
Section 4 Results

4.1 Pedestrian Inspection

Pedestrian inspection/surface survey of the City Center AIS study area was completed with 100 percent coverage. Pedestrian inspection of the City Center AIS study area was conducted at three separate times:

- 1) in May 2011 to support the preparation of the City Center AISP (Hammatt et al. 2011), this inspection was carried out by David Shideler and documented with photographs;
- 2) in November 2011 when the City Center AIS fieldwork began, this inspection was carried out by Matt McDermott, M.A. and documented with photographs; and,
- 3) in February 2013 when the AIS subsurface testing program was complete, this inspection was carried out by Nifae (Mana) Hunkin, B.A. and Michael (Pablo) Rivera, B.A., and documented with photographs.

The pedestrian inspection was carried out by systematically walking the roadways, sidewalks and other pedestrian areas, parking areas, and building interiors that make up the 13.87-acre City Center archaeological APE/study area. The only factor that limited the pedestrian inspection was the small number of privately-owned building interiors where pedestrian access was not possible, prior to the land owner's grant of right of entry for the subsurface testing. The inspection of these areas took place during the subsurface testing.

The City Center AIS study area is completely developed and it is not surprising that no surface archaeological cultural resources were observed during the pedestrian inspection. Figure 112 to Figure 123 are representative photographs of the HHCTCP guideway alignment and associated utility relocation corridor. These photographs, taken in February 2013, are presented from west to east to provide an overview of the City Center AIS study area's surface conditions and level of development at the time of the AIS fieldwork. Additional location photographs for individual test excavations presented in Volumes IVA, IVB, IVC, and IVD, provide a much more comprehensive photographic record of surface conditions during the AIS fieldwork.

4.2 Excavation Summaries

Two hundred-fifty (T-001 through T-232A) test excavations and seven geotechnical cores were investigated in the City Center study area. An overview of the geographic distribution of these test excavations is provided in the detailed discussion in Section 3 (above) of this volume. A detailed discussion of each test excavation including reference to a location map, photographs of the excavation location and stratigraphy, an illustrated profile, a tabulated description of the stratigraphy, and a descriptive summary of the excavation conditions and results is presented in Volumes IVA, IVB, IVC, and IVD. Volume IVA contains the results of Test Excavations 001–047, Volume IVB contains the results of Test Excavations 048–095, Volume IVC contains the results of Test Excavations 096–178, and Volume IVD contains the results of Test Excavations 179–232A. Results of six of the seven geotechnical cores, carried out at the locations of Test Excavations 098, 099, and 101 in the Chinatown Station footprint, are



Figure 112. *Mauka* portion of the Middle Street Transit Center Station location at Kalihi Stream Bridge, view to north across Kamehameha Highway



Figure 113. Location of *mauka* Kalihi Station at the intersection of Dillingham Boulevard and Mokauea Street, view to northeast



Figure 114. HHCTCP alignment through Kalihi, taken at the intersection of Kalihi Street and Dillingham Boulevard, view to southeast



Figure 115. View east across the intersection of Dillingham Boulevard and Kokea Street at the location of *mauka* portion of Kapalama Station at Honolulu Community College



Figure 116. Location of the Iwilei Station, west portion, near the intersection of Dillingham Boulevard and Kaaahi Street, view to southeast



Figure 117. View southeast of the HHCTCP alignment at the Diamond Head-end of Ka'aahi Street, between the Iwilei and Chinatown Stations



Figure 118. Location of the Chinatown Station, at the intersection of Nimitz Highway and Kekaulike Street, view to northeast



Figure 119. View south of the HHCTCP alignment along Nimitz Highway at Honolulu Harbor, looking towards the intersection of Nimitz Highway and Fort Street



Figure 120. View west of the HHCTCP utility relocation corridor at the intersection of Ala Moana Boulevard and Punchbowl Street



Figure 121. View southeast of the HHCTCP alignment at the intersection of Halekauwila Street and Keawe Street, the location of the City Center Station is to the right of the right foreground of the photograph

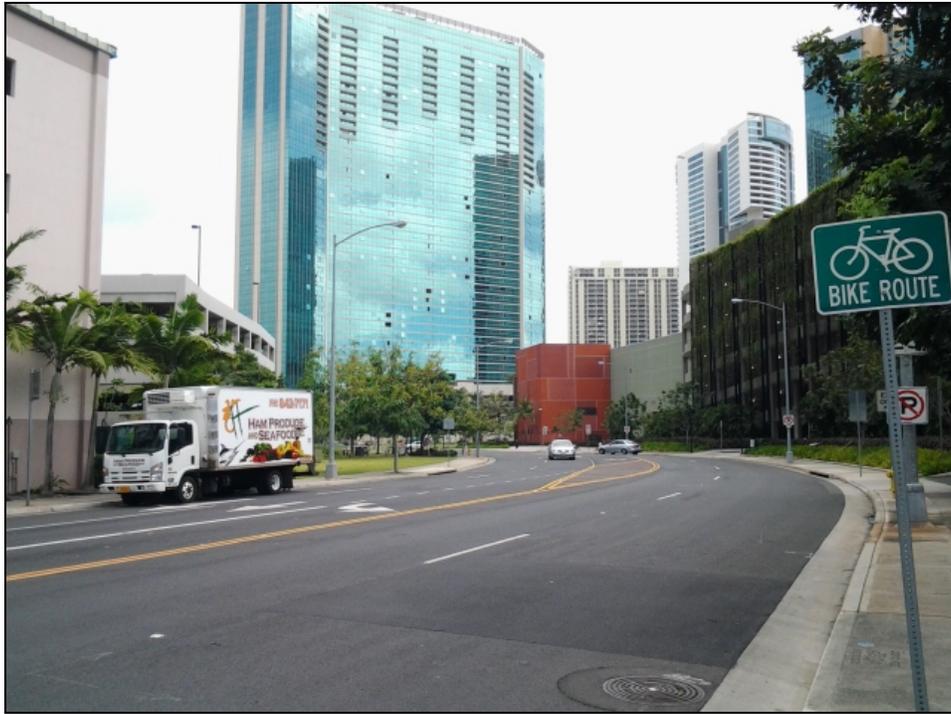


Figure 122. View east of the HHCTCP alignment along Queen Street, between Kamake'e Street and Waimanu Street



Figure 123. View east across Pi'ikoi Street and down Kona Street towards the Ala Moana Station

summarized in the archaeological cultural resource description for SIHP #50-80-14-7427 (see Section 4.3, below). The seventh geotechnical core, carried out in the vicinity of Test Excavation 124 on Halekauwila Street between Punchbowl and South Streets, is described in the archaeological cultural resource description for SIHP #50-80-14-2963 (see Section 4.3, below).

The stratigraphic sequences are described following USDA soil description terminology (Natural Resources Conservation Service/USDA 2002). Observations included color; texture; structure; consistency; plasticity; cementation (if appropriate); sediment origin (marine or terrigenous); inclusions such as cultural materials and/or roots; lower boundary distinctiveness and topography; and other general observations. The use of these standardized descriptive observations allowed for stratigraphic comparisons with nearby excavation areas. They also facilitated comparison with other data to develop the historic context of each test excavation, including information about general setting, geomorphology, depositional history, past land use, and identification of buried archaeological cultural resources (sites, features, deposits) within individual excavations and across the City Center AIS study area.

The entire City Center study area has been extensively developed and is characterized by streets, sidewalks, parking areas, buildings, and landscaped areas. There are multiple historic (pre-1960) and modern deposits characterized by asphalt, base course fill, reworked fill, introduced fill, or locally-procured fill. Within this portion of the project corridor, these fill generally relate to reclamation projects and/or construction projects involving roads, utilities, or other infrastructure. An important aspect of documenting the stratigraphic sequences within the corridor focused on identifying the impacts to (e.g., truncation) and the nature of the boundaries (e.g., smooth and distinct) between these fill episodes and any underlying natural strata (e.g., wetland sediments) or cultural strata (e.g., former A-horizons) associated with pre- and/or early post-Contact land use.

The strata within the City Center study area included the following:

- Natural: sediment deposited by natural processes (e.g., coral bedrock, beach sand).
- Cultural: sediment deposited by various processes and that included cultural materials (e.g., artifacts) or evidence of cultural activities (e.g., features, living surfaces). Most commonly, these deposits are identified as buried A-horizons with evidence of features and/or artifacts.
- Reworked Fill: sediment consisting primarily of local parent material of limited human spatial transport often characterized by an admixture of historic or modern construction debris with previously-deposited natural and/or cultural sediments.
- Introduced Fill: sediment consisting primarily of parent material that is distinct from locally-available sediments and was transported by humans from another location. These fills may include dredged material, terrestrial material, and/or some admixture of historic or modern debris.
- Locally-Procured Fill: sediment consisting of local parent material, but often involving a broader area of human transport than Reworked Fill.
- Top Soil Fill: sediment of higher organic content imported by humans to support historic or modern landscaping (often loams).

- Base Course: sediment consisting of homogenous material such as crushed coral or basalt gravel imported and compacted by humans to provide a support base for overlying construction (e.g., building foundations or roads).

Limitations and important documentation procedures (if applicable) for each test excavation are summarized in the “Documentation Limitations” section of each individual test excavation summary. Where possible, excavation was carried out to 3 m below surface (mbs), the maximum depth possible due to safety concerns, the available shoring system, and the limits of the mechanical excavator’s reach. Reaching bedrock or the water table before this depth halted excavation at shallower depths. Sometimes there were utilities in the excavation sidewalls or loose fill, often with boulders, that made excavation sidewalls unstable and unshorable. In these instances, safety concerns often limited depth of excavation and trench recording procedures—for example, if shoring could not be used because of loose, unstable excavation sidewalls, then archaeologists could not enter the excavations to take samples and draw stratigraphy. In these instances, documentation proceeded in the best, most thorough manner available given the limitations—in consultation with the on-site safety consultant.

In some test excavations, concrete slabs, concrete utility jackets containing live utilities, or other paving layers were encountered. On-site safety was a primary consideration and the archaeologists complied with the on-site safety consultant’s decisions regarding whether excavation could safely extend and/or continue through such paving layers. As such, some test excavations were halted due to these safety hazards.

4.3 Archaeological Cultural Resource Descriptions

Eighteen (18) archaeological cultural resources were identified within, or immediately adjacent to, the City Center AIS study area (Figure 124). Twelve of these resources were previously identified and documented, and some have already had their Hawai’i and/or National Register-eligibility determined. Where this eligibility has not yet been determined for these previously identified cultural resources, eligibility recommendations are given based on available information. The remaining six were newly identified and documented during the City Center AIS and their Hawai’i and National Register-eligibility is presented here as a recommendation. All 18 archaeological cultural resources have been assigned Hawai’i State Inventory of Historic Properties (SIHP) numbers. They are listed and summarized below in Table 8 in roughly geographic order, from west to east, to correspond with Figure 124. The six bold SIHP #s in the first column of Table 8 are newly identified as part of the City Center AIS. The following text describes the 18 archaeological cultural resources in numerical order.

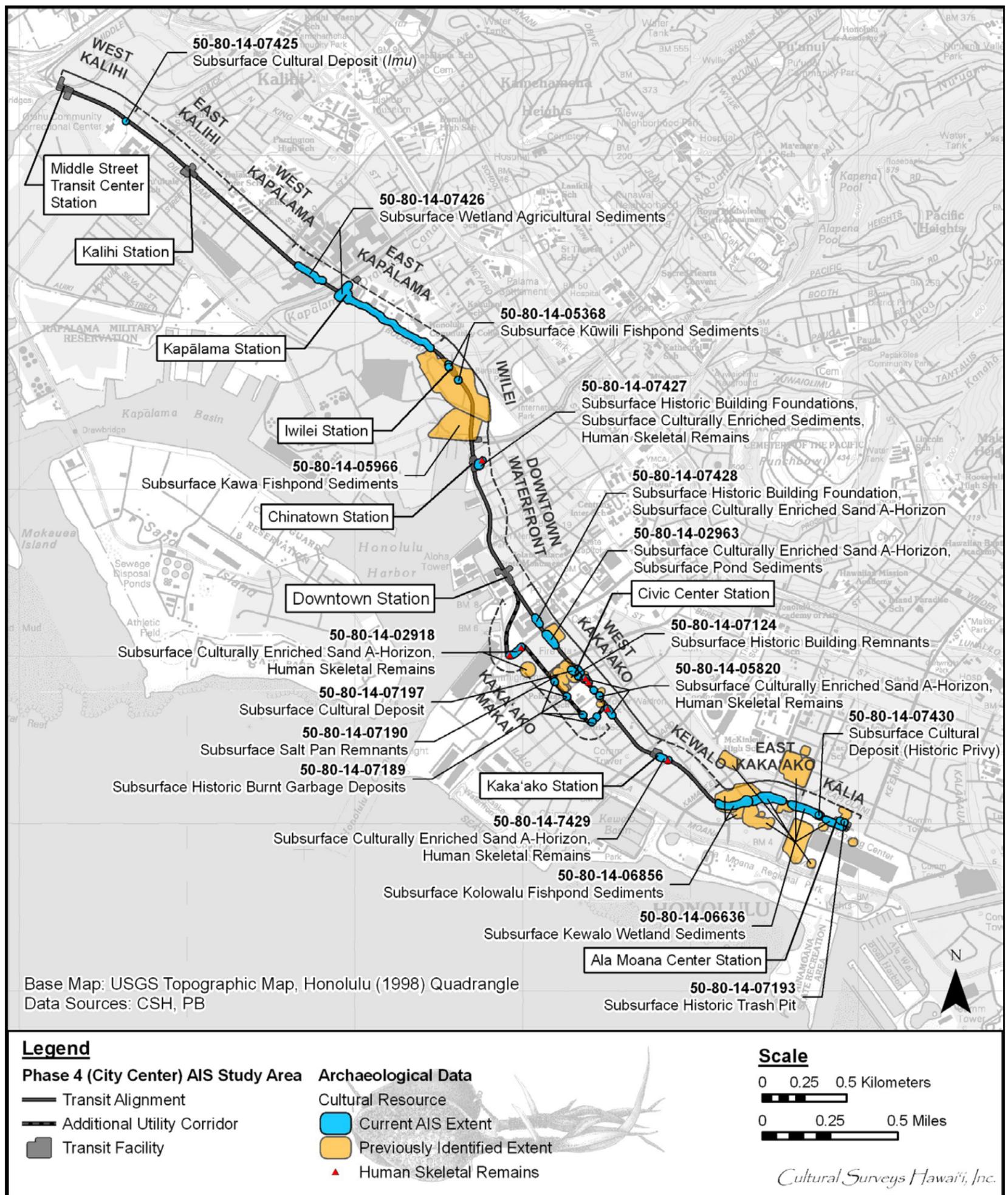


Figure 124. The archaeological cultural resources that were identified within, or immediately adjacent to, the City Center AIS study area (Base Map: U.S.G.S. 1998 Topographic Map of Honolulu Quadrangle)

Table 8. Summary of Archaeological Cultural Resources Located in, or Immediately Adjacent to the City Center AIS Study Area (Bold SIHP #s Newly Identified in this Study)

SIHP #	CSH Temp. #	City Center Excavation #(s)	Location	Description/Formal Type	Function	Age	Previous Reference	Significance / Eligibility ¹		Integrity ² (Yes/No)							Mitigation
								Hawaii Register	National Register	Location	Design	Setting	Materials	Workmanship	Feeling	Association	
50-80-14-7425	1	T-020	Dillingham Blvd. near OCCC	Buried single <i>imu</i> (earth oven) feature	Cooking	Pre-Contact	N/A	D	D	Y	Y	N	Y	Y	N	N	Monitoring
50-80-14-7426	2	T-054-082, and T-085	Dillingham Blvd. between Waiakamilo Road to near Kaaahi Street	Buried agricultural sediments	Agriculture	Pre and Post-Contact	N/A	D	D	Y	N	N	Y	N	N	N	Monitoring
50-80-14-5368	N/A	T-088, 091, 092, 093, and 094	Iwilei Station footprint—towards Nuuanu Stream	Buried remnants of Kuwili Fishpond	Aquaculture	Pre and Post-Contact	McGerty et al. 1997, Hammatt et al. 2008, Athens and Ward 1997	<u>D</u>	<u>D</u>	Y	N	N	Y	Y	N	N	Monitoring
50-80-14-5966	N/A	T-095 within fishpond boundaries but no fishpond sediments observed	Between Iwilei Station and Nuuanu Stream	Buried remnants of Kawa Fishpond	Aquaculture	Pre and Post-Contact	McDermott and Mann 2001	<u>D</u>	<u>D</u>	Y	N	N	Y	Y	N	N	Monitoring
50-80-14-7427	3	T-096-101	Intersection of Kekaulike St. and Nimitz Hwy.	Buried historic building foundations and walls and underlying culturally enriched sediments, which do not have features, also one human talus bone in a fill deposits	Habitation / Commerce	Pre and Post-Contact	N/A	D	D	Y	N	N	Y	Y	N	N	Monitoring
50-80-14-7428	4	T-119, 119A, 120, 120A, 120B	Halekauwila St. between Richards St. and Punchbowl St.	Buried culturally-enriched sand A-horizon (T-120, 120A, and 120B) and historic warehouse foundation (T-119 and 119A)	Habitation / Commerce	Pre and Post-Contact	N/A	D	D	Y	Y	N	Y	Y	N	N	Data Recovery and Monitoring of sand A-horizon, Monitoring for historic foundation
50-80-14-2963	N/A	T-122, 123, and 124	Halekauwila St. between Punchbowl St. and South St.	Buried pond sediments containing historic artifacts—T-122 and 123, culturally-enriched sand A-horizon (in the current study area T-124), also includes 7 human burials as described in the adjacent Makai Parking Garage monitoring report (Clark 1987)	Habitation / Aquaculture / Burial interment	Pre and Post-Contact	Clark 1987	D and E ³	D	Y	N	N	Y	Y	N	N	Monitoring for pond sediments, Data Recovery and Monitoring for culturally Enriched sand A-horizon.
50-80-14-7124	N/A	T-132	Halekauwila St. between South St. and Keawe St.	Buried historic building remnants	Habitation	Post-Contact	Pammer et al. 2011	Previous: <u>A</u> and <u>D</u> Recommended: D only	D	Y	N	N	Y	N	N	N	Monitoring
50-80-14-7189	N/A	T-130, 132,134, 138, 140, 231A, 232, and 232A	Halekauwila St. between South St. and Keawe St.	Buried fill layer containing burnt historic trash from open burning	Land reclamation / Refuse disposal	Post-Contact	Pammer et al. 2011	Previous: <u>A</u> and <u>D</u> Recommended: D only	D	Y	Y	N	Y	N	N	N	Monitoring
50-80-14-7190	N/A	T-229 and T-230	Pohukaina St. between South St. and Keawe St.	Buried salt pan remnants	Salt production	Undetermined, potentially pre and post-Contact	Pammer et al. 2011	Previous: <u>A</u> and <u>D</u> Recommended: D only	D	Y	N	N	Y	Y	N	N	Monitoring

SIHP #	CSH Temp. #	City Center Excavation #(s)	Location	Description/Formal Type	Function	Age	Previous Reference	Significance / Eligibility ¹		Integrity ² (Yes/No)							Mitigation
								Hawaii Register	National Register	Location	Design	Setting	Materials	Workmanship	Feeling	Association	
50-80-14-7197	N/A	Not observed in current AIS, but potentially affected by project construction due to close proximity	Halekauwila St. between South St. and Keawe St.	Buried culturally-enriched sand A-horizon	Habitation	Late pre-Contact / early post-Contact	Pammer et al. 2011	<u>Previous: A</u> and <u>D</u> Recommended: D only	D	Y	Y	N	Y	N	N	N	Monitoring
50-80-14-5820	N/A	T-141, 142, 145, 146A, 150, 151, 151A	Halekauwila St. from Keawe St. to just east of Cooke St.	Human skeletal remains/burials and buried culturally enriched sand A-horizon	Habitation / Burial interment	Pre and Post-Contact	Winieski and Hammatt 2000	D and E	D	Y	Y	N	Y	N	N	N	Data Recovery, Monitoring, Burial Treatment
50-80-14-7429	5	T-167, 168, 168A, 168B, 169, 170, and 170A	Near corner of Queen St. and Ward Ave.	Buried subsurface culturally enriched sand A-horizon—and human cranial Fragment in T-170	Habitation	Undetermined, potentially pre and post-Contact	N/A	D	D	Y	Y	N	Y	N	N	N	Monitoring
50-80-14-6856	N/A	T-181-185	Queen St. between Kamakee St. and Waimanu St.	Buried remnants of Kolowalu Fishpond	Aquaculture	Pre and Post-Contact	O'Hare et al. 2006, Bell et al. 2006, Thurman et al. 2009,	D	D	Y	Y	N	Y	Y	N	N	Monitoring
50-80-14-6636	N/A	T-186-193, 195, 196, 198-200, 202, 202A, 203, 205, 207, 208, 210-212, 214, 219, and 220	From intersection of Queen St. and Waimano St. to along Kona Street adjacent to Ala Moana Center	Buried remnants of the former Kewalo wetland land surface	Former land surface	Pre and Post-Contact	Tulchin and Hammatt 2004, O'Hare et al. 2003, O'Hare et al. 2004, Clark and Gosser 2005, Altizer et al. 2011, Runyon et al. 2011, Morriss et al. 2013	<u>Previous: A</u> and <u>D</u> Recommended: D	D	Y	N	N	Y	N	N	N	Monitoring
50-80-14-7430	6	T-202	Kona St., Diamond Head of Pi'ikoi St.	Buried remnant of a historic privy	Toilet	Post-Contact	N/A	D	D	Y	Y	N	Y	Y	N	N	Monitoring
50-80-14-7193	N/A	T-214	Ala Moana Station	Buried historic refuse-enriched fill deposit	Refuse disposal	Post-Contact	Burke and Hammatt 2012	<u>Ineligible</u>	Ineligible	Y	N	N	Y	N	N	N	N/A
50-80-14-2918	N/A	T-226A, B, C, and D, T-227 and 227A	Punchbowl St. between Ala Moana Blvd. and Pohukaina St.	Buried culturally enriched sand A-horizon with human skeletal remains/burials, also includes iron historic trolley or cart tracks	Habitation / Burial interment / Transportation	Pre and Post-Contact	Yent 1985	D and E	D	Y	Y	N	Y	Y	N	N	Data Recovery, Monitoring, and, Burial Treatment

¹Underlined criteria indicates already determined eligible based on past historic preservation review, no underlining indicates recommended eligibility based on past documentation and/or current AIS investigation.

²Assessed based on the guidance and definitions from National Register Bulletin #15, "How to Apply the National Register Criteria for Evaluation."

³(For burials described in Clark 1987, no human remains/burials documented for SIHP #-2963 in the current City Center AIS).

4.3.1 SIHP # 50-80-14-2918

FORMAL TYPE:	Buried culturally enriched A-horizon containing human remains and iron historic trolley or cart tracks
FUNCTION:	Habitation, burial interment, and transportation
PREVIOUS DOCUMENTATION:	Yent 1985
AGE:	Pre- and post-Contact
NO. FEATURES:	30
DISTRIBUTION:	0.33 acres (within current project area), 1.05 acres (total area)
LOCATION:	Along Punchbowl Street near the Ala Moana intersection (West Kaka'ako Geographic Zone)
TAX MAP KEY:	Plat 027 (in the current project area), TMK [1] 2-1-029:001 (identified by Yent 1985)
LAND JURISDICTION:	City and County of Honolulu

SIHP # 50-80-14-2918 is a previously identified subsurface cultural deposit located along Punchbowl Street near the Ala Moana intersection, and *makai* of Pohukaina Street between Punchbowl and South Streets (Figure 125 and Figure 126). The archaeological cultural resource was first identified in 1985 by Martha Yent. Yent (1985) excavated and documented five burials and a disarticulated cranium at the Honolulu Ironworks Construction Site, located near the corner of Punchbowl and Pohukaina Streets. The burials were located in a sand layer underlying nearly a meter of various fill materials, and they were distributed across an area that measured approximately 0.72 acres (Yent 1985). The age and ancestry of the human remains was not determined.

During the current AIS, a subsurface, culturally enriched A-horizon containing 27 archaeological features was identified in six test excavations (T-226A, T-226B, T-226C, T-226D, T-227, and T-227A). These test excavations are located approximately 90 m northwest of the five human burials discovered by Yent (1985). The newly identified subsurface features include 23 pits, 2 human burials, 1 dog burial, and 1 post mold. Three additional features, which are not associated with the A-horizon, are included in SIHP # -2918. Feature 28 consists of the remnants of a historic structure with a possible transportation function. Feature 29 consists of a historic pit containing reworked and redeposited A-horizon material. Feature 30 consists of a possible post-mold containing a preserved post. Due to its stratigraphic location in a fill deposit, Feature 30 is not associated with the buried A-horizon. Detailed information regarding each archaeological feature is provided in Table 9. CSH recommends that this culturally enriched

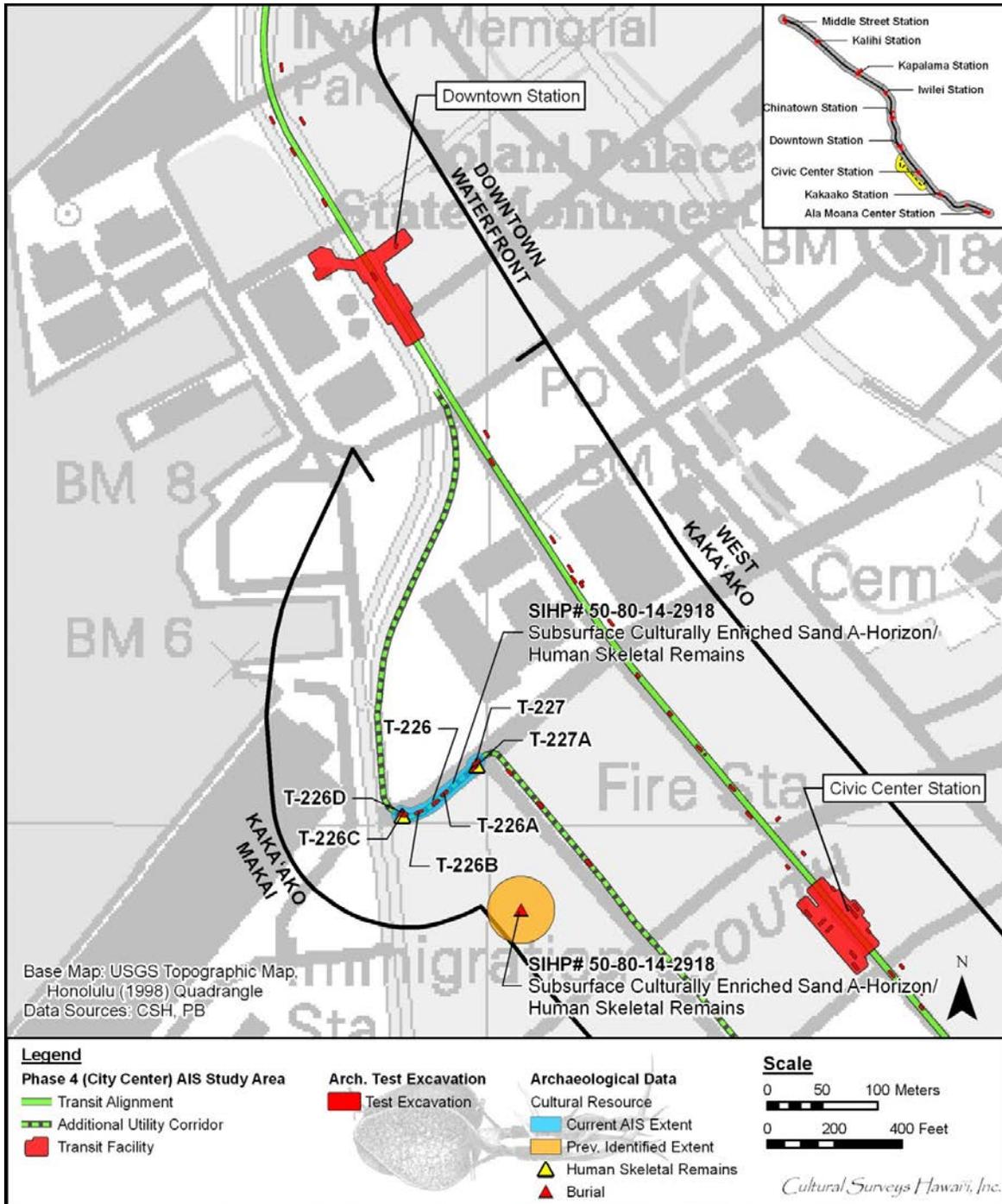


Figure 125. Location of SIHP # 50-80-14-2918 within the West Kaka'ako (Makai) Zone (Base Map: USGS 1998 Topographic Map of Honolulu Quadrangle)

