mother Waldron Park

In the surveyor’s notes for an 1873 map of land parcels at the corner of King and Punchbowl Streets, the present site of the Hawai‘i State Public Library, one of the parcels is identified as the “lot purchased by the Government of Prince Lunalilo in 1872, said portion now to be transferred to the control of the Board of Education.” The parcel was, in 1874, to become the site of the Pohukaina School for Girls, one of three government-supported schools on O‘ahu during the second half of the nineteenth century.

In 1907, the Hawaii Territorial Legislature passed an act to establish the Library of Hawai‘i. After evaluating several possible locations, the government committee decided that the King Street lot of the Pohukaina School would be the best location. Gov. Frear wrote, “I arranged to have Pohukaina School moved to Kakaako- a more central location with reference to itsconstituency and with much more space for buildings and playgrounds” (Frear 1938, cited in Schilz 1991).

As Gov. Frear noted, Pohukaina School was moved to Kaka‘ako within the city block bounded by Pohukaina Street, Keawe Street, Halekauwila Street, and Coral Street, an area adjacent to the *makai* edge of the current project corridor and just southeast of the Civic Center Station.Constructed at a cost of $28,000, the new school building opened in 1913:

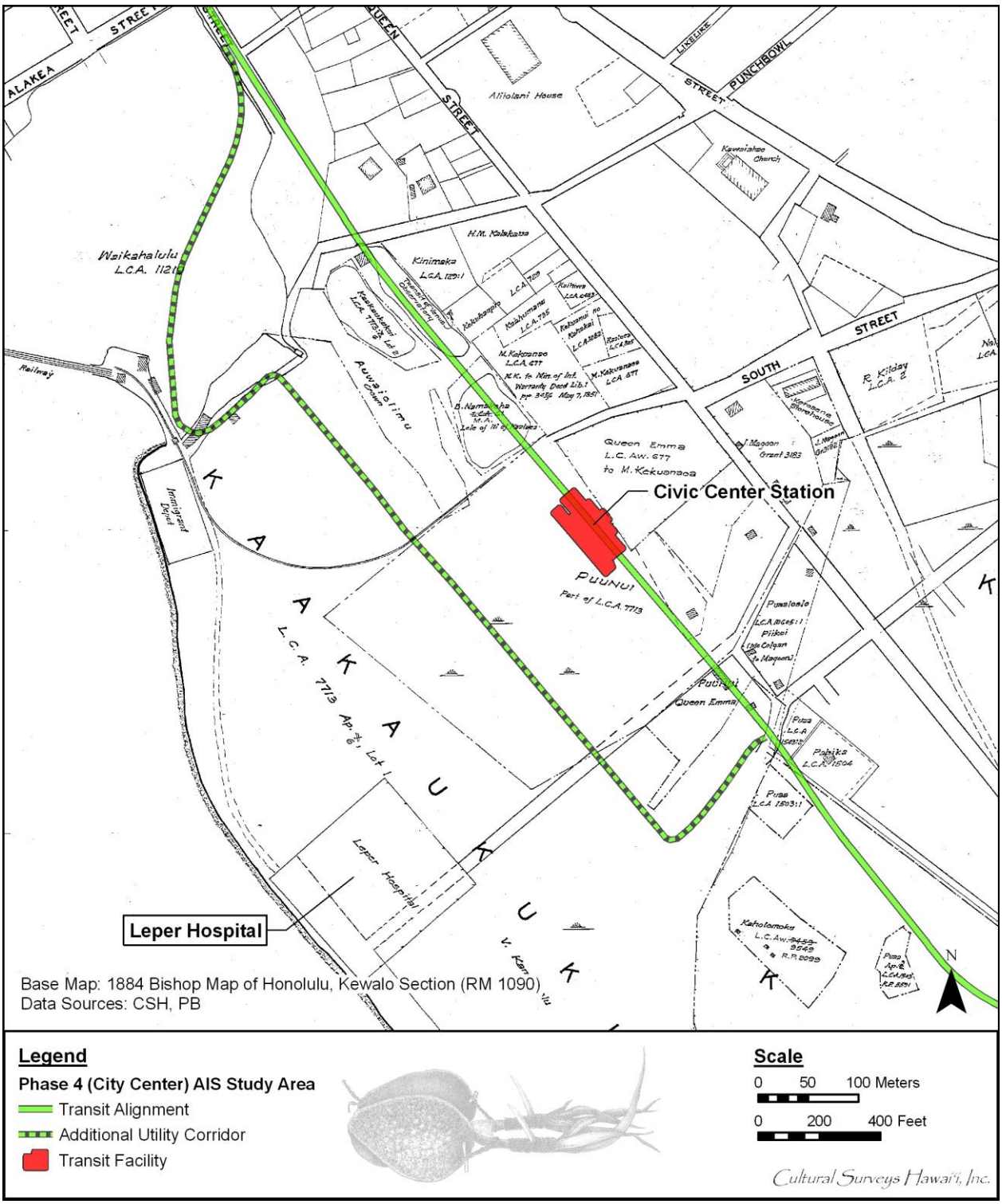


Figure 46. 1884 map of Honolulu, Kewalo section, by S. E. Bishop (Reg. Map 1090), showing the location of the Leper Hospital site in relation to the project corridor(s)

> The structure which was designed by E. C. Petit of the architectural firm headed by H.L. Kerr represents a special study in firproofing. It is fitted with specially designed fire walls and doors, with outside staircases.
>
> The building is of reinforced concrete and economically planned, the rooms on the second floor being fitted with folding doors to that they may be thrown together. The design permits of the addition of a number of rooms at the rear of the building when an increase in school population makes this necessary. (*Pacific Commercial Advertiser*; June 22, 1913:A1)

Pohukaina School remained in operation in Kaka‘ako until 1980, by which time it had developed into a special education facility. The buildings were demolished and, in 1981, the Pohukaina School special education program was transferred to the campus of Kaimukī Intermediate School.

One of the teachers at the Pohukaina School was Margaret Waldron. Mrs. Waldron taught at Pohukaina School for 18 years until her retirement in 1934. She was also noted for her volunteer work in Kaka‘ako and was “generally credited with being the individual who had the most influence in transforming the so-called ‘Kakaako gangs’ into law abiding groups and wiping out the unsavory reputation which at one time clung to the district” (*Honolulu Star-Bulletin*; May 8, 1936:A1). Mrs. Waldron died on May 8, 1936. The following year, when a new playground was constructed across Coral Street from Pohukaina School, the Honolulu Board of Supervisors authorized the park’s designation as “Mother Waldron Playground.” At the September 20, 1937 opening of the playground, designed by Harry Sims Bent and constructed on the site of the former County stables at a cost of $50,000:

> [O]fficials expressed the hope that the park would be appreciated and enjoyed to the utmost. Reference was made to the dusty roads and barren lands that had marked the site not many years ago. (*Honolulu Advertiser*; September 21, 1937:A1)

Mother Waldron Playground was then, in 1937, the most modern facility in the Territory. The following year, Lewis Mumford, the noted author and social scientist, was invited by the Honolulu Park Board to study the county’s parks and playgrounds. He noted the “spirit called forth in the Mother Waldron Playground.” Mumford defined that spirit exemplified by Mother Waldron Playground and other county parks:

> That the very spirit of play is enhanced by taking place in a setting that shows order and vision often does not occur to the municipal departments concerned; hence, ugly chicken-wire fences, clay or bare asphalt surfaces, and a complete innocence of all aesthetic device. Honolulu has made a valuable departure from this stale tradition by providing, in some of its new playgrounds, structures that have none of this tawdry makeshift quality; they are rather examples of building art worthy to have a place beside the open-air gymnasiums or palestra of the Greeks. The handsome bounding wall, the judicious planting of shade trees, the retention of grass wherever possible, translate the spirit of organized play to the area itself. (Mumford 1938:42)

2.4.4 Early Twentieth-Century Land Reclamation Projects

2.4.4.1 Kaka‘ako Reclamation

By the 1880s, infilling of the mud flats, marshes, and salt ponds in the Kaka‘ako area had begun. This infilling was driven by three separate, but overlapping, improvement justifications. The first directive was for the construction of new roads and improving older roads by raising the grade so the improvements would not be washed away by flooding during heavy rains. A report by the Hawaii Board of Health noted:

> I beg to call attention to the built-up section of Kewalo, “Kaka‘ako,” where extensive street improvements, filling and grading have been done. This, no doubt, is greatly appreciated and desirable to the property owners of that locality, but from a sanitary point of view is dangerous, inasmuch as no provision has been made to drain the improved section, on which have been erected neat cottages occupied for the greater part by Hawaiian and Portuguese families, now being from one to three feet below the street surface, and which will be entirely flooded during the rainy season. Unless this is remedied this locality will be susceptible to an outbreak [of cholera] such as we experienced in the past. (Hawaii Board of Health 1905:80)

As mentioned in the above section, the justification for infilling of low-lying areas most frequently cited was public health and sanitation: the desire to clean up rivers and ponds that were reservoirs for diseases such as cholera and were breeding places for rats and mosquitoes. Thus, as early as 1902, the Board of Health reported that:

> The Board has paid a great deal of attention to low-lying stagnant ponds in different parts of the city, and has condemned a number of them. The Superintendent of Public Works has given great assistance to seeing that the ponds condemned by the Board are filled. In September a pond on South Street was condemned as deleterious to the public health. (Hawaii Board of Health 1903:80)

The first areas to be filled were those closest to Honolulu, then moving outward to Kaka‘ako (Griffin et al. 1987:13). The first fill material may have been set down in 1881 for the Kaka‘ako Leper Branch Hospital, which had been built on a salt marsh. Laborers were hired to “haul in wagonloads of rubble and earth to fill up that end of the marsh” (Hanley and Bushnell 1980:113). In 1903, five more lots in Kewalo, on Ilaniwai, Queen, and Cooke Streets, were condemned and ordered to be filled (Hawaii Board of Health 1903:6).

Although public health and safety were prominently cited, according to Nakamura (1979), the main desire (and third justification) to infill Honolulu, Kewalo, and then Waikīkī lands was to provide more room for residential subdivisions, industrial areas, and finally tourist resorts. In the early part of the twentieth century, Kaka‘ako was becoming a prime spot for large industrial complexes, such as iron works, lumber yards, and draying companies, which needed large spaces for their stables, feed lots, and wagon sheds.

In 1900, the Honolulu Iron Works, which produced most of the large equipment for the Hawaiian plantation sugar mills, moved from its old location at Queen and Merchant Streets near

Downtown Honolulu to the shore at Kaka‘ako on land that had been filled from dredged materialduring the deepening of Honolulu Harbor (Thrum 1901:172). Other businesses soon followed. Thrum noted:

> The Union Feed Co. is another concern whose business has outgrown the limits of its old location, corner of Queen and Edinburgh streets. Like the Iron Works Co. they have secured spacious premises at Kakaako, erecting buildings specially adapted to the needs of their extensive business at the corner of Ala Moana (Ocean Road) and South Street. (Thrum 1902:168)

Private enterprises were not the only new occupants of Kaka‘ako. A sewer pumping station, an immigrant station, and a garbage incinerator were also built on “reclaimed land.” Thrum noted:

> The dredging of Honolulu harbor and its channel is completed as far as planned for the present…the material there from being used to fill in a large area of Kakaako and the flats in the vicinity of the sewer pumping station and garbage crematory. (Thrum 1907:148-149)

In 1905, the Kaka‘ako area was being used for the incineration of waste from urban Honolulu. Thomas Thrum reported:

> Early in the year was completed the long projected garbage crematory for the disposal, daily, of the city's refuse by a patent and sanitary process. It is located on the shore of Kakaako, adjoining the sewer pumping station; is two stories in height and built of brick (Thrum 1906:177).

2.4.4.2 Kewalo Reclamation Project

Although the Board of Health could condemn a property and the Department of Public Works could then fill in the land, the process was rather arbitrary and piecemeal. In 1910, after an epidemic of bubonic plague, the Board of Health condemned a large section of Kewalo, consisting of 140 land parcels with numerous ponds (Hawaii Department of Public Works 1914:196).

In 1914, the entire:

> . . .locality bounded by King street, Ward avenue, Ala Moana and South street, comprising a total area of about two hundred acres, had been found by the board of health of the Territory to be deleterious to the public health in consequence of being low and below ‘the established grades of the street nearest thereto’ and at times covered or partly covered by water and improperly drained and incapable by reasonable expenditure of effectual drainage, and that said lands were in an insanitary and dangerous condition. (Hawaii Supreme Court 1915:329)

The superintendent of the Board of Health then sent a letter to all property owners informing them that they must fill in the lands to the grade of the street level within 60 days. Only a few of the land owners complied, infilling their land with a variety of materials. Most of the land owners did not comply with the notice and, in 1912, the bid was given to LorYoung Engineering

Co. to fill in the land with “sand, coral and material dredged from the harbor or reef and the depositing of the same upon the land by the hydraulic method” (Hawaii Supreme Court 1915:331). The affected land owners sued to stop the work, and in the suit the method of hydraulic filling is described:

> By this [hydraulic] method the material dredged is carried in suspension or by the influence of water which is forced through large pipes and laid upon the lands and intervening streets, and afterwards is distributed and leveled, the water having drained off through ditches provided for the purpose. The work is done in large sections around which bulkheads have been constructed. A section can be filled in about thirty days, the dredger working about fifteen hours per day. And in about two months after a section has been filled the ground will have dried out so as to be fit for use as before. . . The character of the material varies from very fine sand to coarse bits of coral. . .
>
> It appears in evidence that though the method employed the finest of the material which is carried upon the land settles when the water which transports it becomes quiet and as the water runs off a sludge or mud remains which forms a strata more or less impervious to water. This strata, however, is covered by the coarser and more porous material. . . it appears that by mixing in to a depth of a few inches ordinary soil small plants will grow without difficulty. . . The character of the locality must be considered. It is not adapted to agriculture, but is suited more particularly to such business purposes as it now partly used for, such as stables, laundries, warehouses, mills, etc., and for cottages with small yards for the accommodation of laborers engaged in connection therewith. Upon the whole, we are of the opinion that the material proposed to be used in the fill-in of the lands of the complainants is not of a character as should be held to be improper for any of the reasons urged [Hawaii Supreme Court 1914:351].

The expense of the law suit brought against the Board of Health directive to fill low-lying areas did manage to shut down operations planned for the area from Ward Avenue to Waikīkī (Thrum 1916:159-160). This land was mainly owned by the Bishop Estate, which leased the land to small farmers growing taro and rice and raising ducks in the ponds. In 1916, the Bishop Estate announced that as soon as their present tenant leases expired, it planned to fill the lands and divide them into residence and business lots (Larrison 1917:148-149).

2.4.5 Urban Expansion in the Kaka‘ako Area

Kaka‘ako was considered outside the Honolulu town boundary and was used in the mito-late nineteenth century as a place for cemeteries, burial grounds, and for the quarantine of contagious patients. Then, in the beginning of the twentieth century, the area was used as a place for sewage treatment and garbage burning, finally becoming an area for cheap housing and commercial industries (Griffin et al. 1987:13).

Late nineteenth-century maps (Figure 47 and Figure 48) show the emerging traces of the future development in Kaka‘ako as the grid of roads extending southeast from Honolulu toward Waikiki. Queen Street, which was planned to connect to the beach road near Waikīkī, appears to follow the route of the traditional trail from Kou (Honolulu) to Waikīkī, as described by John

Papa ‘Ī‘ī. (1959:91-94) This trail likely traversed a sand berm raised above the surrounding marshlands and coral flats. The late nineteenth-century maps indicate the vicinity of the current project corridor remained marshland with fishponds and salt ponds with a few scattered habitations.

A series of U. S. Geological Survey (or wartime U.S. Army) Fire Control maps (Figure 49 to Figure 52) show the gradual expansion of the Honolulu urban district to the edge of Kaka‘ako and beyond in the early twentieth century. During the first half of the twentieth century, both rice fields and marshlands were eliminated as Kaka‘ako lands were filled to accommodate the expanding urbanization of Honolulu.

2.5 Kālia

The extreme east end of the City Center project corridor (approximately 300 m) is in extreme west Kālia at the western edge of Waikīkī (Kālia is understood as having extended as far west as the former *makai* end of Sheridan Street that became Pi‘ikoi Street). The *‘ili* of Kālia in Waikīkī was awarded to Victoria Kamāmalu, but she returned the land to the government. It then became Fort Lands, set aside so that the soldiers manning the fort positions on O‘ahu could plant their own crops and provide for their own subsistence. The plan proved impractical, and many of these lands were then awarded to other *ali‘i* or commoners, or assigned as Government or Crown Lands. There were 47 *kuleana* claims made in Kālia and 38 were awarded (Waihona ‘Āina 2000). Several LCAs near the east end of the City Center route were awarded as “Fort Lands” (Figure 53 and Table 5). Most of the remaining lands in Kālia were government lands.

As the nineteenth century progressed, Waikīkī was becoming a popular site among foreigners – mostly American – who had settled on O‘ahu. An 1865 article in the *Pacific Commercial Advertiser* mentioned a small community that had developed along the beach. The area continued to be popular with the *ali‘i* and several notables had residences there. A visitor to O‘ahu in 1873 described Waikīkī as “a hamlet of plain cottages, whither the people of Honolulu go to revel in bathing clothes, mosquitoes, and solitude, at odd times of the year” (Bliss 1873).

Other developments during the second half of the nineteenth century (a prelude of changes that would dramatically alter the landscape of Waikīkī during the twentieth century) include the improvement of the road connecting Waikīkī to Honolulu (the route of the present Kalākaua Avenue) and the building of a tram line between the two areas. Traditional land uses in Waikīkī were abandoned or modified. By the end of the nineteenth century, most of the fishponds that had previously proliferated had been neglected and allowed to deteriorate. The remaining taro fields were planted in rice to supply the growing numbers of immigrant laborers imported from China and Japan and for shipment to the west coast of the United States (Coulter and Chun 1937).

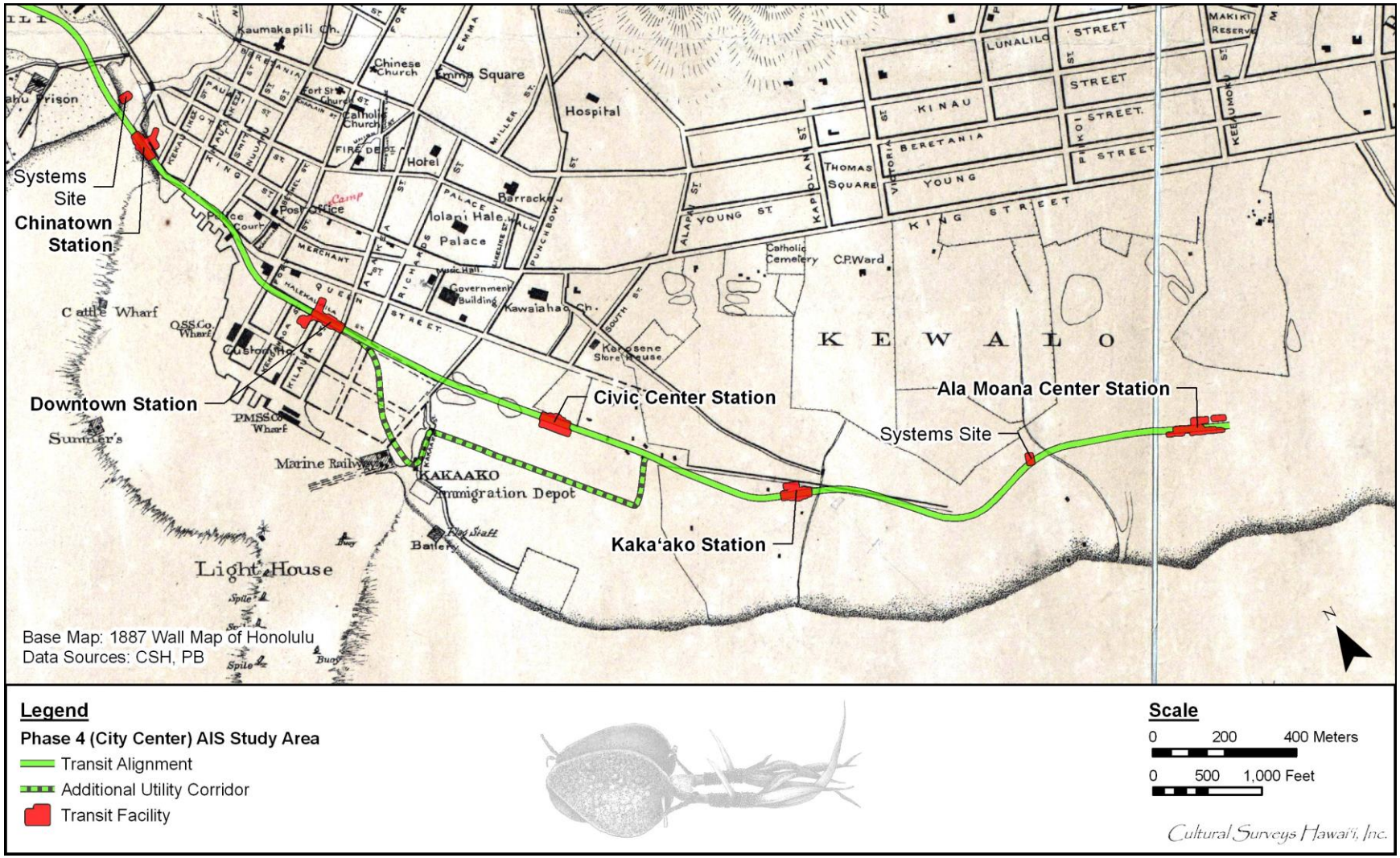


Figure 47. 1887 Hawaiian Government Survey Map of Honolulu and Vicinity, by W.A. Wall, showing the vicinity of the Kaka‘ako portion of the City Center project corridor

