

2.16 Test Excavation 188 (T-188)

Ahupua'a:	Honolulu
LCA:	10605:7
TMK #:	2-3-007: 033
Elevation Above Sea Level:	1.63 m
UTM:	619417 mE, 2355155 mN
Max Length/Width/Depth:	3.65 m / 0.90 m / 1.66 mbs
Orientation:	197 /17° TN
Targeted Project Component:	Guideway Column
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 188 (T-188) was located within a parking lot fronting Waimanu Street, on private property. T-188 was shifted 0.9 m west to avoid undefined possible subsurface utilities. The excavation surface was level with the surrounding land surface.

Summary of Background Research and Land Use: According to S. E. Bishop's map of the Kewalo area of Honolulu (1884), T-188 was situated in LCA 10605:7 awarded to Pi'ikoi. T-188 was 36.0 m east of Land Commission Grant 3194 awarded to Kalae and Ka'aua. In relation to the 1897 map of Honolulu by M. D. Monsarrat, the natural landscape surrounding T-188 consisted of a marsh/wetland environment (SIHP #50-80-14-6636). T-188 was 36.0 m east of the Kolowalu Fishpond (SIHP #50-80-14-6856) and approximately 233.0 m northeast of the shoreline. The 1933 U.S. Army War Department map indicated that Kolowalu Fishpond was filled with sediment and that there was little development within the vicinity. The 1943 U.S. Army War Department map and the 1953 U.S. Army Mapping Service map indicated extensive urban development.

There were several previous archaeological investigations surrounding the location of T-188. Archaeological monitoring within the Kaka'ako Community Improvement District 10, which was located 29.0 m south of T-188, identified a total of 30 post-Contact burials (SIHP #50-80-14-6658, -6659, and -6660) (O'Hare et al. 2006). An archaeological inventory survey for the Ko'olani Condominium documented three historic properties, SIHP #50-80-14-6639 and SIHP #50-80-14-6641, historic trash pits dating from the early twentieth century; and SIHP #50-80-14-6636, the original wetland surface of Kewalo, approximately 65 m south of T-188 (O'Hare et al. 2004). During monitoring for this project, a total of 18 burials (both pre-Contact and historic coffin burials) including an isolated single burial (SIHP #50-80-14-6910), a cluster of 16 historic-era coffin burials (SIHP #50-80-14-6911), and an isolated single burial (SIHP #50-80-14-6912) were encountered and reinterred within the designated preserve area (Hammatt 2008). CSH subsequently conducted an archaeological inventory survey in the adjacent parcel for the Ko'olani Phase II (re-named Waihonua) Project. Three new historic properties were documented; a culturally enriched A-horizon containing pit features (SIHP #50-80-14-7115), historic pond sediment (SIHP #50-80-14-7116), and a concentration of 27 post-Contact coffin burials (Runyon et al. 2011). CSH conducted an archaeological inventory survey for the Victoria

Ward Village shops, which are located approximately 195.0 m southwest of T-188 (Bell et al. 2006). Three cultural resources were identified, including a subsurface cultural layer containing both historic and prehistoric contents with five human burials (SIHP #50-80-14-6854), a subsurface cultural layer consisting of pre- and post-Contact cultural materials and six human burials (SIHP #50-80-14-6855), and the remnants of Kolowalu Fishpond (SIHP #50-80-14-6856) (Bell et al. 2006). In 2009, an archaeological inventory survey was conducted for the Queen Street parks project located 84.0 m southwest of T-188 in which a previously identified cultural resource indicative of Kolowalu Fishpond (SIHP #50-80-14-6856) was encountered (Thurman et al. 2009). Archaeological monitoring for the Kapi'olani revised sewer system project, located 28.0 m north of T-188, identified buried wetland sediment (SIHP #50-80-14-6636) (Altizer et al. 2011). Approximately 130.0 m east of T-188, wetland/marsh sediments were also recorded (SIHP #50-80-14-6636) during the archaeological inventory survey for the Pi'ikoi Senior Residence project (Runyon et al. 2012).

Documentation Limitations: T-188 was excavated to the water table at a depth of 1.66 mbs. A utility jacket within the southern end of the excavation limited documentation of T-188.

Stratigraphic Summary: The stratigraphy of T-188 consisted of fill overlying natural sediment to the water table. Observed strata included asphalt (Ia), sandy clay loam base course (Ib), extremely gravelly sand (crushed coral) fill (Ic), and sandy clay (hydraulic) fill (Id), overlying a natural silt loam A-horizon (IIa), and sandy clay (IIb). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL). The natural sediment (IIa and IIb) within T-188 was considered to be a possible remnant of Kewalo wetland (SIHP #50-80-14-6636).

Artifacts Discussion: No artifacts were observed.

Features Discussion: No features were observed.

Terrestrial Faunal Remains Collected During Excavation: No terrestrial faunal remains were collected individually during excavation.

Sample Results: A total of three bulk sediment samples were collected within T-188 including one sample from Stratum Id at 1.15-1.39 mbs (2 L), from Stratum IIa at 1.4-1.45 mbs (2 L), and from Stratum IIb at 1.5-1.6 mbs (2 L). The bulk samples were wet-screened. The bulk sediment sample from Stratum Id contained no significant material. The bulk sediment sample from Stratum IIa contained various naturally-occurring (non-midden) terrestrial snails (11.2 g), marine bivalve and limpet fragments (0.3 g), crustacean (< 0.1 g), and plant fibers (21.7 g). The bulk sediment sample from Stratum IIa contained charcoal (0.5 g), terrestrial snails (183.0 g), marine limpets, gastropod, and bivalve fragments (3.4 g), Echinodermata *mathaei sp* (0.3 g), *Nerita picea* (0.2 g), and wood (0.1 g).

The results of sample analysis document the mixed depositional origin of Stratum IIa (A-horizon) and Stratum IIb. The marine shell in each layer appeared to have been naturally-deposited within a backshore wetland environment during storm or tidal events. The marine shell did not appear to be culturally-modified or deposited as the result of human activity. The presence of terrestrial snails, wood, and plant fibers was indicative of a wetland deposit.

GPR Discussion: A review of amplitude slice maps indicated linear features outside excavation boundaries. A utility jacket was encountered during excavation. Reflectivity was relatively

uniform throughout the grid and seems to increase with depth. A transition from lower reflectivity (0–0.25 mbs) to a higher reflectivity (0.75–1.0 mbs) was evident in this slice map.

GPR depth profiles for T-188 identified horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.15 mbs and then again around 0.85 mbs. No utilities were observed in the profile although a utility jacket was encountered during excavation. The maximum depth of clean signal return was approximately 1.2 mbs.

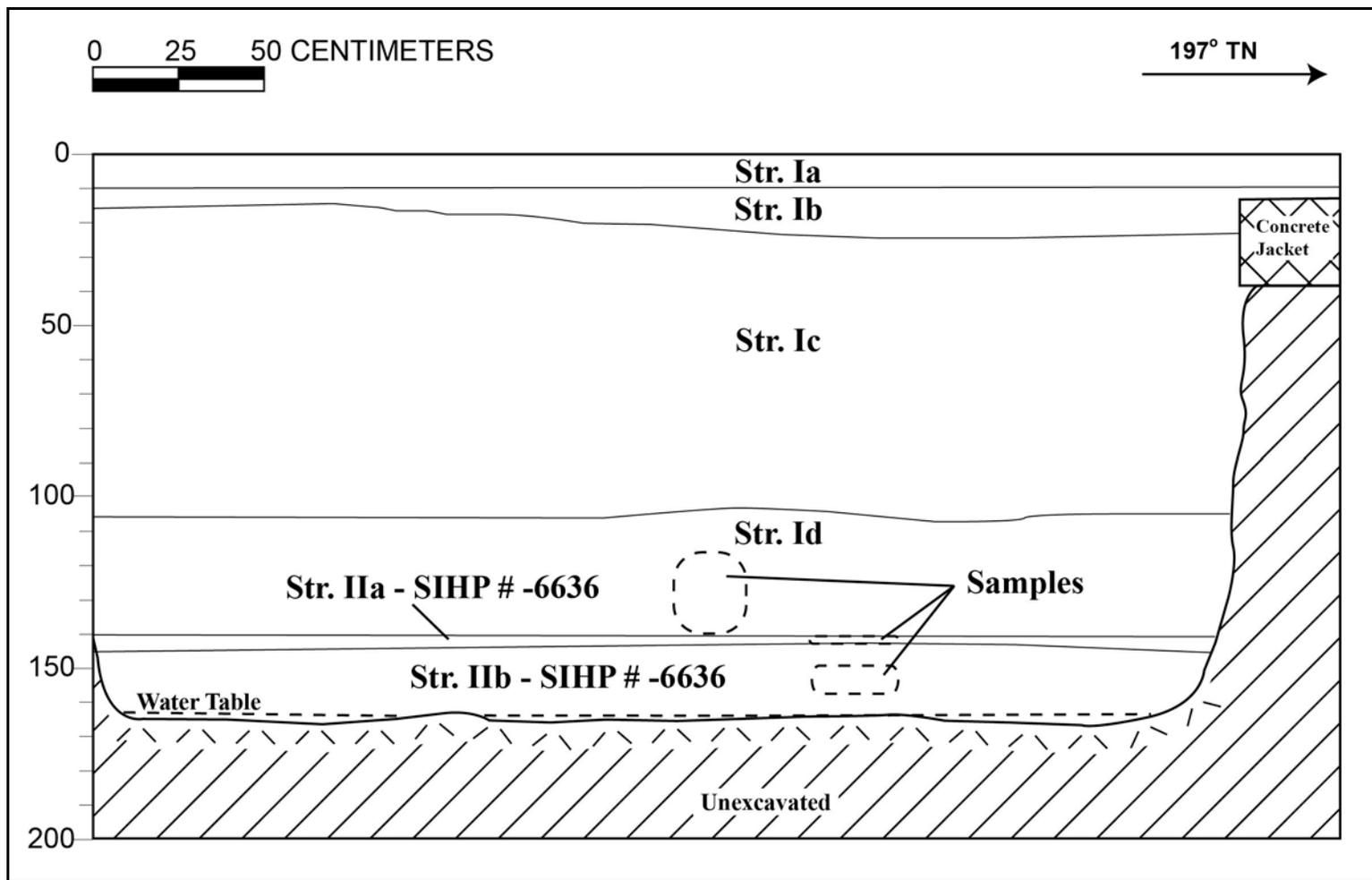
Summary: T-188 was excavated to the water table at a depth of 1.66 mbs. The stratigraphy of T-188 consisted of fill (Ia to Id) overlying natural sediment (IIa and IIb) to the water table. The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL). A total of three bulk sediment samples were collected within T-188 including one sample from Stratum Id at 1.15–1.39 mbs (2 L), from Stratum IIa at 1.4–1.45 mbs (2 L), and from Stratum IIb at 1.5–1.6 mbs (2 L). The bulk samples were wet-screened. The results of sample analysis document the mixed depositional origin of Stratum IIa (A-horizon) and Stratum IIb. The natural sediment (IIa and IIb) within T-188 was considered to be a possible remnant of Kewalo wetland (SIHP #50-80-14-6636).



T-188 general location, view to south



T-188 southwest profile wall, view to south



T-188 southeast wall profile

T-188 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–10	Asphalt
Ib	10–25	Fill; 10 YR 3/2 (very dark graying brown); sandy clay loam; moderate, coarse, blocky structure; moist, friable consistency; slightly plastic; terrigenous origin; abrupt, smooth lower boundary; base course
Ic	15–107	Fill; 10 YR 8/2 (very pale brown); extremely gravelly sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; diffuse, smooth lower boundary; crushed coral
Id	102–141	Fill; GLEY 1 8/10 GY (light greenish gray); sandy clay; structureless, massive; wet, slightly sticky consistency; plastic; marine origin; abrupt lower boundary; hydraulic fill
IIa	139–145	Natural; A-horizon; 10 YR 2/1 (black); silt loam; structureless, massive; moist, firm consistency; slightly plastic; mixed origin; abrupt, smooth lower boundary; many, very fine roots; organic rich sediment with terrestrial and marine shell; former land surface; wetland sediment; component of SIHP # -6636
IIb	143–166	Natural; GLEY 1 5/5 GY; (greenish gray) sandy clay; structureless, massive; moist, firm consistency; plastic; mixed origin; lower boundary not visible; few, fine roots; natural wetland sediment; component of SIHP # -6636

2.17 Test Excavation 189 (T-189)

Ahupua'a:	Honolulu
LCA:	10605:7
TMK #:	2-3-007:033
Elevation Above Sea Level:	1.57 m
UTM:	619447 mE, 2355157 mN
Max Length/Width/Depth:	3.06 m / 0.90 m / 1.74 mbs
Orientation:	204 / 24° TN
Targeted Project Component:	Guideway Column
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 189 (T-189) was located within a parking lot located between Kona Street and Waimanu Street on private property. The excavation surface was level with the surrounding land surface.