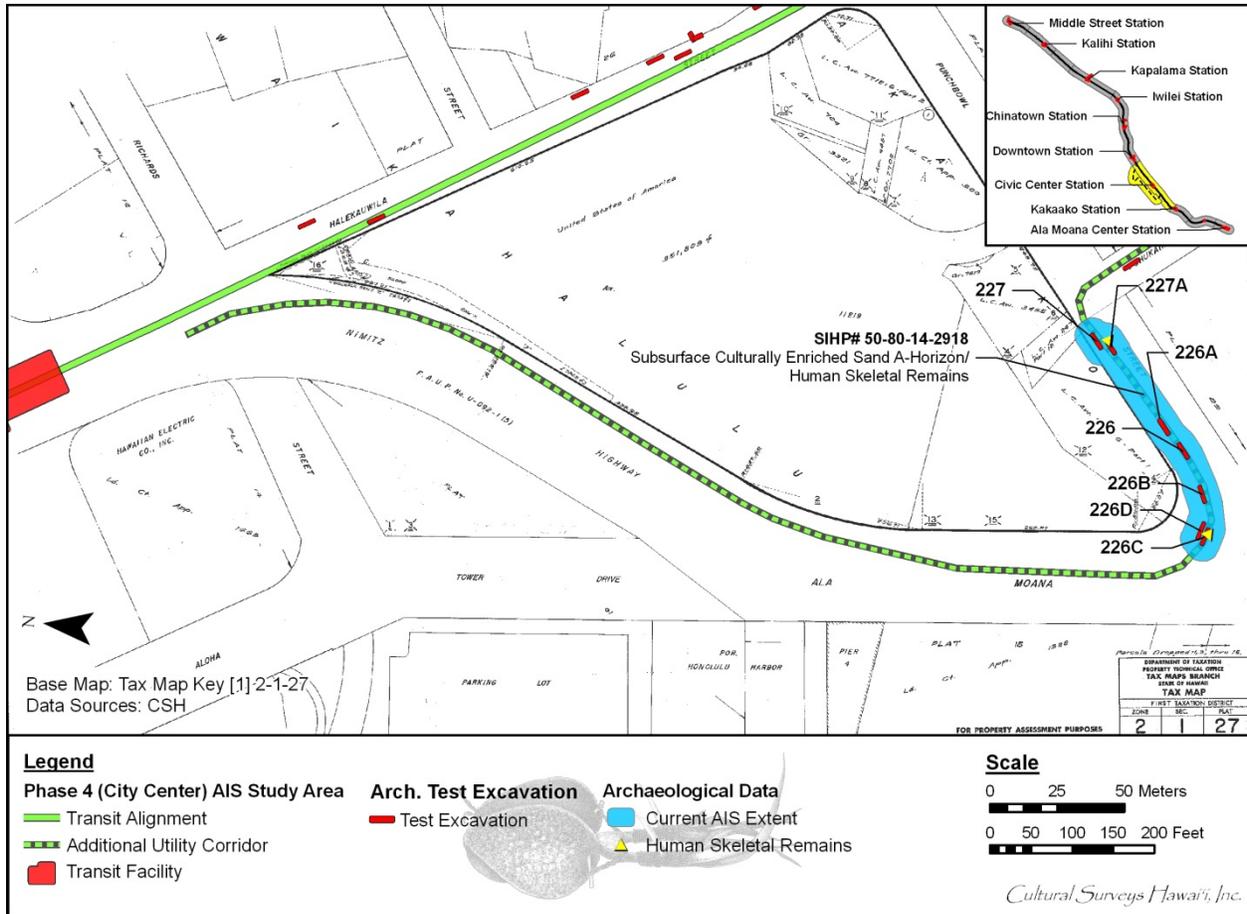


Figure 126. Location of SIHP # 50-80-14-2918 within the West Kaka'ako (Makai) Zone (Base Map: Tax Map Key [1] 2-1-27)

Table 9. Archaeological features of SIHP # -2918 discovered during the current archaeological inventory survey

Feature	Test Excavation	Depth (cmbs)	Radiocarbon Date (C14)	Type	Contents
1	T-226A	92-104	-	Pit	Charcoal (<i>kolomona</i> , 'ilima, <i>kōpiko</i> , 'ōhi'a lehua, <i>ipu</i> , <i>hau</i> , <i>kukui</i> , 'āheahea, <i>hala</i> , 'akoko), burned <i>kukui</i> nut shells, shell, shell midden, faunal bone (fish, medium mammal)
2	T-226A	82-96	-	Pit	Charcoal (<i>kukui</i> , <i>niu</i> , 'ōhi'a lehua, <i>hau</i> , 'ulu), rusted nail, ceramic fragment, shell, shell midden, faunal bone (fish, <i>Sus scrofa</i> molar fragment, medium mammal)
3	T-226A	87-102	-	Pit	Charcoal (<i>kōpiko</i> , <i>kukui</i> , <i>kī</i> , 'akoko, 'ōhi'a lehua, 'āheahea, 'ulu, 'ūlei, 'ilima, <i>lama</i> , grass, <i>kolomona</i> , <i>ipu</i>), shell, shell midden, burned <i>kukui</i> nut shells, volcanic glass (1, debitage), faunal bone (fish, <i>Rattus</i> sp., small mammal), shell midden
4	T-226B	70-96	-	Pit	Charcoal ('ōhi'a lehua, 'āheahea, <i>kukui</i> , 'ulu, and <i>maiapilo</i>), marine shell, marine shell midden, faunal bone (fish, a shark tooth, a <i>Rattus</i> sp. tooth), fire-cracked rock
5	T-226B	75-95	-	Pit	Charcoal ('akoko, <i>kolomona</i> , and <i>kukui</i>), marine shell, marine shell midden, faunal bone (<i>Rattus</i> sp.), volcanic glass (1, debitage)

Feature	Test Excavation	Depth (cmbs)	Radiocarbon Date (C14)	Type	Contents
6	T-226B	80-110	AD 1720-1820	Pit	Charcoal ('ōhi'a lehua, kukui, hau, niu, and kī), marine shell, marine shell midden, faunal bone (<i>Canis lupus familiaris</i> premolar tooth), vesicular basalt, volcanic glass (3, debitage)
7	T-226B	80-95	-	Pit	Charcoal (<i>niu</i>), marine shell, marine shell midden
8	T-226B	76-90	AD 1630-1810	Pit	Charcoal (<i>niu</i> , 'akoko, kolomona, 'ilima, 'āheahea, kī, kukui, and lama), marine shell, marine shell midden, faunal bone (fish, small/medium mammal), fire-cracked rock, volcanic glass (1, debitage)
9	T-226B	76-85	-	Pit	Charcoal, marine shell midden,
10	T-226B	75-87	-	Pit	Charcoal ('ōhi'a lehua and 'ilima), marine shell, marine shell midden, faunal bone (<i>Rattus</i> sp., medium mammal), water-worn basalt
11	T-226B	78-94	AD 1720-1820	Dog burial	Charcoal (<i>kolomona</i> , <i>niu</i> , 'ilima, and <i>kukui</i>), marine shell, marine shell midden, faunal bone (fish),
12	T-226C	114-139	-	Pit	Charcoal, shell, faunal bone (fish)
13	T-226C	115-137	-	Human burial	Observed skeletal remains consisted of a pelvis with no articulating leg elements
14	T-227	90-107	-	Pit	Charcoal, shell, faunal bone (fish, <i>Bos taurus</i>), a bottle glass fragment

Feature	Test Excavation	Depth (cmbs)	Radiocarbon Date (C14)	Type	Contents
15	T-227	93-113	-	Post mold	Possible post mold
16	T-227	101-117	-	Pit	Charcoal, shell, faunal bone (medium mammal), metal, bottle glass fragment
17	T-227	105-116	-	Pit	Charcoal, shell, faunal bone (fish, medium mammal, 2 <i>Sus scrofa</i> molars), metal, bottle glass fragment, glass candle-holder, and an ivory bead
18	T-227	100-105	-	Pit	Charcoal, shell midden, faunal (fish)
19	T-227	100-122	-	Pit	Charcoal, shell midden
20	T-227	90-102	-	Pit	No sample collected, no cultural material observed
21	T-227	100-119	-	Pit	Charcoal, shell midden, ceramic fragment
22	T-227A	103-108	-	Pit	Shell midden, faunal bone (fish), fire-cracked rock, a brick fragment
23	T-227A	108-131	AD 1720-1810	Pit	Charcoal (<i>kōpiko</i> and <i>lama</i>), shell, volcanic glass (2, debitage)
24	T-227A	117-130	-	Pit	Shell, faunal bone (medium mammal, a shark tooth)
25	T-227A	94-108	-	Pit	Shell, faunal bone (fish), volcanic glass (1, debitage)
26	T-227A	112-137	-	Pit	Shell, faunal bone (<i>Canis lupus familiaris</i>)
27	T-227A	120	-	Human burial	A partial infant burial (0-3 years), no visible pit outline

Feature	Test Excavation	Depth (cmbs)	Radiocarbon Date (C14)	Type	Contents
28	T-226D	65	Historic	Remnant rail infrastructure	This feature is comprised of a wood beam, a metal rail (I-beam), and numerous red bricks and brick fragments. The feature measures 2.2 m long by 0.8 m wide. Possible remnant railway or streetcar system.
29	T-226C	78-97		Pit	A diffuse pit with downward tapering sidewalls and a rounded bottom. Contains former culturally-enriched sand A-horizon material that was locally-procured, mixed with other fill material, and re-deposited. Lab analysis yielded charcoal, burned wood, a green bottle glass fragment, burned faunal bone (medium mammal), and fire-cracked rock.
30	T-226C	70-113		Pit	Possible post-mold with straight sides and a slightly rounded base containing a preserved wooden post and fire-cracked rock.

A-horizon and the 30 archaeological features be included as components of SIHP # -2918, given their relative proximity to the previously identified burials.

The buried A-horizon generally consisted of either loamy sand observed at an average depth of 0.53 to 0.99 mbs, or Jaucas sand at an average depth of 1.18 to 1.41 mbs (Figure 127 and Figure 128). These culturally enriched deposits were observed below imported fill material that is likely associated with early twentieth century land reclamation efforts in Kaka'ako. In all but one of the test excavations (T-226C), the A-horizon sediments were overlying natural Jaucas sand. Historic material, including bottle glass, ceramic fragments, metal, brick, and other various items were occasionally observed in the upper boundary of the A-horizon sediments. These likely represent historic disturbance to the older buried A-horizon. The upper A-horizon deposits in T-227 contained a mix of Anglo-American ceramic fragments and bottle glass fragments that date to the 1870s to 1920s. Similar bottle glass fragments, also dated between the 1870s and 1920s, were found in the upper A-horizon deposits in T-227A. In some instances, the lower boundary of the A-horizon sediments and its associated features appear to be more intact and contained charcoal, volcanic glass, faunal bone, and shell midden (see Table 9). Ten fragments of volcanic glass (debitage) were discovered in the A-horizon and in six features (3, 5, 6, 8, 23, and 25). Energy-Dispersive X-ray Fluorescence (EDXRF) analysis indicates that the volcanic glass is from a local O'ahu provenance. A single pick (used to remove the meat from gastropods) (Acc. # 226A-H-1) made out of dog bone (*Canis lupus familiaris*) was discovered in the A-horizon deposits of T-226A (Figure 129).

Historic material was occasionally documented in the archaeological pit features (Features 14, 16, 17, and 21 in T-227), and included bottle glass fragments, a machine-drilled ivory bead (Acc. #227-A-29), metal, and a possible candleholder (Acc. #227 A-28) (Figure 130 and Figure 131). The historic material may indicate that some of the pit features in SIHP # -2918 were utilized or disturbed during the post-Contact era. Feature 29 is an example of historic disturbance to the buried A-horizon. The sediment within and around Feature 29 appears to be culturally-enriched A-horizon material that was mixed with fill material and re-deposited. The majority of the pit features, however, contained cultural material- shell midden, volcanic glass, and fire-cracked rock- that is suggestive of traditional habitation. Radiocarbon analysis on charcoal samples from Features 6, 8, 11, and 23 provided a date range between the late pre-Contact and early post-Contact periods (see Table 9).

Feature 28 was identified at 0.65 mbs in the upper fill deposits of T-226D. Features 28 through 30 are the only archaeological features that are not associated with the culturally enriched A-horizon. Feature 28 is comprised of 10-12 iron rail tracks (I-beams in cross section), and numerous yellow bricks and brick fragments distributed between the of tracks. The feature measured 2.2 m long by more than 0.8 m wide, extending beyond the width of the excavation. The feature appears to be the previously disturbed remnants of a historic structure with a possible transportation function. None of the elements appear to be *in situ*. It is possible that Feature 28 is associated with either the Honolulu streetcar system, which terminated near the shore on Ala Moana Boulevard at the foot (*makai* end) of Punchbowl Street, or with the Marine Rail which is depicted in the 1884 Bishop Map (Figure 132). The Marine Rail was located approximately 100 m northwest of AIS T-226C. Feature 30 consisted of a possible post-mold containing a preserved post (Figure 133 and Table 10). Given its location in a fill deposit overlying the A-horizon, Feature 30 is likely a more recent component of SIHP # -2918. Feature 29 was located within the

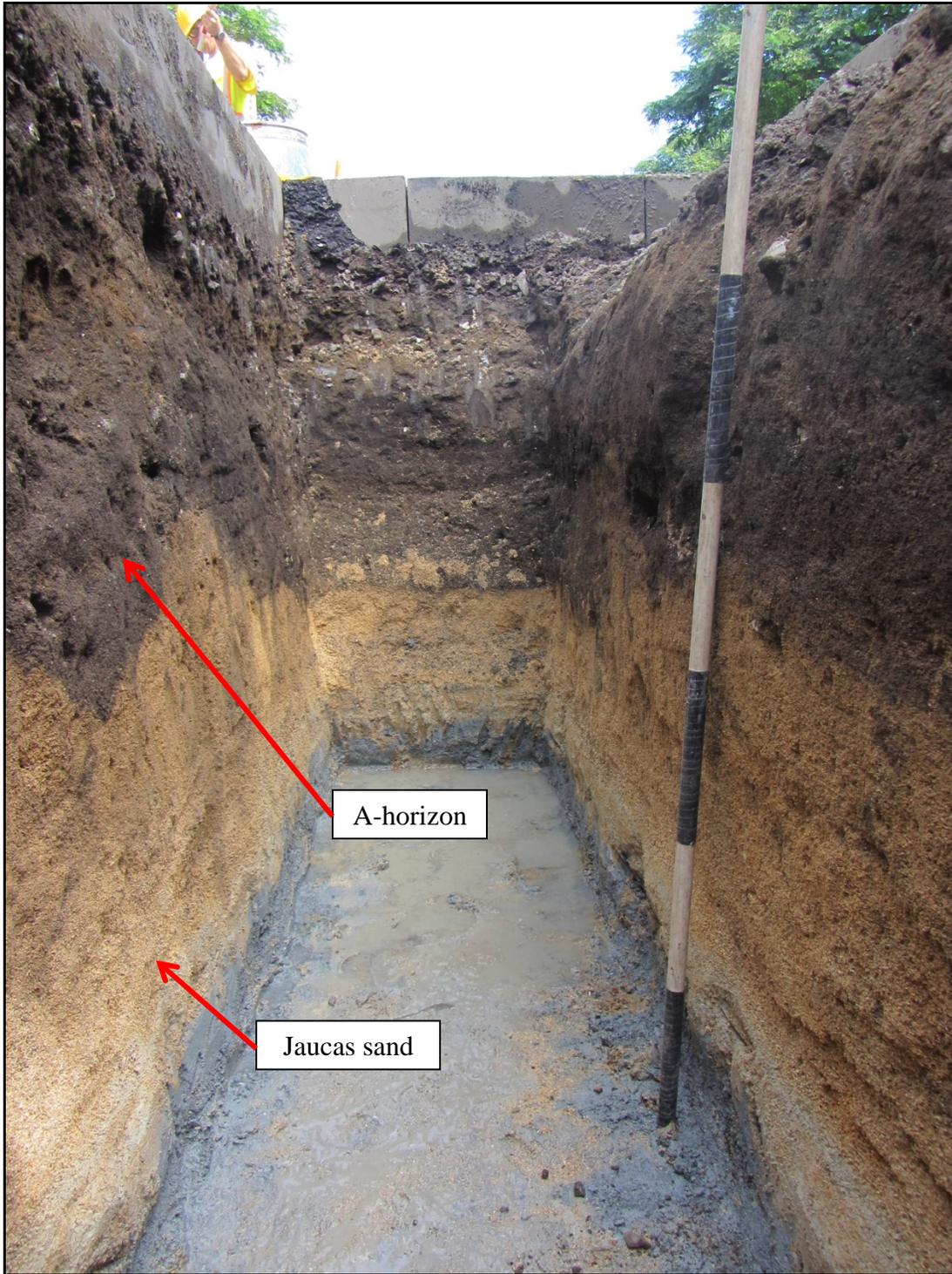


Figure 127. Photograph of T-226A walls depicting the A-horizon and underlying Jaucas sand



Figure 128. Archaeological pit features in T-226B that are associated with the A-horizon



Figure 129. Bone pick (Acc. # 226A-H-1) discovered in the A-horizon deposits in T-226A



Figure 130. Pressed glass artifact (possible candleholder) (Acc. #227 A-28) discovered in T-227 in Feature 17



Figure 131. Machine-drilled ivory bead (Acc. #227-A-29) from Feature 17 in T-227

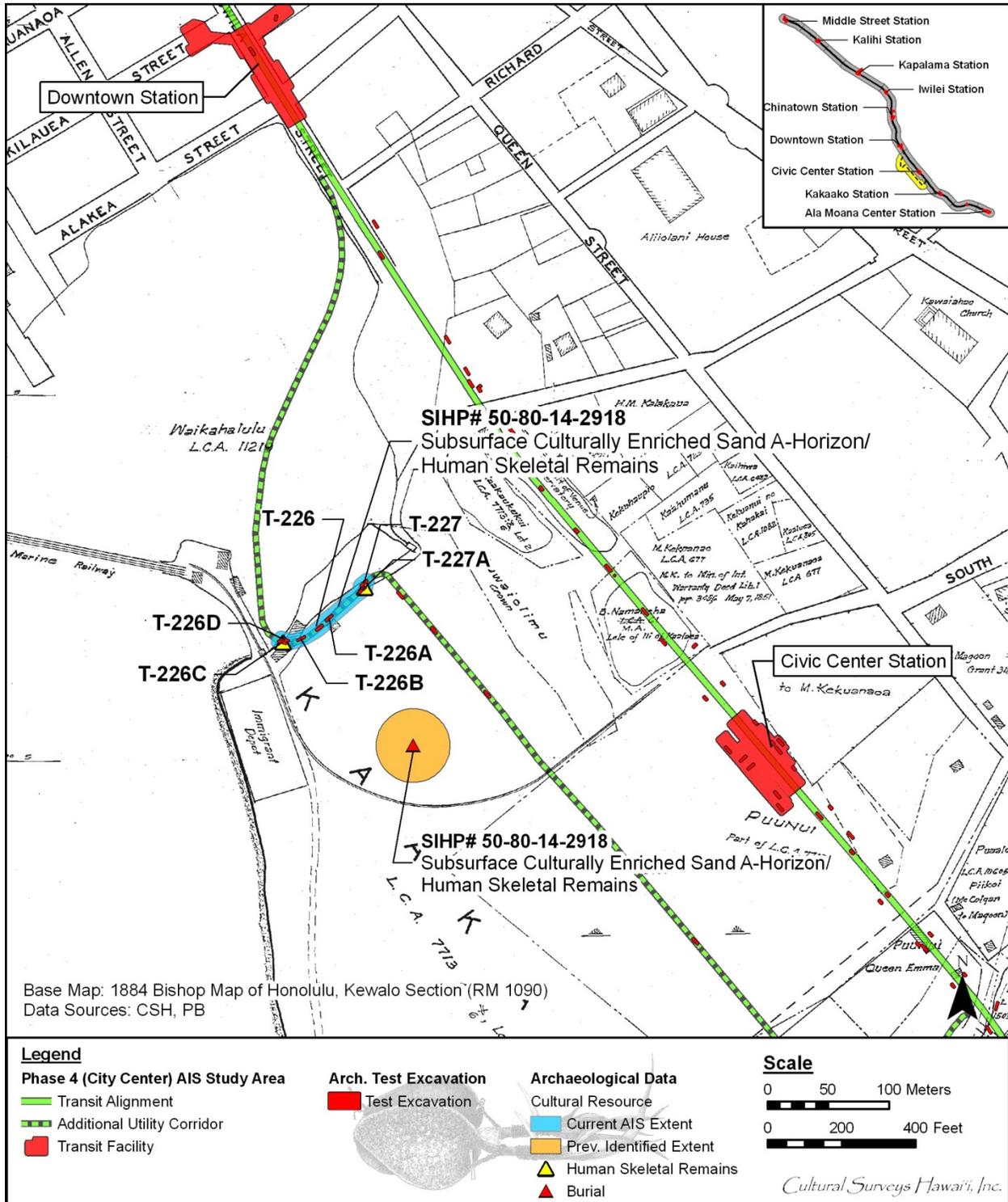


Figure 132. Portion of the 1884 Bishop Map of Honolulu (RM 1090) depicting the location of the Marine Rail in relation to SIHP # 50-80-14-2918

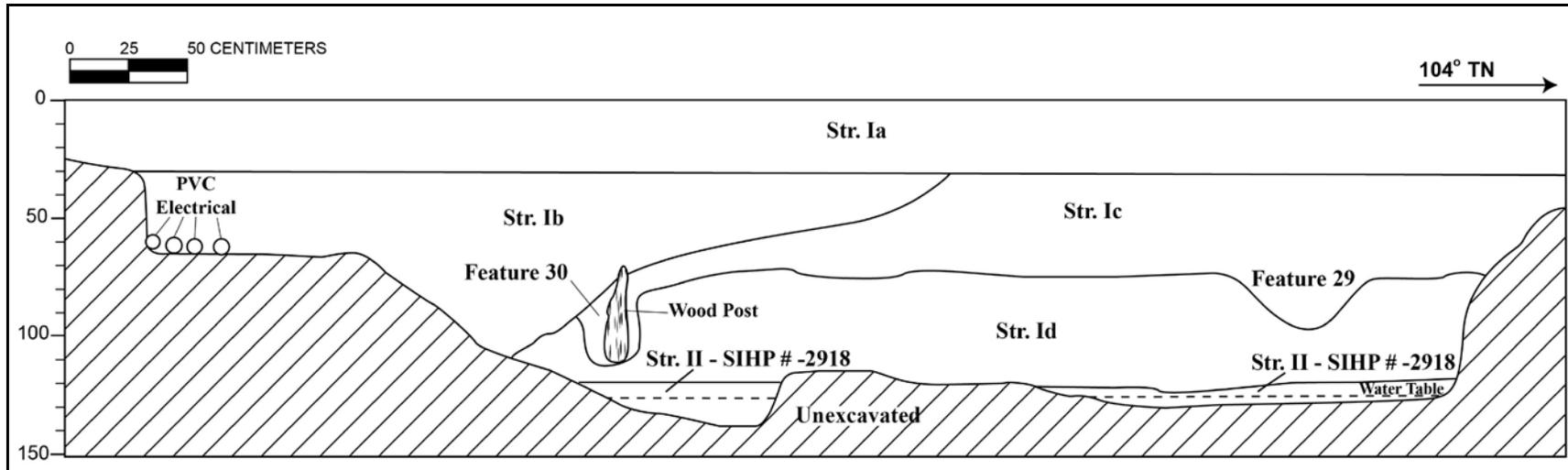


Figure 133. Profile drawing of the north sidewall in T-226C depicting SIHP# -2918 Features 29 and 30

Table 10. Stratigraphic description of the north profile in T-226C

Stratum	Depth (cmbs)	Description
Ia	0–31	Asphalt; road surface
Ib	31–110	Fill; 5 YR 3/3 (dark reddish brown); gravelly clay loam; weak, fine, crumb structure; moist, weakly coherent consistency; non-plastic; abrupt, broken/discontinuous lower boundary; utility trench fill
Ic	32–97	Fill; 10 YR 3/3 (dark brown) mottled with 10 YR 5/6 (yellowish brown); extremely gravelly loamy sand; structureless, single-grain; moist, loose consistency; non-plastic; mixed origin; clear, broken/discontinuous lower boundary; mixed fill with crushed coral; may be locally procured and re-deposited A-horizon sediment with mixed fill. Contained Features 29 and 30 of SIHP # -2918
Id	73–120	Fill; 10 YR 5/4 (light yellowish brown); coarse grain sand; structureless, single-grain; moist, loose consistency; non-plastic; clear, smooth lower boundary; redeposited sand
II	120–137	Natural; 10 YR 6/4 (light yellowish brown); medium-grain sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; lower boundary not observed; Jaucas sand A-horizon (SIHP # -2918)

same fill deposit as Feature 30, however, it contained culturally-enriched A-horizon material that appears to have been locally-procured, mixed with other fill material, and re-deposited (see Figure 133). Accordingly, it was designated as a component of SIHP # -2918.

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

Faunal remains were collected individually during excavation from the A-horizon deposits and the archaeological pit features. Table 11 presents faunal data from those test excavations where more than four species were identified. In general, the faunal remains that were collected were either unmodified, or they exhibited evidence of historic butchering practices (i.e. metal saw blade). The faunal remains from the A-horizon deposits consisted of *Bos taurus* (butchered), *Sus scrofa* (butchered), *Capra aegagrus hircus* (unmodified), and *Canis lupus familiaris* (unmodified). The faunal remains that were collected from Features 3, 11, 14, and 17 consisted of *Rattus* sp. (unmodified), *Bos taurus* (butchered), *Sus scrofa* (unmodified), and *Canis lupus familiaris* (unmodified). The presence of introduced species (*Bos taurus*) that were butchered with a metal saw blade, are evidence that Feature 14 and portions of the A-horizon in SIHP # -2918 were utilized and/or disturbed during the post-Contact period.

Faunal remains were also collected from bulk sediment samples. Figure 134 presents the total weight (g) of faunal remains recovered from deposits associated with SIHP # -2918. Total weight includes both individually collected faunal remains as well as midden material from wet-screened bulk samples. Individual collection and bulk collection represent different sampling strategies, and they cannot be directly compared by weight. However, consistent sampling strategies were used throughout the AIS, and comparison by weight allows for the identification of trends throughout the transit corridor. In general, the faunal remains from the proposed archaeological cultural resources exhibit dominant quantities of invertebrate midden and *Bos taurus* remains, with moderate quantities of pre-contact medium mammals including *Sus scrofa* and *Canis lupus familiaris*.

