

### 3.20 Test Excavation 67 (T-067)

<b>Ahupua'a:</b>	Kapālama
<b>LCA:</b>	N/A
<b>TMK#:</b>	1-5-017: 006
<b>Elevation:</b>	1.5 m
<b>UTM:</b>	616956.28 mE, 2358216.86 mN
<b>Max Length/Width/Depth:</b>	6.0 m / 0.75 m / 1.98 mbs
<b>Orientation:</b>	52 / 232° TN
<b>Targeted Project Component:</b>	Station Building
<b>USDA Soil Designation:</b>	Fill land (FL)

**Setting:** Test Excavation 67 (T-067) was within Honolulu Community College lawn located on the *mauka* side of Dillingham Boulevard and the Kokea Street intersection. T-067 was 25 m southeast from Kapālama Stream. No utilities were indicated near T-067.

**Summary of Background Research and Land Use:** Brown's 1885 map of Kalihi and Kapālama showed T-067 within Konohiki lands part of Grant 10754 to A.L. Castle and Ethelinda S. Castle. At this time T-067 was 88 m southeast of an *'auwai* (irrigation stream) and 22 m north of Niuhelewai Stream. Monsarrat's 1897 map of Honolulu indicated the landscape was primarily agricultural land and T-067 was within a large rice plantation. By 1919 the surrounding area was dramatically altered with the agricultural lands converted to roads and residential developments, according to the 1919 U.S. Army War Department Fire Control map. The 1933 U.S. Army War Department Fire Control map and a 1943 U.S. Army War Department map placed T-067 within a developing street grid system. Urban development of the area continued through the 1950s. By 1953 the Niuehewai Stream was changed to Kapālama Stream and channeled into Kapālama Basin, according to the 1953 U.S. Army Mapping Service map. As the formal Kalihi and Kapālama areas continued to develop T-067 was *mauka* of Dillingham Boulevard.

Several previous archaeological studies were within the vicinity of T-067. 87 m northwest of T-067 Pammer and Monahan (2011) performed an archaeological literature review and field inspection with limited subsurface testing for the Kapālama Shopping Center Redevelopment Project. No historic properties were identified but *lo'i* sediments were observed beneath fill layers. 48 m northeast of T-067 O'Hare et al. (2010) performed an archaeological literature review and field inspection for the Honolulu Community College Advanced Technology Training Center Project. T-067 was 35 m north of the archaeological monitoring done for a small section of Dillingham Boulevard (Medina et al. 2012).

**Documentation Limitations:** T-067 was excavated to a depth of 1.98 mbs and beneath the water table at 1.75 mbs. Loosely compacted fill was a safety issue that created unstable sidewalls which restricted entry into the excavation and limited documentation.

**Stratigraphic Summary:** The stratigraphy of T-067 consisted of fill strata overlying natural sediment to the base of excavation. Observed stratigraphy included a very gravelly sandy loam

landscape fill (Ia), and incinerated fill (Ib), overlying natural silty clay (II), and the decomposing coral shelf (III). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL).

**Artifacts Discussion:** A total of 20 historic artifacts were collected from T-067 (see following table and photographs). Three (3) ceramic fragments from three vessels (Acc. # 067-A-1 to A-3), 7 glass fragments from 7 bottles, (Acc. # 067-A-4 to A-12) and 10 miscellaneous artifacts (Acc. # 067-A-15-24), including a bullet, a metal cup, a fork, and a spoon, were collected from 0.63-1.00 mbs, Stratum Ib, which was a historic, burned trash layer. Nine of the bottles were made by American glass manufacturers and all were made in an Automatic Bottle Machine, made after 1903. Several bottles date to the 1930s and 1940s. Artifacts collected from Stratum Ib may all date to the 1930s-1940s. Two bottle fragments (Acc. # 067-A-13 to A-14) were collected from Stratum II. One of these bottles (Acc. # 067-A-13) was manufactured between 1933 and the 1950s. Artifacts collected from Stratum Ib were manufactured between 1930s to the 1950s.