Summary of Background Research and Land Use: According to the 1897 Monsarrat map of Honolulu, the landscape surrounding T-189 consisted of a marsh/wetland environment and the Kolowalu Fishpond (SIHP #50-80-14-6856) was located 150 m southwest of T-189, where minimal urban development had occurred by that time. T-189 was located within LCA 10605:7, awarded to Iona Pi'ikoi. The 1919 U.S. Army War Department map showed the presence of Kolowalu Fishpond; however, by the 1933 U.S. Army War Department map the fishpond had been filled in. Extensive urban development then occurred throughout the vicinity of T-189 according to the 1953 U.S. Army Mapping Service map.

Previous archaeological investigations in the area include several studies. Archaeological monitoring within the Kaka'ako Community Improvement District 10, which was located 45.0 m south of T-189, identified a total of 30 post-Contact burials (SIHP #50-80-14-6658, -6659, and -6660) (O'Hare et al. 2006). An archaeological inventory survey for the Ko'olani Condominium documented three historic properties, SIHP #50-80-14-6639 and SIHP #50-80-14-6641, historic trash pits dating from the early twentieth century; and SIHP #50-80-14-6636, the original wetland surface of Kewalo, approximately 80 m south of T-189 (O'Hare et al. 2004). During monitoring for this project, a total of 18 burials (both pre-Contact and historic coffin burials) including an isolated single burial (SIHP #50-80-14-6910), a cluster of 16 historic-era coffin burials (SIHP #50-80-14-6911), and an isolated single burial (SIHP #50-80-14-6912) were encountered and reinterred within the designated preserve area (Hammatt 2008). CSH subsequently conducted an archaeological inventory survey in the adjacent parcel for the Ko'olani Phase II (re-named Waihonua) Project. Three new historic properties were documented; a culturally enriched A-horizon containing pit features (SIHP #50-80-14-7115), historic pond sediment (SIHP #50-80-14-7116), and a concentration of 27 post-Contact coffin burials (Runyon et al. 2011). CSH conducted an archaeological inventory survey for the Victoria Ward Village shops, which are located approximately 175.0 m southwest of T-189 (Bell et al. 2006). Three cultural resources were identified, including a subsurface cultural layer containing

both historic and prehistoric contents with five human burials (SIHP #50-80-14-6854), a subsurface cultural layer consisting of pre- and post-Contact cultural materials and six human burials (SIHP #50-80-14-6855), and the remnants of Kolowalu Fishpond (SIHP #50-80-14-6856) (Bell et al. 2006). In 2009, an archaeological inventory survey was conducted for the Queen Street parks project located 126.0 m southwest of T-189 in which a previously identified cultural resource indicative of Kolowalu Fishpond (SIHP #50-80-14-6856) was encountered (Thurman et al. 2009). Archaeological monitoring for the Kapi'olani revised sewer system project, located 15.0 m north of T-189, identified buried wetland sediment (SIHP #50-80-14-6636) (Altizer et al. 2011). Approximately 89.0 m southeast of T-189, wetland/marsh sediments were also recorded (SIHP #50-80-14-6636) during the archaeological inventory survey for the Pi'ikoi Senior Residence project (Runyon et al. 2012).

Documentation Limitations: T-189 was excavated to the coral shelf at a depth of 1.74 mbs and the water table at a depth of 1.65 mbs. There were no specific factors that limited documentation of T-189.

Stratigraphic Summary: The stratigraphy of T-189 consisted of fill overlying natural sediment to the coral shelf. Observed strata included asphalt (Ia), very gravelly sandy loam fill (Ib), extremely gravelly sand (crushed coral) fill (Ic) and clay (hydraulic) fill (Id) overlying a clay loam A-horizon (IIa) and natural clay loam (IIb) to the coral shelf. The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL). The natural sediment (IIa and IIb) within T-189 was considered to be a possible remnant of Kewalo wetland (SIHP #50-80-14-6636).

Artifacts Discussion: No artifacts were observed.

Features Discussion: No features were observed.

Terrestrial Faunal Remains Collected During Excavation: No terrestrial faunal remains were collected individually during excavation.

Sample Results: A total of three bulk sediment samples were collected from T-189 including one sample Stratum IIa at 1.25–1.35 mbs and two samples from Stratum IIb at 1.42–1.51 mbs and 1.55–1.65 mbs. The sample from Stratum IIa contained plant fibers or organic matter (59.3 g), naturally-occurring, water-rounded marine shell (1.3 g), and a small amount of charcoal or carbonized plant material (less than 0.1g). The sample collected from Stratum IIb at 1.42–1.51 mbs contained abundant terrestrial snail shells (272.6 g), naturally-occurring, water-rounded marine shell (13.2 g), and plant fibers or organic matter (5.9 g). The sample collected from Stratum IIb at 1.55–1.65 mbs contained abundant terrestrial snail shells (115.7 g), naturally-occurring, water-rounded marine shell (10.7 g), and a small amount of charcoal (0.1 g). The charcoal from the lower (1.55–1.65 mbs) sample of Stratum IIb was submitted for wood taxa identification. Wood taxa analysis identified native and Polynesian-introduced taxa including *hao* (*Rauvolfia sandwicensis*), *kukui* (*Aleurites moluccana*), palm (Arecaceae), 'A'ali'i (*Dodonaea viscosa*), an unidentified Temperate hardwood, and two unknown taxa (see T-189 Charcoal Taxa Table that follows).

The results of sample analysis document the mixed depositional origin of Stratum IIa and IIb. The marine shell within Stratum IIa and IIb appeared to have been naturally-deposited within a backshore wetland environment during storm or tidal events. The marine shell exhibited smooth,

water-rounded edges, and did not appear to be culturally-modified or deposited as the result of human activity. The presence of terrestrial snails in both strata was indicative of a wetland deposit. The presence of a small amount of charcoal in both strata may be indicative of naturally-occurring decomposed (carbonized) plant matter or possible cultural modification that occurred as the result of wetland agriculture. Wood taxa analysis has identified both native and Polynesian introduced trees and shrubs within the lower portions of Stratum IIb.

GPR Discussion: A review of amplitude slice maps indicated no linear features, which might indicated the presence of utilities. Reflectivity is relatively uniform throughout the grid. A transition from higher reflectivity to lower reflectivity is observed at approximately 0.5 mbs.

GPR depth profiles for T-189 identify horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponds to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.25 mbs. No utilities were observed in the profile. The maximum depth of clean signal return was approximately 1.3 mbs.

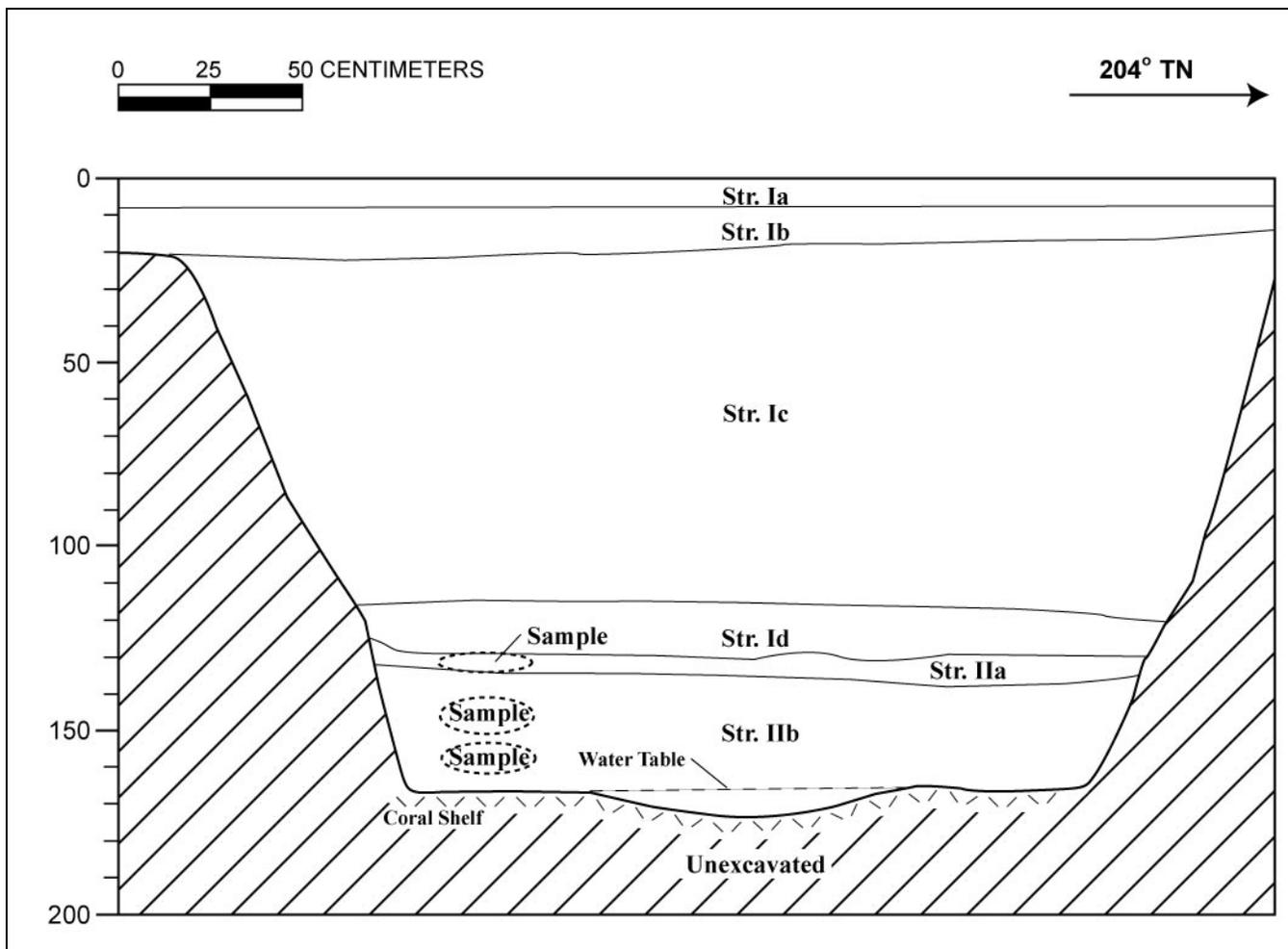
Summary: T-189 was excavated to the coral shelf at a depth of 1.74 mbs. The stratigraphy of T-189 consisted of fill strata (Ia–Id) overlying natural sediment (IIa–IIb) to the coral shelf. The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL). A total of three bulk sediment samples were collected from T-189 including one sample Stratum IIa at 1.25–1.35 mbs and two samples from Stratum IIb at 1.42–1.51 mbs and 1.55–1.65 mbs. The results of sample analysis document the mixed depositional origin of Stratum IIa and IIb. Charcoal, collected from the lower (1.55–1.65 mbs) sample of Stratum IIb was submitted for wood taxa identification. Wood taxa analysis identified both native and Polynesian introduced trees and shrubs. The natural sediment (IIa and IIb) within T-189 was considered to be a possible remnant of Kewalo wetland (SIHP #50-80-14-6636).



T-189 general location, view to south



T-189 east profile wall, view to northeast



T-189 east wall profile.

T-189 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–8	Asphalt
Ib	8–22	Fill; 10 YR 2/2 (very dark brown); very gravelly sandy loam; structureless, single-grain; moist, loose consistency; non-plastic; mixed origin; clear, smooth lower boundary; imported fill
Ic	15–120	Fill; 5 Y 8/1 (white); extremely gravelly sand; structureless, single-grain; moist, friable consistency; non-plastic; abrupt, smooth lower boundary; crushed coral base course with coral cobbles and gravel inclusions
Id	115–135	Fill; Gley 1 8/5 GY (light greenish gray); clay; massive structure; wet, very sticky consistency; very plastic; diffuse lower boundary; common, fine roots; coconut organics, sulfur odor, hydraulic fill
IIa	125–135	Natural; A-horizon; 10 YR 3/1 (very dark gray); clay loam; moderate, fine, crumb structure; wet, slightly sticky consistency; slightly plastic; terrigenous; clear lower boundary; many, very fine roots; organic rich sediment with terrestrial and marine shell; former land surface; wetland sediment
IIb	130–174	Natural; 10 YR 4/2 (dark grayish brown); silty clay loam; massive structure; moist, friable consistency; plastic; mixed origin; small snail shells and rounded gravel present; Kewalo wetland sediment (SIHP #50-80-14-6636)

T-189 (155–165 cmbs, Stratum IIb, Kewalo wetland sediment) Charcoal Taxa

WIDL No.	Taxa	Common/Hawaiian Name	Origin/Habit	Part	Count	Weight
1302-83	Unknown 8			Wood	1	0.04
1302-84	cf. <i>Rauvolfia sandwicensis</i>	<i>Hao</i>	Native/Shrub-Tree	Wood	1	0.03
1302-85	Not identified			Bark	1	<0.01
1302-86	cf. Temperate hardwood			Wood	2	0.01
1302-87	cf. <i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/Tree	Wood	1	<0.01
1302-88	cf. <i>Arecaceae</i>	Palm		Wood	2	<0.01
1302-89	cf. <i>Dodonaea viscosa</i>	'A'ali'i	Native/Shrub	Wood	1	<0.01

2.18 Test Excavation 190 (T-190)

Ahupua'a:	Honolulu
LCA:	10605:7
TMK #:	2-3-007
Elevation Above Sea Level:	1.63 m
UTM:	619453 mE, 2355143 mN
Max Length/Width/Depth:	6.7 m / 0.75m / 1.76 mbs
Orientation:	22 / 202° TN
Targeted Project Component:	Utility Relocation
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 190 (T-190) was located within a gravel-covered shoulder west of Pensacola Street. T-190 was located on private property. A drain line utility was located 2 m east of T-190. The excavation surface was level with the surrounding land surface.