The most prevalent vertebrate remains from SIHP # -2918 were from *Bos taurus*, indicating a strong confirmed post-Contact component. The *Capra aegagrus hircus* remains were insignificant by comparative weight, their presence as post-Contact species important. Goat remains were only identified at one of the other proposed archaeological cultural resources, SIHP # -5280 in Zone 7, West Kaka'ako. Significantly, large quantities of *Sus scrofa* and *Canis lupus familiaris* were also recovered. SIHP # -2918 produced more remains (by weight) of *Sus scrofa* and *Canis lupus familiaris* than any of the other proposed historic properties, and had stronger

Table 11. Individually collected faunal remains from SIHP # 50-80-14-2918. The table only presents data from test excavations where more than four species were identified

Acc. #	Stratum	Depth (cmbs)	Feature	Family/ Class	Species	Element	Description	Modification
226A-F-7	II	97-100	2918-3	Mammalia	Medium mammal	Diaphysis sections	Fragments	None
226A-F-8	II	97-100	2918-3	Muridae (rat)	<i>Rattus</i> sp.	Diaphysis section	Fragment	None
226B-F-1	II	53-76	-	Bovidae (cow)	<i>Bos taurus</i>	Diaphysis section (possible humerus); Diaphysis section	Fragments	Butchered (cut with metal saw blade)
226B-F-2	II	53-76	-	Suidae (pig)	<i>Sus scrofa</i>	Cranial; Mandible; Vertebra; Ribs; Molar; Premolar (pieces mend); Canine	Fragments	None
226B-F-3	II	90	-	Canidae (dog)	<i>Canis lupus familiaris</i> (small dog)	Right Calcaneus (might articulate with <i>Canis lupus familiaris</i> from II_90cmbs_Fe.8 sample 23)	Complete	None
226B-F-4	II	90	2918-11	Canidae (dog)	<i>Canis lupus familiaris</i> (small dog)	Articulated dog	Fragments/complete	None
227A-F-3	II	68-108	-	Bovidae (goat)	<i>Capra aegagrus hircus</i>	Cranial; Vertebral facets; Proximal phalanx	Fragments	None
227A-F-4	II	68-108	-	Mammalia	Medium mammal	Diaphysis sections	Fragments	None
227A-F-5	II	80-90	-	Canidae (dog)	<i>Canis lupus familiaris</i>	Cranial; Molar; Canine; Vertebral facets; Ulna; Diaphysis section; Metacarpal	Fragments	None

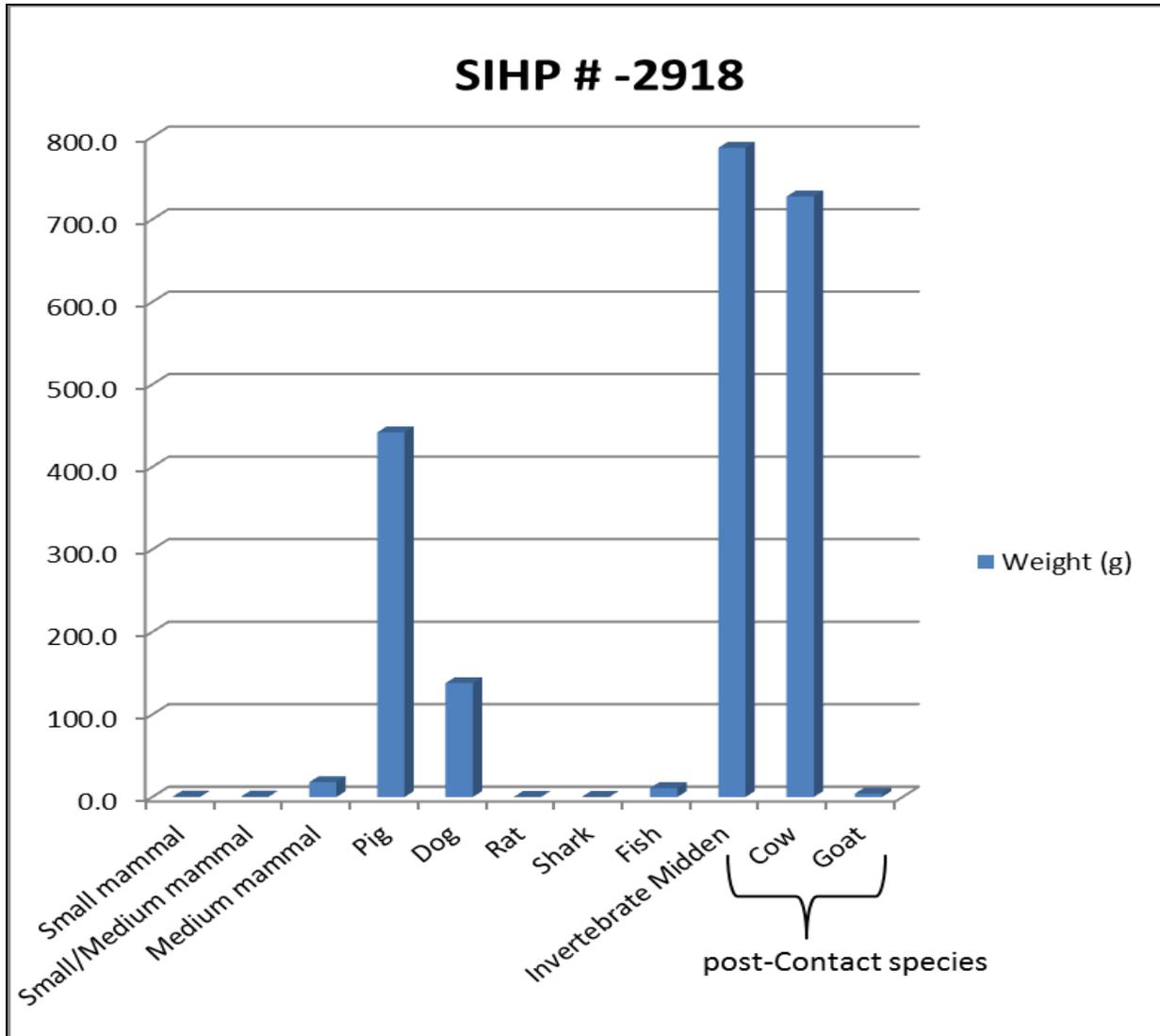


Figure 134. Graph representing the total weight (g) of faunal remains recovered from deposits associated with SIHP # 50-80-14-2918

distributions in comparison to *Bos taurus*. Bulk samples contained a large aggregate weight of invertebrates.

The area surrounding the West Kaka'ako Zone was known traditionally for its low-lying marshes, fishponds, and for salt making. The environment was ideal for traditional Hawaiian subsistence practices, centered on aquaculture and salt production. In the mid-to-late nineteenth century, Kaka'ako was used as a place for cemeteries, burial grounds, and for the quarantine of contagious patients. By 1914, the West Kaka'ako Zone marshlands and fishponds were eliminated as Kaka'ako lands were filled to accommodate the expanding urbanization of Honolulu. The current AIS investigation has provided additional data and further refined the geographic extent of the previously identified subsurface deposits (SIHP # 50-80-14-2918). Based on the findings of Yent (1985) and the results of the City Center AIS, SIHP # -2918 spans an area of approximately 1.05 acres. It is possible, however, that additional components of this cultural resource exist in the undocumented portions within and adjacent to the City Center project area. Laboratory analysis of the collected cultural material from SIHP # -2918 indicates that the A-horizon and many of its associated pit features date to the late pre-Contact and early post-Contact eras. The volume of food refuse and traditional material (volcanic glass debitage and bone pick), as well as the absence of historically-introduced taxa within the sampled pit features, supports a pre- and early post-Contact date for the utilization of this former land surface for habitation and/or food consumption activities. The area also appears to have been utilized for burial interment. Based on the presence of historic material (i.e., rail/trolley infrastructure, bottle glass, ceramics, metal, and faunal bone), the A-horizon and some of its associated pit features appear to have been utilized and/or disturbed during the late post-Contact period.

Based on the guidance of National Register Bulletin No. 15, this archaeological cultural resource retains its integrity of location, design, materials, and workmanship. The components of this cultural resource have provided, and can potentially provide, additional information related to the geographic distribution/extent, materials, and utilization of the pre- and post-Contact Kaka'ako land surface for habitation, burial interment, and transportation. The features of this cultural resource also contain original material that has the potential to convey pre- and post-Contact Hawaiian workmanship. Based on past documentation and the results of this investigation, CSH recommends that this cultural resource maintains the integrity to support its historic significance under Criteria D (has yielded, or is likely to yield, information important for research on prehistory or history) and E (has cultural significance to an ethnic group) of the Hawai'i Register, and Criterion D of the National Register, exclusively for its information potential. The former land surface and its associated features are buried and their surroundings have been completely altered by modern development since their time of construction and period of use. Accordingly, these features do not maintain the integrity of setting, feeling, and association that might convey their significance under significance Criteria A, B, and C of the Hawai'i or National Registers.

4.3.2 SIHP # 50-80-14-2963

FORMAL TYPE:	Buried pond sediments containing historic artifacts; a culturally enriched sand A-horizon; 7 human burials
FUNCTION:	Aquaculture, habitation, and burial interment
PREVIOUS DOCUMENTATION:	Clark 1987
AGE:	Pre- and post-Contact
NO. FEATURES:	12 (identified during the current archaeological inventory survey), 35 (previously identified)
DISTRIBUTION:	0.44 acres (within current project area), 1.59 acres (total area)
LOCATION:	Along Halekauwila Street, between Punchbowl and South Streets (West Kaka'ako Geographic Zone)
TAX MAP KEY:	Plat 030
LAND JURISDICTION:	City and County of Honolulu

SIHP # 50-80-14-2963 is a previously identified cultural resource that consists of culturally enriched pond sediments and 35 archaeological features (Figure 135 and Figure 136). These subsurface deposits are located along Halekauwila Street, between Punchbowl and South Streets. SIHP # -2963 was originally documented by Stephen Clark in 1987.

During a 1987 archaeological monitoring program, Clark documented the following archaeological features: 16 pits, 7 human burials, 5 animal burials, 1 former land surface (A-horizon), 2 building foundations, 1 posthole, 1 burned soil area, and 2 areas with animal bones. The majority of the features, apart from the A-horizon, were discovered in Stratum I. This 20-40 cm thick layer consisted of sandy/silty clay loam and contained both prehistoric and historic artifacts (Clark 1987:45-46). Two trash pits and two remnant building foundations were discovered in various imported fill layers. A buried A-horizon was found in natural coral sand (Stratum II). Although no cultural material was found in this former land surface, radiocarbon analysis of charcoal fragments provided a date of AD 430 to 905. A burial dated to AD 1270 to 1410 (based on radiocarbon analysis of associated charcoal), and a pit feature were both associated with this A-horizon (Clark 1987:110).

Fishpond sediments were discovered in the western portion of Clark's (1987:46) project area. The pond facies included a 20-45 cm thick layer of black silty mud containing an abundance of historic materials, including glass bottles, ceramics, leather shoes and wood. Organics were also observed in this layer, and included *kukui* nuts, *pandanus* keys, and coconuts. Underlying these black deposits was a 3 to 5 cm thick layer of gleyed silty mud containing few historic materials apart from

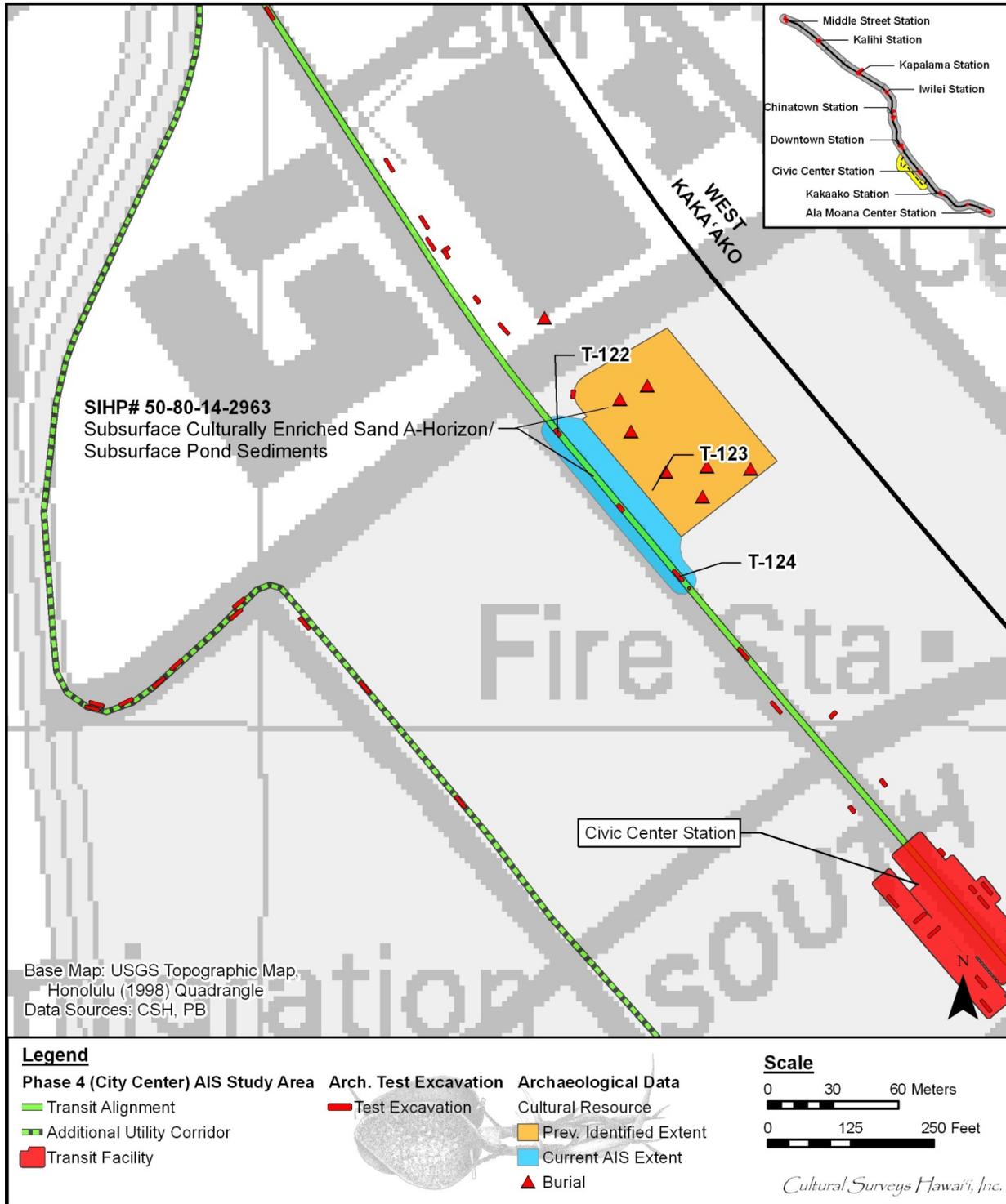


Figure 135. Location of SIHP # 50-80-14-2963 in the West Kaka'ako Zone (Base Map: USGS 1998 Topographic Map of Honolulu Quadrangle)

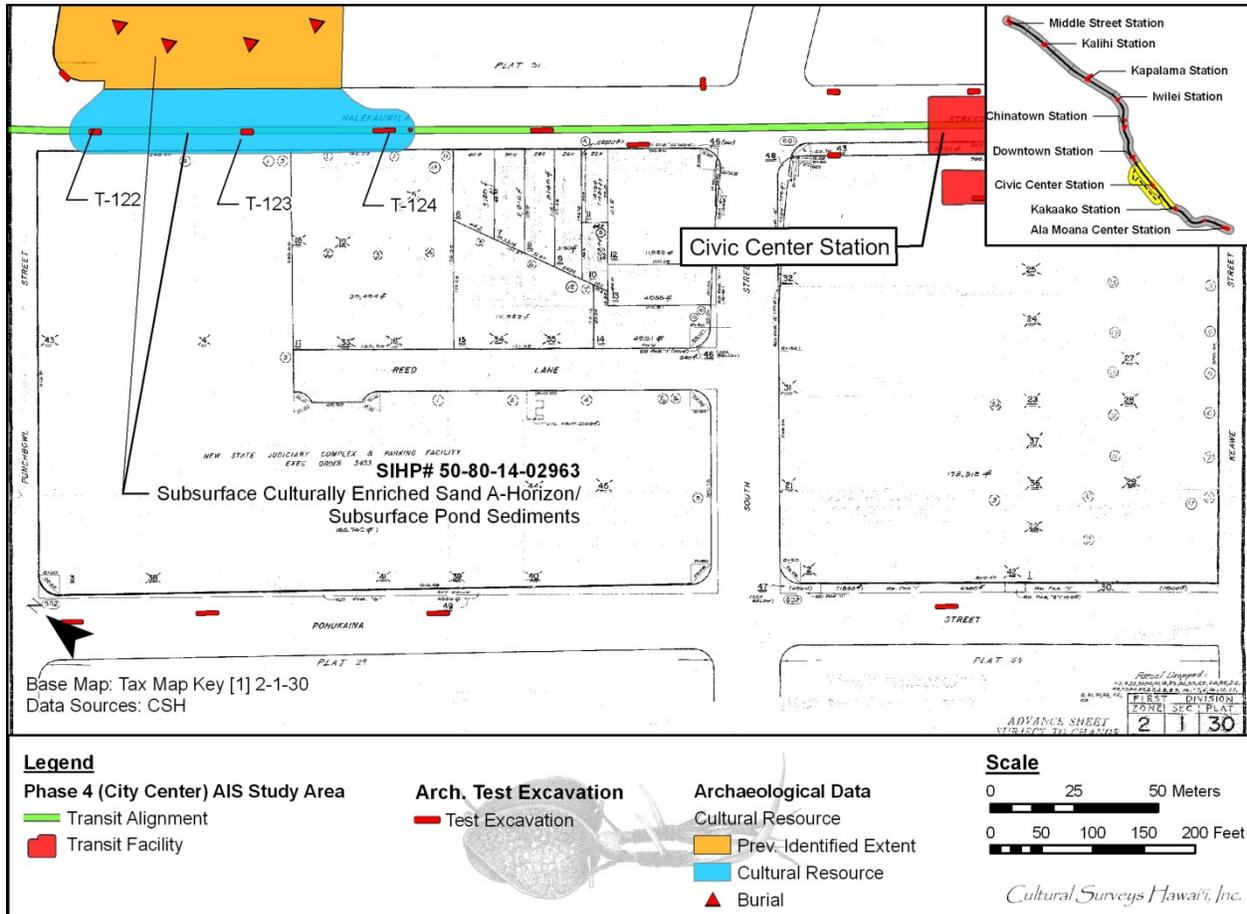


Figure 136. Location of SIHP # 50-80-14-2963 in the West Kaka'ako Zone (Base Map: Tax Map Key [1] 2-1-30)

broken glass fragments. Based on the relative dating of diagnostic glass bottles, Clark (1987:112) suggests that the pond sediments date to the mid/late nineteenth century.

Similar subsurface deposits and features were observed during the current AIS directly adjacent to the former study area. They included culturally enriched pond sediment, as well as 12 archaeological pit features (Table 12). These deposits were observed below imported fill material, likely associated with early twentieth century land reclamation efforts in Kaka'ako. Pond sediment was documented in Test Excavation 122 at a depth of 1.6 to 1.65 mbs and within T-123 at a depth of 1.73 to 1.94 mbs (Figure 137). The pond deposits in T-122 contained charcoal, shell, organics (seeds, plant fibers, plant pods), metal, shell and faunal (fish and bird) midden, and ceramics. The pond deposits in T-123 contained charcoal, shell, organics (*Ruppia maritima* seeds, wood), shell and faunal bone (fish, medium mammal) midden, bottle glass, and a single fragment of volcanic glass debitage (Table 13). CSH recommends that the culturally enriched pond sediments (and their associated 12 features) be considered components of SIHP # -2963 based on their similarity and proximity to the deposits documented by Clark (1987). The previously and newly identified subsurface deposits (SIHP #-2963) encompass an area of approximately 1.59 acres. Additional components of SIHP # -2963 may exist in the undocumented portions within and adjacent to the City Center project area.

Pit Features 1 through 12 were discovered during the current AIS in T-124. Features 1 through 12 were associated with two distinct layers of a former land surface (A-horizon) (Figure 138 and Table 14). Stratum IIa was considered to be a historically disturbed and/or modified upper portion of the former A-horizon, while Stratum IIb was considered to be the *in situ* pre- and/or early-post Contact lower portion of the A-horizon. Stratum IIa was encountered between the depths of 0.80 to 1.117 mbs, and Stratum IIb was located between 1.17 and 1.35 mbs. The associated pit features consisted of dark loamy sand with visible charcoal remains (Figure 139). Sediment samples from five of the pits were collected and analyzed (see Table 12). All five sampled features (1, 2, 5, 8, and 11) contained charcoal, shell and faunal bone (fish, small and medium mammal, turtle). Features 1 and 8 contained volcanic glass fragments that were analyzed and determined to be from a local O'ahu provenance (see Table 13). Feature 1 also contained a basalt fragment and a shark tooth. Feature 1 was originally thought to be a posthole, however, the abundance of midden within it may indicate otherwise. Radiocarbon analysis of charcoal collected from Feature 1 and Feature 2, both of which extended from the base of Stratum IIa, supported a post-Contact depositional age for the sub-stratum. Radiocarbon analysis and wood taxa identification of charcoal collected from Feature 5 and Feature 11, both of which extended from within or from the base of Stratum IIb, supported a pre-Contact depositional age from the sub-stratum. This A-horizon was also observed between the depths of 0.30 and 0.91 mbs during nearby geotechnical boring (T-124A).

The presence of utilities hampered further subsurface testing in the area. In order to ensure that the test areas along Halekauwila Street were thoroughly examined for archaeological cultural resources, one geotechnical bore (T-124A) was collected southeast of T-124 (Figure 140). Each core was drilled in increments of 3 ft, and a total of 11 sediment samples were collected and described according to the U.S. Department of Agriculture (USDA) Soil Survey

Table 12. Archaeological features associated with SIHP # 50-80-14-2963 that were identified during the current AIS

Feature	Test Excavation	Depth (cmbs)	Radiocarbon Date (C14)	Type	Description
1	T-124	116-136	AD 1810-1920	Pit	Possible post-mold with straight sides and a slightly rounded base. The feature contained charcoal (18.4g), midden (47.3g), naturally-deposited marine shell (39.8g), volcanic glass fragments (0.7g), basalt fragments (158.1g), and faunal remains (6.3g). A subsample of the charcoal from the feature was submitted for wood taxa identification and radiocarbon dating. Wood taxa identification results included <i>Ki</i> (cf. <i>Cordyline terminalis</i>), <i>Aheahea</i> (<i>Chenopodium oahuense</i>), and <i>Niu</i> (<i>Cocos nucifera</i>).
2	T-124	116-125	AD 1790-1950	Pit	Possible pit. The feature contained charcoal (2.5g), midden (13.4g), naturally-deposited marine shell (4.4g), and faunal remains (2.2g). A subsample of the charcoal from the feature was submitted for wood taxa identification and radiocarbon dating. Wood taxa identification results included <i>Akoko</i> (cf. <i>Chamaesyce</i> sp.), <i>Aheahea</i> (<i>Chenopodium oahuense</i>), <i>Ilima</i> (cf. <i>Sida fallax</i>).
3	T-124	116-137		Pit	Possible post-mold with angled sides and a slightly rounded base.
4	T-124	140-145		Pit	Possible pit.
5	T-124	140-163	AD 1490-1670	Pit	Possible pit containing charcoal. The feature contained charcoal (6.4g), midden (16.4g), naturally-deposited marine shell (3.6g), and faunal remains (3.2g). A subsample of the charcoal from the feature was submitted for wood taxa identification and radiocarbon dating. Wood taxa identification results included <i>Lama</i> (<i>Diospyros sandwicensis</i>), 'A'ali'i (cf. <i>Dodonaea viscosa</i>), 'Aheahea, aweoweo (<i>Chenopodium oahuense</i>), <i>Kukui</i> (cf. <i>Aleurites moluccana</i>), and an unidentifiable wood fragment.

Feature	Test Excavation	Depth (cmbs)	Radiocarbon Date (C14)	Type	Description
6	T-124	140-175		Pit	Pit or possible post-mold that is oval-shaped and has straight sides.
7	T-124	144-150		Pit	Possible pit.
8	T-124	144-162		Pit	Possible pit containing charcoal. The feature contained charcoal (0.1g), midden (4.6g), naturally-deposited marine shell (0.7g), volcanic glass (0.1g), and faunal remains (0.3g).
9	T-124	144-150		Pit	Possible pit.
10	T-124	140-180		Pit	Possible pit or post-mold that is circular-shaped with straight sides and a flat bottom.
11	T-124	123-132	AD 1450-1640	Pit	Pit that is oval-shaped. The feature contained charcoal (6.9g), midden (1.4g), naturally-deposited marine shell (0.5g), and faunal remains (0.1g). A subsample of the charcoal from the feature was submitted for wood taxa identification and radiocarbon dating. Wood taxa identification results included <i>Lama (Diospyros sandwicensis)</i> , and <i>Ho'awa (cf. Pittosporum sp.)</i> .
12	T-124	140-153		Pit	Pit that is circular shaped with downward-sloping sides and a narrow, rounded base.

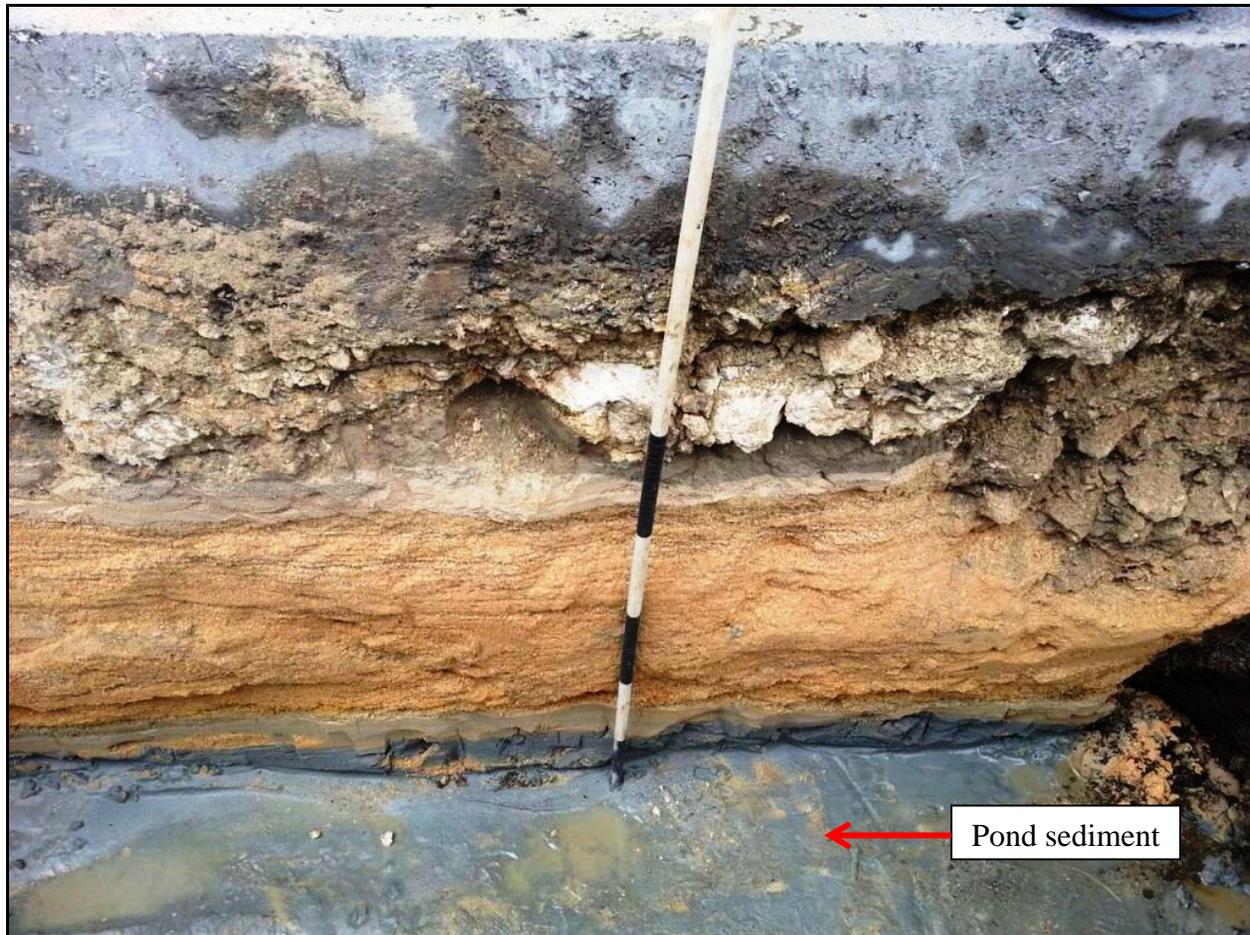


Figure 137. Photograph of the southwest profile wall in T-122 depicting the pond sediments underlying several fill layers

Table 13. Traditional Hawaiian artifacts associated with SIHP # 50-80-14-2963

Acc. #	Trench	SIHP #50-80- 14-	Depth (cmbs)	Feature	Weight (g)	Description
123-H-1	T-123	-0263	180-192	A-horizon	0.1	One fragment of volcanic glass debitage
124-H-1	T-124	-0263	118-144	1	0.7	Seven fragments of volcanic glass debitage
124-H-2	T-124	-0263	144-162	8	0.1	One fragment of volcanic glass debitage

