

Section 4 Zone 8 Kewalo (Test Excavations 162 through 178A)

4.1 Overall Location

For reporting purposes for this AIS, the HHCTCP Section 4 (City Center) has been divided into 11 zones based on geographic and cultural boundaries. The Kewalo Zone is located within the eastern portion of Honolulu Ahupua'a, Honolulu District, Island of O'ahu, in a physiographic division known as the Honolulu Plain (Armstrong 1983:36). The Kewalo portion of the Section 4 route extends approximately 460 m from the intersection of Ward Avenue and Halekauwila Street on the west, arcing slightly north (*mauka*) and continuing along the *makai* side of Queen Street to Kamake'e Street on the east (Figure 26). As part of the City Center AIS, a total of 24 test excavations (T-162 through T-178, T-168A, T-168B, T-170A, T-172A, T-174A, T-175A, and T-178A) were excavated in the Kewalo Zone between Ward Avenue and Kamake'e Street.

While this portion of the route crosses City and County property at Ward Avenue, all of the Kewalo Zone test excavations are on private lands. Excavations T-162 through T-169, T-168A and T-168B were located within TMK [1] 2-3-002:059; T-170 through T-177, T-170A, T-172A, T-174A, T-175A, and T-178A were located within TMK [1] 2-3-002:001; both properties are owned by Victoria Ward, Ltd. Excavation T-178 was located within TMK [1] 2-3-003:087, owned by the Hawaii Community Development Authority.

4.2 Transit Infrastructure

HHCTCP facilities for the current project within the Kewalo Zone include the Kaka'ako Station on the east side of Ward Avenue, just east of Halekauwila Street. The Kaka'ako Station is primarily an elevated platform over the north corner of the present Ross Dress for Less store with a Station Entrance Building adjacent on the north side and an adjacent Station Ancillary Building on the east side. The transit corridor crosses to the east side of Ward Avenue on single columns, but the very first column on the east side of Ward Avenue is a support column for the Kaka'ako Station. Heading east from the Kaka'ako Station the route continues on Kamake'e Street on single columns.

Ten of the excavations (T-162 through T-169, T-168A, and T-168B) tested the station complex footprint, 12 of the test excavations tested guideway columns (T-170 through T-173, T-170A, T-172A, T-175 through T-178, T-175A, and T-178A) and two test excavations (T-174 and T-174A) tested an electric line relocation corridor (see Volume I).

4.3 Geography, Geology, and Land Forms

The Kewalo Zone is situated along the low-lying coastal flats immediately inland of present day Kewalo Basin (approximately 500 m inland from the natural coastline at the edge of today's Ala Moana Boulevard) and is relatively flat. The Kewalo Zone consists of a portion of the broad elevated coral reef in southern O'ahu that probably formed during the 7.5-meter (Waimanalo) stand (Macdonald et al. 1983:420-421). Present day elevations in the zone range from approximately 1.3 m to 2.2 m AMSL. Early maps, such as an 1884 map of Honolulu by S. E. Bishop (Figure 27), indicate that the vicinity of the Kewalo Zone was a little

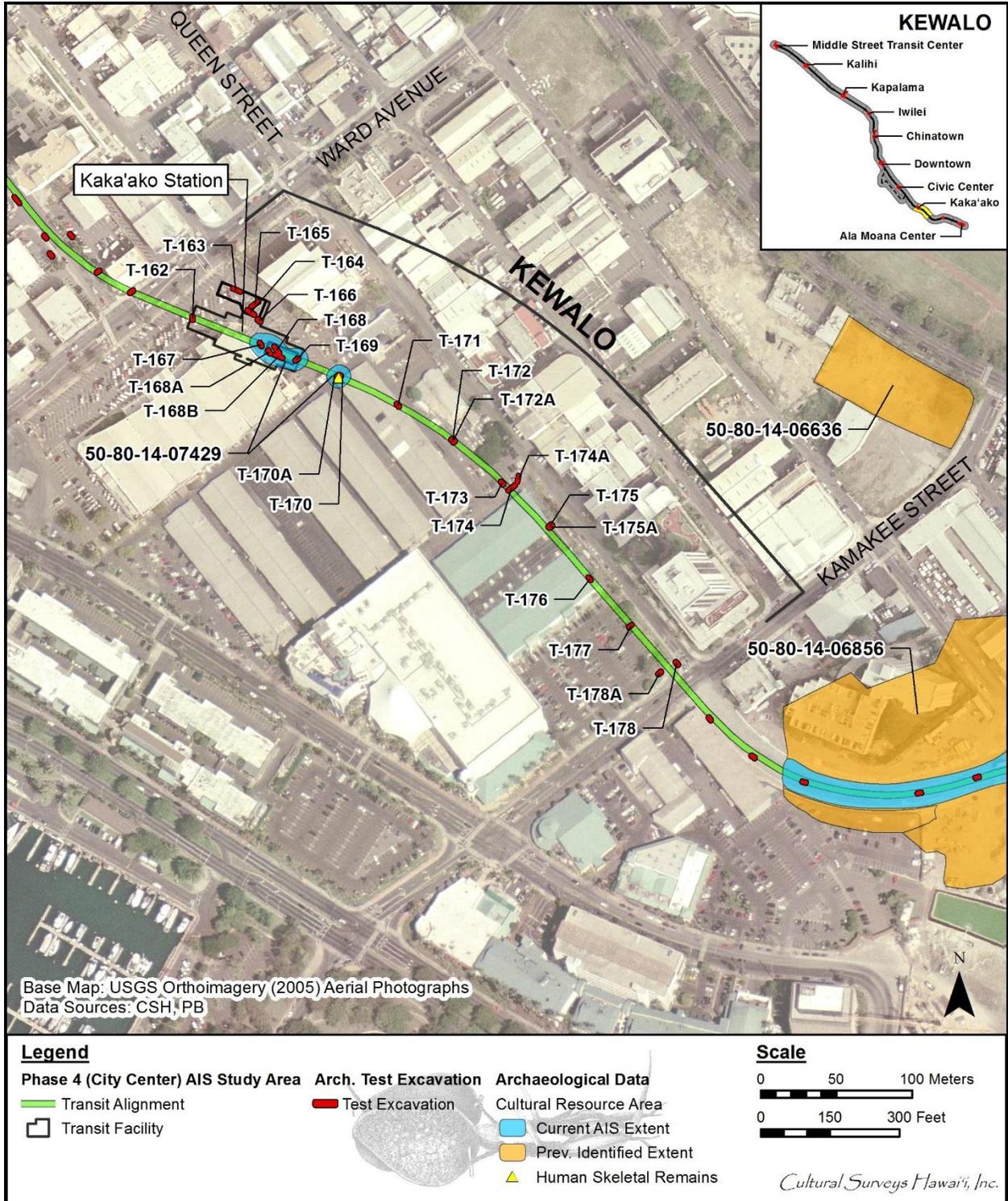


Figure 26. Aerial photograph (source: U.S. Geological Survey orthoimagery 2005b) showing the location of the Kewalo Zone AIS test excavations along the transit corridor and at the Kaka'ako Station

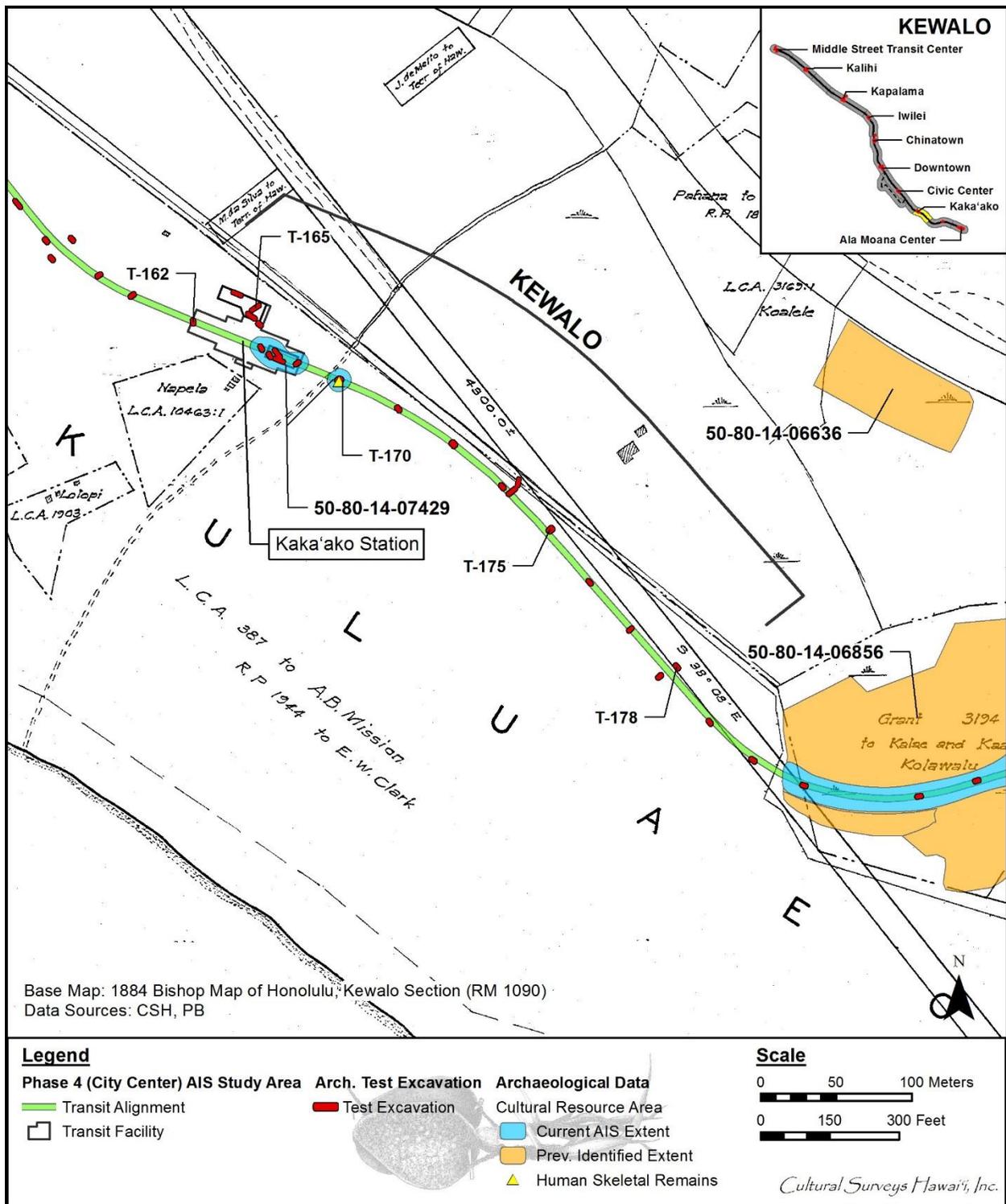


Figure 27. 1884 map of Honolulu, Kewalo Section, by S. E. Bishop (RM 1090) showing LCAs in the vicinity of the transit corridor and Kaka'ako Station AIS test excavations in the Kewalo Zone

higher than the extensive marshes to the northwest. It seems probable that the Kewalo Zone occupied a low coastal dune that was a factor in backing up this shallow marsh.

The average annual rainfall measures 663 to 679 mm (26 to 27 inches) (Giambelluca et al. 2011), which would be marginal at best for non-irrigated agriculture. There were no perennial streams between Nuʻuanu Stream 2 km to the west and the former Piʻinaio Stream (that ran roughly north/south (*mauka/makai*) along the present eastern portion of Ala Moana Boulevard before debouching near the present Ala Wai Boat Harbor) approximately 1.5 km to the east. Kanaha Stream originating in Makiki Valley meandered and dissipated through the marshy Makiki coastal lands. Kewalo was well known for freshwater springs, as seen in the proverb “*Ka wai huahua i o Kewalo,*” which translates as “The bubbling water of Kewalo.” There were also a number of medium-sized fishponds to the northeast and northwest.

Native vegetation in this area is not well documented, but just prior to development in the early twentieth century is understood as including *naupaka* (*Scaevola taccada*), *kiawe* (*Prosopis pallida*), and coconut (*Cocos nucifera*). Today, virtually all vegetation is the result of landscaping efforts.

According to the U.S. Department of Agriculture Soil Survey Geographic (SSURGO) Database (2001) and soil survey data gathered by Foote et al. (1972), soils within the Kewalo Zone consist exclusively of Fill land (FL) (Figure 28). Fill land soils are described as:

...areas filled with material dredged from the ocean or hauled from nearby areas, garbage, and general material from other sources... This land type is used for urban development including airports, housing areas, and industrial facilities.
[Foote et al. 1972:31]

The topography in the vicinity was relatively featureless. There was a particularly pronounced channel through the reef (resulting from an ancient alignment of Kanaha Stream) that was later developed for Kewalo Basin that was probably a significant focus for canoe anchorage and fishing expeditions (as it remains today).

4.4 Traditional and Historic Land Use

4.4.1 Traditional Accounts of the Kewalo Zone

The designated Kewalo Zone lies near the interface of an immediately coastal stretch traditionally known as Kukuluāeʻo and an adjacent *mauka* area known as Kewalo, with the coastal lands of Kaʻakaukui 400 m to the west and the coastal lands of Kālia 700 m to the east (see Vol. II, Figure 3 and Figure 4). By the end of the nineteenth century, the name “Kewalo” had come to subsume many of the names for adjacent areas.

The coastal lands of Kewalo and Kukuluāeʻo appear to have always been sparsely populated compared to the lands that would become Honolulu (further to the west) and the lands of Waikīkī to the southeast.

Perhaps Kewalo is most famous in legends for the drowning of members of a pariah caste (*kauwā*) or *kapu* (taboo) breakers as the first step in a sacrificial ritual known as *Kānāwai Kaiheheʻe* (Kamakau 1991:6) or *Ke-kai-heʻehēʻe*, which translates as “sea sliding along,” suggesting the victims were slid under the sea (Westervelt 1996:16). Kewalo is described as:

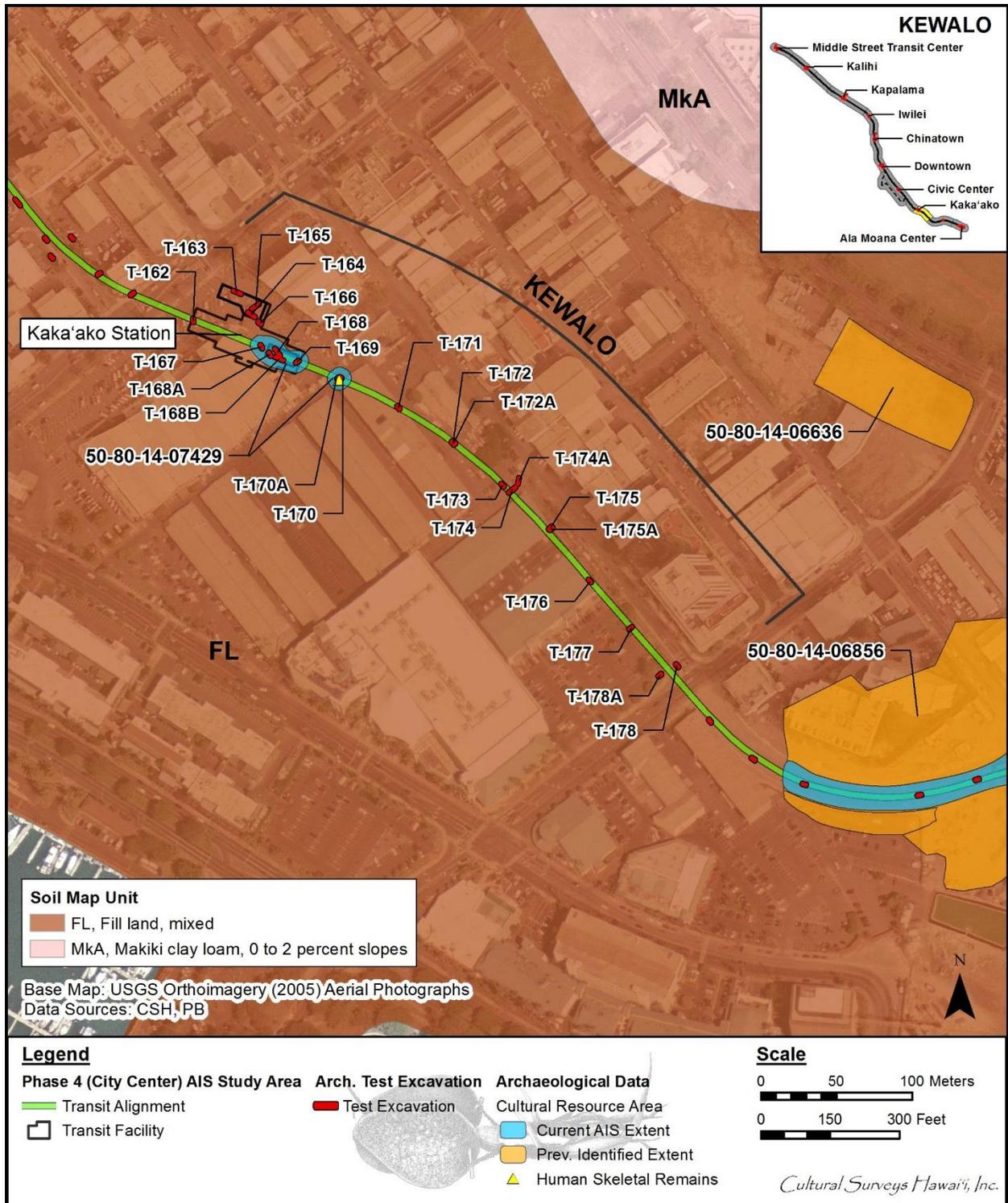


Figure 28. Aerial photograph (source: U.S. Geological Survey orthoimagery 2005b) with overlay of the *Soil Survey of Hawai'i* (Foote et al. 1972) showing sediment types within and in the vicinity of the Kewalo Zone and AIS test excavations

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]

4.4.2 LCA Documentation

Among the first descriptions of the Kaka'ako area (including Kewalo) by the Hawaiians themselves are the testimonies recorded during the 1840s in documents associated with LCA and awardees of the Māhele. The LCA records indicate that the traditional Hawaiian usage of the region and its environs may have been confined to salt making, farming of fishponds, and wetland agriculture (see Vol. III, Appendix E). The testimonies indicate that the area was lived on and was shaped by Hawaiians prior to 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 this 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.

Three LCAs were awarded in the vicinity of the Kewalo Zone: 387, 10436:1, and 10605 (see Figure 27, Table 5, and Figure 29).

The 'ili of Kewalo was awarded to Kamake'e Pi'ikoi, wife of Jonah Pi'ikoi, as part of LCA 10605, 'āpana 7. The award was shared between husband and wife (Kame'eleihiwa 1992:269). 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.

Table 5. LCAs in the Kewalo Zone (in numerical order)

LCA Number	Contents of Award
387	To the American Board of Commissioners for Foreign Missions (ABCFM)
10436:1	One house lot, two ponds, and a salt land to Napela
10605	'Ili of Kewalo, numerous large fishponds, to Kamake'e Pi'ikoi

4.4.3 Historic Land Use

From pre-Contact through post-Contact times, salt production was a major endeavor in the Kewalo area. 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 the 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 buy or trade for salt, which was used to cure the seal and mammal pelts

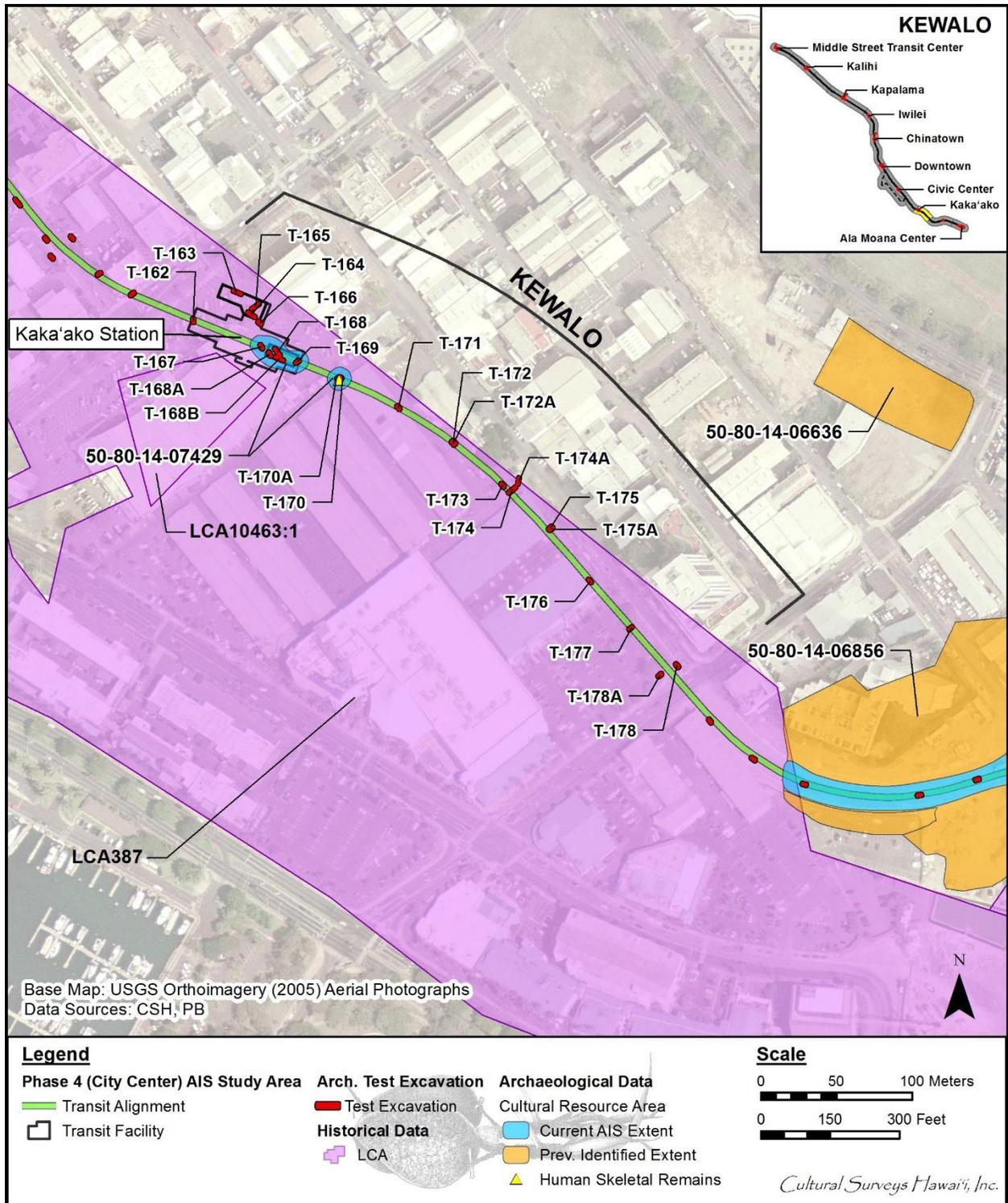


Figure 29. Aerial photograph (base map: U.S. Geological Survey orthoimagery 2005b), showing the locations of LCAs near the Kewalo Zone AIS test excavations along the transit corridor and at the Kaka'ako Station

collected from the Northwest Coast. An 1883 map of the Honolulu Water Works System shows the extent of salt production within the Kewalo area (see Vol. II, 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.

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 1901, most of the fishponds and salt pans *makai* of King Street were reported as abandoned.

By the 1880s, infilling of the mud flats, marshes, and salt ponds in the Kewalo and greater Kaka'ako area had begun. This work was performed for public health and sanitation reasons, for the construction of new roads and the improvement of older roads, and to provide more room for residential subdivisions, industrial areas, and tourist resorts. In 1910, after an epidemic of bubonic plague, the Board of Health condemned a large section of Kewalo (immediately northwest of the Kewalo Zone) consisting of 140 land parcels with numerous ponds (Hawaii Department of Public Works 1914:196).

Several reclamation projects (the Kewalo Reclamation Project and the Waikiki Reclamation Project, including the Ala Wai Canal and the Kewalo Basin Dredging Projects) in the 1930s moved millions of tons of sediment. During the first half of the twentieth century, rice fields and marshlands were eliminated as land in Kewalo (as well as Kaka'ako and Kalia) was filled to accommodate the expanding urbanization of Honolulu. The extensive fill activities of the 1930s allowed for the development of a grid of streets and urbanization in the 1940s (Nakamura 1979).

An 1887 map by W. A. Wall shows very little development within the vicinity of the Kewalo Zone (see Vol. II Figure 47). But by 1897, the street grid system is encroaching from the northwest upon land in the vicinity of the Kewalo Zone, although the coastal region is still undeveloped (see Vol. II Figure 48). The 1914 Sanborn Series maps show some development *mauka* of the Kewalo Zone corridor (Figure 30). A 1919 U.S. Army War Department Fire Control map shows a proposed street grid system and several dwellings/structures (Figure 31). Development lagged throughout the 1920s, as much of the land in this area had not yet been filled in. The 1927 Sanborn Series maps show little new development, although two new businesses are shown at either end of the Kewalo Zone corridor, just *mauka*: J. L. Young Engineering Co. is shown at the southeast end of the zone, while the Hawaiian Mahogany Co., Ltd.'s Ukulele Factory is shown at the northwest end (Figure 32). A 1943 U.S. Army War Department Terrain map shows several large warehouses along the Kewalo Zone corridor (see Vol. II Figure 51). The 1950 Sanborn Series maps show further development at the northwest end of the Kewalo Zone (Figure 33). The Hawaiian Mahogany Co., Ltd. Ukulele Factory is now an expanded Hawaiian Furniture Manufacturing Co. and the T. Kakimoto Lumber Co. has been constructed *makai* of that, in the area of the Kaka'ako HHCTCP Station.

4.4.4 Settlement Pattern Summary

The traditional Hawaiian settlement pattern appears to have been quite low density in the vicinity of the Kewalo Zone ostensibly because of the high water table and marshy ground. This coastal area, below the present-day King Street, consisted of extensive swamp lands utilized for

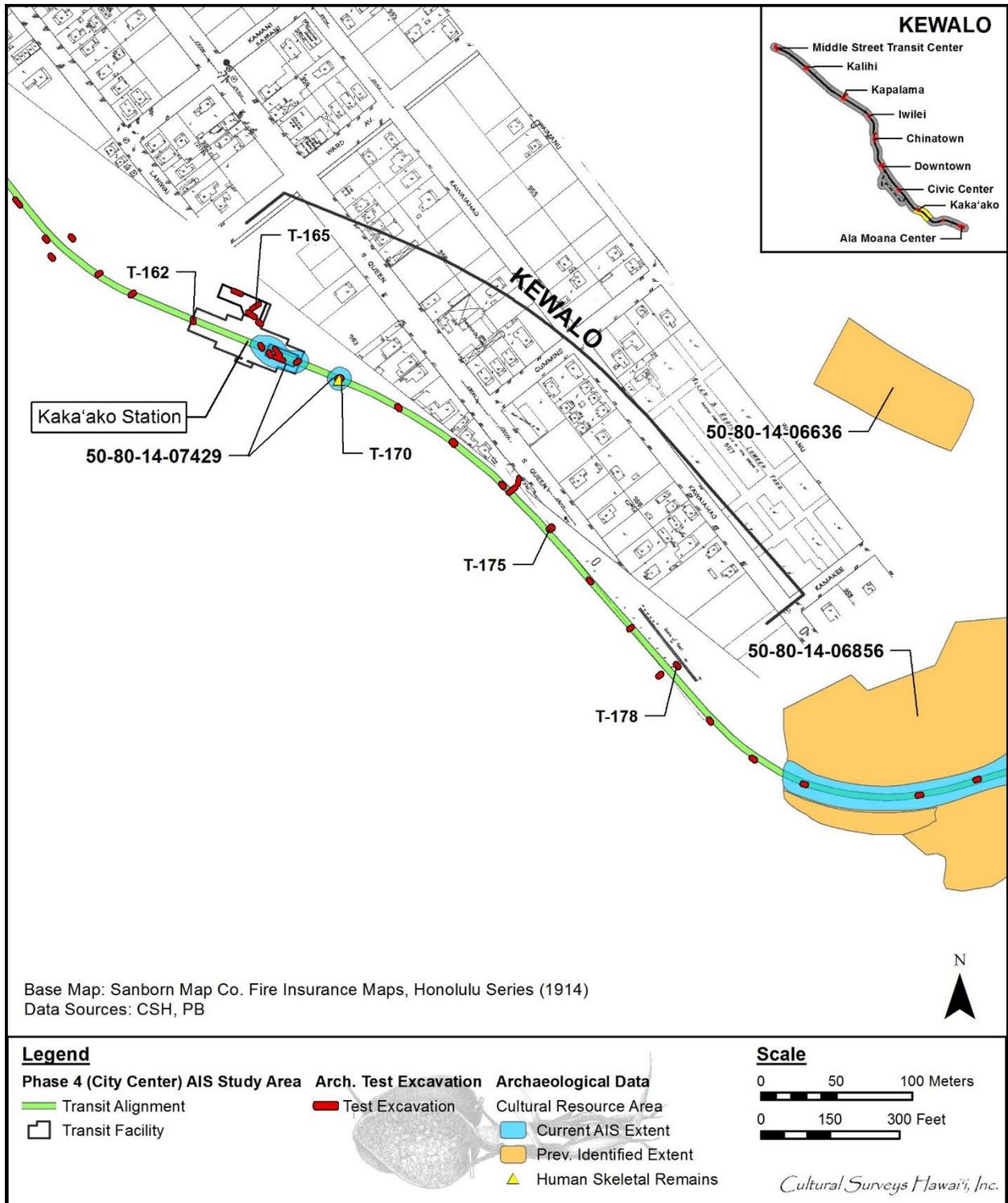


Figure 30. 1914 Sanborn Series map showing limited development along the transit corridor and test excavations in the Kewalo Zone

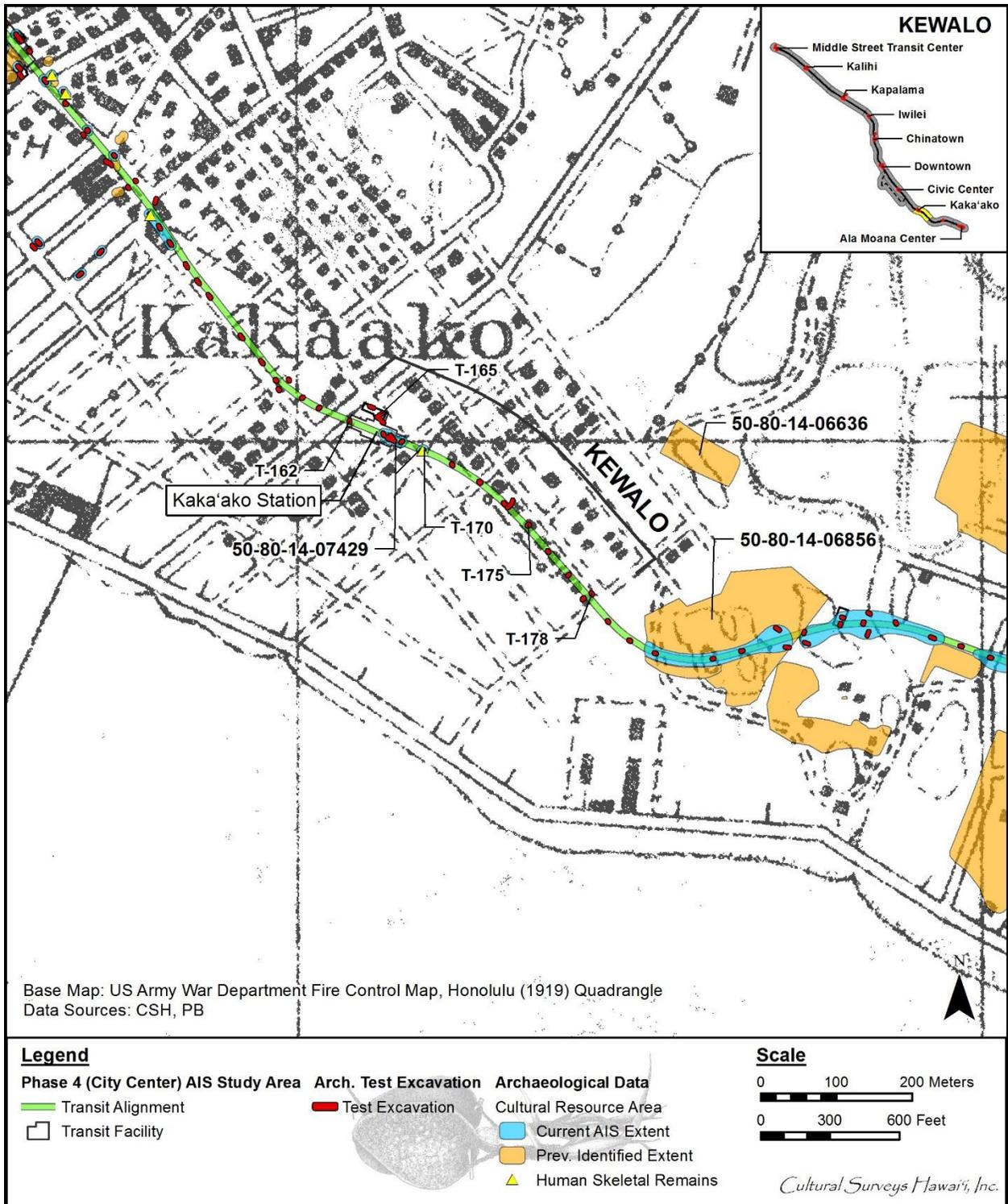


Figure 31. 1919 U.S. Army War Department Fire Control Map, Honolulu Quadrangle, showing the transit corridor and AIS test excavations in the Kewalo Zone; note the proposed street grid system

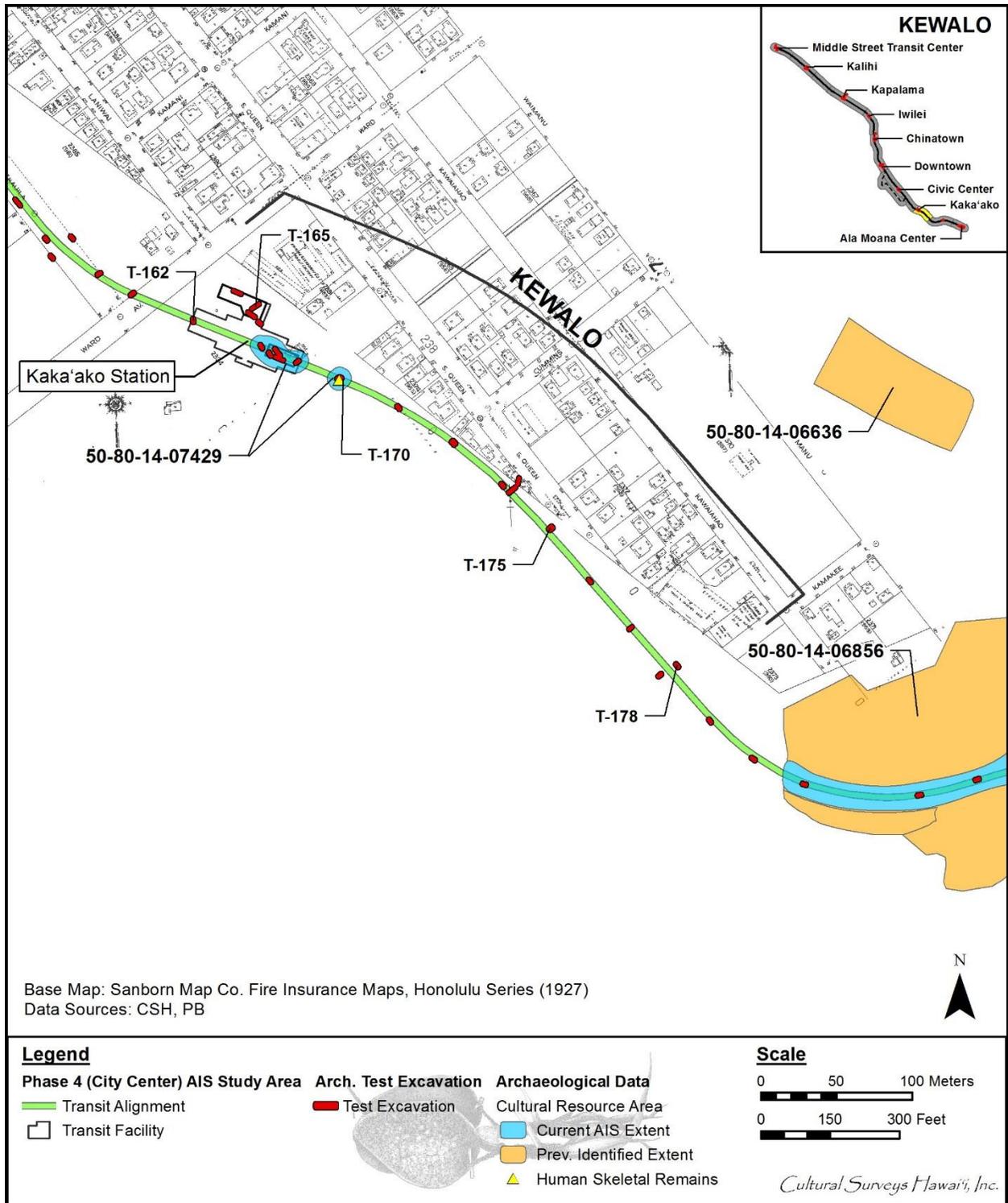


Figure 32. 1927 Sanborn Series map showing the transit corridor and AIS test excavations in the Kewalo Zone, which at this time is amid limited development

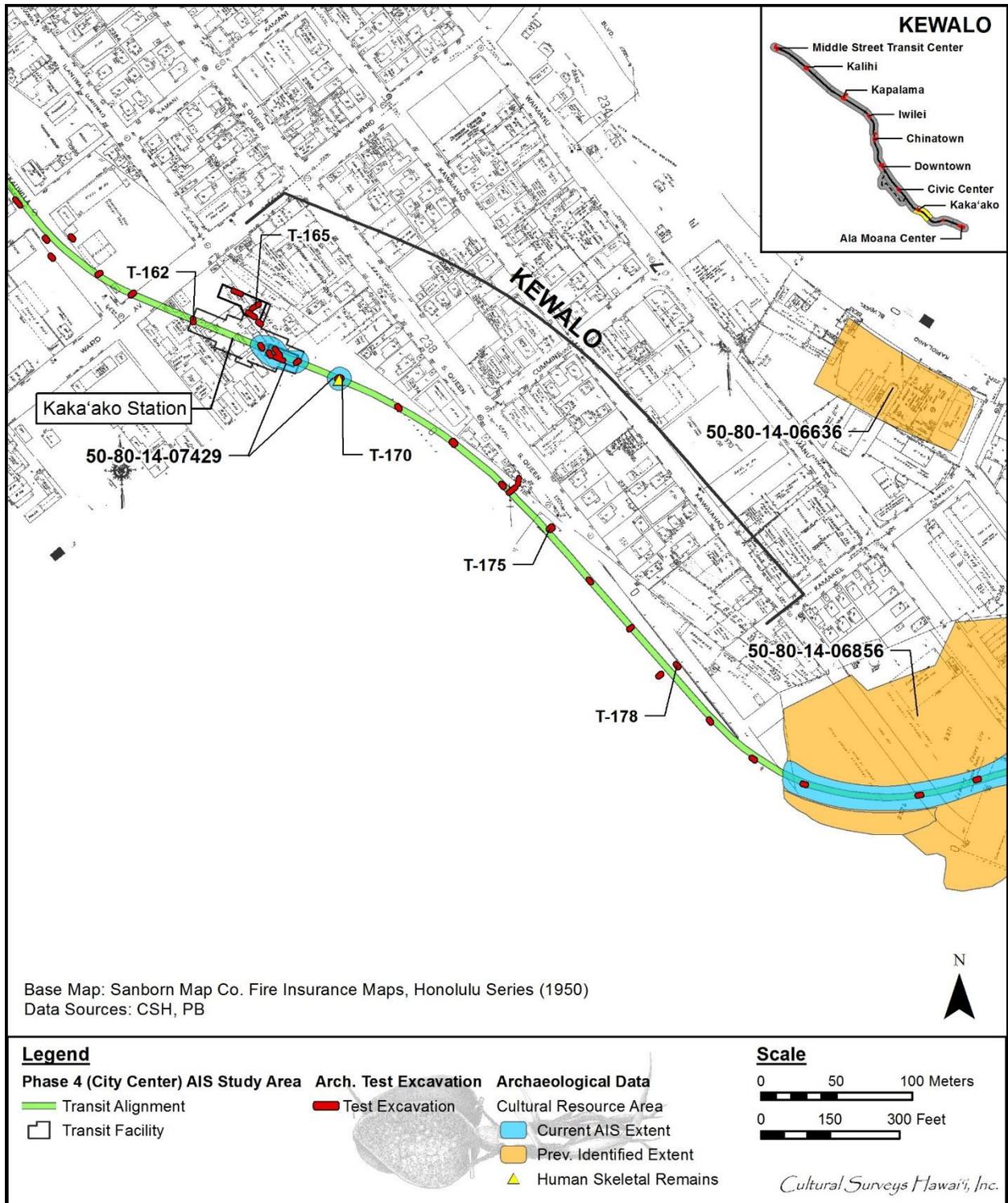


Figure 33. 1950 Sanborn Series map showing the transit corridor and AIS test excavations in the Kewalo Zone during a period of encroaching development

fishponds and salt pans along with occasional taro *lo'i* and habitation. The extent of salt cultivation may have significantly increased during the post-Contact period; however, the importance of salt cultivation in the pre-Contact period was consistently described and mapped by early Western arrivals.