Summary of Background Research and Land Use: According to the 1897 Monsarrat map of Honolulu, the landscape surrounding T-190 consisted of a marsh/wetland environment and the Kolowalu Fishpond (SIHP #50-80-14-6856) was located 150 m west of T-190, and minimal urban development had occurred up to that time. T-190 was located within LCA 10605:7, awarded to Iona Pi'ikoi. The 1919 U.S. Army War Department map showed the presence of Kolowalu Fishpond; however, by the 1933 U.S. Army War Department map the fishpond had been filled in. Extensive urban development then occurred throughout the vicinity of T-190, according to the 1953 U.S. Army Mapping Service map.

Previous archaeological investigations in the area include several studies. Archaeological monitoring for the Kapi'olani revised sewer system project, which included the location of T-190, identified buried wetland sediment (SIHP #50-80-14-6636) (Altizer et al. 2011). Archaeological monitoring within the Kaka'ako Community Improvement District 10, which was located 45.0 m south of T-190, identified a total of 30 post-Contact burials (SIHP #50-80-14-6658, -6659, and -6660) (O'Hare et al. 2006). An archaeological inventory survey for the Ko'olani Condominium documented three historic properties, SIHP #50-80-14-6639 and SIHP #50-80-14-6641, historic trash pits dating from the early twentieth century; and SIHP #50-80-14-6636, the original wetland surface of Kewalo, approximately 60 m south of T-190 (O'Hare et al. 2004). During monitoring for this project, a total of 18 burials (both pre-Contact and historic coffin burials) including an isolated single burial (SIHP #50-80-14-6910), a cluster of 16 historic-era coffin burials (SIHP #50-80-14-6911), and an isolated single burial (SIHP #50-80-14-6912) were encountered and reinterred within the designated preserve area (Hammatt 2008). CSH subsequently conducted an archaeological inventory survey in the adjacent parcel for the Ko'olani Phase II (re-named Waihonua) Project. Three new historic properties were documented; a culturally enriched A-horizon containing pit features (SIHP #50-80-14-7115), historic pond sediment (SIHP #50-80-14-7116), and a concentration of 27 post-Contact coffin burials (Runyon et al. 2011). CSH conducted an archaeological inventory survey for the Victoria

Ward Village shops, which are located approximately 198.0 m southwest of T-190 (Bell et al. 2006). Three cultural resources were identified, including a subsurface cultural layer containing both historic and prehistoric contents with five human burials (SIHP #50-80-14-6854), a subsurface cultural layer consisting of pre- and post-Contact cultural materials and six human burials (SIHP #50-80-14-6855), and the remnants of Kolowalu Fishpond (SIHP #50-80-14-6856) (Bell et al. 2006). In 2009, an archaeological inventory survey was conducted for the Queen Street parks project located 130.0 m southwest of T-190 in which a previously identified cultural resource indicative of Kolowalu Fishpond (SIHP #50-80-14-6856) was encountered (Thurman et al. 2009). Approximately 64.0 m south of T-190, wetland/marsh sediments were also recorded (SIHP #50-80-14-6636) during the archaeological inventory survey for the Pi'ikoi Senior Residence project (Runyon et al. 2012).

Documentation Limitations: T-190 was excavated to a depth of 1.76 mbs and beneath the water table at 1.60 mbs. There were no factors that limited documentation of T-190.

Stratigraphic Summary: The stratigraphy of T-190 consisted of fill overlying natural sediment to beneath the water table. Observed strata included asphalt (Ia), very gravelly sand base course (Ib), extremely gravelly sand fill (Ic), very gravelly loam fill (Id), extremely gravelly sand (crushed coral) fill (Ie), fine-grain sand (hydraulic) fill (If), and sandy loam (hydraulic fill) (Ig) overlying a clay loam A-horizon (IIa) and natural clay (IIb) to beneath the water table. The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL). The natural sediment (IIa and IIb) within T-190 was considered to be a possible remnant of Kewalo wetland (SIHP #50-80-14-6636).

Artifacts Discussion: No artifacts were observed.

Features Discussion: No features were observed.

Terrestrial Faunal Remains Collected During Excavation: No terrestrial faunal remains were collected individually during excavation.

Sample Results: No sample analysis was conducted.

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

GPR depth profiles for T-190 identify horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponds to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.2 mbs and again around 0.5 mbs. No utilities were observed in the profile. The maximum depth of clean signal return was approximately 1.2 mbs.

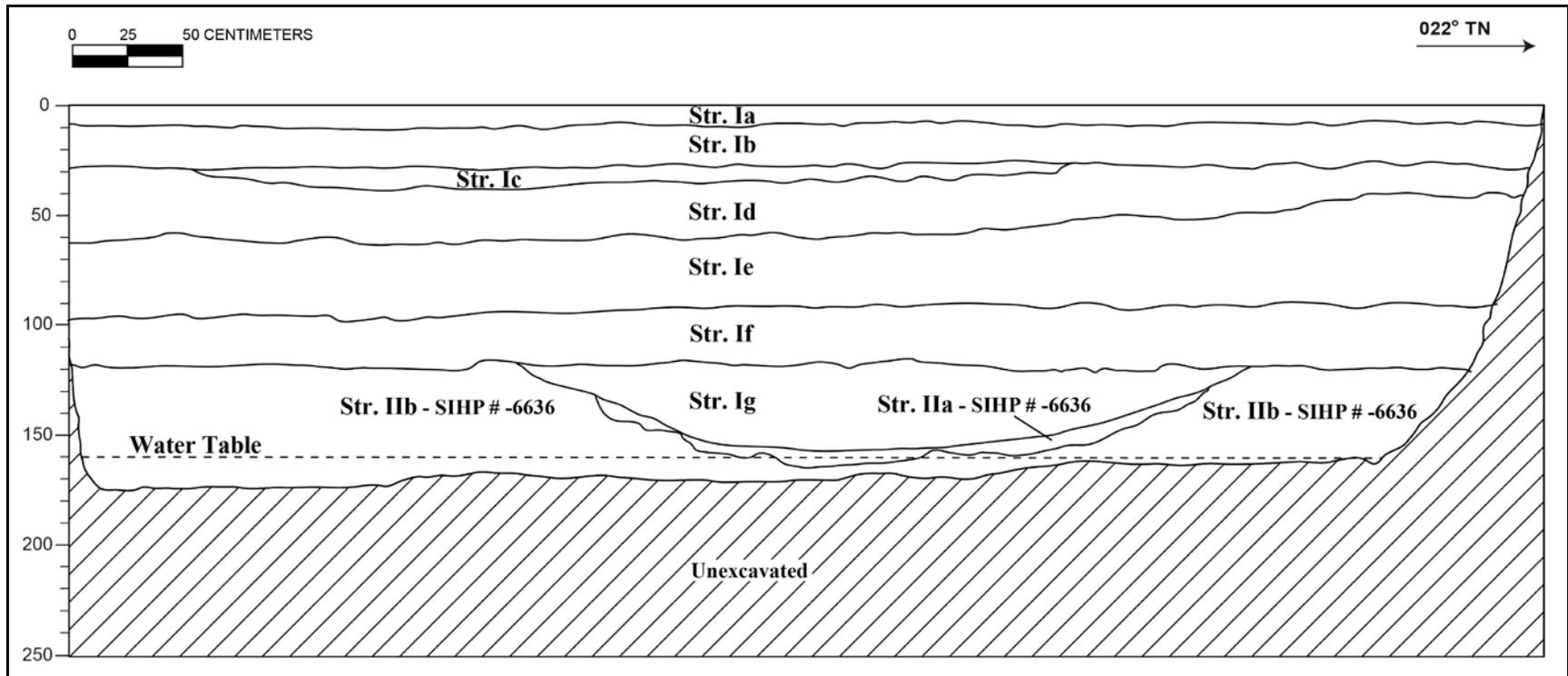
Summary: T-190 was excavated to a depth of 1.76 mbs and beneath the water table at 1.60 mbs. The stratigraphy of T-190 consisted of fill (Ia to Ig) overlying natural sediment (IIa and IIb) to beneath the water table. The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL). The natural sediment (IIa and IIb) within T-190 was considered to be a possible remnant of Kewalo wetland (SIHP #50-80-14-6636).



T-190 general location, view to north



T-190 west profile wall, view to southwest



T-190 west wall profile

T-190 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–11	Asphalt
Ib	7–30	Fill; 10 YR 7/2 (light gray); very gravelly sand; weak, coarse, granular structure; dry, loose consistency; non-plastic; mixed origin; clear, smooth lower boundary; crushed coral mixed with gravel base course/grading fill
Ic	28–40	Fill; 10 YR 7/1 (light gray); extremely gravelly sand; weak, coarse to very coarse, granular structure; dry, loose consistency; non-plastic; mixed origin; clear, smooth lower boundary; gravel grading fill
Id	29–64	Fill; 10 YR 5/2 (grayish brown); very gravelly loam; weak, medium, very coarse, granular structure; dry loose consistency; non-plastic, mixed origin; clear, smooth lower boundary; gravel grading fill
Ie	40–100	Fill; 2.5 Y 8/2 (pale yellow); extremely gravelly sand; structureless, single-grain; dry, loose consistency; non-plastic; marine origin; clear, smooth lower boundary; crushed coral grading fill
If	89–120	Fill; 10 YR 8/3 (very pale brown); fine grain sand; very fine structure; moist, very friable consistency; non-plastic; marine origin; clear, smooth lower boundary; hydraulic fill
Ig	116–158	Fill; 2.5 Y 8/2 (pale yellow); sandy loam; weak, very fine, crumb structure; moist, very friable consistency; non-plastic; marine origin; clear, smooth lower boundary; few, very fine roots; hydraulic fill
IIa	117–166	Natural; A-horizon; 10 YR 3/1 (very dark gray); clay loam; moderate, fine, crumb structure; wet, slightly sticky consistency; slightly plastic; mixed origin; clear lower boundary; many, very fine roots; organic rich sediment with terrestrial and marine shell; former land surface; wetland sediment; component of SIHP # -6636
IIb	117–176	Natural; 5 Y 6/2 (light olive gray); clay; strong, fine, platy structure; wet, slightly sticky consistency; plastic, mixed origin, lower boundary not visible; common, fine roots; wetland sediment; component of SIHP # -6636

2.19 Test Excavation 191 (T-191)

Ahupua'a:	Honolulu
LCA:	10605:7
TMK #:	2-3-007
Elevation Above Sea Level:	1.5 m
UTM:	619454 mE, 2355170 mN
Max Length/Width/Depth:	3.80 m / 1.0 m / 1.38 mbs
Orientation:	304 / 124° TN
Targeted Project Component:	Utility Relocation
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 191 (T-191) was located within the Kona Street roadway, approximately 10 m west of the Kona Street and Pensacola Street intersection. T-191 was located on city-owned property. T-191 was located 1 m north of a water utility and 1.5 m south of an electrical line. The excavation surface was level with the surrounding environment.

Summary of Background Research and Land Use: The natural landscape surrounding T-191 consisted of a marsh/wetland (SIHP #50-80-14-6636) environment. According to the 1897 Monsarrat map of Honolulu, the Kolowalu Fishpond (SIHP #50-80-14-6856) was located 70 m west of T-191 where minimal urban development had occurred up to that point. T-191 was located within LCA 10605:7, awarded to Iona Pi'ikoi. The 1919 U.S. Army War Department map showed the presence of Kolowalu Fishpond; however, by the 1933 U.S. Army War Department map the fishpond had been filled in. Extensive urban development in the area occurred over the next twenty years, according to the 1953 U.S. Army Mapping Service map.