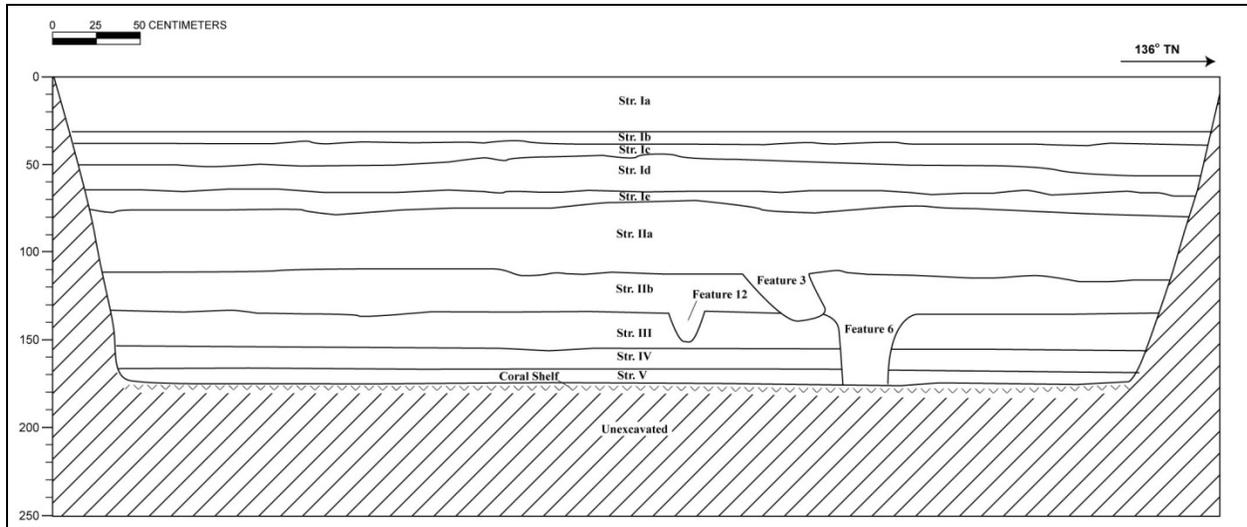


Figure 138. Profile drawing of the northeast wall in T-124 depicting the historically impacted upper A-horizon (Stratum IIa) and the *in situ* pre- and/or early-post Contact A-horizon (Stratum IIb)

Table 14. Stratigraphic description for the northeast profile in T-124

Stratum	Depth (cmbs)	Description
Ia	0-32	Asphalt
Ib	32-38	Fill; 2.5 Y 3/1 (very dark gray); extremely gravelly sandy loam; structureless; moist, friable consistency; slightly plastic; terrigenous origin; very abrupt, smooth lower boundary; fill layer underlying road surface containing ~ 70% small basalt gravels
Ic	38-56	Fill; 10 YR 8/3 (very pale brown); very gravelly sand; structureless, single-grain; moist loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary; crushed coral base course
Id	56-67	Fill; 10 YR 4/3 (brown); sandy loam; structureless; moist, very friable consistency; non plastic; mixed origin, clear lower boundary; contained glass bottle fragments, red brick fragments, cut faunal bone, ceramic fragments, nails, wire, marine shell, cane slag, and basalt sheath tile, all concentrated at N end of excavation ; fill with historic trash inclusions, collected faunal and historics, bottle dates late 1800s to early 1900s, contains basalt and coral polyps, gravel
Ie	67-80	Fill; 10 YR 3/3 (dark brown); loam; structureless; moist, friable consistency; slightly plastic; terrigenous origin; clear to diffuse lower boundary; few, very fine to medium roots; fill seen only in NE excavation wall

Stratum	Depth (cmts)	Description
IIa	80-117	Natural, 10 YR 3/2 (very dark grayish brown); sandy loam; structureless; moist, loose consistency; non-plastic; terrigenous origin; clear lower boundary; contained abundant charcoal, Features 1-3; former A-horizon; likely the historically-disturbed or modified upper portion of the former land surface
IIb	117-135	Natural; 10 YR 4/3 (brown); loamy sand; fine structure; moist, loose consistency; non-plastic; mixed origin; clear lower boundary; contained Features 4-12; likely the in situ pre- and/or early post-contact lower portion of the former land surface
III	135-155	Natural; 10 YR 7/4 (very pale brown); sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; abrupt lower boundary; Jaucas sand
IV	155-167	Natural; 2.5YR 8/3 (pale yellow); clay loam; structureless, massive; moist, friable consistency; slightly plastic; marine origin; abrupt lower boundary; many, very fine roots; marine sediment containing abundant very fine roots, organics
V	167-175	Natural; 10 YR 7/4 (very pale brown) with common fine mottles 10 YR 6/6 to 10 YR 5/8 (brownish yellow to yellowish brown); sandy loam, sand; coarse structure; moist, loose consistency; non-plastic; marine origin; lower boundary not visible; marine sediment overlying coral shelf, small marine shells and some clay

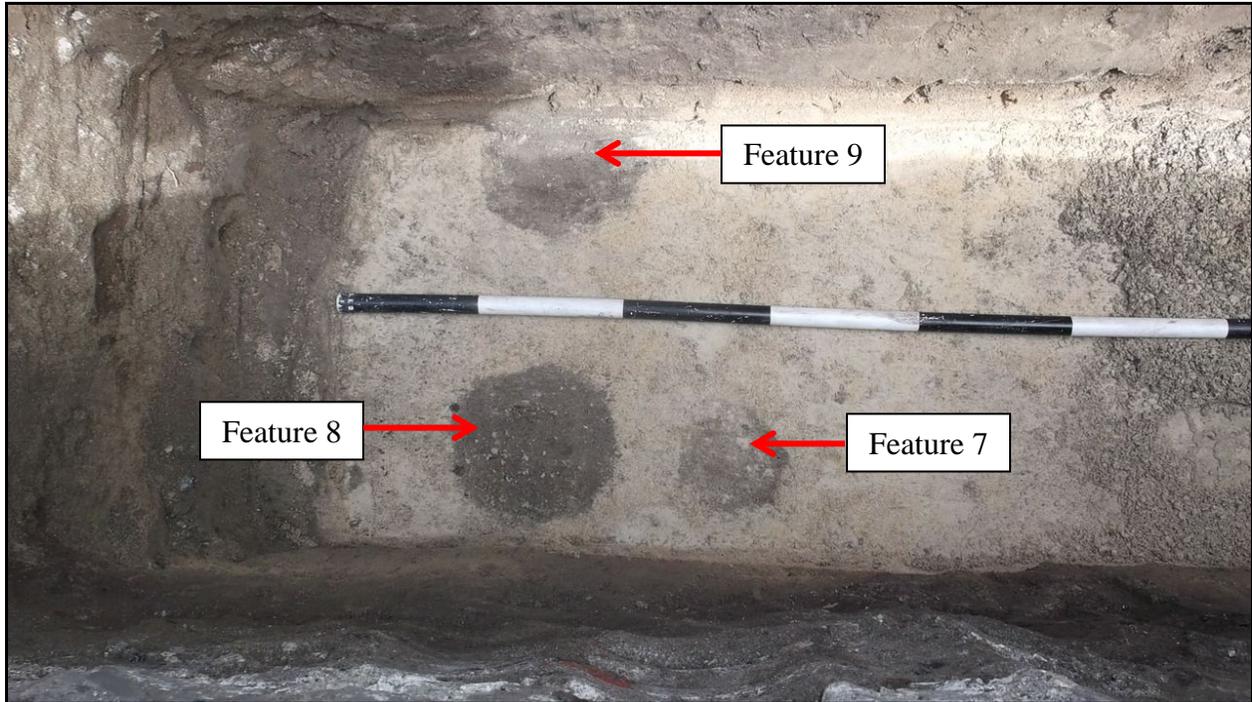


Figure 139. SIHP # 50-80-14-2963 Features 7, 8, and 9 in T-124

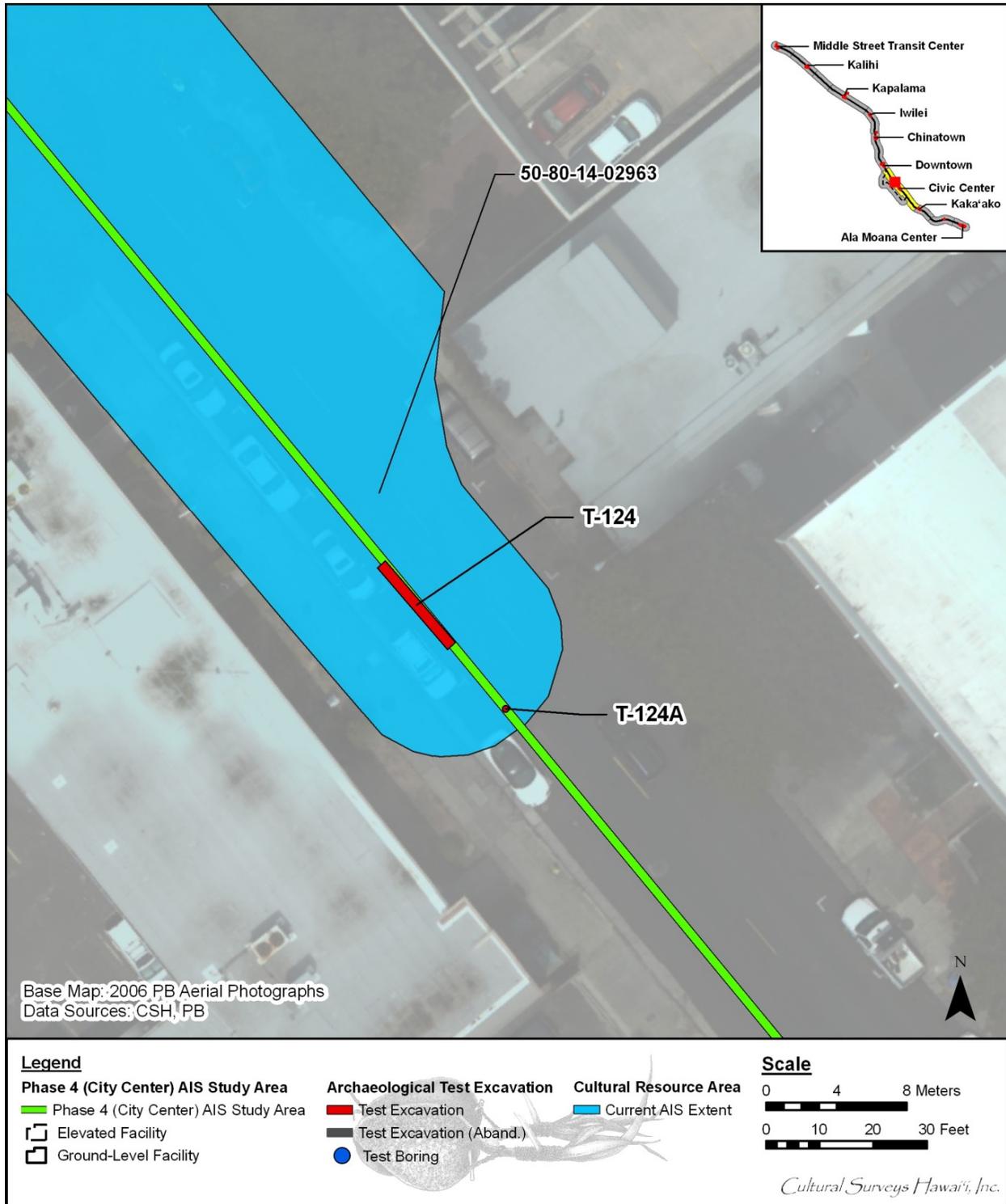


Figure 140. Location of test core T-124A collected southeast of T-124 (base map: 2006 PB aerial photograph)

Designation and Munsell Color Book. Preliminary coring results identified an A-horizon and underlying natural sand (Figure 141). No cultural materials were observed in the core samples.

All of the identified charcoal in the pit features (1, 2, 5, and 11) represented either native or Polynesian-introduced taxa (Table 15). These include: *kī* or *ti*, *‘āheahea*, *‘ōhi‘a ‘ai*, coconut, *‘akoko*, *hau*, *‘ilima*, *lama*, *‘a‘ali‘i*, *kukui*, and *hō‘awa*. No historically-introduced taxa were identified, suggesting that these features may have a pre- and/or early post-Contact depositional origin. Radiocarbon analysis indicated a broad date range for the submitted charcoal samples. The youngest dates were derived from the charcoal in Feature 1 (AD 1810 to 1920) and Feature 2 (AD 1790 to 1950). Radiocarbon analysis placed the charcoal samples collected from Features 1 and 2 within the post-Contact period (post-1778). The oldest dates were derived from Feature 5 (AD 1490 to 1670) and Feature 11 (AD 1450 to 1640). Radiocarbon analysis placed the charcoal samples collected from Features 5 and 11 within the pre-Contact period.

Faunal remains were collected from bulk sediment samples. Figure 142 presents the total weight (g) of faunal remains recovered from deposits associated with SIHP # -2963. Total weight includes the faunal remains as well as midden material from wet-screened bulk samples. In general, the faunal remains from the proposed archaeological cultural resources exhibit dominant quantities of invertebrate midden and *Bos taurus* remains, with moderate quantities of pre-contact medium mammals including *Sus scrofa* and *Canis lupus familiaris*.

SIHP # -2963 was devoid of post-contact species remains such as cow, horse or goat. This is a significant departure from the general trend identified across the proposed archaeological cultural resources. Bulk samples from across the site contained a minimal aggregate weight of invertebrates. A higher proportion of fish remains were found in the midden material from SIHP # -2963 than in midden from the other archaeological cultural resources presented in the AIS. Fish remains were approximately 8% of the mass of invertebrate remains, while 1-2% is typical. This could be a product of small sample size. Combined with the presence of shark and turtle, the higher proportion of fish remains may indicate an increased emphasis on marine processing within the context of SIHP # -2963.

The land around the West Kaka‘ako Zone offered desirable environmental conditions for traditional Hawaiian subsistence practice consisting of aquaculture and salt production. Habitation was likely scattered along the shore and along trails that connected Honolulu to Waikīkī. The current investigation has provided additional data and further refined the geographic extent of the subsurface deposits (SIHP # -2963). Laboratory analyses on the cultural material collected from the buried A-horizon and its associated 12 pit features suggest that this former land surface was utilized for habitation, food production, and aquaculture during the pre- and post-Contact time periods.

Based on the guidance of National Register Bulletin No. 15, this archaeological cultural resource retains its integrity of location, materials, and workmanship. The components of this cultural resource have provided, and can potentially provide, additional information related to the geographic distribution/extent and cultural materials that are associated with pre- and post-Contact habitation and aquaculture in coastal Kaka‘ako. No human remains and/or burials were identified in association with SIHP # -2963 during the current AIS. The components of SIHP # -2963 are buried and their surroundings have been completely altered by modern development since their time of construction and period of use. Accordingly, these features do not maintain

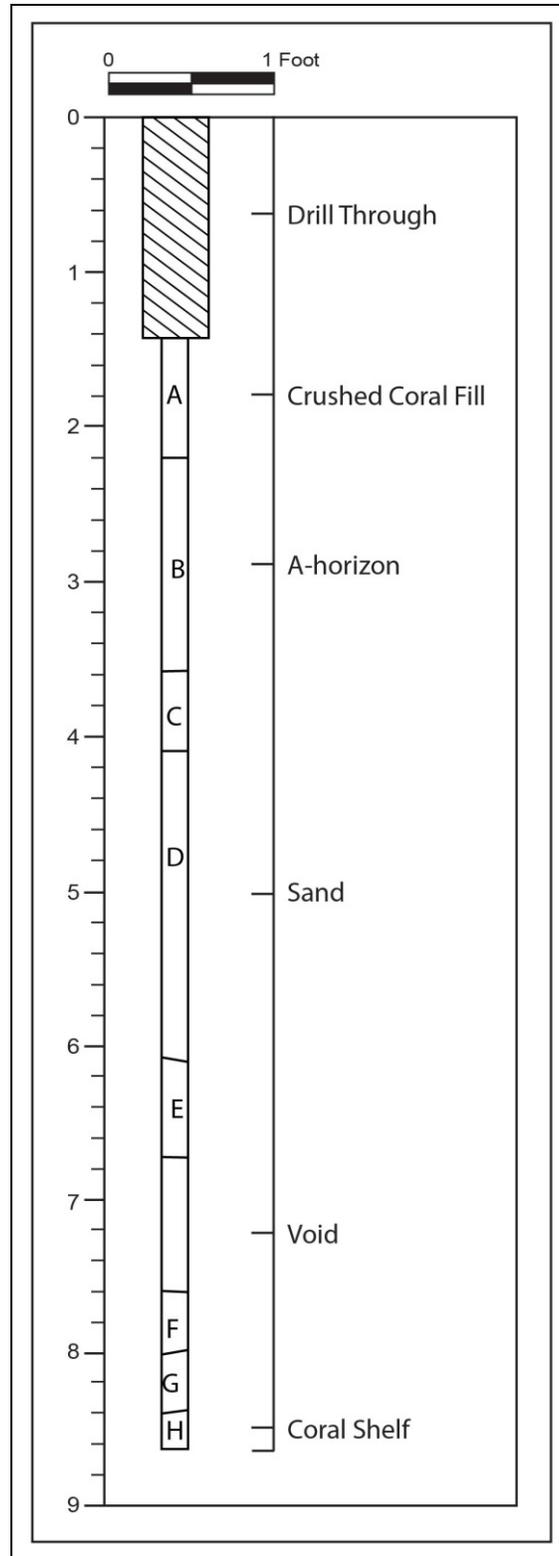


Figure 141. Profile of test core collected southeast of T-124

Table 15. Results of the charcoal taxa identification

Test Excavation	Pit Feature	Depth (cmbs)	Taxa	Common/Hawaiian Name	Origin/Habitat
T-124	1	138-44	cf. <i>Cordyline terminalis</i>	<i>Kī, ti</i>	Native/Tree
T-124	1; 2; 5	138-44; 118-125; 140-163	<i>Chenopodium oahuense</i>	<i>'Āheahea, 'āweoweo</i>	Polynesian Introduction/ Shrub
T-124	1; 2	138-44; 118-125	cf. <i>Syzygium</i> sp.	Mountain apple, roseapple, Java plum, <i>'ōhi'a 'ai</i>	Native + Historic Introduction/ Tree
T-124	1	138-44	<i>Cocos nucifera</i>	<i>Niu, coconut</i>	Polynesian Introduction/ Tree
T-124	1; 2	138-44; 118-125	<i>Chamaesyce</i> sp.	<i>'Akoko</i>	Native/Shrub
T-124	2	118- 125	<i>Hibiscus tiliaceus</i>	<i>Hau</i>	Native/Shrub-Tree
T-124	2	118- 125	cf. <i>Sida fallax</i>	<i>'Ilima</i>	Native/Shrub
T-124	2; 5; 11	118- 125; 140-163; 120-132	<i>Diospyros sandwicensis</i>	<i>Lama</i>	Native/Tree
T-124	5	140-163	cf. <i>Dodonaea viscosa</i>	<i>'A'ali'i</i>	Native/Shrub
T-124	5	140-163	cf. <i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/ Tree
T-124	11	120-132	cf. <i>Pittosporum</i> sp.	<i>Hō'awa</i>	Native/Tree

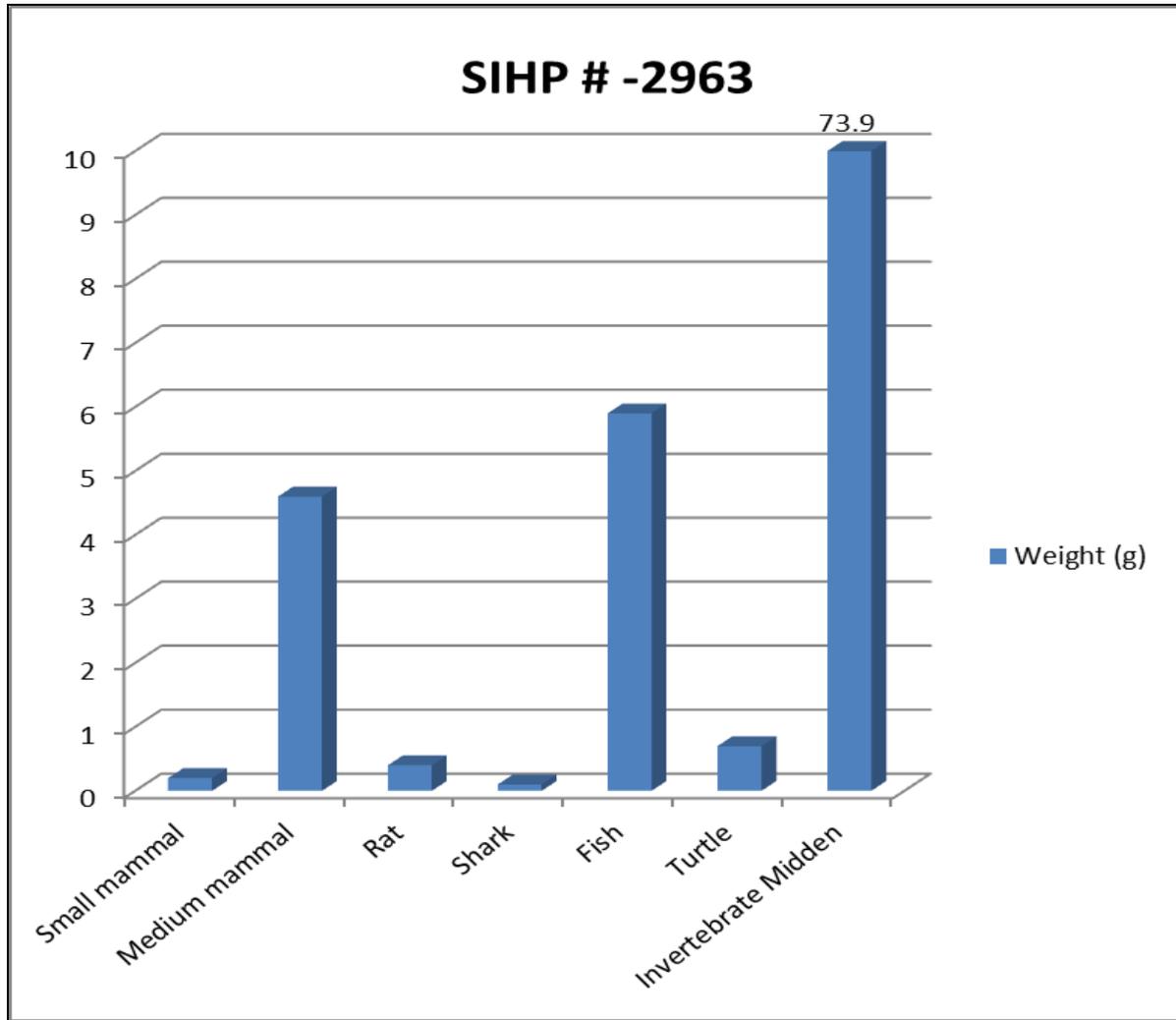


Figure 142. Graph representing the total weight (g) of faunal remains recovered from deposits associated with SIHP # 50-80-14-2963

the integrity of setting, feeling, and association that might convey their significance under significance Criteria A, B, or C of the Hawai'i or National Register. Based on past documentation and the results of the City Center AIS, CSH recommends that this cultural resource is eligible to the Hawai'i Register under Significance Criteria D and E, and to the National Register under Criterion D, exclusively for its information potential.

4.3.3 SIHP # 50-80-14-5368

FORMAL TYPE:	Buried remnants of Kūwili Fishpond
FUNCTION:	Aquaculture
PREVIOUS DOCUMENTATION:	McGerty, Dega, and Spear 1997; Athens and Ward 1997; Hammatt, Hazlett, and Shideler 2008
AGE:	Pre-Contact through post-Contact
NO. FEATURES:	12 (previously identified)
DIMENSIONS:	0.02 acres (within current project area), 17.12 acres (total area)
LOCATION:	West of Ka'aahi Street between Dillingham Boulevard and Ka'aahi Place (Iwilei Geographic Zone)
TAX MAP KEY:	[1] 1-5-007; [1] 1-5-007:001, :002, :009, :014, :015, :016, :018, :021, :023, :024, :026, :028 through :033, :036, :037, :041, :042; [1] 1-5-008; [1] 1-5-009; [1] 1-5-009:007, :009, :014, :015, :016, :019, :020; and [1] 1-5-015:001, :003, :004
LAND JURISDICTION:	Hawaiian Electric, Nu'uauu Auto Company, and the City and County of Honolulu (current project area excavations)

SIHP # 50-80-14-5368 was originally designated by McGerty, Dega, and Spear (1997) during an AIS of the proposed Liliha Civic Center to refer to buried remnants of Kūwili Fishpond. They designated the entire former footprint of Kūwili Fishpond (17.12 acres; footprint determined by historic maps and documents) as the cultural resource. Further investigation of SIHP # -5368 was performed by Athens and Ward (1997) during a paleoenvironmental coring study of the proposed Liliha Civic Center and by Hammatt, Hazlett, and Shideler (2008) during a data recovery program for Kūwili Fishpond as part of the Iwilei Senior Housing Project.

During the current City Center AIS, buried remnants of Kūwili Fishpond were identified in test excavations T-091 through T-093 (a total of 0.2 acres) within the former Kūwili Fishpond footprint, in the Iwilei Geographic Zone (Figure 143 and Figure 144). Although pond sediments were not observed within T-088 and T-094, they are included as part of this cultural resource due to their position within the former Kūwili Fishpond footprint. The general location of this pond in relation to the Iwilei Zone can be seen in an 1885 map by J. F. Brown (Figure 145) and an 1887 map by W. A. Wall (Figure 146).

Kūwili literally means “stand swirling” (Pukui et al. 1974:125). This pond is mentioned in the legend of Kū'ula (the fish god of Hawai'i), where Kū'ula's son, 'Ai'ai, gave a sacred fishhook to his son, Puniaki, who used it to summon a substantial school of *aku* to Honolulu Harbor.