**Features Discussion:** No features were observed.

**Terrestrial Faunal Remains Collected During Excavation:** Terrestrial faunal remains (*Bos taurus*, *Felis catus* and *Aves* sp.) were collected from Stratum Ib at 0.63-1.0 mbs and from Stratum II at 1.5-1.6 mbs. Stratum Ib contained three fragments that included one unfused femur head, a butchered rib portion (*Bos taurus*), and a diaphysis section from possible *Felis catus*. A single tibia shaft (*Aves*) was collected from Stratum II.

**Sample Results** A total of two bulk sediment samples and one column sample were collected from within T-067. The bulk sediment samples were collected from Stratum II between 1.50 and 1.65 mbs (5 L) and Stratum III at 1.84-1.98 mbs (2 L). Both of the bulk samples were wet-screened. The sediment sample from Stratum II contained charcoal (1.3 g) and naturally-occurring, water-rounded marine shell (18.3 g). The sediment sample from Stratum III contained only naturally-occurring, water-rounded marine shell (63.7 g). Bulk sample analysis documented sparse charcoal content within Stratum II and no cultural material within Stratum III.

The column sample, consisting of three 1.0 L subsamples, was collected from Stratum II between 1.52 and 1.69 mbs. All three subsamples were submitted for pollen analysis. The laboratory results indicated a high pollen concentration, ranging from 14000 to 42000 pollen per cubic centimeter (cc) of sediment. Rice (*Oryza sativa*) pollen and charred *Poaceae* was present within all three intervals of the column sample. The sample ranging from 1.52 and 1.60 contained cow pea (*Vigna*) pollen and *Typha angustifolia*-type pollen. A few *Foraminifera* fragments was present between 1.57 and 1.69 mbs. The sample ranging from 1.67 and 1.69 contained sugar cane (*Saccharum*) pollen. The results of the pollen analysis for Stratum II column samples indicated the area around T-067 was cultivated.

**GPR Discussion:** A review of amplitude slice maps indicated no linear features which might have indicated the presence of utilities. Reflectivity was relatively uniform throughout the grid and decreased with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.25 mbs.

GPR depth profiles for T-067 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 which occurred around 0.25 mbs. No utilities were observed in the profile. The maximum depth of clean signal return was approximately 0.80 mbs.