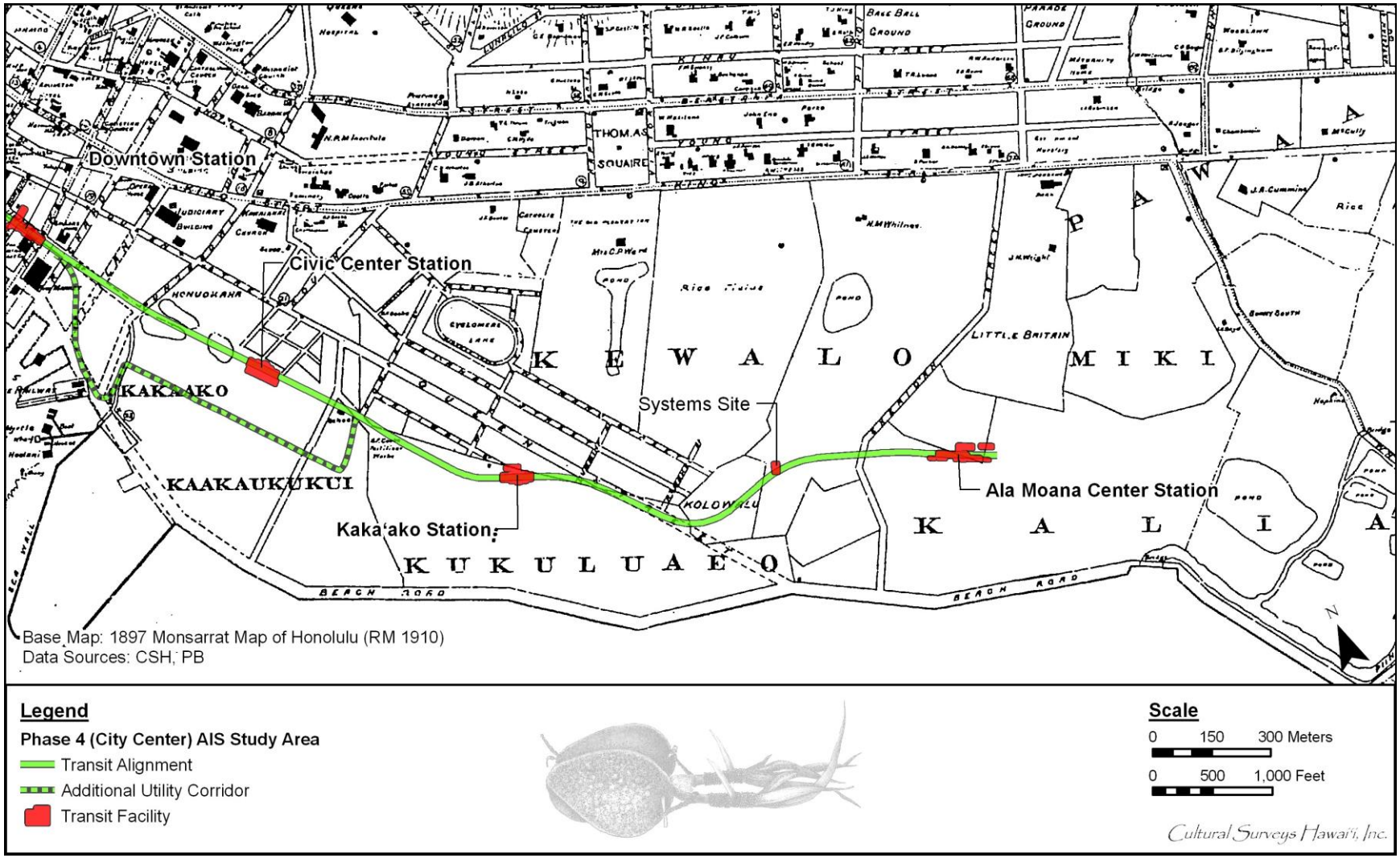


Figure 48. 1897 Map of Honolulu by M. D. Monsarrat (Reg. Map 1910), showing the vicinity of the Kaka‘ako portion of the City Center project corridor

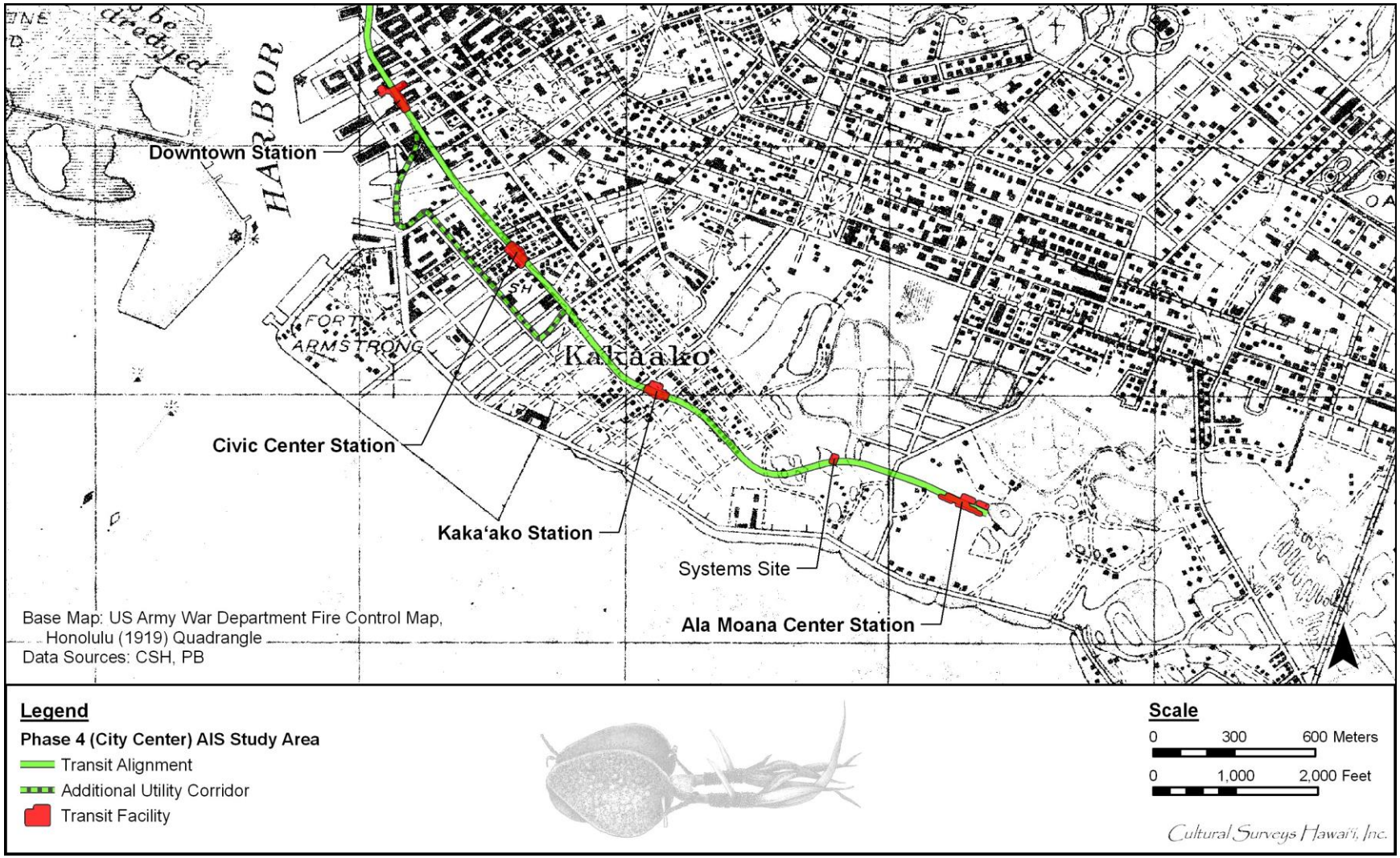


Figure 49. 1919 U.S. Army War Department Fire Control map, Honolulu Quadrangle, showing the Kaka‘ako vicinity of the City Center project corridor

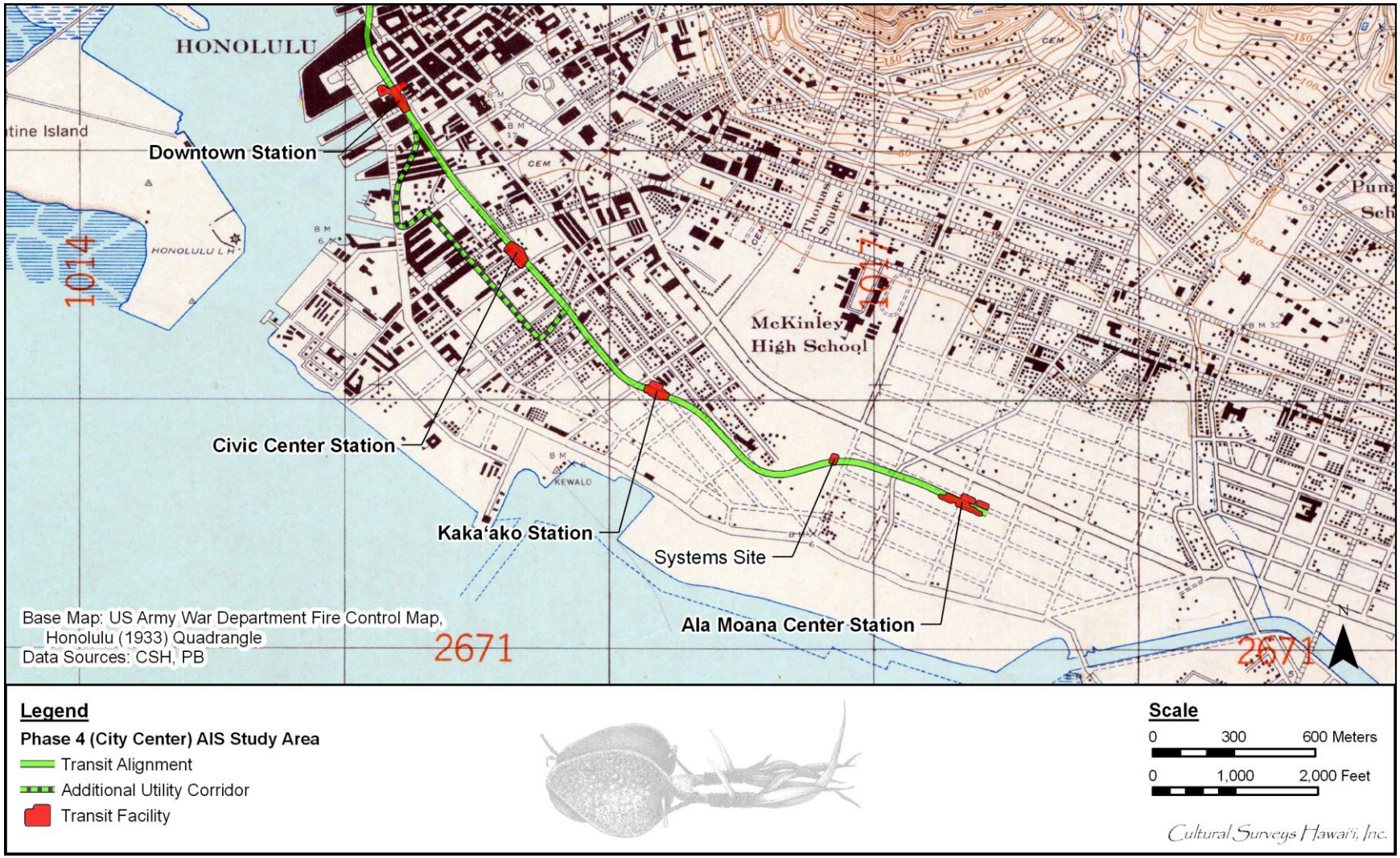


Figure 50. 1933 U.S. Army War Department Fire Control map, Honolulu Quadrangle, showing the Kaka‘ako vicinity of the City Center project corridor

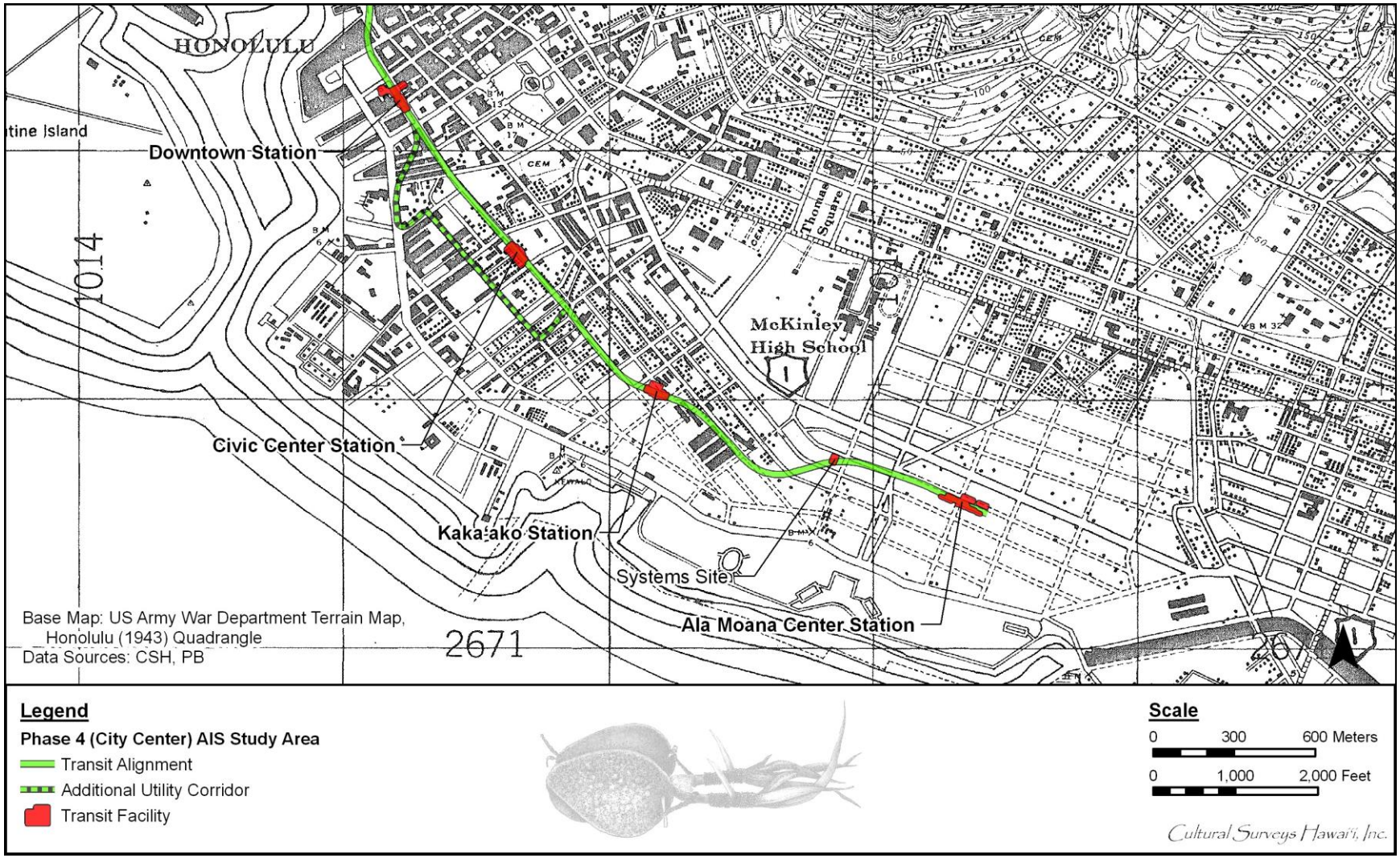


Figure 51. 1943 U.S. Army War Department Terrain map, Honolulu Quadrangle, showing the Kaka‘ako vicinity of the City Center project corridor

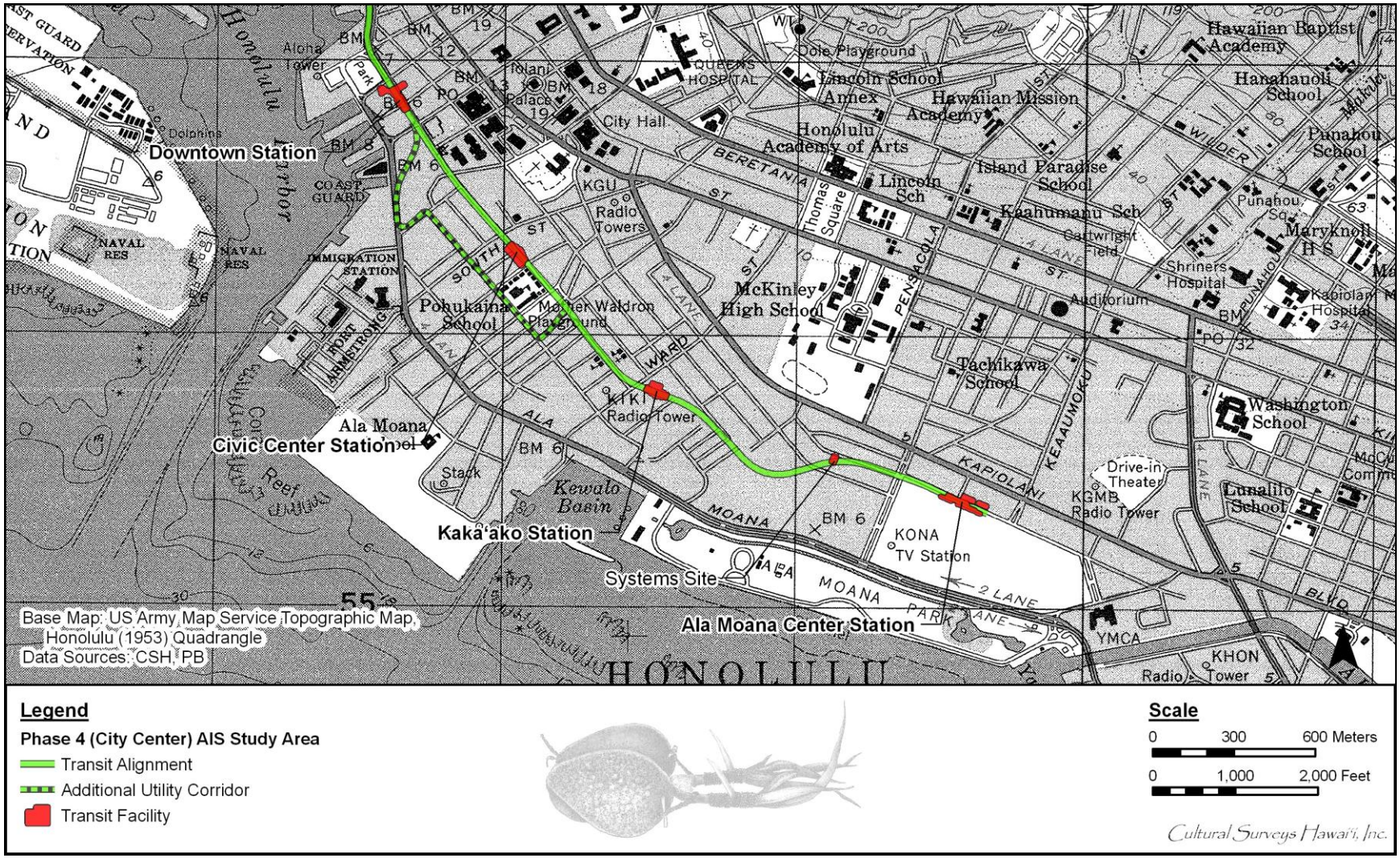


Figure 52. 1953 U.S. Army Mapping Service Topographic map, Honolulu Quadrangle, showing the Kaka‘ako vicinity of the City Center project corridor

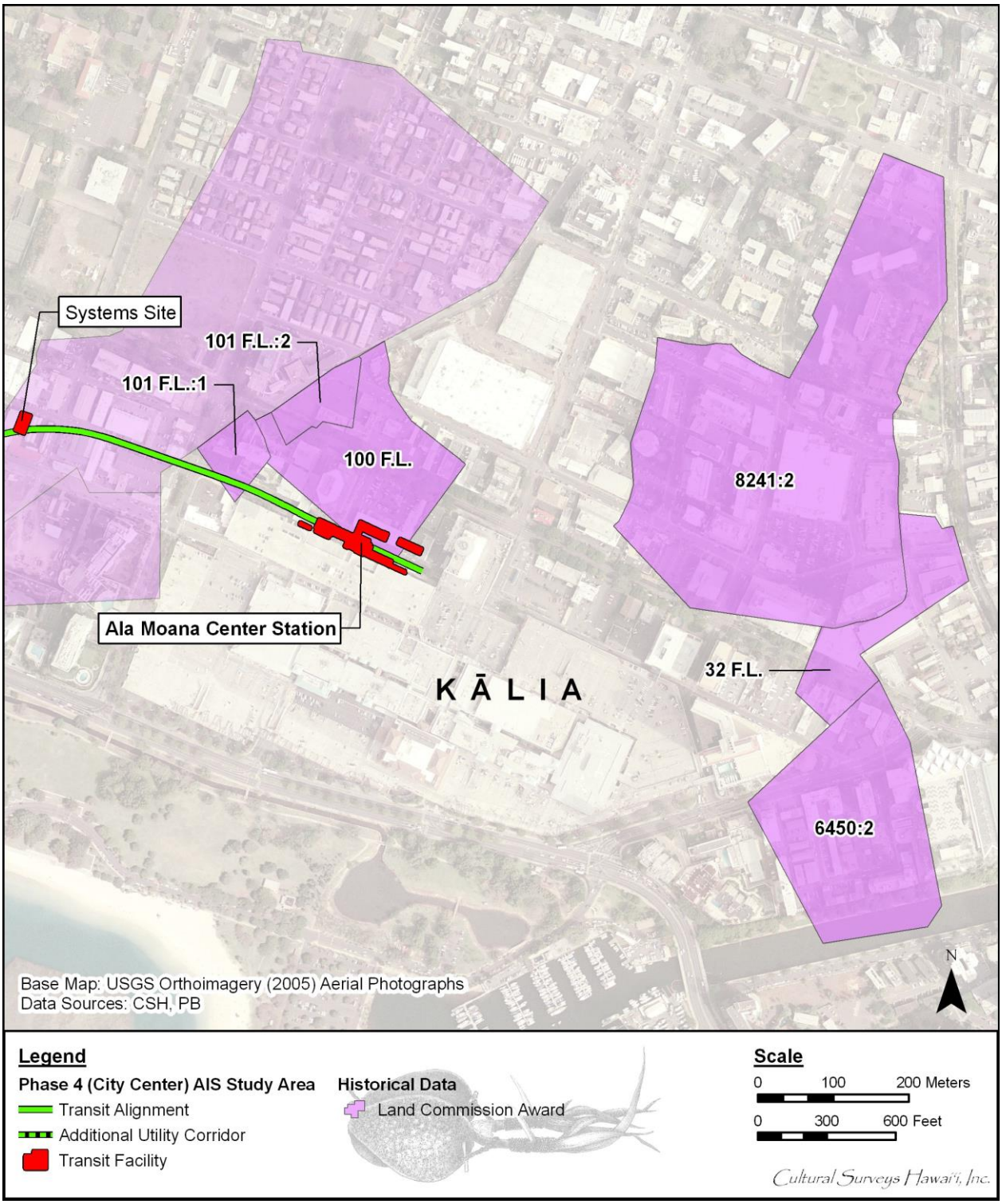


Figure 53. Aerial photograph (source: U.S. Geological Survey Orthoimagery 2005), showing the locations of LCAs within and in the vicinity of the Kālia portion of the City Center project corridor

Table 5. LCAs in Kālia Within and in the Vicinity of the Project Corridor (in numeric order)

LCA Number	Contents of Award
32 F.L.	Two fishponds and two fry ponds to Kunewa
100 F.L.:2	Fort Lands: two ponds, five fry ponds (*ki‘o pua*), one taro patch (*lo‘i*), one house lot, one pasture (*kula* land) to Kekaula
101 F.L.:1 and 101 F.L.:2	Fort Lands: two ponds, three *ki‘o pua* to Kaluaoku
6450:2	Kūwili Fishpond awarded to Kaunuohua
8241:2	Opu Fishpond to John Papa ‘I‘ī

As the sugar industry throughout the Hawaiian kingdom expanded in the second half of the nineteenth century, the need for increased numbers of field laborers prompted passage of contract labor laws. In 1852, the first Chinese contract laborers arrived in the islands. Upon completion of their contracts, a number of the immigrants remained in the islands, many becoming merchants or rice farmers. In the 1880s, groups of Chinese began leasing and buying former taro lands from the Hawaiians of Waikīkī for conversion to rice farming (Coulter and Chun 1937). By 1892, Waikīkī had 542 acres planted in rice, representing almost 12% of the total 4,659 acres planted in rice on O‘ahu.