During his study of Hawaiian fishponds in 1973, Kikuchi classified Kūwili Fishpond as a Type II pond, or a *loko pu'uone* or a *loko haku'one*. This is described as “an isolated shore fishpond usually formed by the development of barrier beaches building a single, elongated sand

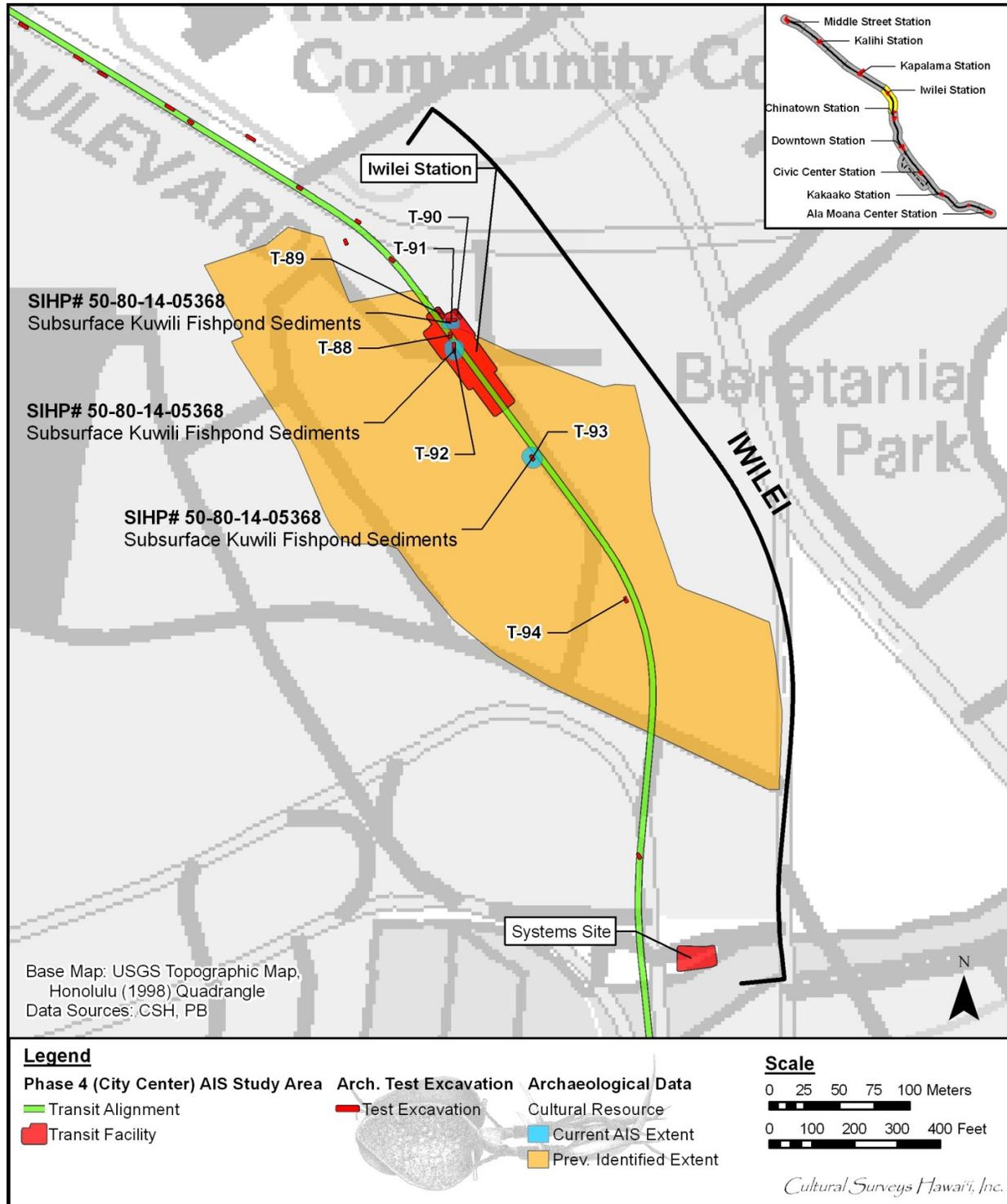


Figure 143. Locations of former and newly identified extents of SIHP # -5368, Kūwili Fishpond, with locations of AIS excavations T-088 through T-094 along the Iwilei Zone corridor (base map: 1998 U.S. Geological Survey topographic map, Honolulu Quadrangle)

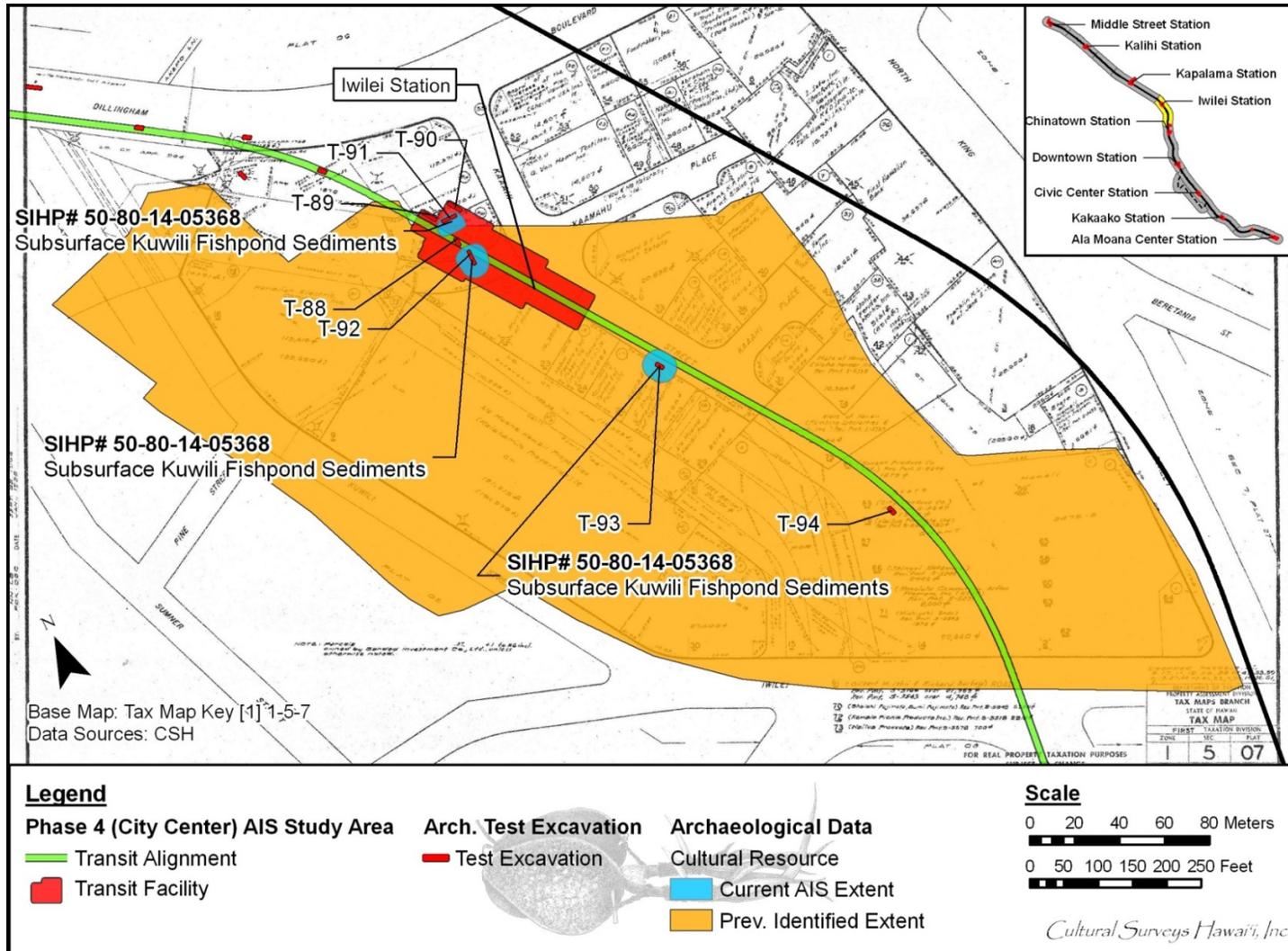


Figure 144. Locations of former and newly identified extents of SIHP # 50-80-14-5368 within the Iwilei Geographic Zone (base map: Tax Map Key [1] 1-5-07)

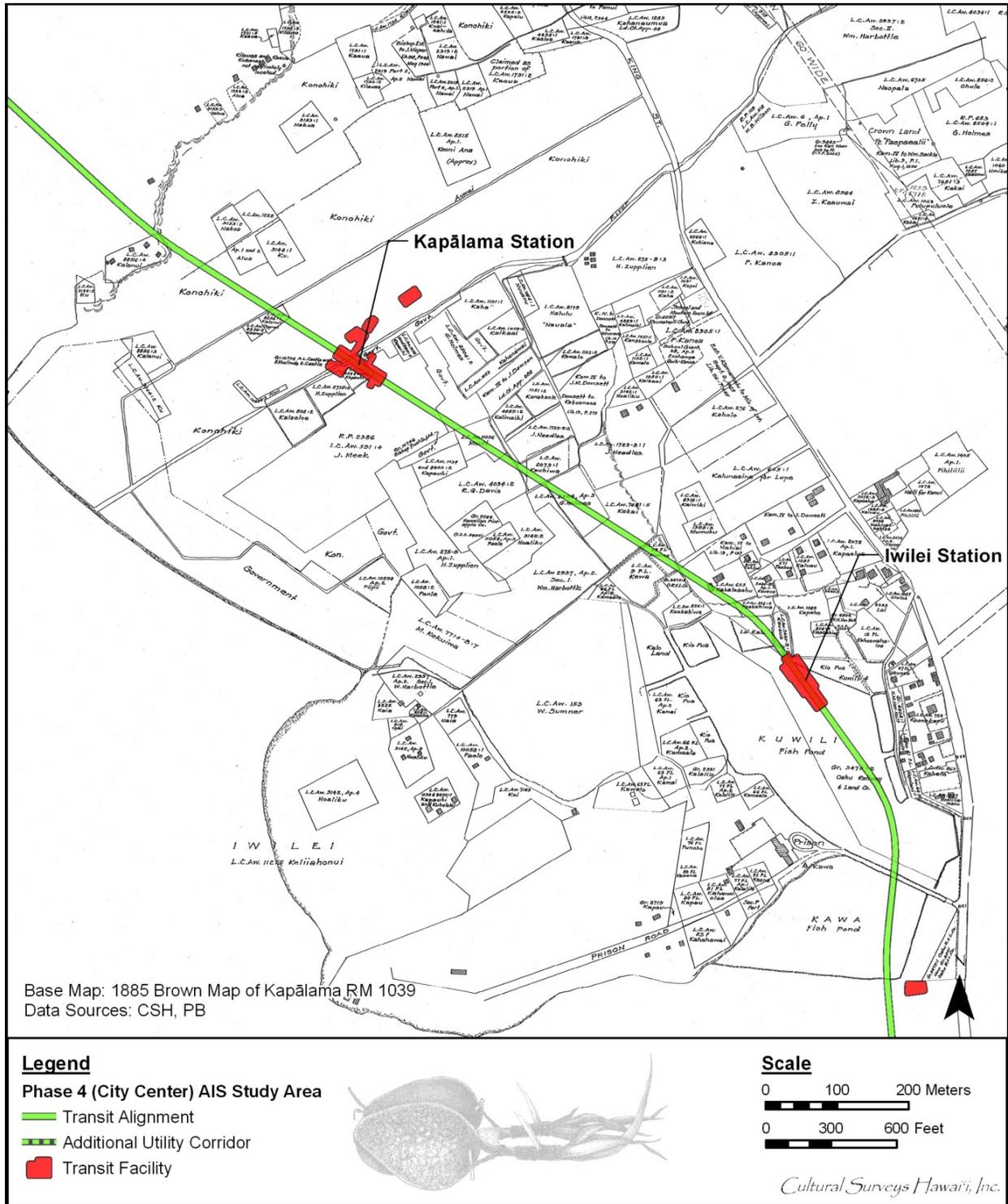


Figure 145. A portion of the 1885 map of Kalihi and Kapālama, *makai* sections, by J. F. Brown depicting the general location of Kūwili Fishpond within the Iwilei Geographic Zone

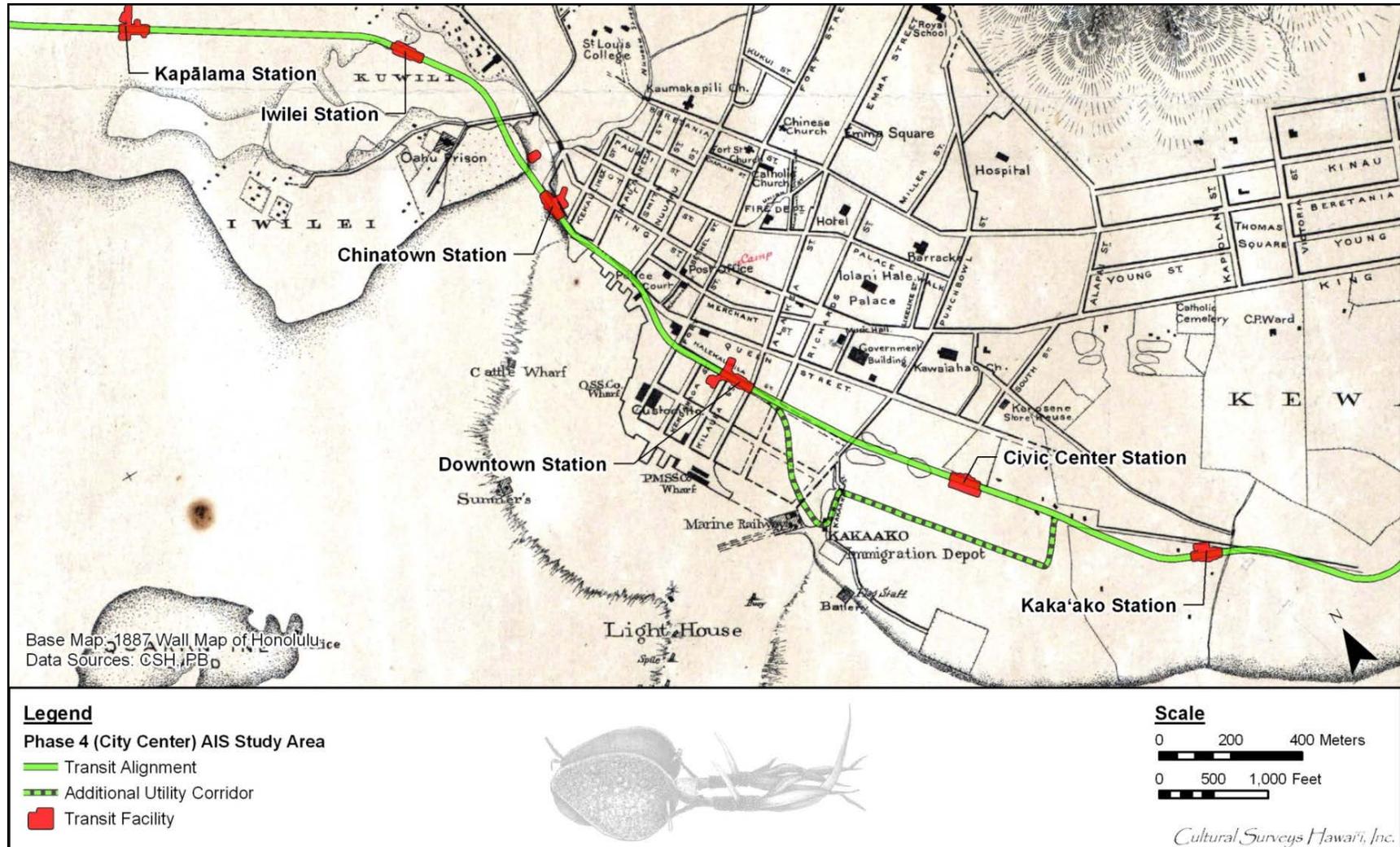


Figure 146. 1887 W. A. Wall Hawaiian Government Survey Map of Honolulu and Vicinity, showing the location of Kūwili Fishpond

ridge [*pu'uone* or *haku'one*] parallel to the coast and containing one or more ditches and sluice grates" (Kikuchi 1973:228).

The Kūwili Fishpond sediments are represented by gleyed silty and sandy clays, with abundant snail shells and organics. The McGerty, Dega, and Spear (1997) study identified fishpond sediments from 1.61 to 2.60 mbs, while the Athens and Ward (1997) study identified similar sediments from 1.45 to 2.35 mbs. Hammatt, Hazlett, and Shideler (2008) identified fishpond sediments from 1.80 to 2.70 mbs. In all three studies, the remnants of Kūwili Fishpond were located beneath thick historic fill layers.

The McGerty, Dega, and Spear (1997) study documented 12 subsurface features associated with SIHP # -5368. Five of the features (2, 4, and 10-12) appear to be related to the in-use fishpond, while nine of the features (1, 3, and 5-9) are associated with the historic period infilling of the fishpond. The 12 features were described as follows:

Feature 1 was a partial human femur uncovered at the eastern end of ST-1 in fill containing historical debris from the twentieth century. In addition, a probable human femur fragment was identified in the south sidewall of the trench. No burial pit, articulated remains, or definite coffin could be identified in the fill. The remains were interpreted to be a previously disturbed burial and that had somehow been incorporated into the trash fill. The human bones were reburied when the trench was backfilled.

Feature 2 was a wall constructed from rounded to subangular basalt rocks, three courses high and visible in the north wall profile of ST-1 between 15.0 and 17.0 m west of ST-1 datum. Feature 2 was two to three courses high and faced. The spaces between the basalt rocks were filled with coral mortar. The base of the wall was built upon Layer II fill containing domestic refuse. At 17.0 m, the wall turned a ninety degrees to the south and extended into the south wall of ST-1. Feature 2 was interpreted as a foundation built on fill deposits that accumulated within the *ki'o pua*.

Feature 3 was a dark reddish brown-soil (5 YR 3/4) silty clay filled trench which extended in a north/west to south/east direction, perpendicular to ST-1. The feature measured 0.40 m wide and ranged in depth from 0.52 to 0.64 m. Feature 3 was uncovered at 0.55 mbs at approximately 17.40 m west of ST-1 datum. Stratigraphic Trench 2 was placed at a ninety degree angle to ST-1, exposing Feature 3 for seven meters to the north/west. A portion of Feature 3 appeared in ST-3, 6.0 m to the south. A green glass bottle mouth fragment was recovered from Feature 3 at 0.92 mbs. The function of this feature was undetermined.

Feature 4 was a loosely built wall incorporating basalt, burned brick and possibly non-local stone. The wall was approximately 0.70 m high and was located around 20.0 m west of ST-1 datum. The feature was built directly on top of gleyed deposits (Layers IIIa and IIIb). Late 19th century bottles were uncovered in gleyed deposits directly below the wall. Red and yellow bricks and iron slag were situated on and around the wall cobbles. When ST-3 was excavated, another section of Feature 4 appeared.

Feature 4 was interpreted as the outer edge of an historical period *ki'ō pua* (fry pond) based on the lower historical cultural deposits and map...depicting the *ki'ō pua* wall in the vicinity of the excavated units.

Feature 5 was a cement jacket located 22.5 m west of ST-1 datum. Feature 5 measures 0.65 by 0.10 m and was exposed at a depth of approximately 0.08 mbs, directly under the blacktop surface in Layer Ia. This layer was fill comprised of coral gravel and sand and was relatively free of trash. These upper fill layers (Layers I-a to I-j) were interpreted as being associated with the in-filling of part of Kūwili Pond in 1889-1890 for the construction of the Railway.

Feature 6 was a cement drain located approximately 27 m west of ST-I datum. The diameter measured 0.76 cm and it was uncovered at 0.60 mbs. Feature 6 was surrounded by coral rubble and sand. The pipe was interpreted as a late nineteenth century or twentieth century feature.

Feature 7 was a small iron pipe located 29.6 m west of ST-1 datum at 0.40 mbs in Layer I-i. Feature 7 was interpreted as a late nineteenth century or early twentieth century feature based on its association with the upper fill layers.

Feature 8 was an iron pipe located 30.55 m west of the ST-1 datum, 0.79 mbs in Layer I-j. The diameter of the pipe was 19 cm. Feature 8 was interpreted as a late nineteenth century or early twentieth century feature based on its association with the upper fill layers.

Feature 9 was a rusty metal pipe located 45.55 m west of ST-1 datum at 0.94 mbs in Layer I-f. Feature 9 was interpreted as a late nineteenth century or early twentieth century feature based on its association with the upper fill layers.

Feature 10 was a possible dredge channel located between 45.50 m and 52.00 m west of ST-1 datum at approximately 1.44 mbs (Figure 26). The feature was around 7.00 m wide and truncated the gleyed deposits in the bottom of ST-1. The feature itself was filled with silty sand. Based on its intrusive position through pond deposits, it was interpreted as a channel for draining the pond before infilling.

Feature 11 was a loose scatter of coral rubble located 52.00 m west of ST-1 datum. The rubble was lying directly on gleyed pond deposits at 1.10 to 1.30 mbs. Although the function of this feature was undetermined, one suggested interpretation was that it functioned as a temporary foundation for a hydraulic dredge used to excavate Feature 10.

Feature 12 was a basalt boulder alignment lying directly on top of a low coral filled platform at the bottom of ST-6... It was one course high at the edge of the reef. To the north were a number of angular coral blocks. Based on what little was exposed, this feature appeared to be a low coral block-filled platform lined with basalt boulders. A small clamshell deposit was sitting directly on top of Feature 21 and was collected for possible radiocarbon dating. This feature was interpreted as being post-Contact in age since photographs of the pond show more than one

structure built directly on the edge of the fishpond [McGerty, Dega, and Spear 1997:31-36].

Radiocarbon analysis of the fishpond sediments was performed by McGerty, Dega, and Spear (1997), Athens and Ward (1997), and Hammatt, Hazlett, and Shideler (2008). Radiocarbon analysis by McGerty, Dega, and Spear (1997) suggests that Kūwili Fishpond may have been constructed as early as AD 1100. Radiocarbon analysis by Athens and Ward (1997), however, yielded a much later age of construction, between approximately AD 1400 and 1700. Hammatt, Hazlett, and Shideler's (2008) radiocarbon analysis results suggest that the earliest pond sediments were deposited circa AD 1020 to AD 1120, which is consistent with the estimate by McGerty, Dega, and Spear (1997). From historic maps and accounts, it is clear that the fishpond remained open (if not always in use) until around the turn of the twentieth century (between 1895 and 1901) when it was filled in during land reclamation activities.

During the current investigation, subsurface sediments associated with Kūwili Fishpond were identified in three AIS test excavations (T-091, T-092, and T-093). Additional test excavations in the area (T-086 through T-090 and T-094) revealed thick fill layers down to the base of excavation, generally at or near the water table, with no natural sediments identified. Fishpond sediments may still be present below the base of excavation in these trenches. Kūwili Fishpond sediments identified in T-091, T-092, and T-093 ranged in depth from 1.65 mbs to approximately 2.74 mbs. The sediments were generally dark green, blue, or gray silty clays or clay loams and contained abundant snail shells and organics. Figure 147 is a representative profile of a trench containing pond sediments (T-091), Table 16 describes the stratigraphy, and Figure 148 is a photograph of the profile wall. The figures and table show that the pond sediments are identified as Stratum II and are located beneath several (thick) fill layers.

Kūwili Fishpond functioned as an aquacultural site beginning in pre-Contact times and continuing through early post-Contact times. Based on the guidance of National Register Bulletin No. 15, this archaeological cultural resource retains its integrity of location, materials, and workmanship. The components of this cultural resource have provided, and can potentially provide, additional information related to the fishpond's original construction and design, its geographical distribution/extent, and broader patterns of the fishpond's use for aquaculture throughout the pre- and post-Contact eras. SIHP # -5368, buried remnants of Kūwili Fishpond, was previously determined eligible to the Hawai'i and National Registers under Significance Criterion D (has yielded, or is likely to yield information important for research on prehistory or history) by McGerty, Dega, and Spear (1997). The archaeological remnants of Kūwili Fishpond are buried and their surroundings have been completely altered by modern development since their time of construction and period of use. Accordingly, these features do not maintain the integrity of setting, feeling, and association that might convey their significance under significance Criteria A, B, or C of the Hawai'i or National Registers. Based on the results of this investigation, CSH recommends that this cultural resource maintains the integrity to support its historic significance under Criterion D of both the Hawai'i and National Registers, exclusively for its information potential.

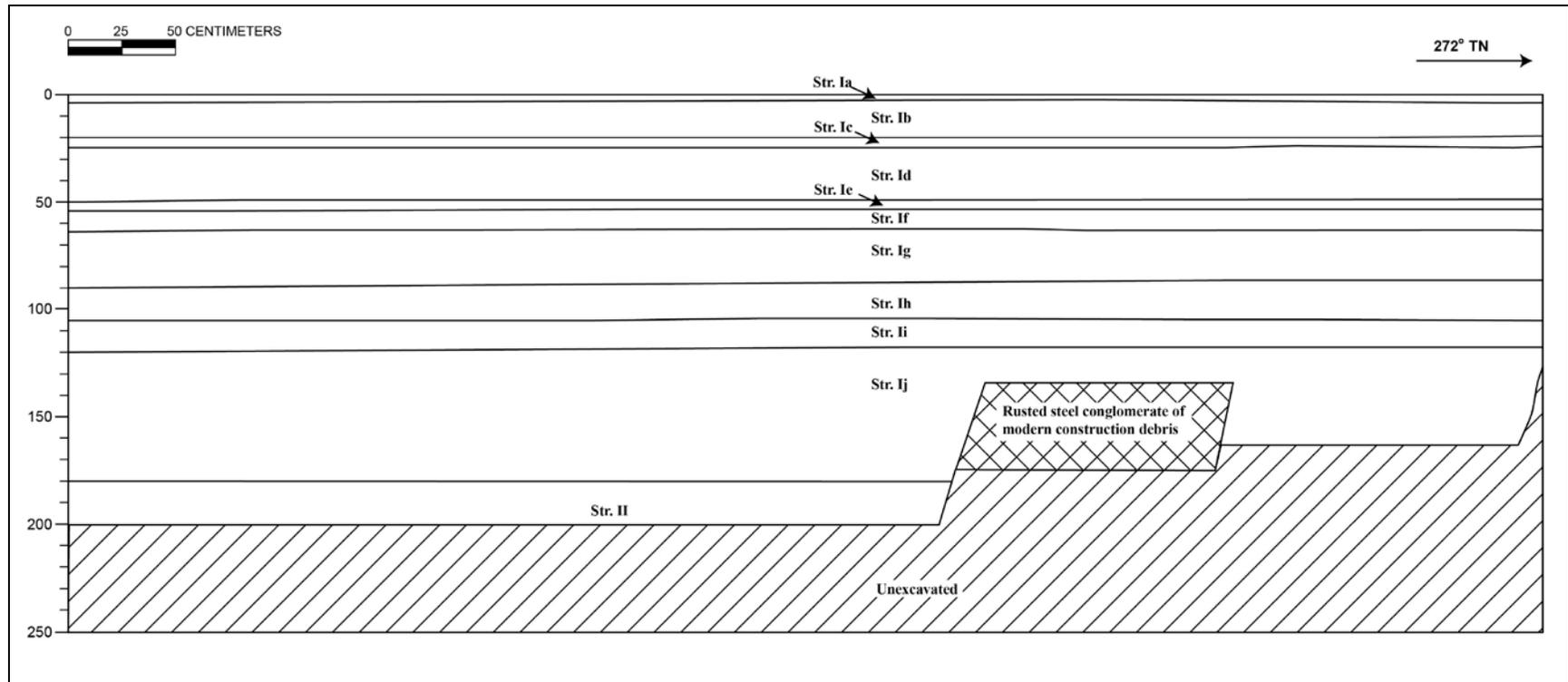


Figure 147. Profile drawing of the south wall in T-091

Table 16. Stratigraphic description for the south profile in T-091

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



Figure 148. Photograph of T-091 south wall profile

4.3.4 SIHP # 50-80-14-5820

FORMAL TYPE:	Human skeletal remains and burials and a culturally enriched A-horizon
FUNCTION:	Habitation and burial interment
PREVIOUS DOCUMENTATION:	Winieski and Hammatt (2000)
AGE:	Pre-Contact/early post-Contact through post-Contact
NO. FEATURES	30 (during current archaeological investigation), 11 (previously documented by Winieski and Hammatt 2000)
DISTRIBUTION:	Approximately 0.04 acres (within current project area), 0.08 acres (total area)
LOCATION:	Halekauwila Street from Keawe Street to just east of Ohe Street (Kaka'ako West Geographic Zone)
TAX MAP KEY:	[1] 2-1-031; [1] 2-1-051; and [1] 2-1-051:003, 038 (Winieski and Hammatt 2000); [1] 2-1-050; [1] 2-1-050:007, :067; and [1] 2-1-051 (within current project area)
LAND JURISDICTION:	Hawai'i Community Development Authority and the City and County of Honolulu (within current project area)

SIHP # 50-80-14-5820 was originally designated by Winieski and Hammatt (2000) to refer to 11 burials associated with a culturally enriched A-horizon both near and within Mother Waldron Park (Figure 149 and Figure 150). During the current AIS, components of this previously documented cultural resource were identified in seven AIS test excavations (T-141, T-142, T-145, T-146A, T-150, T-151, and T-151A) along Halekauwila Street from Keawe Street to just east of Ohe Street. The components include a subsurface cultural layer (former A-horizon) and 30 associated features. Isolated human skeletal remains were also discovered within the A-horizon and its associated pit features. The human skeletal remains and the subsurface cultural layer (including its 30 associated features) are identified as components of SIHP # -5820 based on their proximity and similarity to Winieski and Hammatt's (2000) findings.

The total extent of SIHP # -5820 is largely unknown. The previously and newly identified subsurface deposits (SIHP # -5820) encompass an area of approximately 0.08 acres. Six additional City Center AIS test excavations were conducted in the vicinity (i.e., T-144, T-146 through T-149, and T-148A). Due to the presence of either concrete jackets or the water table, these units were not excavated to sufficient depths to determine if a subsurface cultural layer or burials were present. It is likely that the sediments in these areas have been previously disturbed by prior development activities. Further evidence of this disturbance was documented during a 2013 CSH supplemental inventory survey for the proposed Halekauwila Place Project. Five test

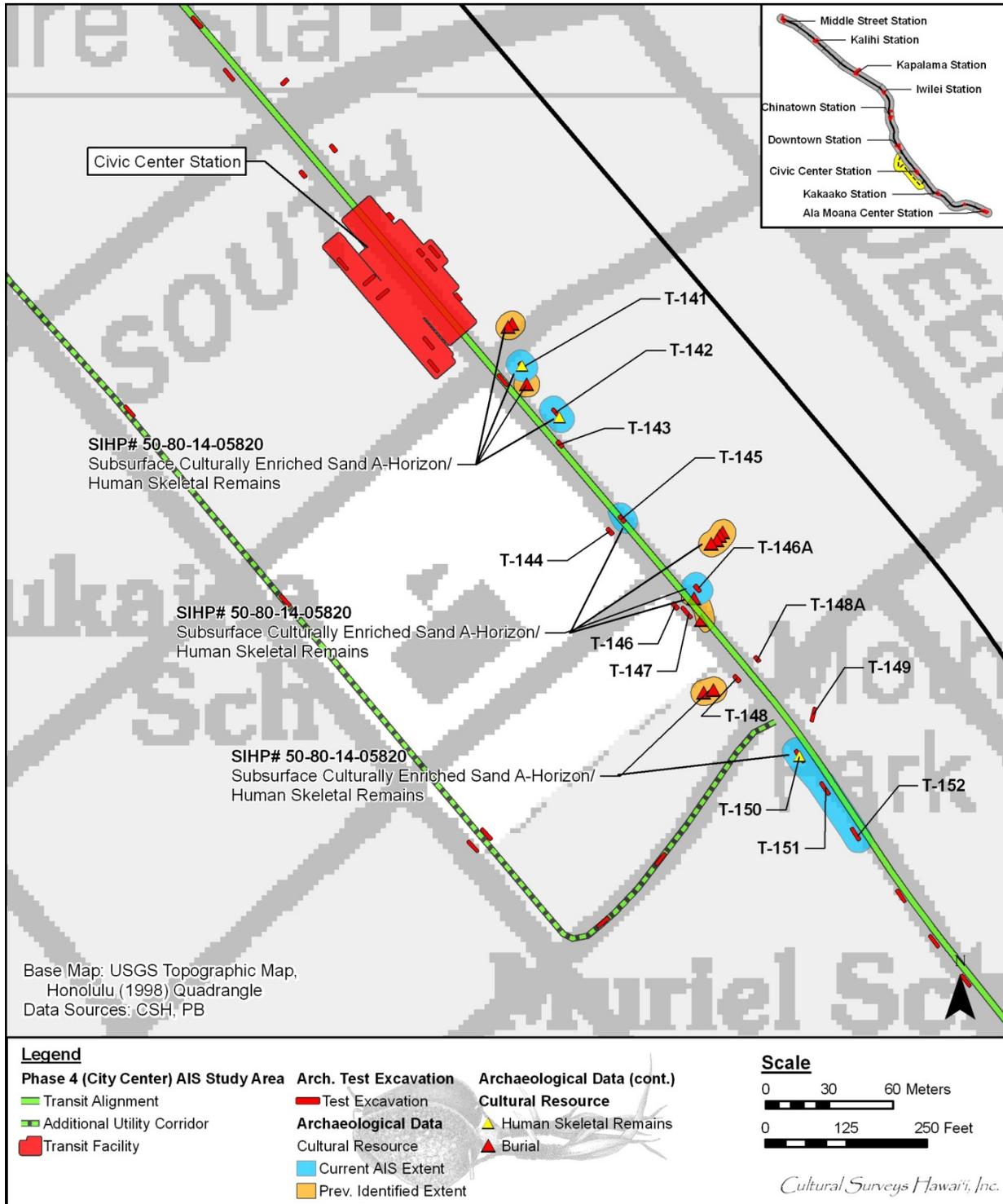


Figure 149. Location of SIHP # 50-80-14-5820 in the Kaka'ako West Geographic Zone (Base Map: USGS 1998 Topographic Map of Honolulu Quadrangle)



Figure 150. Location of SIHP # 50-80-14-5820 in the Kaka'ako West Geographic Zone (Base Map: Tax Map Key [1] 2-1-51)

excavations were completed in the vicinity of SIHP #-5820. The survey identified several imported fill layers overlying natural sediment, but did not encounter the A-horizon deposits and/or features of SIHP # -2963 that were documented by Winieski and Hammatt (2000) and the current City Center AIS. Additional components of SIHP # -2963 may exist, however, in the undocumented portions within and adjacent to the City Center project area.