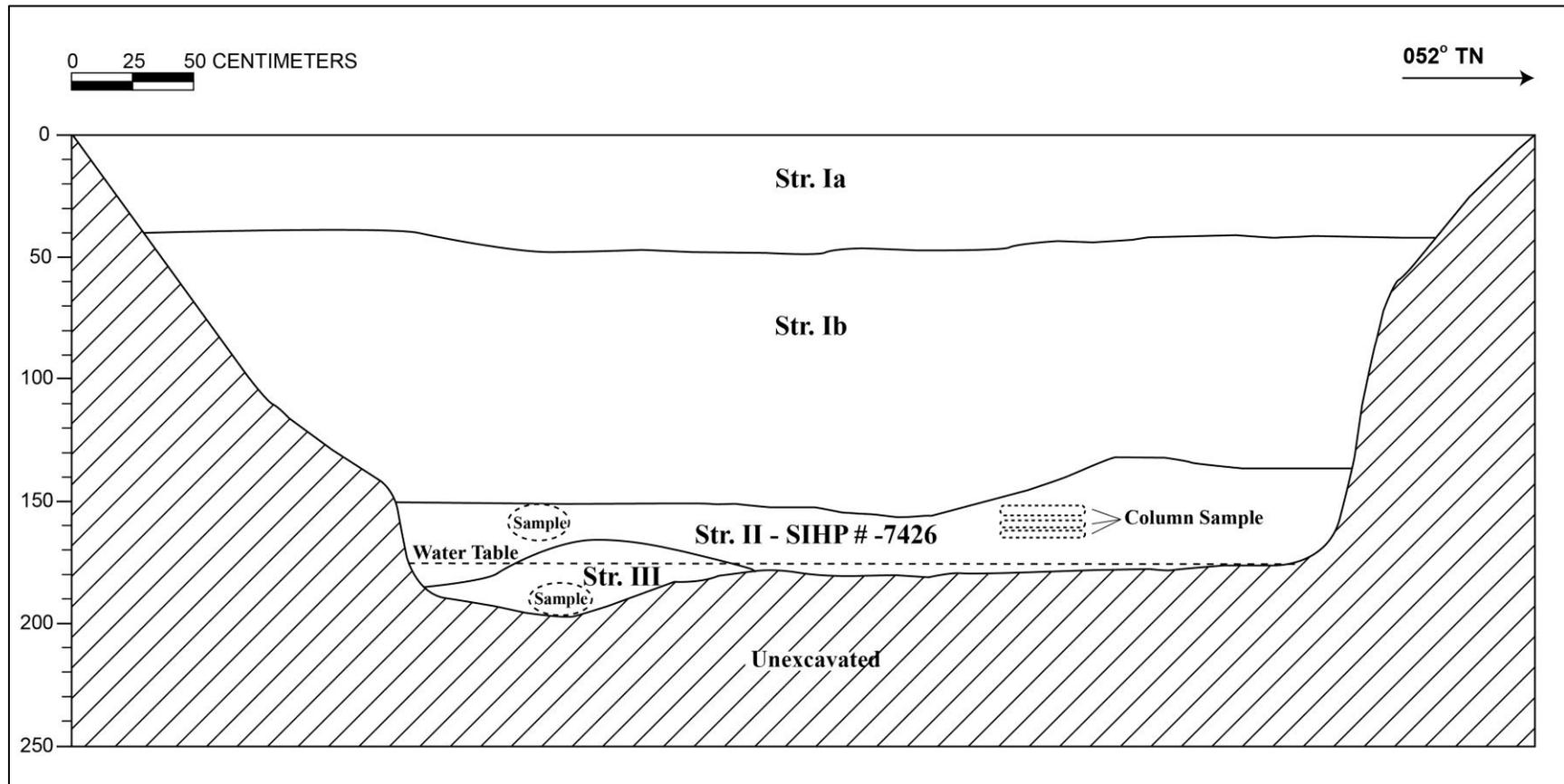
**Summary:** T-067 was excavated to 1.98 mbs and beneath the water table at 1.75 mbs. The stratigraphy of T-067 consisted of fill strata (Ia-Ib) overlying natural sediment (II-III) to the base of excavation. The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL). A total of 20 historic artifacts were collected from T-067. Artifacts collected from Stratum Ib may all date to the 1930s-1940s. Two bottle fragments (Acc. # 067-A-13 to A-14) were collected from Stratum II. One of these bottles (Acc. # 067-A-13) was manufactured between 1933 and the 1950s. A total of two bulk sediment samples and one column sample were collected from within T-067. Bulk sample analysis documented sparse charcoal content within Stratum II and no cultural material within Stratum III. The column sample, consisting of three 1.0 L subsamples, was collected from Stratum II between 1.52 and 1.69 mbs. All three subsamples were submitted for pollen analysis. The results of the pollen analysis for Stratum II column samples indicated the area around T-067 was cultivated. Stratum II is considered a component of SIHP # 50-80-14-7426 (see Volume I).



T-067 general location, view to southwest



T-067 northwest profile wall, view to west.



T-067 northwest wall profile

## T-067 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-50	Fill; 10 YR 4/3 (brown); very gravelly sandy loam; weak, medium, crumb structure; dry, weakly coherent consistency; non-plastic; mixed origin; clear, smooth lower boundary; many, medium to coarse roots; landscaping fill with organics and medium trash
Ib	38-156	Fill; 10 YR 3/2 (very dark grayish brown); very gravelly loamy sand; structureless, single-grain; dry, loose consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; few, medium roots; contained burnt trash, glass metal, faunal; unstable layer of mostly trash, ash, very little sediment
II	132-180	Natural; GLEY 2 2.5/1 (bluish black); silty clay; structureless, massive; wet, slightly sticky consistency; very plastic; mixed origin; abrupt, smooth lower boundary; few, very fine roots; contained some historic trash, glass bottles, ceramic, metal; possible rice paddy/ taro field sediments, considered a component of SIHP # 50-80-14-7426
III	165-198	Natural; 10 YR 3/6 (dark yellowish brown); extremely gravelly clayey sand; structureless, single-grain; wet, slightly sticky consistency; slightly plastic; marine origin; lower boundary not visible; decomposing coral gravels