4.5 Previous Archaeology

Few archaeological studies have been conducted in Kapālama in the vicinity of the Kewalo Zone, and only five studies have been conducted directly adjacent to the Kewalo Zone (Figure 34). Table 6 lists and summarizes the five studies directly adjacent to the Kewalo Zone, which are described in more detail below.

Table 6. Previous Archaeological Studies adjacent to the Kewalo Zone (arranged chronologically)

Author	SIHP #50-80-14	Report Description and Findings
Winieski and Hammatt 2000b	-5598	Archaeological monitoring report for the Kaka'ako Improvement District 4 project; two isolated historic coffin burials documented on Kamake'e Street, between Kawaiaha'o and Waimanu Streets.
Souza et al. 2002	-6376; -6377; and -6378	Archaeological monitoring report for the Kaka'ako Improvement District 7 project; three burials documented.
Fong et al. 2009	N/A	Archaeological monitoring of Kapi'olani Boulevard drainage, water, and sewer systems improvements; no historic properties identified.
Altizer et al. 2011	-6636	Archaeological monitoring report for the Kapi'olani area revised sewer system; wetland deposit identified in Sewer Line G, near Kamaile Street, far from the present project area.
Yamauchi et al. 2011	N/A	Archaeological monitoring report for the Queen and Kamake'e traffic signal project; no historic properties identified.

Queen and Kamake'e Streets Intersection (Yamauchi et al. 2011)

The Yamauchi et al. (2011) study was an archaeological monitoring report for the Queen and Kamake'e Streets intersection traffic signal project. No historic properties were identified during the study.

Yamauchi et al. (2011) recorded four stratigraphic profiles (Profiles 1 through 4) in the immediate vicinity of the Kewalo Zone corridor, all within or near the intersection of Queen and

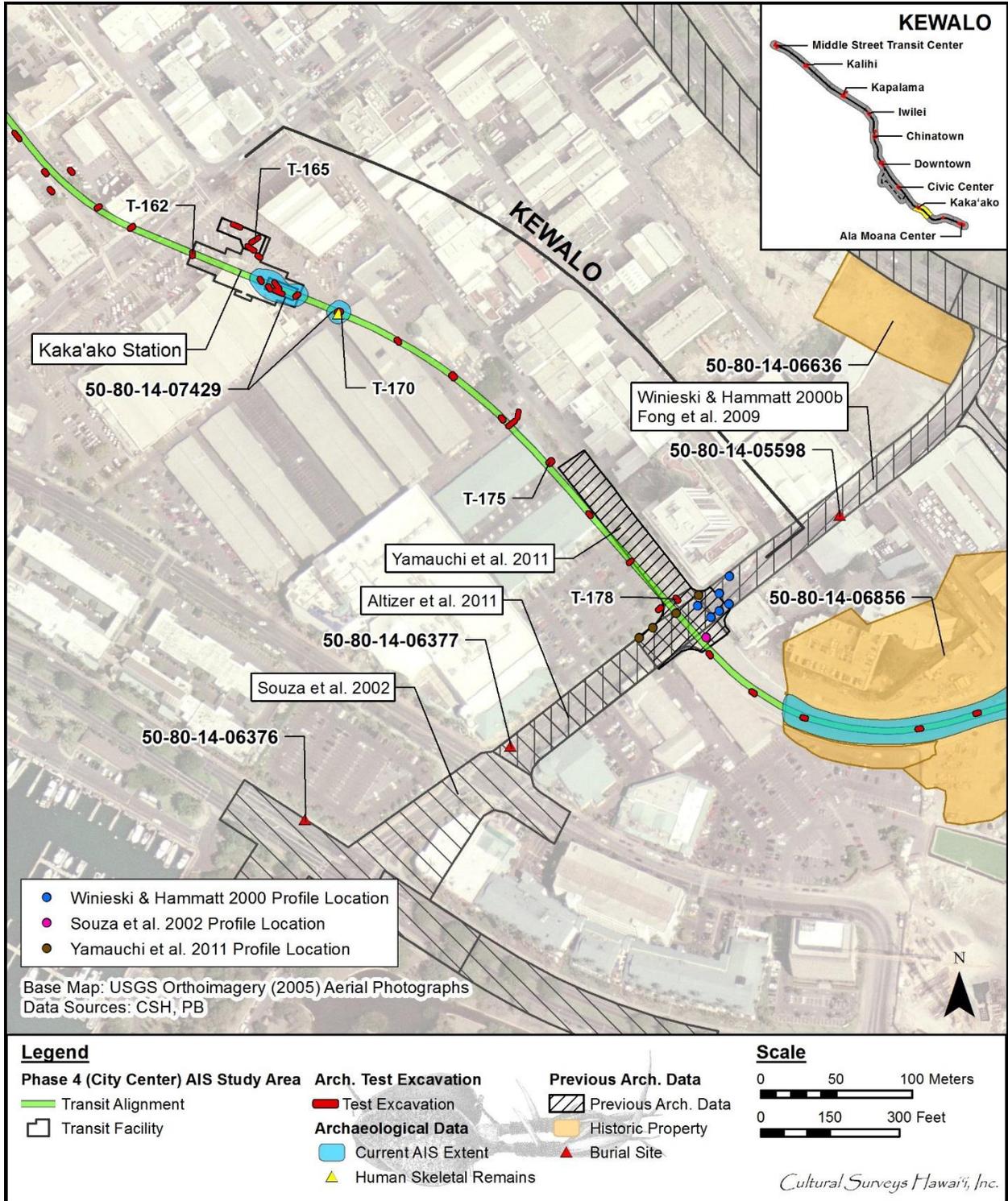


Figure 34. Previous archaeological studies in the vicinity of the Kewalo Zone (base map: U.S. Geological Survey orthoimagery 2005b)

Kamake'e Streets. The stratigraphy observed at Profiles 1 through 3 included multiple fill layers overlying a previously disturbed or truncated sand A-horizon, the natural Jaucas sand, and the coral shelf. The stratigraphy of Profile 4 was similar except that there was no A-horizon.

Kaka'ako Improvement District 7 (Souza et al. 2002)

The Souza, Perzinski, and Hammatt (2002) study was an archaeological monitoring program for the Kaka'ako Improvement District 7 project. During monitoring, three human burials were encountered; they were severely disturbed by excavation activity. Burial 1 (SIHP #50-80-14-6376) and Burial 3 (SIHP #50-80-14-6378) were discovered in base yard backdirt piles. Burial 1 had originally come from an electric box trench on Ala Moana Boulevard near the Kamake'e Street intersection. Burial 2 (SIHP #50-80-14-6377) was discovered during backhoe excavations for a box drain located on Kamake'e Street, between Auahi and Queen Streets, just *makai* of the Kewalo Zone corridor. The burial was within an undisturbed beach sand deposit. It was believed that the burials were traditional Hawaiian burials. One of the Souza et al. (2002) profiles (P10) was located in the vicinity of the Kewalo Zone corridor, although technically within the East Kaka'ako Zone. P10 consisted of asphalt pavement and several fill layers overlying a former sand A-horizon, natural Jaucas sand, and sandy clay.

Kapi'olani Area Revised Sewer System Project (Altizer et al. 2011)

The Altizer, Borthwick, and Hammatt (2011) study was an archaeological monitoring report for the Kapi'olani area revised sewer system and comprised multiple sewer line segments (Sewer Lines A through H and J through N). This study documented two layers of former wetland sediments, possibly pond sediments, identified as SIHP #50-80-14-6636 in Sewer Line G, far from the Kewalo Zone corridor. The only sewer line segment located near the Kewalo Zone corridor was Sewer Line B, on Kamake'e Street, just *makai* of the Kewalo Zone corridor. No historic properties were documented in Sewer Line B, and no stratigraphy was recorded either.

Rehabilitation of Streets, Unit 9, Phase 1 Project (Fong et al. 2009)

The Fong, Borthwick, and Hammatt (2009) study involved archaeological monitoring for 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 identified during the study. Observed stratigraphy consisted primarily of imported fill material associated with utility and road construction. In some instances, pockets of naturally-occurring sediment (Jaucas sand and wetland clays) were observed beneath fill deposits. No profiles were recorded near the Kewalo Zone corridor.

Kaka'ako Improvement District 4 (Winieski and Hammatt 2000b)

The Winieski and Hammatt (2000b) study involved archaeological monitoring for the Kaka'ako Improvement District 4 Project. They documented two historic coffin burials (SIHP #50-80-14-5598) on Kamake'e Street, between the intersections of Kawaiha'o and Waimanu Streets, one block *mauka* of the Kewalo Zone corridor. The two adjacent burials were within well-defined burial pits that originated within a former A-horizon that was capped by modern

fill. The soil contained staining from the deteriorated coffin wood. No associated artifacts were discovered with the burials.

Winieski and Hammatt (2000b) recorded six profiles (P1-P6) in the immediate vicinity of the Kewalo Zone corridor, all within or near the intersection of Queen and Kamake'e Streets. P1 consisted of a various fill layers overlying a natural layer of decomposing sandy clay mixed with coral rubble from the coral shelf. P2, P3, P4, and P5 contained fill overlying a former A-horizon, natural Jaucas sand, and in some cases a layer of decomposing sandy clay mixed with coral rubble from the coral shelf. P6 had been previously disturbed by an existing sewer line trench and contained disturbed fill layers associated with the sewer line overlying natural Jaucas sand.

4.6 Modern Land Use and Built Environment

The Kewalo Zone traverses an urban environment through the neighborhood of Kaka'ako/Kewalo. The Kewalo Zone corridor begins near the intersection of Halekauwila Street and Ward Avenue at the northwest end and cuts across current parking lots and commercial structures to get to and then follow along the *makai* side of Queen Street to Kamake'e Street at the southeast end. Parcels bordering the Kewalo Zone corridor contain commercial buildings and warehouses and large parking lots. A massive utility corridor is also present throughout the Kewalo Zone containing electrical, gas, water, sewer, and storm lines. The number and distribution of these existing utilities indicate that this portion of the transit corridor has been heavily disturbed in the past.

4.7 Test Excavation 162 (T-162)

Ahupua'a:	Honolulu
LCA:	387
TMK #:	2-3-002:059
Elevation Above Sea Level:	1.88 m
UTM:	618768 mE, 2355419 mN
Max Length/Width/Depth:	3 m/0.9 m/1.89 m
Orientation:	346/166° TN
Targeted Project Component:	Station Column
USDA Soil Survey Soil	Fill land (FL)

Setting: Test Excavation 162 (T-162) was located within the level parking lot area paralleling Ward Avenue. T-162 was relocated approximately 18.5 m east of its original layout so that it would be within the station column footprint. T-162 was on privately owned property. No utilities were located within proximity of T-162.

Summary of Background Research and Land Use: Land Court Application 670 map 1 indicates that T-162 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 (see Figure 29). The 1884 Bishop map indicates that T-162 was located within marsh land called Kukuluaeo, 22 m north of LCA 10463:1, awarded to Napela. An unimproved or planned roadway is also depicted, extending northeast (*mauka*) to southwest (*makai*) within 90 m of T-162 (see Figure 27). The roadway is also depicted on the 1887 Wall map along with three structures in the vicinity of T-162. The structures were located approximately 40 m northwest, 65 m southeast, and 160 m southwest of T-162. The 1897 Monsarrat map depicts infrastructure development immediately north of T-162 including a near-modern street grid with the closest intersection being Ilaniwai Street and Kamani Street 115 m northwest and the Cyclomere bicycle track 300 m north. Expanded urbanization in the vicinity of T-162 is depicted throughout the series of twentieth century topographic maps and Sanborn fire insurance maps (see Figure 30, Figure 32, and Figure 33).

Few archaeological studies were conducted in the immediate vicinity of T-162 (see Figure 34). In 2000, CSH conducted archaeological monitoring for Ward Village Phase II (Ward Theaters), approximately 220.0 m southeast of T-162. A buried A-horizon and naturally-occurring pond sediments were documented in portions of the project area but, no cultural resources were assigned (Winieski and Hammatt 2001). In 2005, CSH conducted an archaeological inventory survey for the Moana Vista Project on Kapi'olani Boulevard, located approximately 350 m east of T-162. No cultural resources were encountered (O'Leary and Hammatt 2006).

Documentation Limitations: T-162 was excavated to the coral shelf at 1.89 mbs. The water table was encountered at 1.85 mbs. A utility pipe located in the northern portion of T-162 limited excavation.

Stratigraphic Summary: The stratigraphy of T-162 was consisted of fill overlying natural sediment. Observed strata were asphalt (Ia), very gravelly sandy clay (Ib), clay loam (Ic), silty clay loam (Id), sandy clay fill (Ie), natural sandy clay loam (II), gravelly sandy loam (III), and coral shelf (IV). The stratigraphy conformed to the USDA soil survey designation of Fill land (FL) above Strata II-IV.

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: Two bulk sediment samples were collected within T-162, one each from Stratum II between 1.38 mbs and 1.55 mbs and from Stratum III between 1.55 mbs and 1.89 mbs. The sediment samples were collected from the excavation floor and were not depicted in the stratigraphic profile. Both sediment samples were wet screened. The sample collected from Stratum II between 1.38 mbs and 1.55 mbs contained naturally-occurring marine shell (0.3 g). The bulk sample from Stratum III between 1.55 mbs and 1.89 mbs contained naturally-occurring marine shell (0.4 g).

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 0.25 mbs.

GPR depth profiles for T-162 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. An anomaly was observed in the profile that could correspond to the utility encountered during excavation. The maximum depth of clean signal return was approximately 1.0 mbs.

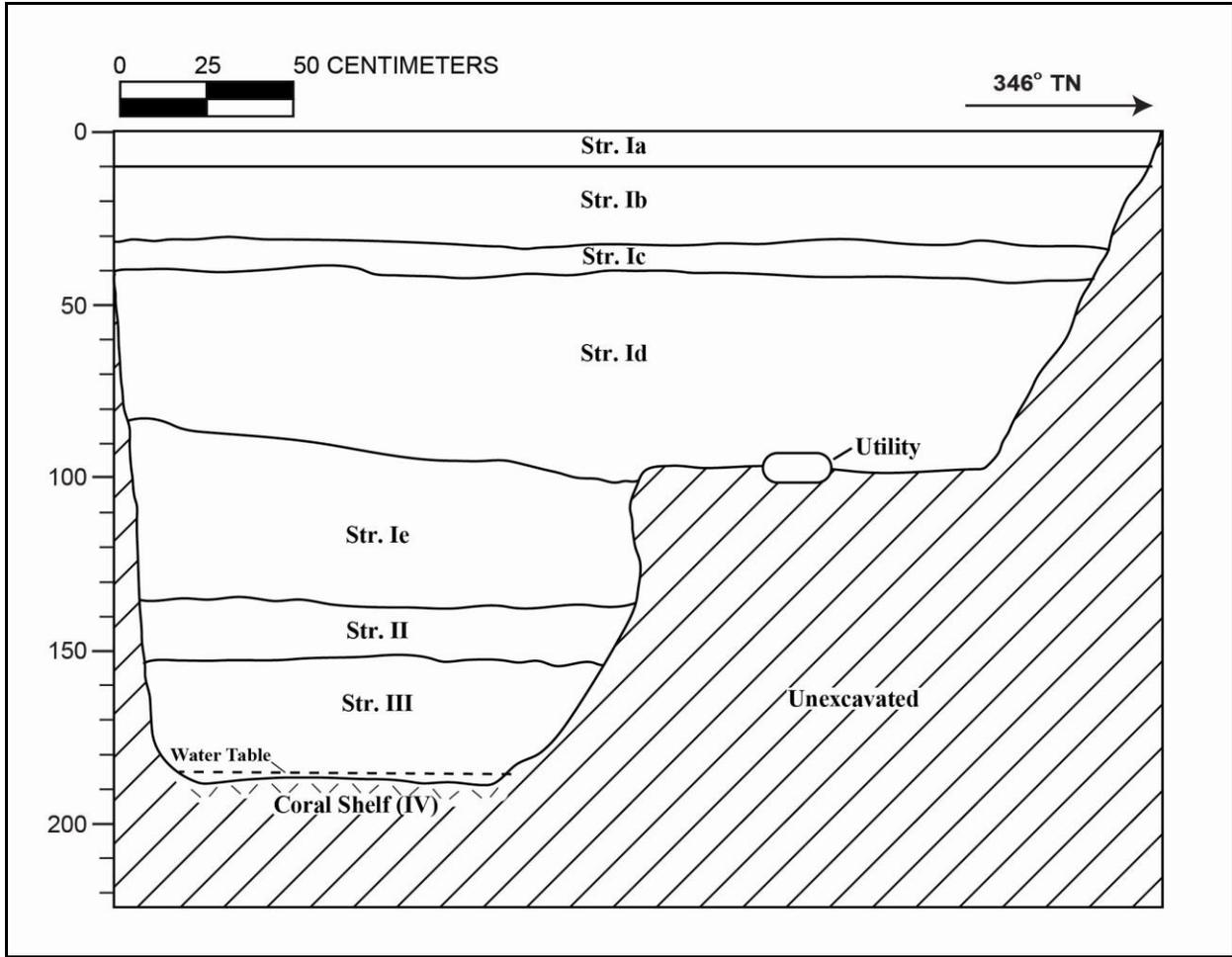
Summary: T-162 was excavated to the coral shelf at 1.89 mbs. The water table was encountered at 1.85 mbs. The stratigraphy of T-162 consisted of fill (Ia–Ie) overlying natural sediment (II–IV). The stratigraphy conformed to the USDA soil survey designation of Fill land (FL) above Stratum II. The two bulk sediment samples documented only naturally-occurring marine shell within Strata II and III. No archaeological cultural resources were identified within T-162.



T-162 general location, view to south



T-162 west wall profile, view to southwest



T-162 west wall profile

T-162 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-10	Asphalt
Ib	10-33	Fill; 10 YR 8/2 (very pale brown); very gravelly sandy clay loam; massive, moderate, medium blocky structure; moist, friable, strong consistency; slightly plastic; mixed origin; abrupt, smooth lower boundary; crushed coral fill
Ic	33-43	Fill; 5 YR 4/3 (reddish brown); clay loam; weak, fine, blocky structure; moist, friable, weak consistency; slightly plastic; terrigenous origin; abrupt, smooth lower boundary; contains (1) rusted nail; clay loam
Id	41-101	Fill; 7.5 YR 3/3 (dark brown); silty clay loam; weak, fine, crumb structure; moist, very friable, consistency; slightly plastic; terrigenous origin; clear, smooth lower boundary
Ie	85-138	Fill; 10 YR 8/2 (very pale brown) with common mottles 10 YR 7/1 (light gray); sandy clay; weak, very fine, platy structure; moist, very friable, weak consistency; slightly plastic; mixed origin; abrupt, smooth lower boundary; hydraulic fill sandy clay
II	138-155	Natural; 5 Y 5/1 (gray); gravelly sandy clay loam; weak, coarse, crumb structure; moist, very friable, weak consistency; slightly plastic; mixed origin; diffuse, smooth lower boundary; common, fine roots
III	155-189	Natural; 2.5 Y 6/1 (gray); gravelly sandy loam; structureless, single-grain; weak, very coarse, granular structure; wet, non-sticky, weak consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; micro mollusk shell fragments, decomposing coral shelf
IV	189 (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

4.8 Test Excavation 163 (T-163)

Ahupua'a:	Honolulu
LC :	387
TMK #:	2-3-002:059
Elevation Above Sea Level:	1.93 m
UTM:	618797 mE, 2355438 mN
Max Length/Width/Depth:	6.73 m, 0.76 m, 1.9 m
Orientation:	290/110° TN
Targeted Project Component:	Station Building
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 163 (T-163) was located approximately 30.0 m southeast of Ward Avenue and Ilaniwai Street intersection, within a parking lot. T-164 was located on private property owned by Victoria Ward Ltd. No utilities were located within close proximity of T-164. 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-163 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 (see Figure 29). The 1884 Bishop map indicates that T-163 was located within marsh land called Kukuluaeo, 52 m north of LCA 10463:1, awarded to Napela. An unimproved or planned roadway is also depicted, extending northeast (*mauka*) to southwest (*makai*) within 80 m of T-163 (see Figure 27). The roadway is also depicted on the 1887 Wall map of Honolulu along with three structures in the vicinity of T-163. The structures were located approximately 55.0 m northwest, 80 m south, and 195 m southwest of T-163. The 1897 Monsarrat map of Honolulu depicts infrastructure development immediately north of T-163 including a near-modern street grid with the closest intersection being Ilaniwai Street and Kamani Street 115 m northwest and the Cyclomere bicycle track 265 m north. Expanded urbanization in the vicinity of T-163 is depicted throughout the series of twentieth century topographic maps and Sanborn fire insurance maps (see Figure 30, Figure 32, and Figure 33).

Few archaeological studies were conducted in the immediate vicinity of T-163 (see Figure 34). In 2000, CSH conducted archaeological monitoring for Ward Village Phase II (Ward Theaters), approximately 220.0 m southeast of T-163. A buried A-horizon and naturally-occurring pond sediments were documented in portions of the project area but, no cultural resources were assigned (Winieski and Hammatt 2001). In 2005, CSH conducted an archaeological inventory survey for the Moana Vista Project on Kapi'olani Boulevard, located approximately 280.0 m east of T-163. No cultural resources were encountered (O'Leary and Hammatt 2006).

Documentation Limitations: T-163 was excavated to a depth of 1.9 mbs. The water table was encountered at 1.84 mbs. There were no limitations to excavation documentation.

Stratigraphic Summary: The stratigraphy of T-163 consisted of fill strata overlying natural sediment to the base of excavation. Observed strata were asphalt (Ia), extremely gravelly sand (Ib), gravelly sandy loam (Ic), gravelly silty loam (Id), very gravelly sandy loam (Ie), gravelly silty sand (If), gravelly silty sand (Ig), gravelly coarse sand (Ih), fine sandy clay (Ii), clay fill (Ij), natural silty clay (II), sandy silty clay (III), and very coarse sand (IV). The stratigraphy conformed to the USDA soil survey designation of Fill land (FL) above Strata II-IV.

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: Three bulk sediment samples were collected from within T-163 consisting of one sample each from Stratum II between 1.5 and 1.6 mbs, Stratum III between 1.6 and 1.7 mbs, and Stratum IV between 1.7 and 1.81 mbs. All of the bulk samples were wet screened. The sample collected from Stratum II contained naturally-occurring gastropods (0.1 g) and *Ruppia maritima* seeds (0.1 g). The sample collected from Stratum III contained *Ruppia maritima* seeds (0.1 g). The sample collected from Stratum IV contained naturally-occurring marine shell (3.1 g). The results documented only naturally-occurring shell and organic material within each sample.

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 0.5 mbs.

GPR depth profiles for T-163 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 0.35 mbs. No utilities were observed in the profile. The maximum depth of clean signal return was approximately 0.9 mbs.

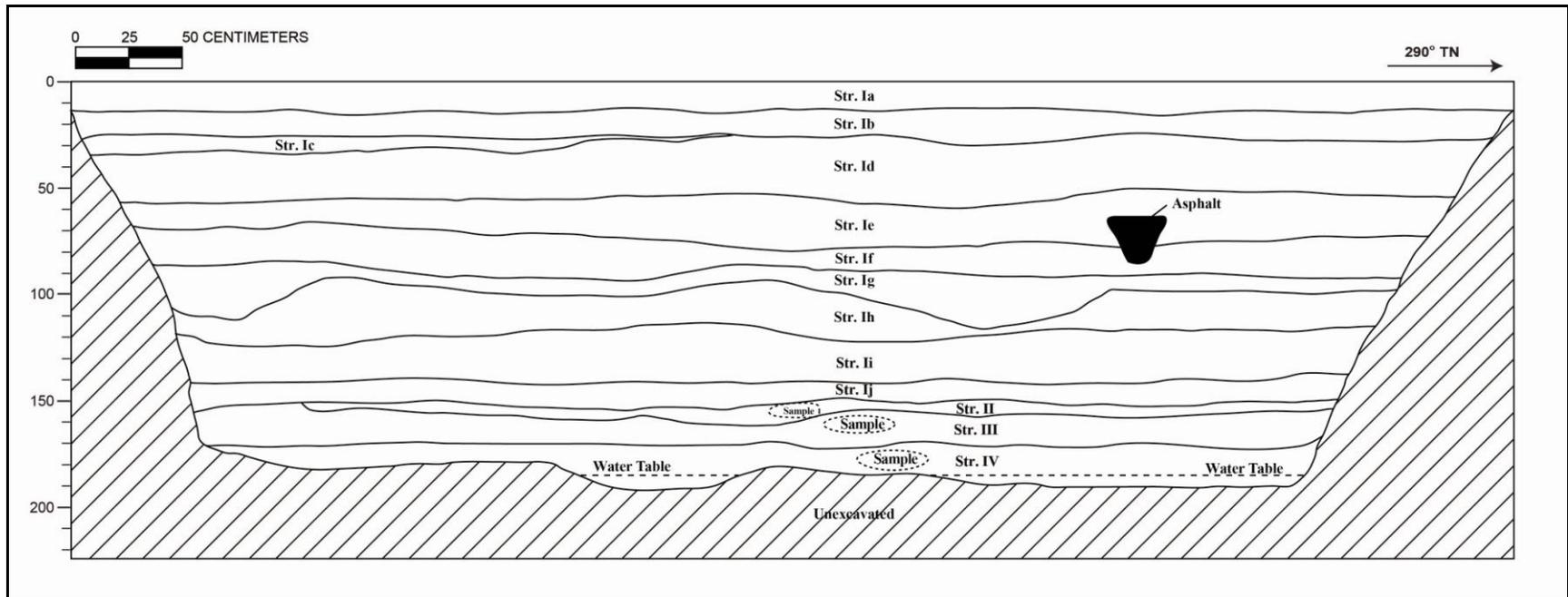
Summary: T-163 was excavated to a depth of 1.9 mbs. The stratigraphy of T-163 consisted of fill strata overlying natural sediment to the base of excavation. The stratigraphy conformed to the USDA soil survey designation of Fill land (FL) above Strata II-IV. Three bulk samples yielded only naturally-occurring shell and organic material. No archaeological cultural resources were identified within T-163.



T-163 general location, view to south



T-163 south wall profile, view to east



T-163 south wall profile

T-163 Stratigraphic Description

Stratum	Depth (cmts)	Description
Ia	0-14	Asphalt
Ib	14-28	Fill; 10 YR 8/2 (very pale brown); extremely gravelly sand; structureless, single-grain; moist, very friable consistency; non-plastic; marine origin; abrupt, smooth lower boundary; crushed coral base course
Ic	28-34	Fill; 10 YR 3/2 (very dark grayish brown); gravelly sandy loam; weak, fine, crumb structure; moist, friable consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary; few, very fine roots
Id	25-58	Fill; 2.5 YR 2.5/3 (dark reddish brown); gravelly silty loam; weak, fine, blocky structure; moist; friable consistency; slightly plastic; terrigenous origin; abrupt, smooth lower boundary
Ie	50-80	Fill; 10 YR 5/2 (grayish brown); very gravelly sandy loam; weak, fine, crumb structure; moist, friable consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; contained glass fragments (not collected) and asphalt
If	68-93	Fill; 10 YR 7/3 (very pale brown); gravelly silty sand; structureless, single-grain; moist very friable, non-sticky consistency; non-plastic; mixed origin; clear smooth lower boundary; contained asphalt (also in Stratum Ie)
Ig	93-115	Fill; 10 YR 7/1 (light gray); gravelly silty sand; structureless, single-grain; moist, loose consistency; non-plastic; mixed origin, abrupt smooth, lower boundary
Ih	93-125	Fill; 10 YR 8/2 (very pale brown); gravelly coarse sand; structureless, single-grain; moist, loose, non-sticky consistency; non-plastic, clear, smooth lower boundary; fill sand
Ii	115-140	Fill; 10 YR 8/4 (very pale brown); fine sandy clay; structureless, single-grain; moist, loose, non-sticky consistency; non-plastic; marine origin; abrupt, smooth lower boundary; fill sand
Ij	140-155	Fill; GLEY 1 7/5GY (light greenish gray); clay; massive structure; moist, friable consistency. Plastic, mixed origin, abrupt, smooth lower boundary; hydraulic fill
II	150-160	Natural; 10 YR 3/2 (very dark grayish brown); silty clay; weak, fine, blocky structure; moist friable consistency; slightly plastic; marine origin; clear, smooth lower boundary; organically enriched peaty layer
III	150-170	Natural; GLEY 1 5/1 (greenish gray); sandy silty clay; weak, fine, blocky structure; moist, firm consistency; slightly plastic; marine origin; clear, smooth lower boundary; many, very fine roots
IV	170-190 (BOE)	Natural; 10 YR 6/2 (light brownish gray); very coarse sand; structureless, single-grain; wet, non-sticky consistency; non-plastic; lower boundary not visible

4.9 Test Excavation 164 (T-164)

Ahupua'a:	Honolulu
LCA:	387
TMK #:	2-3-002:059
Elevation Above Sea Level:	2.04 m
UTM:	618806 mE, 2355423 mN
Max Length/Width/Depth:	6.72 m, 0.76 m, 2.25 m
Orientation:	298/188° TN
Targeted Project Component:	Station Building
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 164 (T-164) was located approximately 47.0 m southeast of Ward Avenue and Ilaniwai Street intersection, within a parking lot. T-164 was located on private property owned by Victoria Ward Ltd. No utilities were located within close proximity of T-164. 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-164 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 (see Figure 29). The 1884 Bishop map indicates that T-164 was located within marsh land called Kukuluaeo, 33 m north of LCA 10463:1, awarded to Napela. An unimproved or planned roadway is also depicted, extending northeast (*mauka*) to southwest (*makai*) within 67 m of T-164 (see Figure 27). The roadway is also depicted on the 1887 Wall map of Honolulu along with three structures in the vicinity of T-164. The structures were located approximately 61 m northwest, 65 m south, and 180 m southwest of T-164. The 1897 Monsarrat map of Honolulu depicts infrastructure development immediately north of T-164 including a near-modern street grid with the closest intersection being Ilaniwai Street and Kamani Street 122 m northwest and the Cyclomere bicycle track 280 m north. Expanded urbanization in the vicinity of T-164 is depicted throughout the series of twentieth century topographic maps and Sanborn fire insurance maps (see Figure 30, Figure 32, and Figure 33).

Few archaeological studies were conducted in the immediate vicinity of T-164 (see Figure 34). In 2000, CSH conducted archaeological monitoring for Ward Village Phase II (Ward Theaters), approximately 200.0 m southeast of T-164. A buried A-horizon and naturally-occurring pond sediments were documented in portions of the project area but, no cultural resources were assigned (Winieski and Hammatt 2001). In 2005, CSH conducted an archaeological inventory survey for the Moana Vista Project on Kapi'olani Boulevard, located approximately 280.0 m east of T-164. No cultural resources were encountered (O'Leary and Hammatt 2006).

Documentation Limitations: T-164 was excavated to a depth of 2.25 mbs. The water table was encountered at 2.08 mbs. A utility pipe in the central portion of T-164 limited documentation.

Stratigraphic Summary: The stratigraphy of T-164 consisted of fill overlying natural sediment to beneath the water table. Observed strata were asphalt (Ia), extremely gravelly sand fill (Ib), gravelly silty sand fill (Ic), silty clay loam fill (Id), gravelly loam fill (Ie), gravelly sandy clay fill (If), and clay fill (Ig) overlying natural sandy clay (II) and coarse sand (III). The stratigraphy conformed to the USDA soil survey designation of Fill land (FL) above Strata II-III.

Artifacts Discussion: A total of three artifacts (Acc. #s 164-A-1 to A-3) were collected, one from Stratum Ic at 0.20–0.35 mbs, and two from Stratum Ie at 0.48–1.06 mbs. The artifact in Stratum Ic was a rail spike, possibly from the Honolulu streetcar tracks dating from 1898 to 1933 (Simpson and Brizdle 2000:43, 124) or from the O.R & L Railroad, which had a terminus train station in Iwilei to the west. The artifacts collected from Stratum Ie consist of a piece of milled wood and the base of a glass bottle. The glass bottle base lacked mold seams, and probably dates to before 1920.

Features Discussion: No features were observed.

Terrestrial Faunal Remains Discussion: No terrestrial faunal remains were collected individually during excavation.

Sample Results: A total of two bulk sediment samples were collected, one each from Stratum II at 1.73–1.90 mbs and from Stratum III at 1.92–2.07 mbs. Both samples were wet screened and yielded sparse amounts of marine shell. The sample from Stratum II contained burned Crustacea (0.1 g) and *Ruppia maritima* seeds (0.1 g). The sample from Stratum III contained Crustacea (0.7 g), *Echinometra mathaei* sp. (0.1 g), unidentified shell fragments (4.4 g), and a piece of plastic (0.1 g). The plastic may indicate modern disturbance to Stratum III or may have been introduced during the excavation and/or sampling process.

GPR Discussion: A review of amplitude slice maps indicated no linear features although a utility was encountered during excavation. Reflectivity was relatively uniform throughout the grid and decreases with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.5 mbs.

GPR depth profiles for T-164 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 0.25 mbs. No utilities were observed in the profile although a utility was encountered during excavation. The maximum depth of clean signal return was approximately 1.0 mbs.

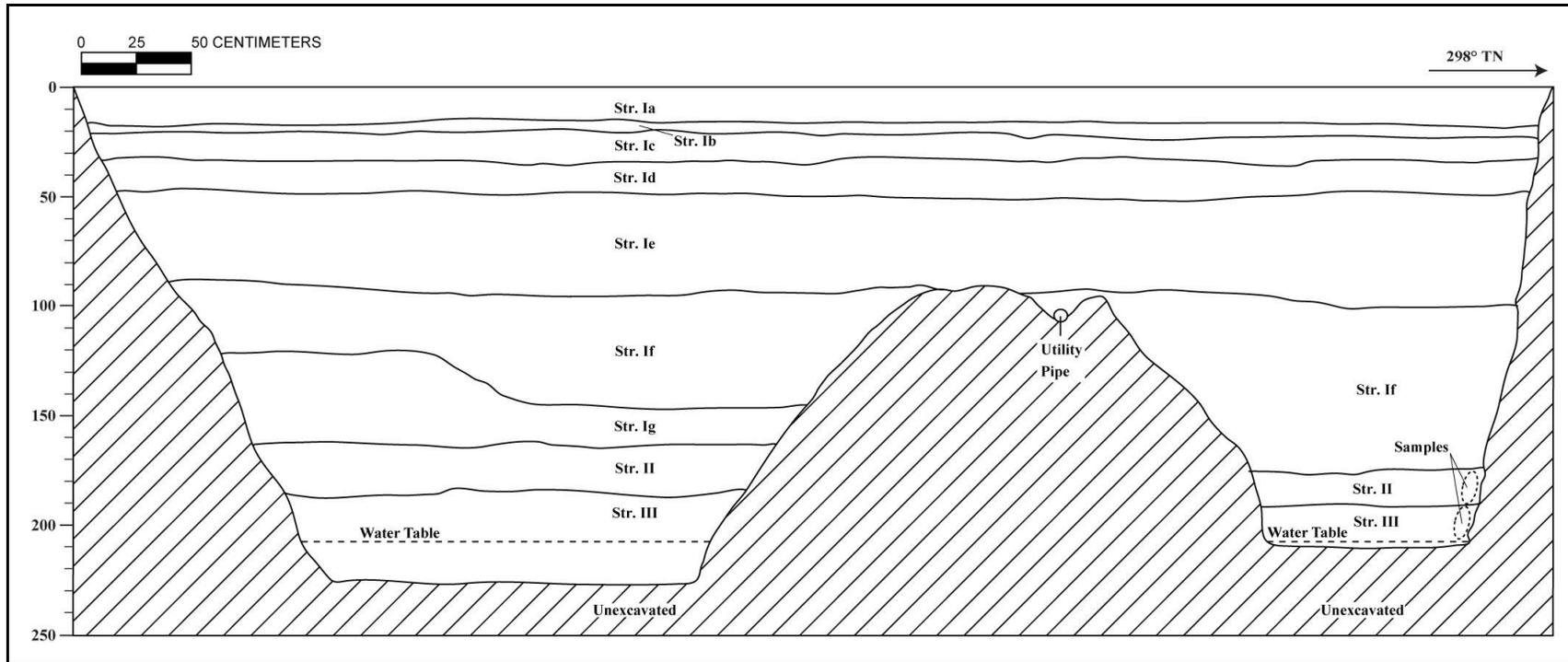
Summary: T-164 was excavated to a depth of 2.25 mbs. The water table was encountered at 2.08 mbs. The stratigraphy of T-164 consisted of fill (Ia–Ig) overlying natural sediment (II-III). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL) above Strata II-III. Three historic artifacts were collected consisting of a railroad spike (Ic), a piece of milled wood (Ie), and a glass bottle base (Ie). All likely date from the late nineteenth- to early twentieth-century. Bulk sample analysis documented sparse amounts of marine shell within both Stratum II and III. The plastic within Stratum III may indicate modern disturbance, or may have been introduced during the excavation and/or sampling process. No archaeological cultural resources were identified within T-164.