In 1919, the Hawaii Government appropriated $130,000 to improve the small harbor now known as Kewalo Basin for the aim of “harbor extension in that it will be made to serve the fishing and other small craft, to the relief of Honolulu harbor proper” (Thrum 1919:147). As the area chosen for the harbor was adjacent to several lumber yards, the basin was initially made to provide docking for lumber schooners, but by the time the wharf was completed in 1926, this import business had faded, so the harbor was used mainly by commercial fishermen. The dredged material from the basin was used to fill a portion of the Bishop Estate on the western edge of Waikīkī and some of the Ward Estate in the coastal area east of Ward Avenue (U.S. Department of the Interior 1920:52). Fill from this project is understood to be present in the eastern portion of the City Center project corridor in former Kālia marshes.

Most of the land use history of Kālia relates to the Kālia lands east of the Ala Wai Canal, well to the east from the City Center project corridor, and is not particularly germane to the current project area per se (which extends into Kālia for only about 300 m).

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Appendix E Previous Archaeological Research

The following previous archaeological research has been copied from the City Center (Section 4) AIS report, Volume II (Hammatt 2013):

Section 1 Previous Archaeological Research

This section reviews previous archaeological studies and finds pertinent to the City Center Section by land area. Kalihi and Kapālama are combined, as their have been very few studies and finds to date in these lands. The popular and convenient designation “Kaka‘ako” is used for the lands between urban Honolulu and Kālia of Waikīkī.

1.1 Kalihi and Kapālama

Commercial development in coastal Kalihi and Kapālama primarily occurred prior to the late 1970s, when archaeological investigations became standard during project planning and construction activities. As a result, few archaeological studies have been conducted in Kalihi and Kapālama (Figure 1 and Table 1). Three previous archaeological investigations have been conducted in the vicinity of the project corridor, both proximal to the proposed Middle Street Transit Center station (Hammatt and Shideler 2002; Dega and Davis 2005; and Folk et al. 1993). The following discussion as well as Figure 1 and Table 1 include all previous archaeological, cultural, and historical investigations in the general vicinity of the project area (generally moving from northwest to southeast).

City and County of Honolulu Bus Repair Shop Facility in Kalihi (Landrum and Klieger 1991, Hammatt and Folk 1992, Folk et al. 1993, Folk and Hammatt 1993)

Several studies were undertaken to fulfill the requirements of an environmental impact assessment for the proposed development of a 4.2-acre City and County of Honolulu Bus Repair Shop Facility at 711 Middle Street in Kalihi, O‘ahu (TMK 1-2-16:17). Beginning in 1991, the studies for this 4.2-acre lot included a historical literature search (Landrum and Klieger 1991); an archaeological inventory survey with subsurface testing (Folk et al. 1993); a burial treatment plan (Hammatt and Folk 1992); and a mitigation plan (Folk and Hammatt 1993). During the historical literature research, it was found that that project area was used extensively for habitation and agriculture from the pre-Contact period through the late 1800s. This was due in part to its proximity to the fishpond Loko Weli. The research did not identify any existing archaeological remains (Landrum and Klieger 1991:35). During the archaeological inventory survey, 19 trenches were excavated by backhoe. Three burials were exposed during testing, including two coffin burials and one burial without a coffin. The burials were situated between 0.6 to 1.1 m below the existing ground surface and were within a reddish-brown silty clay loam buried A horizon (former land surface), which was capped by modern fill. In addition, a cultural layer was identified. The burials and cultural layer were assigned Site # 50-80-14-4525 (Folk et al. 1993:28). Based on recommendations in the AIS, a burial treatment plan was written to address the human remains found, and a mitigation plan was written to address any potential impacts during facilities construction.

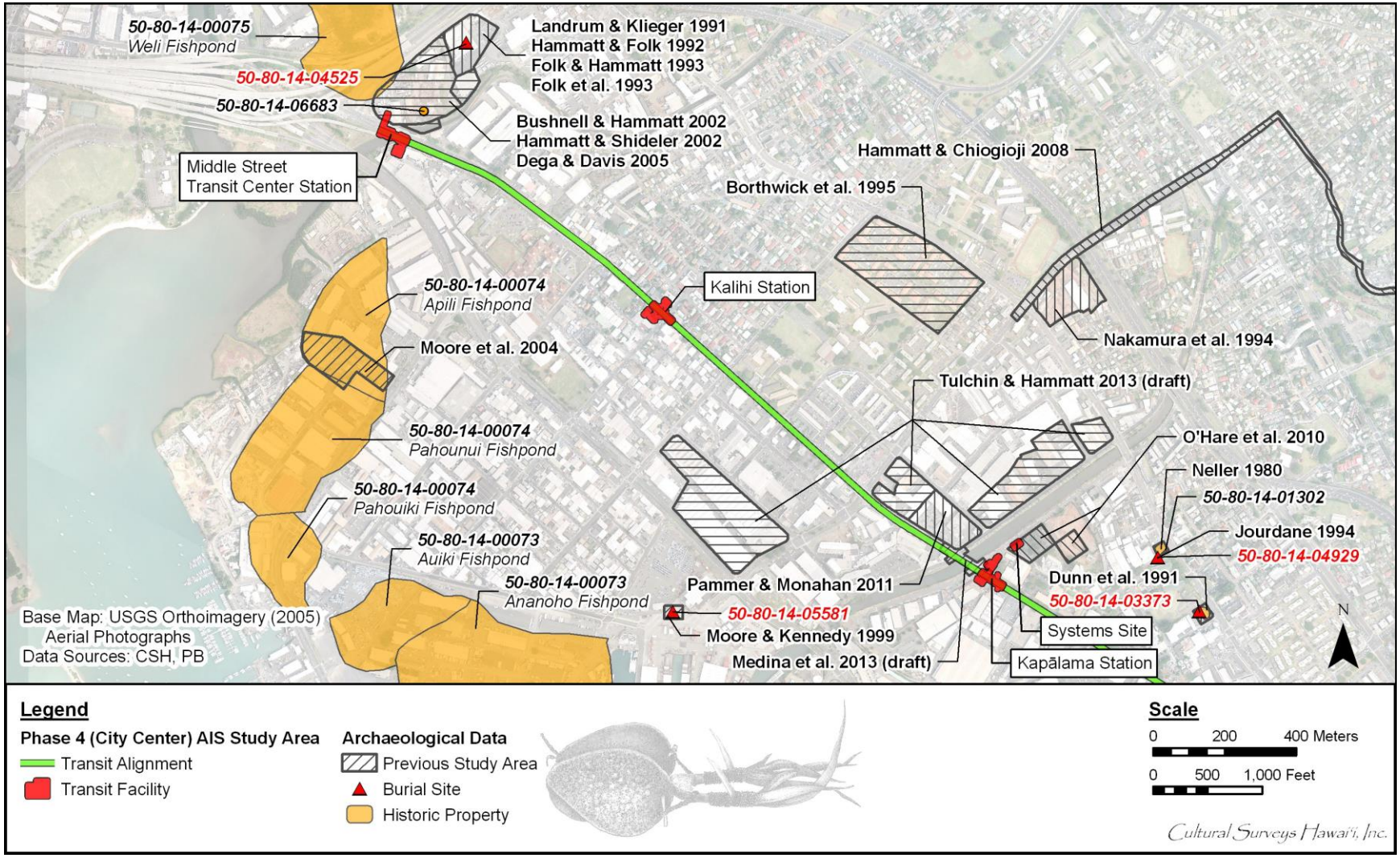

Figure 1. Previous archaeological studies in coastal Kalihi and western Kapālama in the vicinity of the project corridor

Table 1. Previous Archaeological Studies in the Vicinity of the Kalihi-Kapālama Portion of the Project Corridor (arranged chronologically)

Author	SIHP # 50-80-14	Report Description and Findings
Neller 1980	-1302	SHPD site inspection at the Palama Fire Station (#-1302). A large charcoal deposit with basalt cobbles was observed. No further information available due to project backfilling.
Dunn, Kalima, Kalima, and Goodfellow 1991	-3373	During trenching at the Pālama Chevron Station (southwest corner of N. King St. and Robello Lane), very fragmentary skeletal remains believed to be post-Contact were encountered (MNI = 5 ?). Informant indicated area was a former cemetery.
*Landrum and Klieger 1991	NA	This was a historical literature and documents search for the City and County of Honolulu, Department of Transportation Services, Bus Unit Repair Shop Facility
*Hammatt and Folk 1992	-4525	A burial treatment plan
Folk, Crotty, and Hammatt 1993	-4525	Inventory survey - One historic property identified: SIHP # 50-80-14-4525, a post-Contact cultural layer containing three human burials, two of which were in coffins.
*Folk and Hammatt 1993	-4525	A mitigation plan
Nakamura, Pantaleo, and Sinoto 1994	NA	An archaeological assessment of lands in Kapalama on the Corner of North King and Houghtailing Streets, Kapalama; no significant finds
Jourdane 1994	-4929	Inadvertent discovery of human skeletal remains during water line excavation in Austin Lane
Borthwick, Masterson, Creed, and Hammatt 1995	NA	An archaeological inventory survey of the Kamehameha Homes Project, Kapālama. There were no significant finds.
Moore and Kennedy 1999	-5581	This report documents the treatment of human remains inadvertently discovered during construction activities at Pier 40; documentation of a single *in situ* flexed burial (SIHP # 50-80-14-5581) within naturally deposited alluvial sediments. It was determined that the burial was of post-Contact origin (prWWI) and most likely Hawaiian.

Author	SIHP # 50-80-14	Report Description and Findings
*Bushnell and Hammatt 2002	NA	Cultural impact assessment of the proposed Middle Street Transit Center (TMK: 1-2-18: 1, 2 ,3, 8, 9 and10) noted that “The project area has been devoted to light industrial purposes for over a century.” Concerns over fishing and burials are noted.
Hammatt and Shideler 2002	NA	Archaeological assessment (literature review and field inspection) that recommended inventory survey
Moore, Bevan, and Kennedy 2004	-0074	Archaeological inventory survey of a property located along Ke‘ehi Lagoon and in the previous location of Pahounui and Apili Fishponds. Pollen and radiocarbon dating of a geotechnical boring sample documented sediments deposited prior to Hawaiian arrival in the islands.
Dega and Davis 2005	-6683	Inventory survey at the proposed Middle Street Intermodal Center - one historic property identified: SIHP # 50-80-14-6683, a subsurface historic refuse pit and material remains associated with a slaughterhouse
Hammatt and Chiogioji 2008	NA	Archaeological inventory survey of a proposed Board of Water Supply Kalihi Beretania 24-Inch Water Main Project, Nu‘uanu and Kapalama - no finds but notes the Judd St. and Nu‘uanu Ave. bridges as possible historic properties
O’Hare, Shideler, and Hammatt 2010	NA	An archaeological literature review and field inspection report for the Honolulu Community College Advanced Technology Training Center Project noted exposures of midden and features in the banks of the Kapālama Canal and the rich cultural landscape once present.
Pammer and Monahan 2011 (draft)		This archaeological literature review and field inspection for a Kapālama Shopping Center Redevelopment Project included five test excavations. No historic properties were identified.
Medina et al. 2013 (draft)	NA	This archaeological monitoring report for traffic control signal improvements along Dillingham Boulevard characterized subsurface deposits as various layers of fill sediments on top of a layer of organically enriched pond deposit, on top of coral shelf. No historic properties or undisturbed cultural deposits were observed during monitoring.

Author	SIHP # 50-80-14	Report Description and Findings
Tulchin, J. and Hammatt 2013		This archaeological inventory survey plan for Kamehameha Schools commercial lands in the *makai* portion of Kapālama included 13 preliminary test excavations. Three of these (Trenches 3, 4, and 5) were close to the *mauka* side of Dillingham Blvd. No historic properties were identified.

* Not included in Figure 1 – locations of previous research

Vicinity of the Middle Street Transit Center Station (Bushnell and Hammatt 2002, Hammatt and Shideler 2002, Dega and Davis 2005)

In a locale adjacent to the southwest portion of the 711 Middle Street facility, including the immediate vicinity of the proposed Middle Street Transit Center Station, several studies were undertaken based on sites identified and information collected during the investigations for the Bus Repair Shop Facility. These studies included an archaeological assessment (Hammatt andShideler 2002), a cultural impact assessment (Bushnell and Hammatt 2002), and a follow-up inventory survey with subsurface testing (Dega and Davis 2005). The Archaeological Assessment uncovered no new data regarding their project area; however, it was recommended that a program of subsurface testing be implemented to provide paleo-environmental information, particularly in regards to Waikulu Fishpond, which historical records indicated was under the southern half of the subject parcel (Hammatt and Shideler 2002). For the cultural impact assessment, concerns were expressed regarding the potential for more burials in that project area (Bushnell and Hammatt 2002:13). Scientific Consultant Services was contracted to perform the archaeological inventory survey with subsurface testing to mitigate the potential impacts to Waikulu Fishpond underlying the subject parcel. Although many sediment samples were taken, it was impossible to distinguish between naturally deposited stream sediments and fishpond sediments in that project area. Evidence of pre-Contact cultural activity was inconclusive. However, evidence of historic era industrial activity was abundant and was designated as SIHP # 50-80-14-6683 (Dega and Davis 2005:42).

Sand Island Access Road (Moore et al. 2004)

Archaeological Consultants of the Pacific, Inc. carried out an archaeological inventory survey of a property located along Ke‘ehi Lagoon and in the previous location of Pahounui and Apili Fishponds. Pollen and radiocarbon dating of a geotechnical boring sample documented sediments deposited prior to Hawaiian arrival in the islands (BC 2602 to 2429).

Corner of North King and Houghtailing (Nakamura et al. 1994)

The Bernice P. Bishop Museum (Nakamura, Pantaleo, and Sinoto 1994) carried out an archaeological assessment of land in Kapālama on the corner of North King and Houghtailing Streets. No significant finds were reported.

Kamehameha Homes Project, Kapalama (Borthwick et al. 1995)

Cultural Surveys Hawai‘i (Borthwick, Masterson, Creed, and Hammatt 1995) carried out an archaeological inventory survey of the Kamehameha Homes Project in Kapālama (see Figure 1). No significant finds were reported.

Pier 40 (Moore and Kennedy 1999)

In 1999, Archaeological Consultants of the Pacific, Inc. prepared a report documenting the treatment of human remains inadvertently discovered during construction activities at Pier 40, approximately 150 m inland from the pier (Moore and Kennedy 1999) (see Figure 1). The documented remains consisted of a single *in situ* flexed burial (SIHP # 50-80-14-5581) within naturally deposited alluvial sediments at a depth of approximately 70 cmbs (Moore and Kennedy 1999:10). It was determined that the burial was of post-Contact origin (prWWI) and most likely Hawaiian (Moore and Kennedy 1999). The remains were disinterred; however a specific rinterment location was not decided upon at the time of the report's publication.

Kapālama Shopping Center Redevelopment Project (Pammer and Monahan 2011 - draft)

This archaeological literature review and field inspection included five test excavations (Trenches 4 and 5 were close to Dillingham Boulevard). In general, the stratigraphy consisted of the asphalt parking lot surface over modern and historic fill, over naturally deposited sediments, over the coral shelf (a very loose cobbly layer with weak cementation).

Kamehameha Schools Commercial Lands in the *Makai* Portion of Kapālama (Tulchin, J. and Hammatt 2013)

Cultural Surveys Hawai‘i included 13 preliminary test excavations as part of an archaeological inventory survey plan for Kamehameha Schools commercial lands in the *makai* portion of Kapālama. Three of these (Trenches 3, 4, and 5) were close to the *mauka* side of Dillingham Boulevard. Typical stratigraphy was fill over naturally deposited alluvial soils over relatively shallow (110 cmbs) limestone bedrock.

Traffic Control Signal Improvements along Dillingham Boulevard (Medina et al. 2013 - draft)

Cultural Surveys Hawai‘i carried out archaeological monitoring for traffic control signal improvements along Dillingham Boulevard on both sides of the Kapālama Canal crossing. Subsurface deposits were characterized by various layers of fill sediments overtop a layer of organically enriched pond deposit, overtop of coral shelf. No historic properties or undisturbed cultural deposits were observed during monitoring.

Board of Water Supply Kalihi Beretania 24-Inch Water Main Project (Hammatt and Chiogioji 2008)

Cultural Surveys Hawai‘i (Hammatt and Chiogioji 2008) carried out an Archaeological Inventory Survey of the Proposed Board of Water Supply Kalihi Beretania 24-Inch Water Main Project, Nu‘uanu and Kapalama (see Figure 1). No significant finds were documented (although the study emphasized the need to consider the Judd Street and Nu‘uanu Avenue bridges as historic properties).

Honolulu Community College (O'Hare, Shideler, and Hammatt 2010)

Cultural Surveys Hawai‘i (O’Hare, Shideler, and Hammatt 2010) prepared an archaeological literature review and field inspection report for the Honolulu Community College Advanced Technology Training Center Project, located on the northwest side of the HCC campus (quite close to the proposed Kapālama Station Mauka Station Entrance Building) (see Figure 1). It was noted that although that project area has been extensively modified throughout the twentieth century, and no surface archaeological features remain, background research suggests that intact pre-Contact and early post-Contact cultural deposits associated with traditional Hawaiian habitation, agriculture, and burials may lie undisturbed beneath fill layers within the Honolulu Community College Advanced Technology Training Center Project project area(s). Post-Contact cultural deposits associated with western settlement and residential development from the nineteenth and twentieth centuries were also thought to be possibly present.

Field results included observations of both exposed banks of the Kapālama Canal. Notable was the prevalence of edible bivalve mollusk species. The abundance of these species in the east Kapālama Channel bank suggested a pattern of deliberate human predation (i.e. these shells appear to represent archaeological midden). Also observed in the east Kapālama Channel bank were water rounded basalt cobbles that in some places appeared to be grouped, possibly constituting archaeological features.

Palama Fire Station (Neller 1980)

During excavations at the Palama Fire Station in September 1980, SHPD made a site visit to the project. A large charcoal deposit was observed in an excavation sidewall which contained several basalt cobbles. No further information was obtained due to the backfilling of the excavation prior to SHPD’s return to document the feature. It could not be determined whether the deposit represented a historic feature or a traditional *imu* pit; however, no historic artifacts were observed in association with the feature.

Austin Lane (Jourdane 1994)

An inadvertent discovery of human skeletal remains was made during excavation for a water line within Austin Lane in Kapalama. An SHPD site visit determined the remains to represent a single individual from a previously disturbed burial. The burial was likely historic due to historic material within the soil matrix. No ethnicity was able to be determined. The skeletal remains were removed for reinterment.

Pālama Chevron Station (southwest corner of N. King St. and Robello Lane) (Dunn et al. 1991)

The Pālama Chevron Station finds (see Table 1) were reported in a Dunn, Kalima, and Goodfellow (1991) monitoring report. The human skeletal remains observed were highly fragmented. The Minimum Number of Individuals (MNI) appeared to be five—but this was not altogether clear. Of interest was the comment that:

> A parishioner of Kaumakapili Church mentioned to PHRI field personnel that the project area was once a cemetery. Mr. Tom Dye of the DLNR [Department of Land and Natural Resources] said that older residents of the area had once mentioned that when they were younger they regarded the area as “spooky,” and that this may be attributable to the fact that they had heard there were burials in the area. (Dunn et al. 1991:10)

The Pālama Chevron Station site is approximately 200 m northeast of the transit corridor. Finds were reported at 80 cm below surface, 105 cm below surface, and 120 cm below surface (Dunn et al. 1991:1, 4).