## T-067 Historic Artifact Analysis

Acc. # 067-A-	Prov.	Ceramic Vessel Type	Portion	No.	Paste; Decoration	Origin; Age	Comments
1	T-067, St. Ib	Serving Utensil spoon	Body	1	Earthenware, Refined	Asian	Off-white earthenware - slotted spoon
2	T-067, St. Ib	Serving Utensil	Body	1	Porcelain; Painted	Asian	Asian-style soup spoon; white with blue flowers
3	T-067, St. Ib	Flatware	Base to body	1	Porcelain; Painted	Asian	White with blue flowers?
Acc. # 067-A-	Prov.	Glass Bottle Type	Portion	No.	Color	Origin; Age	Comments
4	T-067, St. Ib	Bottle, Beverage	Complete	1	Clear	American; 1934/1944	Bireleys Soda; Owens Illinois Glass Co base mark
5	T-067, St. Ib	Bottle, Medicine	Complete	1	Clear	American; 1938-1969	Armstrong Cork Co. base mark
6	T-067, St. Ib	Bottle, Medicine	Complete	1	Clear	American; 1942-post	"NEUTRA GLAS" "N – 51A" "U.S.A." "4", melted neck (Myers 2010)
7	T-067, St. Ib	Bottle, Medicine	Complete	1	Clear	American; 1942-post	embossed on base: "NEUTRA GLAS" "N – 51A" "U.S.A." "21" (Myers 2010)
8	T-067, St. Ib	Bottle, Cleaner	Neck-lip	1	Amber	American; 1940-1962	Half gallon neck and handle; possibly Clorox bottle
9	T-067, St. Ib	Bottle	Complete	1	Clear	American; 1933/1943	Owens-Illinois Glass Co. base mark
10	T-067, St. Ib	Jar Cosmetic	Complete	1	White	1903-post	Milk glass
11	T-067, St. Ib	Jar Cosmetic	Complete	1	White	1903-post	Milk glass
12	T-067, St. Ib	Bottle, Food	Base	1	Clear	American; 1936/46	Owens-Illinois Glass Co. base mark
13	T-067, St. II	Bottle	Body	1	Clear	American; 1936- 1950s	Mission Beverages bottled at Hawaiian Soda Works, O'ahu
14	T-067, St. II	Jar Cosmetic	Complete	1	Clear	American; 1903-post	Seventeen brand
Acc. # 067-A-	Prov.	Misc. Type	Portion	No.	Material	Origin; Age	Comments
15	T-067, St. Ib	Cup	Complete	1	Metal		Plain metal cup, rusted and very bent
16	T-067, St. Ib	Unknown Metal Item	Fragment	1	Metal		
17	T-067, St. Ib	Ceramic item	Fragment	1	Stoneware		Possible architectural or electrical
18	T-067, St. Ib	Animal Statuette	Fragment	1	Earthenware		Leg of small animal statuette

Acc. # 067-A-	Prov.	Misc. Type	Portion	No.	Material	Origin; Age	Comments
19	T-067, St. Ib	Glass Item	Fragment	1	Glass		Looks like a hand
20	T-067, St. Ib	Fork	Complete	1	Metal		Plain dinner fork with 4 tines. Metal extremely rusted and warped
21	T-067, St. Ib	Spoon	Complete	1	Metal		Small, plain baby spoon. Metal rusted and warped
22	T-067, St. Ib	Cylindric al Object	Fragment	1	Unknown		Black, light-weight material, clean edges
23	T-067, St. Ib	Screw	Complete	1	Metal		Hollow metal screw
24	T-067, St. Ib	Bullet Cartridge	Complete	1	Metal		Bullet cartridge; rusted, hollow opening at bottom that was bent in



T-067 ceramic artifacts (Acc. # 067-A-1 to A-3) from Stratum Ib



T-067 glass bottles and glass bottle fragments (Acc. # 067-A-4 to A-12, shown from left to right and top to bottom) from Stratum Ib