T-164 general location, view to south



T-164 southwest wall profile, view to west



T-164 southwest wall profile

T-164 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-16	Asphalt
Ib	16-22	Fill; 10 YR 7/3 (very pale brown); extremely gravelly sand; structureless, single-grain; dry, loose consistency; non-plastic; marine origin; very abrupt, smoother lower boundary; crushed coral base course (coral gravel)
Ic	20-35	Fill; 10 YR 3/3 (dark brown); gravelly silty sand; weak, fine, crumb structure; moist, very friable consistency; non-plastic; terrigenous origin; clear, smooth lower boundary; contained railroad spike (collected); basalt gravel
Id	31-49	Fill; 5 YR 3/3 (dark reddish brown); silty clay loam; weak, fine, crumb structure; moist, friable consistency; slightly plastic; terrigenous origin; clear, smooth lower boundary; construction fill
Ie	48-106	Fill; 10 YR 3/1 (very dark gray); gravelly loam; weak, fine, crumb structure; moist, friable consistency; slightly plastic; terrigenous origin; abrupt, smooth lower boundary; contained metal utility pipe; contained wood fragment and glass bottle base (collected)
If	86-175	Fill; 10 YR 8/2 (very pale brown); gravelly sandy clay; structureless, massive; moist, very friable consistency; plastic, mixed origin; clear, smooth lower boundary, coral gravel
Ig	120-162	Fill; 5 Y 7/1 (light gray); clay; structureless, massive; moist, firm consistency; very plastic; marine origin; diffuse, smooth lower boundary; hydraulic fill
II	161-190	Natural; 5 Y 4/1 (dark gray); sandy clay; structureless, single-grain; wet, slightly sticky consistency; plastic; diffuse, smooth lower boundary; wetland sediment
III	182-225 (BOE)	Natural; 2.5 Y 6/2 (light brown gray); coarse sand; structureless, single-grain; wet, non-sticky consistency; non-plastic; marine origin; lower boundary not visible; marine (lagoonal) sediment



T-164 glass bottle base (Acc. #164-A-1) collected from Stratum Ie

4.10 Test Excavation 165 (T-165)

Ahupua'a:	Honolulu
LCA:	387
TMK #:	2-3-002:059
Elevation Above Sea Level:	2.03 m
UTM:	618809 mE, 2355429 mN
Max Length/Width/Depth:	6.7 m/ 0.71 m/ 2.04 mbs
Orientation:	54/234° TN
Targeted Project Component:	Station Building
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 165 (T-165) was located approximately 49.0 m southeast of Ward Avenue and Ilaniwai Street intersection, and was located within a parking lot. T-165 was located on private property owned by Victoria Ward Ltd. No utilities were located within close proximity of T-165. 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-165 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 (see Figure 29). The 1884 Bishop map indicates that T-165 was located within marsh land called Kukuluaeo, 51 m north of LCA 10463:1, awarded to Napela. An unimproved or planned roadway is also depicted, extending northeast (*mauka*) to southwest (*makai*) within 65 m of T-165 (see Figure 27). The roadway is also depicted on the 1887 Wall map of Honolulu along with three structures in the vicinity of T-165. The structures were located approximately 72 m northwest, 80 m south, and 195 m southwest of T-165. The 1897 Monsarrat map of Honolulu depicts infrastructure development immediately north of T-165 including a near-modern street grid with the closest intersection being Ilaniwai Street and Kamani Street 122 m northwest and the Cyclomere bicycle track 270 m north. Expanded urbanization in the vicinity of T-165 is depicted throughout the series of twentieth century topographic maps and Sanborn fire insurance maps (see Figure 30, Figure 32, and Figure 33).

Few archaeological studies were conducted in the immediate vicinity of T-165 (see Figure 34). In 2000, CSH conducted archaeological monitoring for Ward Village Phase II (Ward Theaters), approximately 200.0 m southeast of T-165. A buried A-horizon and naturally-occurring pond sediments were documented in portions of the project area but, no cultural resources were assigned (Winieski and Hammatt 2001). In 2005, CSH conducted an archaeological inventory survey for the Moana Vista Project on Kapi'olani Boulevard, located approximately 290 m east of T-165. No cultural resources were encountered (O'Leary and Hammatt 2006).

Documentation Limitations: T-165 was excavated to the water table at a depth of 2.04 mbs. No factors limited the documentation of T-165.

Stratigraphic Summary: The stratigraphy of T-165 consisted of fill strata overlying natural sediment to the water table. Observed strata were asphalt (Ia), extremely gravelly sand (Ib), silty clay loam (Ic), gravelly silty sand (Id), silty clay loam (Ie), extremely gravelly loamy sand (If), extremely gravelly clay loam (Ig), very sandy clay (Ih), clay fill (Ii), natural sandy clay (II), and coarse sand (III). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL) above Strata II-III.

Artifacts Discussion: One metal nail (Acc. #165-A-1) was collected from Stratum Id at 0.22–0.37 mbs. The corrosion of the nail prevented identification of type.

Features Discussion: No features were observed

Terrestrial Faunal Remains Discussion: No terrestrial faunal remains were collected individually during excavation.

Sample Results: One bulk sediment sample was collected from Stratum III between 1.86 and 2.04 mbs and contained charcoal (0.1 g), *Tellina* spp. (0.1 g), Crustacea (2.2 g), *Brachidontes crebristriatus* (0.9 g), Ostreidae (0.7 g), and *Turbo* sp. (0.1 g). The results of sample analysis are consistent with a natural shallow marine or estuary deposit.

GPR Discussion: A review of amplitude slice maps indicated a linear feature that was not encountered during excavation. Reflectivity was relatively uniform throughout the grid and decreases with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.5 mbs.

GPR depth profiles for T-165 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 0.3 mbs. An anomaly was observed in the profile but was not encountered during excavation. The maximum depth of clean signal return was approximately 1.0 mbs.

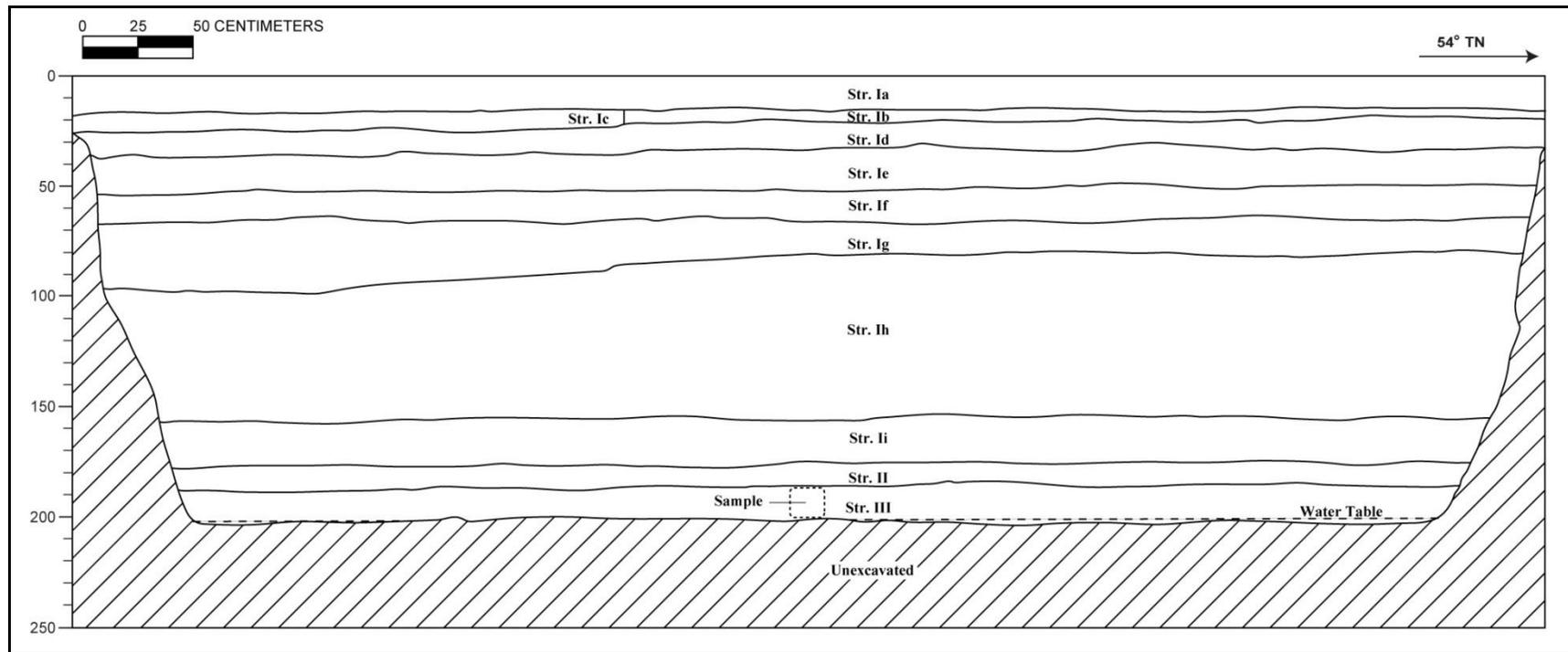
Summary: T-165 was excavated to the water table at a depth of 2.04 mbs. The stratigraphy of T-165 consisted of fill strata (Ia–Ii) overlying natural sediment (II-III) to the water table. The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL) above Strata II-III. Sample analysis in Stratum III was consistent with a natural shallow marine or estuary deposit. No archaeological cultural resources were observed within T-165.



T-165 general location, view to southwest



T-165 northwest profile wall, view to west



T-165 northwest wall profile

T-165 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-19	Asphalt; two layers
Ib	18-22	Fill; 10 YR 7/3 (very pale brown); extremely gravelly sand; structure, single-grain; moist, loose consistency; non-plastic; marine origin; very abrupt, smooth, broken/discontinuous lower boundary; crushed coral base course
Ic	19-26	Fill; 5 YR 3/3 (dark reddish brown); silty clay loam; weak, fine, crumb structure; moist, friable consistency; slightly plastic; terrigenous origin; clear, smooth broken/discontinuous lower boundary; fill deposit
Id	22-37	Fill; 10 YR 3/3 (dark brown); gravelly silty sand; weak, fine, crumb structure; moist, very friable consistency; non-plastic; terrigenous origin; clear, smooth lower boundary; contained nail
Ie	35-54	Fill; 5 YR 3/3 (dark reddish brown); silty clay loam; weak, fine, crumb structure; moist, friable consistency; slightly plastic; terrigenous origin; clear, smooth lower boundary
If	53-68	Fill; 10 YR 6/3 (pale brown); extremely gravelly loamy sand; weak, fine, crumb structure; moist, friable consistency; slightly plastic; mixed origin; clear, smooth lower boundary; crushed coral gravel
Ig	67-97	Fill; 10 YR 3/3 (brown); extremely gravelly clay loam; weak, fine, crumb structure; moist, friable consistency; slightly plastic; mixed origin; diffuse, smooth lower boundary; basalt gravel crushed coral, shell
Ih	83-157	Fill; 10 YR 8/2 (very pale brown); very sandy clay; weak, fine, crumb structure; moist, loose consistency; plastic; mixed origin; clear, smooth lower boundary; locally procured fill, sand mixed with clay
Ii	157-176	Fill; 5 Y 7/1 (light gray); clay; structureless, massive; moist, firm consistency; very plastic; marine origin; diffuse, smooth lower boundary; hydraulic fill deposit
II	176-186	Natural; 5 Y 4/1 (dark gray); sandy clay; structureless, massive; wet, slightly sticky consistency; plastic; mixed origin; diffuse lower boundary; natural marsh/wetland sediment
III	186-204 (BOE)	Natural; 2.5 Y 6/2 (Light brownish gray); coarse sand; structureless, single-grain; wet, non-sticky consistency; non-plastic; marine origin; lower boundary not visible; estuary sediment

4.11 Test Excavation 166 (T-166)

Ahupua'a:	Honolulu
LCA:	387
TMK #:	2-3-002:059
Elevation Above Sea Level:	2.1 m
UTM:	618811 mE, 2355418 mN
Max Length/Width/Depth:	3.70 m/0.93 m/2.07 m
Orientation:	296/116° TN
Targeted Project Component:	Station Column
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 166 (T-166) was located approximately 58.0 m southeast of Ilaniwai Street and Ward Avenue intersection, and was located within a parking lot. T-166 was located on private property owned by Victoria Ward Ltd. 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-166 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 (see Figure 29). The 1884 Bishop map indicates that T-166 was located within marsh land called Kukuluaeo, 53 m north of LCA 10463:1, awarded to Napela. An unimproved or planned roadway is also depicted, extending northeast (*mauka*) to southwest (*makai*) within 65 m of T-166 (see Figure 27). The roadway is also depicted on the 1887 Wall map of Honolulu along with three structures in the vicinity of T-166. The structures were located approximately 75 m northwest, 80 m south, and 195 m southwest of T-166. The 1897 Monsarrat map of Honolulu depicts infrastructure development immediately north of T-166 including a near-modern street grid with the closest intersection being Ilaniwai Street and Kamani Street 122 m northwest and the Cyclomere bicycle track 265 m north. Expanded urbanization in the vicinity of T-166 is depicted throughout the series of twentieth century topographic maps and Sanborn fire insurance maps (see Figure 30, Figure 32, and Figure 33).

Few archaeological studies were conducted in the immediate vicinity of T-166 (see Figure 34). In 2000, CSH conducted archaeological monitoring for Ward Village Phase II (Ward Theaters), approximately 200 m southeast of T-166. A buried A-horizon and naturally-occurring pond sediments were documented in portions of the project area but, no cultural resources were assigned (Winieski and Hammatt 2001). In 2005, CSH conducted an archaeological inventory survey for the Moana Vista Project on Kapi'olani Boulevard, located approximately 340 m east of T-166. No cultural resources were encountered (O'Leary and Hammatt 2006).

Documentation Limitations: T-166 was excavated to a depth of 2.07 mbs. The water table was reached at 1.95 mbs. A utility line within the central portion of T-166 at 0.53 mbs prevented further excavation and documentation of the northwest portion of T-166.

Stratigraphic Summary: The stratigraphy of T-166 consisted of fill strata overlying natural sediment to the water table. Observed strata were asphalt (Ia), very gravelly sandy loam (Ib), very gravelly sandy loam (Ic), clay loam (Id), very gravelly silty clay loam (Ie), sandy clay loam (If), very gravelly sand (Ig), sand fill (Ih), and natural sand (II). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL) above Stratum II.

Artifacts Discussion: No artifacts were observed.

Features Discussion: No features were observed.

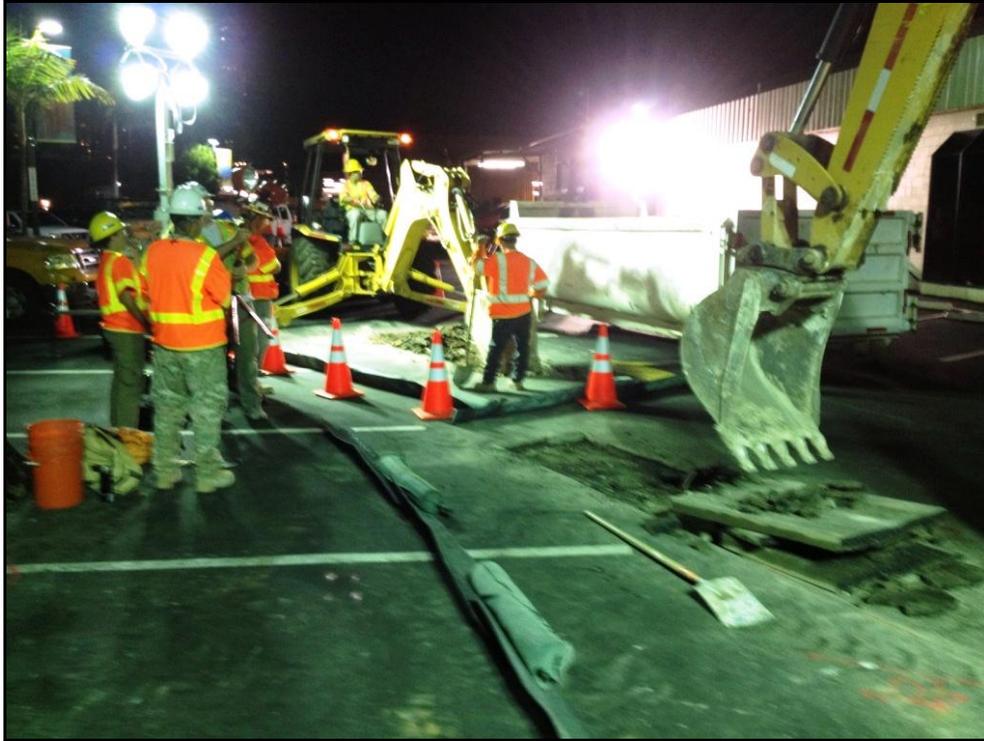
Terrestrial Faunal Remains Discussion: No terrestrial faunal remains were collected individually during excavation.

Sample Results: One bulk sediment sample was collected from Stratum II between 1.44 and 2.07 mbs. The sample was wet screened and yielded naturally-occurring shell (0.5g).

GPR Discussion: A review of amplitude slice maps indicated no linear features although a utility was encountered during excavation. Reflectivity was relatively uniform throughout the grid and decreases with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.5 mbs.

GPR depth profiles for T-166 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 0.3 mbs. No utilities were observed in the profile although a utility was encountered during excavation. The maximum depth of clean signal return was approximately 0.7 mbs.

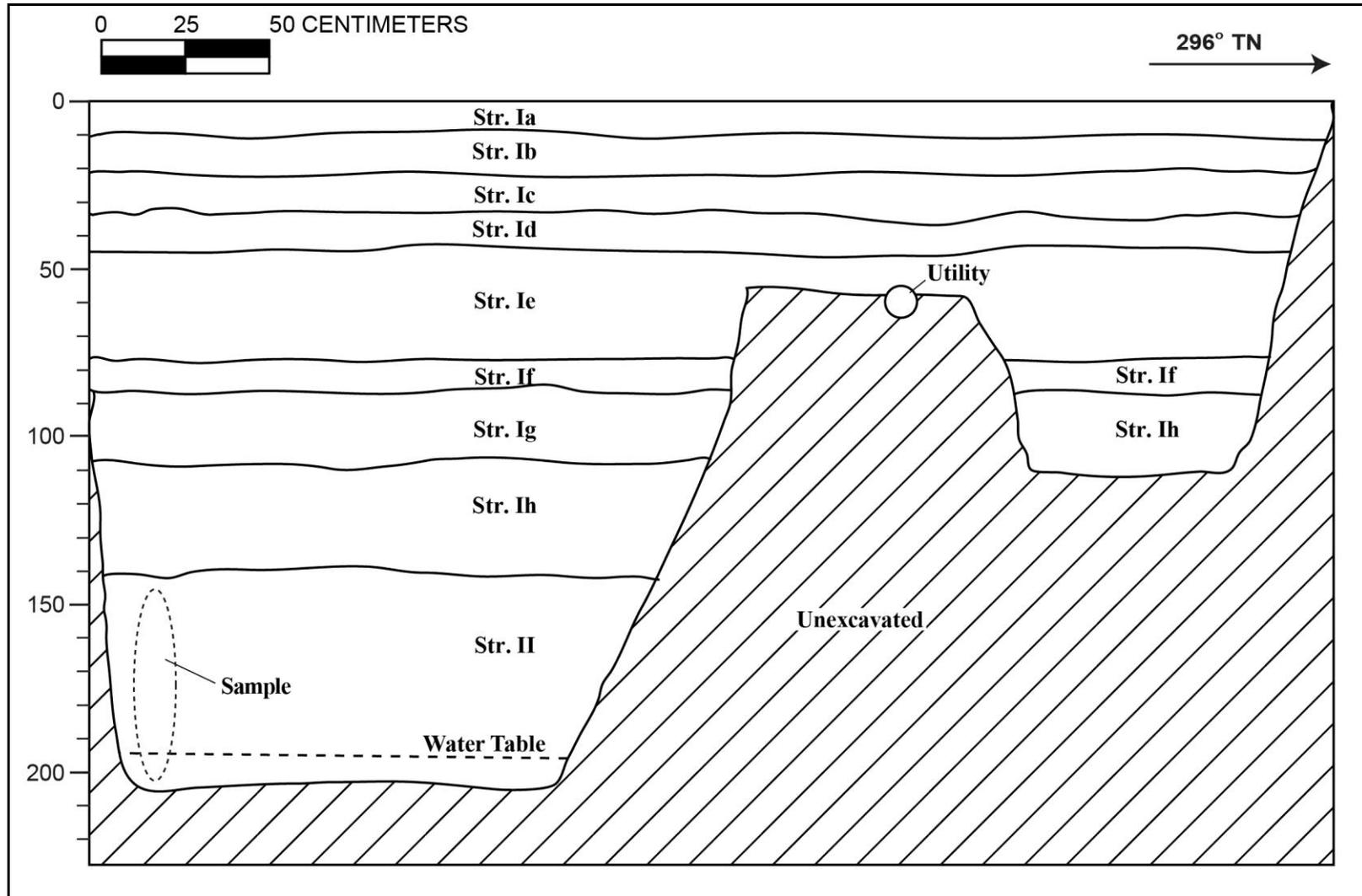
Summary: T-166 was excavated to a depth of 2.07 mbs. The water table was reached at 1.95 mbs. The stratigraphy of T-166 consisted of fill strata overlying natural sediment to the water table. The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL) above Stratum II. The bulk sample from Stratum II yielded naturally-occurring shell. No archaeological cultural resources were identified within T-166.



T-166 general location, view to south



T-166 southwest profile wall, view to south



T-166 southwest wall profile

T-166 Stratigraphic Description

Stratum	Depth (cmts)	Description
Ia	0-13	Asphalt
Ib	13-23	Fill; 10 R 3/3 (dusky red) with common 2 mottles of 5 YR 8/1 (white); very gravelly sandy loam; weak, fine, crumb structure; moist, very friable consistency; slightly plastic; terrigenous origin; abrupt, smoother lower boundary; cement cobbles
Ic	23-36	Fill; 7.5 YR 4/3 (brown) with common 7 mottles of 7/5 YR 8/1 (white); very gravelly sandy loam; moist, very friable consistency; mixed origin; abrupt, smoother lower boundary; coral cobbles
Id	36-48	Fill; 10 R 3/2 (dusky red); clay loam; weak, fine structure; moist, very friable consistency; slightly plastic; terrigenous origin; abrupt, smoother lower boundary
Ie	48-78	Fill; 10 YR 4/3 (brown) with common 2 mottles of 10 YR 8/1 (white); very gravelly silty clay loam; moderate, fine, blocky structure; moist, very friable consistency; slightly plastic; mixed origin; abrupt, smoother lower boundary; coral cobbles
If	78-87	Fill; 7.5 YR 2.5/2 (very dark brown); sandy clay loam; weak, fine, crumb structure; moist, very friable consistency; slightly plastic; terrigenous origin; abrupt, smoother lower boundary
Ig	87-110	Fill; 7.5 YR 6/3 (light brown); very gravelly sand; structureless, single-grain; moist, loose consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; contained coral cobbles
Ih	110-144	Fill; 7.5 YR 7/6 (reddish yellow); sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary; hydraulic fill sand
II	144-207 (BOE)	Natural; GLEY 1 7/5 GY (light greenish gray); sand; weak, coarse, granular structure; moist, loose consistency; non-plastic; marine origin; lower boundary not visible; very fine roots; micro mollusk shells

4.12 Test Excavation 167 (T-167)

Ahupua'a:	Honolulu
LCA:	378
TMK #:	2-3-002-059
Elevation Above Sea Level:	2.2 m
UTM:	618813 mE, 2355402 mN
Max Length/Width/Depth:	3.5 m/0.94 m/2.0 m
Orientation:	130/310° TN
Targeted Project Component:	Station Column
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 167 (T-167) was located within a parking lot paralleling Ward Avenue. T-167 was relocated approximately 15.0 m north of its original layout so that it would be within the station building footprint. T-167 was located on private property owned by Victoria Ward Ltd. There were no nearby utilities.

Summary of Background Research and Land Use: Land Court Application 670 map 1 indicates that T-167 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 (see Figure 29). The 1884 Bishop map indicates that T-167 was located within marsh land called Kukuluaeo, 25 m north of LCA 10463:1, awarded to Napela. An unimproved or planned roadway is also depicted, extending northeast (*mauka*) to southwest (*makai*) within 43 m of T-167 (see Figure 27). The roadway is also depicted on the 1887 Wall map of Honolulu along with three structures in the vicinity of T-167. The structures were located approximately 85 m northwest, 50 m southwest, and 180 m southwest of T-167. The 1897 Monsarrat map of Honolulu depicts infrastructure development immediately north of T-167 including a near-modern street grid with the closest intersection being Queen Street and Cummins Street 140 m southeast and the Cyclomere bicycle track 300 m north. Expanded urbanization in the vicinity of T-167 is depicted throughout the series of twentieth century topographic maps and Sanborn fire insurance maps (see Figure 30, Figure 32, and Figure 33).

Few archaeological studies were conducted in the immediate vicinity of T-167 (see Figure 34). In 2000, CSH conducted archaeological monitoring for Ward Village Phase II (Ward Theaters), approximately 190 m southeast of T-167. A buried A-horizon and naturally-occurring pond sediments were documented in portions of the project area but, no cultural resources were assigned (Winieski and Hammatt 2001). In 2005, CSH conducted an archaeological inventory survey for the Moana Vista Project on Kapi'olani Boulevard, located approximately 310 m east of T-167. No cultural resources were encountered (O'Leary and Hammatt 2006).

Documentation Limitations: T-167 was excavated to a depth of 2.00 mbs. The water table was encountered at 1.98 mbs. There were no factors that limited the excavation of T-167.

Stratigraphic Summary: The stratigraphy of T-167 consisted of fill strata overlying natural sediment to the water table. Observed strata for the southwest wall were asphalt (Ia), extremely gravelly sand (Ib), loamy clay (Ic), loamy sandy clay (Id), sandy loam (Ie), sandy loamy clay (If), fine sand fill (Ig), gravelly sandy loam (Ih), gravelly sandy clay (Ii), gravelly fine sand (Ij), and silty clay (Ik), overlying a buried silty sand A-horizon (II) and coarse marine sand (III) to the water table. The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL) above Strata II-III. Stratum II was designated a component of SIHP #50-80-14-7429, a buried A-horizon containing seven features identified in 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.

Artifacts Discussion: A single traditional Hawaiian artifact (Acc. #167-H-1) was collected from Feature 3 in Stratum II at 1.4 mbs. The artifact is a drilled dog tooth that may have been part of a dog-tooth necklace (*lei 'ilio*) or part of a dog-tooth leg ornament (*kupe'e niho 'ilio*). Two miscellaneous historic artifacts (Acc. #s 167-A-1 to A-2) were also collected. One glass insulator was recovered from SIHP #-7429 Feature 3, 1.4 mbs in Stratum II. It had the mark of an insulator company in operation from 1864 to 1921. A porcelain insulator fragment was recovered at 0.8 mbs from Stratum Ig.

Features Discussion: Four features (Features 1–4) identified as originating from Stratum II within T-167 were designated as features of SIHP #50-80-14-7429.

SIHP #-7429 Feature 1 is a shallow pit identified near the base of Stratum II between 1.40 and 1.45 mb. It measured 0.94 m in length and 0.87 m in width and was intrusive into Stratum III. This irregularly-shaped pit extended beyond the excavation boundaries at the southeastern end of the excavation. SIHP #-7429 Feature 1 is interpreted as a pit of indeterminate function.

SIHP #-7429 Feature 2 is an oval-shaped pit identified near the base of Stratum II between 1.41 and 1.49 mbs. It measured 0.32 m in length and over 0.15 m in width, and extended into the northeast wall near the southeastern end of T-167. SIHP #-7429 Feature 2 is interpreted as a possible postmold.

Feature 3 is a shallow pit identified near the base of Stratum II between 1.32 and 1.48 mbs. It was intrusive into Stratum III. The roughly rectangular-shaped pit measured over 0.94 m wide and over 1.45 m long, and extended into the southeast end and both sidewalls. A dog-tooth pendant was collected within the pit at 1.4 mbs. SIHP #-7429 Feature 3 is interpreted as a pit feature of indeterminate function.

Feature 4 is a pit identified within Stratum II between 1.54 and 1.66 mbs. It intruded into Stratum III. The feature was located below the lower extent of SIHP #-7249 Feature 3 near the center of the excavation. SIHP #-7429 Feature 4 was mostly circular in plan view and measured 0.31 m long and 0.28 m wide. The pit was observed only in plan view and did not extend into the excavation sidewalls. SIHP #-7429 Feature 4 is interpreted as a possible postmold.

The four features of SIHP #-7429 within Stratum II of T-167 consist of two possible postmolds and two pit features of indeterminate function. They may reflect temporary occupation of the landscape as well as subsequent historic impacts as evidenced by the presence of various historic materials.

Terrestrial Faunal Remains Discussion: Faunal remains were collected individually during excavation from three Features 1–3 of SIHP #50-80-14-7429, a culturally-enriched buried A-

horizon. SIHP #-7429 Feature 1 (1.40–1.45 mbs) contained a single fragmentary medium mammal skeletal element. SIHP #-7429 Feature 2 (1.41–1.49 mbs) contained irregular bone fragments of a medium mammal. SIHP #-7429 Feature 3 (1.32–1.48 mbs) contained both medium mammal and *Sus scrofa* skeletal elements. The medium mammal fragments from SIHP #-7429 Features 2 and 3 were burnt. The medium mammal fragment from SIHP #-7429 Feature 1 shows no evidence of cultural modification. The *Sus scrofa* rib from SIHP #-7429 Feature 3 was butchered with a metal blade, indicating an historic origin.

Sample Results: A total of six bulk sediment samples were collected from within T-167. They consist of one sample each from Stratum Ii at 0.95 mbs, SIHP #-7429 Feature 1 between 1.40 and 1.45 mbs, SIHP #-7429 Feature 2 between 1.41 and 1.49 mbs, SIHP #-7429 Feature 3 between 1.40 and 1.48 mbs, the Stratum II/III interface between 1.45 and 1.50 mbs, and Stratum III between 1.6 and 1.84 mbs. All of the bulk samples were wet screened.

The bulk sample collected from Stratum Ii at 0.95 mbs contained marine shell midden consisting of *Heterocentrotus mammillatus* (0.9 g).

The bulk sample collected from SIHP #-7429 Feature 1 at 1.4–1.45 mbs contained charcoal (0.2 g), *Nerita picea* (1.9 g), possibly burned Crustacea (0.7 g), naturally-occurring, water-rounded marine shell (non-midden) (0.8 g), and a metal fragment (0.4 g).

The bulk sample collected from SIHP #-7429 Feature 2 at 1.41–1.49 mbs 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).

The bulk sample collected from SIHP #-7429 Feature 3, between 1.40 and 1.48 mbs contained 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), Crustacea (2.2 g), Echinoidea spp. (1.7), and *Brachidontes crebristriatus* (1.3 g). The charcoal collected from Feature 3 was submitted for wood taxa identification. 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 bulk sample collected from the Stratum II/III interface between 1.45 and 1.50 mbs contained *Nerita picea* (0.7 g), a bottle glass fragment (3.5 g), and a rusted metal fragment (0.5 g).

The bulk sample collected from Stratum III between 1.60 and 1.84 mbs contained naturally-occurring shell (7.4 g) and possible marine shell midden consisting of Crustacea (5.2 g), *Nerita picea* (3.4 g), *Echinometra mathaei* sp. (2.2 g).

The results of sample analysis documented the presence of historic artifacts within SIHP# 7429 Features 1–3. Wood taxa analysis identified cf. Conifer (pine, fir), a historically-introduced tree, within SIHP #-7429 Feature 3. Food refuse, including possible marine shell midden represented by various species and fish bone, was also identified.

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 0.5 mbs and increases again around 0.75 mbs.

GPR depth profiles for T-167 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. Anomalies were observed in the profile but were not encountered during excavation. The maximum depth of clean signal return was approximately 1.0 mbs.

Summary: T-167 was excavated to a depth of 2.00 mbs. The water table was encountered at 1.98 mbs. The stratigraphy of T-167 consisted of fill strata (Ia–Ik) overlying natural sediment (II–III) to the water table. The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL) above Strata II and III. A single traditional Hawaiian artifact (Acc. #167-H-1) was collected from Stratum II (SIHP #-7429) at 1.4 mbs. The artifact is a drilled dog tooth that may have been part of a dog-tooth necklace (*lei 'ilio*) or part of a dog-tooth leg ornament (*kupe'e niho 'ilio*). Two miscellaneous historic artifacts (Acc. #s 167-A-1 to A-2) also were collected. One glass insulator was collected from SIHP #-7429 Feature 3 (1.4 mbs). It exhibits the manufacturing mark of an insulator company in operation from 1864 to 1921. A porcelain insulator fragment (Acc. #167-A-3) was collected at 0.8 mbs from Stratum Ig. A total of four features (Features 1–4) were identified originating from Stratum II within T-167 and were designated as features of SIHP #50-80-14-7429. They consist of two possible postmolds and two pit features of indeterminate function. Faunal remains were collected individually during excavation from SIHP #-7429 Features 1–3. The medium mammal fragments from SIHP #-7429 Features 2 and 3 were burnt; the medium mammal fragment from SIHP #-7429 Feature 1 shows no evidence of cultural modification. The *Sus scrofa* rib from SIHP #-7429 Feature 3 was butchered with a metal blade, indicating an historic origin. The results of sample analysis documented the presence of historic artifacts within SIHP #-7429 Features 1–3. Wood taxa analysis identified cf. Conifer (pine, fir), a historically-introduced tree, within SIHP #-7429 Feature 3. Food refuse, including possible marine shell midden represented by various species and fish bone, was also identified. Stratum II and all associated features (Features 1–4) were considered to be components of SIHP #50-80-14-7429, a buried A-horizon containing seven features identified in 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 (see Volume 1).



T-167 general location, view to the northwest



T-167 plan view, view to northwest, Features 1 and 2



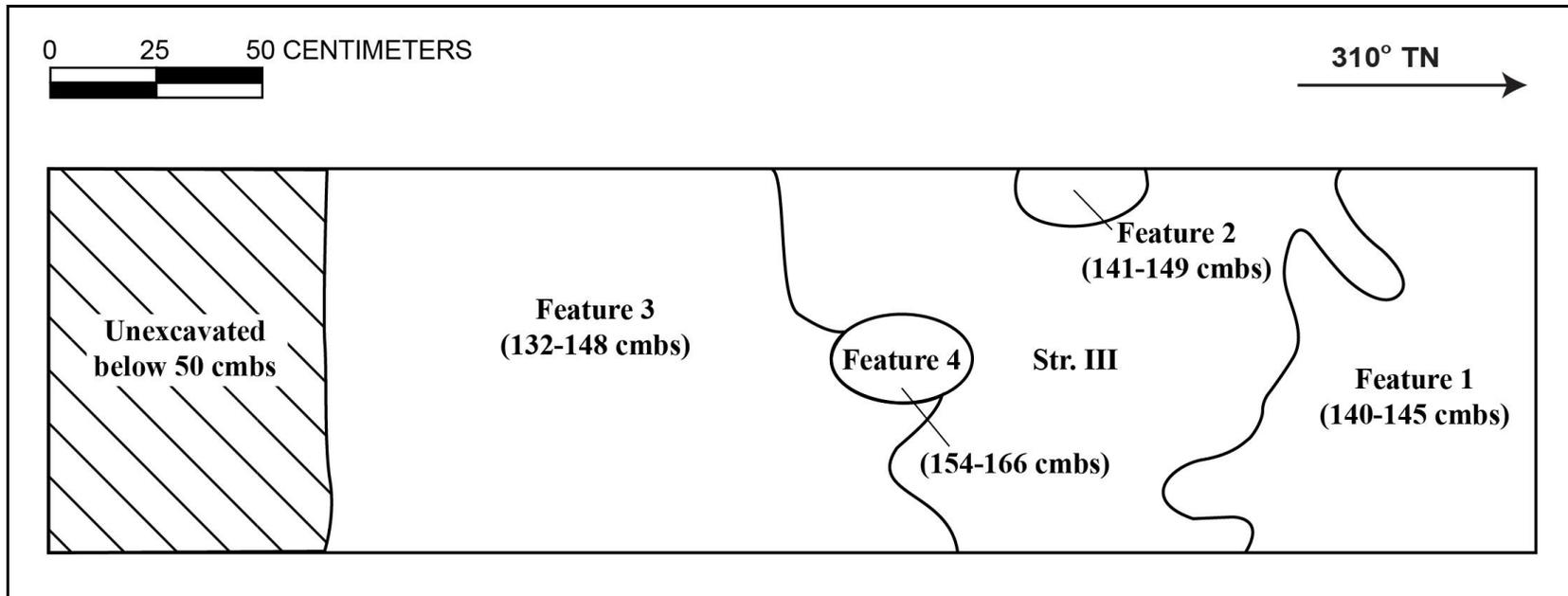
T-167 plan view, view to southeast, Feature 3



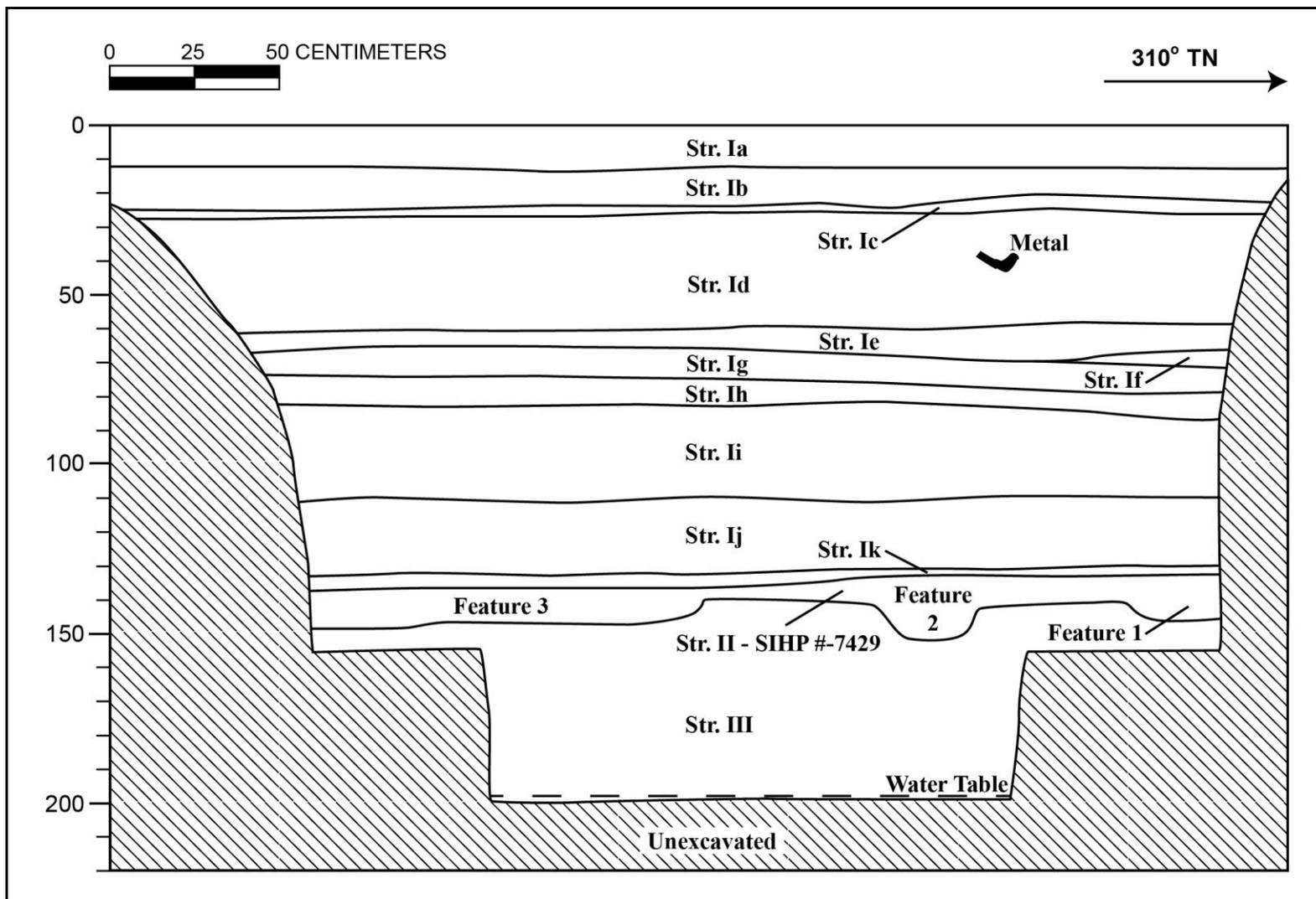
T-167 northeast profile wall, view to north



T-167 southwest profile wall, view to west



T-167 plan view showing SIHP #-7429 Features 1-4



T-167 southwest wall profile showing SIHP #-7429 Features 1-3

T-167 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-14	Asphalt
Ib	10-25	Fill; 2.5 YR 8/3 (pale yellow); extremely gravelly sand; structureless, single-grain; moist, very friable consistency; plastic; mixed origin; abrupt, smooth lower boundary; crushed coral base course
Ic	21-25	Fill; 5 YR 3/3 (dark reddish brown); loamy clay; weak, fine, medium, platy structure; moist, very friable consistency; slightly plastic; mixed origin; very abrupt, smooth lower boundary; ~5% small coral gravels
Id	25-60	Fill; 2.5 YR 3/2 (very dark grayish brown); loamy sandy clay; weak, medium, crumb structure; moist, very friable consistency; slightly plastic; mixed origin; clear, smooth lower boundary; ~10% coral gravels, cobbles, 5 coral boulders
Ie	58-70	Fill; 10 YR 2/2 (very dark brown); sandy loam; weak, fine crumb structure; moist, very friable consistency; non-plastic; mixed origin; abrupt lower boundary; ~2% coral gravels (very small)
If	66-72	Fill; 2.5 YR 2.5/4 (dark reddish brown); sandy loamy clay; weak, medium, coarse, crumb structure; moist, friable consistency; slightly plastic, mixed origin, abrupt, smooth, discontinuous lower boundary; flecked with coral
Ig	65-80	Fill; 2.5 YR 6/2 (light brownish gray); fine sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; abrupt lower boundary; contained a porcelain insulator (collected)
Ih	74-87	Fill; 10 YR 2/1 (black); gravelly sandy loam; structureless, single-grain; moist, loose consistency; non-plastic; mixed origin; abrupt lower boundary; contained burnt trash, glass, rusty nails, and paper (not collected)
Ii	82-110	Fill; 10 YR 7/2 (light gray); gravelly sandy clay; weak, fine, crumb structure; moist, very friable consistency; plastic; mixed origin; diffuse, smooth lower boundary
Ij	110-134	Fill; 2.5 Y 7/3 (pale yellow); gravelly fine sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; clear lower boundary
Ik	129-137	Fill; 10 YR 7/2 (light gray); silty clay; moderate, very fine, blocky structure, moist, firm consistency; very plastic; marine origin; very abrupt lower boundary
II	132-140	Natural, 10 YR 3/1 (very dark gray); silty sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; diffuse, irregular lower boundary; buried A-horizon; SIHP #-7429 including Features 1-4; contained drilled dog tooth and glass insulator (collected)

Stratum	Depth (cmbs)	Description
SIHP #-7429 Feature 1	140-145	Pit feature originating from Stratum II; contained marine shell midden and a metal fragment; SIHP #-7429 Feature 1
SIHP #-7429 Feature 2	141-149	Pit feature originating from Stratum II; contained fish bone and a metal fragment; SIHP #-7429 Feature 2
SIHP #-7429 Feature 3	132-148	Pit feature originating from Stratum II; contained a dog-tooth pendant, charcoal, marine shell midden, fish bone, and metal fragments SIHP #-7429 Feature 3
SIHP #-7429 Feature 4	154-166	Possible postmold feature originating from Stratum II; SIHP #-7429 Feature 4
III	138-200 (BOE)	Natural; 5 Y 8/4 (pale yellow); coarse sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; lower boundary not visible

T-167 Terrestrial vertebrate material collected individually during excavation

Acc. #	Stratum	Depth (cmbs)	Feature	Family/Class	Species	Element	Description	Modification
167-F-1	-	140-145	SIHP #-7429 Feature 3	Suidae	<i>Sus scrofa</i> (pig)	Rib; Irregular bones	Fragments	Rib butchered (cut with metal)
167-F-2	-	140-145	SIHP #-7429 Feature 3	Mammalia	Medium mammal	Diaphysis section; Irregular bones	Fragments	Diaphysis section burned
167-F-3	-	141-145	SIHP #-7429 Feature 1	Mammalia	Medium mammal	Diaphysis section	Fragment	None
167-F-4	-	141-149	SIHP #-7429 Feature 2	Mammalia	Medium mammal	Irregular bones	Fragments	Burned

4.13 Test Excavation 168 (T-168)

Ahupua'a:	Honolulu
LCA:	387
TMK #:	2-3-002:059
Elevation Above Sea Level:	2.1 m
UTM:	618823 mE, 2355399 mN
Max Length/Width/Depth:	6.8 m/0.75 m/2.20 mbs
Orientation:	143/323° TN
Targeted Project Component:	Station Building
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 168 (T-168) was located approximately 79 m southeast of Ward Avenue and Ilaniwai Street intersection, and was located within a parking lot. T-168 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-168 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 (see Figure 29). The 1884 Bishop map indicates that T-168 was located within marsh land called Kukuluaeo, 24 m northeast of LCA 10463:1, awarded to Napela. An unimproved or planned roadway is also depicted, extending northeast (*mauka*) to southwest (*makai*) within 33 m of T-168 (see Figure 27). The roadway is also depicted on the 1887 Wall map of Honolulu along with three structures in the vicinity of T-168. The structures were located approximately 97 m northwest, 51 m southwest, and 180 m southwest of T-168. The 1897 Monsarrat map of Honolulu depicts infrastructure development immediately north of T-168 including a near-modern street grid with the closest intersection being Queen Street and Cummins Street 135 m southeast and the Cyclomere bicycle track 300 m north. Expanded urbanization in the vicinity of T-168 is depicted throughout the series of twentieth century topographic maps and Sanborn fire insurance maps (see Figure 30, Figure 32, and Figure 33).