Previous Documentation

During archaeological monitoring for the Pohulani Elderly Rental Housing development, Winieski and Hammatt (2000) documented a largely intact, buried A-horizon overlying sterile beach sand and tidal deposits. Although it was a cultural layer, the A-horizon was not included in the initial designation of SIHP # -5820. The layer was fairly consistent, ranging from very dark grayish brown to dark brown and from silty sand to sandy clay. It was identified at depths from 0.4 mbs to 1.25 mbs. This cultural layer contained human burials, traditional Hawaiian artifacts, historic artifacts, charcoal flecking, faunal bone and animal burials. At least eight of the 11 human burials encountered during the project were located within the A-horizon. In most cases, the burial pits intruded into the underlying sterile beach sand. Cultural materials were sparse within the A-horizon itself, but were found in larger concentrations within the associated subsurface features.

The Winieski and Hammatt (2000) study documented 11 burials near or within Mother Waldron Park (Table 17). Five burials were located along Halekauwila Street, two burials were located within Keawe Street, and four burials were located within Mother Waldron Park. Seven of the burials were either intact or partially intact. All 11 burials were recovered and subsequently reinterred within Mother Waldron Park.

Of the eight identified pit burials enough evidence remained in six cases to confirm that the individuals had been interred in a fully-flexed position, the traditional Hawaiian form. Mother Waldron Park Burial 4 was the deepest of the confirmed flexed finds. It was uncovered between 1.45 and 1.50 mbs in wet gray-blue gleyed sandy clay, directly at the water table. The remains rested on their right side and were oriented with the skull to the east. Significantly, the damp environment preserved a rare sennit cord wrapped over and under the remains. It was probably a remnant of the cordage used to bind the body into a flexed position.

The remaining flexed burials originated in the dark grayish brown A-horizon. Where identified, the burial pits generally extended into the underlying sterile layer of white beach sand. They ranged in depth from 0.60 to 1.40 mbs, though in all but one case the bottom of the excavated burial was recorded at 1.15 mbs or lower. The greatest amount of osteological information was retrieved from Mother Walden Park Burial 1, recovered from a depth of 1.25 mbs to 1.35 mbs. Buried in a 0.9 m long pit, the remains were supine, with the arms tight against the upper torso, the hands near the shoulders, and the skull oriented north. Osteological analysis suggested that the burial was a female of Polynesian ancestry between approximately 40 to 45 years of age. Significantly, the cranium exhibited artificial deformation. A whole pig (*Sus scrofa*) was found buried at the base of the trench directly adjacent to the skull of Burial 1. The pig burial was within a well-defined pit extending from the overlying cultural layer and intruding into the white beach sand layer. The skull was oriented toward the east. Additionally, a small pit approximately 0.50 m east of the human and pig burials contained the charred partial remains of

Table 17. Burials in the Vicinity of SIHP #-5820

Location	#	Condition	Type	Position	Body Orient.	Head Orient.	Depth (mbs)	Originating Strata	Under-lying Layer	Notes
Winieski and Hammatt (2000)										
Mother Walden Park	1	Intact	Pit Burial	Flexed	Supine	North	1.25 to 1.35	Dark Grayish Brown Sand	Beach Sand	Female, Polynesian descent, aged 40 to 45 years; artificial cranial deformation. Associated with a whole pig burial.
Mother Walden Park	2	Disturbed	Fragments							Right ulna, radius and hand fragments.
Mother Walden Park	3	Intact	Pit Burial	Flexed	Right	South-east	1.10 to 1.15	Dark Grayish Brown Sand	Beach Sand	
Mother Walden Park	4	Intact	Pit Burial	Flexed	Right	East	1.45 to 1.50	Gray-blue Gleyed Sandy Clay	Water Table	Recovered a sennit cord used to bind the remains in a flexed position.
Keawe St.	1	Disturbed	Fragments							Dislodged skull; long bones recovered from backdirt.
Keawe St.	2	Intact	Pit Burial	Flexed	Left	North	0.60 to 0.70	Dark Grayish Brown Sandy Clay	Beach Sand	Juvenile female with hands were position in front of face.
Halekauwila St. & Coral St.	1	Disturbed	Fragments				1.40	Dark Grayish Brown Silty Sand	Beach Sand	
Halekauwila St. & Coral St.	2	Partial	Pit Burial			North	1.40 to 1.60	Dark Grayish Brown Silty Sand	Beach Sand	In situ portion included ulna, radius and torso.
Halekauwila St. & Coral St.	3	Partial	Pit Burial	Extended	Supine	South-east	1.20 to 1.30	Dark Grayish Brown Silty Sand	Beach Sand	In situ portion included right ulna, radius, pelvis, vertebrae and ribs.
Halekauwila St. & Coral St.	4	Intact	Pit Burial	Flexed	Right	East	1.30 to 1.40	Dark Grayish Brown Silty Sand	Beach Sand	
Halekauwila St. & Keawe St.	1	Disturbed	Pit Burial	Flexed		South	0.80 to 1.15	Very Dark Grayish Brown Silty Sand	Beach Sand	In situ portion included femur, patella, tibia, fibula and mandible fragment.

Location	#	Condition	Type	Position	Body Orient.	Head Orient.	Depth (mbs)	Originating Strata	Under-lying Layer	Notes
Dagher and Spear (2012)										
Halekauwila St. & Cooke St.		Disturbed								
Current AIS										
Halekauwila St. & Keawe St.	T-141	Disturbed	Fragments				0.61 to 0.75	Light Brownish Gray Loamy Sand	Jaucas Sand	Redeposited remains from multiple individuals, including both infants and adults: MIN = 3
Halekauwila St. & Keawe St.	T-142	Intact	Pit Burial	Flexed		South	0.80 to 1.25	Dark Grayish Brown Sandy Loam	Jaucas Sand	Minimally uncovered. Pit outline to faint to be detected in overlying A-Horizon

another pig. The pit intruded into the beach sand layer from the base of the overlying cultural layer above. The pig bones were bundled in the base of the pit at a depth of 1.70 mbs. The proximity of the pig burials to the human burial suggested contemporaneity and a probable association between the features.

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

The only confirmed extended burial was Halekauwila and Coral St. Burial 3. The remains were located in a disturbed pit at the base of the A-horizon, at a depth of 1.2 mbs to 1.3 mbs. The articulated portion of the burial was in a supine, extended position, with the shattered skull oriented southeast. The *in situ* portion of the burial consisted of the right ulna and radius, pelvis, vertebrae, and ribs.

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

City Center AIS

The current City Center AIS identified a culturally enriched A-horizon within West Kaka'ako that was similar to one documented by Winieski and Hammatt (2000) (Table 18). The A-horizon deposits ranged in color from very dark gray to dark grayish brown, though in some cases they were lighter. The sediment matrix varied from silty sand to sandy loam. Overall, stratigraphic descriptions were similar to the dark grayish brown silty sand identified by Winieski and Hammatt (2000). The A-horizon contained pre-Contact, post-Contact, and re-deposited cultural layers. Similar to Winieski and Hammatt (2000), the cultural layer documented by the current AIS contained human burials, traditional Hawaiian artifacts, historic period artifacts, charcoal flecking, animal bone and animal burials. The former land surface appears to have been utilized for habitation, burial interment, and food production during the pre- and post-Contact time periods. Thirty features were associated with the A-horizon. For detailed information regarding each feature, refer to (Table 19).

Table 18. A-horizon associated with SIHP # -5820 that was documented during the City Center AIS

Unit	A-Horizon Matrix	Depth (mbs)	Features	Radiocarbon Dates	Associated Faunal Remains	Associated Cultural Material
T-141	Light Brownish Gray Loamy Sand	0.43 to 0.61	1 to 4	N/A	Pig, Dog, Bird and Horse (Burial)	Glass, Historic Ceramics, Metal, Basalt Stone Sinker
T-142	Dark Grayish Brown Sandy Loam with Charcoal Flecking	0.47 to 0.90	5 to 8, 30	Feat. 8: AD 1510 to 1670	Cow, Pig, Dog, Rat, Bird, Fish, Butchered Cow	Glass, Historic Ceramics, Metal, Earthenware, Basalt Game Stone (Feat. 5), Shell Fishhook (Feat. 6), Human Burial (Feat. 30)
T-145	Very Dark Grayish Silty Sand with Charcoal Flecking	0.50 to 0.87	9, 10	Feat. 9: AD 1480 to 1650	Fish, Butchered Medium Mammal	Fire-cracked Rock, Imu Pit (Feat. 9)
T-146A	Very Dark Gray Sandy Loam	0.87 to 1.10	11 to 17	Feat. 15: AD 1720 to 1820	Pig, Dog	Fire Cracked Rock, Volcanic Glass
T-150	Pale Brown Loamy Sand	0.70 to 1.27	18 to 20	Feat. 19: AD 1810 to 1920; Feat. 20: AD 1630 to 1690	Pig, Cat, Fish	Fire-cracked Rock, Worked Human Bone (18), Volcanic Glass Debitage (Feat. 20)
T-151	Dark Grayish Brown Silty Sand	0.41 to 1.18	21 to 25	Feat. 25: AD 1480 to 1660	Pig, Dog, Rat, Fish	Fire-cracked Rock, Historics, Volcanic Glass (Feat. 22), Red Brick (Feat. 23, 1918-1978)
T-151A	Very Dark Grayish Brown Silty Loamy Sand	0.98 to 1.15	26 to 29	N/A	Butchered Medium Mammal	A-horizon redeposited as fill, Historics, Volcanic Glass Debitage (Feat. 26)

Table 19. Archaeological features associated with SIHP # 50-80-14-5820

Feature	Test Excavation	Depth (cmbs)	Radiocarbon Date (C14)	Description	Contents
1	T-141	55-115	-	Pit	Pit containing an <i>in situ</i> horse burial and isolated human skeletal remains in a disturbed context (3 minimum number of individuals, both infant and adult). This feature also contained charcoal, midden, non-midden shell, and faunal remains (medium-sized mammal).
2	T-141	71-89	-	Pit	Pit containing a minimal amount of marine shell and faunal fragments.
3	T-141	65-150	-	Pit	Pit with no observed or collected cultural remains.
4	T-141	75-95	-	Pit	Pit containing a minimal amount of charcoal. Taxa analysis of charcoal identified <i>kukui</i> (cf. <i>Aleurites moluccana</i>).
5	T-142	50-75	-	Pit	Pit containing traditional Hawaiian artifacts, including basalt game stone; a fire-cracked, water-worn basalt cobble; and several flakes from fire-cracked rocks. Historic artifacts were also documented within this feature: two ceramic fragments and rusted metal pieces. Additionally, this feature contained charcoal, non-midden shell, and fish remains (unidentified).
6	T-142	50-83	-	Pit	Pit containing both traditional Hawaiian and historic artifacts. Historic artifacts included a possible ceramic fragment, a clear glass fragment, and a piece of rusted metal. The single traditional Hawaiian artifact was identified as a shell fishhook. Additionally, charcoal, midden, non-midden shell, water-worn rocks, and faunal remains (medium mammal, fish, and rat) were documented.
7	T-142	50-90	-	Pit	Pit containing charcoal, midden, non-midden shell, a fragment of vesicular basalt, faunal remains (bird, cow, pig, fish), and several historic artifacts (earthenware, ceramic, metal, and glass fragments).
8	T-142	55-73	AD 1510-1670	Pit	Pit containing a small amount of charcoal, midden, non-midden shell, and faunal remains (pig, cow, dog, fish). Preliminary wood taxa analysis of a sample of charcoal identified coconut (<i>Cocos nucifera</i>), <i>kukui</i> (<i>Aleurites moluccana</i>), and <i>kōpiko</i> (cf. <i>Psychotria</i> sp.).
9	T-145	74-92	AD 1480-1650	Imu pit	Imu pit containing fire-cracked rock, midden, non-midden shell, charcoal, and glass fragments. Preliminary wood taxa analysis of a sample of charcoal from this feature identified 'ilima (cf. <i>Sida fallax</i>), and <i>lama</i> (<i>Diospyros sandwicensis</i>).

Feature	Test Excavation	Depth (cmbs)	Radiocarbon Date (C14)	Description	Contents
10	T-145	70-110	-	Pit	Pit containing charcoal, non-midden shell, and faunal (medium-sized mammal) remains. Preliminary wood taxa analysis of a sample of charcoal from this feature identified <i>kukui</i> (<i>Aleurites moluccana</i>), and either pine, fir (cf. <i>Conifer</i>).
11	T-146A	61-67	-	Pit	Pit containing charcoal, midden, non-midden shell, and burned fish bone.
12	T-146A	75-110	AD 1630-1690	Pit	Pit containing charcoal, midden, non-midden shell, volcanic glass, basalt, fire-cracked rock, and fish remains. Preliminary wood taxa analysis of a sample of charcoal identified <i>kukui</i> (<i>Aleurites moluccana</i>), <i>hau</i> (<i>Hibiscus tiliaceus</i>), 'akoko (cf. <i>Chamaesyce</i> sp.), <i>niu</i> (<i>Cocos nucifera</i>), and 'a'ali'i (cf. <i>Dodonaea viscosa</i>).
13	T-146A	83-94	AD 1630-1690	Pit	Pit containing charcoal, midden, non-midden shell, faunal remains (fish, medium-sized mammal), and fire-cracked rock. Preliminary wood taxa analysis of a sample of charcoal identified <i>kukui</i> (<i>Aleurites moluccana</i>), <i>hau</i> (<i>Hibiscus tiliaceus</i>), <i>kolomona</i> (cf. <i>Senna</i> sp.), and 'ōhi'a lehua (cf. <i>Metrosideros polymorpha</i>).
14	T-146A	84-95	AD 1490-1670	Pit	Pit containing charcoal, midden, non-midden shell, burned wood, volcanic glass, fish remains, and fire-cracked rock. Preliminary wood taxa analysis of a sample of charcoal identified <i>niu</i> (<i>Cocos nucifera</i>), and 'ōhi'a lehua (cf. <i>Metrosideros polymorpha</i>).
15	T-146A	84-92	AD 1720-1820	Pit	Pit containing charcoal, midden, non-midden shell, a basalt fragment, and faunal remains (pig, dog, fish). Preliminary wood taxa analysis of a sample of charcoal identified <i>kukui</i> (<i>Aleurites moluccana</i>) and <i>pilo</i> (cf. <i>Coprosma</i> sp.).
16	T-146A	93-106	-	Pit	Pit containing midden, non-midden shell, and fish remains.
17	T-146A	121-135	-	Pit	Pit containing wood fragments.
18	T-150	75-105	-	Pit	Pit containing a worked human bone, basalt tool fragment, fire-cracked rock, and midden.
19	T-150	53-95	AD 1810-1920	Pit	Pit containing charcoal, midden, non-midden shell, fish remains, and fire-cracked rock. Preliminary wood taxa analysis of a sample of charcoal identified <i>kukui</i> (<i>Aleurites moluccana</i>) 'ilima (cf. <i>Sida fallax</i>), and 'āheahea or 'āweoweo (<i>Chenopodium oahuense</i>).
20	T-150	90-130	AD 1630-1690	Pit	Pit containing charcoal, midden, non-midden shell, a small fragment of volcanic glass debitage (1 fragment), and fish remains. Preliminary wood taxa analysis of a sample of charcoal identified <i>kukui</i> (<i>Aleurites moluccana</i>).

Feature	Test Excavation	Depth (cmbs)	Radiocarbon Date (C14)	Description	Contents
21	T-151	48-85	-	Pit	Pit containing fire-cracked rock and marine shell midden.
22	T-151	60-90	-	Pit	Pit containing marine shell midden, historic, volcanic glass (2 fragments of debitage) and faunal remains.
23	T-151	60-99	-	Pit	Pit containing marine shell, historic (one red brick fragment, dated to 1918-1978), faunal remains, and fire-cracked rock.
24	T-151	76-98	-	Pit	Pit containing the <i>in situ</i> , articulated remains of two infant dog s(<i>Canis lupus familiaris</i>). Additional faunal remains (fish and pig) were collected from the base of the pit.
25	T-151	90-119	AD 1480-1660	Pit	Pit containing charcoal, midden, and rat remains. Preliminary wood taxa analysis of a sample of charcoal identified <i>kukui</i> (<i>Aleurites moluccana</i>) and <i>ko'oko'olau</i> (cf. <i>Bidens</i> sp.).
26	T-151A	74-80	-	Pit	Pit containing basalt, volcanic glass (1 fragment of debitage), faunal remains, and marine shell midden.
27	T-151A	70-72	-	Pit	Pit containing marine shell midden, historic, charcoal, and faunal remains.
28	T-151A	70-75	-	Pit	Pit containing marine shell midden, charcoal, historic, faunal remains, and possibly fire-cracked rock.
29	T-151A	47-58	-	Pit	Pit containing little cultural material.
30	T-142	80-125	-	Human burial	One <i>in situ</i> human burial located in the natural Jaucas sand underlying the A-horizon. The burial was in a flexed or partially flexed position, and a faint burial pit outline was present. No grave goods were observed.

Human skeletal remains were found in both test excavations T-141 and T-142 of the current AIS. In Feature 1 of T-141, scattered isolated human skeletal remains were found throughout the former A-horizon. They were in a disturbed context, between 0.61 mbs and 0.75 mbs. Identified skeletal elements included mandible fragments (infant), multiple vertebrae, multiple rib fragments (both adult and infant), a left radius (infant), a long bone (infant), a manubrium, a right third metacarpal, two left second metacarpals, a proximal hand phalanx, an intermediate hand phalanx, two distal hand phalanges (infant), an os coxa, a right os coxa (infant), and a left calcaneus. Unless otherwise noted, the remains were adult. Based on the presence of adult and infant remains, as well as the duplication of adult elements, the minimum number of individuals (MNI) represented within this assemblage is three. Due to the paucity and fragmentary nature of the remains, neither sex nor ancestry was determined. Feature 1 also contained an intact *Equus ferus caballus* (horse) burial. The in situ horse burial was encountered between 0.77 mbs and 1.15 mbs beneath the human skeletal remains (Figure 151 and Figure 152).

A primary, *in situ* human burial (Feature 30) was uncovered in T-142. The burial pit was documented in the natural Jaucas sand layer directly underlying the former A-horizon. The outline was too faint to discern whether the pit originated in the former A-horizon or in the underlying Jaucas sand. The burial pit ranged in depth from 0.8 mbs to 1.25 mbs, while the skeletal remains were between 1.0 mbs and 1.12 mbs. The remains were minimally uncovered. However, it was possible to determine that the burial was likely flexed or partially flexed. The head appeared to be oriented north, while the feet appeared to be oriented south. The size of the remains suggests that the burial was of an adult or adolescent individual. Based on the location and position of the burial, along with a lack of grave goods, the burial is likely traditional Hawaiian.

Human skeletal remains were also discovered during the wet screening of bulk sample material from T-142. The human remains consisted of a single mandibular incisor of 10 +/- year old, as well as two fragments of spongy bone.

Radiocarbon analysis produced dates for eight features associated with SIHP # -5820. Six charcoal samples returned calibrated pre-Contact dates with a range of AD 1480 to AD 1690 (see Table 19). All of the pit features contained charcoal, midden, non-midden shell, and fish remains (except Feature 9). Feature 9 was an in-situ pre-Contact *imu* pit containing thermally-altered basalt stones, charcoal flecking, and faunal bone; it had a calibrated date range between AD 1480 and 1650 (Figure 153). Volcanic glass debitage was identified in Feature 12 (AD 1630 to 1690), Feature 14 (AD 1490 to 1670), and Feature 20 (AD 1630 to 1690) corroborating the pre-Contact radiocarbon dates. A charcoal sample from Feature 15 produced a calibrated date between AD 1720 and 1820, indicating that the feature was likely deposited during the late pre-Contact to early post-Contact period. Features 12, 13, 14, and 15 were all identified in the same test excavation, T-146A. All four features exhibited evidence of traditional food refuse and lacked historic material. They provided strong evidence for a heavily used pre-Contact surface.

Feature 19 produced the only entirely post-Contact date, with an interval between AD 1810 and 1920. Feature 19 was found in the same test excavation (T-150) as Feature 20 (dating between AD 1630 and 1690) (Figure 154 and Table 20). The sample from Feature 19 was collected from more recent A-horizon deposits, (between 0.53 and 0.95 mbs) than the sample from Feature 20 (between 0.90 and 1.30 mbs). The presence of midden and volcanic glass

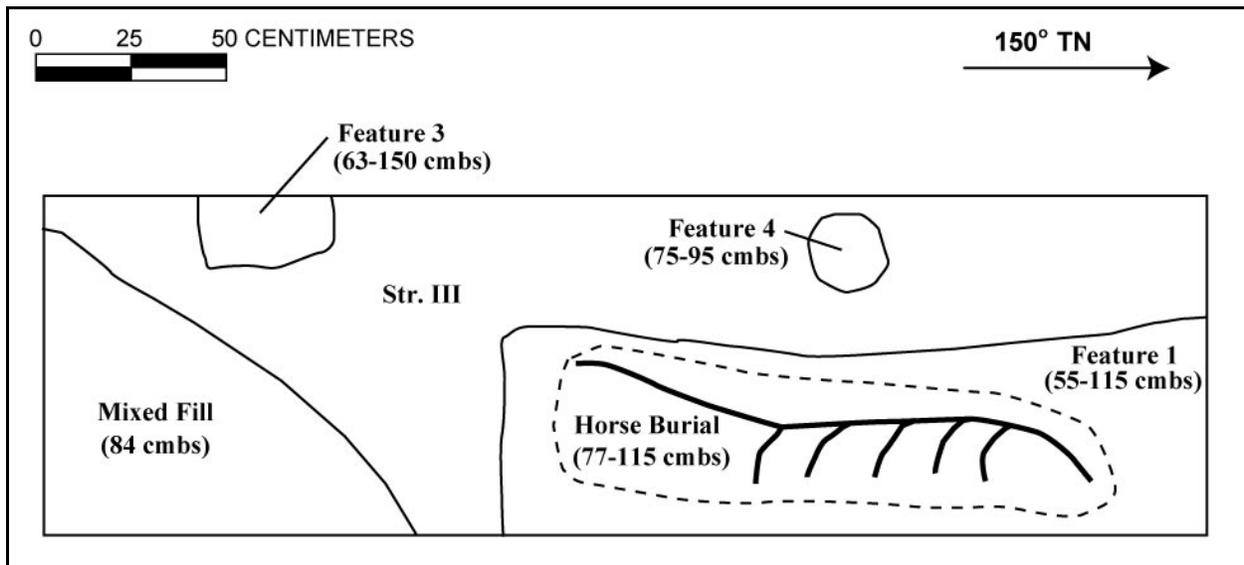
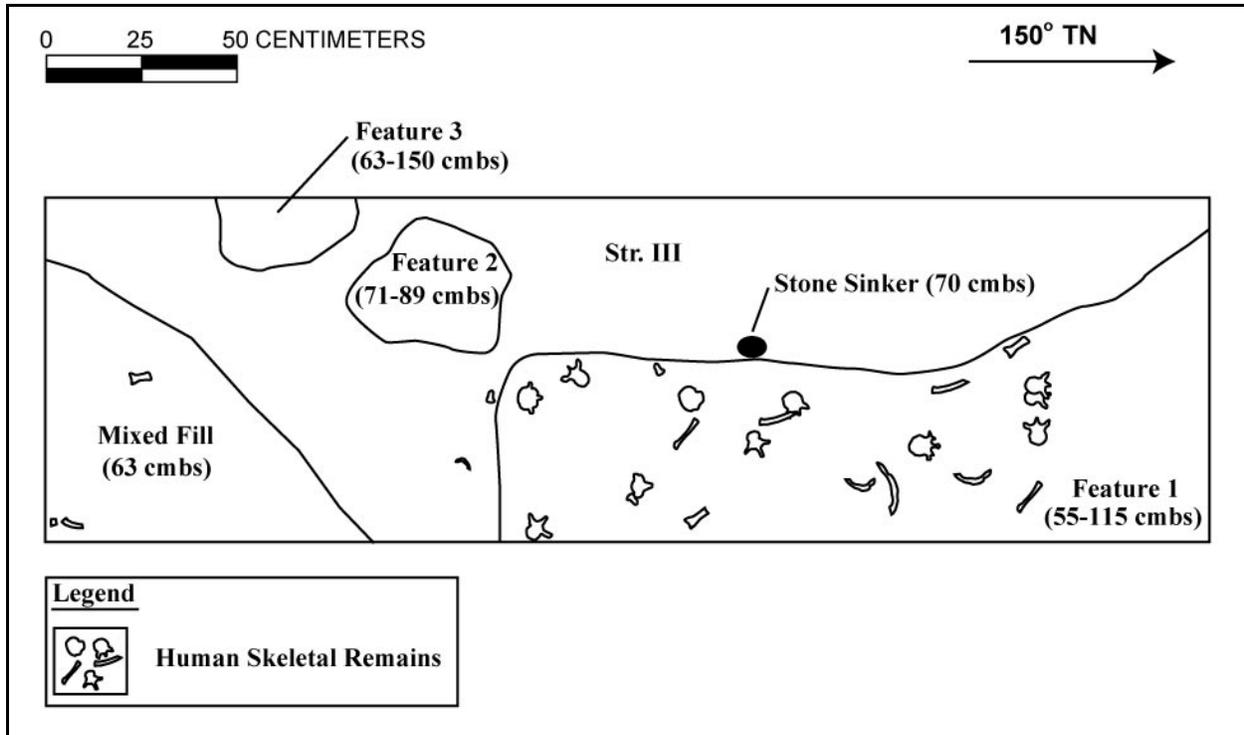


Figure 151. Plan views of T-141 depicting the human skeletal remains and the horse burial of SIHP # -5820 Feature 1



Figure 152. Photograph of the articulated horse burial in Feature 1



Figure 153. Photograph of the southwest profile in T-145 depicting the possible *imu* pit (Feature 9)

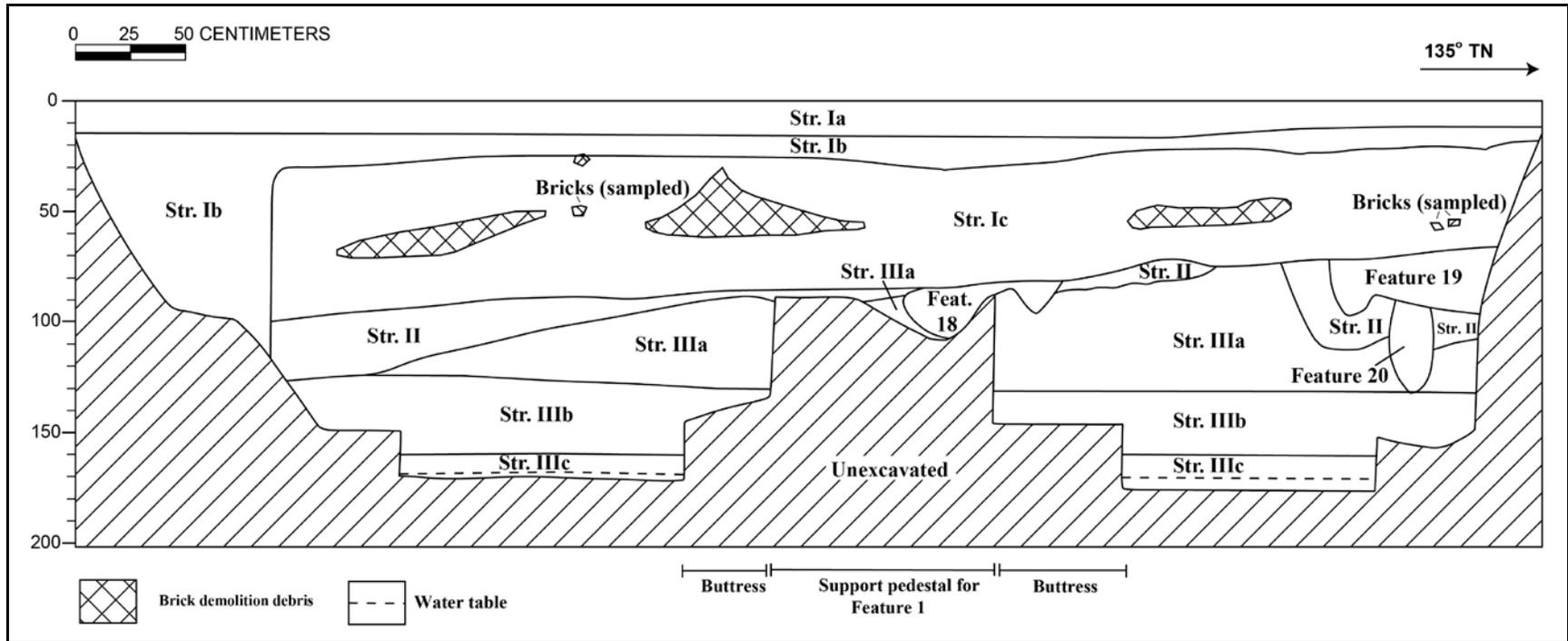


Figure 154. Profile drawing of the northeast wall in T-150 depicting Features 18, 19, and 20 of SIHP #-5820

Table 20. Stratigraphic description for the northeast profile in T-150

Stratum	Depth (cmbs)	Description
Ia	0-15	Asphalt
Ib	10-116	Fill; GLEY 1 5/N (gray); extremely gravelly silty clay; weak, medium, crumb structure; moist, very friable consistency; plastic; mixed origin; clear, wavy lower boundary; gravel base course
Ic	16-100	Fill; 7.5 YR 4/2 (brown); gravelly silt loam; structureless, single-grain; dry, loose consistency; non-plastic; mixed origin; diffuse, wavy lower boundary; contained brick, metal, coral inclusions, some shell; disturbed upper boundary
II	70-127	Natural; 10 YR 6/3 (pale brown); loamy sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; clear, broken/discontinuous lower boundary; contained midden, fire-cracked rock; former A-horizon; truncated cultural layer
IIIa	75-130	Natural; 10 YR 8/4 (very pale brown); fine to coarse grained sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary; contained few small shells
IIIb	125-165	Natural; 10 YR 7/4 (very pale brown); very fine to fine grained sand; structureless, single-grain; wet, non-sticky consistency; non-plastic, marine origin; diffuse, smooth lower boundary
IIIc	160-175	Natural; 2.5 Y 6/3 (light yellowish brown); medium to very coarse grained sand; structureless, single-grain; wet, slightly sticky consistency; weakly cemented; non-plastic; marine origin; lower boundary not visible; contained larger shells

throughout T-150 also suggested both pre-Contact and early post-Contact utilization of the former land surface. Feature 19 may also be evidence for the post-Contact disturbance of the A-horizon deposits.