T-067 glass bottle and glass fragment artifact (Acc. # 067-A-13 to A-14) from Stratum II



T-067 miscellaneous artifacts (Acc. # 067-A-15 to A-24, shown from left to right and top to bottom) from Stratum Ib

### 3.21 Test Excavation 68 (T-068)

<b>Ahupua'a:</b>	Kapālama
<b>LCA:</b>	275 B:2
<b>TMK#:</b>	1-5-020: 003
<b>Elevation Above Sea Level:</b>	1.7 m
<b>UTM:</b>	616916.36 mE, 2358156.74 mN
<b>Max Length/Width/Depth:</b>	6.1 m / 0.72 m / 1.95 mbs
<b>Orientation:</b>	214 / 34° TN
<b>Targeted Project Component:</b>	Station Building
<b>USDA Soil Designation:</b>	Fill land (FL)

**Setting:** Test Excavation 68 (T-068) was within the parking lot of a small strip mall located on the *makai* side of Dillingham Boulevard near the Kokea Street intersection. T-068 was in front of the Mix Plate Café restaurant and approximately 60 m southeast of Kapālama Stream. The only utilities indicated were two sewer lines 4.4 m and 7.4 m *'ewa* of T-068. The location was within private property owned by Bishop Estate.

**Summary of Background Research and Land Use:** Brown's 1885 map of Kalihi and Kapālama showed T-068 within Konohiki lands part of Grant 10754 to A.L. Castle and Ethelinda S. Castle. At this time T-068 was 85 m southeast of an *'auwai* (irrigation stream) and 25 m north of Niuhelewai Stream. Monsarrat's 1897 map of Honolulu indicated T-068 was within a large rice plantation. By 1919 the surrounding area was dramatically altered with the agricultural lands converted to roads and residential developments, according to the 1919 U.S. Army War Department Fire Control map. The 1933 U.S. Army War Department Fire Control map and a 1943 U.S. Army War Department map placed T-068 within a developing street grid system. Urban development continued through the 1950s and the Niuhelewai Stream was changed to Kapālama Stream and channeled into Kapālama Basin, according to the 1953 U.S. Army Mapping Service map. As the formal Kalihi and Kapālama areas continued to develop T-068 was within in a building footprint *makai* of Dillingham Boulevard.

Several previous archaeological studies were within the vicinity of T-068. Approximately 110 m northwest of T-068 Pammer and Monahan (2011) performed an archaeological literature review and field inspection with limited subsurface testing for the Kapālama Shopping Center Redevelopment Project. No historic properties were identified but *lo'i* sediments were observed beneath fill layers. O'Hare et al. (2010) performed an archaeological literature review and field inspection 118 m northeast of T-068 for the Honolulu Community College Advanced Technology Training Center Project. T-068 was 7 m south of the archaeological monitoring done for a small section of Dillingham Boulevard (Medina et al. 2012). T-068 was also within an ethnohistoric study area for Uyeoka et al. (2009).

**Documentation Limitations:** T-068 was excavated to 1.95 mbs, and beneath the water table at 1.76 mbs. An irrigation line at 0.1 mbs and a buried concrete slab at 0.4 mbs prevented excavation to the water table in the northeast end of T-068 and limited documentation.

**Stratigraphic Summary:** The stratigraphy of T-068 consisted of fill strata overlying natural sediment. Observed strata included asphalt (Ia), silty loam topsoil fill (Ib), extremely gravelly sandy loam gravel base course fill (Ic), sandy clay loam fill (Id), extremely cobbly sandy loam fill (Ie), extremely gravelly to cobbly loam fill (If), medium grain sand fill (Ig), very sandy gravel (Ih), silty clay fill (Ii), loam fill (Ij), and gravelly sand fill (Ik) overlying natural silty clay (IIa and IIb). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL).

**Artifacts Discussion:** No artifacts were collected.

**Features Discussion:** No features were observed.

**Terrestrial Faunal Remains Collected During Excavation:** Faunal remains, collected from Stratum IIb of T-068 (1.78-1.83 mbs), included unidentified fish bone. The faunal remains collected from Stratum IIIb are considered to have no cultural significance.