Few archaeological studies were conducted in the immediate vicinity of T-168 (see Figure 34). In 2000, CSH conducted archaeological monitoring for Ward Village Phase II (Ward Theaters), approximately 175 m southeast of T-168. 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 2005, CSH conducted an archaeological inventory survey for the Moana Vista Project on Kapi'olani Boulevard, located approximately 300 m east of T-168. No cultural resources were encountered (O'Leary and Hammatt 2006).

Documentation Limitations: T-168 was excavated to a depth of 2.20 mbs. The water table was encountered at 2.10 mbs. There were no factors that limited the documentation of T-168.

Stratigraphic Summary: The stratigraphy of T-168 consisted of fill strata overlying natural sediment to the base of excavation. Observed strata were asphalt (Ia), very gravelly coarse clayey sand (Ib), gravelly sandy loam (Ic), very gravelly sandy loam (Id), sandy clay (Ie), gravelly medium sand (If), extremely gravelly sand (Ig), fine sand (Ih), silty clay (Ii), natural loamy sand (II), and coarse sand (III and IV). The stratigraphy generally conformed to USDA soil survey designation of Fill land (FL) above Strata II-IV. Stratum II was designated a component of SIHP #50-80-14-7429, SIHP #50-80-14-7429, a buried A-horizon containing seven features identified in 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 (see Volume 1).

Artifacts Discussion: See below.

Features Discussion: No features were observed.

Terrestrial Faunal Remains Discussion: No terrestrial faunal remains were collected individually during excavation.

Sample Results: A total of three samples were collected from Stratum II (SIHP #-7429) consisting of one bulk sediment sample between 1.45–1.53 mbs and one field-screened sample each from 1.45–1.60 mbs and 1.46–1.56 mbs. The samples were collected from the excavation floor and are not depicted in the stratigraphic profile map. The bulk sediment sample was wet screened.

The bulk sediment sample from Stratum II (SIHP #-7429) between 1.45–1.53 mbs contained charcoal (23.1 g), a *kukui* nut shell fragment (0.4 g), metal fragments (16.8 g), a small blue glass bead (0.1 g), a glass fragment (0.1 g), an unidentified medium mammal bone (1.6 g), an unidentified fish bone (0.3 g), and possible marine shell midden. The possible marine shell midden included *Echinometra mathaei sp. and diadema sp.* (2.5 g), Neritidae (2.4 g), *Turbo sandwicensis* (1.3 g), *Nerita picea* (1.2 g), unidentified burned shell (1.0 g), *Tellina palatam* (0.4 g), Echinoidea (0.5 g), and Crustacea (0.7 g).

The field-screened sample from Stratum II (SIHP #-7429) between 1.45–1.60 mbs contained charcoal (6.8 g), a burned *kukui* nut shell (0.2 g), and possible marine shell midden. The possible marine shell midden included *Nerita picea* (0.2 g), and *Isognomon sp.* (0.1 g).

The field-screened sample from Stratum II (SIHP #-7429) between 1.46–1.56 mbs contained a rusted metal nail (2.3 g), an unidentified fish bone (0.1 g), an unidentified medium mammal bone fragment (0.1 g), and possible marine shell midden. The possible marine shell midden included *Nerita picea* (1.0 g), *Strombus sp.* (0.3 g), and Crustacea (0.1 g).

The analysis of the samples collected from Stratum II (SIHP #-7429) indicated the presence of traditional food refuse comprised of possible marine shell midden and fish bone. It also documented the minimal presence of historic cultural material within Stratum II.

GPR Discussion: A review of amplitude slice maps indicated no linear features although a utility was encountered during excavation. Reflectivity was relatively uniform throughout the grid and decreases with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.5 mbs.

GPR depth profiles for T-168 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 0.3 mbs. No utilities were observed in the profile however a metal pipe was encountered 1.49 mbs which was below the depth of clean signal return. The maximum depth of clean signal return was approximately 1.0 mbs.

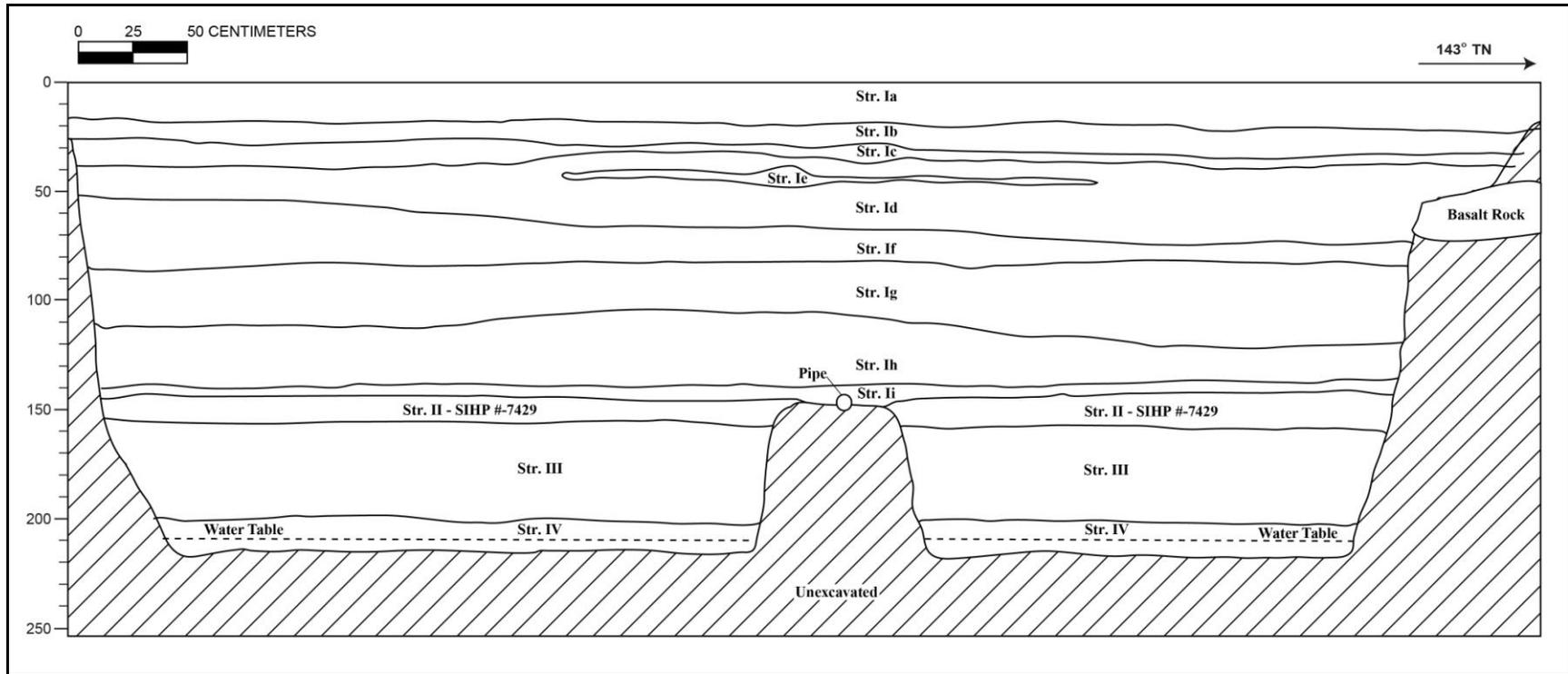
Summary: T-168 was excavated to a depth of 2.20 mbs. The water table was encountered at 2.10 mbs. The stratigraphy of T-168 consisted of fill strata (Ia–Ii) overlying natural sediment (II–IV) to the base of excavation. The stratigraphy generally conformed to USDA soil survey designation of Fill land (FL) above Strata II–IV. The bulk sediment samples collected from Stratum II indicated the presence of traditional food refuse comprised of possible marine shell midden and fish bone, and minimal historic cultural material. Stratum II is identified as a component of SIHP #50-80-14-7429, SIHP #50-80-14-7429, a buried A-horizon containing seven features identified in 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 (see Volume 1).



T-168 general location, view south



T-168 northeast wall profile, view north



T-168 northeast wall profile

T-168 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-25	Asphalt
Ib	17-31	Fill; 10 YR 8/3 (very pale brown); very gravelly, coarse clayey sand; structureless, single-grain; moist, firm consistency; slightly plastic; mixed origin; abrupt, smooth lower boundary; contained modern debris, rusted metal, wire with plastic insulation (not collected); crushed coral
Ic	27-41	Fill; 10 YR 4/3 (brown) with mottles of 10 YR 8/3 (very pale brown); gravelly, sandy loam; weak, medium, crumb structure; moist, friable consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; contained modern debris, glass, rusty metal (not collected)
Id	32-73	Fill; 10 YR 5/2 (grayish brown) with mottles of 10 YR 8/3 (very pale brown); very gravelly sandy loam; weak, medium, crumb structure; moist, friable consistency; non-plastic; mixed origin; clear, smooth lower boundary; few, fine roots; contained modern, historic debris, glass, and rusted metal (not collected)
Ie	40-45	Fill; 2.5 YR 3/4 (dark reddish brown); sandy clay; massive structure; moist, firm consistency; very plastic; mixed origin; abrupt, broken/discontinuous lower boundary; intrudes into Id
If	55-88	Fill; 10 YR 7/3 (very pale brown); gravelly medium sand; structureless, single-grain; moist, firm consistency; non-plastic; mixed origin; clear, smooth lower boundary; contains charcoal and historic trash (not collected)
Ig	82-120	Fill; 2.5 Y 8/2 (pale yellow); extremely gravelly medium sand; structureless, single-grain; moist, firm consistency; non-plastic, marine origin; diffuse, smooth lower boundary; crushed coral fill
Ih	105-140	Fill; 2.5 Y 8/3 (pale yellow); fine sand; structureless, single-grain; moist, very friable consistency; non-plastic; marine origin; clear, smooth lower boundary; hydraulic fill sand
Ii	136-146	Fill; 2.5 Y 8/2 (pale yellow); silty clay; structureless, massive; moist, very friable; very plastic; mixed origin; clear, smooth lower boundary; fill deposit
II	140-160	Natural, 10 YR 3/1 (very dark gray); medium loamy sand; structureless, single-grain; moist, friable consistency; non-plastic; mixed origin; clear lower boundary; buried A-horizon; SIHP #50-80-14-7429
III	156-202	Natural; 10 YR 7/3 (very pale brown); coarse sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; clear, smooth lower boundary; natural sand
IV	202-220 (BOE)	Natural; 10 YR 7/1 (light gray); coarse sand; structureless, single-grain; wet, non-sticky consistency; non-plastic; marine origin; lower boundary not visible; natural sand

4.14 Test Excavation 168A (T-168A)

Ahupua'a:	Honolulu
LCA:	387
TMK #:	2-3-002:059
Elevation Above Sea Level:	2.15 m
UTM:	618818.3835 mE, 2355397.189 mN
Max Length/Width/Depth:	3.67 m/0.88 m/2.24 mbs
Orientation:	150/320° TN
Targeted Project Component:	Station Building
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 168A (T-168A) was located approximately 79 m southeast of Ward Avenue and Ilaniwai Street intersection, and was located within a parking lot. T-168A was an additional excavation added to further investigate and delineate the boundaries of the buried A-horizon (SIHP #50-80-14-7429). T-168A also investigated a portion of the station building. T-168A was located on private property owned by Victoria Ward Ltd. 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-168A 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 (see Figure 29). The 1884 Bishop map indicates that T-168A was located within marsh land called Kukuluaeo, 24 m northeast of LCA 10463:1, awarded to Napela. An unimproved or planned roadway is also depicted, extending northeast (*mauka*) to southwest (*makai*) within 33 m of T-168A (see Figure 27). The roadway is also depicted on the 1887 Wall map of Honolulu along with three structures in the vicinity of T-168A. The structures were located approximately 97 m northwest, 51 m southwest, and 180 m southwest of T-168A. The 1897 Monsarrat map of Honolulu depicts infrastructure development immediately north of T-168A including a near-modern street grid with the closest intersection being Queen Street and Cummins Street 135 m southeast and the Cyclomere bicycle track 300 m north. Expanded urbanization in the vicinity of T-168A is depicted throughout the series of twentieth century topographic maps and Sanborn fire insurance maps (see Figure 30, Figure 32, and Figure 33).

Few archaeological studies were conducted in the immediate vicinity of T-168A (see Figure 34). In 2000, CSH conducted archaeological monitoring for Ward Village Phase II (Ward Theaters), approximately 175 m southeast of T-168A. 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 2005, CSH conducted an archaeological inventory survey for the Moana Vista Project on Kapi'olani Boulevard, located approximately 300 m east of T-168A. No cultural resources were encountered (O'Leary and Hammatt 2006).

Documentation Limitations: T-168A was excavated to a depth of 2.24 mbs. The water table was encountered at 2.02 mbs. T-168A was relocated from its original position due to the presence of a subsurface concrete jacket (see following T-168A plan view).

Stratigraphic Summary: The stratigraphy of T-168A consisted of fill strata overlying natural sediment to the base of excavation. Observed strata were asphalt (Ia), extremely gravelly sand fill (Ib), gravelly silty clay loam fill (Ic), clay loam fill (Id), very gravelly silty clay loam fill (Ie), gravelly silty clay loam fill (If), very gravelly sandy loam fill (Ig), gravelly sand fill (Ih) and sandy clay (Ii) overlying a loamy sand buried A-horizon (II), Jaucas sand (III), and the coral shelf (IV). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL) above Strata II-IV. Stratum II was designated as a component of SIHP #50-80-14-7429, a buried A-horizon containing seven features identified in T-167, T-168, T-168A, T-168B, T-169, T-170, and T-170A.

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: A total of three bulk sediment samples were collected within T-168A consisting of two samples from Stratum II between 1.40–1.45 mbs and between 1.40–1.53 mbs, and one sample from the Stratum II/III interface between 1.49–1.58 mbs. All of the bulk samples were wet screened. Only small amounts of naturally-occurring, water-rounded marine shell were encountered within each bulk sediment sample.

GPR Discussion: A review of amplitude slice maps indicated no linear features although a concrete jacket was encountered during excavation. Reflectivity was relatively uniform throughout the grid and decreases with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.5 mbs.

GPR depth profiles for T-168A 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 although a concrete utility jacket was encountered during excavation. The maximum depth of clean signal return was approximately 1.0 mbs.

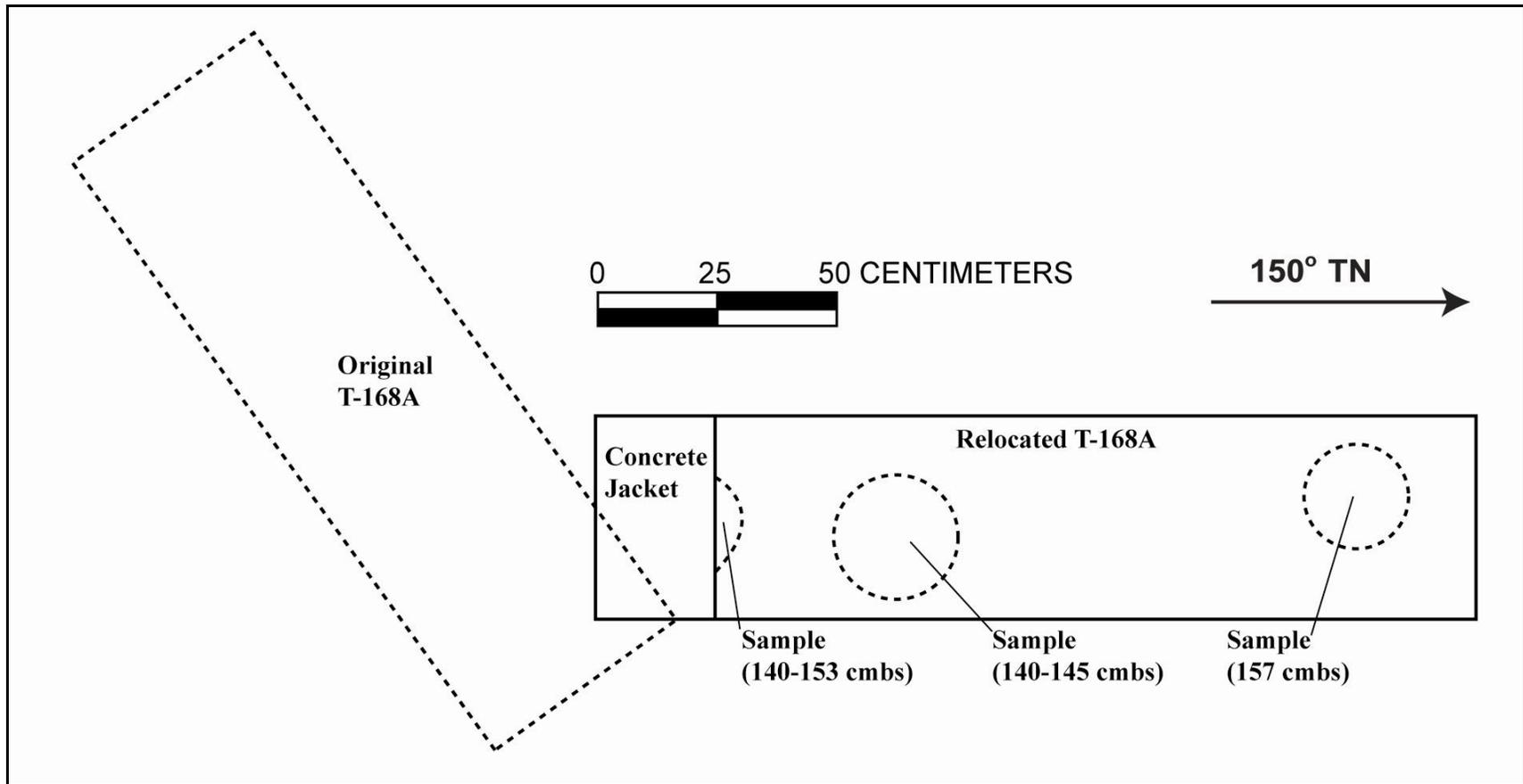
Summary: T-168A was excavated to a depth of 2.24 mbs. The water table was encountered at 2.02 mbs. The stratigraphy of T-168A consisted of fill strata (Ia–Ii) overlying natural sediment (II-III) to the coral shelf (IV). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL) above Strata II-IV. Only minimal naturally-occurring, water-rounded marine shell was identified in the bulk samples from Strata II and II/III interface. Stratum II is identified as a component of SIHP #50-80-14-7429, a buried A-horizon containing seven features identified in 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 (see Volume 1).



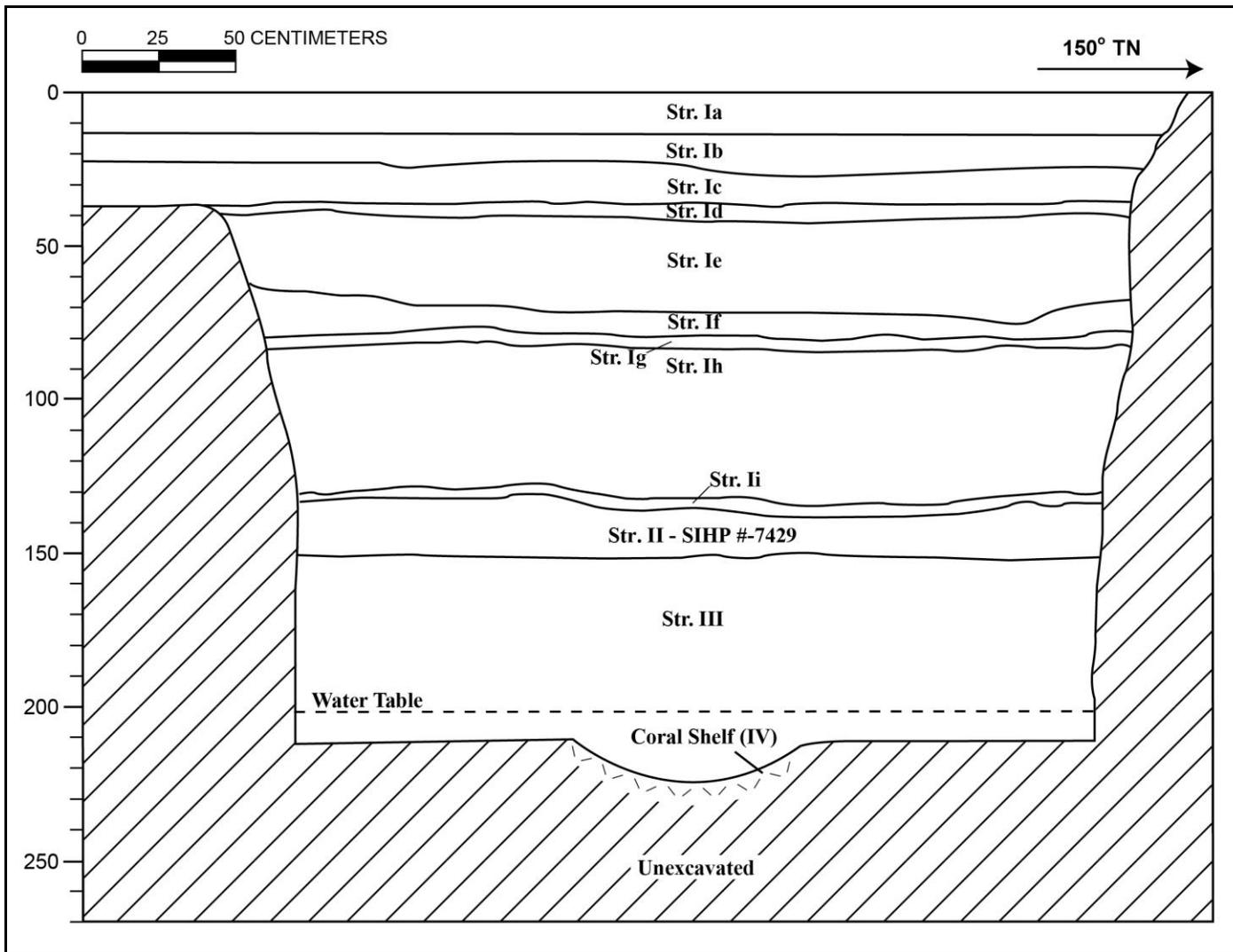
T-168A general location, view to south



T-168A northeast profile wall, view to the east



T-168A plan view



T-168A northeast wall profile

T-168A Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-14	Asphalt
Ib	14-29	Fill; 10 YR 7/4 (very pale brown); extremely gravelly sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary; imported crushed coral fill
Ic	22-38	Fill; 10 YR 3/3 (dark brown); gravelly silty clay loam; fine, crumb structure; moist, friable consistency; slightly plastic; terrigenous origin; abrupt, smooth lower boundary; basalt boulders
Id	38-45	Fill; 5 YR 3/3 (dark reddish brown); clay loam; fine, blocky structure; moist, firm consistency; slightly plastic; terrigenous origin; abrupt, smooth lower boundary
Ie	45-75	Fill; 10 YR 4/1 (dark gray); very gravelly silty clay loam; fine, crumb structure; moist, friable consistency; slightly plastic; terrigenous origin; abrupt, smooth lower boundary
If	62-82	Fill; 10 YR 4/3 (brown); gravelly silty clay loam; fine, crumb structure; moist, friable consistency; slightly plastic; terrigenous origin; abrupt, smooth lower boundary
Ig	81-85	Fill; 10 YR 4/1 (dark gray); very gravelly sandy loam; structureless, single-grain; moist, friable consistency; non-plastic; mixed origin; abrupt, smooth lower boundary
Ih	85-135	Fill; 10 YR 8/2 (very pale brown); gravelly sand; structureless, single-grain; moist, friable consistency; non-plastic; marine origin; abrupt, smooth lower boundary
Ii	128-140	Fill; 10 YR 8/2 (very pale brown); sandy clay; moderate, fine, blocky structure; moist, friable consistency; slightly plastic; mixed origin; abrupt, smooth lower boundary
II	130-153	Natural; 10 YR 5/1 (gray); loamy sand; structureless, single-grain; wet, non-sticky consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; contained small marine shells; buried A-horizon; SIHP #50-80-14-7429
III	153-224 (BOE)	Natural; 10 YR 8/3 (very pale brown); sand; structureless, single-grain; wet, non-sticky consistency; non-plastic; marine origin; abrupt, wavy lower boundary; Jaucas sand
IV	215-224 (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

4.15 Test Excavation 168B (T-168B)

Ahupua'a:	Honolulu
LCA:	387
TMK #:	2-3-002:059
Elevation Above Sea Level:	2.1 m
UTM:	618824.6557 mE, 2355394.323 mN
Max Length/Width/Depth:	6.2 m/0.78 m/2.10 m
Orientation:	108/288° TN
Targeted Project Component:	Station Building
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 168B (T-168B) was located within the level parking lot area paralleling Ward Avenue. T-168B was an additional excavation added to further investigate and delineate the boundaries of the buried A-horizon (SIHP #50-80-14-7429). T-168B also investigated a portion of the station building. T-168B was located on private property. It was relocated approximately 0.8 m to the north from its original planned location. A sewer line was located 11 m southeast. 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-168B 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 (see Figure 29). The 1884 Bishop map indicates that T-168B was located within marsh land called Kukuluaeo, 24 m northeast of LCA 10463:1, awarded to Napela. An unimproved or planned roadway is also depicted, extending northeast (*mauka*) to southwest (*makai*) within 33 m of T-168B (see Figure 27). The roadway is also depicted on the 1887 Wall map of Honolulu along with three structures in the vicinity of T-168B. The structures were located approximately 97 m northwest, 51 m southwest, and 180 m southwest of T-168B. The 1897 Monsarrat map of Honolulu depicts infrastructure development immediately north of T-168B including a near-modern street grid with the closest intersection being Queen Street and Cummins Street 135 m southeast and the Cyclomere bicycle track 300 m north. Expanded urbanization in the vicinity of T-168B is depicted throughout the series of twentieth century topographic maps and Sanborn fire insurance maps (see Figure 30, Figure 32, and Figure 33).

Few archaeological studies were conducted in the immediate vicinity of T-168B (see Figure 34). In 2000, CSH conducted archaeological monitoring for Ward Village Phase II (Ward Theaters), approximately 175 m southeast of T-168B. 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 2005, CSH conducted an archaeological inventory survey for the Moana Vista Project on Kapi'olani Boulevard, located approximately 300 m east of T-168B. No cultural resources were encountered (O'Leary and Hammatt 2006).

Documentation Limitations: T-168B was excavated to the coral shelf at a depth of 2.10 mbs. The water table was encountered at 1.95 mbs. The presence of a metal pipe limited excavation within the central portion of the test excavation.

Stratigraphic Summary: The stratigraphy at T-168B consisted of fill overlying natural sediment. Observed strata were asphalt (Ia), very gravelly sand fill (Ib), sandy clay loam fill (Ic), and very gravelly sand fill (Id) overlying a loamy sand buried A-horizon (II), Jaucas sand (III), and the coral shelf (IV). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL) above Strata II and III. Stratum II was designated as a component of SIHP #50-80-14-7429, a buried A-horizon containing seven features identified in T-167, T-168, T-168A, T-168B, T-169, T-170, and T-170A.

Artifacts Discussion: A total of four artifacts (Acc. #s 168B-A-1 to A-4) were collected from Stratum Ic at 0.73 mbs. The artifacts consist of one glass bottle fragment; one tile, one marble, and a bone toothbrush handle. The glass bottle fragment was dated 1911-1929, dates this deposit to the early twentieth century or later.

Features Discussion: The single feature identified within Stratum II of T-168B was designated as SIHP #-7429 Feature 5.

SIHP #-7429 Feature 5 is a large pit identified within Stratum II at 1.5 mbs. It was intrusive into Stratum III and terminated at 1.65 mbs. The pit was ovoid in plan view, measured over 0.60 m long and 0.30 m wide, and extended into the south sidewall. The presence of large metal fragments and historically-introduced Conifer charcoal indicated that SIHP #-7429 Feature 5, and therefore also Stratum II, likely were deposited during the post-Contact period. SIHP #-7429 Feature 5 is interpreted as a pit of indeterminate function.

Terrestrial Faunal Remains Discussion: The faunal remains collected individually during excavation from Stratum II (SIHP #-7429; 1.40–1.45 mbs) consisted of *Sus scrofa* and *Bos taurus* skeletal elements. A *Bos taurus* rib was butchered with a metal blade, indicating historic food remnants.

Sample Results: Two bulk samples were collected from within T-168B consisting of one sample from Stratum II (SIHP #-7429) between 1.40–1.45 mbs and one sample from SIHP #-7429 Feature 5 between 1.60–1.65 mbs. Both bulk samples were wet screened.

The sample from Stratum II (SIHP #-7429; 1.40–1.45 mbs) contained charcoal (123.4 g), large rusted metal fragments (84.5 g), bottle glass fragments (1.3 g), an unidentified fish bone (0.4 g), an unidentified medium mammal bone fragment (0.2 g), a dog tooth (0.1 g), cut bovine remains (13.1 g), and possible marine shell midden. The possible marine shell midden included *Nerita picea* (9.6 g), burned cf. Strombidae (1.4 g), *Strombus* sp. (1.1 g), Crustacea (0.9 g), burned Crustacea (0.5 g), *Turbo* sp. (0.8 g), *Echinothrix diadema* sp. (0.4 g), *Brachidontes crebristriatus* (0.1 g), *Tellina palatam* (0.1 g), and *Trochus* sp. (0.1 g).

The bulk sample from SIHP #-7429 Feature 5 (1.60–1.65 mbs) contained charcoal (43.2 g), rusted metal (3.0 g), a rat (*Rattus* sp.) bone (0.1 g), fire-cracked rock (43.1 g), naturally-occurring marine shell (2.4 g), and possible marine shell midden. The possible marine shell midden included Crustacea (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). The charcoal collected from SIHP #-7429 Feature 5 was submitted for wood taxa identification.

Wood taxa analysis identified cf. *Metrosideros polymorpha* ('Ōhi'a lehua), a native tree, and conifer (pine, fir, etc.), a historically-introduced tree.

The results of sample analysis documented a large amount of charcoal and the presence of historic material within Stratum II and SIHP #-7429 Feature 5. The presence of large metal fragments and historically-introduced Conifer charcoal within Feature 5 indicated that the feature likely was deposited during the post-Contact period. The large quantity of charcoal within SIHP #-7429 Feature 5 (43.2 g) and Stratum II (SIHP #-7429; 123.4 g) may indicate an association of the feature and stratum with a burn event.

GPR Discussion: A review of amplitude slice maps indicated no linear features although an abandoned metal utility line was encountered during excavation. Reflectivity was relatively uniform throughout the grid and decreases with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.5 mbs.

GPR depth profiles for T-168B 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 0.35 mbs. No utilities were observed in this profile although an abandoned utility was encountered below the clean signal return. The maximum depth of clean signal return was approximately 1.0 mbs.

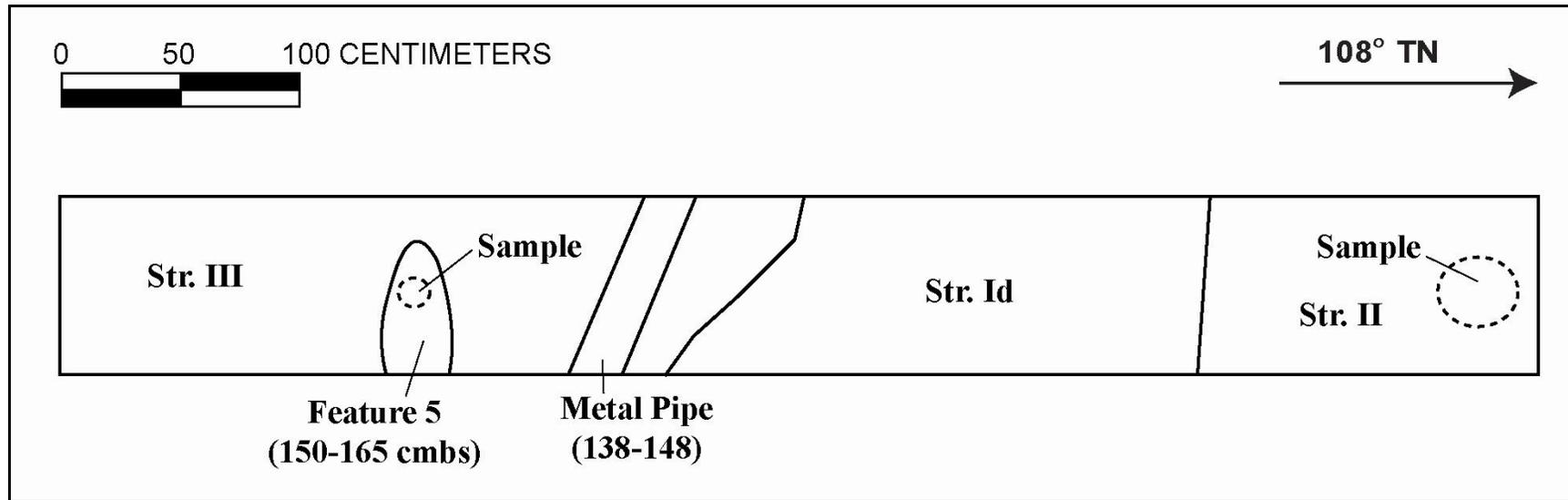
Summary: T-168B was excavated to the coral shelf at a depth of 2.10 mbs. The water table was encountered at 1.95 mbs. The stratigraphy at T-168B consisted of fill (Ia–Id) overlying natural sediment (II–III) and the coral shelf (IV). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL) above Strata II–IV. A total of four artifacts (Acc. #s 168B-A-1 to A-4) were collected from Stratum Ic at 0.73 mbs. They consist of one glass bottle fragment; one machine cut tile, one marble, and a bone toothbrush handle. The glass bottle fragment was dated 1911–1929, which indicates that the material was deposited within the early twentieth century or possibly later. SIHP #-7429 Feature 5 originated in Stratum II and is identified as a pit of indeterminate function. The faunal remains collected individually during excavation from Stratum II (SIHP #-7429) consisted of *Sus scrofa* and *Bos taurus* skeletal elements. A *Bos taurus* rib was butchered with a metal blade, indicating an historic origin. The results of sample analysis documented a large amount of charcoal and the presence of historic material within Stratum II and SIHP #-7429 Feature 5, suggesting these deposits likely date to the historic period and they may be associated with a burn event. Stratum II and Feature 5 are identified as components of SIHP #50-80-14-7429, a buried A-horizon containing seven features identified in 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 (see Volume 1).