1.2 Honolulu

The downtown Honolulu area has had a dense population since circa AD 1200. Honolulu has also been the loci of the government of Hawai‘i since 1809. There have been several extensive archaeological investigations near the HRTP AIS project corridor. The discussion of previous archaeological investigations proceeds from ‘Ewa to Diamond Head (i.e., west to east) (Figure 2 and Table 2).

Kūwili Fishpond (McGerty et al. 1997)

In 1993, Scientific Consultant Services Inc. conducted an archaeological inventory survey at the site of the proposed Liliha Civic Center (Figure 2). The Kūwili Fishpond project area was between Iwilei Road, N. King Street, and Kaaahi Place. Subsurface testing identified soil layers interpreted to be the remains of Kūwili Fishpond (SIHP # 50-80-14-5368). Radiocarbon analysis of pond sediments suggests that Kūwili Fishpond may have been constructed as early as AD 1100 (McGerty, Dega, and Spear 1997).

A total of 12 subsurface features were documented, including human skeletal remains, possible *ki‘o pua* (fry-pond) walls, a coral platform foundation, and a basalt alignment. The dis-articulated human skeletal remains were found in historic sediments that filled in the pond and a portion (Feature 4) of the outer edge of an historic period *ki‘o pua* (fry pond):

> Feature 1 was a partial human femur uncovered in the eastern end of ST-1 in fill containing historical debris from the nineteenth century. In addition, a probable human femur fragment was identified in the south sidewall of the trench. No burial pit, articulated remains, or definite coffin could be identified in the fill. The remains were interpreted to be a previously disturbed burial and that [*sic*] had somehow been incorporated into the trash fill. The human bones were rburied when the trench was backfilled (McGerty et al. 1997: 31).

Kūwili Fishpond (Athens and Ward 1997)

IARII’s (Athens and Ward 1997) (see Figure 2) investigations at this same Kūwili Fishpond project area located a low energy, gleyed, clay layer that contained little clastic material. A gleyed layer is a mottled or dark gray, sticky, organirich layer in the ground that is frequently or continuously saturated, resulting in a reduced condition that preserves the organic matter. Clastic sediments are erosional detritus transported and deposited as solid fragments. This gleyed layer’s color, texture, and elevation above sea level were consistent with general observations for fishpond sediments; this type of sediment could only have formed in a still (“quiet water”) and protected environment.

Above this clay layer were massive historic fill deposits. Below were sandy, silty marine sediments that contained clastics of coral and terrigenous basalt. These notably higher energy

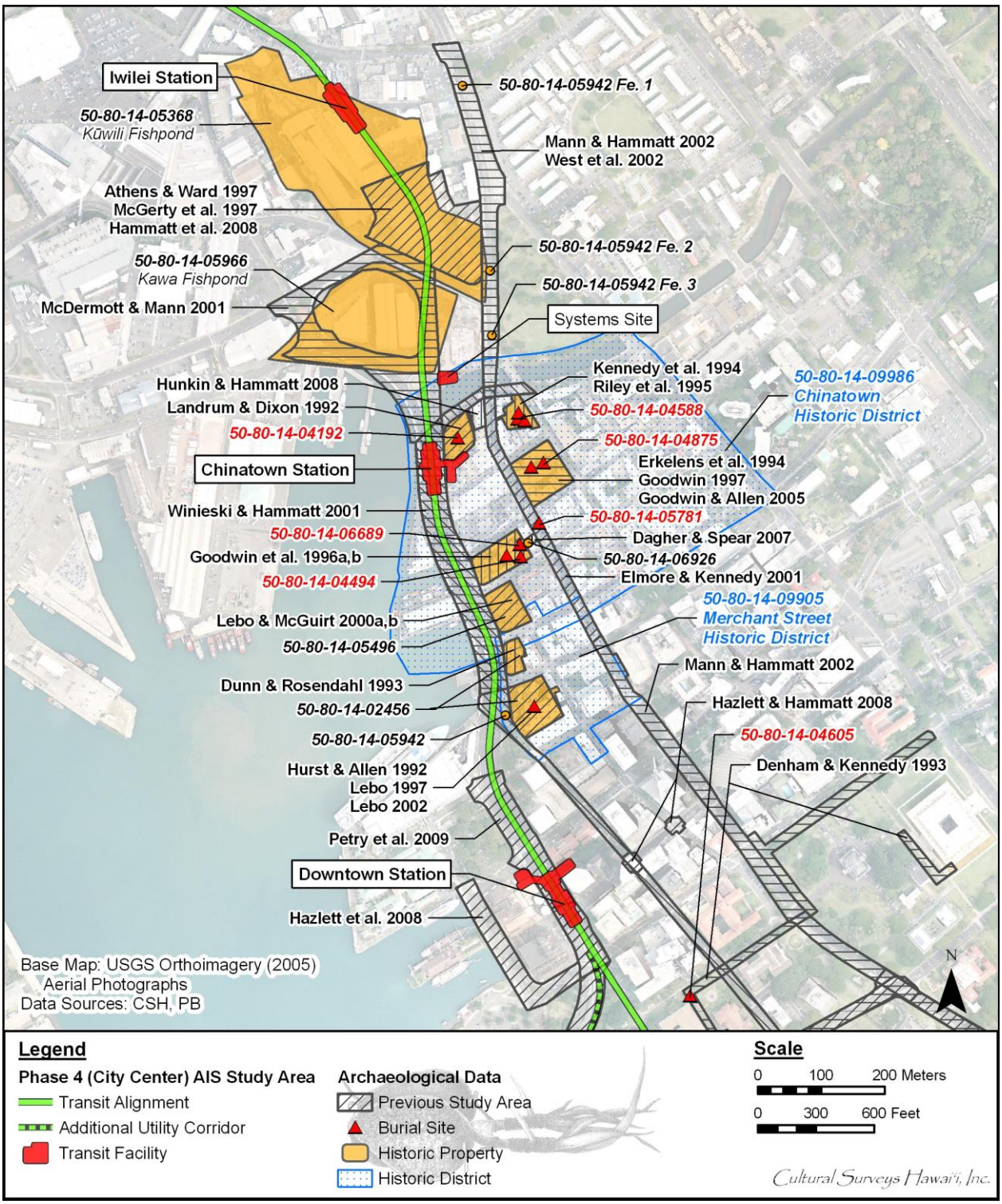

Figure 2. Previous archaeological studies in southeastern Kapālama and coastal Honolulu in the vicinity of the project corridor

Table 2. Previous Archaeological Studies in the Vicinity of the Downtown Honolulu Portion of the Project Corridor (arranged chronologically)

Author	SIHP # 50-80-14	Report Description and Findings
Goodwin et al. 1992	-4494	Inventory survey, data recovery, and monitoring for the Marin Tower property - the entire Marin Tower property was designated SIHP # 50-80-14-4494. SHIP -4494 consists of 28 post-Contact burial features and the remains of several displaced human skeletal remains; pre-Contact fire pits; and early post-Contact structural foundations associated with the residence of the Marin family from about 1810 to 1850. Numerous pre- and post-Contact artifacts were also documented.
Hurst and Allen 1992	-2456	Archaeological monitoring and an archaeological inventory survey of the Harbor Court Tower site - one historic property documented: SIHP # 50-80-14-2456, a subsurface cultural layer containing both pre- and post-Contact elements. The cultural layer contained primarily post-Contact features (i.e., building foundation ruins) associated with nineteenth-century urban development; however, both pre- and post-Contact artifacts were also observed. Pre-Contact traditional Hawaiian artifacts included basalt and volcanic glass flakes and modified marine shell; post-Contact artifacts included nineteenth century bottles and ceramics.
Landrum and Dixon 1992	-4192	Data recovery - documented four post-Contact trash pits, a brick and motor building foundation, and a single pre-Contact human burial; all documented archaeological features were designated SIHP # 50-80-14-4192.
Dunn and Rosendahl 1993	-2456	Inventory survey of the proposed Nu‘uanu Court Project - one historic property was documented: SIHP # 50-80-14-2456, a cultural layer containing both pre- and post-Contact features.
Denham and Kennedy 1993	-4605, -4606	Archaeological monitoring for the State Capitol Complex Telecommunications Conduits Project documented two historic properties: SIHP # 50-80-14-4606, a multi-component site consisting of a human burial, historic trash pit, firepit, and 6 postholes, and SIHP # 50-80-14-4606 consisting of 9 historic trash pits

Author	SIHP # 50-80-14	Report Description and Findings
Kennedy et al. 1994	-4587, -4588	Inventory survey for the Kekaulike Revitalization Project, ‘Ewa Block, between King Street and Hotel Street, which documented two historic properties: SIHP # -4587, a small fishpond, and SIHP # -4588, a multi-component site consisting of 53 features, ranging from pre-Contact to modern and including 3 human burials
Erkelens et al. 1994	-4875	Interim report on 4 sets of human skeletal remains at the Kekaulike Project, Diamond Head Block, identified during inventory survey and data recovery investigations
Riley et al. 1995	-4587, -4588	Data recovery for the Kekaulike Revitalization Project, ‘Ewa Block documented 55 features spanning the early pre-Contact period through the 20th century. Radiocarbon dating of SIHP # -4587, a small fishpond, yielded an early 10th c. date and dating of a coral reefstone platform (SIHP # -4588) yielded an 11th c. date.
Goodwin et al. 1995	-4494	Inventory survey, data recovery and monitoring for the Marin Tower property. The entire Marin Tower property was designated SIHP # 50-80-14-4494. SHIP # -4494 consists of 28 post-Contact burial features and the remains of several displaced human skeletal remains, pre-Contact fire pits, and early post-Contact structural foundations associated with the residence of the Marin family from about 1810 to 1850. Numerous pre- and post-Contact artifacts were also documented.
Goodwin et al. 1996	-4494	Inventory survey, data recovery, and monitoring for the Marin Tower property. The entire Marin Tower property was designated SIHP # 50-80-14-4494. SHIP -4494 consists of 28 post-Contact burial features and the remains of several displaced human skeletal remains, pre-Contact fire pits and early post-Contact structural foundations associated with the residence of the Marin family from about 1810 to 1850. Numerous pre- and post-Contact artifacts also documented.

Author	SIHP # 50-80-14	Report Description and Findings
Goodwin 1997	-4875	Inventory survey of the Kekaulike Project, Diamond Head Block, documented a multi-component site consisting of 105 features and 6 culturally enriched sediment strata. The majority of features were identified as native Hawaiian from the early post-Contact period, but included later historic and modern features and structural remnants. A single burial was documented.
Athens and Ward 1997	-5368	Concluded that fishpond construction occurred rather late in the prehistoric Hawaiian period, after upland forests had been affected by inland expansion of Hawaiian land use
Lebo 1997	-2456	Data recovery excavations identified 35 new features associated with SIHP # 50-80-14-2456 post-Contact deposits. These included: fire pits, pavements, building foundations, post molds, and trash pits. Documented artifacts included: bottles, ceramics, glass beads, buttons (wood, shell, and bone), metal nails, adzes (stone and shell), flakes (basalt, quartz, chert, flint, jasper, and volcanic glass), modified, manufactured glass, fish hook blanks, bone awls, hammer stones, and grinding stones.
McGerty, Dega, and Spear 1997	-5368	Inventory survey at the site of the proposed Liliha Civic Center - subsurface testing identified soil layers interpreted to be the remains of Kūwili Fishpond (SIHP # 50-80-14-5368).
Lebo and McGuirt 2000a	-5496	Inventory survey at 800 Nu‘uanu Avenue. One historic property documented: SIHP # 50-80-14-5496, subsurface cultural layer containing both pre- and post-Contact archaeological features.
Lebo and McGuirt 2000b	-5496	Data recovery - Additional components of SIHP # 50-80-14-5496, a subsurface cultural layer documented
McDermott and Mann 2001	-5966	Inventory survey for the proposed Nimitz Highway Water System Improvements in Downtown Honolulu - the archaeological fieldwork focused on investigations of Kawa Fishpond (SIHP # 50-80-14-5966).
Winieski and Hammatt 2001a	-5942	Archaeological monitoring for the Nimitz Highway Reconstructed Sewer Project. Only one historic property was encountered: a remnant of a light-gauge rail associated with the historic Honolulu Rapid Transit trolley system (SIHP # 50-80-14-5942) at the intersection of Queen Street and Nimitz Highway.

Author	SIHP # 50-80-14	Report Description and Findings
Elmore and Kennedy 2001	-5781	Archaeological monitoring for sidewalk improvements within Chinatown. A single human burial (SIHP # 50-80-14-5781) was documented, likely native Hawaiian.
Lebo 2002	-2456	Radiocarbon analysis of the SIHP # 50-80-14-2456 pre-Contact deposits indicated that occupation at the site began between AD 1000 and AD 1200 (Lebo 2002: 14-1). Some 113 features were identified within pre-Contact deposits and include: 86 post molds, 25 in-filled pits, and two firepits. Traditional Hawaiian artifacts collected from the pre-Contact deposits consisted of primarily basalt tools and flakes, collected from non-feature contexts.
Mann and Hammatt 2002	-6371	Archaeological Monitoring Report for the King Street Rehabilitation Project (sections of King St. between Dillingham and South St.) - no significant finds north of Nu‘uanu Stream. Previously disturbed human skeletal remains were found at a significant distance from the current project corridor, approximately 388 m northeast (SIHP # 50-80-14-6371)
West, Ostroff, and Roberts 2002	-5942	Archaeological monitoring - one previously identified historic property documented: SIHP # 50-80-14-5942, remnants of the Honolulu Rapid Transit trolley system
Goodwin and Allen 2005	-4875	Data recovery at the Kekaulike Project Diamond Head Block which excavated four house compounds and a blacksmith’s shop. Radiocarbon dating indicated the area was in use as early as the 13th century, with the majority of documented features associated with the early pre-Contact period. Four human burials were documented.
Dagher and Spear 2007	-6889, -6926	Archaeological monitoring identified 2 historic properties: SIHP # 50-80-14-6889, two human burials, likely native Hawaiian; and SIHP # 50-80-14-6926, a mortared basalt foundation wall and a ceramic storm drain containing a cache of ceramic vases

Author	SIHP # 50-80-14	Report Description and Findings
Hammatt, Hazlett, and Shideler 2008	-5368	Data recovery for SIHP # 50-80-14-5368 (a.k.a. Kūwili Fishpond) - radiocarbon dating samples collected by CSH suggest the earliest pond sediments were deposited circa AD 1020 to AD 1120. Microscopic charcoal particles in soil samples indicated local land clearing activity both prior to and after construction of Kūwili Fishpond. Pollen analysis did not provide much information about the effect of Hawaiian settlement, agriculture, or inland expansion upon the local vegetation or upon the inland forest.
Hazlett, Fehrenbach, and Hammatt 2008	N/A	Archaeological monitoring for water main installation on Aloha Tower Drive - no historic properties were encountered during project construction; observed stratigraphy consisted entirely of fill associated with modern road and utility construction, as well as historic land filling activities, associated with the expansion of Honolulu Harbor.
Hunkin and Hammatt 2008		Archaeological monitoring for courtyard renovation at the Armstrong Building on N. King Street documented no archaeological cultural resources.
Petrey et al. 2009		Archaeological monitoring for resurfacing of portions of Nimitz Highway and Ala Moana Boulevard, installation of streetlights, replacement of concrete bus pads, and limited drainage installation. No archaeological cultural resources were documented.

sediments were interpreted as the natural lagoonal deposits that predated the construction of Kūwili Fishpond (SIHP # 50-80-14-5368). The shallow lagoon layers received enough energy to transport clastics both from coral reefs and Nu‘uanu Stream. The combined terrestrial basalt and marine coral clastics were consistent with higher energy marine embayment and/or lagoon that had a significant source of terrigenous sediment, such as the nearby Nu‘uanu Stream (Athens and Ward 1997:47).

Two radiocarbon age determinations were undertaken on sediments collected by IARII from a core sample in Stratum III, the fingrained (clayey) fishpond layer. These two radiocarbon age determinations were calibrated assuming a 40% contribution of marine carbon using the CALIB radiocarbon calibration program. This estimate of the percentage of carbon from a marine sourcewas included in the calibration in an attempt to compensate for the marine reservoir effect, which, because of the apparent age of marine carbon, results in erroneously-old radiocarbon age determinations for marine samples. Assuming the 40% input of marine carbon in the two samples, the dating results were 480-289 and 507-293 cal. B.P. (or AD 1470-1661 and AD 1443-1657, respectively) (Athens and Ward 1997:47).

Based on the results of pollen analysis of sediment samples and the two radiocarbon dates, Athens and Ward (1997) concluded that fishpond construction occurred rather late in the prehistoric Hawaiian period, after upland forests had been affected by inland expansion of Hawaiian land use.

Kūwili Fishpond (Hammatt et al. 2008)

In 2008, CSH conducted data recovery for SIHP # 50-80-14-5368 (Kūwili Fishpond; Figure 2) at the site of the proposed Iwilei Senior Housing Project (Hammatt, Hazlett, and Shideler 2008). Data recovery was focused on two research objectives: 1) to determine the date of construction and chronology of use of the fishpond, and 2) to develop data on paleo-environmental change and man-made alterations of the landscape at the fishpond.

Radiocarbon dating samples collected by CSH suggest the earliest pond sediments were deposited circa AD 1020 to AD 1120, which is consistent with the estimate of AD 1100 by McGerty et al. (1997).

Microscopic charcoal particles in soil samples indicated local lanclearing activity both prior to and after construction of Kūwili Fishpond. Unfortunately, the pollen analysis did not provide much information about the effect of Hawaiian settlement, agriculture, or inland expansion upon the local vegetation or upon the inland forest. According to McGerty et al. (1997), their project area had become a marsh by 2000 B.P.; the CSH (Hammatt et al. 2008) pollen analysis indicated that the area had remained marshland for the next thousand years, and the same flora (*Pritchardia*, *Cyperaceae* and *Poaceae*) that had dominated the vicinity before establishment of the fishpond continued to grow in the area afterward.

King Street, between Liliha and River Streets (West et al. 2002)

In 2002, Garcia and Associates completed archaeological monitoring for waterline installation within King Street, between Liliha and River streets (West, Ostroff, and Roberts 2002) (Figure 2). One previously identified historic property was documented: SIHP # 50-80-14-5942, remnants of the Honolulu Rapid Transit trolley system. This historic property was previously identified by Winieski and Hammatt (2001a) at the intersection of Queen Street and Nimitz Highway (see Nimitz Highway Reconstruction Sewer Project section below). West et al. (2002) identified portions of SIHP -5942 near the intersection of Liliha Street and King Street, at the Iwilei Road and King Street intersection, and near the Nu‘uanu/North King Street bridge. Documented Honolulu Rapid Transit trolley system remnants consisted of railroad ties, metal hardware, and brick construction.

Documented stratigraphy consisted primarily of imported fill material overlying limestone bedrock. In some instances, naturally deposited marine clay was observed approximately 1.5 m below the existing ground surface.

Nimitz Highway Water System Improvements between Iwilei Road, N. King Street, River Street, and Kūkahi Street (McDermott and Mann 2001)

In 2001, CSH conducted an archaeological inventory survey for proposed Nimitz Highway Water System Improvements in Downtown Honolulu (McDermott and Mann 2001). Their project area was between Iwilei Road, N. King Street, River Street, and Kūkahi Street. The archaeological fieldwork focused primarily on the investigation of Kawa Fishpond, designated

SIHP # 50-80-14-5966. Five boring cores were extracted to determine the boundaries of the pond, and three backhoe trenches were excavated near cores with positive results for fishpond sediments. Radiocarbon dating results of fishpond samples did not provide a clear date of construction for Kawa Fishpond, but, based on the samples, it appears that fishpond sediments were accumulating since at least AD 1150-1350.

Archaeological Monitoring Report for the King Street Rehabilitation Project (Mann and Hammatt 2002)

In 2002, CSH conducted an archaeological monitoring program for the King Street Rehabilitation Project, but there were no significant finds north of Nu‘uanu Stream (Mann and Hammatt 2002). Stratigraphic data was presented for North King Street north of Nu‘uanu Stream, but the excavations were typically less than a meter deep and were thus primarily only fill sediments. A find of previously disturbed human skeletal remains was documented near the corner of King and Punchbowl Streets, approximately 388 m northeast of and at a significant distance from the project corridor.

Nimitz Highway Reconstructed Sewer Project (Winieski and Hammatt 2001a)

In 2001, CSH conducted archaeological monitoring for the Nimitz Highway Reconstructed Sewer Project (Winieski and Hammatt 2001a) (see Figure 2). The route of the sewer construction began on River Street, at the intersection of River and Hotel Streets, then *makai* to Nimitz Highway, and extended to Bethel Street, where it merged into the ‘Ewa western end of Queen Street. The route then extended along Queen Street to South Street, along South Street to Ala Moana Boulevard, and terminated at the Ala Moana Wastewater Pump Station. Only one historic property was encountered: a remnant of a light-gauge rail associated with the historic Honolulu Rapid Transit trolley system (SIHP # 50-80-14-5942) at the intersection of Queen Street and Nimitz Highway. Based on the monitoring findings, as well as previous archaeological research, it was recommended that an archaeological monitor be present for any future ground disturbance in the area to mitigate the impact of subsurface disturbance to significant pre-Contact and historic archaeological resources.

River-Nimitz Redevelopment (Landrum and Dixon 1992)

In 1989, the Applied Research Group at the Bishop Museum conducted emergency data recovery in response to the inadvertent discovery of subsurface archaeological features during River-Nimitz Redevelopment work on the corner of River Street and Nimitz Highway (Landrum and Dixon 1992) (see Figure 2). Documented archaeological features consisted of four post-Contact trash pits, a brick and motor building foundation, and a single pre-Contact human burial. The numerous artifacts discovered in the trash pits appeared to be deposited in the early nineteenth century through the early twentieth century. The pre-Contact burial was found within inundated marsh sediments, which preserved some soft-tissue remains, as well as burial goods consisting of braided cordage and matted pandanus. All of the documented archaeological features were designated SIHP # 50-80-14-4192.

Armstrong Building (Hunkin and Hammatt 2008)

In 2008, CSH conducted archaeological monitoring of renovations to the Armstrong Building courtyard which consisted of limited ground disturbing activities. No archaeological resources were documented.