**Sample Results:** Two bulk sediment samples were collected from Stratum IIb at 1.78-1.83 mbs (2.5 L) and 1.83-1.91 mbs (2.5 L). The bulk samples were wet-screened. The sample from 1.78-1.83 mbs contained charcoal (0.2g), *Ruppia maritima* seeds (0.1g), and burned fish remains (0.1g). The sample from 1.83-1.91 mbs contained charcoal (0.4g), *Ruppia maritima* seeds (0.1g), and a single large unidentified seed. Results of sample analysis indicated that no significant cultural material was present.

**GPR Discussion:** A review of amplitude slice maps indicated no linear features although an irrigation line was encountered during excavation. Reflectivity was relatively uniform throughout the grid and decreased with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.25 mbs.

GPR depth profiles for T-068 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 which occurred around 0.10 mbs. No utilities were observed in the profile although a utility was encountered during excavation. The maximum depth of clean signal return was approximately 1.10 mbs

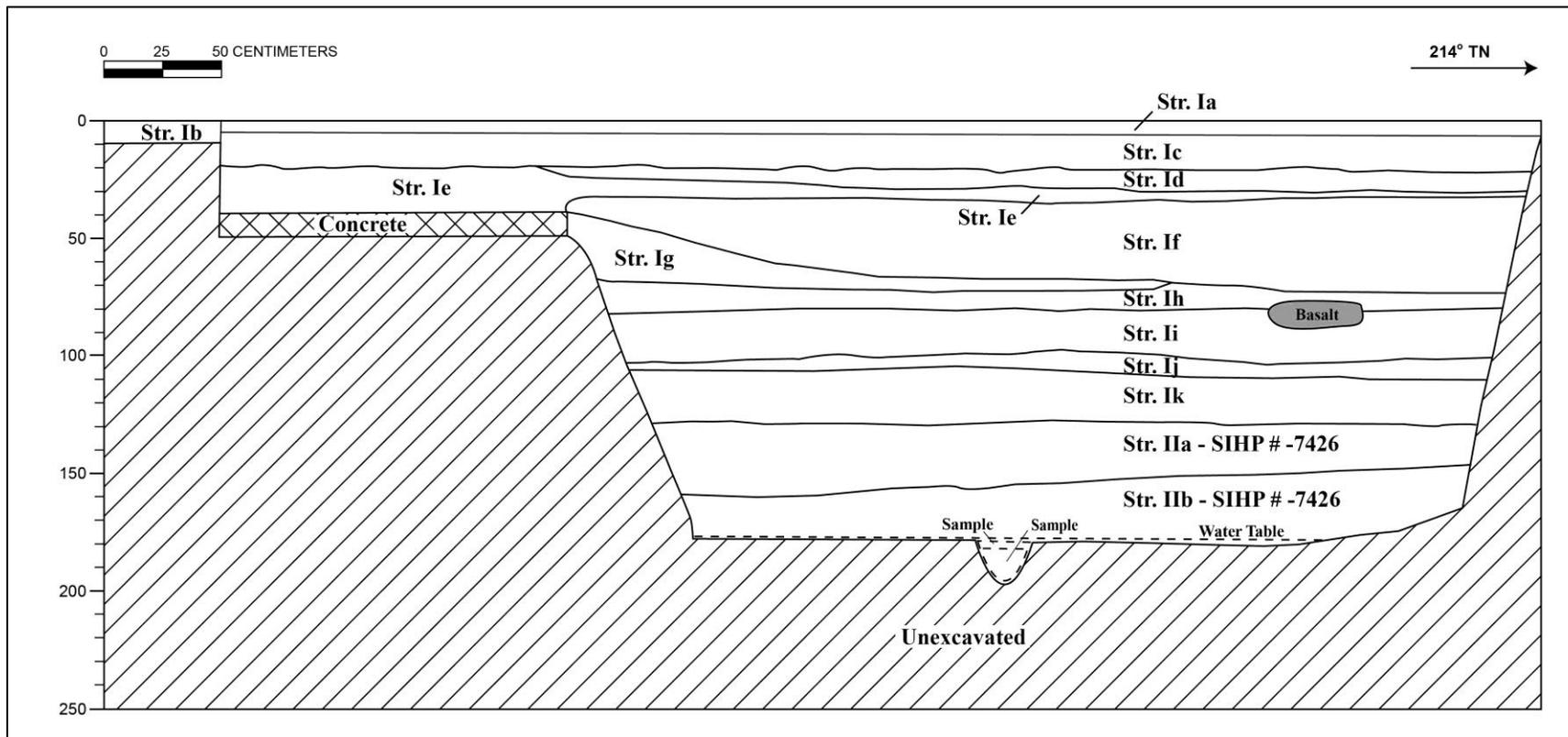
**Summary:** T-068 was excavated to 1.95 mbs, and beneath the water table at 1.76 mbs. The stratigraphy of T-068 consisted of fill strata (Ia-Ik) overlying natural sediment (IIa-IIb). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL). The faunal remains collected from Stratum IIIb are considered to have no cultural significance. Results of sample analysis indicated that no significant cultural material was present. The concrete slab that was documented within T-068 was considered to be less than 50 years old and related to the adjacent landscaped area. Stratum IIIa and IIIb are considered to be components of SIHP # 50-80-14-7426 (see Volume I).