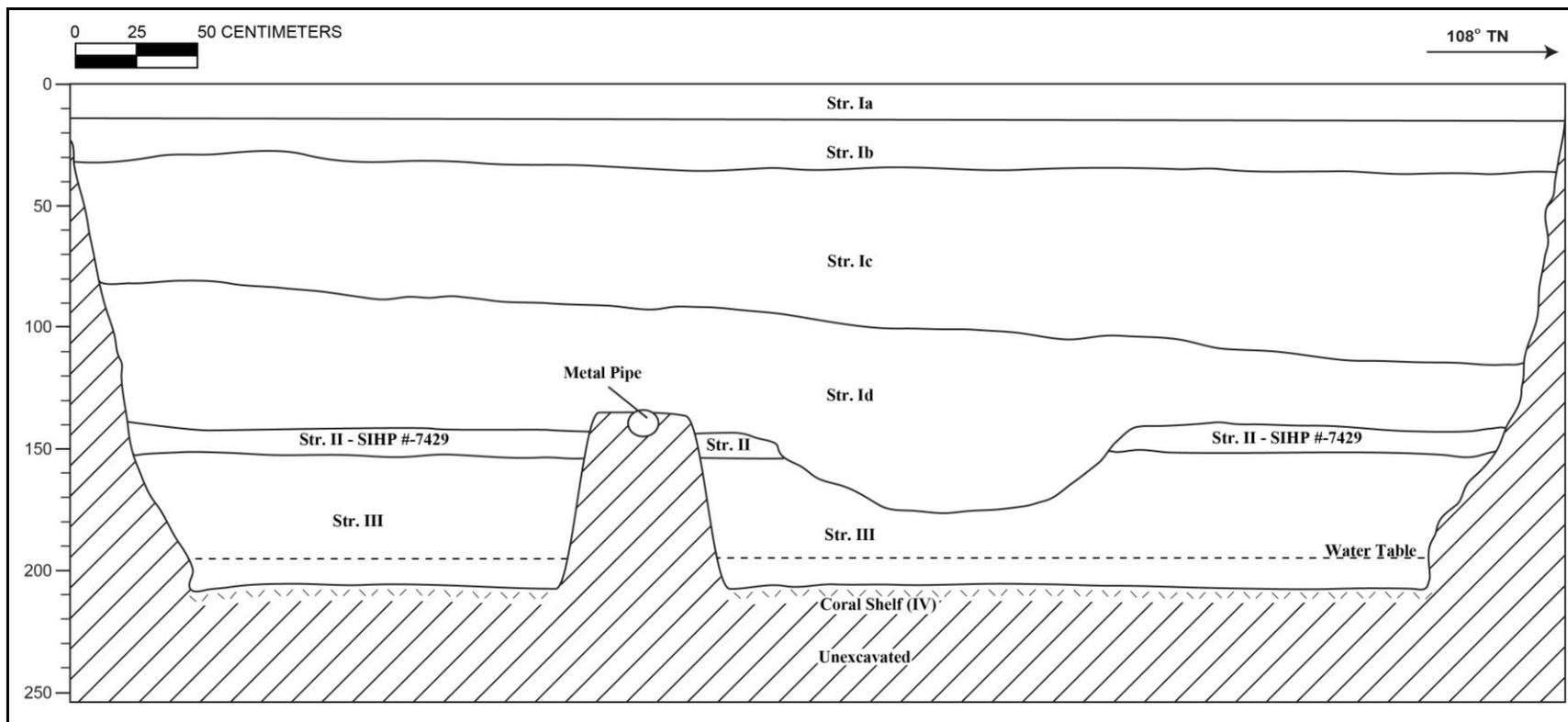
T-168B general location, view to west



T-168B north profile wall, view to west



T-168B plan view



T-168B north wall profile

T-168B Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-13	Asphalt
Ib	13-30	Fill; 10 YR 8/2 (very pale brown); very gravelly sand; moderate, coarse, blocky, crumb structure; dry, loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary; crush coral fill
Ic	30-115	Fill; 10 YR 3/2 (very dark grayish brown); sandy clay loam; medium, crumb structure; moist, loose to very friable consistency; slightly plastic; mixed origin; clear, smooth lower boundary; contained metal, wood fragment, porcelain insulators, observed but not collected, glass bottle, marble, tile, toothbrush handle (collected); sandy clay loam fill
Id	80-140	Fill; 10 YR 8/2 (very pale brown); very gravelly sand; weak, medium, granular structure; dry, loose consistency; non-plastic; marine origin; clear, smooth lower boundary; coral gravel to cobbles
II	140-151	Natural; 10 YR 2/1 (black); loamy sand; weak, fine-medium, granular-crumb structure; moist, loose consistency; non-plastic; mixed origin; abrupt, smooth-wavy lower boundary; contained abundant charcoal and faunal remains, contained Feature 5, charcoal flecking, urchin, crustaceans; buried A-horizon; component of SIHP #50-80-14-7429
SIHP #-7429 Feature 5	150-165	Pit feature originating from Stratum II; loamy sand; contained charcoal, marine shell midden, faunal bone, metal fragments, and fire-cracked rock; SIHP #-7429 Feature 5
III	151-210	Natural; 10 YR 7/3 (very pale brown); sand; weak, medium-coarse, granular structure; moist, loose, non-sticky consistency; non-plastic; marine origin; abrupt, smooth lower boundary
IV	210 (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

4.16 Test Excavation 169 (T-169)

Ahupua'a:	Honolulu
LCA:	387
TMK #:	2-3-002:059
Elevation Above Sea Level:	2.05 m
UTM:	618836.4813 mE, 2355392.309 mN
Max Length/Width/Depth:	3.72 m/0.90 m/1.89 m
Orientation:	48/228° TN
Targeted Project Component:	Station Column
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 169 (T-169) was located in a parking lot on the eastern side of the current building, approximately 80 m southeast of Ward Avenue and near the Queen Street intersection. Existing utilities near T-169 included a parallel sewer line approximately 1.6 m to the northwest and a parallel drain line approximately 7.6 m to the southeast. T-169 was located on private property owned by Victoria Ward Ltd. The excavation area was level with the surrounding land surface.

Summary of Background Research and Land Use: Land Court Application 670 map 1 indicates that T-169 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 (see Figure 29). The 1884 Bishop map indicates that T-169 was located within marsh land called Kukuluaeo, 29 m northeast of LCA 10463:1, awarded to Napela. An unimproved or planned roadway is also depicted, extending northeast (*mauka*) to southwest (*makai*) within 21 m of T-169 (see Figure 27). The roadway is also depicted on the 1887 Wall map of Honolulu along with three structures in the vicinity of T-169. The structures were located approximately 111 m northwest, 58 m southwest, and 190 m southwest of T-169. The 1897 Monsarrat map of Honolulu depicts infrastructure development immediately north of T-169 including a near-modern street grid with the closest intersection being Queen Street and Cummins Street 121 m southeast and the Cyclomere bicycle track 300 m north. Expanded urbanization in the vicinity of T-169 is depicted throughout the series of twentieth century topographic maps and Sanborn fire insurance maps (see Figure 30, Figure 32, and Figure 33).

Few archaeological studies were conducted in the immediate vicinity of T-169 (see Figure 34). In 2000, CSH conducted archaeological monitoring for Ward Village Phase II (Ward Theaters), approximately 165 m southeast of T-169. 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 2005, CSH conducted an archaeological inventory survey for the Moana Vista Project on Kapi'olani Boulevard, located approximately 300 m east of T-169. No cultural resources were encountered (O'Leary and Hammatt 2006).

Documentation Limitations: T-169 was excavated to a depth of 1.89 mbs. Excavation was ceased prior to the water table due to safety concerns of collapsing sidewalls during hand excavation. Excavation was limited by two utility lines that were encountered. A backhoe was used to remove the upper fill strata and expose the buried A-horizon. All of the natural sediment within T-169 was hand excavated.

Stratigraphic Summary: The stratigraphy of T-169 consisted of fill strata overlying natural sediment to the base of excavation. Observed strata were asphalt (Ia), very gravelly silty sand (Ib), gravelly sandy clay loam fill (Ic), gravelly clay loam fill (Id), a concrete slab (Ie), gravelly loamy sand fill (If), gravelly sand fill (Ig), and clay fill (Ih), overlying natural silty sand (II), and natural very coarse sand (III). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL) above Strata II and III. Stratum II was identified as a component of SIHP #50-80-14-7429, SIHP #50-80-14-7429, a buried A-horizon containing seven features identified in T-167, T-168, T-168A, T-168B, T-169, T-170, and T-170A.

Artifacts Discussion: A total of six artifacts (Acc. #s 169-A-1 to A-6) were collected from T-169. One asphalt fragment was collected from 0.76 mbs. Four marbles were collected from Stratum II (SIHP #-7429) at 1.36 mbs. One marble is glass, the other three are clay. A piece of worked glass lacking datable attributes also was collected from Stratum II at 1.47 mbs.

Features Discussion: No features were observed.

Terrestrial Faunal Remains Discussion: The remains of several species were collected individually during excavation within Stratum II (SIHP #-7429; 1.44–1.54 mbs). The remains included *Bos taurus*, medium mammal (possible *Ovis aries*), *Canis lupus familiaris*, and medium mammal (possible *Felis catus* or *Canis lupus familiaris*). The *Bos taurus* fragment had been butchered with a metal saw blade, indicating historic food remnants. The remaining bones show no evidence of cultural modification.

Sample Results: Two bulk sediment samples and one screened sample were collected from Stratum II (SIHP #-7429). A 4-liter bulk sediment sample from 1.34 mbs to 1.40 mbs yielded charcoal (3.6 g), marine shell midden material (9.7 g), naturally-occurring marine shell (3.0 g), burned *kukui* nut (0.1 g), corroded metal pieces and a metal pin in wood (70.0 g), a ceramic fragment (0.7 g), glass (0.5 g), medium mammal remains (1.8 g), and a long bone fragment from a rat (*Rattus sp.*) (0.1 g). The marine shell midden material was identified as *Echinothrix diadema sp./Echinometra mathaei sp.* (4.8 g), *Nerita picea* (3.7 g), *Tellina palatam* (0.5 g), *Cellana sandwicensis* (0.4 g), *Cypraea caputserpentis* (0.3 g), and Crustacea (0.3 g).

A 4-liter bulk sediment sample from Stratum II (SIHP #-7429; 1.38 mbs to 1.44 mbs) yielded contained charcoal (0.1 g), naturally-occurring shell (3.7 g), a corroded metal fragment (0.2 g), bird (Aves) bone (0.1 g), and fish bone (0.1 g).

A 24.5-liter screened sample from Stratum II (SIHP #-7429; 1.44 mbs to 1.54 mbs) yielded historic metal (58.8 g) and glass fragments (3.3 g). The results of sample analysis indicate the presence of historic artifacts and terrestrial and marine shell content within the Stratum II (SIHP #-7429) culturally-enriched sand A-horizon.

GPR Discussion: A review of amplitude slice maps indicated no linear features although two utilities were encountered during excavation. 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-169 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 0.4 mbs. No utilities were observed in the profile although two metal utility pipes were encountered during excavation. The maximum depth of clean signal return was approximately 1.0 mbs.

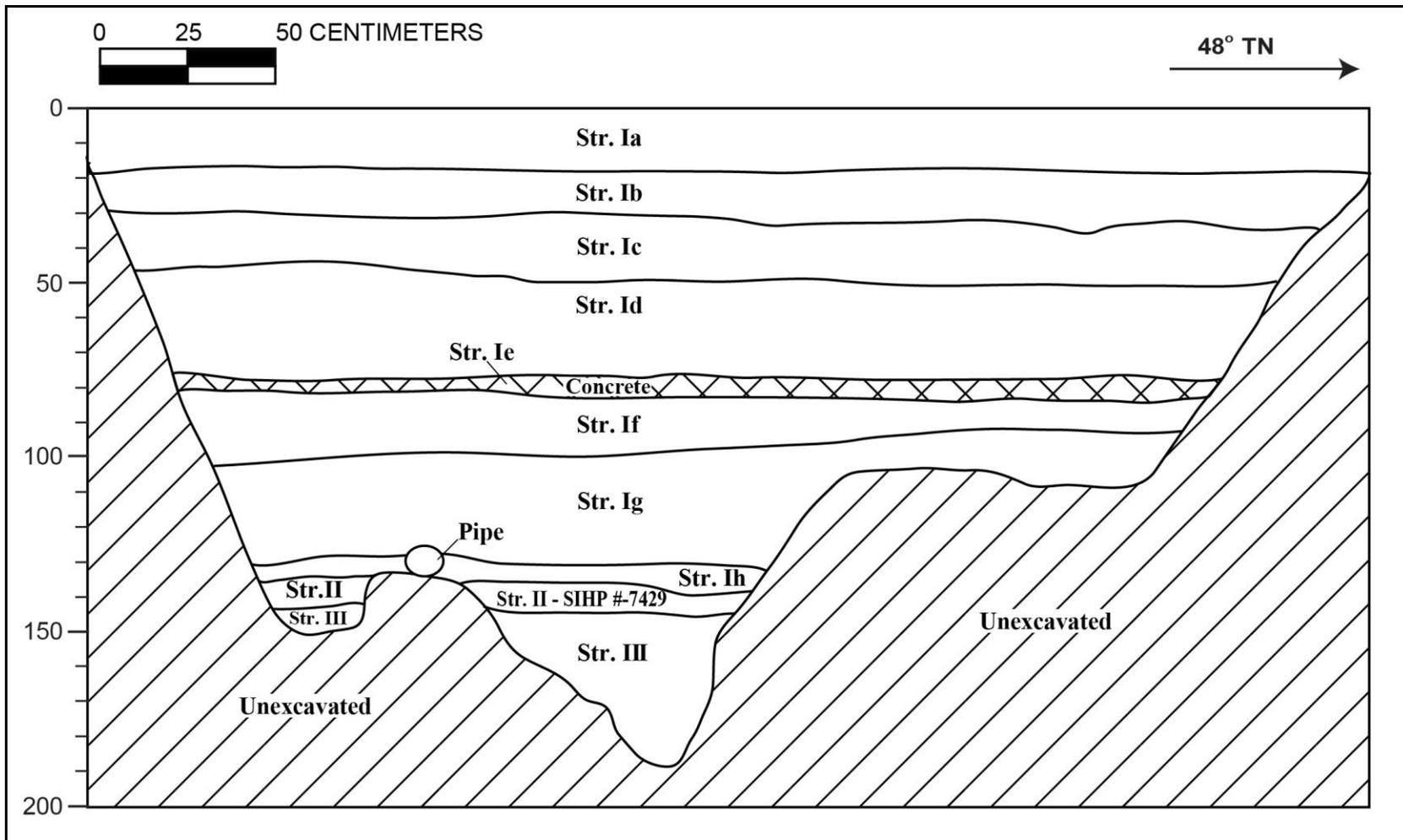
Summary: T-169 was excavated to a depth of 1.89 mbs. The stratigraphy of T-169 consisted of fill strata (Ia–Ih) overlying a buried cultural A-horizon (II) and natural sediment (III). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL) above Strata II and III. The sample analysis indicated the presence of historic artifacts, butchered historic food bone, and terrestrial and marine shell content within Stratum II, a buried A-horizon containing seven features identified in 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 (see Volume 1).



T-169 general location, view to east



T-169 northwest wall, view to west



T-169 northwest wall profile

T-169 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-18	Asphalt
Ib	18-34	Fill; 10 YR 8/2 (very pale brown); very gravelly silty sand, structureless, single-grain; moist, loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary; crushed coral base course fill
Ic	30-50	Fill; 7.5 YR 3/3 (dark brown); gravelly sandy clay loam; medium, crumb structure; moist, very friable consistency; slightly plastic; mixed origin; abrupt, smooth lower boundary; coral gravel sandy clay loam
Id	45-76	Fill; 10 YR 6/2; (light brownish gray); gravelly clay loam, medium, crumb structure; moist, very friable consistency; slightly plastic; mixed origin; abrupt, smooth lower boundary; coral cobbles with sandy clay loam; asphalt (collected)
Ie	76-82	Concrete slab
If	82-103	Fill; 5 YR 3/3; (dark reddish brown); gravelly loamy sand; structureless, single-grain; moist, loose to very friable consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; loamy sand with coral cobbles; contained historic glass and metal fragments
Ig	90-133	Fill; 7.5 YR 8/2 (pinkish white); gravelly sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; clear, smooth lower boundary; with coral cobbles and gravels
Ih	129-138	Fill; 10 YR 8/1; (white); clay; weak, fine, blocky structure; moist, firm, consistency; plastic; marine origin; abrupt, smooth lower boundary; few, fine roots; hydraulic fill
II	135-144	Natural, 10 YR 3/2; (very dark grayish brown); silty sand; structureless, single-grain; moist, loose consistency; non-plastic; mixed origin; diffuse, smooth lower boundary; contained charcoal flecking, marine shell midden and metal fragments (not collected), cut faunal remains, glass, and clay marbles (collected); former A-horizon; component of SIHP #50-80-14-7429
III	144-189 (BOE)	Natural; 10 YR 7/4; (very pale brown); very coarse sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; lower boundary not visible; natural marine sand

T-169 Terrestrial vertebrate material collected individually during excavation

Acc. #	Stratum	Depth(cmbs)	Feature	Family/Class	Species	Element	Description	Modification
169-F-1	II, SIHP #-7429	144	-	Bovidae	<i>Bos taurus</i> (cow)	Tibia diaphysis section	Fragment	Butchered (cut with metal blade)
169-F-2	II, SIHP #-7429	144	-	Mammalia	Medium mammal (possible <i>Ovis aries</i>)	Vertebra; Tibia (distal portion); Epiphysis; Irregular bone fragments	Fragments	None
169-F-3	II, SIHP #-7429	144	-	Canidae	<i>Canis lupus familiaris</i> (dog)	Vertebra	Fragment	None
169-F-4	II, SIHP #-7429	144-154	-	Mammalia	Medium mammal (possible <i>Felis catus</i> or <i>Canis lupus familiaris</i>)	Metatarsus (possible, pieces mend)	Fragment	None
169-F-5	II, SIHP #-7429	144-145	-	Canidae	<i>Canis lupus familiaris</i> (dog)	Cervical vertebra; Ulna; Irregular bones	Fragments	None

4.17 Test Excavation 170 (T-170)

Ahupua'a:	Honolulu
LCA:	387
TMK #:	2-3-002:059
Elevation Above Sea Level:	1.48 m
UTM:	618864.7858 mE, 2355380.988 mN
Max Length/Width/Depth:	3.74 m/0.93 m/1.16 m
Orientation:	230/50° TN
Targeted Project Component:	Guideway Column
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 170 (T-170) was located in the throughway of a parking lot, approximately 60 m southwest of Queen Street, east of Ward Avenue. There were no existing utilities in the immediate vicinity. T-170 was located on private property owned by Victoria Ward, Ltd. The excavation area was level with the surrounding land surface.

Summary of Background Research and Land Use: Land Court Application 670 map 1 indicates that T-170 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 (see Figure 29). The 1884 Bishop map indicates that T-170 was located within marsh land called Kukuluaeo, 60 m east of LCA 10463:1, awarded to Napela. An unimproved or planned roadway is also depicted, extending northeast (*mauka*) to southwest (*makai*) within 8 m of T-170 (see Figure 27). The roadway is also depicted on the 1887 Wall map of Honolulu along with three structures in the vicinity of T-170. The structures were located approximately 140 m northwest, 75 m southwest, and 210 m southwest of T-170. The 1897 Monsarrat map of Honolulu depicts infrastructure development immediately north of T-170 including a near-modern street grid with the closest intersection being Queen Street and Cummins Street 90 m southeast and the Cyclomere bicycle track 315 m north. Expanded urbanization in the vicinity of T-170 is depicted throughout the series of twentieth century topographic maps and Sanborn fire insurance maps (see Figure 30, Figure 32, and Figure 33).

Few archaeological studies were conducted in the immediate vicinity of T-170 (see Figure 34). In 2000, CSH conducted archaeological monitoring for Ward Village Phase II (Ward Theaters), approximately 140 m southeast of T-170. 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 2005, CSH conducted an archaeological inventory survey for the Moana Vista Project on Kapi'olani Boulevard, located approximately 280 m east of T-170. 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 178 m southeast of T-170.

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-170 was excavated to a depth of 1.16 mbs. The water table was encountered at 1.14 mbs. A backhoe was used to remove the upper fill strata and expose the underlying natural sediment. All of the natural sediment within T-170 was hand excavated to below the water table. Human remains (SIHP #-7429 Feature 6) were discovered during the collection of a bulk sample from the sidewall within Stratum II. No further work was conducted following the discovery and the bulk sediment sample was replaced within the excavation area of T-170.

Stratigraphic Summary: The stratigraphy of T-170 consisted of fill strata overlying natural sediment to the base of excavation. Observed strata were asphalt (Ia), very gravelly sandy loam (Ib), extremely gravelly sand (Ic), and very fine sand fill (Id), overlying a natural silty coarse sand buried A-horizon (II), natural medium to coarse sand (III), natural loamy sand (IV), and natural coarse sand (V). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL) above Strata II-V. Stratum II was designated as a component of Stratum II, a buried A-horizon containing seven features identified in T-167, T-168, T-168A, T-168B, T-169, T-170, and T-170A.

Artifacts Discussion: No artifacts were observed.

Features Discussion: A single feature (Feature 6) identified within T-170 consists of a single isolated human remain encountered within Stratum II. The single human remain was designated as Feature 6 of SIHP #-7429.

SIHP #-7429 Feature 6 was encountered within Stratum II at 0.65–0.71 mbs. The discovery was made while attempting to collect a bulk sediment sample from the southeast sidewall. The remains were identified as a fragmented left temporal portion including the mastoid process and the root of the zygomatic arch. The mastoid process was noted as appearing relatively small and gracile, possibly indicating a female or young adult individual. Exposure of the human remains was limited and the find was left in situ and covered. No estimation of age or ancestry was provided. The human cranial fragment was considered an isolated find. No further work was conducted following the inadvertent discovery, and the bulk sediment sample that was in the process of being collected was replaced within the excavation area of T-170.

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 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 0.5 mbs.

GPR depth profiles for T-170 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 0.3 mbs. No utilities were observed in the profile. The maximum depth of clean signal return was approximately 1.3 mbs.

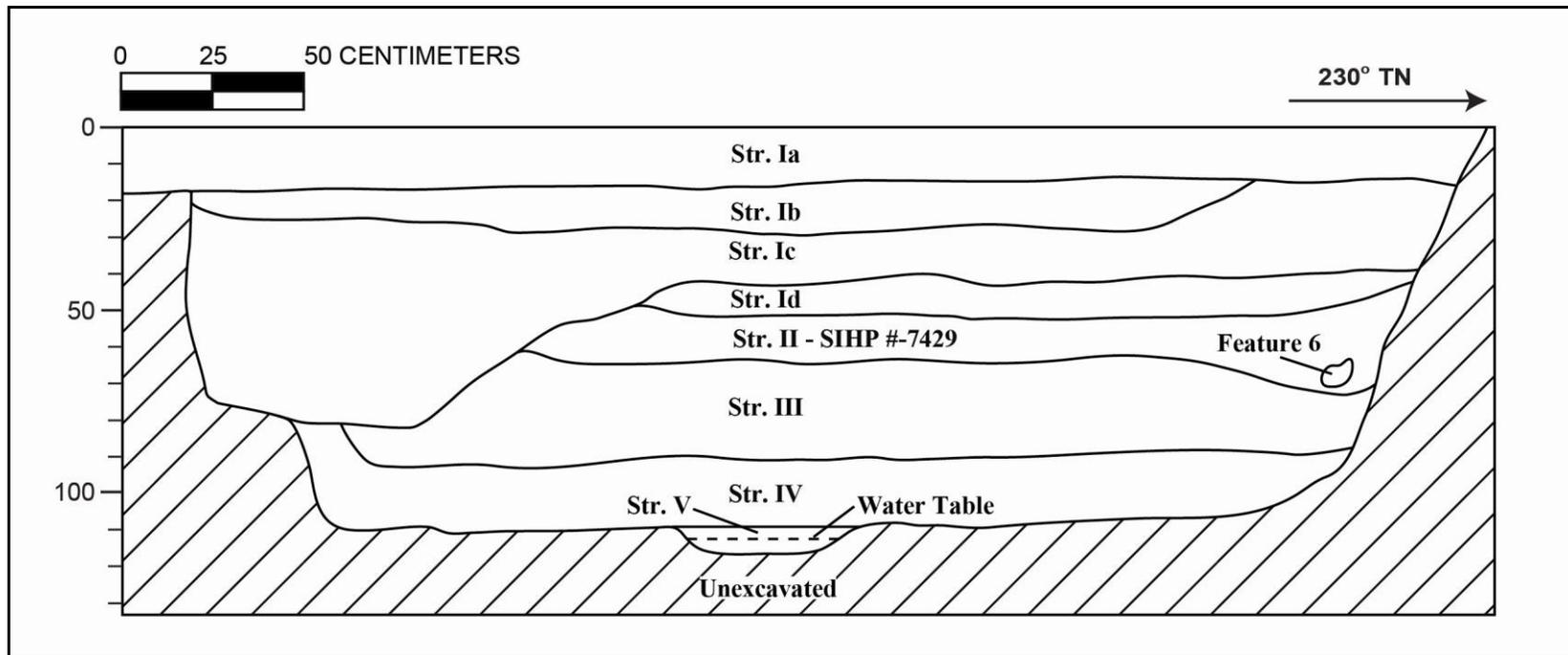
Summary: T-170 was excavated to a depth of 1.16 mbs in natural sediment. The water table was encountered at 1.14 mbs. The stratigraphy of T-170 consisted of fill strata (Ia–Id) overlying a buried cultural A-horizon (II) and natural sediment (III–V) to the base of excavation. Human skeletal remains consisting of an isolated left temporal portion were encountered in Stratum II. The buried A-horizon (II) containing human skeletal remains (Feature 6) was designated as a component of SIHP #50-80-14-7429, Stratum II, a buried A-horizon containing seven features identified in 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 (see Volume 1).



T-170 general location, view to south



T-170 overview of southeast profile, view to south (prior to discovery of human skeletal remains)



T-170 southeast wall profile showing SIHP #-7429 Feature 6 (human skeletal remain)

T-170 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-16	Asphalt
Ib	15-30	Fill; 10 YR 3/2 (very dark grayish brown); very gravelly sandy loam; weak, fine, crumb structure; very friable, weak consistency; non-plastic; terrigenous origin; abrupt, discontinuous lower boundary; basalt base course
Ic	15-84	Fill; 10 YR 8/2 (very pale brown); extremely gravelly sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; abrupt, irregular lower boundary; crushed coral fill
Id	39-54	Fill; 10 YR 7/2 (light gray); very fine sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; abrupt, discontinuous lower boundary
II	41-75	Natural; Buried A-horizon; 10 YR 3/2 (very dark grayish brown); coarse silty sand; structureless, single-grain; moist, loose consistency; non-plastic; mixed origins; diffuse, discontinuous lower boundary; SIHP #50-80-14-7429; contained human left temporal bone portion (SIHP #-7429 Feature 6)
SIHP #-7429 Feature 6	65-71	Human cranial fragment found within Stratum II; previously disturbed, isolated skeletal remain; SIHP #-7429 Feature 6
III	61-95	Natural; 10 YR 7/4 (very pale brown); medium to coarse grain sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; diffuse, discontinuous lower boundary; natural Jaucas sand
IV	80-110	Natural; 10 YR 6/4 (light yellowish brown); loamy sand; structureless single-grain; moist, loose consistency; non-plastic; marine origin; clear, discontinuous lower boundary; natural Jaucas sand
V	110-116 (BOE)	Natural; GLEY 1 5GY 7/1 (light greenish gray); coarse sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; lower boundary not visible; natural marine sand

4.18 Test Excavation 170A (T-170A)

Ahupua'a:	Honolulu
LCA:	387
TMK #:	2-3-002:059
Elevation Above Sea Level:	1.5 m
UTM:	618863.8872 mE, 2355381.637 mN
Max Length/Width/Depth:	2.8 m/1.23 m/1.32 m
Orientation:	49/229° TN
Targeted Project Component:	Guideway Column
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 170A (T-170A) was located in the throughway of a parking lot, approximately 60 m southwest of Queen Street, east of Ward Avenue. T-170A was an additional excavation added to increase testing coverage area for the redesign and slight relocation of the guideway column tested by the original T-170. It also further investigated cultural material associated with the buried A-horizon (SIHP #50-80-14-7429) identified in T-170. It was located on private property owned by Victoria Ward, Ltd. The location of T-170A was directly parallel to T-170, along the northwest side. There were no existing utilities in the immediate vicinity. The excavation area was level with the surrounding land surface.

Summary of Background Research and Land Use: Land Court Application 670 map 1 indicates that T-170A 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 (see Figure 29). The 1884 Bishop map of Honolulu to Kewalo indicates that T-170A was located within marsh land called Kukuluao, 60 m east of LCA 10463:1, awarded to Napela. An unimproved or planned roadway is also depicted, extending northeast (*mauka*) to southwest (*makai*) within 8 m of T-170A (see Figure 27). The roadway is also depicted on the 1887 Wall map of Honolulu along with three structures in the vicinity of T-170A. The structures were located approximately 140 m northwest, 75 m southwest, and 210 m southwest of T-170A. The 1897 Monsarrat map of Honolulu depicts infrastructure development immediately north of T-170A including a near-modern street grid with the closest intersection being Queen Street and Cummins Street 90 m southeast and the Cyclomere bicycle track 315 m north. Expanded urbanization in the vicinity of T-170A is depicted throughout the series of twentieth century topographic maps and Sanborn fire insurance maps (see Figure 30, Figure 32, and Figure 33).

Few archaeological studies were conducted in the immediate vicinity of T-170A (see Figure 34). In 2000, CSH conducted archaeological monitoring for Ward Village Phase II (Ward Theaters), approximately 140 m southeast of T-170A. 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 2005, CSH conducted an archaeological inventory

survey for the Moana Vista Project on Kapi'olani Boulevard, located approximately 280 m east of T-170A. 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 178 m southeast of T-170A. 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-170A was excavated to a depth of 1.32 mbs. The water table was encountered at 1.24 mbs. There were no specific factors that limited documentation of T-170A. A backhoe was used to remove the upper fill strata and expose the underlying natural sediment. All of the natural sediment within T-170A was hand excavated to below the water table.

Stratigraphic Summary: The stratigraphy of T-170A consisted of fill strata overlying natural sediment. Observed strata were asphalt (Ia), very gravelly loam (Ib), extremely gravelly sand (Ic), very fine sand fill (Id), overlying natural silty sand (II), natural medium to coarse sand (III), and natural coarse sand (IV). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL) above Strata II-V. Stratum II, a buried A-horizon containing seven features identified in T-167, T-168, T-168A, T-168B, T-169, T-170, and T-170A.

Artifacts Discussion: See Sample Results below.

Features Discussion: The single feature identified within Stratum II of T-170A was designated as SIHP #50-80-14-7429 Feature 7.

SIHP #-7429 Feature 7 is a pit identified within Stratum II at 0.56 mbs which terminated at 0.60 mbs near the base of Stratum II. The pit appeared generally square shaped in plan view and measured 0.35 m long and 0.25 m wide. SIHP #-7429 Feature 7 is interpreted as a pit of indeterminate function.

Terrestrial Faunal Remains Discussion: Faunal remains were collected individually from SIHP #-7429 Feature 7 (0.56–0.60 mbs) during excavation of T-170A. These remains consist of a *Canis lupus familiaris* proximal phalanx, diaphysis sections from a *Rattus sp.*, and a vertebra and irregular bone from a medium mammal. The medium mammal vertebra had been butchered with a metal blade, indicating an historic origin. The other bones show no evidence of cultural modification.

Sample Results: A total of two sediment samples were collected from within T-170A consisting of one bulk sediment sample from Stratum II (SIHP #-7429) between 0.56–0.60 mbs (11.0 L) and one screened sample from SIHP #-7429 Feature 7 between 0.56–0.60 mbs. The bulk sediment sample and the contents of the screened sample were both wet screened.

The 11-liter bulk sediment sample from Stratum II (SIHP #-7429; 0.56–0.60 mbs) yielded charcoal (0.5 g), marine shell midden material (4.0 g), naturally-occurring shell material (1.2 g), a refined earthenware historic ceramic fragment (1.3 g), corroded metal fragments (1.1 g), a bottle glass fragment (0.5 g), medium mammal remains (0.2 g), fish bone (0.4 g) and fire-cracked rock (55.6 g). The marine shell midden material was classified as *Nerita picea* (3.8 g) and *Echinothrix diadema sp./Echinometra mathaei sp.* (0.2 g).

The 2-liter screened sample from SIHP #-7429 Feature 7 yielded marine shell midden (13.5 g), bottle glass fragments (0.3 g), a fish spine (0.1 g), and fire-cracked rock (25.8 g). The marine shell midden material was classified as *Strombus* sp. (8.5 g), *Nerita picea* (2.6 g), burned *Natica* sp. (2.0 g), burned Crustacea (0.3 g), and *Isognomon* sp. (0.1 g).

The results of Stratum II sample analysis documented the presence of traditional food refuse including marine shell midden and historic artifacts within SIHP #-7429, including Feature 7. The presence of historic material may indicate deposition during the post-Contact period.

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 0.25 mbs.

GPR depth profiles for T-170A 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 0.25 mbs and again around 0.5 mbs. No utilities were observed in the profile. The maximum depth of clean signal return was approximately 1.2 mbs.

Summary: T-170A was excavated to a depth of 1.32 mbs. The water table was encountered at 1.24 mbs. The stratigraphy of T-170A consisted of fill strata (Ia–Id) overlying a culturally-enriched buried A-horizon (II) and natural sediment (III-IV). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL) above Strata II-IV. Faunal remains collected from Stratum II during excavation and the sample analysis documented the presence of traditional food refuse including marine shell midden and historic artifacts within SIHP #-7429, including Feature 7. The presence of historic material may indicate deposition during the post-Contact period. Stratum II and associated Feature 7 were identified as components of SIHP #50-80-14-7429, a buried A-horizon containing seven features identified in 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 (see Volume 1).



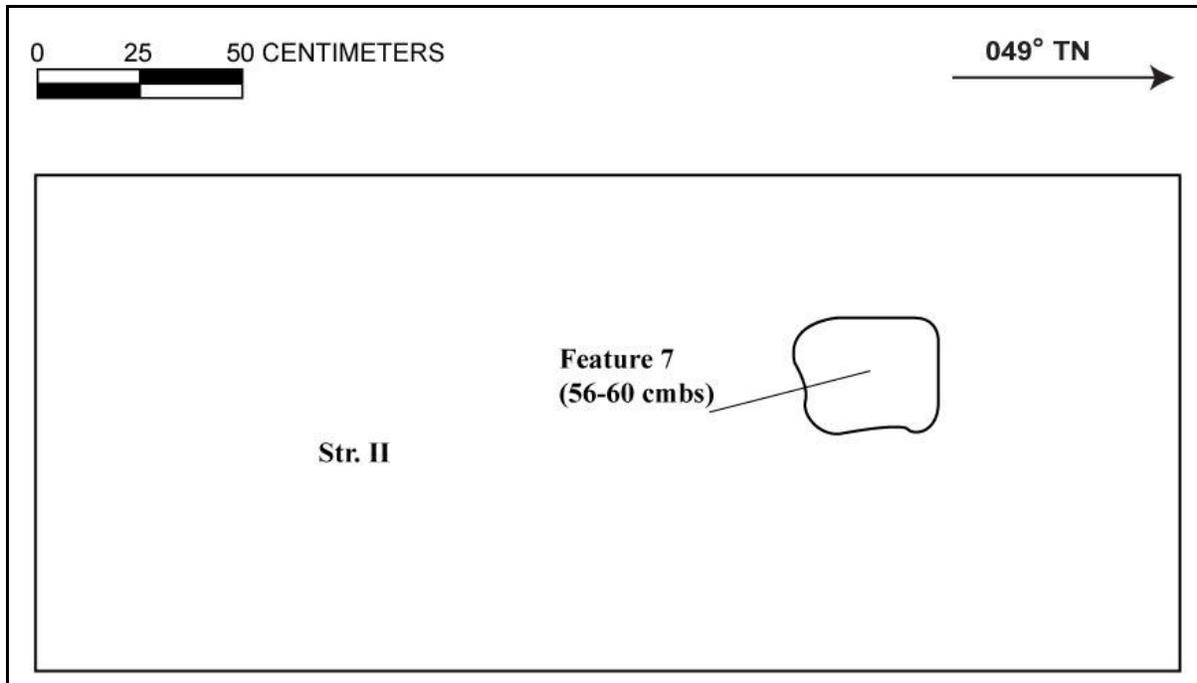
T-170A general location, view to south



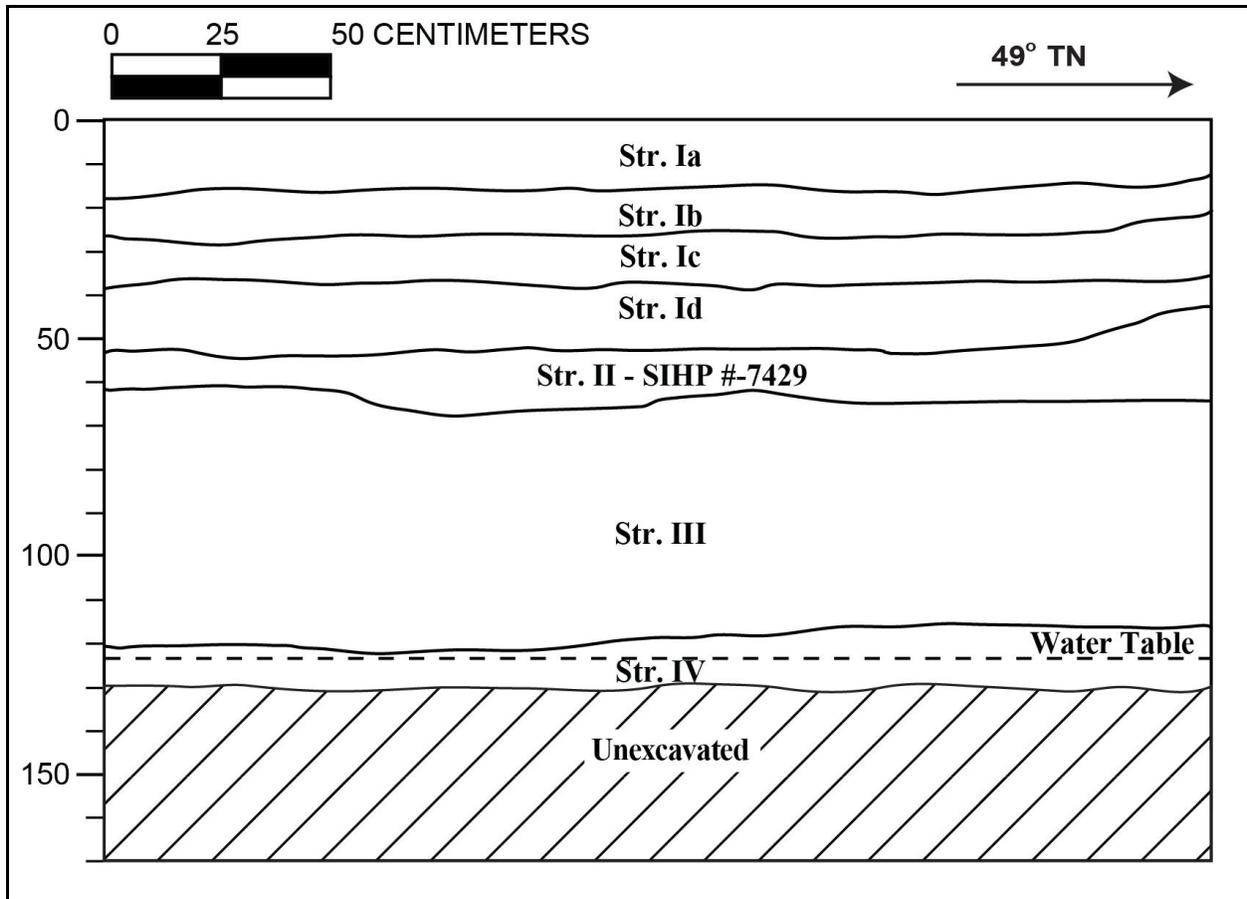
T-170A northwest wall, view to west



T-170A excavation floor showing SIHP #-7429 Feature 7, view to northeast



T-170A plan view showing SIHP #-7429 Feature 7



T-170A northwest wall profile

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, single-grain; 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, single-grain; 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, single-grain; 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, fire-cracked 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, single-grain; 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, single-grain; moist, loose consistency; non-plastic; marine origin; lower boundary not visible; natural marine sand

4.19 Test Excavation 171 (T-171)

Ahupua'a:	Honolulu
LCA:	387
TMK #:	2-3-002:001
Elevation Above Sea Level:	1.27 m
UTM:	618903.4893 mE, 2355362.486 mN
Max Length/Width/Depth:	3.10 m/0.93 m/1.32 m
Orientation:	324/144° TN
Targeted Project Component:	Guideway Column
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 171 (T-171) was located was located in a parking lot adjacent to a structure and approximately 43 m southwest of Queen Street, between Ward Avenue and Cummins Street. T-171 was located on private property owned by Victoria Ward, Ltd. There were no existing utilities in the immediate vicinity. The excavation area was level with the surrounding land surface.