Kekaulike Revitalization Project, ‘Ewa Block (Kennedy et al. 1994; Riley et al. 1995)

In 1992, Archaeological Consultants of Hawaii conducted an archaeological inventory survey for the Kekaulike Revitalization Project, ‘Ewa Block, bounded by King Street, River Street, Hotel Street, and Kekaulike Street (Kennedy et al. 1994). Investigations consisted of nine backhoe trenches and three hand excavated test units. Two historic properties were identified: SIHP # 50-80-14-4587, a small pond, and SIHP # 50-80-14-4588, a multi-component site consisting of 53 features ranging from the pre-Contact to the historic period and comprising a range of functions. The documented features included 20 postholes, 3 pits, 3 firepits, 3 cut stone walls, 7 crushed coral foundations, a burn layer (possibly from the 1900 or 1902 Chinatown fires), historic trash pits, and 3 human burials (two likely historic and one likely pre-Contact).

In 1993, Archaeological Consultants of Hawaii conducted a data recovery program further investigating the two historic properties documented by Kennedy et al. 1994 (Riley et al. 1995). A total of 64 test units were excavated and 55 features were documented, including 3 additional human burials. Radiocarbon dating of charcoal from SIHP # -4587 yielded a much earlier date than expected, within the 10th century. As the dated charcoal was obtained from behind the pond wall, the radiocarbon date was believed to represent the construction or renovation of the pond. Investigations indicated that use of the pond continued up until the 1860s when it was infilled. Analysis of the documented features of SIHP # -4588 showed an extensive timeline of occupation of the project area. Features ranged from the 10th and 11th centuries (as evidenced by the pond and by a coral reefstone platform with the remnants of a possible human burial), up through the pre-Contact 1600s and 1700s (as evidenced by a hard packed living surface with associated traditional cultural artifacts), through the 1800s (as evidenced by a latrine pit, a Kauai poi pounder and traditional style fishhooks made from copper), and up through the 20th century. Osteological analysis of the three human burials, as well as the three burials documented during the inventory survey, identified five of the six individuals as of Chinese ancestry.

Kekaulike Revitalization Project, Diamond Head Block (Erkelens et al. 1994; Goodwin 1997; Goodwin and Allen 2005)

In 1994, International Archaeological Research Institute (IARII) conducted an archaeological inventory survey for the Kekaulike Revitalization Project, Diamond Head Block, bounded by King Street, Maunakea Street, Hotel Street, and Kekaulike Street (Goodwin 1997). Investigations consisted of 21 test trenches. A multi-component site (SIHP # 50-80-14-4875) consisting of 105 features along with six culturally enriched sediment strata was documented. The features ranged from the pre-Contact period to the 20th century and included pre-Contact and post-Contact fire pits, pit features, historic structural foundations, masonry walls, postholes (possible pre-Contact and/or post-Contact), privies, historic trash pits, and human skeletal remains within a pit feature. Charcoal from one fire pit feature yielded a date range of AD 1184-1394. The majority of the features were identified as native Hawaiian from the early post-Contact period.

In 1994, IARII conducted a data recovery program further investigating SIHP # 50-80-14-4875 (Goodwin and Allen 2005). Investigations recovered artifacts and dated charcoal layers that indicate the are was in use as early as the 13th century, with heavy occupation occurring from the early- to minineteenth century. Four house compounds and a blacksmith’s shop, dating partly to the early 19th century, were excavated. A total of 8,552 artifacts were collected, associated with a

variety of ethnic origins (traditional Hawaiian, Euro-American, and Asian). Multiple features, such as postmolds, living floors, firepits, refuse pits, and fence lines were all recorded in association with each of the four house compounds. Large amounts of bone midden were also recovered, which included faunal remains present before Contact (such as pig, dog, turtle, chicken, shark, fish, and Pacific rat). Historically introduced animals such as cow, horse, goat, sheep, cat, and the Norwegian rat were also present. The remains of a human fetus were identified during faunal analysis.

In tandem with the inventory survey and data recovery investigations of the Kekaulike Project, Diamond Head Block, an interim report on human skeletal remains found in the project area was produced (Erkelens et al. 1994). The human skeletal remains documented during inventory survey investigations were found to consist of three individuals within a single pit feature representing a secondary burial context. The remains were incomplete and inarticulated while the secondary burial pit contained historic artifacts. Osteological examination identified a yound adult male (either Hawaiian or Asian, or mixed Hawaiian/Asian), a late adolescent female (likely Hawaiian), and a young child 3-4 years of age. During data recovery human fetal remains were recovered from samples of a large refuse deposit. Osteological analysis placed the age at 6-7 months. All human skeletal remains were disinterred.

Marin Tower (Goodwin et al. 1992, Goodwin et al. 1995, Goodwin et al. 1996)

Marin Tower, surrounded by Smith Street, King Street, Maunakea Street, and Nimitz Highway (see Figure 2), was the subject of intensive archaeological research. The results of the research were presented in three International Archaeological Research Institute, Inc. reports: *The Burials From the Marin Tower Property, Preliminary Report* (Goodwin et al. 1992); *Honoruru to Honolulu: From Village to City, Volume II: The Burials* (Goodwin et al. 1995); and *Honoruru to Honolulu: From Village to City, Volume I: History and Archaeology of a City Block; Archaeological Data Recovery Report, Marin Tower Property, Site No. 50-80-14-4494* (Goodwin et al. 1996).

The results included designating the entire Marin Tower project area as SIHP # 50-80-14-4494. Research for this multi-sectioned project indicated that Don Pablo Francisco de Paula de Marin and a number of his wives and children were buried on this property in a family cemetery. Fifteen burial features and several isolated, displaced human skeletal remains were found during the data recovery efforts. Coffin remnants of both adult and child coffins were recovered. A large variety of associated grave goods were also recovered, including small glass beads (0.08 inches in diameter), large glass beads, a copper ring, bone discs and buttons, an iron and wood smoking pipe, a glass bead necklace, copper alloy buttons, shell buttons, ceramics, an iron-blade kitchen knife, and a copper cross necklace. A Memorandum of Agreement was drawn up with Marin family relatives, and the skeletal remains were disinterred then rinterred elsewhere on the property on March 3, 1994.

Additionally, documented archaeological features consisted of pre-Contact fire pits and early post-Contact structural foundations associated with the residence of the Marin family from about 1810 to 1850. Also documented were artifacts associated with the use of the *makai* portion of the property as part of the Honolulu Ironworks from 1850 to 1900, as well as the use of the *mauka* portion for shops and families of Chinese merchants during the same period. Additionally,

artifacts and structures related to the commercial development of the property as part of Downtown Honolulu from 1900-1950 were also documented.

Pacific Town Gateway Center Project (Dagher and Spear 2007)

In 2007, Scientific Consultant Services (SCS) conducted archaeological monitoring at the Pacific Town Gateway Center Project on N. King Street. Two cultural resources were identified. SIHP # 50-80-14-6889 consisted of two human burials in close proximity to each other. Burial 1 was a flexed or partially flexed in situ burial with no discernible burial pit identified as a young adult male at least 25-30 years of age. Similarly, Burial 2 was a flexed in situ burial with no discernible burial pit identified as an adult female. Based on the burial contexts the individuals were believed to be of native Hawaiian ancestry. SIHP # 50-80-14-6926 consisted of two historic features. Feature 1 was a stacked and faced foundation wall of mortared basalt cobbles and boulders capped with concrete. Feature 2 was a collapsed molded ceramic storm drain which contained a cache of intact Ing Ka Py ceramic vases. Monitoring also identified fill materials from the adjacent Marin Tower project which contained glass bottles, porcelain fragments, metal nails and spikes, marine shell, faunal remains, including butchered cow and pig, and two traditional artifacts, a basalt *‘ulumaika* and a smaller coral *‘ulumaika*.

Corner of Marin and Smith Streets (Lebo and McGuirt 2000a and b)

A subsurface inventory survey was conducted by the Bishop Museum in December 1996 (Lebo and McGuirt 2000a) at 800 Nu‘uanu Avenue (see Figure 2). Six trenches were excavated in the parking lot of a Bank of Hawai‘i building at the corner of Marin and Smith Streets. An analysis of the trench stratigraphy and recovered cultural remains allowed the researchers to identify five cultural periods within a cultural deposit designated SIHP # 50-80-14-5496: (1) pre-Contact (pr1810), when the area was inhabited only by Native Hawaiians; (2) 1810 to 1850, when early foreign residents such as the Spaniard Don Francisco de Paula de Marin and the Englishman Isaac Davis began to build dwellings and storehouses in the area; (3) 1850-1890s, when large industrial structures, such as the Honolulu Flour Mill and the Honolulu Iron Works, were built on the property; (4) 1890s-1925, when many smaller wooden structures for businesses took over the area; and (5) 1925 to present, when most buildings were demolished and their project area was used as a parking lot. A few traditional Hawaiian artifacts and numerous historic artifacts were recovered during the excavations.

Data recovery was conducted by the Bishop Museum (Lebo and McGuirt 2000b) in the 800 Nu‘uanu Block (TMK 1-1-7-002:002) in October 1997. Ten backhoe trenches were excavated within the parking lot on the Diamond Head portion of the block bounded by Nu‘uanu Avenue and Nimitz, Marin, and Smith Streets. A total of 76 features were identified, including building foundations, post molds, coral block floors and walls, fire pits, trash deposits, and cast-iron sewer pipes. All features within their project area were designated as part SIHP # 50-80-14-5496, previously identified by Lebo and McGuirt (2000a). The earliest cultural remains were believed to date to earlier than AD 1810. Numerous historic artifacts were recovered dating to the early post-Contact period, when the area was used for storehouses, to the later historic periods when the lot was used for industrial structures, for small businesses, and then as a parking lot.

Introduction to the “Harbor Court” Projects

The “Harbor Court” Projects involved two adjacent tower projects, Queens Court and Harbor Court. Archaeological research was conducted by Paul H. Rosendahl, Ph.D., Inc. (PHRI) and the Bishop Museum. Studies included: *Archaeological Inventory Survey, Nu‘uanu Court Project, Land of Nu‘uanu, Kona District, Island of O‘ahu (TMK:2-1-02:26)* (Dunn and Rosendahl 1993); *Archaeological Monitoring and Inventory Survey, Harbor Court (Ka‘ahumanu Parking Structure) Project, Site 50-80-14-2456, Nu‘uanu, Ahupua‘a, Kona District, Island of O‘ahu, Hawai‘i* (Hurst and Allen 1992); *Native Hawaiian and Euro-American Culture Change in Early Honolulu, Archaeological Data Recovery, Harbor Court Property, Site No. 50-80-14-2456, Honolulu, Hawai‘i* (Lebo 1997); and *Pulaholaho and Charlton's Claim: Archaeological Data Recovery at Harbor Court, Downtown Honolulu (Site 50-80-14-2456)* (Lebo 2002).

The results of the research are described below based on the individual reports listed above.

Nu‘uanu Harbor Court Project (Ka‘ahumanu Parking Garage) (Dunn and Rosendahl 1993)

In 1993, Paul H. Rosendahl, Ph.D., Inc. (PHRI) completed an archaeological inventory survey of the proposed Nu‘uanu Court Project (formerly called the Ka‘ahumanu Parking Garage) (Dunn and Rosendahl 1993) (see Figure 2). One historic property was documented: SIHP # 50-80-14-2456, a subsurface cultural layer containing both pre- and post-Contact features including: marinshell midden, charcoal, non-human bone, postholes, pit features, and a variety of artifacts. Pre-Contact traditional Hawaiian artifacts included basalt flakes and modified shell and bone; post-Contact artifacts included metal, glass, and ceramic fragments.

Harbor Court Tower (Hurst and Allen 1992)

In 1992, the Applied Research Group of the Bishop Museum completed archaeological monitoring and an archaeological inventory survey of the Harbor Court Tower site (formerly called the Ka‘ahumanu Parking Garage) (see Figure 2). One historic property was documented: SIHP # 50-80-14-2456, a subsurface cultural layer containing both pre- and post-Contact elements. The cultural layer contained primarily post-Contact features (i.e., building foundation ruins) associated with nineteenth-century urban development. Pre-Contact traditional Hawaiian artifacts included basalt and volcanic glass flakes and modified marine shell; post-Contact artifacts included nineteenth-century bottles and ceramics. Six human burials were also identified (SIHP # -2456). Although a description of the burials was not provided in Hurst and Allen 1992, Appendix B of Lebo 2002 (see below) provides a complete osteological report of these findings. The burials were determined to likely be of Polynesian ancestry and consisted of four adult females (varying between 18-25 and 25-35 years of age), an adult male (25-35 years of age), and a subadult (8-12 years of age). The subadult skeletal remains were notable in the absence of the skull and leg bones which were believed to have been later recovered by the family as keepsakes, a traditional Hawaiian practice. One of the female skeletons evidenced tooth evulsion, the late Hawaiian practice of removing teeth in order to express grief.

Harbor Court Tower (Lebo 1997)

In 1997, the Applied Research Group of the Bishop Museum completed data recovery at SIHP # 50-80-14-2456, located at the Harbor Court Tower site (formerly called the Ka‘ahumanu Parking Garage) (see Figure 2). Data recovery involved an analysis of “Native Hawaiian occupations associated with the village of Kou/Honolulu from late eighteenth to minineteenth

century” (Lebo 1997:195). Lebo provides the following summary of the findings during the data recovery:

> These investigations indicate a dynamic post-Contact Native Hawaiian occupation at the site characterized by a vibrant interchange of traditional and introduced ideas, materials, technology, and cultural lifeways. Rich local marine and terrestrial resources were utilized for food, tools, ornaments, building materials, and clothing. Traditional lithic, bone, and shell tool and ornament production and technology continued as a mainstay of Native Hawaiian daily life. Introduced materials such as ceramics and bottle glass were incorporated into the everyday life of the Native Hawaiian retinue that occupied this site.
>
> At micentury, the site was transformed into a major commercial area in early Honolulu. Commercial development continued through the nineteenth century. Development in the twentieth century included the demolition of some of these commercial buildings [Skinner’s Auction House, Janion Green building, Hudson's Bay Co. store and the Theo. Davies building] and the erection of the Kaahumanu parking structure. Today, this site is the location of the Harbor Court Tower. (Lebo 1997:195)

All data recovery excavations were stopped upon encountering the pre-Contact deposits of the site. The pre-Contact deposits were investigated later by PHRI (Lebo 2002). Data recovery excavations identified 35 new features associated with SIHP # -2456. These included: fire pits, pavements, building foundations, post molds, and trash pits. All observed artifacts were of post-Contact origin, but as noted above, represent the influence of Western material culture upon the traditional Hawaiian lifestyle. Documented artifacts included: bottles, ceramics, glass beads, buttons (wood, shell, and bone), metal nails, adzes (stone and shell), flakes (basalt, quartz, chert, flint, jasper, and volcanic glass), modified manufactured glass, fish hook blanks, bone awls, hammer stones, and grinding stones.

Harbor Court Tower (Lebo 2002)

In 2002, PHRI completed data recovery at SIHP # 50-80-14-2456, located at the Harbor Court Tower site (formerly called the Ka‘ahumanu Parking Garage) (see Figure 2). The data recovery excavations conducted by PHRI completed the work which was initially begun by the Applied Research Group (Lebo 1997). Radiocarbon analysis of the SIHP # -2456 pre-Contact deposits indicated that occupation at the site began between AD 1000 and AD 1200 (Lebo 2002: Chapter 14:1).

One hundred and thirteen features were identified within pre-Contact deposits and include: 86 post molds, 25 in-filled pits, and two firepits. Traditional Hawaiian artifacts collected from the pre-Contact deposits consisted of primarily basalt tools and flakes and were collected from non-feature contexts. Observed midden consisted primarily of fish, bird, sea turtle, and marine mollusks. Dog and pig were also documented, but to a lesser extent.

King Street Sidewalk Improvements, Chinatown (Elmore and Kennedy 2001)

Between 1999 and 2000, Archaeological Consultants of Hawaiia conducted archaeological monitoring along King Street between River Street and Bethel Street. A human burial,

designated SIHP # 50-80-14-5781, was documented at the corner of King Street and Maunakea Street, within natural alluvial sediment. Investigations documented an in situ flexed primary burial disturbed by project excavation. The remains were disinterred.

Nimitz Highway and Ala Moana Boulevard Resurfacing Project (Petry et al. 2009)

In 2007, CSH (Petry, Hazlett, Borthwick, and Hammatt 2009) completed archaeological monitoring for the resurfacing of portions of Nimitz Highway and Ala Moana Boulevard along with the installation of streetlights, replacement of concrete bus pads, and limited drainage installation. The majority of ground disturbance consisted of very shallow excavations with the exception of traffic signal installations. In the area of Fort Street and Nimitz Highway fill deposits containing historic and modern building debris were documented. In the area of Bishop Street and Nimitz Highway fill deposits containing building rubble were observed. In the area along Ala Moana Boulevard between Channel Street and Pi‘ikoi Street natural coralline sand was documented beneath fill material. No archaeological cultural resources were documented.

Water Main Installation on Aloha Tower Drive (Hazlett et al. 2008)

In 2007, CSH (Hazlett, Fehrenbach, and Hammatt 2008) completed archaeological monitoring for water main installation on Aloha Tower Drive (see Figure 2). No historic properties were encountered during project construction. Observed stratigraphy consisted entirely of fill associated with modern road and utility construction, as well as historic land filling activities associated with the expansion of Honolulu Harbor. Documented fill sediments consisted of dredge material associated with the construction of Honolulu Harbor, as well as terrestrial sediments imported from other land areas of O‘ahu.

State Capitol Complex Telecommunications Conduits (Denham and Kennedy 1993)

In 1992, Archaeological Consultants of Hawaii conducted archaeological monitoring of electrical line excavations for the State Capitol Complex Telecommunication Conduits, Phase III, Project ((Denham and Kennedy 1993). Two historic properties were documented. SIHP # 50-80-14-4605, a multi-component site, consisted of an in situ human burial, a historic trash pit, a ditch, 1 firepit, and 6 postholes. The firepit was dated to between 1390-1700. In addition, one of the postholes was dated between 860-1330, with the most likely date range during the late 12th century. The human burial was disinterred. SIHP # 50-80-14-4606 consisted of nine historic trash pits dating from the minineteenth century and the early twentieth century.

1.3 Kaka‘ako

The Kaka‘ako area contains historic properties of both pre-Contact and post-Contact origin. The area has been subject to intensive reconstruction and growth since the mi1990s as a consequence of the growth of Honolulu and Waikīkī. Several investigations have uncovered subsurface elevated sand ridges, often containing burials and other historic properties, such as post-Contact trash pits. The discussion of previous archaeological investigations proceeds from ‘Ewa to Diamond Head (west to east) (Figure 3, Figure 4, and Table 3).

American Disabilities Act Improvements Project (Hazlett and Hammatt 2008)

In 2006, CSH conducted archaeological monitoring at the intersections of Alakea and Queen Streets and Alakea and Merchant Streets (Hazlett and Hammatt 2008). Fill materials contained historic trash, building materials, and faunal bones. No cultural resources were identified.

Nimitz Highway Reconstructed Sewer Project (Winieski and Hammatt 2001a)

Between 1999 and 2001, CSH conducted archaeological monitoring along portions of River Street, Nimitz Highway, Queen Street, South Street, and Ala Moana Boulevard (Winieski and Hammatt 2001a). A historic brick alignment was observed within Queen Street and a historic brick lined manhole and a remnant of a light gauge trolley rail (SIHP # 50-80-14-5942) were observed at the intersection of Queen Street and Nimitz Highway.

Water Main Installation on Aloha Tower Drive (Hazlett et al. 2008)

In 2007, CSH (Hazlett, Fehrenbach, and Hammatt 2008) completed archaeological monitoring for water main installation on Aloha Tower Drive. No historic properties were encountered during project construction. Observed stratigraphy consisted entirely of fill associated with modern road and utility construction, as well as historic land filling activities associated with the expansion of Honolulu Harbor. Documented fill sediments consisted of dredge material associated with the construction of Honolulu Harbor, as well as terrestrial sediments imported from other land areas of O‘ahu.

Nimitz Highway and Ala Moana Boulevard Resurfacing Project (Petry et al. 2009)

In 2007, CSH (Petry, Hazlett, Borthwick, and Hammatt 2009) completed archaeological monitoring for the resurfacing of portions of Nimitz Highway and Ala Moana Boulevard along with the installation of streetlights, replacement of concrete bus pads, and limited drainage installation. The majority of ground disturbance consisted of very shallow excavations with theexception of traffic signal installations. In the area of Fort Street and Nimitz Highway fill deposits containing historic and modern building debris were documented. In the area of Bishop Street and Nimitz Highway fill deposits containing building rubble were observed. In the area along Ala Moana Boulevard between Channel Street and Pi‘ikoi Street natural coralline sand was documented beneath fill material. No archaeological cultural resources were documented.