T-068 pre-excavation, view southwest



T-068 southeast wall profile



T-068 southeast wall profile

## T-068 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-6	Fill; 10 YR 2/1 (black); asphalt; structureless, massive; dry, extremely hard, indurated consistency; non-plastic; terrigenous origin; very abrupt, smooth lower boundary; surface pavement for parking lot
Ib	0-10	Fill; 10 YR 2/2 (very dark brown); silty loam; structureless, single-grain; moist, very friable consistency; slightly plastic; terrigenous origin; very abrupt, broken/discontinuous lower boundary; many, very fine to fine roots
Ic	6-20	Fill; 10 YR 4/2 (dark grayish brown); extremely gravelly sandy loam; structureless, single-grain; dry, loose; slightly plastic; very abrupt, smooth lower boundary; basalt gravel base course
Id	20-40	Fill; 10 YR 4/3 (brown); sandy clay loam; structureless, single-grain; moist, friable to firm consistency; slightly plastic; mixed origin; very abrupt, broken/discontinuous lower boundary; contained very coarse sand, coral and basalt gravel overlying (Id)
Ie	20-35	Fill; 10 YR 8/2 (very pale brown); extremely cobbly sandy loam; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; very abrupt, smooth lower boundary; crushed coral
If	32-74	Fill; 5 YR 3/3 (dark reddish brown); extremely gravelly to cobbly loam; structureless, single-grain; moist, very friable consistency; slightly plastic; very abrupt, smooth lower boundary; contained basalt gravel and cobbles, coral gravel or coral flecking
Ig	40-73	Fill; 10 YR 6/3 (pale brown); medium grain sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; very abrupt, broken/discontinuous lower boundary
Ih	68-84	Fill; 10 YR 7/3 (very pale brown); very sandy gravel; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; very abrupt, smooth lower boundary; crushed coral, contained part of a basalt stone
Ii	80-92	Fill; Gley 1 10Y (greenish black); silty clay; structureless, massive; moist, firm; plastic; terrigenous origin; very abrupt, broken/discontinuous lower boundary; contained part of basalt stone
Ij	97-110	Fill; 10 YR 2/2 (very dark brown); loam; weak, fine, platy structure; moist, very friable consistency; plastic; terrigenous origin; very abrupt, smooth lower boundary; many, very fine roots
Ik	104-130	Fill; 10 YR 5/4 (yellowish brown) with common, very fine mottles of 10 YR 6/6 (brownish yellow); gravelly sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; very abrupt, smooth lower boundary; crushed coral fill
IIa	130-160	Natural; 10 YR 4/1 (dark gray) silty clay; with few, fine mottles of 10 YR 3/3 (dark brown); weak, fine, prismatic structure; wet, sticky consistency; very plastic; terrigenous origin; diffuse, smooth lower boundary; few, very fine roots; contained organics; component of SIHP #50-80-14-7426.
IIb	145-	Natural; Gley 1 3N (very dark gray); silty clay; structureless, massive; very