Fragmentary historic artifacts were common in upper levels of the A-horizon. Fragments of historic ceramics and rusted metal were found in T-141 and T-142 (Features 5, 6 and 7). Pieces of historic glass were identified in T-141, T-142, and T-145. Feature 23 in excavation T-151 contained a red brick fragment (Acc. # 151-A-1) that dated between 1918 and 1978. The historic material in the upper A-horizon is evidence for the utilization and/or disturbance of this former surface during the post-Contact time period.

Limited traditional Hawaiian artifacts were recovered from the AIS test excavations. Volcanic glass debitage was found in T-146A, T-150, T-151 and T-151A. EDXRF (see EDXRF discussion in Volume IV) analysis conducted on volcanic glass collected from Features 12, 14, 20 and 22 indicated a local O'ahu Island source for the material. A basalt stone sinker (Acc. # 141-H-1), was recovered from T-141 at the interface of the former A-horizon and the underlying natural Jaucas sand (Figure 155). A basalt game stone (Acc. # 142-H-1) was discovered in Feature 5 of T-142 and a marine shell fishhook (Acc. # 142-H-2) was discovered in Feature 6 of T-142 (Figure 156 and Figure 157). The size and form of the fishhook is indicative of 'opelu fishing. The basalt game stone was sent for EDXRF analysis; although a specific source material was not available, the results indicated that the basalt game stone had a high ratio of Strontium to Zirconium. It did not match Oahu Island volcanic source samples.

Faunal remains were individually collected during excavation. For detailed faunal information from test excavations where more than four species were identified, refer to Table 21. Those that were recovered from the A-horizon in SIHP# -5820 provided evidence of both pre-Contact and post-Contact land use and food production. Significant quantities of *Bos taurus* (cow), *Equus ferus caballus* (horse), *Sus scrofa* (pig) and *Canis lupus familiaris* (dog) were recovered. Faunal remains also included unidentified medium mammals, *Felis catus* (cat), unidentified Aves (birds), and *Gallus gallus* (chicken), as well as fish and mollusks. *Sus scrofa* and *Canis lupus familiaris* were introduced by Polynesians, and represent both pre-Contact and post-Contact components. *Bos taurus* and *Equus ferus caballus* were post-Contact introductions and represent historic components. There was evidence for extensive historic butchering of both *Bos taurus* and *Sus scrofa*.

Butchered faunal remains were individually recovered from the A-horizon in SIHP # -5820. Vertebra and irregular bones from a medium mammal (possibly *Sus scrofa*) were recovered from T-145 at a depth of 0.76 mbs; they exhibited similar evidence of sawing. Butchered skeletal fragments from a medium sized mammal were found in the T-151A spoil bin, (which originated from around 0.70 mbs). The diaphysis sections and irregular bones were butchered with a metal blade and burned/calced. A burned *Canis lupus familiaris* diaphysis section with perimortem fractures was recovered at 0.69 mbs within the A-horizon deposits in T-142. The perimortem fractures are consistent with traditional food processing methods.

Numerous *Bos taurus* remains with butchering marks were individually recovered from T-142, including a rib recovered from a depth of 0.70 mbs. There were metal saw marks on the diaphysis of a *Bos taurus* long bone (probably a tibia) recovered from Feature 6 (between 0.52 and 0.60 mbs). Additional *Bos taurus* elements with uniform striations were recovered from



Figure 155. Photograph of the basalt stone sinker (Acc. # 141-H-1) that was recovered from the interface of the former A-horizon and the underlying natural Jaucas sand in T-141



Figure 156. Photograph of the basalt game stone (Acc. # 142-H-1) discovered in Feature 5 of T-142

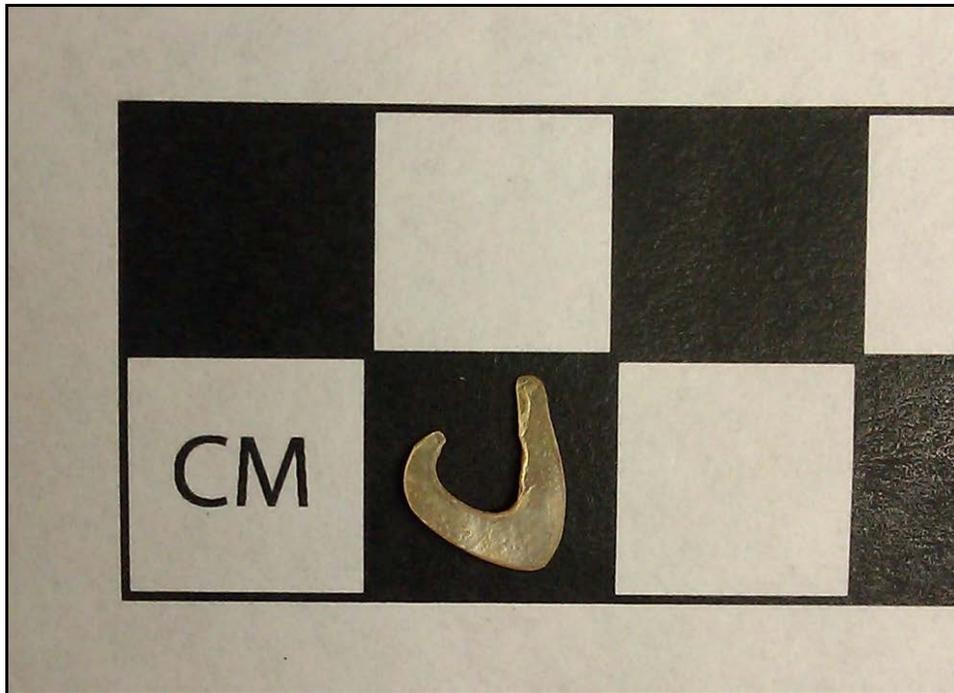


Figure 157. Photograph of the marine shell fishhook (Acc. # 142-H-2) discovered in Feature 6 of T-142

Table 21. Individually collected faunal remains from SIHP # 50-80-14-5820. The table only presents data from test excavations where more than four species were identified

Acc. #	Stratum	Depth (cmbs)	Feature	Family/ Class	Species	Element	Description	Modification
141-F-1	II	45-58	5820-1	Suidae (pig)	<i>Sus scrofa</i>	Molar; molar fragment	Complete/ Fragment	None
141-F-2	II	45-58	5820-1	Canidae (dog)	<i>Canis lupus familiaris</i>	Vertebra (spinous process; Humerus (proximal section))	Fragments	None
141-F-3	II	45-58	5820-1	Aves (bird)	Unidentified	Diaphysis section	Fragment	None
141-F-4	II	77-115	5820-1	Equidae (horse)	<i>Equus ferus caballus</i>	Articulated Horse	Complete	None
141-F-5	II	89	5820-2	Suidae (pig)	<i>Sus scrofa</i>	Cranial	Fragment	None
142-F-10	Iia	44-52	5820-5	Bovidae (cow)	<i>Bos taurus</i>	Rib	Fragment	Burned/calcined (deformed from high temperature fire)
142-F-11	Iia	44-52	5820-5	Mammalia	Medium mammal (possible <i>Bos taurus</i> or <i>Sus scrofa</i>)	Cranial (possible)	Fragment	None

Acc. #	Stratum	Depth (cmbs)	Feature	Family/ Class	Species	Element	Description	Modification
142-F-12	Ia	50-60	5820-7	Bovidae (cow)	<i>Bos taurus</i>	Radial proximal portion (possible); Lumbar vertebrae; Ribs; Irregular bones; 2nd and 3rd Carpus	Fragments	Radius and vertebrae butchered (cut with metal saw blade)
142-F-13	Ia	50-60	5820-7	Bovidae (goat)	<i>Capra aegagrus hircus</i>	Occipital/basilar condyle; Right styloid and occipital portions (pieces mend)	Fragments	None
142-F-14	Ia	50-60	5820-7	Mammalia	Medium mammal (possible <i>Bos taurus</i> or <i>Sus scrofa</i>)	Irregular bones	Fragments	None

Acc. #	Stratum	Depth (cmbs)	Feature	Family/ Class	Species	Element	Description	Modification
142-F-15	Ia	52-60	5820-6	Bovidae (cow)	<i>Bos taurus</i>	Diaphysis section (possible tibia); Cancellous diaphysis sections	Fragments	Butcher marks on diaphysis sections (cut with metal saw blade); Black charring/burnt areas on cancellous diaphysis sections
142-F-16	Ia	69	-	Canidae (dog)	<i>Canis lupus familiaris</i>	Diaphysis section	Fragment	Perimortem fractures, burned (traditional method)
142-F-17	Ia	70	-	Bovidae (cow)	<i>Bos taurus</i>	Rib	Fragment	Butcher marks (cut with metal saw blade, a single false start)

Feature 7, (between 0.50 and 0.60 mbs) including lumbar vertebrae, ribs, irregular bones and the second and third carpus. A calcined *Bos taurus* rib was located in Feature 5 within T-142 at a depth of between 0.44 and 0.52 mbs. Additional *Bos taurus* ribs with butchering marks from a metal saw were recovered from T-145 at a depth of 0.70 mbs.

The metal saw marks on the *Bos taurus* and *Sus scrofa* remains found in T-142, Feature 7, T-145, and T-151A indicate a historic rather than a traditional Hawaiian processing. The butchered remains in the A-horizon were found between 0.44 and 0.83 mbs. *Bos taurus* remains were not found deeper than 0.70 mbs.

Archaeologists individually recovered numerous faunal remains without signs of modern butchering from deeper in the A-horizon. Unmodified skeletal elements from *Sus scrofa* were collected from between 0.42 and 1.10 mbs. *Sus scrofa* was a Polynesian introduced species and common in both pre- and post-Contact contexts. In Feature 2 (T-141) a *Sus scrofa* cranial fragment was found at a depth of 0.89 mbs. Similarly, Feature 7 (T-142) contained *Sus scrofa* cranial fragments collected from between 0.50 and 0.60 mbs, which included portions of the right temporal styloid and the occipital/basilar styloid. Feature 7 also contained numerous irregular medium mammal bones that were possibly from *Sus scrofa*. Additional unidentified medium mammal cranial fragments were collected from Feature 5, higher in the same unit (between 0.44 and 0.52 mbs). In T-146A numerous *Sus scrofa* skeletal elements were uncovered between 0.42 and 0.67 mbs, including proximal rib fragments, diaphysis sections of long bones, and a proximal phalanx. *Sus scrofa* mandibular remains were found across several units deep within the A-horizon. A mandibular premolar was found in Feature 15 within T-146A at a depth between 0.84 and 0.92 mbs. An exterior cortical portion of a *Sus scrofa* mandible with alveolar socket remnants was found in T-150 between 0.90 and 1.10 mbs. Another mandible and a juvenile molar were found in Feature 24 within T-151 at a depth of 0.98 mbs.

Faunal remains were also collected from bulk sediment samples. Figure 158 presents the total weight (g) of faunal remains recovered from deposits associated with SIHP # -5820. Total weight includes both individually collected faunal remains as well as midden material from wet-screened bulk samples. Individual collection and bulk collection represent different sampling strategies, and they cannot be directly compared by weight. However, consistent sampling strategies were used throughout the AIS, and comparison by weight allows for the identification of trends throughout of the transit corridor. In general, the faunal remains from the proposed archaeological cultural resources exhibit dominant quantities of invertebrate midden and *Bos taurus* remains, with moderate quantities of pre-Contact medium mammals including *Sus scrofa* and *Canis lupus familiaris*.

The most prevalent vertebrate remains from SIHP # -5820 were from *Equus ferus caballus*. This is a statistical outlier caused by the horse burial. Even without the horse remains, the faunal remains are dominated by the presence of post-Contact species, primarily *Bos taurus*. The *Capra aegagrus hircus* and *Felis catus* remains were insignificant by comparative weight, but their presence as post-Contact species is important. Goat remains were only identified at one of the other proposed archaeological cultural resources, SIHP # -2918 in Zone 11, Kaka'ako Makai. Cat remains were only identified at one of the other proposed archaeological cultural resources, SIHP # -7429 in Zone 8, Kewalo. Larger quantities of *Canis lupus familiaris* remains were

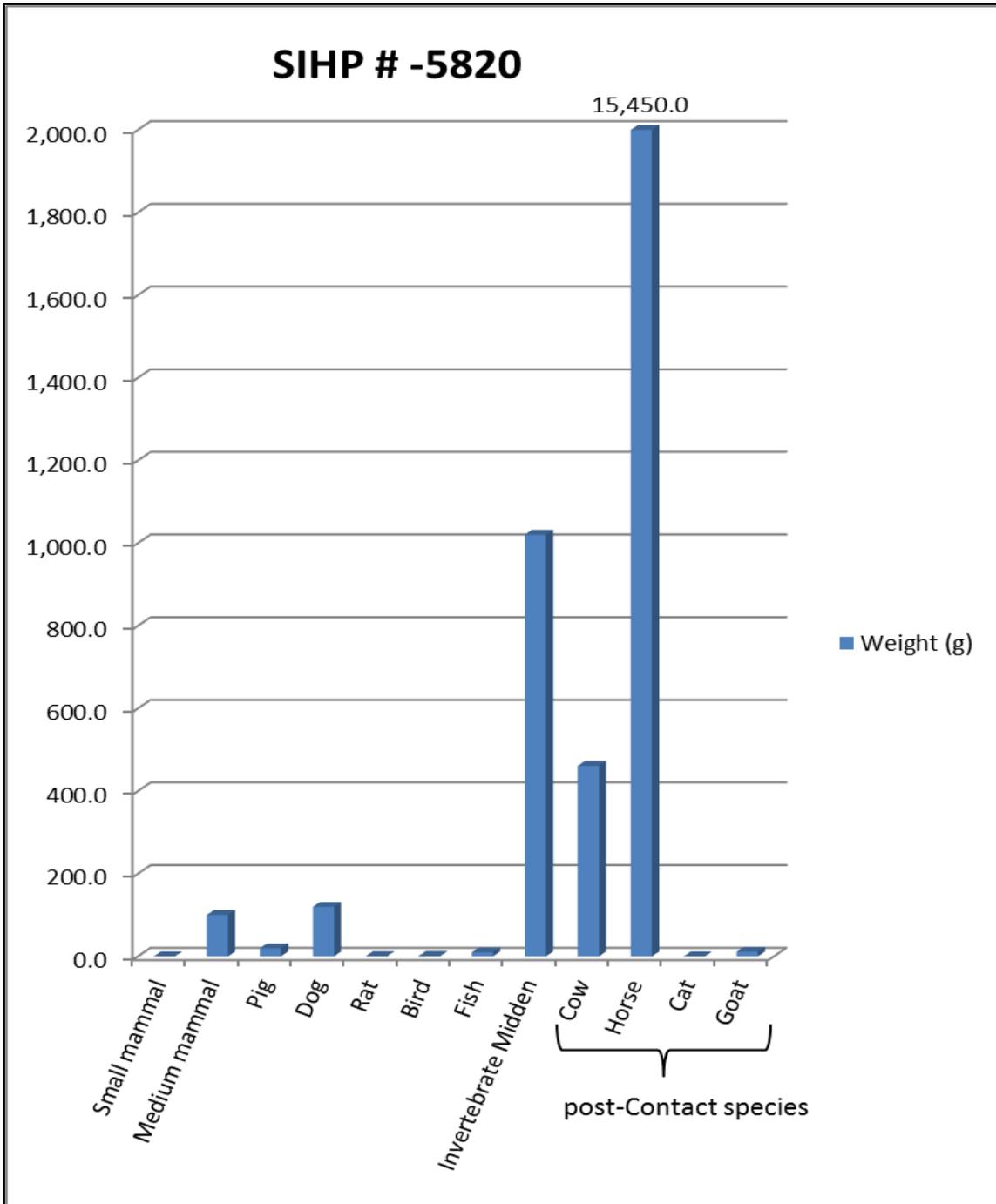


Figure 158. Graph representing the total weight (g) of faunal remains recovered from deposits associated with SIHP # 50-80-14-5820

discovered than *Sus scrofa* remains. This is counter to the observed trend in which pig remains are either more prevalent or nearly equivalent to dog remains by weight. Bulk samples contained a large aggregate weight of invertebrates, and minimal amounts of fish, shark and small mammals.

Significance

The low-lying marshes in Kaka'ako provided the ideal conditions for traditional Hawaiian subsistence practices, consisting of aquaculture, salt production, and occasional taro *lo'i* farming. During the early twentieth century, many of Kaka'ako's marshes and fishponds were filled to accommodate the expanding urbanization of Honolulu. The results of past documentation (Winieski and Hammatt 2000) and the current City Center AIS indicate that the area of SIHP # - 5820 was heavily utilized during pre- and post-Contact times for habitation and burial interments. Radiocarbon dates, as well as faunal and artifact analysis, indicates that upper portions of the culturally enriched A-horizon were likely utilized and/or disturbed more recently during the post-Contact period. The lower portions of the A-horizon appear to be largely intact, and consist of pre- and early-post Contact cultural material.

The current AIS has provided additional data and further refined the geographic extent of the former subsurface cultural layer (SIHP # 50-80-14-5820). The A-horizon matches the cultural layer described by Winieski and Hammatt (2000). Radiocarbon dates place features within the A-horizon firmly in the pre-Contact period. Pre-Contact and post-Contact artifacts were identified. Faunal remains documented ancient and historic foodways, and provided examples of post-Contact butchering practices. Similar to previous studies, a flexed burial was discovered extending into the Jaucas sand. Laboratory analysis on the cultural material collected from the buried A-horizon and its associated 30 archaeological features, suggests that this former land surface was utilized for habitation, burial, and food production during the pre- and post-Contact time periods.

Based on the guidance of National Register Bulletin No. 15, this archaeological cultural resource retains its integrity of location, design, materials, and workmanship. The components of this cultural resource have provided, and can potentially provide additional, information regarding pre- and post-Contact habitation and burial interment in Kaka'ako. The former land surface and its associated features, however, are buried and their surroundings have been completely altered by modern development since their time of construction and period of use. Accordingly, these features do not maintain the integrity of setting, feeling, and association that might convey their significance under significance Criteria A, B, or C of the Hawai'i or National Registers. Based on past documentation and the results of this investigation, CSH recommends that this cultural resource maintains the integrity to support its historic significance under Criteria D (has yielded, or is likely to yield, information important for research on prehistory or history) and E (has cultural significance to an ethnic group) of the Hawai'i Register and Criterion D of the National Register, exclusively for its information potential.

4.3.5 SIHP # 50-80-14-5966

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

SIHP #50-80-14-5966 is a previously identified cultural resource that consists of buried remnants of Kawa Fishpond (Figure 159 and Figure 160). The entire former footprint of Kawa Fishpond (8.13 acres; footprint determined from historic maps and documents) was identified as the cultural resource. The extent of Kawa Fishpond is largely bounded by Iwilei Road, Sumner Street, Awa Street, and N Nimitz Highway within the Iwilei Geographic Zone. Initial documentation of the fishpond was performed by McDermott and Mann (2001) during an AIS for the Nimitz Highway Water System Improvements, Part I, Project.

Buried remnants of Kawa Fishpond were not encountered during the current City Center AIS. Potential evidence of the fishpond's modification, however, was discovered within the footprint of Kawa Fishpond in one test excavation (T-095). The observed stratigraphy within T-095 included fill layers down to 1.45 mbs, where excavation was halted due to the presence of a contaminated fill layer. These various fill deposits may be associated with the late-nineteenth century in-filling of Kawa Fishpond. Original fishpond sediments may also be present below the fill deposits, which remain unexcavated.

Few oral traditions, legends, or other ethnographic information exist regarding Kawa Fishpond. The Hawaiian word "*kawa*," however, literally translates as a precipice or leaping place, or as the pool below a precipice into which swimmers leap (Pukui and Elbert 1986:139). The earliest information about the pond comes from historic maps and general descriptions of the Honolulu environment. The location of this pond in relation to the Iwilei Zone can be seen in an 1885 map by J. F. Brown (Figure 161) and an 1897 map by M. D. Monsarrat (Figure 162). Based on the depiction of fishponds in the general area of Kawa Fishpond on early maps of Honolulu, it is likely that this pond was constructed in pre-Contact times. Kawa Fishpond also appears similar in construction style and geographic setting to other pre-Contact fishponds. Kawa Fishpond was classified by Kikuchi, in his 1973 study of Hawaiian fishponds, as a Type I pond, or a *loko kuapā*. Kikuchi (1973:227) describes this type as "a fishpond of littoral water whose side or sides facing the sea consist of a stone or coral wall containing one or more sluice grates." Kawa

Fishpond remained open (if not always in use) until 1896, when an outbreak of cholera prompted the Honolulu Board of Health to recommend its in-filling.