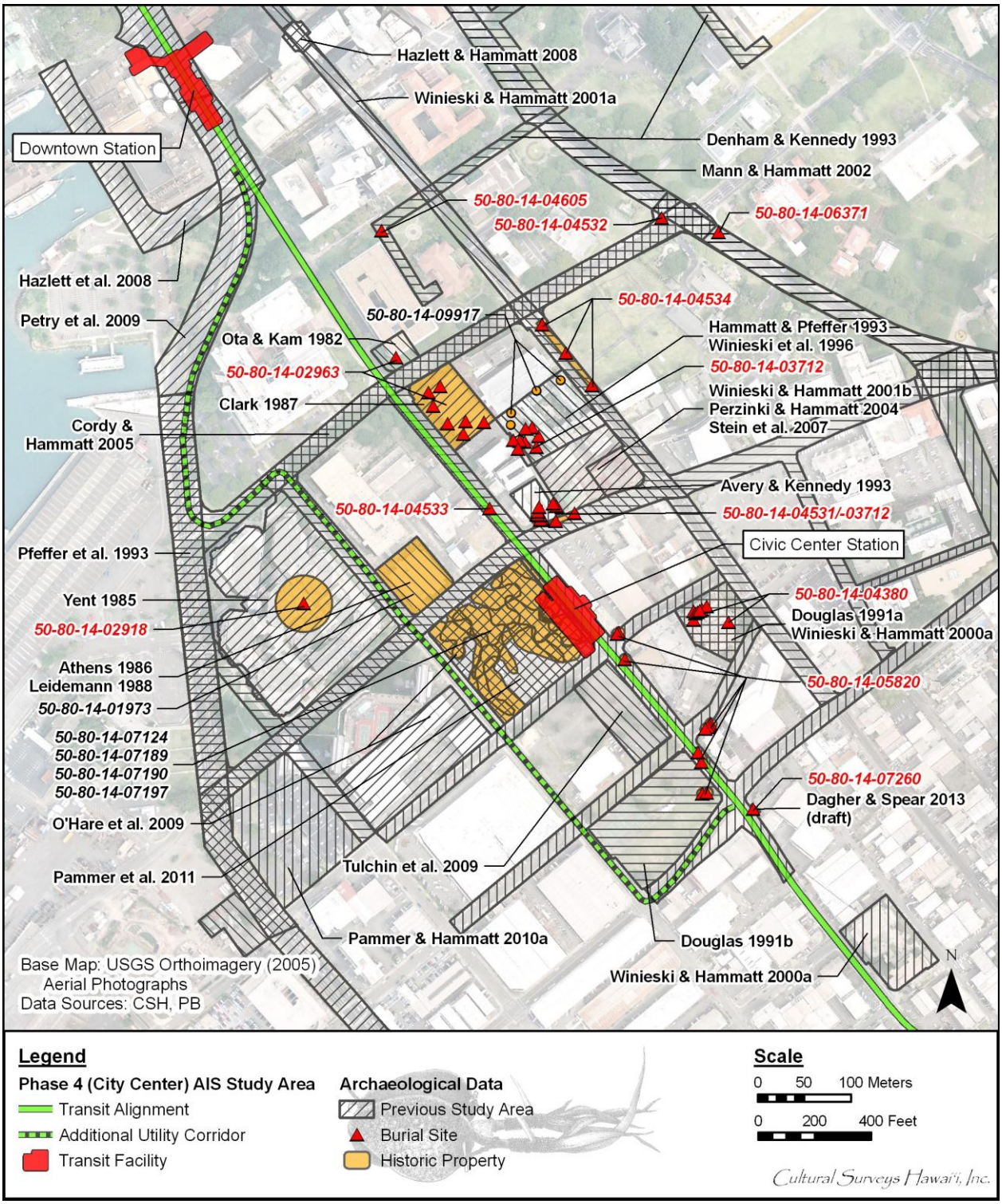

Figure 3. Previous archaeological studies in northwestern Kaka‘ako in the vicinity of the project corridor

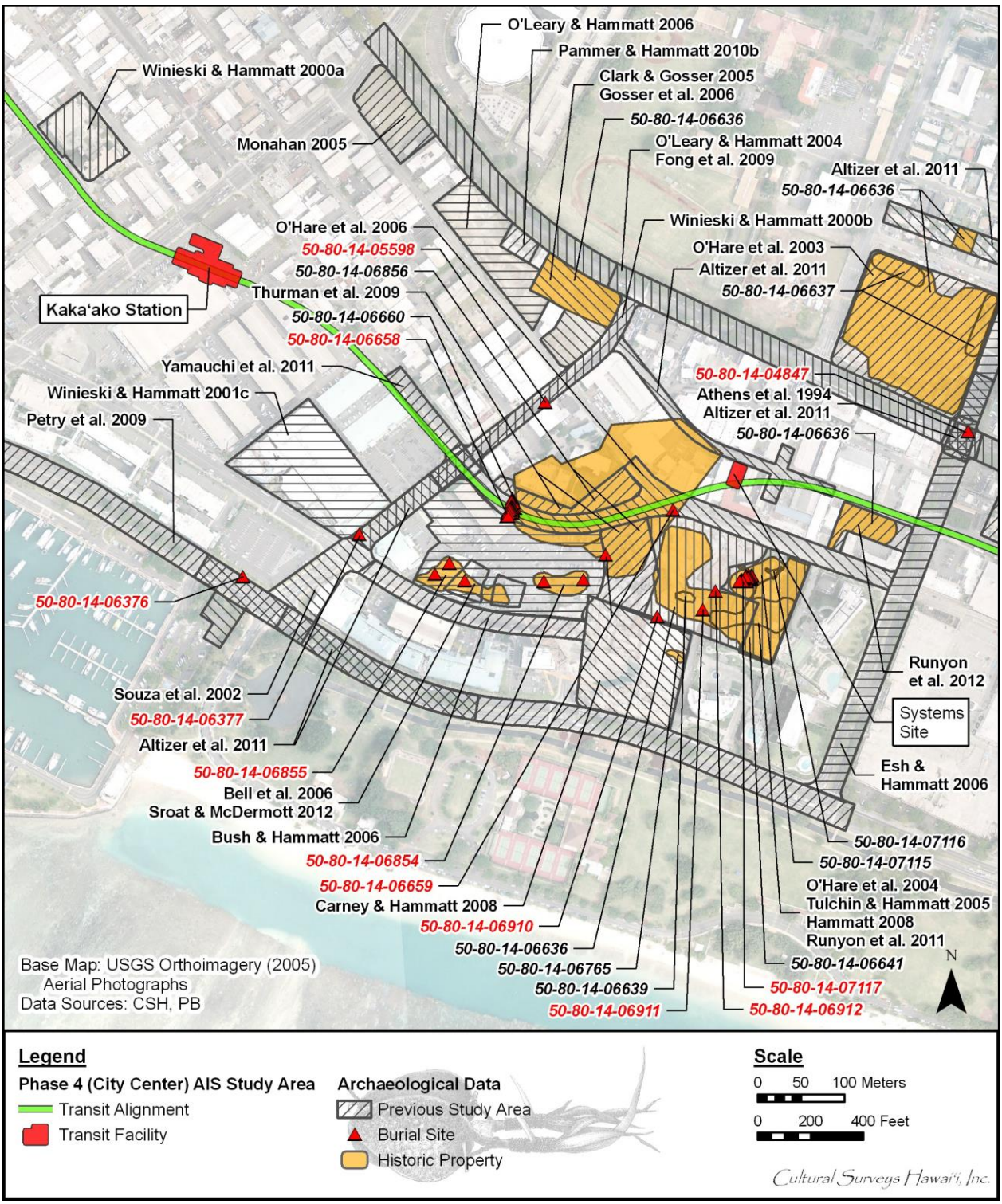

Figure 4. Previous archaeological studies in southeastern Kaka‘ako in the vicinity of the project corridor

Table 3 Previous Archaeological Studies in the Vicinity of the Kaka‘ako Portion of the Project Corridor (arranged chronologically)

Author	SIHP # 50-80-14	Report Description and Findings
Ota and Kam 1982	-2963	Osteological Study, Makai Parking Garage, corner of Punchbowl and Halekauwila Streets (TMK 2-1-31:23) - Six partial burial sets (SIHP # 50-80-14-2963) found. Tooth evulsion indicates probable pre-Contact to 1850 date.
Yent 1985	-2918	Ka‘ākaukukui Cemetery (-2918) at the Honolulu Iron Works project area - Five burials (SIHP # 50-80-14-2918) recorded
Athens 1986	-1973	Monitoring of Judiciary Parking Lot - Historic deposits (SIHP # 50-80-14-1973) with artifacts dating late nineteenth to early twentieth centuries
Clark 1987	-2963	Archaeological monitoring at Makai Parking Garage, corner of Punchbowl and Halekauwila Streets (TMK 2-1-31:23) - One cultural resource identified: SIHP # 50-80-14-2963; seven burials likely dating to pre -1850
Leidemann 1988	-1973	Monitoring at Federal Building parking lot - Historic deposits (SIHP # 50-80-14-1973) found
Douglas 1991a	-4380	Coral and Queen Street area - Eight burials (SIHP # 50-80-14-4380) recorded and five disinterred
Douglas 1991b	-4380	Coral and Queen Street area - One burial recorded (SIHP # 50-80-14-4380).
Avery and Kennedy 1993	-3712	Archaeological monitoring 614 South Street - one cultural resource identified: SIHP # 50-80-14-3712 (Honuakaha Smallpox Cemetery); nine post-Contact burials and an early twentieth-century trash pit
Hammatt and Pfeffer 1993	-3712	Archaeological inventory survey at the American Brewery lot – identified 29 burial pits associated with the Honuakaha Cemetery (SIHP # 50-80-14-3712) and 3 refuse pits associated with the brewery
Denham and Kennedy 1993	-4605, -4606	Archaeological monitoring for the State Capitol Complex Telecommunications Conduits Project documented two cultural resources: SIHP # 50-80-14-4606, a multi-component site consisting of a human burial, historic trash pit, firepit, and 6 postholes, and SIHP # 50-80-14-4606 consisting of 9 historic trash pits

Author	SIHP # 50-80-14	Report Description and Findings
Pfeffer, Borthwick, and Hammatt 1993	-3712; -4531; -4532; -4533; -4534	Monitoring for Kaka‘ako I1 - 31 burials from 1853-1854 Honuakaha Smallpox Cemetery (SIHP # 50-80-14-3712/-4531) at Quinn Lane; one historic burial from Punchbowl St. (SIHP # 50-80-14-4532); one possibly pre-Contact burial from Halekauwila St. (SIHP # 50-80-14-4533); and 116 historic burials from Kawaiaha‘o Cemetery (SIHP # 50-80-14-4534) at Queen St. (used from 1825-1920)
Athens et al. 1994	-4847	One set of human remains documented within a wetland environment, believed to represent a pre-Contact unattended death (SIHP # 50-80-14-4847)
Winieski et al. 1996	-3712	Archaeological monitoring as well as disinterment of 25 sets of human remains (SIHP # 50-80-14-3712) at the Honuakaha Housing Project (Honolulu Brewery site). Monitoring documented historic artifacts ranging from the 1880s to the turn of the 20th century. Eleven previously identified and 14 inadvertent find of human remains were disintered and reintered on the property.
Winieski and Hammatt 2000a	-1388; -4380; -5820	Archaeological monitoring at the Kaka‘ako Improvement District 3 area - 20 human burials were encountered. Nine burials were discovered at the Pohulani Elderly Rental Housing (SIHP # 50-80-14-4380), and 11 were in and around Mother Waldron Park (SIHP # 50-80-14-5820).
Winieski and Hammatt 2000b	-5598	Monitoring for Kaka‘ako Improvement District 4 construction - Two isolated historic coffin burials (SIHP # 50-80-14-5598) were documented on Kamake‘e Street, between the intersections of Kawaiaha‘o and Waimanu Streets.
Winieski and Hammatt 2001a	-5942	Archaeological monitoring along Nimitz Highway, Queen Street, and Ala Moana Boulevard which documented historic trash within fill, a brick alignment, a brick lined manhole, and the remains of a light gauge rail associated with the historic Honolulu Rapid Transit System, SIHP # 50-80-14-5942
Winieski and Hammatt 2001b	NA	Archaeological monitoring of boring at the Kaka‘ako Fire Station. No cultural material or human remains were observed.
Winieski and Hammatt 2001c	NA	Archaeological monitoring at the Ward Village Phase II project (Ward Theatres documented pockets of a sandy loam buried A horizon – no archaeological cultural resources were identified

Author	SIHP # 50-80-14	Report Description and Findings
Souza, Perzinski, and Hammatt 2002	-6376; -6377; and -6378	Kaka‘ako Improvement District 7 Monitoring - Three burials encountered: SIHP # 50-80-14-6376, SIHP # 50-80-14-6377, and SIHP # 50-80-14-6378
O’Hare et al. 2003	-6636	Inventory survey at the corner of Pi‘ikoi St. and Kapi‘olani Blvd. – documented 4 features consisting of 2 historic trash pits, a pit containing ceramic insulators, and an artificially constructed sand berm with a possible coral retaining wall and a wooden fence post. The sand berm feature was designated part of SIHP # 50-80-14-6636.
O’Hare, Bush, Borthwick, and Hammatt 2004	-6639; -6641; -6636	Inventory survey Ko‘olani Condominium - Three cultural resources documented: SIHP # 50-80-14-6639 and SIHP # 50-80-14-6641, historic trash pits dating from the early twentieth century; and SIHP # 50-80-14-6636, the original wetland surface of Kewalo
O’Leary and Hammatt 2004	NA	Archaeological monitoring along Kapi‘olani Blvd. – no archaeological cultural resources identified
Perzinski and Hammatt 2004	NA	Inventory survey for the Kaka‘ako Fire Station Renovation Project – no cultural resources documented
Clark and Gosser 2005	-6636	Inventory survey at the corner of Kapi‘olani Blvd. and Kamake‘e St. which documented pond sediments, a component of the Kewalo wetland sediments (SIHP # 50-80-14-6636)
Cordy and Hammatt 2005	NA	Archaeological monitoring Punchbowl St. - No historic properties identified; observed stratigraphy generally consisted of historic and modern fill material overlying naturally deposited sediment layers (Jaucas sand or black cinder).
Monahan 2005	NA	Archaeological monitoring on two parcels at the corner of Kapi‘olani Blvd. and Ward Ave. - no archaeological finds
Tulchin, T. and Hammatt 2005	-6636; -6641	Inventory survey Phase II portion of the Ko‘olani Condominium parcel - Two cultural resources identified: SIHP # 50-80-14-6636, original wetland surface of Kewalo area; and SIHP # 50-80-14-6641, historic garbage layer—both previously identified by O‘Hare et al. (2004)

Author	SIHP # 50-80-14	Report Description and Findings
Bell, McDermott, and O’Leary 2006	-6854; 6855; -6856	Archaeological inventory survey for Victoria Ward Village Shops – Three cultural resources identified: SIHP # 50-80-14-6854, subsurface cultural layer containing both historic and prehistoric cultural material and five human burials; SIHP # 50-80-14-6855, pre-Contact traditional Hawaiian cultural layer with six human burials; and SIHP # 50-80-14-6856, historic fishpond remnant
Esh and Hammatt 2006	NA	Monitoring for the Rehabilitation of Streets Unit 5B on Pi‘ikoi Street between Ala Moana Boulevard and Matlock Street - No cultural resources observed
Gosser et al. 2006	NA	Monitoring at the corner of Kapi‘olani Blvd. and Kamake‘e St. documented no finds
O’Hare, Bush, and Hammatt 2006	-6658; -6659; -6660	Monitoring for the Queen Street Extension Project - Three cultural resources documented: SIHP # 50-80-14-6658, a cluster of 28 burials; SIHP # 50-80-14-6659, two isolated burials; and SIHP # 50-80-14-6660, a post-Contact trash deposit
O’Leary and Hammatt 2006	NA	Inventory survey for the Moana Vista Project – no finds
Stein et al. 2007	NA	Monitoring for the Kaka‘ako Fire Station renovation – no cultural resources were identified
Carney and Hammatt 2008	-6765	Archaeological monitoring of the Hokua Tower Project which identified 2 historic properties: SIHP # 50-80-14-6765, an isolated fragment of a human mandible, and a historic trash pit
Hammatt 2008	-6910; -6911; -6912	Monitoring associated with the development of the Ko‘olani Towers Phase I - Three cultural resources identified: SIHP # 50-80-14-6910, a single pre-Contact burial; SIHP # 50-80-14-6911, a cluster of 16 historic coffin burials; and SIHP # 50-80-14-6912, a single burial
Hazlett and Hammatt 2008	NA	Archaeological monitoring at the intersections of Alakea and Merchant Streets and Alakea and Queen Streets. No historic properties were identified.
Hazlett, Fehrenbach, and Hammatt 2008	NA	Archaeological monitoring for water main installation on Aloha Tower Drive - no cultural resources were encountered during project construction; observed stratigraphy consisted entirely of fill associated with modern road and utility construction, as well as historic land filling activities, associated with the expansion of Honolulu Harbor.

Author	SIHP # 50-80-14	Report Description and Findings
Petrey et al. 2009	NA	Archaeological monitoring for resurfacing of portions of Nimitz Highway and Ala Moana Boulevard, installation of streetlights, replacement of concrete bus pads, and limited drainage installation. No archaeological cultural resources were documented.
Fong, Borthwick, and Hammatt 2009	NA	Monitoring of Kapi‘olani Boulevard Drainage, Water, and Sewer Systems Improvements - No cultural resources observed
O’Hare, Tulchin, T., Borthwick, and Hammatt 2009	NA	Archaeological inventory survey plan for three Kamehameha Schools Kaka‘ako Mauka parcels including Civic Center Transit Center location - Preliminary testing identified extensive fill layers overlying naturally deposited sandy clay and marsh/pond sediments. No cultural resources identified
Thurman, Altizer, O’Hare, Shideler, and Hammatt 2009	-6856	Archaeological inventory survey for Queen Street parks project - One previously identified cultural resources: SIHP # 50-80-14-6856, a historic fishpond remnant, originally identified by Bell et al. (2006)
Tulchin, T. Altizer, Borthwick, and Hammatt 2009	NA	Archaeological assessment of the proposed Halekauwila Place Project - No cultural resources identified. The stratigraphy observed within the subject parcel generally consisted of three to five layers of historic and modern fill material overlying naturally deposited sediment layers (sandy clay and gleyed clay sediments typical of a wet, marsh-type environment).
Pammer and Hammatt 2010a	NA	Archaeological assessment - No cultural resources were identified within the 4.7-acre project area. The project area was observed to have undergone extensive land modification by the filling of the low lying areas of Kaka‘ako.
Pammer and Hammatt 2010b	NA	Archaeological assessment for an approximately 0.26-acre Moana Vista project on Kapi‘olani Boulevard - No cultural resources identified
Altizer et al. 2011	-6636 (a kilometer north)	This archaeological monitoring report for the Kapi‘olani area revised sewer system documented SIHP # 50-30-14-6636, a wetland deposit, in Sewer Line G, near Kamaile Street, far from the present project area.

Author	SIHP # 50-80-14	Report Description and Findings
Pammer, Fong, and Hammatt 2011	-7124; -7189; -7190; -7197	A total of four cultural resources were identified within the project area: SIHP # 50-80-14-7124, -7189, -7190 and -7197. SIHP # 50-80-14-7124 consists of 31 historic building remnants features (Features A – EE), generally located just beneath the modern layers of fill. SIHP # 50-80-14-7189 consists of a layer of burnt historic debris, suspected to be from the open air burning of urban refuse during the early 1900s. SIHP # 50-80-14-7190 consists of old salt pan remnants, presenting as an approximately 5 cm thick layer of alternating peat and clay striations. SIHP # 50-80-14-7197 consists of a sandy cultural layer containing one late pre-Contact/early post-Contact fire pit feature.
Runyon, Thurman, O’Hare, Borthwick, and Hammatt 2011	-6636; -6641; -7115; -7116; -7117	Five cultural resources are significant based on Hawai‘i Register* criteria: SIHP # 50-80-14-6641, a burnt historic trash layer, was previously evaluated and determined significant under criteria A and D; SIHP # 50-80-14-6636, Kewalo wetland sediment, was previously evaluated and determined significant under criteria A and D; SIHP # 50-80-14-7115, a subsurface cultural layer containing intact pit features and artifacts is significant based on criteria A, D, and E; SIHP # 50-80-14-7116, a buried low-energy alluvial layer, is significant based on criteria A and D; SIHP # 50-80-14–7117, based on available archaeological information, is a concentration of post-Contact human burials, the majority of which are in an extended burial posture and located in coffins. All 27 burials were documented in pits extending down from the overlying buried, culturally-enriched A horizon (SIHP # -7115).
Yamauchi et al. 2011	NA	Archaeological monitoring for the Queen and Kamake‘e traffic signal project - no cultural resources were identified
Runyon, Borthwick, and Hammatt 2012	-6636	Archaeological Inventory Survey Report for the Senior Residence at Pi‘ikoi. SIHP # 50-80-14-6636 consists of buried Kewalo wetland sediments, found in all test trenches in the project area. The site has been previously documented in nearby areas in Kaka‘ako (O’Hare et al. 2003, O’Hare et al. 2004, Tulchin, T. and Hammatt 2005, and Runyon et al. 2011).

Author	SIHP # 50-80-14	Report Description and Findings
Sroat and McDermott 2012	-6855	This supplemental archaeological inventory survey report for the Ward Village Shops Phase 2 project identified no new cultural resources. Further documentation of SIHP 50-80-14-6855 was conducted.
Dagher and Spear 2013 (draft)	-7260	This burial site component of a data recovery plan for State Site 50-890-14-7260 addresses the inadvertent find of a partial set of displaced human skeletal remains at the east corner of Halekauwila Street and Cooke Street.

State Capitol Complex Telecommunications Conduits (Denham and Kennedy 1993)

In 1992, Archaeological Consultants of Hawaii conducted archaeological monitoring of electrical line excavations for the State Capitol Complex Telecommunication Conduits, Phase III, Project ((Denham and Kennedy 1993). Two historic properties were documented. SIHP # 50-80-14-4605, a multi-component site, consisted of an in situ human burial, a historic trash pit, a ditch, 1 firepit, and 6 postholes. The firepit was dated to between 1390-1700. In addition, one of the postholes was dated between 860-1330, with the most likely date range during the late 12th century. The human burial was disinterred. SIHP # 50-80-14-4606 consisted of nine historic trash pits dating from the minineteenth century and the early twentieth century.

Kaka‘ako Improvement District 1 (I1) (Pfeffer et al. 1993)

Between 1986 and 1988, CSH (Pfeffer, Borthwick, and Hammatt 1993) conducted archaeological monitoring, data recovery, and burial disinterment in the Hawai‘i Community Development Authority’s Kaka‘ako Improvement District 1 (I1), which was bounded by Punchbowl Street (west), South Street (east), King Street (north), and Ala Moana Boulevard (south), including extensions east for Kawaiaha‘o Lane, Queen Street, and Auahi Street. Portions of Pohukaina Street, Quinn Lane, and Reed Lane are also within this district (Figure 3). The observed stratigraphy generally consisted of imported construction fill material overlying naturally deposited Jaucas sand or black cinder deposits. In many cases, these Jaucas sand or black cinder deposits were culturally enriched with pre- and post-Contact deposits including: human burials, building foundations, trash pits, midden concentrations, and various pre- and post-Contact artifacts.