Previous archaeological investigations in the vicinity of T-191 included several studies. Archaeological monitoring for the Kapi'olani revised sewer system project, which included the location of T-191, identified buried wetland sediment (SIHP #50-80-14-6636) (Altizer et al. 2011). Archaeological monitoring within the Kaka'ako Community Improvement District 10, which was located 65.0 m south of T-191, identified a total of 30 post-Contact burials (SIHP #50-80-14-6658, -6659, and -6660) (O'Hare et al. 2006). An archaeological inventory survey for the Ko'olani Condominium documented three historic properties, SIHP #50-80-14-6639 and SIHP #50-80-14-6641, historic trash pits dating from the early twentieth century; and SIHP #50-80-14-6636, the original wetland surface of Kewalo, approximately 100 m south of T-191 (O'Hare et al. 2004). During monitoring for this project, a total of 18 burials (both pre-Contact and historic coffin burials) including an isolated single burial (SIHP #50-80-14-6910), a cluster of 16 historic-era coffin burials (SIHP #50-80-14-6911), and an isolated single burial (SIHP #50-80-14-6912) were encountered and reinterred within the designated preserve area (Hammatt 2008). CSH subsequently conducted an archaeological inventory survey in the adjacent parcel for the Ko'olani Phase II (re-named Waihonua) Project. Three new historic properties were documented; a culturally enriched A-horizon containing pit features (SIHP #50-80-14-7115), historic pond sediment (SIHP #50-80-14-7116), and a concentration of 27 post-Contact coffin

burials (Runyon et al. 2011). CSH conducted an archaeological inventory survey for the Victoria Ward Village shops, which are located approximately 200.0 m southwest of T-191 (Bell et al. 2006). Three cultural resources were identified, including a subsurface cultural layer containing both historic and prehistoric contents with five human burials (SIHP #50-80-14-6854), a subsurface cultural layer consisting of pre- and post-Contact cultural materials and six human burials (SIHP #50-80-14-6855), and the remnants of Kolowalu Fishpond (SIHP #50-80-14-6856) (Bell et al. 2006). Approximately 100.0 m southeast of T-191, wetland/marsh sediments were recorded (SIHP #50-80-14-6636) during the archaeological inventory survey for the Pi'ikoi Senior Residence project (Runyon et al. 2012). According to Athens et al. (1994), an inadvertent human remains find (SIHP #50-80-14-4847) was located within the intersection of Pi'ikoi Street and Kapiolani Boulevard, approximately 234.0 m northeast from T-191. During an archaeological inventory survey near the intersection of Pi'ikoi Street and Ala Moana Boulevard, approximately 240.0 m southeast of T-191, a remnant of a discontinuous natural wetland sediment, previously designated SIHP #50-80-14-6636, was recorded (Morriss et al. 2013; *Draft*).

Documentation Limitations: T-191 was excavated to a depth of 1.38 mbs and beneath the water table at 1.30 mbs. There were no factors that limited documentation of T-191.

Stratigraphic Summary: The stratigraphy of T-191 consisted of fill overlying natural sediment to the water table. Observed strata included asphalt (Ia), very cobbly sand (crushed coral) fill (Ib), and clay (hydraulic) fill (Ic) overlying a sandy clay A-horizon (IIa), and natural clay (IIb) to the water table. The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL). The natural sediment (IIa and IIb) within T-191 was considered to be a possible remnant of Kewalo wetland (SIHP #50-80-14-6636).

Artifacts Discussion: See sample results below.

Features Discussion: No features were observed.

Terrestrial Faunal Remains Collected During Excavation: No terrestrial faunal remains were collected individually during excavation.

Sample Results: Three Bulk sediment samples were collected from Stratum Ic at 1.07–1.20 mbs (1.5 L), Stratum IIa at 0.87–0.95 mbs (4 L), and Stratum IIb at 1.20–1.26 mbs (3 L). The bulk samples from the two natural strata were wet-screened. The bulk samples from Stratum IIa contained charcoal (0.4 g), terrestrial snail shells (77.5 g), glass fragments (0.3 g), and naturally-occurring marine shell (8.6 g). The bulk sample from Stratum IIb contained charcoal (0.1 g) and naturally-occurring marine shell (3.7 g). The bulk sample from Stratum Ic was not wet-screened.

A column sample was collected from the Stratum IIa/IIb interface between 0.85–1.25 mbs. Pollen analysis determined that the pollen content of T-191 was heavily dominated by Cyperaceae pollen, which indicated a local population of sedges growing in a marshland environment. Poaceae pollen was noted in small quantities, indicating that few grasses were mixed with sedges in the area. Pollen analysis also indicated that *'aheahea* and *koa* grew in the vicinity of T-191. No evidence of agricultural activity was observed in the samples (Cummings and Varney 2012). (see Volume V).

The results of sample analysis supported the identification of the natural sediment (IIa and IIb) within T-191 as a wetland (marshland) deposit.

GPR Discussion: A review of amplitude slice maps indicated a linear feature but none were encountered during excavation. Reflectivity is relatively uniform throughout the grid and decreases with depth. A transition from higher reflectivity to lower reflectivity is observed at approximately 0.75 mbs.

GPR depth profiles for T-191 identify horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponds to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.15 mbs and again around 0.8 mbs. An anomaly is observed in the profile but was not observed during excavation. The maximum depth of clean signal return was approximately 1.1 mbs.

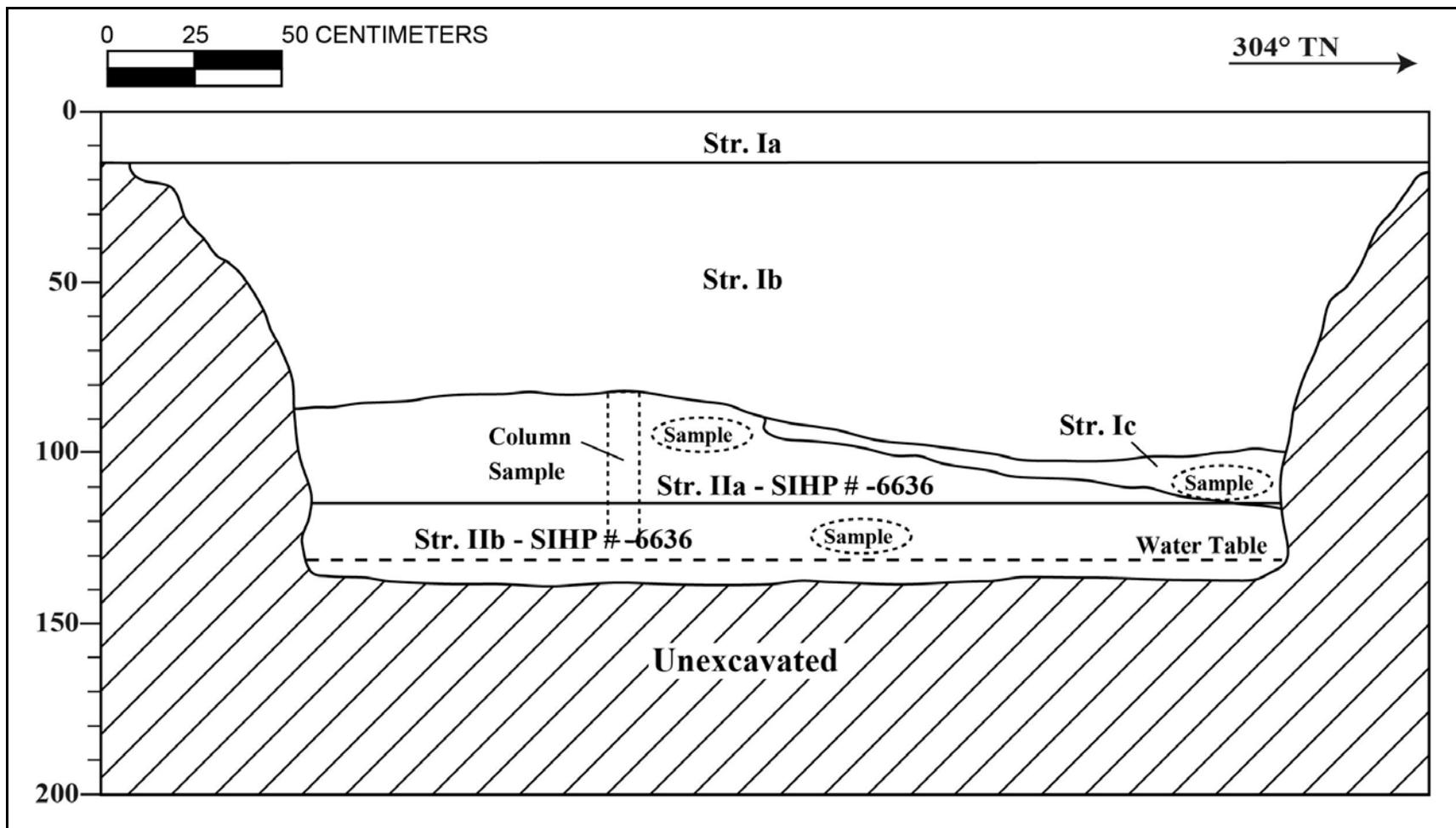
Summary: T-191 was excavated to a depth of 1.38 mbs and beneath the water table at 1.30 mbs. The stratigraphy of T-191 consisted of fill (Ia–Ic) overlying natural sediment (IIa–IIb) to beneath the water table. The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL). Bulk sediment samples were collected from Stratum Ic at 1.07–1.20 mbs (1.5 L), Stratum IIa at 0.87–0.95 mbs (4 L), and Stratum IIb at 1.20–1.26 mbs (3 L). The bulk samples from the two natural strata were wet-screened. A column sample was collected from the Stratum IIa/IIb interface at 0.85–1.25 mbs. Pollen analysis determined that the pollen content of T-191 was heavily dominated by Cyperaceae pollen, which indicated a local population of sedges growing in a marshland environment. The results of sample analysis supported the identification of the natural sediment (IIa and IIb) within T-191 as a wetland (marshland) deposit. The natural sediment (IIa and IIb) within T-191 was considered to be a possible remnant of Kewalo wetland (SIHP #50-80-14-6636).



T-191 general location, view to east



T-191 southwest profile wall, view to south



T-191 southwest wall profile

T-191 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–15	Asphalt
Ib	15–100	Fill; 10 YR 8/3 (very pale brown); very cobbly sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; abrupt, wavy lower boundary; 70% cobbles; crushed coral fill
Ic	90–115	Fill; 10 YR 7/1 (light gray); clay; structureless, massive; wet, very sticky consistency; very plastic; terrigenous; abrupt, smooth lower boundary; likely hydraulic fill material
IIa	82–115	Natural, A-horizon; 10 YR 4/3 (brown); sandy clay; structureless, massive; wet, sticky consistency; slightly plastic; terrigenous origin; clear lower boundary; fresh water snail shell, consistent with former marsh/wetlands; Kewalo wetland sediment (SIHP #50-80-14-6636)
IIb	115–138	Natural, A-horizon; 10 YR 3/2 (very dark grayish brown); clay; structureless, massive; wet, sticky consistency; plastic, terrigenous origin; lower boundary not visible; consistent with former marsh/wetlands; Kewalo wetland sediment (SIHP #50-80-14-6636)

2.20 Test Excavation 192 (T-192)

Ahupua'a:	Honolulu
LCA:	10605:7
TMK #:	2-3-007 [Plat]
Elevation Above Sea Level:	1.7 m
UTM:	619490 mE, 2355158 mN
Max Length/Width/Depth:	3.70 m / 0.90 m / 1.83 mbs
Orientation:	324 / 124° TN
Targeted Project Component:	Utility Relocation
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 192 (T-192), within the Kona Street roadway, approximately 20 m east of the Kona Street and Pensacola Street intersection, was located on city-owned property. T-192 was located 0.8 m east of a water utility, 2.3 m north of a sewer line, and 4 m north of an electrical line. The excavation surface was level with the surrounding environment.

Summary of Background Research and Land Use: According to the 1897 Monsarrat map of Honolulu, the Kolowalu Fishpond (SIHP #50-80-14-6856) was located 110 m west of T-192, and minimal urban development had occurred prior to that date. The natural landscape surrounding T-192 consisted of a marsh/wetland (SIHP #50-80-14-6636) environment. T-192 was located within LCA 10605:7, awarded to Iona Pi'ikoi. The 1919 U.S. Army War Department map showed the presence of Kolowalu Fishpond; however, by the 1933 U.S. Army War Department map the fishpond had been filled in. Extensive urban development in the area occurred over the next twenty years, according to the 1953 U.S. Army Mapping Service map.

Previous archaeological investigations in the vicinity of T-192 included several studies. Buried wetland sediment (SIHP #50-80-14-6636) was identified during monitoring for the Kapi'olani revised sewer system project (Altizer et al. 2011); T-192 was located within the former project area. Approximately 65 m southeast of T-192, wetland/marsh sediments were recorded (SIHP #50-80-14-6636) during the Pi'ikoi Senior Residence archaeological inventory survey (Runyon et al. 2012). An archaeological inventory survey for the Ko'olani Condominium documented three historic properties, SIHP #50-80-14-6639 and SIHP #50-80-14-6641, historic trash pits dating from the early twentieth century; and SIHP #50-80-14-6636, the original wetland surface of Kewalo, approximately 100 m south of T-192 (O'Hare et al. 2004). During monitoring for this project, a total of 18 burials (both pre-Contact and historic coffin burials) including an isolated single burial (SIHP #50-80-14-6910), a cluster of 16 historic-era coffin burials (SIHP #50-80-14-6911), and an isolated single burial (SIHP #50-80-14-6912) were encountered and reinterred within the designated preserve area (Hammatt 2008). CSH subsequently conducted an archaeological inventory survey in the adjacent parcel for the Ko'olani Phase II (re-named Waihonua) Project. Three new historic properties were documented; a culturally enriched A-horizon containing pit features (SIHP #50-80-14-7115), historic pond sediment (SIHP #50-80-14-7116), and a concentration of 27 post-Contact coffin burials (Runyon et al. 2011). According

to Athens et al. (1994), an inadvertent human remains find (SIHP #50-80-14-4847) was located within the intersection of Pi'ikoi Street and Kapi'olani Boulevard, approximately 205 m northeast from T-192. Approximately 250 m east of T-192, an inadvertent human remains find of a long bone fragment (SIHP #50-80-14-4243) was identified near the intersection of Pi'ikoi Street and Kapi'olani Avenue during construction activities (Smith 1989). During AIS testing near the intersection of Pi'ikoi Street and Ala Moana Boulevard, approximately 200 m southeast of T-192, a remnant of a discontinuous natural wetland sediment (SIHP #50-80-14-6636) was recorded, extending the previously identified site boundary (Morriss et al. 2013; *Draft*).