Summary of Background Research and Land Use: Land Court Application 670 map 1 indicates that T-171 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 (see . The 1884 Bishop map of Honolulu to Kewalo indicates that T-171 was located within marsh land called Kukuluaeo, 90 m east of LCA 10463:1, awarded to Napela. An unimproved or planned roadway is also depicted, extending northeast (*mauka*) to southwest (*makai*) within 49 m of T-171 (see Figure 27). The roadway is also depicted on the 1887 Wall map of Honolulu along with three structures in the vicinity of T-171. The structures were located approximately 180 m northwest, 110 m southwest, and 240 m southwest of T-171. The 1897 Monsarrat map of Honolulu depicts infrastructure development immediately north of T-171 including a near-modern street grid with the closest intersection being Queen Street and Cummins Street 50 m east and the Cyclomere bicycle track 335 m north. Expanded urbanization in the vicinity of T-171 is depicted throughout the series of twentieth century topographic maps and Sanborn fire insurance maps (see Figure 30, Figure 32, and Figure 33).

Several archaeological studies have been conducted in the vicinity of T-171 (see Figure 34). In 2000, CSH conducted archaeological monitoring for Ward Village Phase II (Ward Theaters), approximately 110 m south of T-171. 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 (ID-7) 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 240 m east of T-171. 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 135 m southeast of T-171. 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-171 was excavated to a depth of 1.32 mbs. The water table was encountered at 1.21 mbs. There were no factors that limited documentation of T-171. A backhoe was used to remove the upper fill strata and expose the underlying natural sediment. All of the natural sediment within T-171 was hand excavated to below the water table.

Stratigraphic Summary: The stratigraphy of T-171 consisted of fill strata overlaying natural sediment. Observed strata were asphalt (Ia), very gravelly sandy loam (Ib), extremely gravelly sand (Ic), extremely gravelly sandy loam (Id), extremely gravelly sand (Ie), very fine sand fill (If), overlying natural silty clay (II) and natural loamy sand (III) over the coral shelf (IV). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL) above Strata II-IV.

Artifacts Discussion: One fragment of a glass soda bottle (Acc. #171-A-1) was collected from Stratum Ib/Ic, 0.13 to 0.25 mbs. The bottle dates from the 1890s to 1913 period and from a bottling works with a plant in downtown Honolulu. The artifact collected from Stratum Ib/Ic indicates the deposit dates from the 1890s or later.

Feature Discussion: No features were observed.

Terrestrial Faunal Remains Discussion: A single *Bos taurus* (possible) distal tibia fragment was collected individually during excavation from Stratum II (at 0.85 mbs). This bone exhibits evidence of being butchered with a metal blade, indicating historic food remnants.

Sample Results: No sample analysis was conducted.

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.

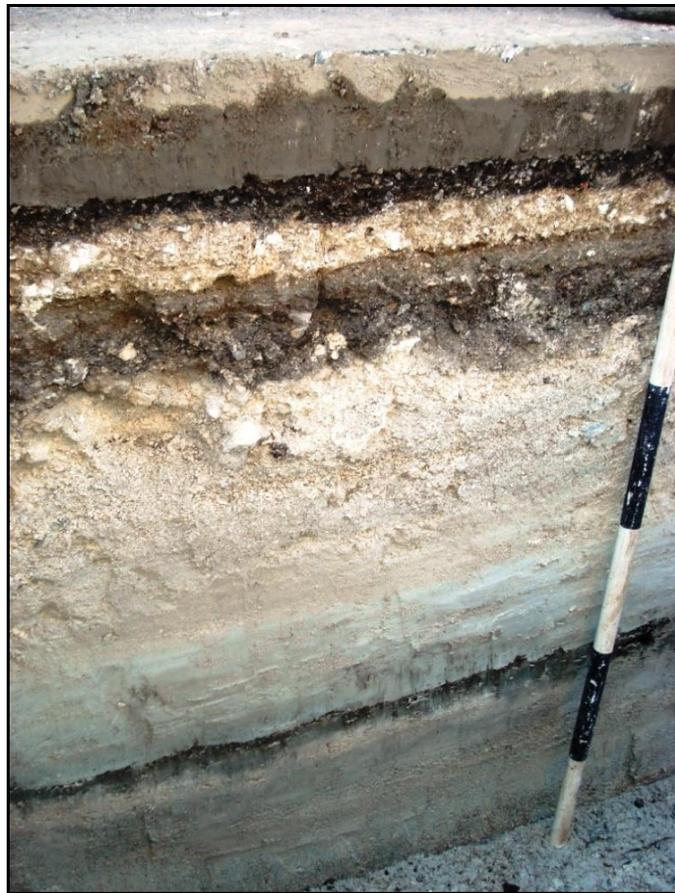
GPR depth profiles for T-171 identified horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.2 mbs. No utilities were observed in the profile. The maximum depth of clean signal return was approximately 1.0 mbs.

Summary: T-171 was excavated to a depth of 1.32 mbs. The water table was encountered at 1.21 mbs. The stratigraphy of T-171 consisted of fill strata (Ia-If) overlaying natural sediment (II-III) and the coral shelf (IV). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL) above Strata II-IV. A glass soda bottle fragment (Acc. #171-A-1)

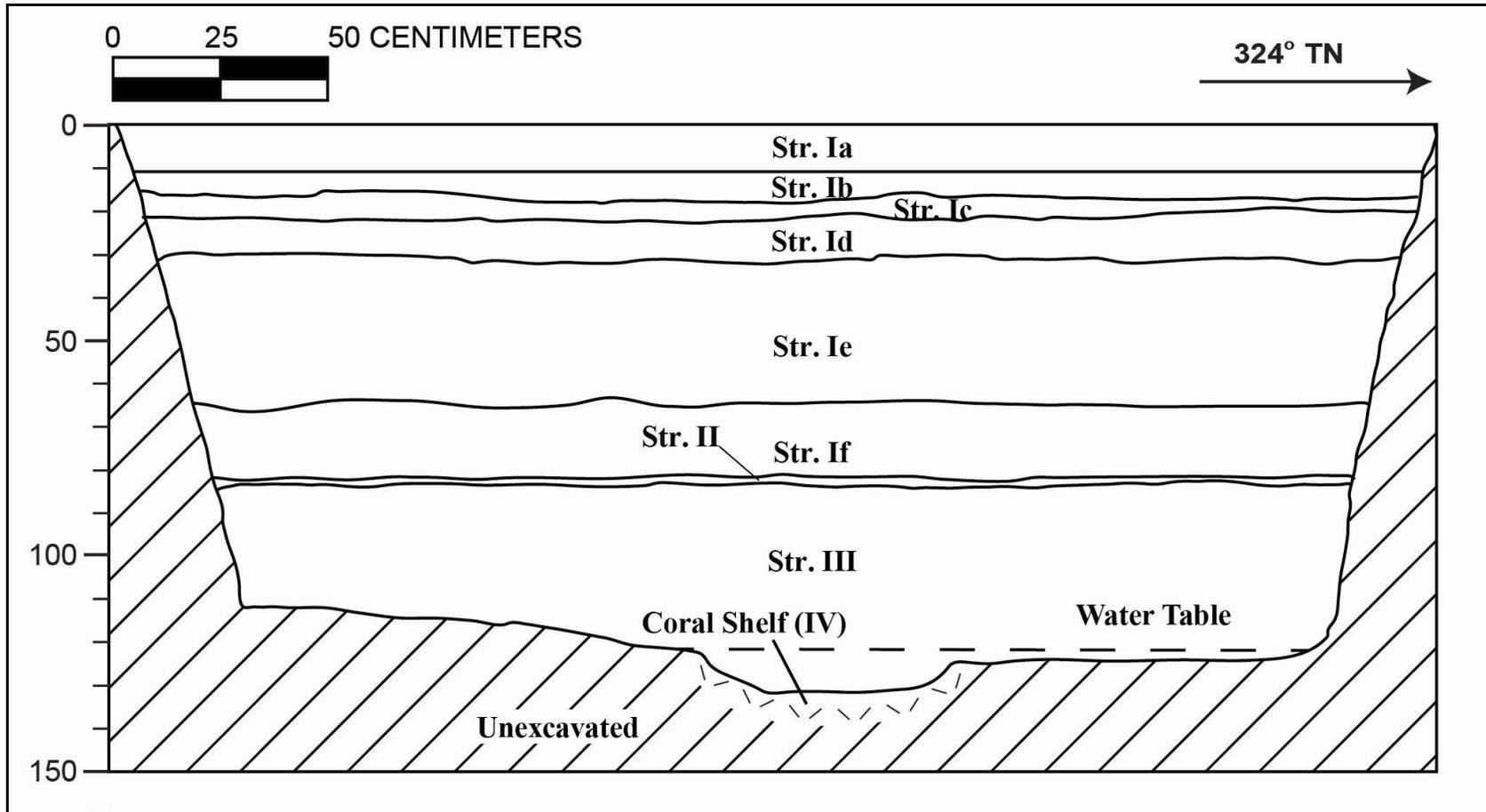
collected from Stratum Ib/Ic indicating Strata Ib dates to the 1890s or later. A single historic butchered *Bos taurus* fragment was collected individually during excavation from Stratum II. No archaeological cultural resources were identified within T-171.



T-171 general location, view to north



T-171 southwest wall profile



T-171 southwest wall profile

T-171 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-12	Asphalt
Ib	12-17	Fill; 10 YR 3/2 (very dark grayish brown); very gravelly sandy loam; weak, fine, crumb structure; very friable, weak consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary; basalt base course
Ic	15-22	Fill; 2.5 Y 5/2 (dark grayish brown); extremely gravelly sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; very abrupt, smooth lower boundary; crushed coral base course
Id	19-32	Fill; 2.5 Y 3/2 (very dark grayish brown); extremely gravelly sandy loam; weak fine, crumb structure; slightly plastic; terrigenous origin; very abrupt, smooth lower boundary; basalt gravel in loam matrix
Ie	30-65	Fill; 2.5 Y 7/2 (light gray); extremely gravelly sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; clear, smooth lower boundary; crushed coral hydraulic fill
If	65-82	Fill; 2.5 Y 7/1 (light gray); very fine sand; structureless, massive; moist, loose consistency; non-plastic; marine origin; very abrupt, smooth lower boundary; hydraulic fill
II	81-84	Natural; 2.5 Y 4/1 (dark gray); silty clay; structureless, massive; weak, fine, blocky structure; moist, firm consistency; very plastic; abrupt, smooth lower boundary; fine roots common; marshland/wetland sediment/peat containing roots and organics
III	83-132	Natural; 2.5 Y 6/1 (gray); loamy sand; weak, fine, crumb structure; wet, slightly sticky consistency; non-plastic; marine origin; lower boundary not visible; fine roots common
IV	132 (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

4.20 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 (see Figure 29). 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 (see Figure 27). 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 (see Figure 30, Figure 32, and Figure 33).

Several archaeological studies have been conducted in the vicinity of T-172 (see Figure 34). 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 (ID-7) 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 machine-blown glass bottle fragment, dated post-1907, and a machine-made 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.

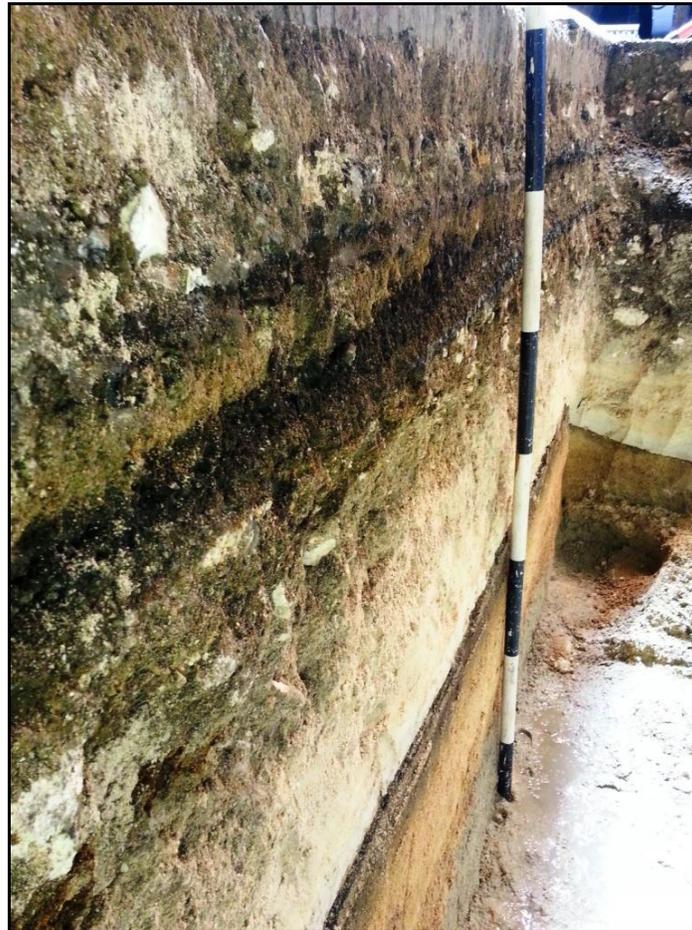
GPR Discussion: A review of amplitude slice maps indicated no linear features which might indicate the presence of utilities. Reflectivity was relatively uniform throughout the grid and decreases with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.75 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.

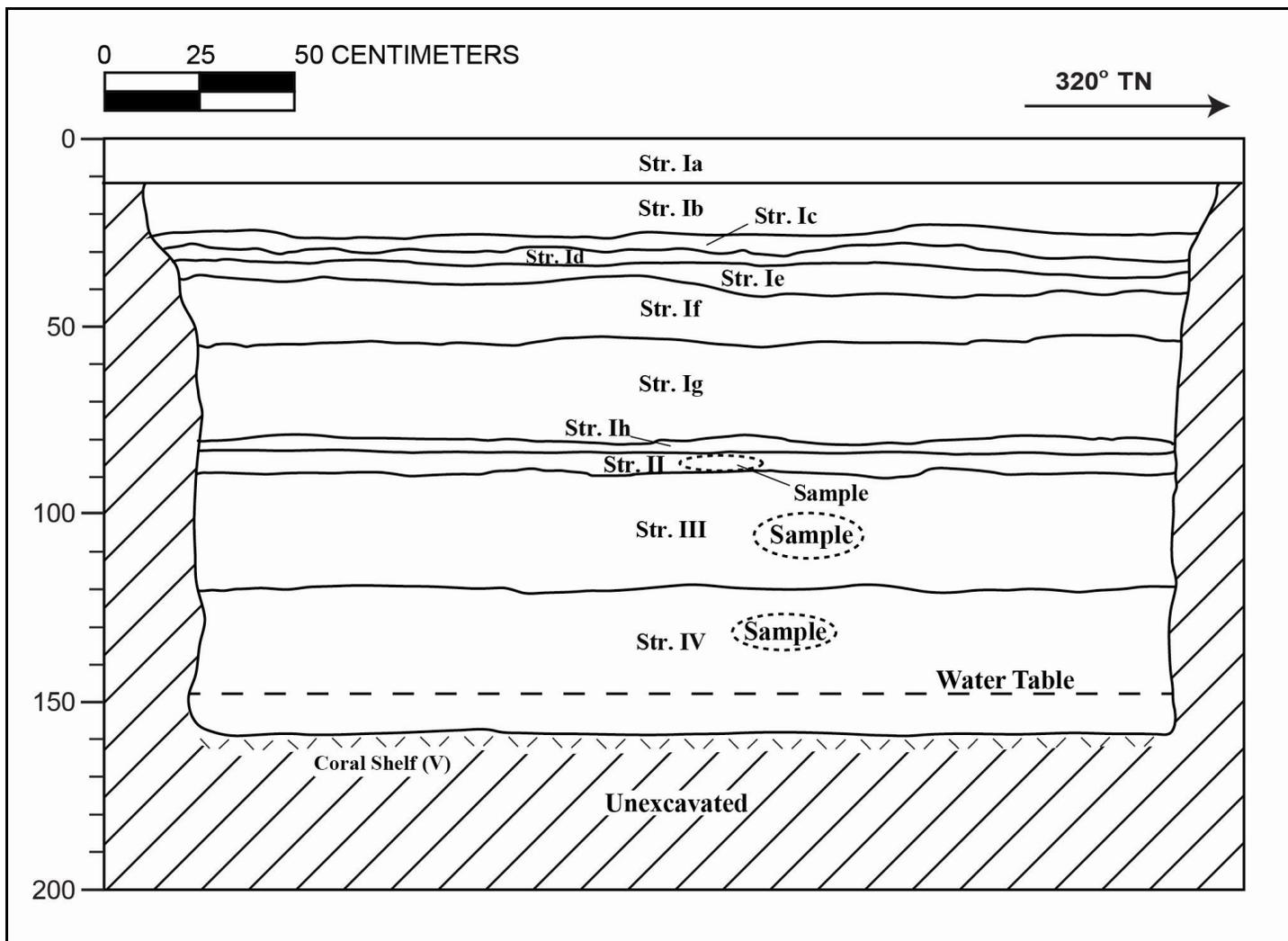
Summary: T-172 was excavated to a depth of 1.57 mbs. The water table was encountered at 1.48 mbs. The stratigraphy of T-172 consisted of fill strata (Ia–Ih) overlying natural sediment (II–IV) to the coral shelf (V). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (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, single-grain; 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, single-grain; 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, single-grain; 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, single-grain; 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, single-grain; 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, single-grain; non-sticky consistency; non-plastic; marine origin; clear, smooth lower boundary; Jaucas sand
IV	120-157	Natural; 10 YR 6/2 (gray); sand; structureless, single-grain; 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



T-172 glass bottle artifact (Acc. #172-A-1) from Stratum Id, dated post-1907

4.21 Test Excavation 172A (T-172A)

Ahupua'a:	Honolulu
LCA:	387
TMK #:	2-3-002:001
Elevation Above Sea Level:	1.53 m
UTM:	618940.271 mE, 2355339.844 mN
Max Length/Width/Depth:	3.06 m/0.98 m/1.55 m
Orientation:	323/143° TN
Targeted Project Component:	Guideway Column
USDA Soil Survey Soil	Fill land (FL)

Setting: Test Excavation 172A (T-172A) was located approximately 30 m southwest of Queen Street and Cummins Street intersection, and was located within the DKKY Architecture parking lot. T-172A was an additional excavation added to further investigate the natural land surfaces documented in T-172. T-172A also investigated a guideway column location. T-172A was located on private property owned by Victoria Ward Ltd. No utilities were noted in the immediate 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-172A 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 (see Figure 29). The 1884 Bishop map of Honolulu to Kewalo indicates that T-172A 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-172A (see Figure 27). The roadway is also depicted on the 1887 Wall map of Honolulu along with three structures in the vicinity of T-172A. The structures were located approximately 229 m northwest, 150 m west, and 270 m southwest of T-172A. The 1897 Monsarrat map of Honolulu depicts infrastructure development immediately north of T-172A 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-172A is depicted throughout the series of twentieth century topographic maps and Sanborn fire insurance maps (see Figure 30, Figure 32, and Figure 33).

Several archaeological studies have been conducted in the vicinity of T-172A (see Figure 34). In 2000, CSH conducted archaeological monitoring for Ward Village Phase II (Ward Theaters), approximately 100 m south of T-172A. 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 (ID-7) 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-172A. 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-172A. 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-172A was excavated to a depth of 1.55 mbs. The water table was encountered at 1.45 mbs. There were no factors that limited documentation of T-172A. A backhoe was used to remove the upper fill strata and expose the underlying natural sediment. All of the natural sediment within T-172A was hand excavated to below the water table.

Stratigraphic Summary: The stratigraphy of T-172A consisted of fill strata overlying natural sediment to the water table. Observed strata were asphalt (Ia), gravelly silty loam (Ib), silty loam (Ic), asphalt (Id), gravelly silty loam (Ie), gravelly silty clay (If), gravelly medium grain sand (Ig), fine sand fill (Ih), very fine sand fill (Ii), silty clay (Ij), natural fine sand (II), natural medium grain sand (III), and the coral shelf (IV). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL) above Strata II-IV.

Artifacts Discussion: A total of 28 historic artifacts (Acc. #s 172A-A-1 to A-28, see following table and photographs) were collected from T-172A, Stratum Ic and Strata Ih/Ii. The collection consists of one ceramic vessel fragment, five glass fragments from four bottles, 46 colored tile and tile fragments, and one nail. One of the bottles dates to the 1920s-1940s and was distributed by an O'ahu bottler. The large number of varied colored tiles may be flooring or wall tiles of a structure or construction debris, dating to the mid-twentieth century.

Feature 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 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-172A 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 0.1 mbs. No utilities were observed in the profile. The maximum depth of clean signal return was approximately 1.0 mbs.

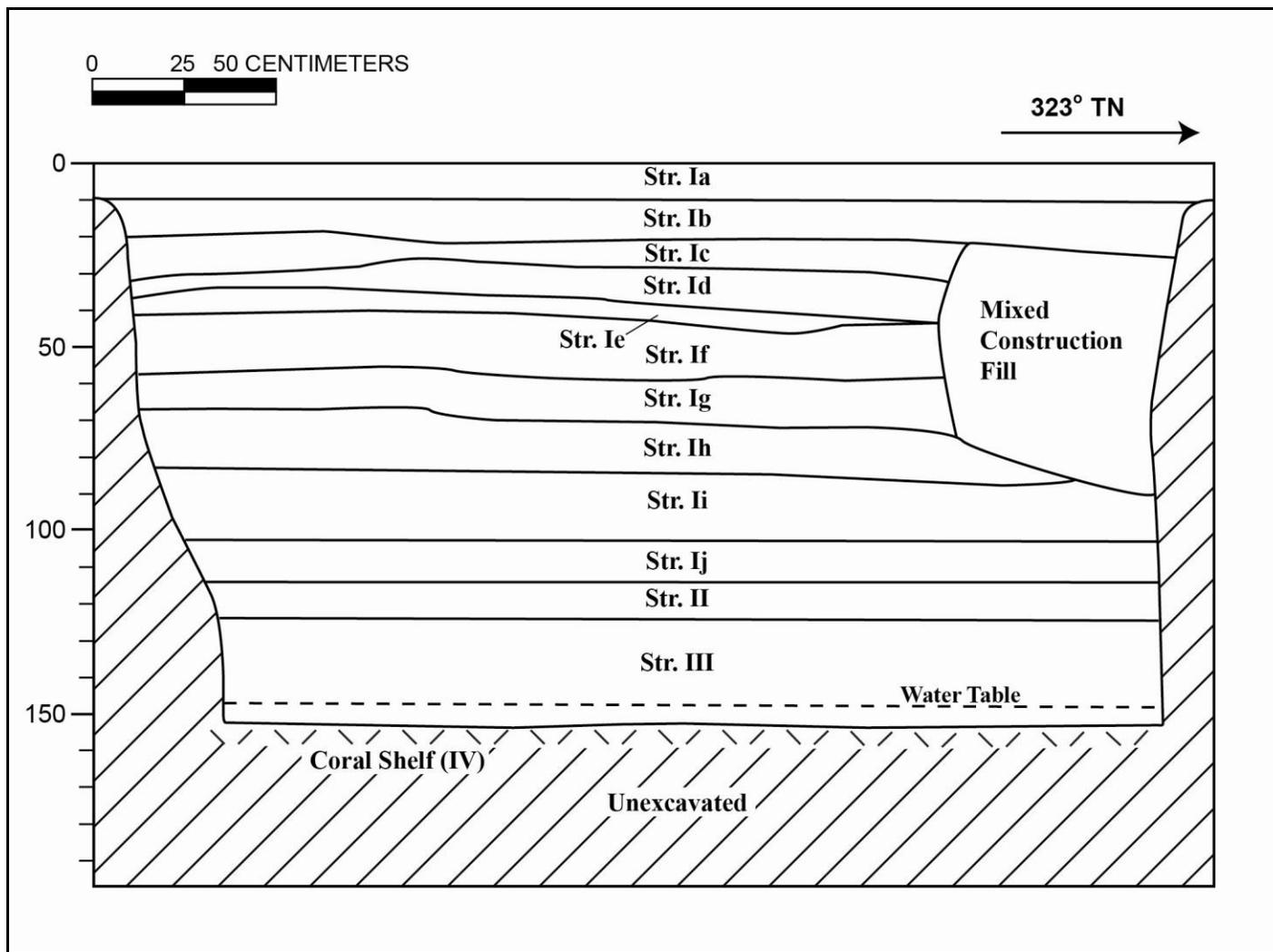
Summary: T-172A was excavated to a depth of 1.55 mbs. The water table was encountered at 1.45 mbs. The stratigraphy of T-172A consisted of fill strata overlying natural sediment to the water table. The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL) above Strata II-IV. The historic artifacts collected from Stratum Ic include a 1920s-1940s bottle and numerous mid-century floor or wall tiles. No archaeological cultural resources were identified within T-172A.



T-172A general location, view to southeast



T-172A southwest wall, view to west



T-172A southwest wall profile

T-172A Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-10	Asphalt
Ib	10-25	Fill; 10 YR 5/4 (yellowish brown); gravelly silty loam; weak, fine granular structure; moist, loose consistency; slightly plastic; terrigenous origin; clear lower boundary; base coarse, mixed fill
Ic	18-31	Fill; 10 YR 2/2 (very dark brown); silty loam; weak, fine, granular structure; moist, very friable consistency; slightly plastic; terrigenous origin; clear lower boundary; contained ceramic and glass artifacts (collected); mixed construction fill
Id	25-45	Fill; 10 YR 2/1 (black); asphalt; strong, medium granular structure; moist, loose consistency; abrupt lower boundary; asphalt layer
Ie	38-41	Fill; 10 YR 4/3 (brown); gravelly silty loam; weak structure; moist, loose consistency; non-plastic; terrigenous origin; abrupt lower boundary; contained ceramics and glass (not collected); crushed coral fill
If	43-60	Fill; 5 YR 4/3 (reddish brown); gravelly silty clay; structureless, massive; moist, very friable consistency; plastic; terrigenous origin; abrupt lower boundary; reddish brown clay
Ig	58-75	Fill; 7.5 YR 4/2 (brown); gravelly medium grain sand; structureless, single-grain; loose, moist consistency; non-plastic; mixed origin; abrupt lower boundary; crushed coral
Ih	67-85	Fill; 10 YR 7/3 (very pale brown); fine sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; clear lower boundary; locally procured sand, hydraulic fill
Ii	85-105	Fill; 10 YR 8/4 (very pale brown); very fine sand; structureless, single-grain; clear lower boundary; hydraulic fill
Ij	105-115	Fill; 10 YR 6/4 (light yellowish brown); silty clay; structureless, massive; wet, sticky consistency; plastic; mixed origin; very abrupt lower boundary; hydraulic fill
II	115-125	Natural; 10 YR 6/4 (light yellowish brown); fine sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; abrupt lower boundary; natural sand
III	125-155	Natural; 10 YR 6/2 (light brownish gray); medium grain sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; lower boundary not visible; marine sand
IV	155 (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

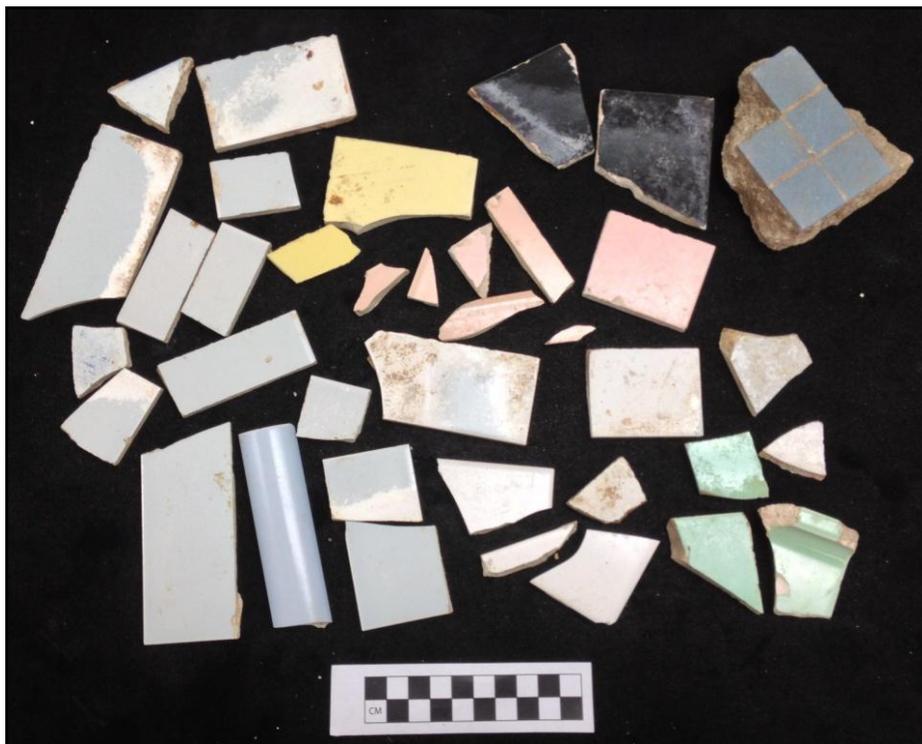
T-172A Historic Artifact Analysis Table

Acc. # 172A- A-	Prov.	Ceramic Vessel Type	Portion	No.	Paste	Origin; Age	Comments
1	T-172A, St. Ic	Tableware - unidentified	Body	1	Refined earthenware	Euro- American	Whiteware; no decoration on fragment
Acc. # 172A- A-	Prov.	Glass Bottle Type	Portion	No.	Color	Origin; Age	Comments
2	T-172A, St. Ic	Bottle, soda	Body-lip	1	Clear	American 1920s-40s	Smile Soda Water Works, O'ahu bottler
3	T-172A, St. Ic	Bottle	Body	1	Olive		
4	T-172A, St. Ic	Bottle	Body	2	Clear	1870s- post	Date based on color
5	T-172A, St. Ih/Ii, mixed pit fill	Bottle	Body	1	Clear	1870s- post	Date based on color
Acc. # 172A- A-	Prov.	Misc. Type	Portion	No.	Material	Origin; Age	Comments
6	T-172A, St. Ic	Tile	Fragment	2	Earthenware		Grey-blue; stippled texture
7	T-172A, St. Ic	Tile	Fragment	6	Earthenware		Beige
8	T-172A, St. Ic	Tile	Complete	1	Earthenware		Five connected blue pieces
9	T-172A, St. Ic	Tile	Fragment	1	Earthenware		Blue glaze; rough texture
10	T-172A, St. Ic	Tile	Fragment	1	Earthenware		Blue-green; letters "NGM"
11	T-172A, St. Ic	Tile	Fragment	1	Earthenware		Bluish-white glaze; triangular
12	T-172A, St. Ic	Tile	Fragment	1	Earthenware		Light green glaze; letter "A"
13	T-172A, St. Ic	Tile	Fragment	2	Earthenware		White glaze; rough texture
14	T-172A, St. Ic	Tile	Fragment	1	Earthenware		Pale yellow glaze; underside has "FRMOSA" "MARK"
15	T-172A, St. Ic	Tile	Fragment	2	Earthenware		Black glaze
16	T-172A, St. Ic	Tile	Fragment	1	Earthenware		Blue glaze; curved

17	T-172A, St. Ic	Tile	Fragment	5	Earthenware	Mexican	Very pale blue- grey color; ribbed underside; one fragment has "REDONDO / TRUSIZE" on back and another has "ZE"
18	T-172A, St. Ic	Tile	Fragment	7	Earthenware		Light blue and white
19	T-172A, St. Ic	Tile	Fragment	1	Earthenware		Green glaze; curved rim
20	T-172A, St. Ic	Tile	Fragment	1	Earthenware		Grey glaze; two- tone color with bumpy texture
21	T-172A, St. Ic	Tile	Fragment	2	Earthenware		Light orange fragments; one has letters "RED" and "TRU" on underside
22	T-172A, St. Ic	Tile	Fragment	3	Earthenware		White glaze
23	T-172A, St. Ic	Tile	Fragment	1	Earthenware		Yellow glaze
24	T-172A, St. Ic	Tile	Fragment	1	Earthenware		Pale green and white glaze
25	T-172A, St. Ic	Tile	Fragment	3	Earthenware		Brown colored tiles
26	T-172A, St. Ic	Tile	Fragment	2	Earthenware		Red colored tiles
27	T-172A, St. Ic	Tile	Fragment	1	Earthenware		Grey-blue; curved; rough texture
28	T-172A, St. Ic	Nail, Wire	Complete	1	Metal, iron	ca. 1850 to the present	Round head



T-172A glass bottle artifact (Acc. #172A-A-2) from Stratum Ic, dated to 1920s-1940s



T-172A various colored tile fragments (Acc. #s 172A-A-6 to A-23) collected from Stratum Ic, dated mid-twentieth century

4.22 Test Excavation 173 (T-173)

Ahupua'a:	Honolulu
LCA:	387
TMK #:	2-3-002:001
Elevation Above Sea Level:	1.42 m
UTM:	618972 mE, 2355312 mN
Max Length/Width/Depth:	3.05 m/0.95 m/1.37 m
Orientation:	320/140° TN
Targeted Project Component:	Guideway Column
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 173 (T-173) was located in a parking lot 19 m southwest of Queen Street and approximately 16 m northwest of an Office Depot. T-173 was 50 m south of the intersection of Queen Street and Cummins Street. T-173 was 2.5 m northwest of a gas line and 2.7 m north of a water line. The excavation surface was level with the surrounding parking lot surface.

Summary of Background Research and Land Use: Land Court Application 670 map 1 indicates that T-173 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 (see Figure 29). The 1884 Bishop map of Honolulu to Kewalo indicates that T-173 was located within marsh land called Kukuluaeo, 180 m southeast of LCA 10463:1, awarded to Napela. An unimproved or planned roadway is also depicted, extending northeast (*mauka*) to southwest (*makai*) within 140 m of T-173 (see Figure 27). The roadway is also depicted on the 1887 Wall map of Honolulu. The 1897 Monsarrat map of Honolulu depicts infrastructure development immediately north of, and including T-173, which is depicted within Queen Street and 47 m southeast of the Queen Street and Cummins Street intersection. Expanded urbanization in the vicinity of T-173 is depicted throughout the series of twentieth century topographic maps and Sanborn fire insurance maps (see Figure 30, Figure 32, and Figure 33).

Several archaeological studies have been conducted in the vicinity of T-173 (see Figure 34). In 2000, CSH conducted archaeological monitoring for Ward Village Phase II (Ward Theaters), approximately 120.0 m south of T-173. 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 (ID-7) 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 175 m northeast of T-173. 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 50 m southeast of T-173. 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-173 was excavated to the water table at a depth of 1.37 mbs. There were no factors limiting documentation.

Stratigraphic Summary: The stratigraphy of T-173 consisted of fill strata overlying natural sediment to the water table. Observed strata were asphalt (Ia), very gravelly sandy loam base course (Ib), very gravelly loam fill (Ic), very gravelly sand fill (Id), very gravelly sandy loam fill (Ie), gravelly fine to coarse sand fill (If), and silty clay fill (Ig), overlying a natural loamy sand buried A-horizon (II) and naturally medium-grain sandy loam (III) to the water table. Observed stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL) above Strata II and III.

Artifacts Discussion: No artifacts were encountered.

Features Discussion: No features were observed.

Terrestrial Faunal Remains Discussion: No terrestrial faunal remains were collected individually during excavation.

Sample Results: No samples were collected.

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 0.25 mbs and increases again around 0.75 mbs.

GPR depth profiles for T-173 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 0.25 mbs and again at 0.5mbs. No utilities were observed in the profile. The maximum depth of clean signal return was approximately 1.0 mbs.

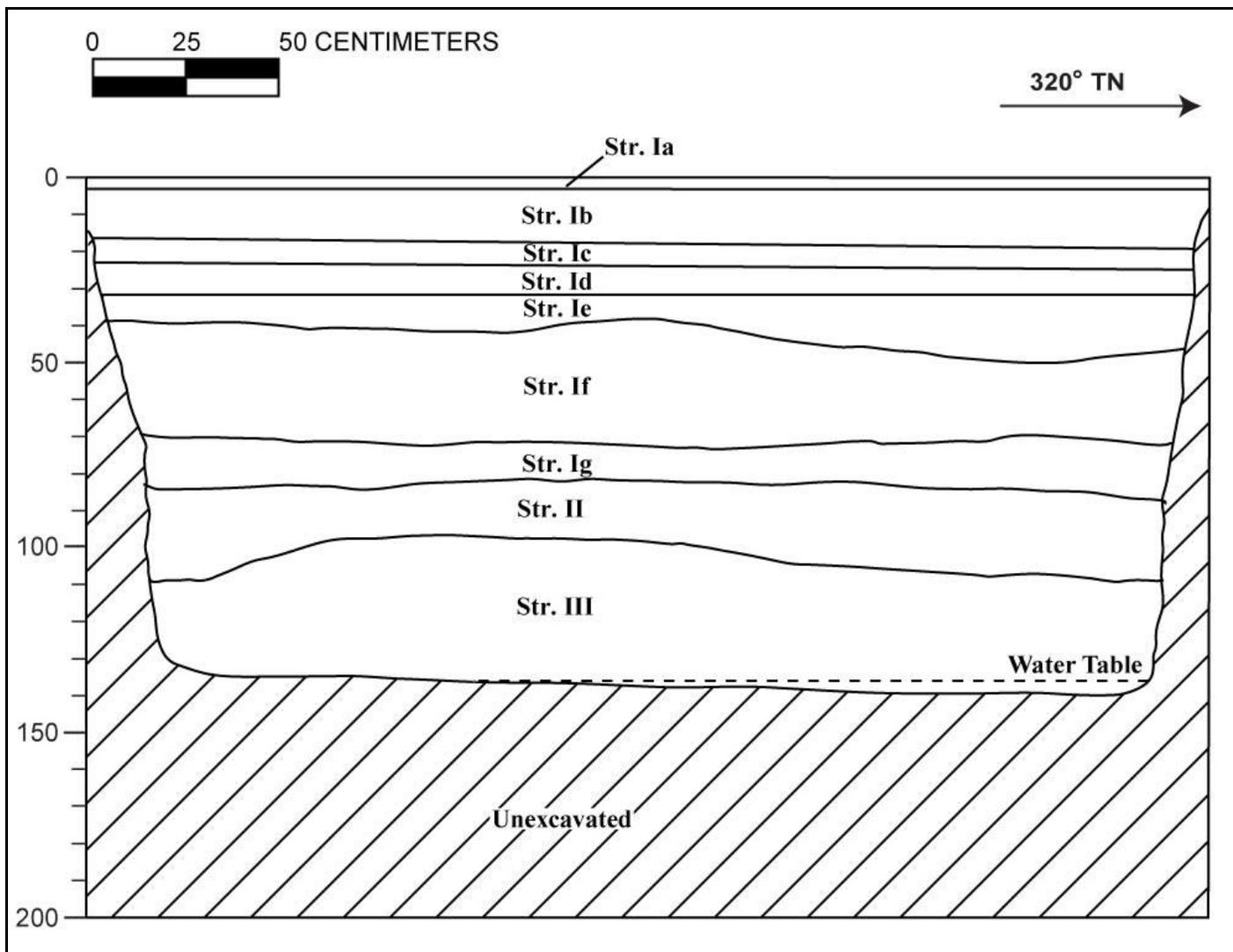
Summary: T-173 was excavated to the water table at a depth of 1.37 mbs. The stratigraphy of T-173 consisted of fill strata (IA–Ig) overlying natural sediment (II–III) to the water table. Observed stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL) above Strata II and III. No archaeological cultural resources were identified within T-173.