During the course of archaeological monitoring and data recovery activities, 149 human burials were identified and disinterred: 31 burials from the 1853-1854 Honuakaha Smallpox Cemetery (SIHP # 50-80-14-3712 / -4531) at Quinn Lane, one historic burial from Punchbowl Street (SIHP # 50-80-14-4532), one possibly pre-Contact burial from Halekauwila St. (SIHP # 50-80-14-4533), and 116 historic burials from Kawaiaha‘o Cemetery (SIHP # 50-80-14-4534) at Queen Street (used from 1825-1920).

Archaeological Monitoring along Punchbowl Street (Cordy and Hammatt 2005)

In 2005, CSH completed archaeological monitoring along Punchbowl Street for the installation of planters, improved sidewalk access, and the establishment of a north-bound contra

flow lane. No historic properties were identified. Observed stratigraphy generally consisted of historic and modern fill material overlying naturally deposited sediment layers (Jaucas sand or black cinder).

Kaka‘ako Improvement District 3 (Winieski and Hammatt 2000a)

Between November 1990 and September 1992, CSH conducted archaeological monitoring at the Kaka‘ako Improvement District 3 area. The monitoring of susurface excavations revealed that although the area had been previously disturbed to a great extent, undisturbed beach sand and volcanic cinder deposits were still intact below fill layers. Twenty human burials were encountered; nine burials were discovered at the Pohulani Elderly Rental Housing (SIHP # 50-80-14-4380), and 11 were in and around Mother Waldron Park (SIHP # 50-80-14-5820). Seventeen of the burials were discovered *in situ*; three were too fragmented and disturbed for an *in situ* location to be established. Four burials were in extended supine position; seven were in fully flexed positions. Burial positions for the remaining nine burials could not be established. Seventeen of the burials were recovered and reinterred in Mother Waldron Park. Three were left in place beneath the Pohulani Elderly Rental Housing Facility (Winieski and Hammatt 2000a).

State Office Building #2 at the Corner of Punchbowl and Halekauwila Streets (Ota and Kam 1982; Clark 1987)

In 1982, six partial sets of human remains were documented during the construction of State Office Building #2 at the corner of Punchbowl and Halekauwila Streets. The remains were in poor condition, and ethnicity could not be determined for four of the six sets of remains. Two of the burials showed evidence of incisor evulsion (forcible pulling out or extraction), which was practiced by late pre-Contact Hawaiians (Ota and Kam 1982). These burials were designated SIHP # 50-80-14-2963.

In 1987, seven sets of human remains were discovered during the construction of a parking garage on the corner of Punchbowl and Halekauwila Streets (Clark 1987). Four of the burials were intact with well-defined burial pits, and these were assumed to be of Hawaiian ancestry. Only one of the individuals was believed to be pre-Contact in age. These burials were incorporated into SIHP # 50-80-14-2963, previously identified by Ota and Kam (1982). Additional cultural material recovered at the site included basalt tools, glass bottles, ceramic fragments, and metal objects. The Ft 10 burial was reported from a depth of 75 cmbs, but other burial depths were reported “below graded surface” (Clark 1987:63-75).

American Brewery (Hammatt and Pfeffer 1993; Winieski et al. 1996)

In 1993, CSH conducted an archaeological inventory survey at the American Brewery lot (Hammatt and Pfeffer 1993). A total of 24 backhoe trenches were excavated, specifically located in order to identify and locate the boundaries of a portion of Honuakaha Cemetery. Test excavations documented 29 coffin burial pits and 3 refuse pits associated with early 20th c. brewery activity. The majority of burials were interred in sand deposits. Historical and osteological research of Honuakaha Cemetery indicates the vast majority were native Hawaiians.

Between 1993 and 1995, CSH conducted archaeological monitoring as well disinterment of previously identified and inadvertently discovered human remains at the Honuakaha Housing Project (previously the American Brewery Site) (Wineiski et al. 1996). Monitoring documented historic artifacts (bottles, metal, etc.) ranging from the 1880s to after the construction of the

Brewery Building at the turn of the 20th century. Eleven sets of human remains were disintered from the area of the project's building footprint (considered "outlier" burials of the Honuakaha Cemetery) and an additional 14 inadvertent finds of human burials, identified during utility installation in Quinn Lane, were disintered. The majority of documented burials were preserved in place, with the disintered remains reintered elsewhere within the property.

614 South Street (Avery and Kennedy 1993)

In 1993, Archaeological Consultants of Hawaii, Inc. (ACH) conducted archaeological monitoring of subsurface excavations at 614 South Street. Monitoring was required following the inadvertent disturbance of three *in situ* burials. The subject property was located over a portion of the historic Honuakaha Smallpox Cemetery (SIHP # 50-80-14-3712). The excavation of trenches across the property and on Quinn Lane identified the presence of six additional in situ human burials. A historic trash pit dated to the early twentieth century was also identified.

All nine burials and the trash pit were included as features of the Honuakaha Smallpox Cemetery (SIHP # 50-80-14-3712). All of the burials were situated in the known bounds of the cemetery and were likely interred during the smallpox epidemic of 1853 (Avery and Kennedy 1993:19). Two of the burials contained grave goods consisting of: a drilled dog's tooth pendent, a gold earring, and glass and shell beads. All of the identified burials were situated within Jaucas sand deposits.

Kaka‘ako Fire Station (Winieski and Hammatt 2001b; Perzinski and Hammatt 2004; Stein et al. 2007)

In 2001, CSH conducted archaeological monitoring of seven geotechnical bores in the *makai* portion of the Kaka‘ako Fire Station (Winieski and Hammatt 2001b). No human remains associated with the Honuakaha Smallpox Cemetery were observed.

In 2004, CSH conducted an archaeological inventory survey for the Kaka‘ako Fire Station (Perzinski and Hammatt 2004). Twelve backhoe test trenches were excavated. No cultural resources were identified. Stratigraphy consisted of fill layers overlying natural sandy loam and sand layers which contained sparse historic trash, a sterile sand layer, and a mixed layer of sand and cinder.

Between 2004 and 2006, archaeological monitoring was conducted for the renovation of the Kaka‘ako Fire Station (Stein et al. 2007). No cultural resources were documented.

Judiciary Parking Garage (Athens 1986)

In December of 1985, monitoring was conducted for the proposed Judiciary Parking Garage, at the northwest corner of Pohukaina and South Streets (Athens 1986). In the nineteenth century, this project area would have been in the *‘ili* of ‘Auwaiolimu, south of three fishponds. No undisturbed sand layers were noted in the excavations, and much of the area appeared to have been disturbed prior to the excavation. It is likely that the area was under water, or was intertidal in pre-Contact times, and therefore, little in the way of pre-Contact Hawaiian deposits would be found. No pre-Contact cultural deposits or artifacts were recorded, but historic artifacts were common in concentrations and scattered throughout the several fill layers exposed in the construction trenches. Soda bottles of three O‘ahu bottlers were found, including the Sunrise Soda Water Works, Pacific Soda Works, and Arctic Soda Works. These blotop bottles date between 1880 and 1915. The deposit was designated SIHP # 50-80-14-3984.

Federal Judiciary Building Parking Complex (Leidemann 1988)

In 1988, the Bernice Pauahi Bishop Museum conducted archaeological monitoring for the Federal Judiciary Building parking complex (Leidemann 1988). The project area was described as on the northwest corner of Pohukaina and South Streets in the text (Leidemann 1988:1), which would make this project area the same as Athens' 1986 project area (described above). However, on their Figure 1 (Leidemann 1988:2), the project area was drawn on the northwest corner of Reed Lane and South Street, which would make this project area immediately north of the Athens' project area. Leidemann made no mention of the Athens study in her report. Clark (1987:22) stated that the project areas were the same. As in the Athens study, no undisturbed sand deposits were recorded and no pre-Contact artifacts were found. Analysis of the post-Contact artifactual material encountered determined that the most likely time frame for the manufacture and disposal of the historic artifacts found was for the years between 1880 and 1930. The deposit was designated SIHP # 50-80-14-1973.

Honolulu Ironworks Burials (Yent 1985)

In 1985, five burials were uncovered at the former Honolulu Ironworks lot (Yent 1985), which is the block at the corner of Punchbowl and Pohukaina Street. The burials were found in burial pits in the sand deposit that lies under at least a meter of the ironworks fill. Two of the individuals were in an extended position. A crew from the Division of State Parks disinterred the five burials, which were later designated SIHP # 50-80-14-2918. Yent's report does not contain a map, so the locations of the burials disinterred by the Division of State Parks are unknown.

Former Comp USA Parcel (Pammer and Hammatt 2010a)

No historic properties were identified within the 4.7-acre project area. The project area was observed to have undergone extensive land modification by the filling of the low lying areas of Kaka‘ako.

Kamehameha Schools Block 2 Parking Lot (Pammer et al. 2011)

In 2011 CSH (Pammer, Fong, and Hammatt 2011) completed an archaeological inventory survey for a Kamehameha Schools Block 2 parking lot parcel bounded by South Street to the northwest, Halekauwila Street to the northeast, Keawe Street to the southeast, and Pohukaina Street to the southwest. A total of four historic properties were identified within the project area: SIHP # 50-80-14-7124, -7189, -7190 and -7197. SIHP # 50-80-14-7124 consists of 31 historic building remnants features (Features A – EE), generally located just beneath the modern layers of fill. These include brick and mortar clusters, slabs of concrete/basalt, concrete footings with metal supports, large slabs of very hard, corroded, melted metal, and pit features containing demolition debris. SIHP # 50-80-14-7189 consists of a layer of burnt historic debris, suspected to be from the open-air burning of urban refuse during the early 1900s. The charred remains were then utilized to fill in the unwanted wetlands around the project area. The observed cultural materials include glass bottles, ceramics, and other domestic waste. SIHP # 50-80-14-7190 consists of old salt pan remnants, presenting as an approximately 5 cm thick layer of alternating peat and clay striations. SIHP # 50-80-14-7197 consists of a sandy cultural layer containing one late pre-Contact/early post-Contact fire pit feature.

Proposed Civic Center Transit Station Area (O'Hare et al. 2009)

In 2009, CSH (O'Hare, Tulchin, T., Borthwick, and Hammatt 2009) prepared an archaeological inventory survey plan for three Kamehameha Schools Kaka‘ako *mauka* parcels. One of the *mauka* parcels encompasses the *makai* half of the proposed Civic Center transit station. To formulate a strategy for testing, preliminary archaeological work, in the form of subsurface testing, was conducted. Preliminary testing identified the following stratigraphic sequence: 1) fill layers consisting of mixed marine/terrigenous soil strata; layers of incinerated and un-burnt garbage with metal, glass, and ceramic fragments; crushed coral layers; volcanic cinders; and pumped/dredged marine clay layers; 2) a naturally deposited sandy clay or sandy loam; and 3) a very dark gray sandy clay with organic material representing former marsh/pond sediments of the pre-Contact and prHawaiian occupation of the islands.

Halekauwila Place Project (Tulchin et al. 2009)

In 2009, CSH (Tulchin, T., Altizer, Borthwick, and Hammatt 2009) completed an archaeological assessment of the proposed Halekauwila Place project, located just *makai* of the project area, in between the proposed Civic Center and Kaka‘ako transit stations. As the subject parcel was an asphalt parking lot, the assessment consisted of subsurface testing; this involved the excavation of 18 backhoe trenches. No historic properties were identified.

The stratigraphy observed within the subject parcel generally consisted of three to five layers of historic and modern fill material beneath the modern asphalt pavement and gravel base course. Naturally-deposited sediment layers (sandy clay and gleyed clay sediments typical of a wet, marsh-type environment) were generally encountered at depths approximately 0.9-1.3 m below the current land surface, within approximately 0.5-1.0 m of the water table.

Coral and Queen Streets Osteological Reports (Douglas 1991a, Douglas 1991b)

These two osteological reports analyze burial finds from a site documented as part of Kaka‘ako Improvement District 3 (Winieski and Hammatt 2000a – see section on "Kaka‘ako Improvement District 3" above).

In November of 1990, during construction of an elderly housing project at the southwest corner of Coral and Queen Streets, human bones were uncovered and reported to the State Historic Preservation Division (Douglas 1991a). Disinterment of the burials was recommended, and CSH then conducted excavations in November of 1990. Eight separate burials were identified on the east side of the property, with only five removed. A glass bead was found with one burial, suggesting a post-Contact date. One burial also exhibited a prmortem loss of the mandibular incisors, which suggests deliberate tooth evulsion. This procedure was known to have been practiced by Hawaiians in the pre-Contact and early post-Contact period. The author concluded that the burials were likely of Hawaiian ethnicity, perhaps representing a nuclear family. This burial area was later designated SIHP # 50-80-14-4380. This project area is within the boundary of LCA 2045 to Kauwahi, who received the parcel in the time of Kamehameha I, indicating that this was a Hawaiian habitation area as early as the beginning of the nineteenth century.

In March of 1991, during excavation of a waterline trench between Coral and Queen Streets across Mother Waldron Park, human skeletal remains were discovered and disinterred (Douglas

1991b). The remains were determined to be of Hawaiian ancestry, with a pig burial possibly associated with the burial. These burials were considered part of SIHP # 50-80-14-4380.

Intersection of Kapi‘olani Blvd. and Ward Ave. (Monahan 2005)

In 2005, Scientific Consultants Services conducted an archaeological inventory survey at the *makai*/Dimaond Head corner of Kapi‘olani Boulevard and Ward Avenue (Monahan 2005). Nine backhoe trenches were excavated. No archaeological cultural resources were identified.

Moana Vista Project (O’Leary and Hammatt 2006)

In 2005, CSH conducted an archaeological inventory survey for the Moana Vista Project (O’Leary and Hammatt 2006). No archaeological cultural resources were identified.

Moana Vista Project (Pammer and Hammatt 2010b)

This archaeological assessment for an approximately 0.26-acre Moana Vista project on the *makai* side of Kapi‘olani Boulevard, northwest of Kamake‘e Street, identified no historic properties.

Ward Theatres (Winieski and Hammatt 2001c)

In 2000, CSH conducted archaeological monitoring for the Ward Village Phase II (Ward Theatres) project (Winieski and Hammatt 2001c). Stratigraphy consisted largely of crushed coral fill and hydraulic fill overlying decomposing coral shelf. Only a few pockets of the project area exposed a buried A horizon. No archaeological cultural resources were identified.

Kamake‘e and Queen Streets Traffic Signal Project (Yamauchi et al. 2011)

In 2010, CSH conducted archaeological monitoring for the Kamake‘e and Queen Street Traffic Signal project (Yamauchi et al. 2011). A buried sandy loam A horizon was documented beneath overlying fill deposits. No archaeological cultural resources were identified.

Intersection of Kapi‘olani Blvd. and Kamake‘e St. (Clark and Gosser 2005; Gosser et al. 2006)

In 2004, Pacific Consulting Services conducted an archaeological inventory survey for a storage facility at the southwest corner of Kapi‘olani Boulevard and Kamake‘e Street (Clark and Gosser 2005). Wetland pond deposits were documented in the northern portions of the project area and considered to be a component of SIHP # 50-80-14-6636, the Kewalo wetlands. Radiocarbon dating of a peat sample from the pond sediments indicated that the pond was active as late at the 1920s to 1930s.

In 2006, Pacific Consulting Services conducted archaeological monitoring. No additional archaeological cultural resources were identified.

Kaka‘ako Improvement District 7 (Souza et al. 2002)

In 2000, excavation associated with the Kaka‘ako Improvement District 7 construction was undertaken by CSH. Three human burials were encountered, which were severely disturbed by excavation activity (Souza, Perzinski, and Hammatt 2002). The burials’ age and ethnicity are unknown, though the lack of grave goods may indicate they are pre-Contact or early post-Contact. Burial 1 (SIHP # 50-80-14-6376) was inadvertently discovered by Delta Construction Company personnel on October 13, 2000 in the base yard back dirt pile. Burial 2 (SIHP # 50-80-

14-6377) was encountered by a CSH archaeologist during backhoe excavations for a box drain. The burial was within an undisturbed beach sand deposit. Burial 3 (SIHP # 50-80-14-6378) was recovered in the Delta Co. base yard on Pensacola Avenue and Kapi‘olani Boulevard.

Kapi‘olani Area Revised Sewer System (Altizer et al. 2011)

Between 2008 and 2009, CSH conducted archaeological monitoring of sewer line rehabilitation excavations throughout the Kapi‘olani area (Altizer et al. 2011). Wetland marsh sediments, considered components of the Kewalo wetlands (SIHP # 50-80-14-6636) were documented in the area Sewer Line G, an easement off of Pensacola Street between Ho‘ola‘i and Kamaile Streets. No other archaeological cultural resources were identified.

Kapi‘olani Blvd. Sewer Line s(O’Leary and Hammatt 2004)

In 2004, emergency repair of a sewer line along Kapi‘olani Boulevard was monitored by CSH (O’Leary and Hammatt 2004). All excavations were relatively shallow and remained within the previous sewer line utility corridor. No archaeological cultural resources were identified.

Kapi‘olani Boulevard Drainage, Water, and Sewer Systems (Fong et al. 2009)

In 2009, CSH (Fong, Borthwick, and Hammatt 2009) completed archaeological monitoring of construction associated with the upgrading of existing drainage, water, and sewer systems within Kapi‘olani Boulevard, from Kalākaua Avenue to Ward Avenue; within Kamake‘e Street, from Kapi‘olani Boulevard to Auahi Street; and within Atkinson Drive, from Kapi‘olani Boulevard to Ala Moana Boulevard. No historic properties were observed.

Observed stratigraphy consisted primarily of imported fill material associated with utility and road construction. In some instances, pockets of naturally deposited sediment (Jaucas sand and wetland clays) were observed beneath fill deposits.

Kaka‘ako Improvement District 4 (Winieski and Hammatt 2000b)

In 2000, archaeological monitoring by CSH for the Kaka‘ako Improvement District 4 construction documented two isolated historic coffin burials (SIHP # 50-80-14-5598) on Kamake‘e Street, between the intersections of Kawaiaha‘o and Waimanu Streets (Winieski and Hammatt 2000b). The two adjacent burials were found in undisturbed beach sand with an associated A horizon that was capped by modern fill. Well-defined burial pits were present, as well as staining from the deteriorated coffin wood. No associated artifacts, other than the coffins, were discovered during disinterment.

Victoria Ward Village Shops (Bell et al. 2006 and Sroat and McDermott 2012)

In 2006, CSH (Bell, McDermott, and O’Leary 2006) completed an archaeological inventory survey for the Victoria Ward Village Shops. Three historic properties were identified: SIHP # 50-80-14-6854, a subsurface cultural layer/activity area remnant consisting of an immature pig skeleton, remnants of a historic privy, remnants of a culturally enriched A horizon (containing both historic and prehistoric cultural material), and five human burials; SIHP # 50-80-14-6855, an activity area remnant, comprised of a pronounced subsurface traditional Hawaiian cultural layer that includes scallop-shaped pit features and six human burials; and SIHP # 50-80-14-6856, a historic fishpond remnant, part of Land Commission Grant 3194, “Kolowalu,” awarded to Kalae and Kaaua.

The supplemental archaeological inventory survey report for the Ward Village Shops Phase 2 project (Sroat and McDermott 2012) identified no new historic properties; however, further documentation of SIHP -6855 was conducted.

Hokua Tower Project (Carney and Hammatt 2008)

Between 2003 and 2005, CSH conducted archaeological monitoring for the Hokua Tower Project on Auahi Street (Carney and Hammatt 2008). Two archaeological cultural resources were identified, consisting of an isolated fragment of a human mandible found on the ground surface and of unknown provenience and a historic trash pit (SIHP # 50-80-14-6765).

Queen Street Extension Project (O’Hare et al. 2006)

In 2004, CSH completed archaeological monitoring for the Queen Street Extension Project. Three historic properties were documented: SIHP # 50-80-14-6658, SIHP # 50-80-14-6659, and SIHP # 50-80-14-6660. SIHP # 50-80-14-6658 is a cluster of 28 burials within the Queen Street extension. Seventeen of the 28 burials were determined to be of Hawaiian ethnicity, based on the types of grave goods, the presence of tooth ablation, and a traditional burial position (flexed vs. extended). The ethnicity of the remaining 11 could not be definitively determined, but it is assumed that most of these were also Hawaiian since this area of Kaka‘ako was not inhabited by other ethnic groups until the twentieth century. All grave goods were historic; most were dated to the mito-late nineteenth century. It is possible that many of these individuals were victims of the 1853 smallpox epidemic or one of the other epidemics that decimated the Hawaiian population in the last half of the nineteenth century. SIHP # 50-80-14-6659 consists of two isolated burials in a previously disturbed stratigraphic context. The age or ethnicity of these burials could not be determined. SIHP # 50-80-14-6660 is a discrete historic dump area containing bottles dated to the early twentieth century (O’Hare, Bush, and Hammatt 2006). The burials were typically encountered at depths of 88-118 cmbs (inference from reported stratigraphy—see O’Hare, Bush, and Hammatt 2006:73 and 76). The burials were reinterred in a reburial vault in the immediate vicinity on the *mauka* side of Queen Street.

Queen Street Parks Project (Thurman et al. 2009)

In 2009, CSH (Thurman, Altizer, O’Hare, Shideler, and Hammatt 2009) completed an archaeological inventory survey for the Queen Street Parks project. Fieldwork involved the excavation of 29 backhoe trenches. One previously identified historic property was recorded: SIHP 50-80-14-6856, a historic fishpond remnant, originally identified by Bell et al. (2006).

Documented stratigraphy consisted of varying layers of fill overlying various naturally deposited sediments atop the coral shelf. The fill consisted of imported terrigenous sediment, incinerator material containing burnt and unburnt historic refuse, crushed coral, and hydraulic pump dredge. Natural sediments consisted primarily of backshore marsh or pond sediments associated with SIHP -6856 (“Kolowalu” fish pond). Naturally deposited Jaucas sand deposits were also observed.