Documentation Limitations: T-192 was excavated to 1.83 mbs beyond the water table at a depth of 1.80 mbs. A utility line extended diagonally through the middle of T-192 and prevented full excavation of the northwest end of T-192. The presence of the water table, utilities and wall instability limited documentation of T-192.

Stratigraphic Summary: The stratigraphy T-192 consisted of fill strata overlying natural sediment to the coral shelf. Observed strata included asphalt (Ia), gravel sub-grade (Ib), crushed coral fill (Ic), and hydraulic fill clay fill (Id) overlying natural marsh sediment (II) to the coral shelf. The stratigraphy conformed to the USDA soil survey designation of Fill land. Natural sediments observed were considered to be components of SIHP #50-80-14-6636, Kewalo wetland sediments.

Artifacts Discussion: No artifacts were observed.

Features Discussion: No features were observed.

Terrestrial Faunal Remains Collected During Excavation: No terrestrial faunal remains were collected individually during excavation.

Sample Results: One bulk sample was collected from of the backdirt pile of Stratum II sediment, taken between 1.75–1.83 mbs (1 L). The sample was wet-screened and was dominated by freshwater and brackish snail shells (17.8 g) and wood (0.2 g). The results of sample analysis indicated a wetland/marsh environment.

GPR Discussion: A review of amplitude slice maps indicated linear features outside excavation boundaries, although a utility pipe was encountered during the excavation. Reflectivity is relatively uniform throughout the grid and decreases with depth except for the linear features. A transition from higher reflectivity to lower reflectivity is observed at approximately 0.25 mbs and increases again around 0.75 mbs.

GPR depth profiles for T-192 identify horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponds to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.2 mbs. Anomalies are observed in the profile but not within excavation boundaries, although a utility pipe was encountered during excavation. The maximum depth of clean signal return was approximately 1.0 mbs.

Summary: T-192 was excavated to a depth of 1.83 mbs. The stratigraphy T-192 consisted of fill strata (Ia–Id) overlying natural sediment (II) to the coral shelf. The stratigraphy conformed to the USDA soil survey designation of Fill land. The results of sample analysis indicated a

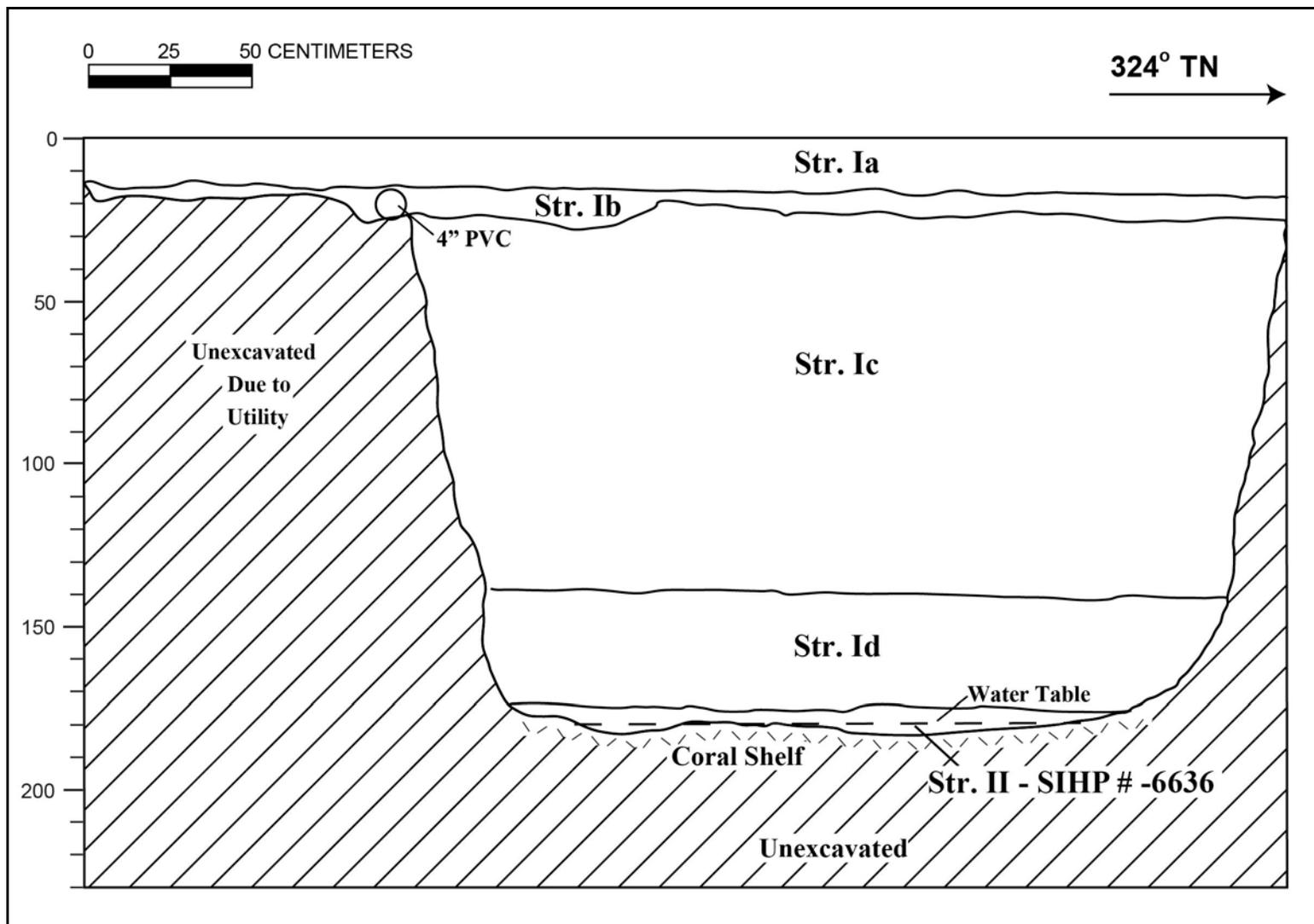
wetland/marsh environment. Natural sediments observed were considered to be components of SIHP #50-80-14-6636, Kewalo wetland sediments (see Volume I).



T-192 general location, view to west



T-192 southwest profile wall, view to south



T-192 southwest wall profile

T-192 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–15	Asphalt
Ib	15–26	Fill; 10 YR 2/1 (black); extremely gravelly silty sand; structureless, single-grain; moist, loose consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary; gravel sub-grade
Ic	17–140	Fill; 10 YR 8/3 (very pale brown); very gravelly cobbly silty sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; very abrupt, smooth lower boundary; crushed coral fill material
Id	140–175	Fill; 10 YR 6/1 (gray); silty clay; weak, coarse, blocky structure; wet, very sticky consistency; very plastic; marine origin; very abrupt, smooth lower boundary; hydraulic fill clay fill material
II	175–183	Natural; 10 YR 3/2 (very dark grayish brown) with very few, fine to medium mottles of 10 YR 8/1 (white); silty clay; weak, medium, blocky structure; wet, sticky consistency; plastic; mixed origin; lower boundary not visible; marsh/agriculture sediment over coral shelf; Kewalo wetland sediment (SIHP #50-80-14-6636)

2.21 Test Excavation 193 (T-193)

Ahupua'a:	Honolulu
LCA:	10605:7
TMK #:	2-3-007 (Plat)
Elevation Above Sea Level:	1.77 m
UTM:	619538 mE, 2355138 mN
Max Length, Width, Depth:	7.05 m / 0.76 m / 2.38 mbs
Orientation:	302 / 122° TN
Targeted Project Component:	Utility Relocation
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 193 (T-193) was located within the Kona Street roadway, approximately 70 m southeast of the Kona Street and Pensacola Street intersection. T-193 was located on city-owned property, 2.4 m southwest of a water utility and 4.8 m southwest of a sewer line. The excavation surface was level with the surrounding environment.

Summary of Background Research and Land Use: The natural landscape surrounding T-193 consisted of a marsh/wetland (SIHP #50-80-14-6636) environment and the Kolowalu Fishpond (SIHP #50-80-14-6856) was located 160 m west of T-193, according to the 1897 map of Honolulu by M. D. Monsarrat. Minimal urban development had occurred by that time. T-193 was located within LCA 10605:7, awarded to Iona Pi'ikoi. The 1919 U.S. Army War Department map showed the presence of Kolowalu Fishpond; however, by the 1933 U.S. Army War Department map the fishpond had been filled in. According to the 1953 U.S. Army Mapping Service map, extensive urban development in the area occurred over the next twenty years.

Previous archaeological investigations surrounding the location of T-193 included several studies. An archaeological inventory survey for the Ko'olani Condominium documented three historic properties, SIHP #50-80-14-6639 and SIHP #50-80-14-6641, historic trash pits dating from the early twentieth century; and SIHP #50-80-14-6636, the original wetland surface of Kewalo, approximately 120 m south of T-193 (O'Hare et al. 2004). During monitoring for this project, a total of 18 burials (both pre-Contact and historic coffin burials) including an isolated single burial (SIHP #50-80-14-6910), a cluster of 16 historic-era coffin burials (SIHP #50-80-14-6911), and an isolated single burial (SIHP #50-80-14-6912) were encountered and reinterred within the designated preserve area (Hammatt 2008). CSH subsequently conducted an archaeological inventory survey in the adjacent parcel for the Ko'olani Phase II (re-named Waihonua) Project. Three new historic properties were documented; a culturally enriched A-horizon containing pit features (SIHP #50-80-14-7115), historic pond sediment (SIHP #50-80-14-7116), and a concentration of 27 post-Contact coffin burials (Runyon et al. 2011). Within 15 m north of T-193, archaeological monitoring for the Kapi'olani revised sewer system project was conducted by Altizer et al (2011) where the natural wetland surface (SIHP #50-80-14-6636) was recorded. Approximately 12 m southeast of T-193, wetland/marsh sediments were recorded (-

6636) during the AIS for the Pi'ikoi Senior Residence project (Runyon et al. 2012). According to Athens et al. (1994) an inadvertent human remains find (SIHP #50-80-14-4847) was located within the intersection of Pi'ikoi Street and Kapi'olani Avenue, approximately 160 m northeast from T-193. During an AIS conducted by O'Hare et al. (2003), two previously recorded historic properties were identified, including a remnant of a discontinuous natural wetland sediment (SIHP #50-80-14-6636) and a historic trash dump (SIHP #50-80-14-6637) located approximately 150 m north from T-193. Approximately 195 m east of T-193, an inadvertent human remains find of a long bone fragment (SIHP #50-80-14-4243) was identified near the intersection of Pi'ikoi Street and Kapi'olani Avenue during construction activities (Smith 1989). During AIS testing near the intersection of Pi'ikoi Street and Ala Moana Boulevard, approximately 145 m southeast of T-193, a remnant of a discontinuous natural wetland sediment (SIHP #50-80-14-6636) was recorded, extending the previously recorded site boundary (Morriss et al. 2013; *Draft*).

Documentation Limitations: T-193 was excavated to a depth of 2.38 mbs beyond to the water table which was at a depth of 2.26 mbs. A gas utility extended parallel to the southwest wall. The central portion of T-193 remained unexcavated in an effort to stabilize the gas line along the southwest wall. The presence of the gas line limited documentation.

Stratigraphic Summary: The stratigraphy of T-193 consisted of fill strata overlying natural sediment to the water table. Observed strata included asphalt (Ia), sandy loam fill (Ib), cobbly crushed coral sand (Ic), sand (Id), and clay (Ie) overlying natural sandy clay (IIa) and gravelly sandy clay (IIb) to the water table. The stratigraphy conformed to the USDA soil survey designation of Fill land. Natural sediments observed were considered to be components of SIHP #50-80-14-6636, Kewalo wetland sediments.

Artifacts Discussion: No artifacts were observed.

Features Discussion: No features were observed.

Terrestrial Faunal Remains Collected During Excavation: No terrestrial faunal remains were collected individually during excavation.

Sample Results: One bulk sediment sample (2 L) was collected from Stratum IIa between 1.53–1.56. A second bulk sample (1.5 L) was collected from Stratum IIb between 2.20–2.25 mbs. The bulk samples were wet-screened. The sediment sample from Stratum IIa contained a small amount of plant fibers (0.1 g) and naturally-occurring, water-rounded marine shell (144.3 g). The sample from Stratum IIb contained only naturally-occurring, water-rounded marine shell (19.5 g). The bulk samples did not contain cultural material.

GPR Discussion: A review of amplitude slice maps indicated no linear features although a utility was encountered during excavation. Reflectivity is relatively uniform throughout the grid and decreases with depth. A transition from higher reflectivity to lower reflectivity is observed at approximately 0.25 mbs and increases again around 0.75 mbs.