T-173 general location, view to south



T-173 southwest wall profile



T-173 southwest wall profile

T-173 Stratigraphic Description

Stratum	Depth (cmts)	Description
Ia	0-2	Asphalt
Ib	2-17	Fill; 2.5 Y 4/1 (dark gray); very gravelly sandy loam; structureless, single-grain; moist, loose consistency; non-plastic; terrigenous origin; very abrupt, smooth lower boundary; gravel base course
Ic	17-24	Fill; 7.5 YR 4/4 (brown); very gravelly loam; structureless, single-grain; moist, loose consistency; non-plastic; mixed origin; very abrupt, smooth lower boundary; grading fill
Id	23-33	Fill; 10 YR 8/2 (very pale brown); very gravelly sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; very abrupt, smooth lower boundary; crushed coral grading fill
Ie	28-48	Fill; 2.5 Y 5/1 (gray); very gravelly sandy loam; structureless, single-grain; moist, very friable consistency; non-plastic; mixed origin; abrupt, wavy lower boundary; grading fill
If	38-72	Fill; 2.5 Y 8/2 (pale yellow); fine to coarse grain gravelly sand; structureless, single-grain; moist, very friable consistency; non-plastic; marine origin; abrupt, smooth lower boundary; hydraulic fill sand
Ig	71-84	Fill; 2.5 Y 8/3 (pale yellow); silty clay; weak, coarse, platy structure; moist, friable consistency; plastic; marine origin; very abrupt, smooth lower boundary; hydraulic fill
II	90-115	Natural, 2.5 Y 3/1 (very dark gray); loamy sand; weak, medium, granular structure; moist, very friable consistency; non-plastic; mixed origin; contained glass fragments; buried A-horizon; very compacted
III	108-137 (BOE)	Natural; 5 Y 6/1 (gray); medium-grained sandy loam; weak, medium, granular structure; moist, very friable consistency; non-plastic; lower boundary not visible; possible natural sandy loam marsh sediment

4.23 Test Excavation 174 (T-174)

Ahupua'a:	Honolulu
LCA:	387
TMK #:	2-3-002:001
Elevation Above Sea Level:	1.41 m
UTM:	618979 mE, 2355309 mN
Max Length/Width/Depth:	6.76 m/0.74 m/1.25 m
Orientation:	232/52° TN
Targeted Project Component:	Utility Relocation
USDA Soil Survey Designation:	Fill land (FL)

Setting: Test Excavation 174 (T-174) was located in a parking lot 13.0 m southwest of Queen Street and approximately 8.0 m northwest of an Office Depot. A gas line was located 1.0 m northeast and 2.0 m northwest. Utilities in the vicinity of T-174 included two water lines located 2.0 m southeast and 2.0 m southwest of the excavation area.

Summary of Background Research and Land Use: Land Court Application 670 map 1 indicates that T-174 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 (see Figure 29). The 1884 Bishop map of Honolulu to Kewalo indicates that T-174 was located within marsh land called Kukuluaeo, 180 m southeast of LCA 10463:1, awarded to Napela. An unimproved or planned roadway is also depicted, extending northeast (*mauka*) to southwest (*makai*) within 145 m of T-174 (see Figure 27). The roadway is also depicted on the 1887 Wall map of Honolulu. The 1897 Monsarrat map of Honolulu depicts infrastructure development immediately north of, and including T-174, which is depicted within Queen Street and 45 m southeast of the Queen Street and Cummins Street intersection. Expanded urbanization in the vicinity of T-174 is depicted throughout the series of twentieth century topographic maps and Sanborn fire insurance maps (see Figure 30, Figure 32, and Figure 33).

Several archaeological studies have been conducted in the vicinity of T-174 (see Figure 34). In 2000, CSH conducted archaeological monitoring for Ward Village Phase II (Ward Theaters), approximately 100 m south of T-174. 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 (ID-7) Project along Kamake'e Street from Queen Street to Ala Moana Boulevard. Three human burials (SIHP #s 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 175 m northeast of T-174. 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 45 m southeast of T-174. 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-174 was excavated to a depth of 1.25 mbs. The water table was encountered at 1.15 mbs. Two utility lines were located in the northeastern portion of T-174 and limited documentation.

Stratigraphic Summary: The stratigraphy of T-174 consisted of fill overlying natural sediment. The Observed strata were asphalt (Ia), gravelly sandy loam fill (Ib), gravelly sandy loam fill (Ic), sand fill (Id), sandy loam fill (Ie), natural sand (II), natural sandy loam (III). The stratigraphy generally conformed to USDA soil designation of Fill land (FL) above Strata II and III.

Artifacts Discussion: No artifacts were observed.

Features Discussion: No features were observed.

Terrestrial Faunal Remains Discussion: A single *Sus scrofa* (possible) rib fragment was collected individually during excavation from Stratum Ie (0.67–1.03 mbs). This bone exhibits no evidence of cultural modification. *Sus scrofa* is a Polynesian introduction common in both pre- and post-Contact contexts.

Sample Results: A single 1.0 liter bulk sample from Stratum II was collected at 1.0 mbs. The sample was wet screened but contained no material.

GPR Discussion: A review of amplitude slice maps indicated linear features which could correspond to one of the utilities encountered during excavation. Reflectivity was relatively uniform throughout the grid and decreases with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.5 mbs .

GPR depth profiles for T-174 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. Several anomalies were observed in the profile and one seems to correspond to a utility that was encountered during excavation. The maximum depth of clean signal return was approximately 1.4 mbs.

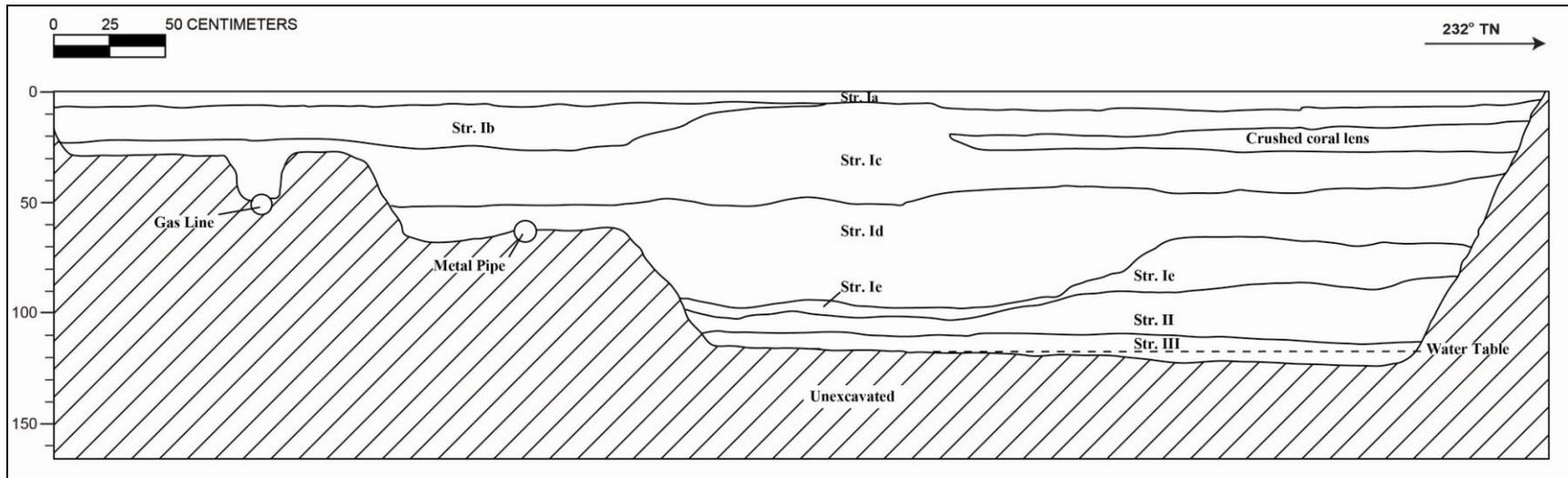
Summary: T-174 was excavated to a depth of 1.25 mbs. The water table was encountered at 1.15 mbs. The stratigraphy of T-174 consisted of fill (Ia–Ie) overlying natural sediment (II–III). The stratigraphy generally conformed to USDA soil designation of Fill land (FL) above Strata II and III. A single unmodified *Sus scrofa* (possible) rib fragment was collected from Stratum Ie (fill). No archaeological cultural resources were identified within T-174.



T-174 general location, view to southwest



T-174 southeast profile wall



T-174 southeast wall profile

T-174 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-10	Asphalt
Ib	5-26	Fill; 10 YR 3/2 (very dark grayish brown); gravelly sandy loam; weak, medium, crumb structure; moist, loose consistency; non-plastic; mixed origin; clear, smooth lower boundary; imported fill
Ic	5-52	Fill; 10 YR 4/2 (dark grayish brown); gravelly sandy loam; weak, fine to medium, crumb structure; moist, loose consistency; non-plastic; mixed origin; clear, smooth lower boundary; fill deposit with cobble inclusions
Id	40-100	Fill; 10 YR 7/2 (very pale brown); sand; weak, very fine to fine structure; moist, loose consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; fill deposit
Ie	67-103	Fill; 2.5 Y 4/2 (dark grayish brown); sandy loam; weak, medium crumb structure; moist, loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary; fill deposit, contained unmodified <i>Sus scrofa</i> (pig) bone (collected)
II	85-115	Natural, 10 YR 7/3 (very pale brown); sand; weak, medium structure; moist, loose consistency; non-plastic; marine origin; clear to diffuse lower boundary; natural sand deposit
III	110-125 (BOE)	Natural, 10 YR 6/1 (light brownish gray); sandy loam; fine to medium, crumb structure; moist, friable consistency; non-plastic; marine origin; natural marine sandy clay deposit

4.24 Test Excavation 174A (T-174A)

Ahupua'a:	Honolulu
LCA:	387
TMK #:	2-3-002:001
Elevation Above Sea Level:	1.43 m
UTM:	618982.8106 mE, 2355314.56 mN
Max Length/Width/Depth:	4.47 m/0.81 m/1.57 m
Orientation:	359/179° TN
Targeted Project Component:	Utility Relocation
USDA Soil Survey Designation:	Fill land (FL)

Setting: Test Excavation 174A (T-174 A) was located within the DKKY Architecture Parking Lot, behind the Office Depot. T-174A was an additional excavation added to increase testing coverage area for a utility relocation and to further investigate the natural land surfaces documented in T-174. T-174A was located on private property owned by Victoria Ward Ltd. 8 m southwest of a storm drain, and 13 m southwest of a water line. The excavation surface was level with the surrounding land surface.

Summary of Background Research and Land: Land Court Application 670 map 1 indicates that T-174A 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 (see Figure 29). The 1884 Bishop map of Honolulu to Kewalo indicates that T-174A was located within marsh land called Kukuluaeo, 180 m southeast of LCA 10463:1, awarded to Napela. An unimproved or planned roadway is also depicted, extending northeast (*mauka*) to southwest (*makai*) within 145 m of T-174A (see Figure 27). The roadway is also depicted on the 1887 Wall map of Honolulu. The 1897 Monsarrat map of Honolulu depicts infrastructure development immediately north of, and including T-174A, which is depicted within Queen Street and 45 m southeast of the Queen Street and Cummins Street intersection. Expanded urbanization in the vicinity of T-174A is depicted throughout the series of twentieth century topographic maps and Sanborn fire insurance maps (see Figure 30, Figure 32, and Figure 33).

Several archaeological studies have been conducted in the vicinity of T-174A (see Figure 34). In 2000, CSH conducted archaeological monitoring for Ward Village Phase II (Ward Theaters), approximately 100.0 m south of T-174A. 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 (ID-7) Project along Kamake'e Street from Queen Street to Ala Moana Boulevard. Three human burials (SIHP #s 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 175 m northeast of T-174A. 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 45 m southeast of T-174A. 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-174A was excavated to the coral shelf at 1.57 mbs. The water table was reached at 1.35 mbs. There were no factors that limited the excavation of T-174A.

Stratigraphic Summary: Stratigraphy at T-174A included fill overlying natural sediment. Observed strata were asphalt (Ia), very gravelly sandy loam base course fill (Ib), extremely gravelly loam (Ic), clay loam fill (Id), sandy loam fill (Ie), natural sand (II), natural very coarse sand (III) and the coral shelf (IV). The stratigraphy was consistent with the USDA soil survey designation of Fill land (FL) above Strata II-IV.

Artifacts Discussion: A single red, machine-made brick fragment (Acc. #174A-A-1) was collected at approximately 0.50 mbs within Stratum Id.

Features Discussion: No features were observed.

Terrestrial Faunal Remains Discussion: A single *Bos taurus* proximal phalanx was collected individually during excavation from Stratum Id (at 0.75 mbs). This bone exhibits no evidence of cultural modification, but the presence of *Bos taurus* (an introduced species) indicates a post-Contact origin.

Sample Results: No sample analysis was conducted.

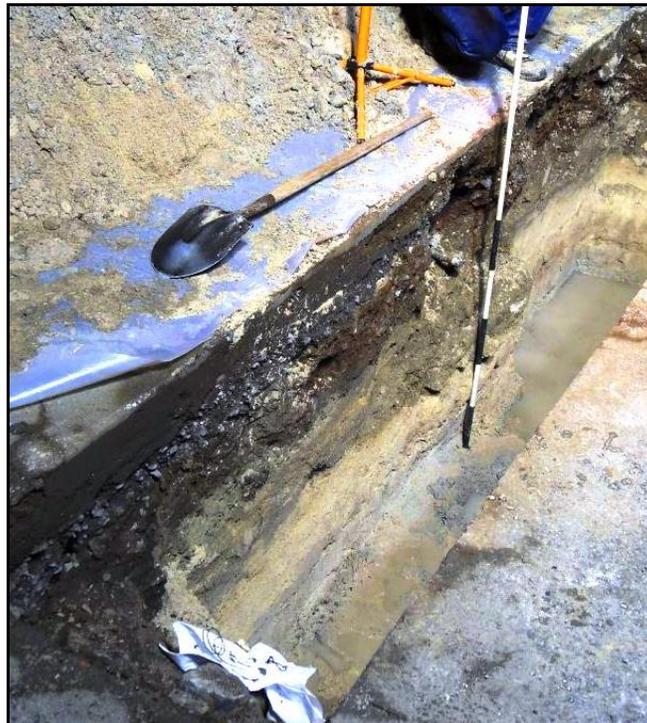
GPR Discussion: A review of amplitude slice maps indicated no linear features although several utilities were encountered during excavation. Reflectivity was relatively uniform throughout the grid and decreases with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.5 mbs.

GPR depth profiles for T-174A 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 0.3 mbs. An anomaly was observed in the profile but not within excavation boundaries. The maximum depth of clean signal return was approximately 0.85 mbs.

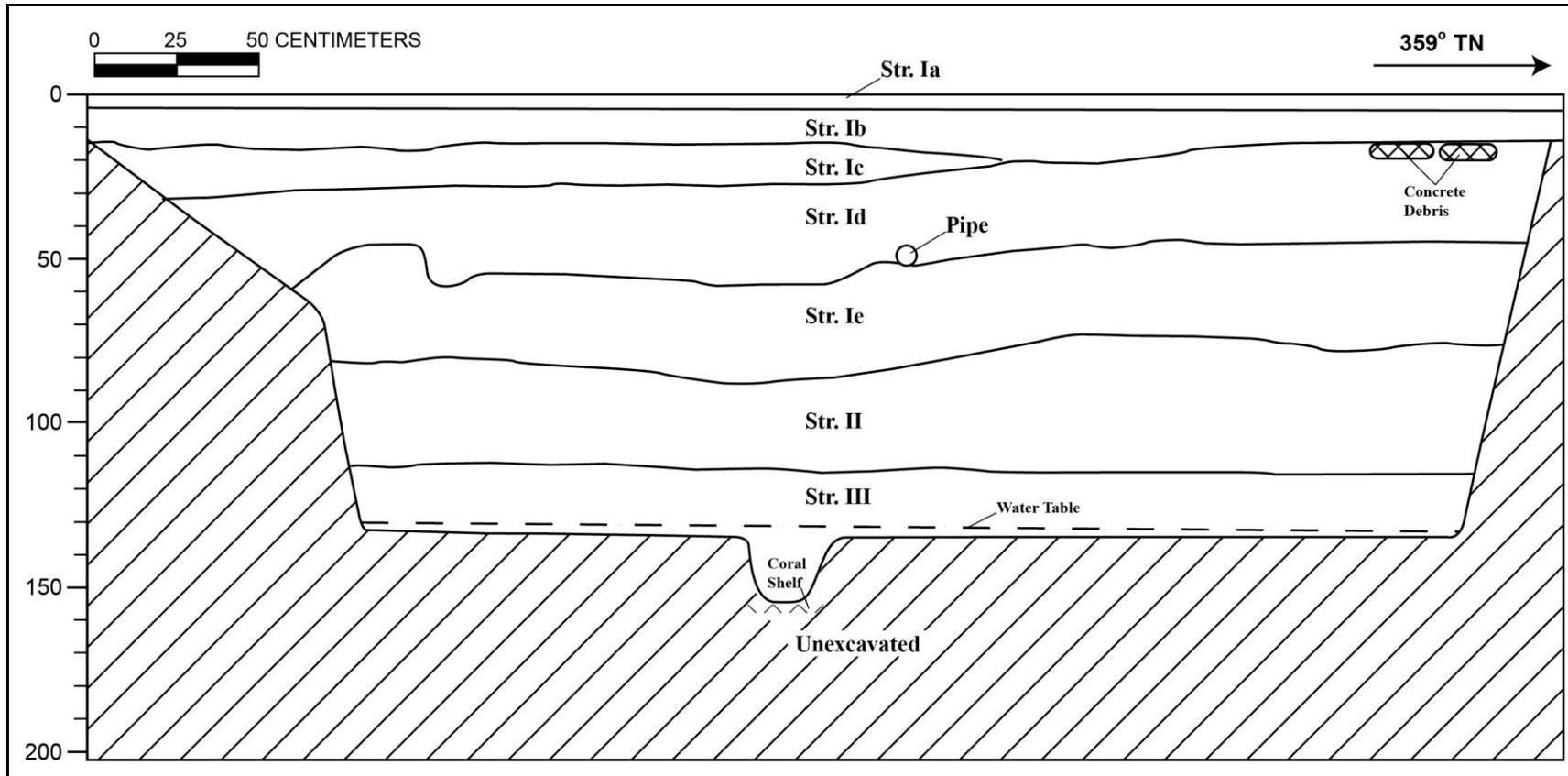
Summary: T-174A was excavated to the coral shelf at 1.57 mbs. The water table was reached at 1.35 mbs. Stratigraphy at T-174A included fill (Ia–Ie) overlying natural sediment (II-III) and the coral shelf (IV). The stratigraphy was consistent with the USDA soil survey designation of Fill land (FL) above Strata II-IV. A red machine-made brick fragment was collected from Stratum Id (fill) and a single *Bos taurus* unmodified proximal phalanx was collected from Stratum Id (fill). No archaeological cultural resources were identified within T-174A.



T-174A general location, view to the south



T-174A east profile wall, view to the south



T-174A east wall profile

T-174A Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-5	Asphalt
Ib	4-20	Fill; 10 YR 3/2 (very dark grayish brown); very gravelly sandy loam; structureless, single-grain; moist, loose consistency; non-plastic; terrigenous origin; clear, smooth lower boundary; few, fine to medium roots; imported fill base course
Ic	14-32	Fill; 10 YR 3/1 (very dark gray); extremely gravelly loam; structureless, single-grain; moist, loose consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary; basalt base course; single brick fragment (collected)
Id	15-60	Fill; 7.5 YR 2.5/2 (very dark brown); clay loam; weak, fine, blocky structure; moist, very friable consistency; slightly plastic; terrigenous origin; clear, wavy lower boundary
Ie	45-87	Fill; 10 YR 6/3 (pale brown); sandy loam; structureless, single-grain; moist, loose consistency; non-plastic; mixed origin; clear, smooth lower boundary; single faunal remains (collected)
II	74-115	Natural; 10 YR 7/3 (very pale brown); sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; lower boundary not visible; Jaucas sand
III	112-157	Natural; 10 YR 6/1 (gray); very coarse sand; structureless, single-grain; wet, non-sticky consistency; non-plastic; marine origin; abrupt lower boundary; Jaucas sand
IV	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

4.25 Test Excavation 175 (T-175)

Ahupua'a:	Honolulu
LCA:	387
TMK #:	2-3-002:001 [plat]
Elevation Above Sea Level:	1.3 m
UTM:	619004 mE, 2355284 mN
Max Length/Width/Depth:	3.10 m/0.96 m/0.85 m
Orientation:	226/46° TN
Targeted Project Component:	Guideway Column
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 175 (T-175) was located in the west sidewalk of Queen Street, northeast of an Office Depot and 135 m northwest of the intersection of Kamake'e and Queen Street. A gas line was present within the T-175 excavation area, and a water line was located 5.5 m northeast. The excavation area of T-175 was moderately sloping to the southwest.

Summary of Background Research and Land Use: Land Court Application 670 map 1 indicates that T-175 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 (see Figure 29). The 1884 Bishop map of Honolulu to Kewalo indicates that T-175 was located within marsh land called Kukuluaeo, 215 m southeast of LCA 10463:1, awarded to Napela. An unimproved or planned roadway is also depicted, extending northeast (*mauka*) to southwest (*makai*) within 185 m of T-175 (see Figure 27). The roadway is also depicted on the 1887 Wall map of Honolulu. The 1897 Monsarrat map of Honolulu depicts infrastructure development immediately north of, and including T-175, which is depicted within Queen Street and 87 m southeast of the Queen Street and Cummins Street intersection. Expanded urbanization in the vicinity of T-175 is depicted throughout the series of twentieth century topographic maps and Sanborn fire insurance maps (see Figure 30, Figure 32, and Figure 33).

Several archaeological studies have been conducted in the vicinity of T-175 (see Figure 34). In 2000, CSH conducted archaeological monitoring for Ward Village Phase II (Ward Theaters), approximately 80 m southwest of T-175. 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 (ID-7) 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 175 m northeast of T-175. 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 within 10 m southeast of T-175. 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-175 was excavated to 0.85 m below datum (mbd) by hand due to the presence of three utilities extending perpendicular through the test excavation. A level datum, consisting of a string and line level, was established in order to document the stratigraphic profile of the sloped excavation area.

Stratigraphic Summary: The stratigraphy of T-175 consisted of fill overlying natural sediment. Observed strata were asphalt (Ia), gravelly silt loam fill (Ib), stony sandy loam fill (Ic), extremely gravelly sand fill (Id) and fine sand fill (Ie) overlying natural coarse sand (II) and medium to coarse Jaucas sand (III). The stratigraphy of T-175 generally conformed to the USDA soil survey designation of Fill land (FL) above Strata II and III.

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: Two bulk sediment samples were collected from within T-175 consisting of one sample from Stratum II between 0.62–0.68 mbd and one from Stratum III between 0.75–0.82 mbd.

The sample from Stratum II yielded naturally-occurring marine shell (3.8 g). The sample from Stratum III yielded Crustacea (1.0 g), *Brachidontes crebristriatus* (0.1 g), and roots (0.3 g).

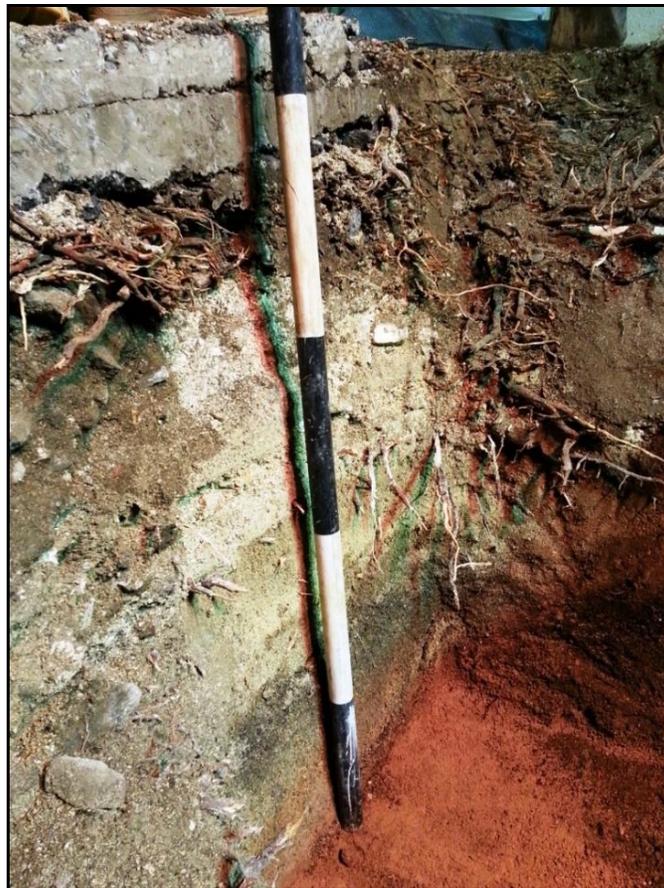
GPR Discussion: A review of amplitude slice maps indicate linear features that correspond to the utilities encountered during excavation. Reflectivity was relatively uniform throughout the grid and decreases with depth except for the utilities. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.75 mbs.

GPR depth profiles for T-175 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 indicates a change in reflectivity occurring around 0.15 mbs. Several Anomalies were observed in the profile and seem to correspond to the utilities encountered during excavation. The maximum depth of clean signal return was approximately 1.25 mbs.

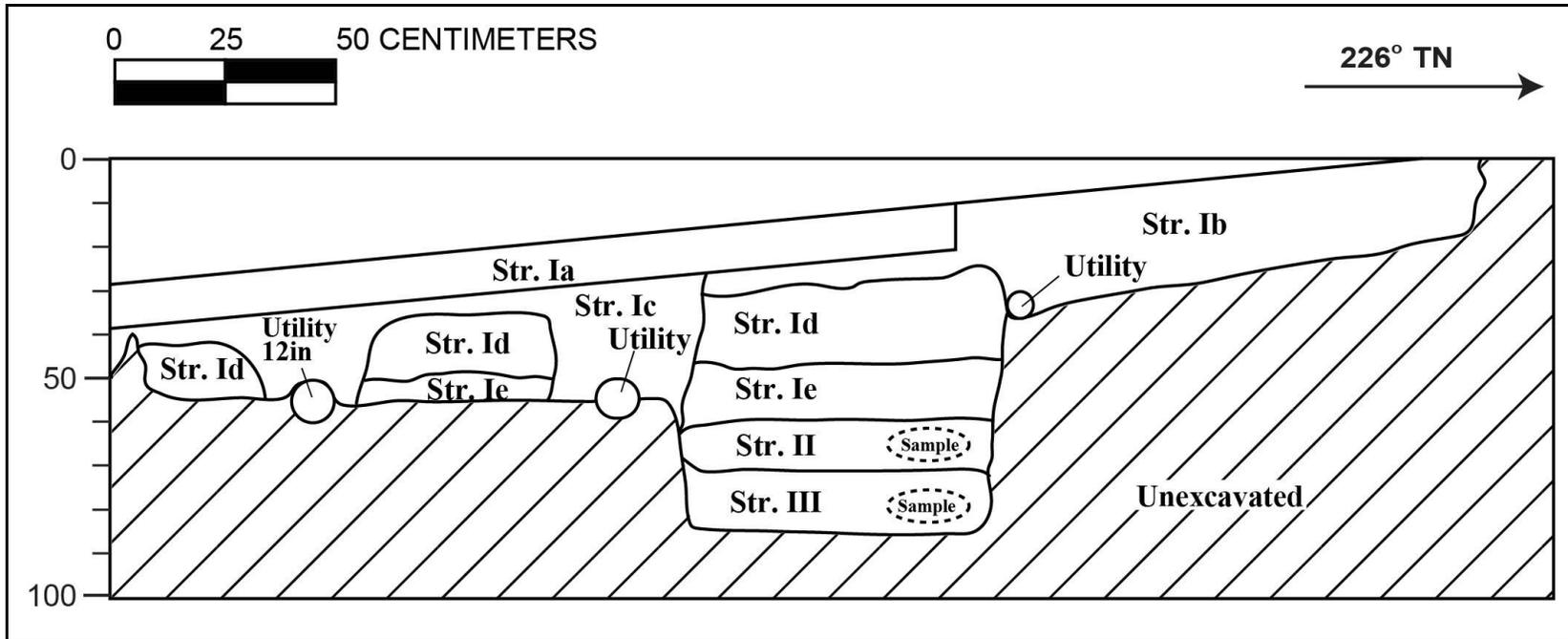
Summary: T-175 was excavated to 0.85 m below datum by hand due to the presence of three utilities extending perpendicular through the test excavation. The stratigraphy of T-175 consisted of fill (Ia–Ie) overlying natural sediment (II–III). The sediments samples yielded no cultural material. No archaeological cultural resources were identified within T-175.



T-175 general location, view to southwest



T-175 southeast wall profile, view to south



T-175 southeast wall profile, mapped using level datum

T-175 Stratigraphic Description

Stratum	Depth (cmbd)	Description
Ia	10-37	Asphalt (sloped surface)
Ib	0-35	Fill; 10 YR 4/2 (dark grayish brown); gravelly silty loam; structureless, single-grain; moist, loose consistency; non-plastic; terrigenous origin; clear, broken/discontinuous lower boundary; many, coarse to very coarse roots; modern A-horizon/ imported sod
Ic	25-60	Fill; 10 YR 5/1 (gray); stony sandy loam; structureless, single-grain; moist, loose consistency; non-plastic; terrigenous origin; lower boundary not visible
Id	25-55	Fill; 10 YR 7/2 (light gray); extremely gravelly sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; broken/discontinuous lower boundary
Ie	45-60	Fill; 2.5 Y 8/2 (pale yellow); fine sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; clear, smooth lower boundary; few roots
II	60-71	Natural; 2.5 Y 2.5/1 (black); coarse sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; clear, smooth lower boundary; many, coarse to very coarse roots; natural sediment with shell material in matrix
III	70-85 (BOE)	Natural; 2.5 8/3 (pale yellow); medium to coarse sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; lower boundary not visible; natural Jaucas sand

4.26 Test Excavation 175A (T-175A)

Ahupua'a:	Honolulu
LCA:	387
TMK #:	2-3-002:001 plat
Elevation Above Sea Level:	1.3 m
UTM:	619004.726 mE, 2355283.115 mN
Max Length/Width/Depth:	2.17 m/0.90 m/1.30 m
Orientation:	40/220° TN
Targeted Project Component:	Guideway Column
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 175A (T-175A) was located directly southeast of T-175, which had three utilities that severely limited excavation. T-175A was located in the southwest (*makai*) sidewalk of Queen Street, northeast of an Office Depot and 132 m northwest of the intersection of Kamake'e and Queen Street. T-175A was an additional excavation added to further investigate the natural land surfaces documented in T-175. T-175A also investigated a guideway column location and was on private property owned by Victoria Ward Ltd. The southwest end of T-175A intersected a gas line and a water line was located 5.6 m northeast of T-175A. The southwest portion of T-175A was 0.2 m above the surrounding sidewalk due to a sloped surface.

Summary of Background Research and Land Use: Land Court Application 670 map 1 indicates that T-175A 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 (see Figure 29). The 1884 Bishop map of Honolulu to Kewalo indicates that T-175A was located within marsh land called Kukuluao, 215 m southeast of LCA 10463:1, awarded to Napela. An unimproved or planned roadway is also depicted, extending northeast (*mauka*) to southwest (*makai*) within 185 m of T-175A (see Figure 27). The roadway is also depicted on the 1887 Wall map of Honolulu. The 1897 Monsarrat map of Honolulu depicts infrastructure development immediately north of, and including T-175A, which is depicted within Queen Street and 87 m southeast of the Queen Street and Cummins Street intersection. Expanded urbanization in the vicinity of T-175A is depicted throughout the series of twentieth century topographic maps and Sanborn fire insurance maps (see Figure 30, Figure 32, and Figure 33).

Several archaeological studies have been conducted in the vicinity of T-175A (see Figure 34). In 2000, CSH conducted archaeological monitoring for Ward Village Phase II (Ward Theaters), approximately 80 m southwest of T-175A. 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 (ID-7) 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 175 m northeast of T-175A. 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 within 10 m southeast of T-175A. 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-175A was excavated to the coral shelf at a depth of 1.30 mbs. The water table was reached at 1.18 mbs. The presence of utilities limited documentation procedures.

Stratigraphic Summary: The stratigraphy of T-175A consisted of fill overlying natural sediment. Observed strata were asphalt (Ia), very gravelly sandy loam fill (Ib), extremely gravelly sand fill (Ic) and fine- to medium-grain sand fill (Id) overlying natural loamy sand (II), coarse Jaucas sand (III and IV), and the coral shelf (V). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL) above Strata II-V.

Artifacts Discussion: One basalt rock (Acc. #175A-A-1) from Stratum III was collected for lithic analysis. The basalt rock did not appear to be culturally-modified and no additional analysis was performed.

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 sediment samples were collected from within T-175A consisting of two bulk sediment samples from Stratum II between 0.60–0.68 mbs and 0.66 mbs and one bulk sample from Stratum III between 0.80–0.90 mbs. The samples were collected from the excavation floor and are not depicted on the stratigraphic profile. All samples were wet screened.

The 1-liter bulk sediment from Stratum II (0.6–0.68 mbs) contained gastropods (0.6 g), juvenile *Nerita* sp. (0.1 g), and possible marine shell midden including *Conus* sp. (3.0 g), *Turbo* sp. (2.7 g), Crustacea (2.2 g), *Trochus* sp. (0.7 g), *Brachidontes crebristriatus* (0.5 g), *Cypraea* sp. (0.3 g), *Ctena bella* (0.3 g), and *Tellina* sp. (0.1 g).

The 5-liter bulk sediment sample from Stratum II (0.60–0.68 mbs) contained roots (10.1 g), coral (21.0 g), and naturally-occurring marine shell (6.7 g).

The 5-liter bulk sediment sample from Stratum III (0.80–0.90 mbs) contained Crustacea (0.2 g), *Brachidontes crebristriatus* (0.2 g), limpets/gastropods (0.1 g), and roots (5.6 g).

Analysis of the bulk sediment samples documented the presence of possible marine shell midden within Stratum II and naturally-occurring, water-rounded marine shell and roots within Stratum III.

GPR Discussion: A review of amplitude slice maps indicate linear features that correspond to the utilities encountered during excavation. Reflectivity was relatively uniform throughout the grid and decreases with depth except for the utilities. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.75 mbs.

GPR depth profiles for T-175A 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 indicates a change in reflectivity occurring around 0.15 mbs. Several Anomalies were observed in the profile and seem to correspond to the utilities encountered during excavation. The maximum depth of clean signal return was approximately 1.25 mbs.

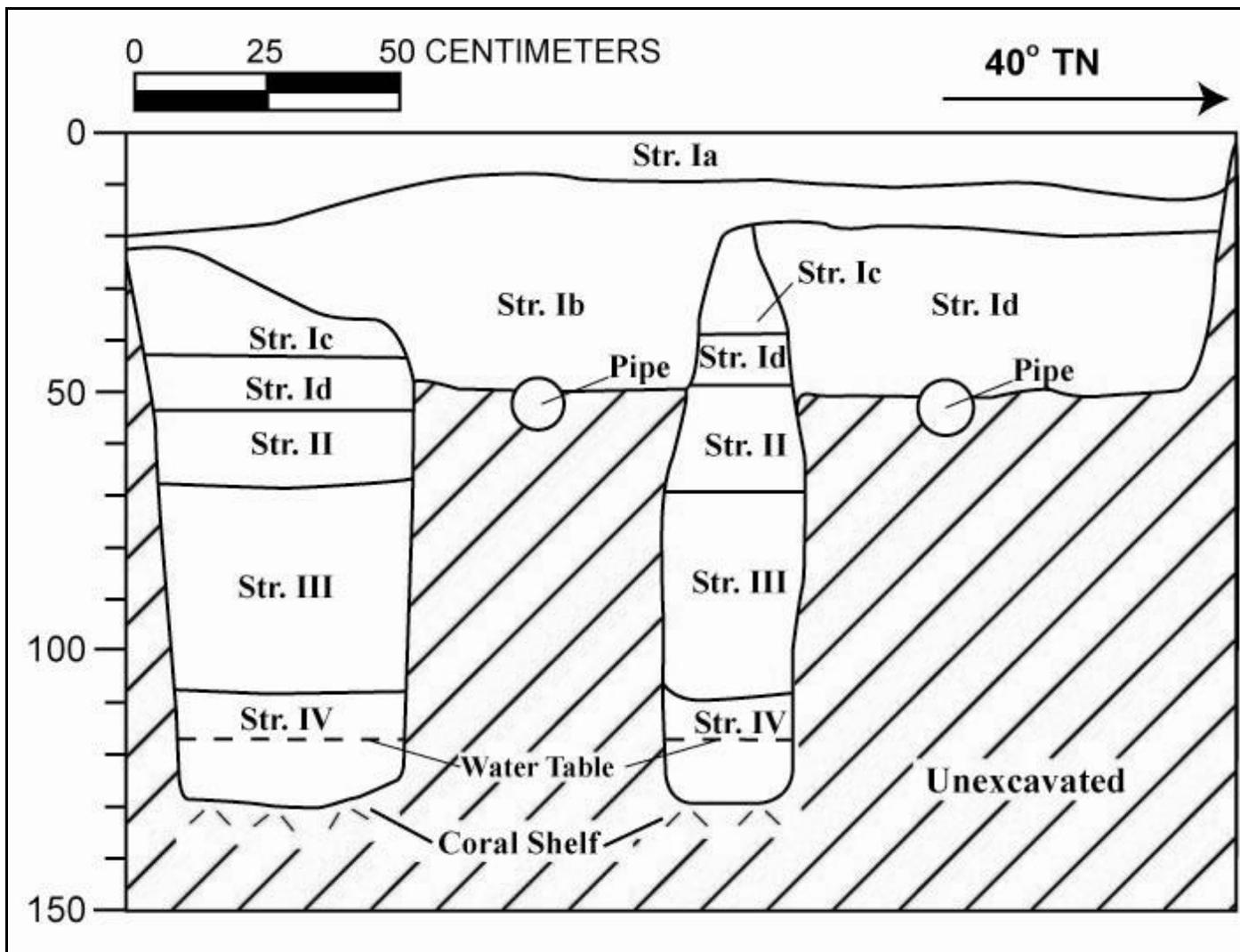
Summary: T-175A was excavated to the coral shelf at a depth of 1.30 mbs. The stratigraphy of T-175A consisted of fill (Ia–Id) overlying natural sediment (II–IV) and the coral shelf (V). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL) above Strata II–V. The bulk sediment samples documented the presence of possible marine shell midden within Stratum II and naturally-occurring, water-rounded marine shell and roots within Stratum III. No archaeological cultural resources were identified within T-175A.