Ko‘olani Condominium (O’Hare et al. 2004 and Hammatt 2008)

In 2003, CSH (O’Hare, Bush, Borthwick, and Hammatt 2004) conducted an archaeological inventory survey for the Ko‘olani Condominium parcel in the Kewalo area, Honolulu. Two previously unrecorded historic properties were found. SIHP # 50-80-14-6639 and SIHP # 50-80-14-6641 are historic trash pits dating from the early twentieth century. In addition, one

previously recorded historic property, the original wetland surface of Kewalo (SIHP # 50-80-14-6636), was documented (O’Hare, Bush, Borthwick, and Hammatt 2004).

In 2008, CSH (Hammatt 2008) completed archaeological monitoring associated with the development of the Ko‘olani Towers Phase I, located in Kaka‘ako, west of Waimanu Street and miblock between Kamake‘e Street and Pi‘ikoi Street. Three historic properties were identified: SIHP # 50-80-14-6910, a single pre-Contact burial; SIHP # 50-80-14-6911, a cluster of 16 historic coffin burials believed to comprise a discrete cemetery; and SIHP # 50-80-14-6912, a single burial (the total number of burials encountered was 18). In addition, various historic trash deposits were observed throughout their project area but were not considered eligible for the Hawai‘i Register of Historic Places (Hammatt 2008). Burials were reported at depths of 60 cmbs, 78 cmbs, and 100 cm below surface, but no depths are reported for most burials (owing to removal of the former ground surface in the vicinity prior to burial discovery). Eight of the burials were left in their original place of interment, with most of the rest relocated closer to the burials left in place.

Phase II Portion of the Ko‘olani Condominium (Tulchin and Hammatt 2005)

In 2005, an inventory survey was conducted by CSH (Tulchin, T. and Hammatt 2005) for the Phase II portion of the Ko‘olani Condominium parcel in the Kewalo area of Honolulu. Two historic properties were identified: SIHP # 50-80-14-6636, original wetland surface of Kewalo area, and SIHP # 50-80-14-6641, historic garbage layer. Both were previously identified by O’Hare et al. (2004) (see section discussing “Ko‘olani Condominium” above)..

Waihonua (Runyon et al. 2011)

In 2011, CSH (Runyon, Thurman, O’Hare, Borthwick, and Hammatt 2011) completed an archaeological inventory survey for the Ko‘olani Phase II (rnamed Waihonua) project (located just *mauka* of the Tulchin, T. and Hammatt 2005 project area). Five historic properties—two previously documented and three newly identified—are documented within the project area. During a prior archeological inventory survey investigation (Tulchin, T. and Hammatt 2005 – see section discussing “Phase II Portion of the Ko‘olani Condominium” above), eight trenches were excavated within the southern portion of that project area. The investigation documented a layer of burnt trash, which dated from the 1880s to 1920s and was designated SIHP (State Inventory of Historic Properties) # 50-80-14-6641, located in the southern portion of that project area. Additionally, buried Kewalo wetland sediment was documented in the southern portion of the Waihonua project area and was designated SIHP # 50-80-14-6636.

Based on the current investigation, the boundary of SIHP # -6641 was expanded. The three newly documented historic properties included:

SIHP # 50-80-14-7115, a buried culturally enriched sand A horizon (cultural layer) containing multiple pit features and pre- and post-Contact artifacts located throughout the west half of the Waihonua project area;

SIHP # 50-80-14–7116, a buried low-energy alluvial layer (gleyed sediment) corresponding geographically to a documented historic pond, located in the northern portion of the project area; and

SIHP # 50-80-14–7117, a concentration of 27 post-Contact human burials, located in the western portion of the Waihonua project area.

Senior Residence at Pi‘ikoi (Runyon et al. 2012)

In 2012, CSH (Runyon, Borthwick, and Hammatt 2012) completed an archaeological inventory survey for the Senior Residence at Pi‘ikoi. One historic property was identified: SIHP # 50-80-14-6636, consisting of buried Kewalo wetland sediments found in all test trenches in that project area. The site has been previously documented in nearby areas in Kaka‘ako (O’Hare et al. 2003, O’Hare et al. 2004, Tulchin, T. and Hammatt 2005, and Runyon et al. 2011)

Rehabilitation of Streets Unit 5B on Pi‘ikoi Street (Esh and Hammatt 2006)

In August 2004, CSH conducted archaeological monitoring for the Rehabilitation of Streets Unit 5B on Pi‘ikoi Street between Ala Moana Boulevard and Matlock Street (Esh and Hammatt 2006). No historic properties were observed.

Pi‘ikoi Street and Kapi‘olani Blvd. Intersection (O’Hare et al. 2003)

In 2003, CSH conducted an archaeological inventory survey at a property on the corner of Pi‘ikoi Street and Kapi‘olani Boulevard (O’Hare et al. 2003). Stratigraphy consisted of landscape, construction, and/or coral and sand fill sediments over natural wetland clay sediments. The fill deposits contained historic artifacts dating to the 1920s and 1930s. Four subsurface features were identified: Feature 1, a pit feature containing broken ceramic insulators; Feature 2, a trash pit containing 1920s and 1930s historic artifacts; Feature 3, a trash pit containing wood and concrete; and Feature 4, an artificially constructed sand berm with a concentration of coral boulders at the east side, possibly representing a retaining wall for the berm. A wooden fence post was also found on the other side of the coral rock pile, possibly representing a property boundary, rice field boundary, or a trail edge. Feature 4 is considered part of SIHP # 50-80-14-6636, the Kewalo wetlands.

Inadvertent Remains at the Pi‘ikoi and Kapi‘olani Intersection (Athens et al. 1994)

In 1994, an inadvertent discovery of human skeletal remains was made during utility excavations at the corner of Pi‘ikoi Street and Kapi‘olani Boulevard (Athens et al. 1994). The remains consisted of a single individual, a young female 12-15 years of age. The remains were documented within a wetland environment and believed to represent an unattended death, or non-intentional burial. Radiocarbon analysis of bone collagen yielded a date of death of between AD 1295-1473. Osteological analysis identified a severe bone infection of the right pubis and the probable cause of death.

1.4 Kālia

Previous archaeological studies in the immediate vicinity of the Kālia portion of the project corridor are summarized in Table 4 and depicted in Figure 5. The archaeological studies in the Kālia area are summarized below.

Kapi‘olani Area Revised Sewer System (Altizer et al. 2011)

Between 2008 and 2009, CSH conducted archaeological monitoring of sewer line rehabilitation excavations throughout the Kapi‘olani area (Altizer et al. 2011). Wetland marsh sediments, considered components of the Kewalo wetlands (SIHP # 50-80-14-6636) were documented in the area Sewer Line G, an easement off of Pensacola Street between Ho‘ola‘i and Kamaile Streets. No other archaeological cultural resources were identified.

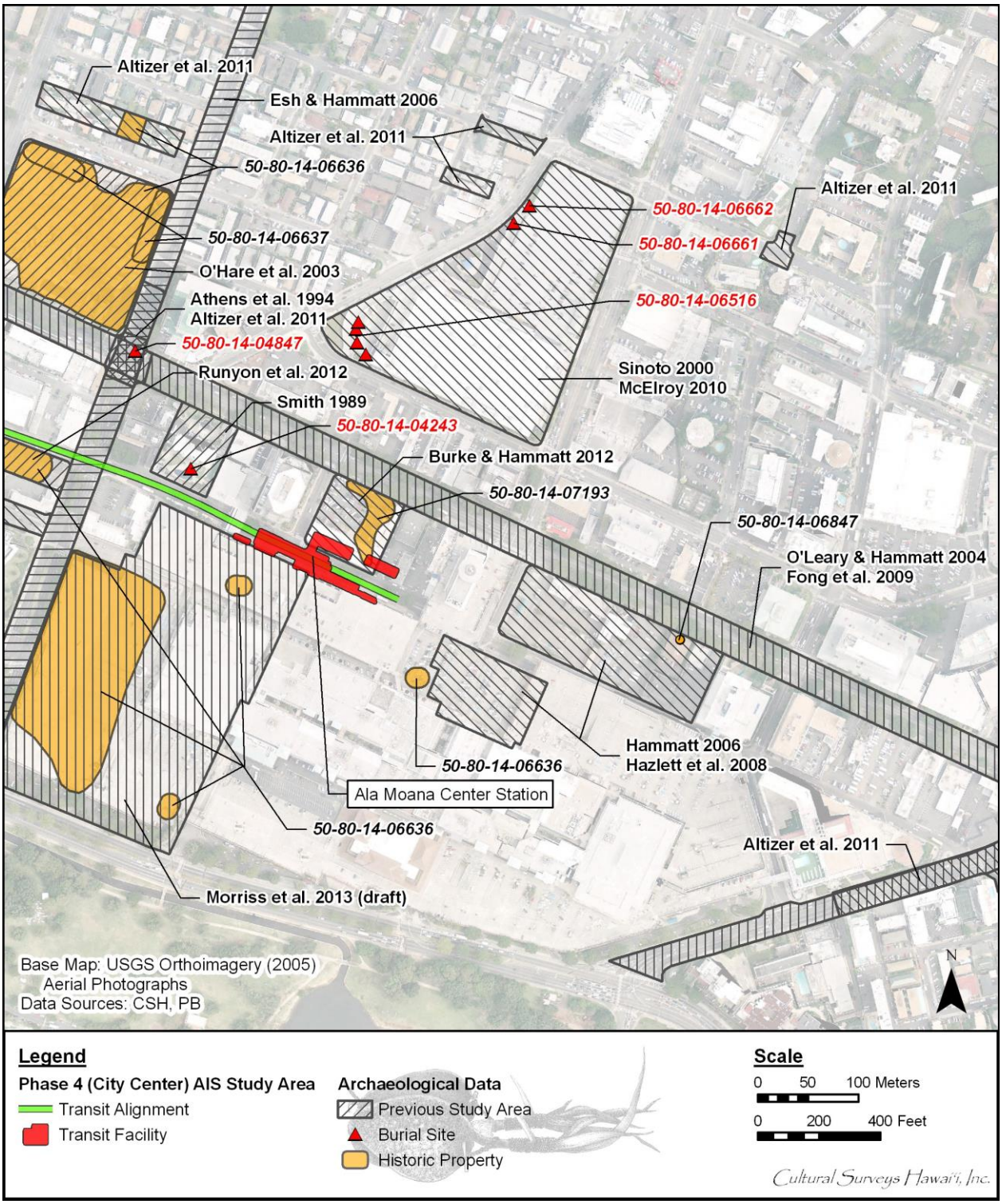

Figure 5. Previous archaeological studies in the general vicinity of the Kālia end of the project corridor

Table 4. Previous Archaeological Studies in the Immediate Vicinity of the Kālia Portion of the Project Corridor (arranged chronologically)

Author	SIHP # 50-80-14	Report Description and Findings
Smith 1989	-4243	Inadvertent burial find - SIHP # 50-80-14-4243 (bone fragment) *makai* of Kapi‘olani Blvd., southeast of Pi‘ikoi St.
Athens et al. 1994	-4847	One set of human remains documented within a wetland environment, believed to represent a pre-Contact unattended death (SIHP # 50-80-14-4847)
Sinoto 2000	NA	This archaeological assessment of a “Superblock” (present St. Sam’s Club/Wal-Mart) noted that some remains may still be present
O’Hare et al. 2003	-6636	Inventory survey at the corner of Pi‘ikoi St. and Kapi‘olani Blvd. – documented 4 features consisting of 2 historic trash pits, a pit containing ceramic insulators, and an artificially constructed sand berm with a possible coral retaining wall and a wooden fence post. The sand berm feature was designated part of SIHP # 50-80-14-6636.
O’Leary and Hammatt 2004	NA	This archaeological monitoring report addressed Kapi‘olani Blvd. from Kalākaua Ave. to Kamake‘e St. but reported no significant finds.
Hammatt 2006	-6847	Inventory survey for Ala Moana *mauka* expansion - One historic property observed: SIHP # 50-80-14-6847, post-Contact trash deposit
Esh and Hammatt 2006	NA	Monitoring for the Rehabilitation of Streets Unit 5B on Pi‘ikoi Street between Ala Moana Boulevard and Matlock Street - No cultural resources observed
Hazlett, Loynaz, and McDermott 2008	NA	Monitoring of the Ala Moana expansion project - No historic properties encountered
Fong, Borthwick, and Hammatt 2009	NA	This archaeological monitoring report addressed Kapi‘olani Blvd. from Atkinson Dr. to Kamake‘e St. but reported no significant finds.
McElroy 2010	-6516; -6661; and -6662	This after-thfact archaeological monitoring report documents human remains (MNI = 64) found in six areas, assigned SIHP #s 50-80-14-6516, -6661, and -6662. Both pre-Contact and post-Contact burials
Altizer et al. 2011	-6636 (a kilometer north)	This archaeological monitoring report for the Kapi‘olani area revised sewer system documented SIHP # 50-30-14-6636, a wetland deposit, in Sewer Line G, near Kamaile Street, far from the present project area.

Author	SIHP # 50-80-14	Report Description and Findings
Burke and Hammatt 2012	7193	1391 Kapi‘olani Boulevard Parcel - archaeological inventory survey for a 1391 Kapi‘olani Boulevard parcel involving 22 test excavations. SIHP # 50-80-14-7193, a historic trash layer dating from the 1930s to the 1950s, was documented.
Runyon, Borthwick, and Hammatt 2012	-6636	Archaeological inventory survey for the Senior Residence at Pi‘ikoi. SIHP # 50-80-14-6636 consists of buried Kewalo wetland sediments, found in all test trenches in the project area. The site has been previously documented in nearby areas in Kaka‘ako (O’Hare et al. 2003, O’Hare et al. 2004, Tulchin, T. and Hammatt 2005, and Runyon et al. 2011).
Morriss, Hunkin, and McDermott 2013 (draft)	-6636	Archaeological inventory survey for the Ala Moana Center ‘Ewa Mall Expansion Project. Identified SIHP # 50-80-14-6636, buried Kewalo wetland sediments, and possible salt pan remnants (however further investigation was deemed necessary to confirm).

Pi‘ikoi Street and Kapi‘olani Blvd. Intersection (O’Hare et al. 2003)

In 2003, CSH conducted an archaeological inventory survey at a property on the corner of Pi‘ikoi Street and Kapi‘olani Boulevard (O’Hare et al. 2003). Stratigraphy consisted of landscape, construction, and/or coral and sand fill sediments over natural wetland clay sediments. The fill deposits contained historic artifacts dating to the 1920s and 1930s. Four subsurface features were identified: Feature 1, a pit feature containing broken ceramic insulators; Feature 2, a trash pit containing 1920s and 1930s historic artifacts; Feature 3, a trash pit containing wood and concrete; and Feature 4, an artificially constructed sand berm with a concentration of coral boulders at the east side, possibly representing a retaining wall for the berm.

Kapi‘olani Area Revised Sewer System (Altizer et al. 2011)

Between 2008 and 2009, CSH conducted archaeological monitoring of sewer line rehabilitation excavations throughout the Kapi‘olani area (Altizer et al. 2011). Wetland marsh sediments, considered components of the Kewalo wetlands (SIHP # 50-80-14-6636) were documented in the area Sewer Line G, an easement off of Pensacola Street between Ho‘ola‘i and Kamaile Streets. No other archaeological cultural resources were identified.

Pi‘ikoi Street and Kapi‘olani Blvd. Intersection (O’Hare et al. 2003)

In 2003, CSH conducted an archaeological inventory survey at a property on the corner of Pi‘ikoi Street and Kapi‘olani Boulevard (O’Hare et al. 2003). Stratigraphy consisted of landscape, construction, and/or coral and sand fill sediments over natural wetland clay sediments. The fill deposits contained historic artifacts dating to the 1920s and 1930s. Four subsurface features were identified: Feature 1, a pit feature containing broken ceramic insulators;

Feature 2, a trash pit containing 1920s and 1930s historic artifacts; Feature 3, a trash pit containing wood and concrete; and Feature 4, an artificially constructed sand berm with a concentration of coral boulders at the east side, possibly representing a retaining wall for the berm. A wooden fence post was also found on the other side of the coral rock pile, possibly representing a property boundary, rice field boundary, or a trail edge. Feature 4 is considered part of SIHP # 50-80-14-6636, the Kewalo wetlands.

Senior Residence at Pi‘ikoi (Runyon et al. 2012)

In 2012, CSH (Runyon, Borthwick, and Hammatt 2012) completed an archaeological inventory survey for the Senior Residence at Pi‘ikoi. One historic property was identified: SIHP # 50-80-14-6636, consisting of buried Kewalo wetland sediments found in all test trenches in that project area. The site has been previously documented in nearby areas in Kaka‘ako (O’Hare et al. 2003, O’Hare et al. 2004, Tulchin, T. and Hammatt 2005, and Runyon et al. 2011).

Inadvertent Remains at the Pi‘ikoi and Kapi‘olani Intersection (Athens et al. 1994)

In 1994, an inadvertent discovery of human skeletal remains was made during utility excavations at the corner of Pi‘ikoi Street and Kapi‘olani Boulevard (Athens et al,. 1994). The remains consisted of a single individual, a young female 12-15 years of age. The remains were documented within a wetland environment and believed to represent an unattended death, or non-intentional burial. Radiocarbon analysis of bone collagen yielded a date of death of between AD 1295-1473. Osteological analysis identified a severe bone infection of the right pubis and the probable cause of death.

Rehabilitation of Streets Unit 5B on Pi‘ikoi Street (Esh and Hammatt 2006)

In August 2004, CSH conducted archaeological monitoring for the Rehabilitation of Streets Unit 5B on Pi‘ikoi Street between Ala Moana Boulevard and Matlock Street (Esh and Hammatt 2006). No historic properties were observed.

Ala Moana Center ‘Ewa Mall Expansion Project (Morriss et al. 2013 – draft)

In 2012, CSH conducted an archaeological inventory survey for the Ala Moana Center ‘Ewa Mall Expansion Project (Morriss et al. 2013 - draft). The majority of the project area documented wetland sediments beneath extensive layers of reclamation fill. The wetland sediments, designated SIHP # 50-80-14-6636, were previously documented in O’Hare et al. 2003, O’Hare et al. 2004, Tulchin, T. and Hammatt 2005, Runyon et al. 2011, and Runyon et al. 2012. Pollen and phytolith analysis indicated a sedge marshland environment. Possible salt pan sediments were also documented within nine test excavations; however, further investigations were recommended in order to definitively identify these sediments as salt pan remnants rather than land reclamation fill.

Kona Street *Iwi* (Smith 1989)

In 1989, four bone fragments were found by construction workers in a property (TMK 2-3-39:19) just *mauka* (approximately 20 m) of Kona Street (toward Kapi‘olani Boulevard) and just east (80 m?) of Pi‘ikoi Street (toward Kona Iki Street). The precise location and depth of the find are unclear, as the bone fragments had been disinterred prior to the visit of the State archaeologist. The find was reported to Marc Smith (1989) of SHPD. Smith examined the bones and determined that only one was human; the others were pig bones. The human bone was a

right tibia shaft fragment. The human bone was temporarily taken to the Honolulu SHPD office, and the location was given the designation of SIHP # 50-80-14-4243. The project supervisor "expressed an interest in the later return of the bone to be reburied on site at the end of the project" (Smith 1989:1). The final resting place of the bone is unclear.

1391 Kapi‘olani Boulevard Parcel (Burke and Hammatt 2012)

CSH carried out an archaeological inventory survey for a 1391 Kapi‘olani Boulevard parcel involving 22 test excavations. SIHP # 50-80-14-7193, a historic trash layer dating from the 1930s to the 1950s was documented.

Walmart/Sams Club (Sinoto 2000, Sinoto and Pantaleo 2002, and McElroy 2010)

Aki Sinoto Consulting conducted an archaeological assessment (Sinoto 2000) and prepared an archaeological monitoring plan (Sinoto and Pantaleo 2002) for Makaloa-Sheridan Sam's Club/Wal-Mart Project. Archaeological monitoring of the project was conducted from 2002 to 2004 (McElroy 2010). Human remains (MNI = 64) (SIHP # 50-80-14-6516, -6661, and -6662) were observed in six areas throughout the project parcel. They appear to represent both pre-Contact and post-Contact burials.

Kapi‘olani Boulevard Monitoring (O'Leary and Hammatt 2004 and Fong et al. 2009)

O'Leary and Hammatt (2004) and Fong, Borthwick, and Hammatt (2009) report archaeological monitoring along Kapi‘olani Boulevard, but the subsurface impacts of the two projects were relatively light, and no historic properties are reported.

Ala Moana *Mauka* Expansion (Hammatt 2006 and Hazlett et al. 2008)

In late 2005 and early 2006, an archaeological inventory survey of the Ala Moana Expansion property (TMK: 1 2-3-38: 001 and 2-3-40: 005, 007, 009, 011, 014, 016, and 018) was conducted by CSH (Hammatt 2006). The investigation's 30 backhoe trenches revealed no Jaucas sand deposits within the property. The natural land surface, prior to historic/modern fill episodes, was either sandy clay or a highly organically enriched peaty layer. The natural "prfill" land surface had been completely removed by prior construction-related disturbances within large portions of the parcel. One historic resource (SIHP # 50-80-14-6847) was found, consisting only of a wooden box placed in a pit cut down into the sandy-clay former land surface. The box contained a mix of historic artifacts, including, among other things, printed material, wooden chopsticks, pig bone, and a horse brush. It was dated to the late nineteenth or early twentieth century.

Between 2006 and 2007, CSH (Hazlett, Loynaz, and McDermott 2008) conducted archaeological monitoring for the Ala Moana expansion project (TMK: 1 2-3-38: 001 and 2-3-40: 005, 007, 009, 011, 014, 016, and 018). Within the *mauka* parcel of the project area (adjacent to Kapi‘olani Boulevard), natural stratigraphy was observed beneath imported construction fill, consisting of a discontinuous sandy loam A horizon overlying varying layers of naturally deposited sediments, consisting of loams and clays, indicative of the marsh environment that preceded the land reclamation and subsequent development of the area. Within the *makai* parcel of that project area, imported fill extended to an undetermined depth below the water table. No historic properties were observed.

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