GPR depth profiles for T-193 identify horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponds to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.2 mbs and again at 0.7 mbs. An anomaly is observed in the

profile but was not encountered during excavation, although a gas utility was encountered during excavation. The maximum depth of clean signal return was approximately 1.6 mbs.

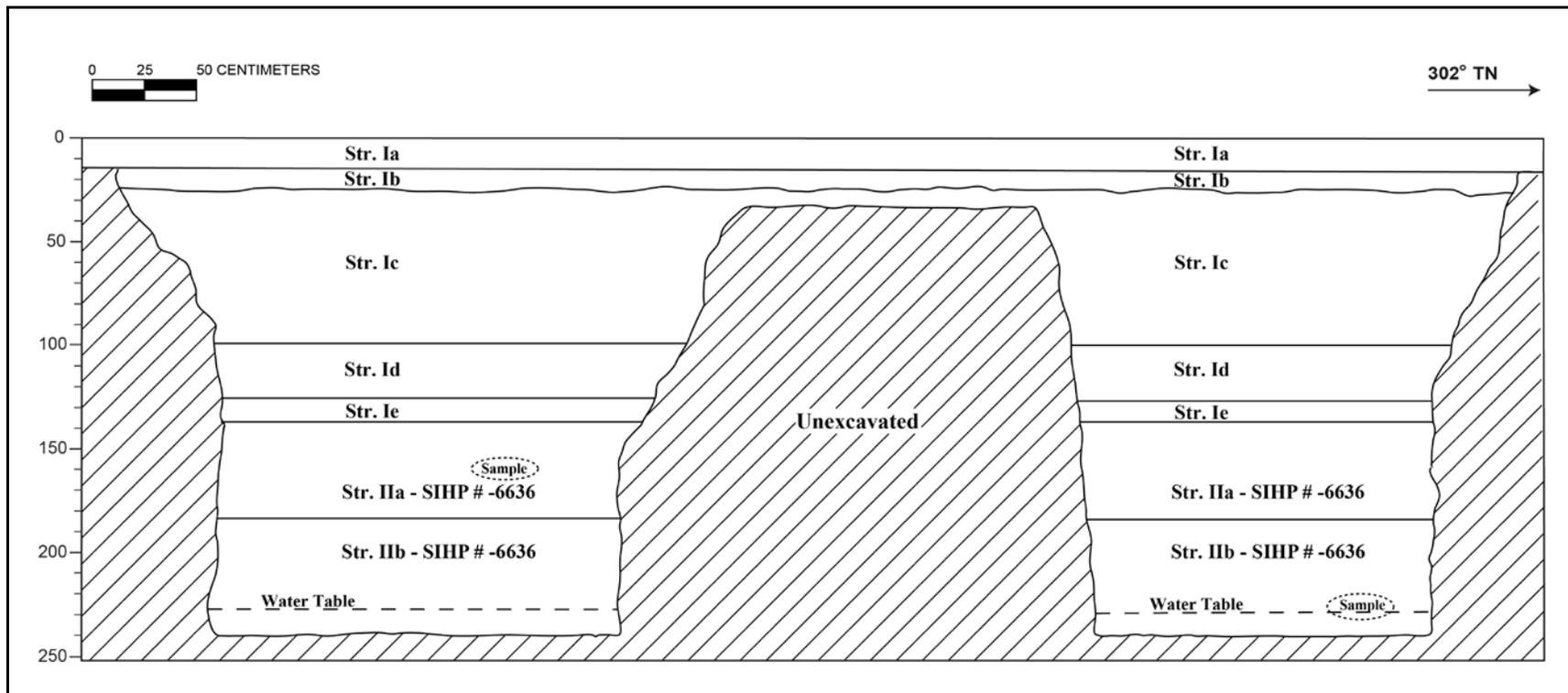
Summary: T-193 was excavated to the water table at a depth of 2.38 mbs. The stratigraphy of T-193 consisted of fill strata (Ia-Ie) overlying natural sediment (IIa-IIb) to the water table. The stratigraphy conformed to the USDA soil survey designation of Fill land. One bulk sediment sample (2 L) was collected from Stratum IIa between 1.53–1.56. A second bulk sample (1.5 L) was collected from Stratum IIb between 2.20–2.25 mbs. The bulk samples did not contain cultural material. The natural sediment (IIa and IIb) within T-193 are considered to be components of SIHP #50-80-14-6636, Kewalo wetland sediments (see Volume I).



T-193 general location, view to north



T-193 southwest profile wall



T-193 southwest wall profile

T-193 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–15	Asphalt
Ib	15–26	Fill; 10 YR 3/2 (very dark grayish brown); sandy loam; structureless, single-grain; moist, loose consistency; non-plastic; abrupt, wavy lower boundary; imported fill
Ic	23–99	Fill; 10 YR 8/2, (very pale brown); cobbly crushed coral sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; abrupt, smoother lower boundary; imported fill, 50% coral cobbles and gravel
Id	99–125	Fill; 10 YR 8/3 (very pale brown); sand; structureless, single-grain; wet, slightly sticky consistency; non-plastic; marine origin; abrupt, smooth lower boundary; imported fill, hydraulic fill material
Ie	125–136	Fill; 10 YR 7/1 (light gray); clay; structureless, massive; wet, very sticky consistency; very plastic; marine origin; abrupt, smoother lower boundary; hydraulic fill material
IIa	136–182	Natural, 10 YR 5/1 (gray); sandy clay; structureless, massive; wet, sticky consistency; plastic; terrigenous origin; abrupt, smooth lower boundary; peat layer on upper part of stratum, consistent with marsh/wetlands, peat of 10 YR 5/2 (grayish brown); Kewalo wetland sediment (SIHP #50-80-14-6636)
IIb	182–238	Natural, 10 YR 6/1 (gray); gravelly sand clay; structureless, massive; wet, sticky consistency; slightly plastic; lower boundary not visible; clay with coral gravel mix; Kewalo wetland sediment (SIHP #50-80-14-6636)

2.22 Test Excavation 194 (T-194)

Ahupua'a:	Honolulu
LCA:	10605:7
TMK #:	2-3-007 (Plat)
Elevation Above Sea Level:	1.65 m
UTM:	619576 mE, 2355128 mN
Max Length/ Width/Depth:	3.60 m / 0.90 m / 0.95 mbs
Orientation:	104 / 284° TN
Targeted Project Component:	Guideway Column
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 194 (T-194) was located within the Kona Street roadway, approximately 60 m northwest of the intersection of Pi'ikoi Street and Kona Street. T-194 was located on property owned by the City and County of Honolulu, 0.8 m south of a water utility and 2 m north of a sewer line. The excavation surface was level with the surrounding land surface.

Summary of Background Research and Land Use: The natural landscape surrounding T-194 consisted of a marsh/wetland (SIHP #50-80-14-6636) environment and the Kolowalu Fishpond (SIHP #50-80-14-6856) was located 200 m west of T-194, according to 1897 map of Honolulu by M. D. Monsarrat. Minimal urban development had occurred prior to that date. T-194 was located within LCA 10605:7, awarded to Iona Pi'ikoi. The 1919 U.S. Army War Department map showed the presence of Kolowalu Fishpond; however, by the 1933 U.S. Army War Department map the fishpond had been filled in. According to the 1953 U.S. Army Mapping Service map, extensive urban development in the area occurred over the next twenty years.

There were several previous archaeological investigations surrounding the location of T-194. Archaeological monitoring within the Kaka'ako Community Improvement District 10, which was located 60.0 m south of T-194, identified a total of 30 post-Contact burials (SIHP #50-80-14-6658, -6659, and -6660) (O'Hare et al. 2006). An archaeological inventory survey for the Ko'olani Condominium documented three historic properties, SIHP #50-80-14-6639 and SIHP #50-80-14-6641, historic trash pits dating from the early twentieth century; and SIHP #50-80-14-6636, the original wetland surface of Kewalo, approximately 130 m south of T-194 (O'Hare et al. 2004). During monitoring for this project, a total of 18 burials (both pre-Contact and historic coffin burials) including an isolated single burial (SIHP #50-80-14-6910), a cluster of 16 historic-era coffin burials (SIHP #50-80-14-6911), and an isolated single burial (SIHP #50-80-14-6912) were encountered and reinterred within the designated preserve area (Hammatt 2008). CSH subsequently conducted an archaeological inventory survey in the adjacent parcel for the Ko'olani Phase II (re-named Waihonua) Project. Three new historic properties were documented; a culturally enriched A-horizon containing pit features (SIHP #50-80-14-7115), historic pond sediment (SIHP #50-80-14-7116), and a concentration of 27 post-Contact coffin burials (Runyon et al. 2011). CSH conducted an archaeological inventory survey for the Victoria

Ward Village shops, which are located approximately 320.0 m southwest of T-194 (Bell et al. 2006). Three cultural resources were identified, including a subsurface cultural layer containing both historic and prehistoric contents with five human burials (SIHP #50-80-14-6854), a subsurface cultural layer consisting of pre- and post-Contact cultural materials and six human burials (SIHP #50-80-14-6855), and the remnants of Kolowalu Fishpond (SIHP #50-80-14-6856) (Bell et al. 2006). In 2009, an archaeological inventory survey was conducted for the Queen Street parks project located 250.0 m southwest of T-194 in which a previously identified cultural resource indicative of Kolowalu Fishpond (SIHP #50-80-14-6856) was encountered (Thurman et al. 2009). Archaeological monitoring for the Kapi'olani revised sewer system project, located 50.0 m west of T-194, identified buried wetland sediment (SIHP #50-80-14-6636) (Altizer et al. 2011). Approximately 100.0 m southwest of T-194, wetland/marsh sediments were also recorded (SIHP #50-80-14-6636) during the archaeological inventory survey for the Pi'ikoi Senior Residence project (Runyon et al. 2012). During AIS testing near the intersection of Pi'ikoi Street and Ala Moana Boulevard, approximately 135.0 m southeast of T-194, a remnant of a discontinuous natural wetland sediment (SIHP #50-80-14-6636) was recorded, extending the previously recorded site boundary (Morriss et al. 2013; *Draft*).

Documentation Limitations: T-194 was excavated to a depth of 0.95 mbs. The presence of a utility jacket extending throughout T-194 prevented excavation down to natural sediment or the water table.

Stratigraphic Summary: The stratigraphy of T-194 consisted of fill strata to the base of excavation. Observed strata included asphalt (Ia), base course (Ib), crushed coral fill (Ic), and sand fill (Id) to the base of excavation. The stratigraphy conformed to the USDA soil designation of Fill land.

Artifact Discussion: No artifacts were observed.

Feature Discussion: No features were observed.

Terrestrial Faunal Remains Collected During Excavation: No terrestrial faunal remains were collected individually during excavation.

Sample Results: No sample analysis was conducted.

GPR Discussion: A review of amplitude slice maps indicated linear features; one outside excavation boundaries, and the other seeming to correspond to the metal utility encountered during excavation. Reflectivity is relatively uniform throughout the grid and decreases with depth except for the linear features. A transition from higher reflectivity to lower reflectivity is observed at approximately 0.25 mbs.

GPR depth profiles for T-194 identify horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponds to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.4 mbs. Anomalies are observed in the profile, one of which corresponds to the metal utility encountered, and the other which lies below the concrete jacket and was not conducive to ground-truthing. The maximum depth of clean signal return was approximately 1.3 mbs.

Summary: T-194 was excavated to a depth of 0.95 mbs. The stratigraphy of T-194 consisted of fill strata to the base of excavation (Ia-Id). The stratigraphy conformed to the USDA soil designation of Fill land. No natural sediment was observed. No cultural materials were identified within T-194.