T-175A general location, view to southwest



T-175A northwest wall profile



T-175A northwest wall profile

T-175A Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-20	Asphalt
Ib	8-50	Fill; 10 YR 2/2 (very dark brown); very gravelly sandy loam; weak, fine, crumb structure; moist, very friable consistency; non-plastic; terrigenous origin; clear, irregular lower boundary; many, very fine to coarse roots; with cobble and boulder inclusion
Ic	23-45	Fill; 10 YR 8/2 (very pale brown); extremely gravelly sand; structureless, single-grain; dry, loose consistency; non-plastic; marine origin; abrupt, broken/discontinuous lower boundary; many, fine to coarse roots; crushed coral fill
Id	20-55	Fill; 10 YR 7/3 (very pale brown); fine to medium grained sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; abrupt, broken/discontinuous lower boundary; many, very fine to medium roots; imported sand fill
II	50-70	Natural; 10 YR 3/2 (very dark grayish brown); loamy sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; abrupt, broken/discontinuous lower boundary; many, very fine to medium roots; buried A-horizon;
III	70-109	Natural; 10 YR 7/4 (very pale brown); coarse sand; structureless, single-grain; wet, non-sticky consistency; non-plastic; marine origin; diffuse, broken/discontinuous lower boundary; few, very fine roots; Jaucas sand
IV	109-130	Natural; GLEY 1 7/5GY (light greenish gray); coarse sand; structureless, single-grain; wet, non-sticky consistency; non-plastic; marine origin; abrupt, smooth lower boundary; Jaucas sand
V	130 (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

4.27 Test Excavation 176 (T-176)

Ahupua'a:	Honolulu
LCA:	387
TMK #:	2-3-002: 001
Elevation Above Sea Level:	1.34 m
UTM:	619030.4643 mE, 2355248.852 mN
Max Length/Width/Depth:	3.20 m/0.70 m/1.16 m
Orientation:	318/138° TN
Targeted Project Component:	Guideway column
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 176 (T-176) was located 1.0 m from the northeast side of the Office Depot Building within the landscaping and approximately 11.5 m southwest of Queen Street. T-176 was located on private property owned by Victoria Ward, Ltd. A gas line was located directly next to the northeast side of the excavation area and parallel water line was located 8.0 m to the northeast. The excavation area was level with the surrounding land surface, although slightly raised in relation to the paved parking lot.

Summary of Background Research and Land Use: Land Court Application 670 map 1 indicates that T-176 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 (see Figure 29). The 1884 Bishop map of Honolulu to Kewalo indicates that T-176 was located within marsh land called Kukuluaeo, 250 m southeast of LCA 10463:1, awarded to Napela. An unimproved or planned roadway is also depicted, extending northeast (*mauka*) to southwest (*makai*) within 220 m of T-176 (see Figure 27). The roadway is also depicted on the 1887 Wall map of Honolulu. The 1897 Monsarrat map of Honolulu depicts infrastructure development immediately north of, and including T-176, which is depicted within Queen Street and 90 m northwest of the Queen Street and Kamake'e Street intersection. Expanded urbanization in the vicinity of T-176 is depicted throughout the series of twentieth century topographic maps and Sanborn fire insurance maps (see Figure 30, Figure 32, and Figure 33).

Several archaeological studies have been conducted in the vicinity of T-176 (see Figure 34). In 2000, CSH conducted archaeological monitoring for Ward Village Phase II (Ward Theaters), approximately 80 m southwest of T-176. 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 (ID-7) 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 190 m northeast of T-176. 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 within 5 m northeast of T-176. Portions of a truncated, buried A-horizon overlying Jaucas sand were documented, and no cultural resources were encountered (Yamauchi et al. 2011). In 2006, CSH conducted an archaeological inventory survey for the Victoria Ward Village Shops Project, adjacent to Kaka'ako ID-7 District and bounded by Auahi Street, Kamake'e Street, and Queen Street. Three historic properties were identified: SIHP #50-80-14-6854, a subsurface cultural layer containing both historic and prehistoric cultural material and five human burials; SIHP #50-80-14-6855, a pre-Contact traditional Hawaiian cultural layer with 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 (Bell et al. 2006). From 2003-2004, CSH conducted archaeological monitoring for the Queen Street extension from Kamake'e Street to Pi'ikoi Street as part of the Kaka'ako Community Improvement District 10 Project. Three historic properties were 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'Hare et al. 2006). In 2009, CSH conducted an archaeological inventory survey for the Queen Street Parks Project, which encompassed two parcels of land separated by Queen Street and bounded by Kamake'e Street, Auahi Street, Waimanu Street, and Pi'ikoi Street. The investigation encountered deposits relating to SIHP #50-80-14-6856, a historic fishpond remnant (Thurman et al. 2009).

Documentation Limitations: T-176 was excavated to a depth of 1.16 mbs. The water table was encountered at 1.12 mbs. A backhoe was used to remove the upper fill strata and expose the buried A-horizon. All of the natural sediment within T-176 was hand-excavated to the water table.

Stratigraphic Summary: The stratigraphy of T-176 consisted of fill overlying natural sediment. Observed strata were clay landscaping fill (Ia), very gravelly loamy sand fill (Ib), overlying a natural loamy sand (II) and medium grain sand (III). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL) above Strata II and III.

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: One screened sample (45.0 L) was collected from Stratum II between 0.39–0.68 mbs. The sample was screened on site and yielded *Barbatia* sp. shell fragment (4.5 g). The results of sample analysis suggested Stratum II within T-176 lacked cultural content.

GPR Discussion: A review of amplitude slice maps indicated a linear feature but was not encountered during excavation. Reflectivity was relatively uniform throughout the grid and decreases with depth except for the linear feature. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.25 mbs and increases again around 0.5 mbs.

GPR depth profiles for T-176 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 and again at approximately 0.65 mbs. No utilities were observed in the profile. The maximum depth of clean signal return was approximately 1.0 mbs.

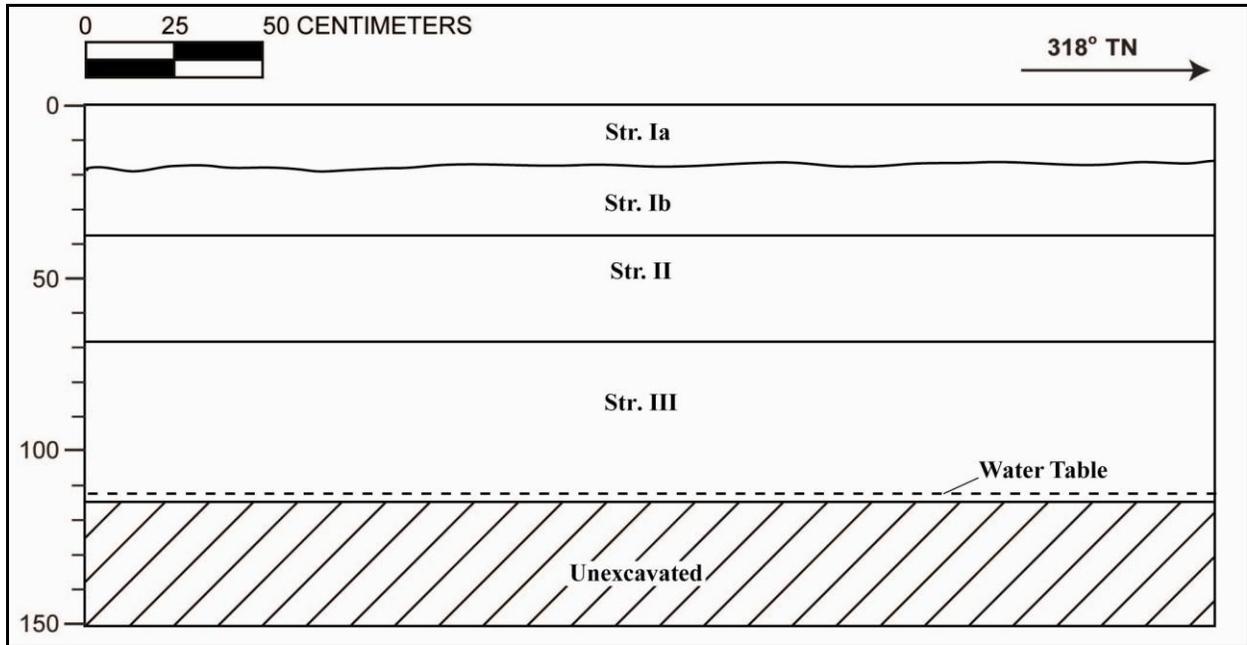
Summary: T-176 was excavated to a depth of 1.16 mbs. The water table was encountered at 1.12 mbs. The stratigraphy of T-176 consisted of fill strata (Ia–Ib) overlying a buried A-horizon (II) and natural sediment (III). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL) above Strata II and III. One screened sample (45.0 L) was collected from Stratum II between 0.39–0.68 mbs. The sample was screened on site and yielded one *Barbatia* sp. shell fragment (0.2 g). The results of sample analysis suggested Stratum II within T-176 lacked cultural content. No archaeological cultural resources were identified in T-176.



T-176 general location, view to northwest



T-176 southwest profile wall, view to west



T-176 southwest wall profile

T-176 Stratigraphic Description

Stratum	Depth (cmts)	Description
Ia	0-17	Fill; 7.5 YR 3/2 (dark brown); clay; structureless, massive; moist, very friable consistency; plastic; terrigenous origin; abrupt, smooth lower boundary; fine to medium roots common
Ib	17-39	Fill; 10 YR 5/2 (grayish brown), with mottles of 10 YR 8/2 (very pale brown); very gravelly loamy sand; structureless, single-grain; moist, very friable consistency; non-plastic; mixed origin; diffuse, smooth lower boundary; many fine to coarse roots; contained coral and cement cobbles
II	39-68	Natural; 2.5 Y 3/1 (very dark gray); loamy sand; structureless, single-grain; moist, loose consistency; non-plastic; mixed origin; diffuse, smooth lower boundary; no cultural material observed; buried A-horizon; former land surface
III	68-116 (BOE)	Natural; 2.5Y 8/2 (pale brown); medium-grain sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; Jaucas sand

4.28 Test Excavation 177 (T-177)

Ahupua'a:	Honolulu
LCA:	387
TMK #:	2-3-002:001
Elevation Above Sea Level:	1.68 m
UTM:	619057.5522 mE, 2355217.902 mN
Max Length/Width/Depth:	3.05 m/0.96 m/1.53 m
Orientation:	234/54° TN
Targeted Project Component:	Guideway Column
USDA Soil Designation	Fill land (FL)

Setting: Test Excavation 177 (T-177) was located in the landscaping on the northeast side of the Office Deport Parking lot, approximately 8.0 m southwest of Queen Street and 50.5 m northwest of Kamake'e Street. T-177 was located on private property owned by Victoria Ward, Ltd. A perpendicular water line was located 4.8 m to the northeast. The excavation area was level with the surrounding land surface.

Summary of Background Research and Land Use: Land Court Application 670 map 1 indicates that T-177 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 (see Figure 29). The 1884 Bishop map of Honolulu to Kewalo indicates that T-177 was located within marsh land called Kukuluaeo, 290 m southeast of LCA 10463:1, awarded to Napela. An unimproved or planned roadway is also depicted, extending northeast (*mauka*) to southwest (*makai*) within 250 m of T-177 (see Figure 27). The roadway is also depicted on the 1887 Wall map of Honolulu. The 1897 Monsarrat map of Honolulu depicts infrastructure development immediately north of, and including T-177, which is depicted within Queen Street and 50 m northwest of the Queen Street and Kamake'e Street intersection. Expanded urbanization in the vicinity of T-177 is depicted throughout the series of twentieth century topographic maps and Sanborn fire insurance maps (see Figure 30, Figure 32, and Figure 33).

Several archaeological studies have been conducted in the vicinity of T-177 (see Figure 34). In 2000, CSH conducted archaeological monitoring for Ward Village Phase II (Ward Theaters), approximately 85 m southwest of T-177. 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 (ID-7) 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 190 m northeast of T-177. 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 included the location of T-177. Portions of a truncated, buried A-horizon overlying Jaucas sand were documented, and no cultural resources were encountered (Yamauchi et al. 2011). In 2006, CSH conducted an archaeological inventory survey for the Victoria Ward Village Shops Project, adjacent to Kaka'ako ID-7 District and bounded by Auahi Street, Kamake'e Street, and Queen Street. Three historic properties were identified: SIHP #50-80-14-6854, a subsurface cultural layer containing both historic and prehistoric cultural material and five human burials; SIHP #50-80-14-6855, a pre-Contact traditional Hawaiian cultural layer with 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 (Bell et al. 2006). From 2003-2004, CSH conducted archaeological monitoring for the Queen Street extension from Kamake'e Street to Pi'ikoi Street as part of the Kaka'ako Community Improvement District 10 Project. Three historic properties were 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'Hare et al. 2006). In 2009, CSH conducted an archaeological inventory survey for the Queen Street Parks Project, which encompassed two parcels of land separated by Queen Street and bounded by Kamake'e Street, Auahi Street, Waimanu Street, and Pi'ikoi Street. The investigation encountered deposits relating to SIHP #50-80-14-6856, a historic fishpond remnant (Thurman et al. 2009).

Documentation Limitations: T-177 was excavated to a depth of 1.53 mbs. The water table was encountered at 1.48 mbs. A large block of concrete and a metal utility pipe were encountered at 0.68 mbs in the eastern portion of T-177, which limited excavation. A backhoe was used to remove the upper fill strata and expose the buried A-horizon. All of the natural sediment within T-177 was hand excavated to the water table.

Stratigraphic Summary: The stratigraphy of T-177 consisted of fill overlying natural sediment. Observed strata were clay loam topsoil (Ia), gravelly silty loam fill (Ib) gravelly silty loam fill (Ic), and silty clay fill (Id), overlying natural silty sand (II), and natural medium grain sand (III). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL) above Strata II and III.

Artifacts Discussion: See sample results below.

Feature Discussion: No features were observed.

Terrestrial Faunal Remains Discussion: No terrestrial faunal remains were collected individually during excavation.

Sample Results: A total of two screened samples and two bulk sediment samples were collected from within T-177. The bulk sediment samples and the contents of both screened samples were wet screened.

A 30-liter screened sediment sample from Stratum II between 0.90–1.05 mbs yielded charcoal (0.1 g), naturally-occurring marine shell material (8.3 g), a seed (0.1 g), and a piece of volcanic glass (0.1 g).

A 2-liter bulk sample of Stratum II from between 0.90–1.04 mbs yielded naturally-occurring marine shell material (1.1 g) and possible marine shell midden (50.6 g). The possible marine shell midden included *Nerita picea* (42.7 g), *Strombus maculatus* (3.8 g), *Pinctada radiata* (1.2 g), *Brachidontes crebristriatus* (1.1 g), *Turbo sandwicensis* (0.9 g), *Ctena bella* (0.5 g), Crustacea (0.2 g), and *Natica* sp. (0.2 g).

A 5-liter bulk sample from Stratum III between 0.97 mbs and 1.53 mbs yielded *Ruppia maritima* seeds (0.1 g).

A 34-liter screened sample from Stratum III between 1.15–1.25 mbs yielded 0.1 g of naturally-occurring limpets/gastropods, and a small possible midden signature consisting of *Turbo sandwicensis* (0.7 g), *Ctena bella* (0.1 g), *Brachidontes crebristriatus* (0.1 g), *Strombus* sp. (0.1 g), and Crustacea (0.2 g).

Sample analysis documented the presence of possible traditional food refuse (marine shell) within Stratum II, and naturally-occurring marine shell within Stratum III. The presence of possible food refuse generally supports the identification of Stratum II as a former land surface (buried A-horizon).

GPR Discussion: A review of amplitude slice maps indicated linear features but not within excavation boundaries although a concrete jacket and metal utility were encountered during excavation. Reflectivity was relatively uniform throughout the grid and decreases with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.25 mbs and increases again around 0.75 mbs.

GPR depth profiles for T-177 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 0.25 mbs. An anomaly was observed in the profile that corresponds with the concrete jacket and abandoned metal pipe encountered during excavation. The maximum depth of clean signal return was approximately 1.0 mbs.

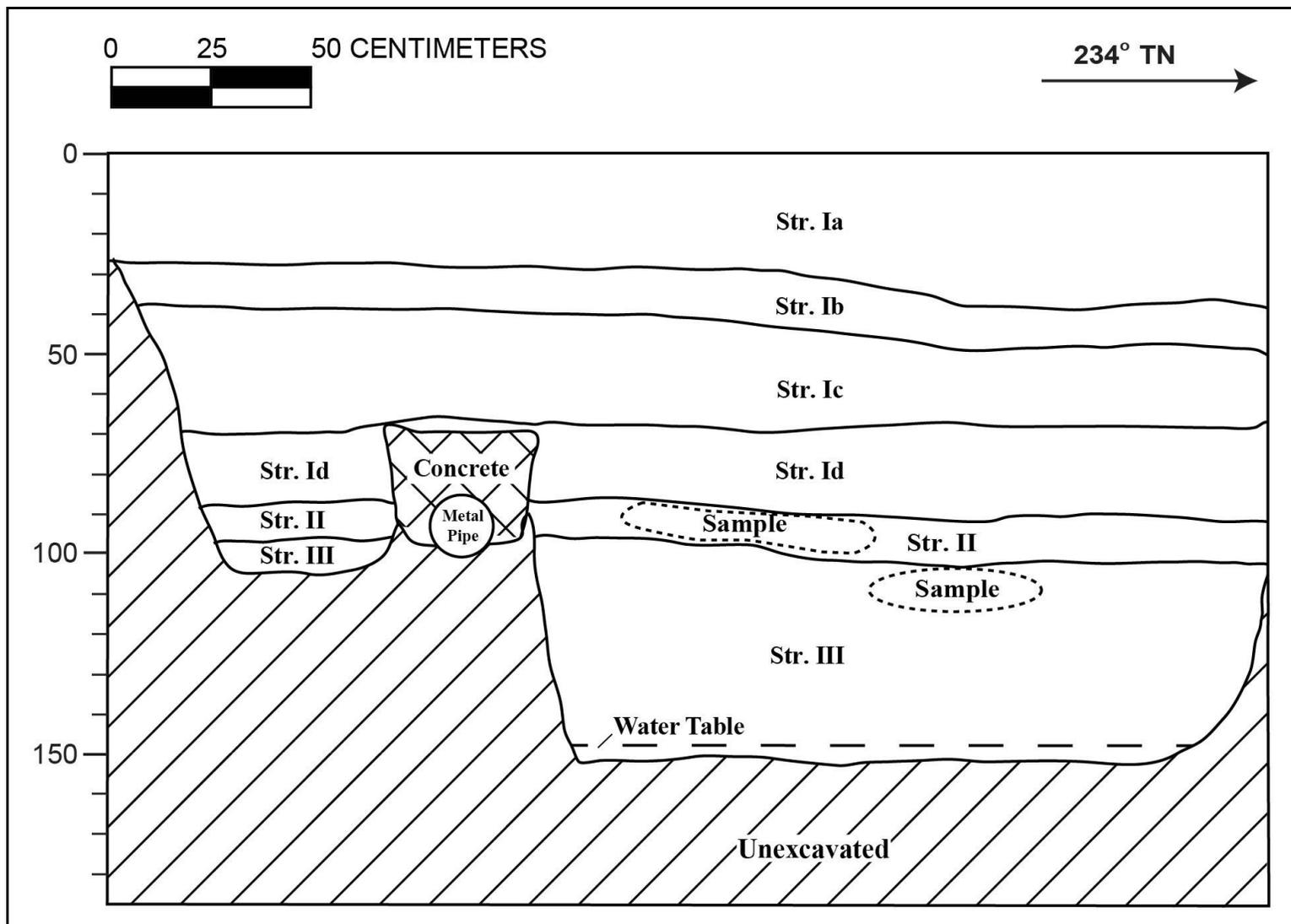
Summary: T-177 was excavated to a depth of 1.53 mbs. The water table was encountered at 1.48 mbs. The stratigraphy of T-177 consisted of fill (Ia–Id) overlying natural sediment (II–III). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL) above Strata II and III. The sample analysis documented the presence of possible traditional marine shell food refuse within Stratum II (a possible buried A-horizon) and naturally-occurring marine shell within Stratum III. However, the findings from Stratum II were insufficient to warrant designation of this layer as a cultural resource. As such, archaeological cultural resources were identified within T-177.



T-177 general location, view to west



T-177 southeast wall profile close-up at 1.4 mbs, view to south



T-177 southeast wall profile

T-177 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-38	Fill; 7.5 YR 3/2 (dark brown); clay loam; weak, fine, granular structure; moist, very friable consistency; slightly plastic; terrigenous origin; clear, wavy lower boundary; many very coarse roots; organic topsoil
Ib	25-49	Fill; 10 YR 4/3 (brown); gravelly silty loam; structureless, single-grain; moist, loose consistency; non-plastic; mixed origin; clear, wavy lower boundary; few medium to coarse roots; imported fill
Ic	39-71	Fill; 10 YR 3/1 (very dark gray); gravelly silty loam; structureless, single-grain; moist, loose consistency; non-plastic; mixed origin; clear, smooth lower boundary; few medium to coarse roots; imported fill contained asphalt gravel
Id	67-92	Fill; 10 YR 6/3 (pale brown); silty clay; structureless, massive; moist, firm; slightly plastic; terrigenous origin; very abrupt smooth lower boundary; few fine to medium roots; hydraulic fill; contained a metal spike
II	90-105	Natural; 10 YR 4/2 (dark grayish brown); silty sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; diffuse, smooth lower boundary; buried A-horizon; former land surface
III	97-153 (BOE)	Natural; 10 YR 7/4 (very pale brown); medium-grain sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; Jaucas sand

4.29 Test Excavation 178 (T-178)

Ahupua'a:	Honolulu
LCA:	387
TMK #:	2-3-003:087
Elevation Above Sea Level:	1.42 m
UTM:	619088 mE, 2355193 mN
Max Length/Width/Depth:	3.0 m/0.97 m/1.40 m
Orientation:	122/302° TN
Targeted Project Component:	Guideway Column
USDA Soil Survey Designation:	Fill land (FL)

Setting: Test Excavation 178 (T-178) was located within the center lane on Queen Street, near the corner of Queen Street and Kamake'e Street. It was located on private property owned by the Hawai'i Community Authority south (*makai*) of the World Gym facility and across from the Office Depot. T-178 was located 1 m north (*mauka*) of an electric line, 2 m east of a water line, and 4 m south of the sewer line.

Summary of Background Research and Land Use: Land Court Application 670 map 1 indicates that T-178 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 (see Figure 29). The 1884 Bishop map of Honolulu to Kewalo indicates that T-178 was located within marsh land called Kukuluaeo, 320 m southeast of LCA 10463:1, awarded to Napela. An unimproved or planned roadway is also depicted, extending northeast (*mauka*) to southwest (*makai*) within 300 m of T-178 (see Figure 27). The roadway is also depicted on the 1887 Wall map of Honolulu. The 1897 Monsarrat map of Honolulu depicts infrastructure development immediately north of, and including T-178, which is depicted within Queen Street and adjacent to the Queen Street and Kamake'e Street intersection. Expanded urbanization in the vicinity of T-178 is depicted throughout the series of twentieth century topographic maps and Sanborn fire insurance maps (see Figure 30, Figure 32, and Figure 33).

Several archaeological studies have been conducted in the vicinity of T-178 (see Figure 34). In 2000, CSH conducted archaeological monitoring for Ward Village Phase II (Ward Theaters), approximately 90 m southwest of T-178. 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 (ID-7) 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 230.0 m northeast of T-178. 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 included the location of T-178. Portions of a truncated buried A-horizon overlying Jaucas sand were documented, and no cultural resources were encountered (Yamauchi et al. 2011). In 2006, CSH conducted an archaeological inventory survey for the Victoria Ward Village Shops Project, adjacent to Kaka'ako ID-7 District and bounded by Auahi Street, Kamake'e Street, and Queen Street. Three historic properties were identified: SIHP #50-80-14-6854, a subsurface cultural layer containing both historic and prehistoric cultural material and five human burials; SIHP #50-80-14-6855, a pre-Contact traditional Hawaiian cultural layer with 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 (Bell et al. 2006). From 2003-2004, CSH conducted archaeological monitoring for the Queen Street extension from Kamake'e Street to Pi'ikoi Street as part of the Kaka'ako Community Improvement District 10 Project. Three historic properties were 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'Hare et al. 2006). In 2009, CSH conducted an archaeological inventory survey for the Queen Street Parks Project, which encompassed two parcels of land separated by Queen Street and bounded by Kamake'e Street, Auahi Street, Waimanu Street, and Pi'ikoi Street. The investigation encountered deposits relating to SIHP #50-80-14-6856, a historic fishpond remnant (Thurman et al. 2009).

Documentation Limitations: T-178 was excavated to a depth of 1.40 mbs. The water table was encountered at 1.37 mbs. There were no factors that limited excavation.

Stratigraphic Summary: The stratigraphy of T-178 consisted of fill strata to beneath the water table. Observed strata were asphalt (Ia), and extremely gravelly sand (Ib and Ic) to the water table. 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 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 0.5 mbs.

GPR depth profiles for T-178 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.

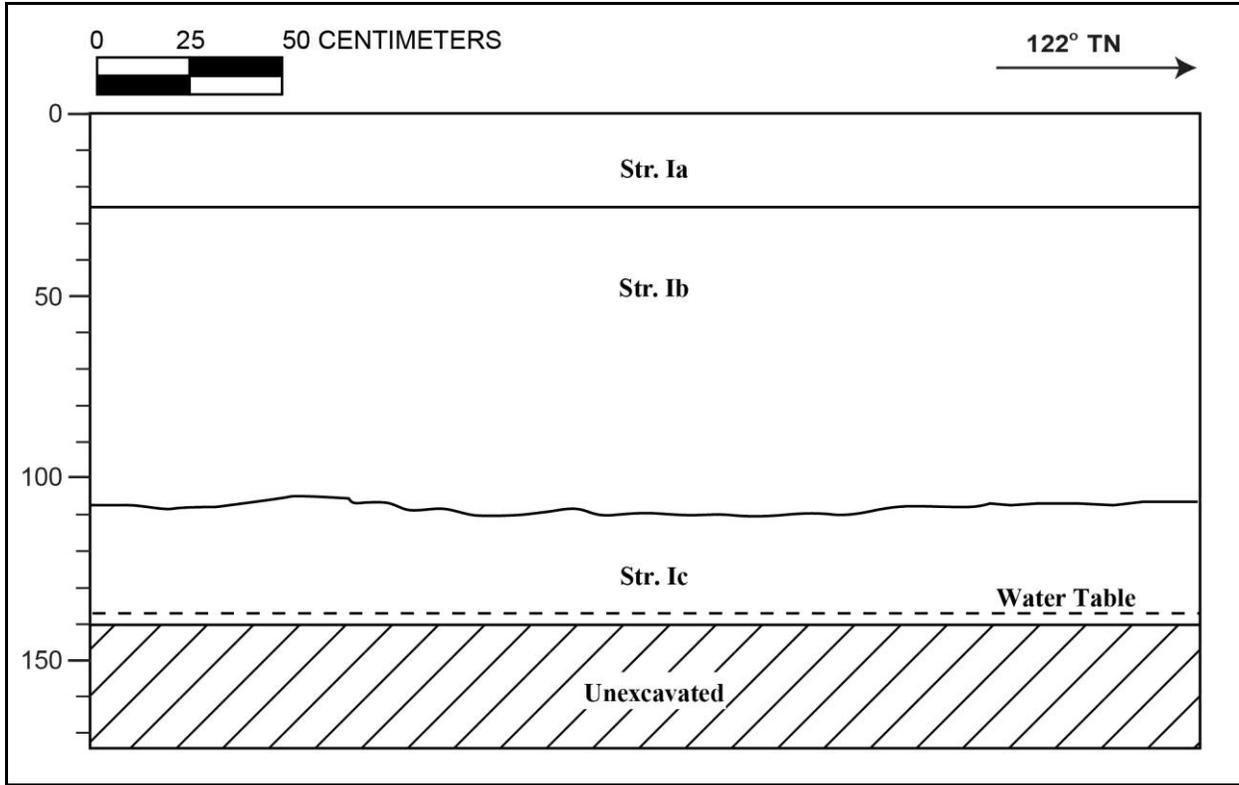
Summary: T-178 was excavated to a depth of 1.40 mbs. The water table was encountered at 1.37 mbs. The stratigraphy of T-178 consisted of fill strata (Ia to Ic) to beneath the water table. The stratigraphy conformed to the USDA soil survey designation of Fill land (FL). No archaeological cultural resources were identified within T-178.



T-178 general location, view to northeast



T-178 southwest profile wall, view to south



T-178 southwest wall profile

T-178 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-25	Asphalt
Ib	25-112	Fill; 10 YR 7/3 (very pale brown); extremely gravelly sand; structureless, single grain; loose, moist consistency; non-plastic; mixed origin; clear, smooth lower boundary; crushed coral fill
Ic	112-140 (BOE)	Fill; 10 YR 4/1 (dark gray); extremely gravelly sand; structureless, single grain; loose, moist consistency; non-plastic; mixed origin; lower boundary not observed; construction-grade gravel ("3b" gravel)

4.30 Test Excavation 178A (T-178A)

Ahupua'a:	Honolulu
LCA:	387
TMK #:	2-3-002:001
Elevation Above Sea Level:	1.48 m
UTM:	619088 mE, 2355193 mN
Max Length/Width/Depth:	3.0 m/1.0 m/1.72 m
Orientation:	212/32° TN
Targeted Project Component:	Guideway Column
USDA Soil Survey Designation:	Fill land (FL)

Setting: Test Excavation 178A (T-178A) was located on the corner of Queen Street and Kamake'e Street. T-178A was located within a landscaped area in the east corner of the Office Depot parking lot. It was an additional excavation added to further investigate the presence of the natural land surfaces in the surrounding area. T-178A also investigated a guideway column location and was on private property owned by Victoria Ward Ltd. Nearby utilities included a storm drain (6.0 m southeast of T-178A) and a water line (12.0 m southeast T-178A). The excavation surface was level with the surrounding topography.

Summary of Background Research and Land Use: Land Court Application 670 map 1 indicates that T-178A 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 (see Figure 29). The 1884 Bishop map of Honolulu to Kewalo indicates that T-178A was located within marsh land called Kukuluaeo, 320 m southeast of LCA 10463:1, awarded to Napela. An unimproved or planned roadway is also depicted, extending northeast (*mauka*) to southwest (*makai*) within 300 m of T-178A (see Figure 27). The roadway is also depicted on the 1887 Wall map of Honolulu. The 1897 Monsarrat map of Honolulu depicts infrastructure development immediately north of, and including T-178A, which is depicted within Queen Street and adjacent to the Queen Street and Kamake'e Street intersection. Expanded urbanization in the vicinity of T-178A is depicted throughout the series of twentieth century topographic maps and Sanborn fire insurance maps (see Figure 30, Figure 32, and Figure 33).

Several archaeological studies have been conducted in the vicinity of T-178A (see Figure 34). In 2000, CSH conducted archaeological monitoring for Ward Village Phase II (Ward Theaters), approximately 90 m southwest of T-178A. 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 (ID-7) 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 230 m northeast of T-178A. 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 included the location of T-178A. Portions of a truncated, buried A-horizon overlying Jaucas sand were documented, and no cultural resources were encountered (Yamauchi et al. 2011). In 2006, CSH conducted an archaeological inventory survey for the Victoria Ward Village Shops Project, adjacent to Kaka'ako ID-7 District and bounded by Auahi Street, Kamake'e Street, and Queen Street. Three historic properties were identified: SIHP #50-80-14-6854, a subsurface cultural layer containing both historic and prehistoric cultural material and five human burials; SIHP #50-80-14-6855, a pre-Contact traditional Hawaiian cultural layer with 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 (Bell et al. 2006). From 2003-2004, CSH conducted archaeological monitoring for the Queen Street extension from Kamake'e Street to Pi'ikoi Street as part of the Kaka'ako Community Improvement District 10 Project. Three historic properties were 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'Hare et al. 2006). In 2009, CSH conducted an archaeological inventory survey for the Queen Street Parks Project, which encompassed two parcels of land separated by Queen Street and bounded by Kamake'e Street, Auahi Street, Waimanu Street, and Pi'ikoi Street. The investigation encountered deposits relating to SIHP #50-80-14-6856, a historic fishpond remnant (Thurman et al. 2009).

Documentation Limitations: T-178A was excavated to the coral shelf at a depth of 1.72 mbs. The water table was encountered at 1.70 mbs. A PVC pipe was encountered at 0.20 mbs in the northeast portion of the excavation and another pipe was encountered at 0.28 mbs in the southwest portion of the excavation. These utilities shortened the length of the excavation. T-178A was hand excavated due to the presence and further possibility of subsurface utilities.

Stratigraphic Summary: The stratigraphy of T-178A consisted of fill strata overlying natural sediment to the decomposing coral shelf. Observed strata were silty clay loam fill (Ia), loamy sand fill (Ib), very gravelly sandy loam fill (Ic), very gravelly sandy loam fill (Id), and very fine sand fill (Ie), overlying natural medium to coarse loamy sand (II), natural coarse sand (III), and natural clayey sand (IV), to the the decomposing coral shelf (V). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL) above Strata II-V.

Artifacts Discussion: One brick (Acc. #178A-A-1) was collected from Stratum Ic at 0.35 mbs. The brick was machine made between 1918 and 1978, indicating this fill deposit dated to the twentieth century.

Features Discussion: No features were observed.

Terrestrial Faunal Remains Discussion: No terrestrial faunal remains were collected individually during excavation.

Sample Results: One 15-liter sample of Stratum III was screened during fieldwork. No cultural material was identified.

GPR Discussion: A review of amplitude slice maps indicated no linear features although two utilities were encountered during excavation. Reflectivity was relatively uniform throughout the grid and decreases with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.5 mbs.

GPR depth profiles for T-178A 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 0.3 mbs. Several Anomalies were observed in the profile and could correspond to the utility along the northwest wall that was encountered during excavation. The maximum depth of clean signal return was approximately 1.0 mbs.

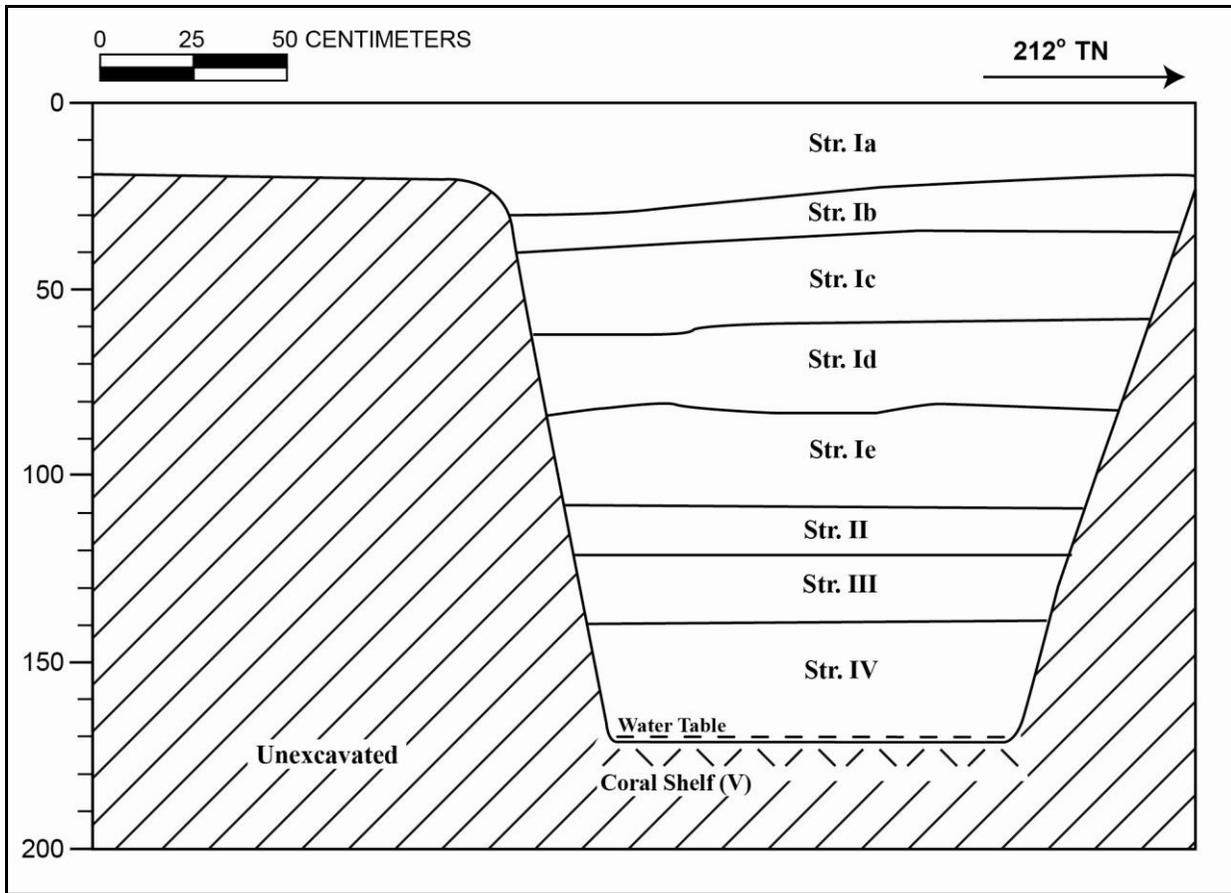
Summary: T-178A was excavated to the coral shelf at a depth of 1.72 mbs. The water table was encountered at 1.70 mbs. The stratigraphy of T-178A consisted of fill strata (Ia–Ie) overlying natural sediment (II–IV) to the decomposing coral shelf (V). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL) above Strata II. A single brick fragment was collected from a twentieth-century fill deposit (Ic). No cultural material was identified within the single screened bulk sediment sample. No archaeological cultural resources were identified within T-178A.



T-178A general location, view to northeast



T-178A southeast profile wall



T-178A southeast wall profile

T-178A Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-30	Fill; 10 YR 2/2 (very dark brown); silty clay loam; structureless, massive; moist, very friable consistency; slightly plastic; terrigenous origin; clear lower boundary; many coarse roots
Ib	20-40	Fill; 10 YR 4/2 (very dark grayish brown); loamy sand; structureless, single-grain; moist, very friable consistency; non-plastic; mixed origin; clear lower boundary; common, medium roots
Ic	35-64	Fill; 10 YR 3/2 (very dark grayish brown); very gravelly sandy loam; structureless, single-grain; moist, very friable; non-plastic; mixed origin; clear lower boundary; few, medium roots; one red brick (collected)
Id	64-82	Fill; 5 YR 3/3 (dark reddish brown) with mottles of 10 R 3/4 (dusky red); very gravelly sandy loam; structureless, single-grain; moist, friable consistency; non-plastic; mixed origin; clear, wavy lower boundary; few, fine roots.
Ie	82-108	Fill; 10 YR 8/3 (very pale brown) with mottles of 10 YR 5/6 (yellowish brown); very fine sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; abrupt boundary; few, fine roots; hydraulic fill banding
II	108-120	Natural; 10 YR 7/1 (light gray); medium coarse loamy sand; structureless, single-grain; moist, loose consistency; slightly plastic; mixed origin; diffuse and smooth boundary; buried A-horizon
III	120-140	Natural; 10 YR 6/2 (light brownish gray); coarse sand; structureless, single-grain; loose; non-plastic; marine origin; clear and smooth boundary; no roots.
IV	140-172	Natural; 10 YR 8/2 (very pale brown); clayey sand; structureless, single-grain; wet, non-sticky consistency; slightly plastic; marine origin; abrupt, smooth lower boundary
V	172 (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