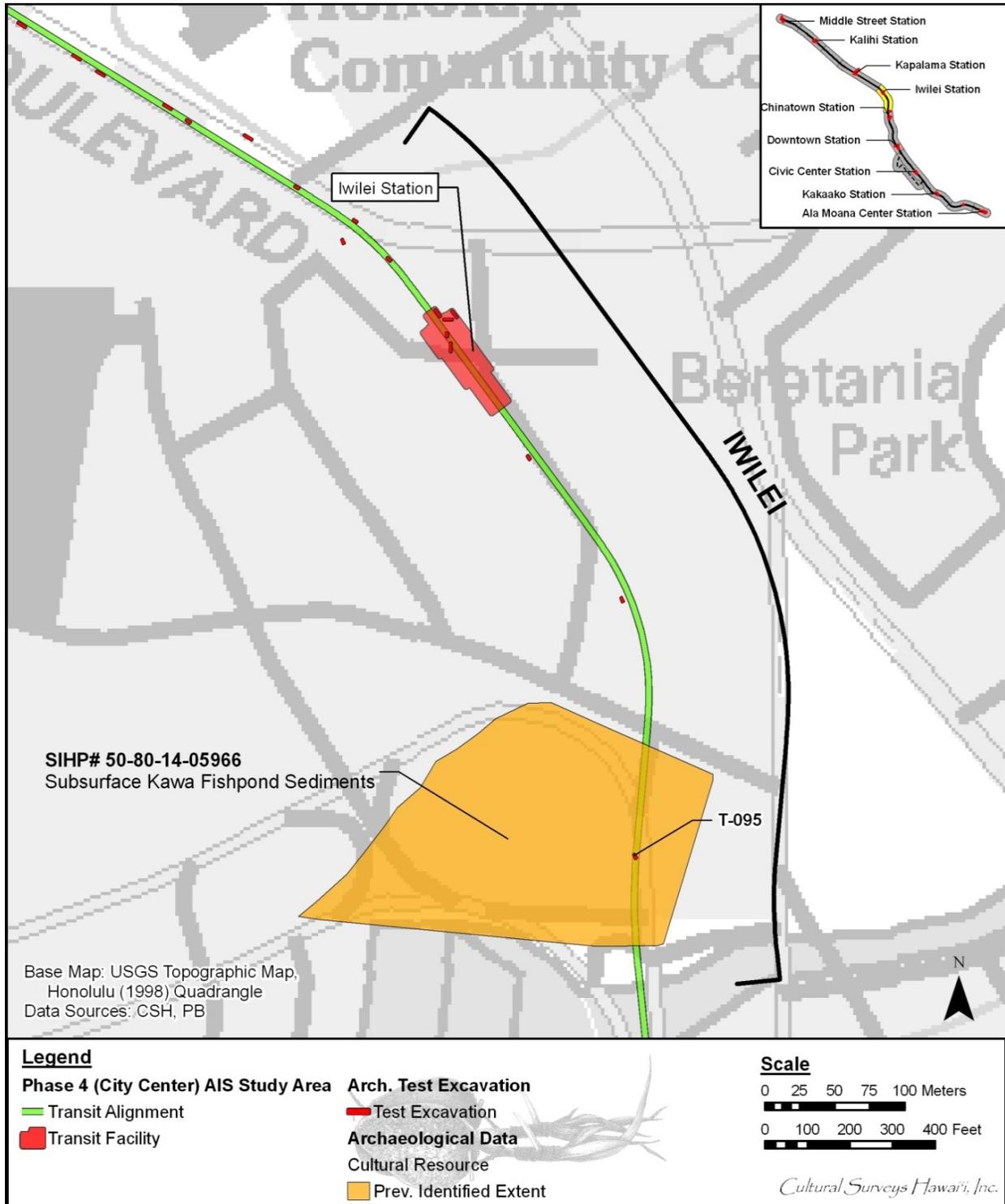


Figure 159. Location and extent of SIHP # -5966, Kawa Fishpond, with location of AIS excavation T-095 along the Iwilei Zone corridor (base map: 1998 U.S. Geological Survey topographic map, Honolulu Quadrangle)

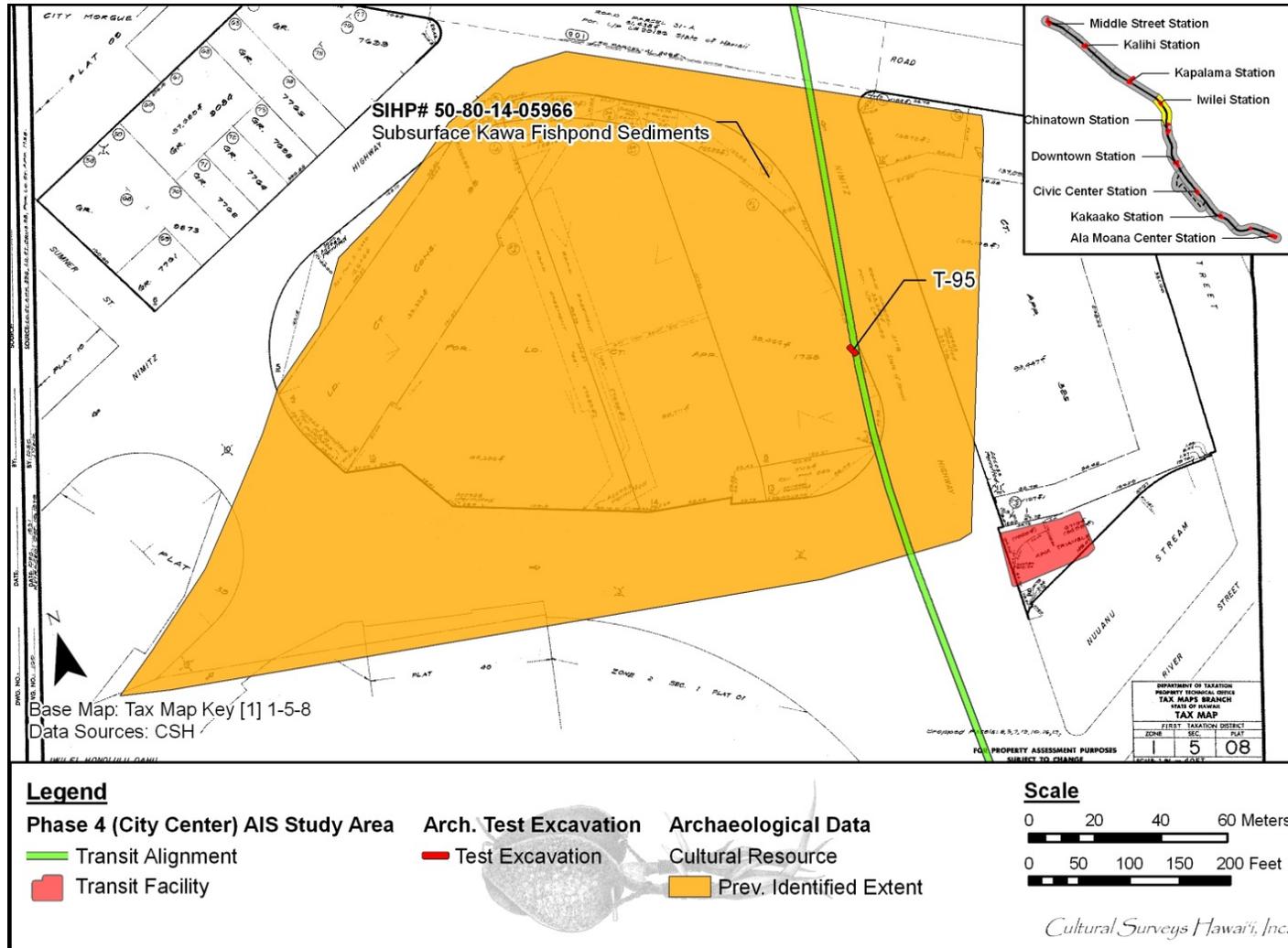


Figure 160. Location and extent of SIHP # -5966, Kawa Fishpond, with location of AIS excavation T-095 along the Iwilei Zone corridor (base map: Tax Map Key [1] 1-5-8)

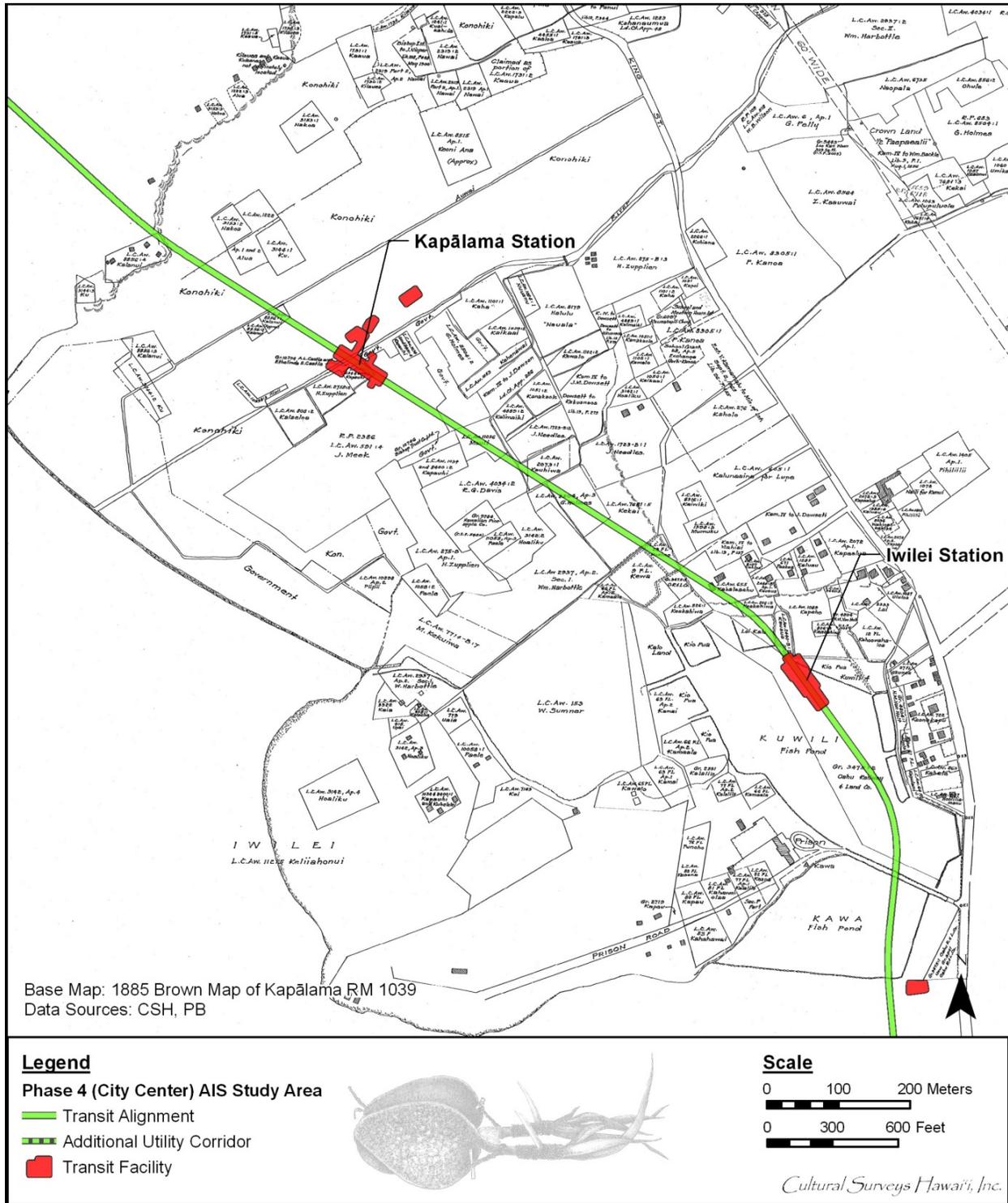


Figure 161. Portion of the 1885 map of Kalihi and Kapālama, makai sections, by J. F. Brown showing the general location of Kawa Fishpond

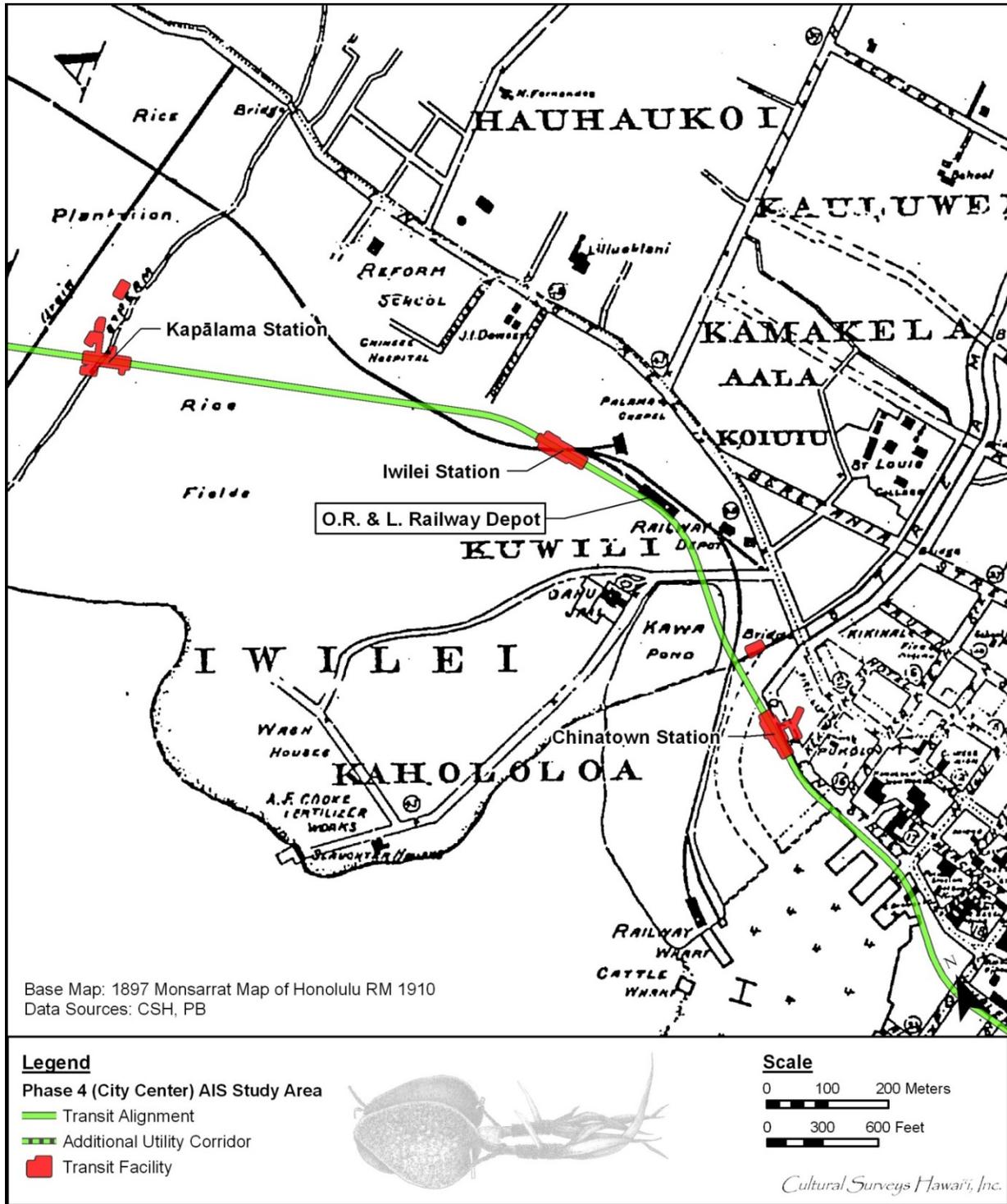


Figure 162. Portion of the 1897 Map of Honolulu by M. D. Monsarrat (Reg. Map 1910) showing the general location of Kawa Fishpond

McDermott and Mann (2001) identified the Kawa Fishpond sediments as fine grained, relatively homogenous, dark gray silty sediments. The pond sediments ranged in depth from 2.04 mbs to 3.50 mbs. In one of their test excavations, fishpond deposits were heavily contaminated with petroleum oil (this could correspond to the contamination noted in the current AIS test excavation, T-095). Historic (mid- to late-nineteenth century) glass bottle fragments were recovered from within the fishpond sediments. These historic artifacts were not unexpected considering Kawa Fishpond was not filled until the end of the nineteenth century. The pond sediments were covered with thick, historic fill deposits.

Radiocarbon results from McDermott and Mann's (2001) study indicated that the fishpond sediments were accumulating since at least AD 1150 to 1350. This age determination is associated with the transformation of a previously higher-energy lagoonal environment into a lower-energy ponded environment that is often characteristic of traditional Hawaiian fishponds.

Micro-charcoal particle counts and palynomorph identification results indicated that fishpond sediments (as well as underlying lagoonal deposits) were accumulating subsequent to Polynesian colonization. The types and relative amounts of the different taxa indicate that these sediments accumulated relatively early during the Polynesian occupation, prior to the large scale destruction of the pre-Polynesian native Hawaiian floral regime. This pollen evidence, along with the complete lack of historically introduced taxa, are inconsistent with the known historic, and presumed later prehistoric use of the pond.

Kawa Fishpond functioned as an aquacultural site beginning in pre-Contact times and continuing through early post-Contact times. Based on the guidance of National Register Bulletin No. 15, this archaeological cultural resource retains its integrity of location, materials, and workmanship. Although direct evidence of Kawa Fishpond was not encountered during the current investigation, there is a possibility that fishpond sediments are present below the documented fill deposits. SIHP # -5966, Kawa Fishpond, was previously determined eligible to the Hawai'i and National Registers under Significance Criterion D (has yielded, or is likely to yield information important for research on prehistory or history) by McDermott and Mann (2001). The archaeological remnants of Kawa Fishpond are buried and their surroundings have been completely altered by modern development since their time of construction and period of use. Accordingly, these features do not maintain the integrity of setting, feeling, and association that might convey their significance under significance Criteria A, B, or C of the Hawai'i or National Register. Based on the results of McDermott and Mann's (2001) study, CSH recommends that this cultural resource maintains the integrity to support its historic significance under Criterion D of the Hawai'i and National Registers, exclusively for its information potential.

4.3.6 SIHP # 50-80-14-6636

FORMAL TYPE:	Buried remnants of the former Kewalo wetland land surface
FUNCTION:	Former land surface
PREVIOUS DOCUMENTATION:	O'Hare, Borthwick, and Hammatt (2003), O'Hare et al. (2004), Tulchin and Hammatt (2005), Clark and Gosser (2005), Hammatt (2008), Altizer, Borthwick, and Hammatt (2011), Runyon et al. (2011), and Morriss, Hunkin, and McDermott (2013; draft)
AGE:	Pre-Contact to early twentieth century
DIMENSIONS:	Approximately 1.22 acres (within current project area), 3.37 acres (total area)
LOCATION:	Within the current project area, AIS test excavations T-186 through T-193, T-195, T-196, T-198 through T-200, T-202, T-202A, T-203, T-205, T-207, T-208, T-210 through T-212, T-214, T-219, and T-220 located mostly along Kona Street within the East Kaka'ako and Kālia Geographic Zones, Honolulu Ahupua'a
TAX MAP KEY:	[1] 2-3-004, [1] 2-3-004:069, [1] 2-3-007, [1] 2-3-007:033 [1] 2-3-038:006, [1] 2-3-039:004 and :011 (current project area); [1] 2-3-010:028 (O'Hare, Borthwick, and Hammatt 2003); [1] 2-3-006:014, 017 (O'Hare et al. 2004); [1] 2-3-004:073, [1] 2-3-005:027, [1] 2-3-006:014, and [1] 2-3-007:002 (Tulchin and Hammatt 2005); [1] 2-3-003:075 (Clark and Gosser 2005); [1] 2-3-010:019, 020, 021, 024, 025, 026 (Altizer, Borthwick, and Hammatt 2011); [1] 2-3-004:080, [1] 2-3-006:014 (Runyon et al. 2011); [1] 2-3-038:001 (Morriss, Hunkin, and McDermott 2013; draft)
LAND JURISDICTION:	The City and County of Honolulu; Cody Properties, LLC; Kaka'ako Associates, LLC; General Growth Properties Ala Moana; Sam House Development, LLC; and Izuo Brothers, Ltd. (within current project area)

SIHP # 50-80-14-6636 was originally designated by O'Hare, Borthwick, and Hammatt (2003) during an AIS of a property in Kewalo to refer to buried remnants of the former Kewalo wetland land surface (Figure 163 through Figure 165). O'Hare et al. described these deposits as part of the:

...pre-Contact to early twentieth century land surface that underlays the dredged fill materials from the Kewalo and Ala Wai Canal land reclamation projects, which took place in the 1920s and 1930s. This land surface is a wetland deposit [O'Hare, Borthwick, and Hammatt 2003:69].

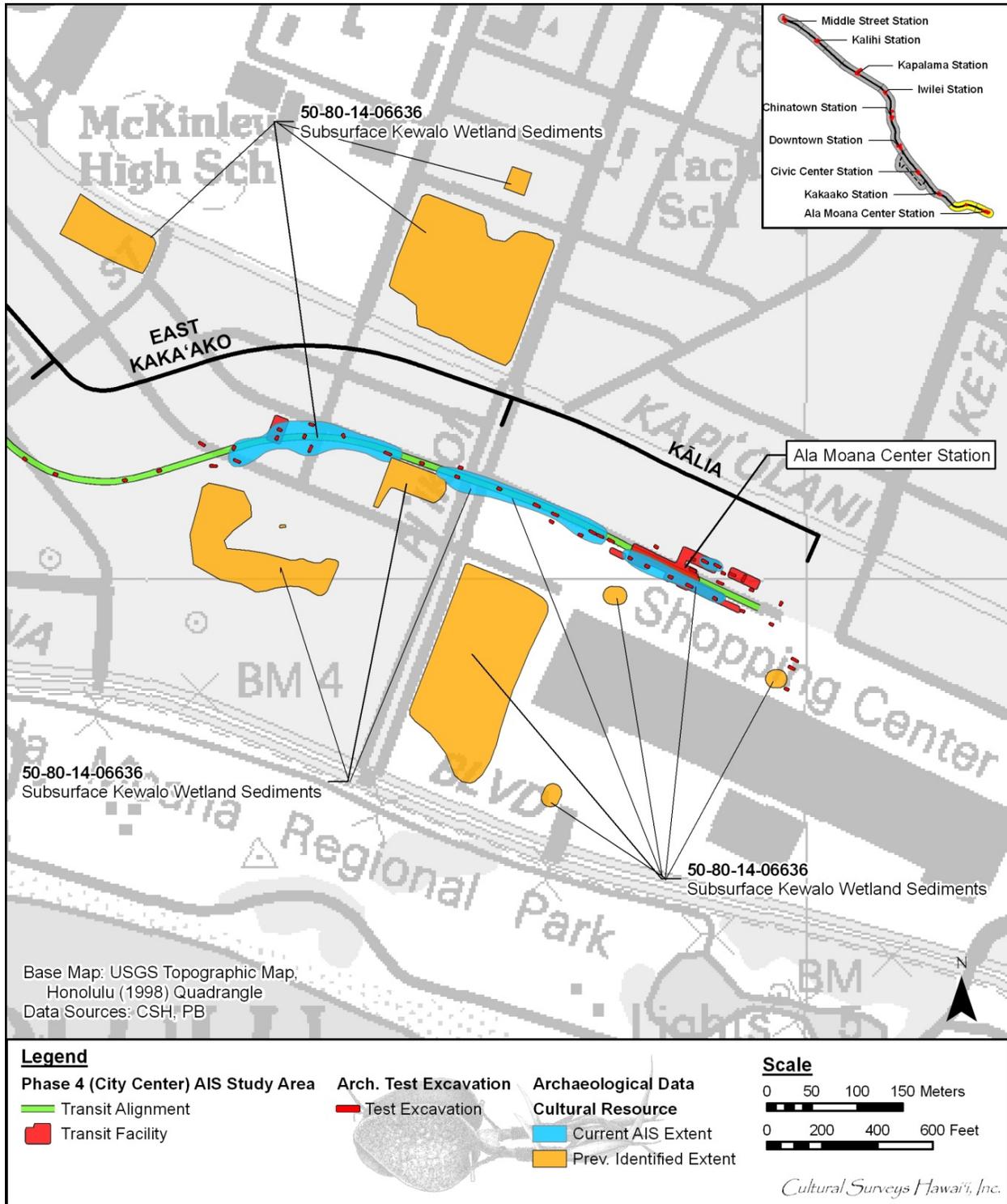


Figure 163. Locations of former and newly identified extents of SIHP # -6636 in the vicinity of the East Kaka'ako and Kālia Geographic Zones

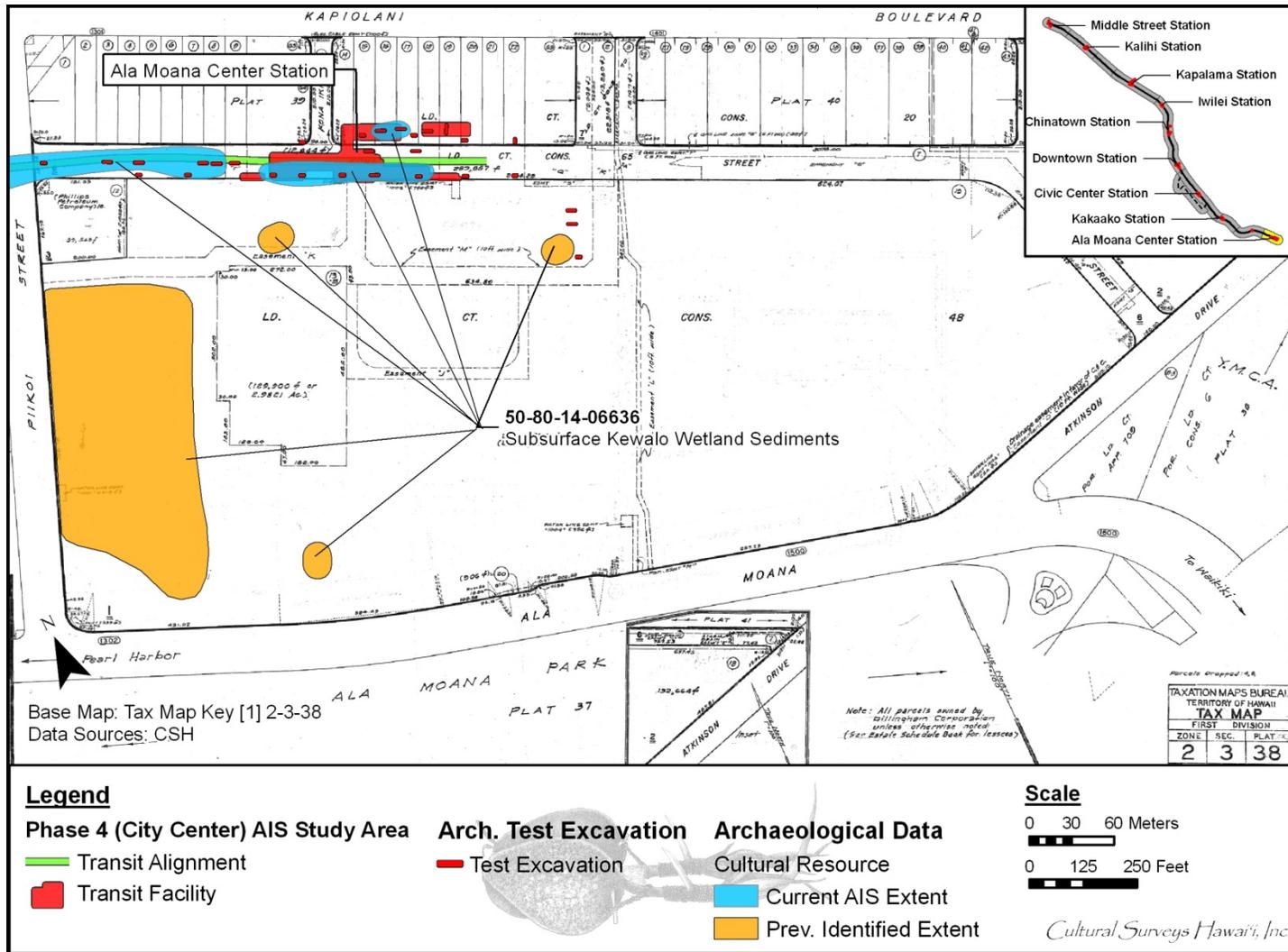


Figure 164. Location and extent of SIHP # -6636, Kewalo wetlands, with locations of AIS test excavations along the Kālia Zone corridor (base map: Tax Map Key [1] 2-3-38)

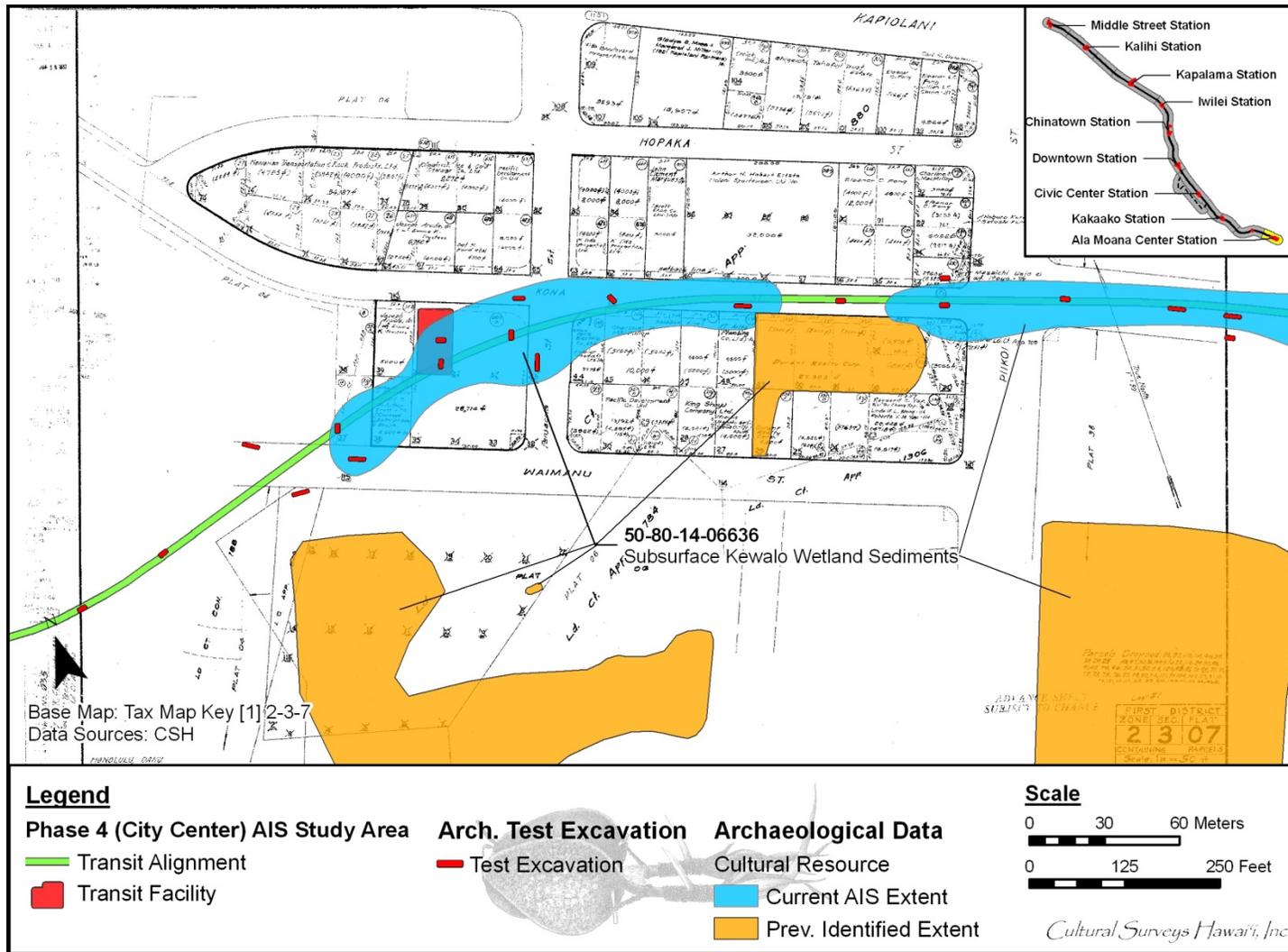


Figure 165. Location and extent of SIHP # -6636, Kewalo wetlands, with locations of AIS test excavations along the East Kaka'ako and Kālia Zones corridor (base map: Tax Map Key [1] 2-3-07)