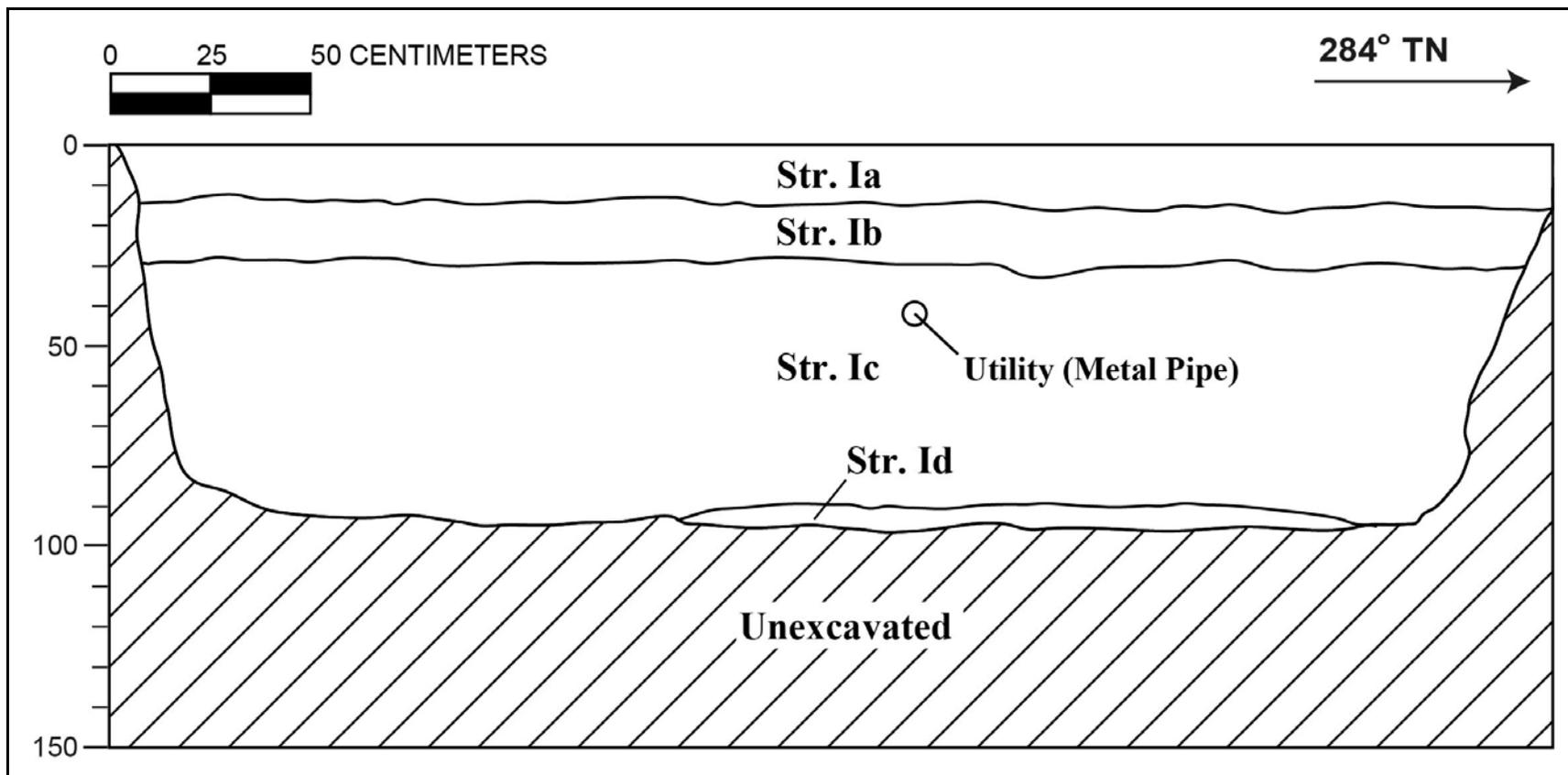
T-194 general location, view to southwest



T-194 northeast profile wall



T-194 southwest profile wall



T-194 southwest wall profile

T-194 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–15	Asphalt
Ib	13–32	Fill; 10 YR 3/4 (very dark grayish brown) with mottles of 10 YR 3/2 (very dark grayish brown); very cobbly sandy loam; weak, fine, medium, crumb structure; moist, loose consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; cobbly base course
Ic	28–95	Fill; 10 YR 8/2 (very pale brown); very gravelly sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary; crushed coral fill
Id	90–95	Fill; 10 YR 8/2 (very pale brown); fine sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; lower boundary not visible; sand fill

2.23 Test Excavation 195 (T-195)

Ahupua'a:	Honolulu
LCA:	10605:7
TMK #:	2-3-007:033
Elevation Above Sea Level:	1.58 m
UTM:	619419 mE, 2355164 mN
Max Length/Width/Depth:	4.35 m / 0.95 m / 1.65 mbs
Orientation:	288 / 108° TN
Targeted Project Component:	Utility Relocation
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 195 (T-195) was located within a parking lot adjacent to the Kona Street roadway, approximately 40 m southwest of the Kona Street and Pensacola Street intersection. T-195 was located on private property owned by Kakaako Associates LLC. The excavation surface was level with the surrounding land surface.

Summary of Background Research and Land Use: The natural landscape surrounding T-195 consisted of a marsh/wetland (SIHP #50-80-14-6636) environment, and the Kolowalu Fishpond (SIHP #50-80-14-6856) was located 42 m west of T-195 according to the 1897 map of Honolulu by M. D. Monsarrat. Minimal urban development had occurred prior to 1897. T-195 was located within LCA 10605:7, awarded to Iona Pi'ikoi. The 1919 U.S. Army War Department map showed the Kolowalu Fishpond, which by 1933 had been filled in (U.S. War Department 1933). According to the 1953 U.S. Army Mapping Service map, extensive urban development in the area occurred over the next twenty years.

There were several previous archaeological investigations surrounding the location of T-195. Archaeological monitoring within the Kaka'ako Community Improvement District 10, which was located 38.0 m south of T-195, identified a total of 30 post-Contact burials (SIHP #50-80-14-6658, -6659, and -6660) (O'Hare et al. 2006). CSH conducted an archaeological inventory survey for the Victoria Ward Village shops, which are located approximately 200.0 m southwest of T-195 (Bell et al. 2006). Three cultural resources were identified, including a subsurface cultural layer containing both historic and prehistoric contents with five human burials (SIHP #50-80-14-6854), a subsurface cultural layer consisting of pre- and post-Contact cultural materials and six human burials (SIHP #50-80-14-6855), and the remnants of Kolowalu Fishpond (SIHP #50-80-14-6856) (Bell et al. 2006). In 2009, an archaeological inventory survey was conducted for the Queen Street parks project located 85.0 m southwest of T-195 in which a previously identified cultural resource indicative of Kolowalu Fishpond (SIHP #50-80-14-6856) was encountered (Thurman et al. 2009). Archaeological monitoring for the Kapi'olani revised sewer system project, located 15.0 m north of T-195, identified buried wetland sediment (SIHP #50-80-14-6636) (Altizer et al. 2011). An archaeological inventory survey for the Ko'olani Condominium documented three historic properties, SIHP #50-80-14-6639 and SIHP #50-80-14-6641, historic trash pits dating from the early twentieth century; and SIHP #50-80-14-6636, the

original wetland surface of Kewalo, approximately 90 m south of T-195 (O'Hare et al. 2004). During monitoring for this project, a total of 18 burials (both pre-Contact and historic coffin burials) including an isolated single burial (SIHP #50-80-14-6910), a cluster of 16 historic-era coffin burials (SIHP #50-80-14-6911), and an isolated single burial (SIHP #50-80-14-6912) were encountered and reinterred within the designated preserve area (Hammatt 2008). CSH subsequently conducted an archaeological inventory survey in the adjacent parcel for the Ko'olani Phase II (re-named Waihonua) Project. Three new historic properties were documented; a culturally enriched A-horizon containing pit features (SIHP #50-80-14-7115), historic pond sediment (SIHP #50-80-14-7116), and a concentration of 27 post-Contact coffin burials (Runyon et al. 2011). Approximately 130.0 m east of T-195, wetland/marsh sediments were also recorded (SIHP #50-80-14-6636) during the archaeological inventory survey for the Pi'ikoi Senior Residence project (Runyon et al. 2012).

Documentation Limitations: T-195 was excavated to the coral shelf at 1.65 mbs, and beneath the water table at 1.64 mbs. The western portion of T-195 was unexcavated beneath 0.10 mbs due to the presence of utilities.

Stratigraphic Summary: The stratigraphy of T-195 consisted of fill strata overlying natural sediment to the coral shelf. Observed strata included asphalt (Ia), base course (Ib), crushed coral fill (Ic), and hydraulic fill (Id) overlying natural pond sediment (II) to the coral shelf. The stratigraphy conformed to the USDA designation of Fill land.

Artifacts Discussion: No artifacts were observed.

Features Discussion: No features were observed.

Terrestrial Faunal Remains Collected During Excavation: No terrestrial faunal remains were collected during excavation.

Sample Results: One bulk sediment sample was collected from Stratum II between 1.37 and 1.46 mbs (2.5 L). The sediment sample was wet-screened and contained naturally-deposited snails (26.9 g), limpets and gastropods (0.8 g), crustacean (<0.1 g), Echinodermata *mathaei* sp. (<0.1 g), and *Ruppia* maritime seeds. Two column samples (0.25 L each) were collected from Stratum II at 1.35 mbs and 1.50 mbs. The column samples were not submitted for further analysis.

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

GPR depth profiles for T-195 identify horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponds to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.1 mbs. An anomaly is observed in the profile and corresponds to the utility jacket encountered during excavation. The maximum depth of clean signal return was approximately 1.0 mbs.

Summary: T-195 was excavated to the coral shelf at 1.65 mbs, and beneath the water table at 1.64 mbs. The stratigraphy of T-195 consisted of fill strata (Ia-Id) overlying natural sediment (II)

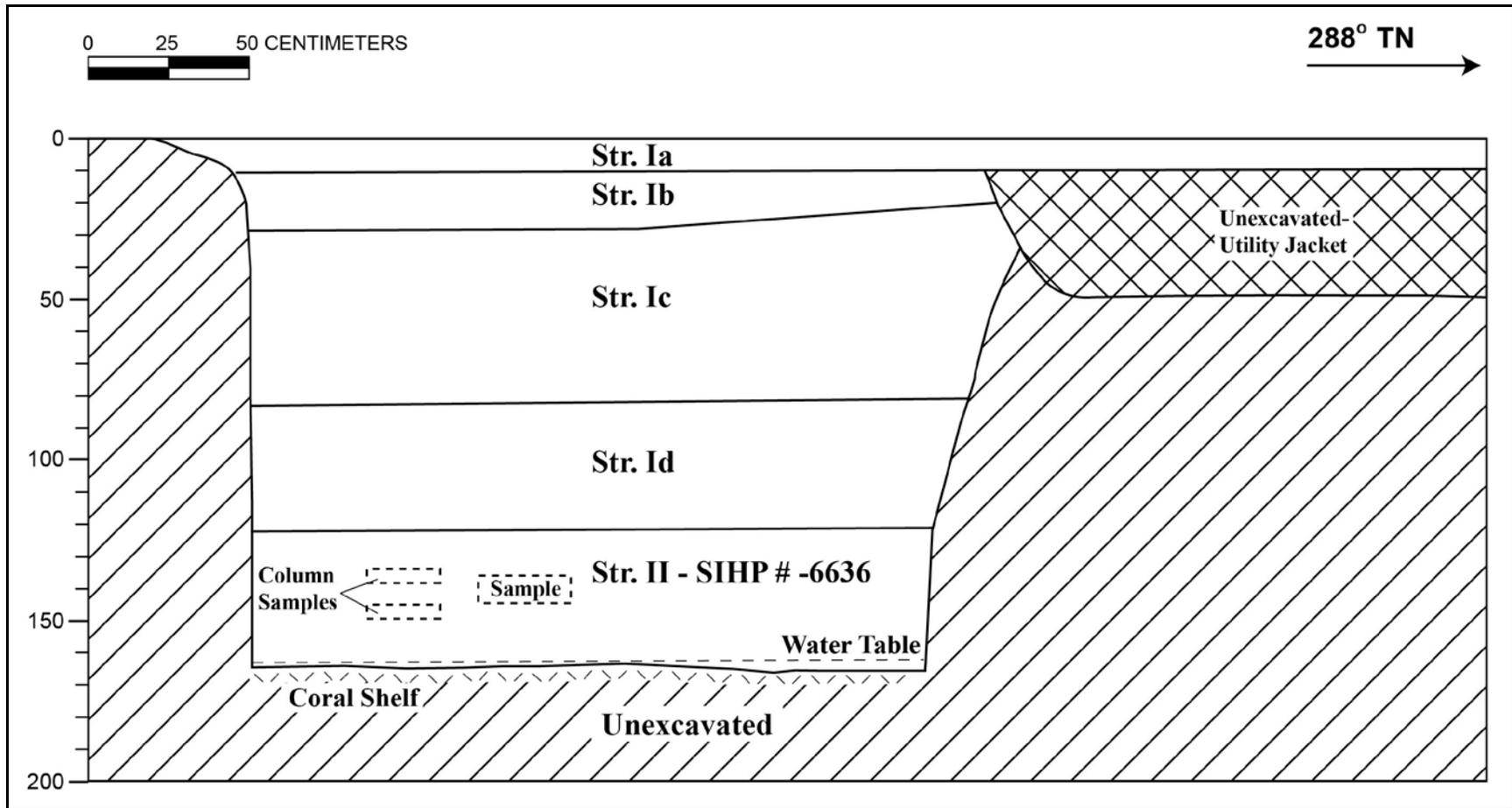
to the coral shelf. The stratigraphy conformed to the USDA designation of Fill land. Stratum II was considered to be a component of SIHP #50-80-14-6636, Kewalo wetlands sediment (see Volume I).



T-195 general location, view to northeast



T-195 south profile wall



T-195 south wall profile

T-195 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–15	Asphalt; road
Ib	15–33	Fill; 10 YR 3/3 (dark brown); clay loam; moderate, fine, blocky structure; moist, firm consistency; slightly plastic; terrigenous origin; clear, wavy lower boundary; imported fill
Ic	33–83	Fill; 10 YR 8/2 (very pale brown); extremely gravelly sand; structureless, single-grain; dry, loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary; contained brick and metal fragments; crushed coral fill
Id	83–124	Fill; 10 YR 6/1 (gray); clay, structureless, massive; moist, friable consistency; plastic; marine origin; clear, smooth lower boundary; hydraulic fill
II	124–165	Natural; GLEY 1 6/10 Y (greenish gray); clay; structureless, massive; moist, friable consistency; plastic; marine origin; abrupt lower boundary; natural wetland sediment; component of SIHP # - 6636

2.24 Test Excavation 196 (T-196)

Ahupua'a:	Honolulu
LCA:	10605:7
TMK #:	N/A
Elevation Above Sea Level:	1.4 m
UTM:	619615 mE, 2355113 mN
Max Length/Width/Depth:	3.70 m / 0.71 m / 1.80 mbs
Orientation:	290 / 110° TN
Targeted Project Component:	Guideway Column
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 196 (T-196) was located within a parking lot, adjacent to Kona Street, approximately 14 meters northwest of the intersection at Kona Street and Pi'ikoi Street. T-196 was located approximately 0.2 m east of a water line and 2.3 m west of a gas line, on property owned by the City and County of Honolulu. The excavation surface was level with the surrounding land surface.

Summary of Background Research and Land Use: Baldwin's 1883 Honolulu Water Works map located T-196 approximately 360 m north of the coastline. S. E. Bishop's map of the Kewalo area of Honolulu (1884) indicated that T-196 was located on Sheridan Street, west of LCA 101:1, which was comprised of fort lands, two ponds, and three *ki'o pua*. W. A. Wall's 1887 map of Honolulu indicated agricultural development to the north and east of T-196, while the immediate surrounding area remained marshlands. According to the 1919 U.S. Army War Department map, the vicinity of T-196 had undergone moderate urban development. The 1933 U.S. Army War Department map of Honolulu indicated that the entire area surrounding T-196 had been marked with a grid pattern for planned urban development. The 1939–41 U.S. Army Air Corps aerials and the 1943 U.S. Army War Department map of Honolulu indicated continued urban development in the area. By the U.S. Army Mapping Service's 1953 topographic map, the entire area had undergone heavy urban development.

Previous archaeology of the area surrounding T-196 included several studies. In 2012, an archaeological inventory survey just northwest of T-196 along Kona Street documented one historic property (SIHP #50-80-14-6636) that consisted of buried Kewalo wetland deposits (Runyon et al. 2012). An archaeological inventory survey for the Ko'olani Condominium documented three historic properties, SIHP #50-80-14-6639 and SIHP #50-80-14-6641, historic trash pits dating from the early twentieth century; and SIHP #50-80-14-6636, the original wetland surface of Kewalo, approximately 150 m southwest of T-196 (O'Hare et al. 2004). During monitoring for this project, a total of 18 burials (both pre-Contact and historic coffin burials) including an isolated single burial (SIHP #50-80-14-6910), a cluster of 16 historic-era coffin burials (SIHP #50-80-14-6911), and an isolated single burial (SIHP #50-80-14-6912) were encountered and reinterred within the designated preserve area (Hammatt 2008). CSH subsequently conducted an archaeological inventory survey in the adjacent parcel for the

Ko'olani Phase II (re-named Waihonua) Project. Three new historic properties were documented; a culturally enriched A-horizon containing pit features (SIHP #50-80-14-7115), historic pond sediment (SIHP #50-80-14-7116), and a concentration of 27 post-Contact coffin burials (Runyon et al. 2011). An archaeological monitoring project conducted in 2006 of road resurfacing on Pi'ikoi Street yielded no cultural materials, but continued monitoring in the area was recommended due to the high potential for encountering archaeological material and human burials in the general vicinity (Esh and Hammatt 2006).

Documentation Limitations: T-196 was excavated to a depth of 1.80 mbs, and beneath the water table at 1.72 mbs. There were no factors limiting documentation of T-196.

Stratigraphic Summary: The stratigraphy of T-196 consisted of fill strata overlying natural sediment to the coral bedrock. Observed strata included asphalt (Ia), base course (Ib), gravelly crushed coral sand fill (Ic), and clay fill (Id), and natural silty clay (II). The observed stratigraphy generally conformed to the USDA soil survey designation of Fill land.

Artifacts Discussion: A total of two bottle glass fragments (Acc. #196-A-1 to A-2, see following figure) were collected from the backdirt pile of Stratum II. The bottle fragments included an olive-colored body fragment and a clear milk bottle fragment, both of which post-dated the 1870s.

Features Discussion: No features were observed.

Terrestrial Faunal Remains Collected During Excavation: No terrestrial faunal remains were collected individually during excavation.

Sample Results: Two bulk sediment samples were collected within Stratum II of T-196 between 1.50–1.55 mbs (4 L) and 1.56–1.70 mbs (4 L). Both samples were wet-screened. The sediment sample from 1.5–1.55 mbs contained charcoal (0.3 g), terrestrial snail shells (46.6 g), and naturally-deposited marine shells (1.0 g). The sediment sample collected from 1.56–1.70 mbs contained charcoal (0.1 g), terrestrial snail shells (172.9 g), and naturally-deposited marine shell (12.1 g). The results of sample analysis supported the identification of Stratum II as a wetland deposit considered to be a component of SIHP #50-80-14-6636, Kewalo wetland sediment (see Volume I).

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

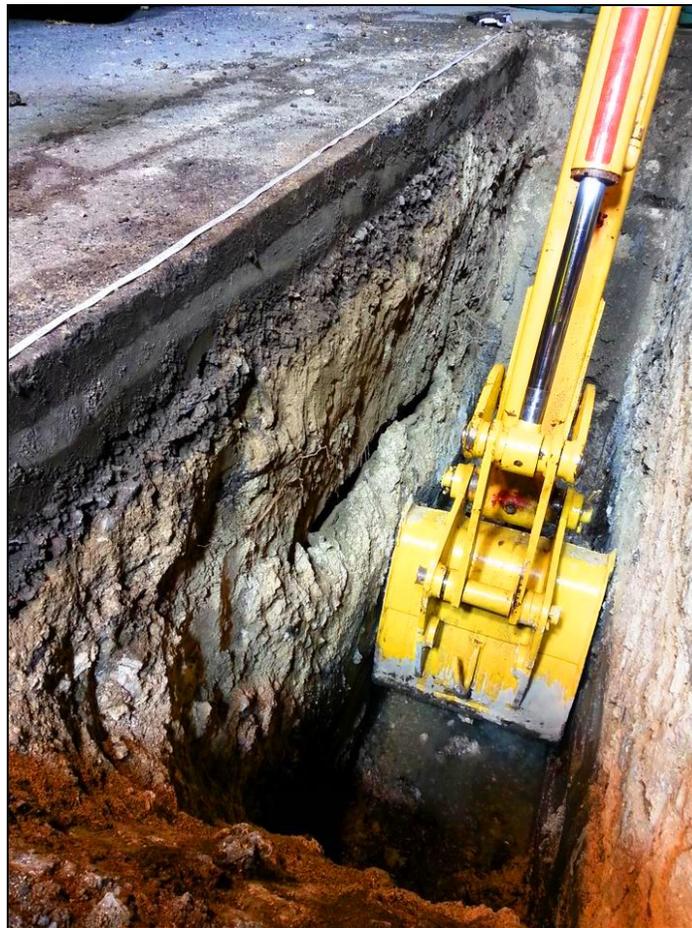
GPR depth profiles for T-196 identify horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponds to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.25 mbs. No utilities were observed in the profile. The maximum depth of clean signal return was approximately 1.0 mbs.

Summary: T-196 was excavated to a depth of 1.80 mbs, and beneath the water table at 1.72 mbs. The stratigraphy of T-196 consisted of fill strata (Ia–Id) overlying natural sediment (II) to the coral bedrock. The observed stratigraphy generally conformed to the USDA soil survey designation of fill land. The results of sample analysis supported the identification of Stratum II

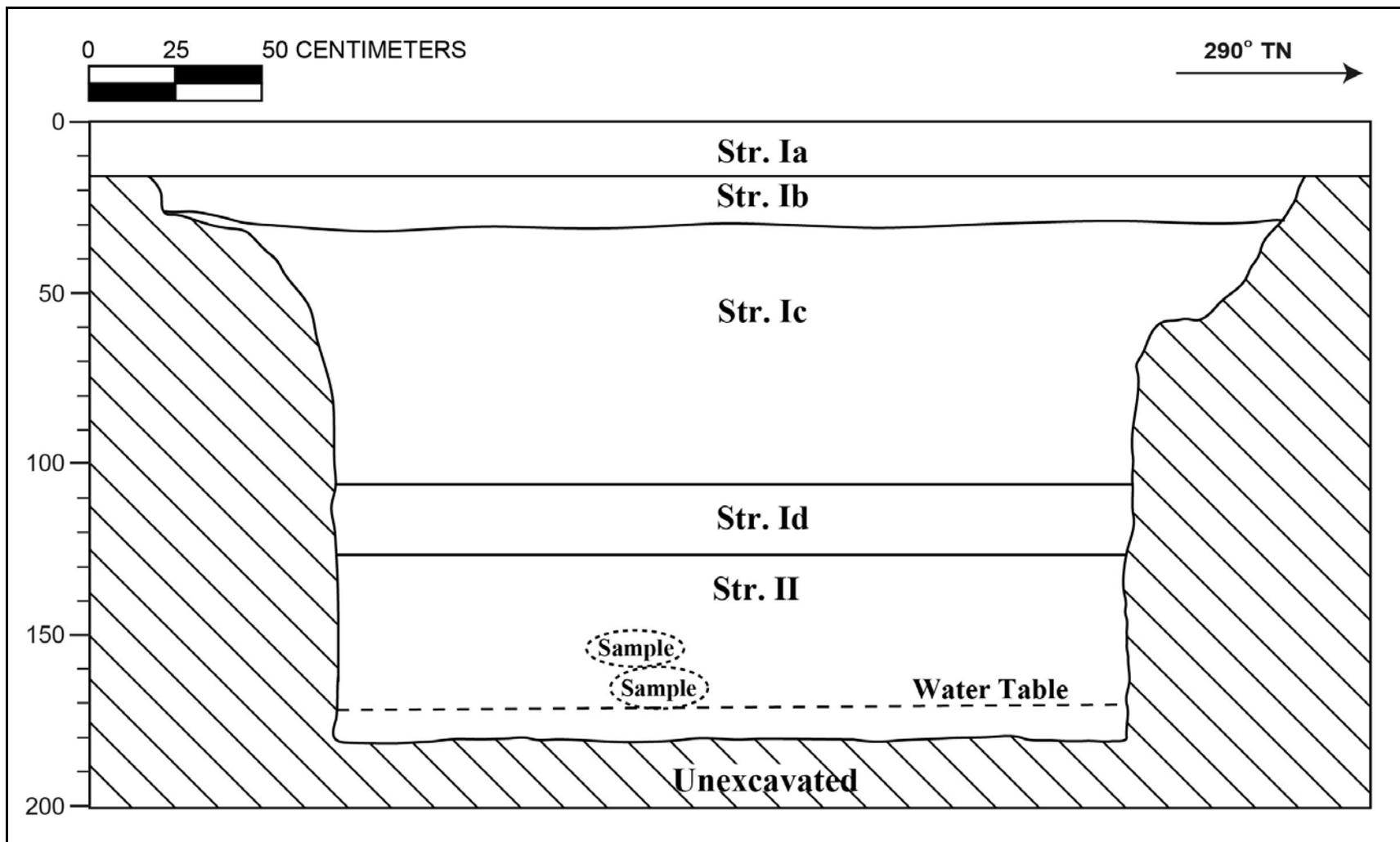
as a wetland deposit considered to be a component of SIHP #50-80-14-6636, Kewalo wetland sediment (see Volume I).



T-196 general location, view to west



T-196 south profile, view to southwest



T-196 south wall profile

T-196 Stratigraphic Description

Stratum	Depth (cmts)	Description
Ia	0–15	Asphalt / Concrete
Ib	15–31	Fill; cobbly base course; 10 YR 3/2 (very dark grayish brown); very gravelly loam; structureless, single-grain; moist, very friable consistency; non-plastic; terrigenous origin; abrupt lower boundary; imported fill, base course 3B, cobbles with gravel
Ic	27–105	Fill; 10 YR 8/3 (very pale brown); very gravelly sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; abrupt lower boundary; common, medium to coarse roots; imported fill, 50% gravel (coral)
Id	105–126	Fill; 10 YR 6/1 (gray); clay; structureless, massive; wet, very sticky consistency; very plastic; mixed origin; abrupt lower boundary; imported fill, hydraulic fill material
II	125–180	Natural; Gley 1 4/N (dark gray); silty clay; structureless, massive; wet, sticky consistency; plastic; mixed origin; lower boundary not visible; contains glass bottle fragments, natural sediment with organic content (peat) present along upper boundary including possible terrestrial and marine shell; component of SIHP # -6636



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

2.25 Test Excavation 197 (T-197)

Ahupua'a: Honolulu
LCA : 10605:7
TMK #: 2-3-007: 054 [Plat]

Setting: Test Excavation 197 (T-197) was located within a building on the north (*mauka*) side of Kona Street near the Pi'ikoi Street intersection. T-197 was abandoned because the column location had been relocated.