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	195	sticky consistency; very plastic; terrigenous origin; lower boundary not visible; component of SIHP #50-80-14-7426.
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### 3.22 Test Excavation 69 (T-069)

<b>Ahupua'a:</b>	Kapālama
<b>LCA:</b>	591:4
<b>TMK#:</b>	1-5-017: 006
<b>Elevation Above Sea Level:</b>	1.47 m
<b>UTM:</b>	616957.21 mE, 2358174.58 mN
<b>Max Length/Width/Depth:</b>	6.3 m / 0.80 m / 1.94 mbs
<b>Orientation:</b>	118 / 298° TN
<b>Targeted Project Component:</b>	Station Building
<b>USDA Soil Designation:</b>	Fill land (FL)

**Setting:** Test Excavation 69 (T-069) was located approximately 5.0 m northeast of Dillingham Boulevard and 51 m southeast of Kokea Street. T-069 was located on private property owned by University of Hawaii. One light post was located 1.5 m southwest of T-069. No other utilities were identified in the vicinity of T-069 prior to excavation. The excavation surface was level with the surrounding land surface.

**Summary of Background Research and Land Use:** Brown's 1883 Kalihi and Kapālama map placed T-069 within undeveloped natural landscape. The southern half of T-069 was within LCA 591:4, a 9.64 acre plot awarded to J. Meek. The northern half of T-069 was on government land along Niuhelewai Stream (1885 Brown Kapālama map). Monsarrat's 1897 map of Honolulu marked the area surrounding the trench as rice fields (*lo'i*) and indicated agricultural developments. The U.S. Army War Department Fire Control map of Honolulu of 1919 showed the disappearance of agricultural lands and urban development between 300.0 to 400.0 m in all directions from T-069. Grid patterns for planned development of the immediate area surrounding T-069 first appeared on the 1933 U.S. Army War Department Fire Control map of Honolulu, with Dillingham Boulevard already constructed in its modern location 5.0 m to the southwest. Development in the immediate area of T-069 did not appear, however, until the 1953 U.S. Army Mapping Service map, with two buildings 50.0 m southwest on the *makai* (seaward) side of Dillingham Boulevard, several buildings about 180.0 m to the east, Kokea Street 40.0 m to the north, and the canalized Niuhelewai Stream in its modern setting 64.0 m to the northwest.

Previous archaeological investigations in the vicinity of T-069 included, 125.0 m to the northwest, an archaeological literature review with limited subsurface testing in which no historic properties were reported (Pammer and Monahan 2011), and, approximately 85.0 m to the northeast, an archaeological literature and field inspection wherein no historic properties were reported (O'Hare et al. 2010).

**Documentation Limitations:** T-069 was excavated to the coral shelf at a depth of 1.94 mbs, and below the water table at 1.60 mbs. An electric line was encountered at 0.47 mbs in the south wall. The depth of the excavation and rising water table limited documentation of T-069.

**Stratigraphic Summary:** The stratigraphy of T-069 consisted of fill strata overlying natural sediment to base of excavation. Observed strata included modern sod layer (Ia), asphalt (Ib), crushed coral fill (Ic), gravelly sandy loam (Id), silty sand (Ie), silty clay (If), clay (II), and decomposing coral shelf (III). The stratigraphy conformed to the USDA soil survey designation of Fill land (FL).

**Artifacts Discussion:** No artifacts were observed.

**Features Discussion:** No features were observed.

**Terrestrial Faunal Remains Collected During Excavation:** No terrestrial faunal remains were observed.

**Sample Results:** One bulk sediment sample was collected from Stratum II between 1.63-1.94 mbs (2.5 L). The bulk sample was wet-screened and contained charcoal (0.2 g), and naturally deposited Tellinidae *Tellina palatum* (17.1g), Trochidae (2.3g), and Mytilidae *Brachiodontes crebristriatus* (2.0g). The results of the sample analysis indicated that little cultural material was present.

**GPR Discussion:** A review of amplitude slice maps indicated no linear features although an electric line was encountered during excavation. Reflectivity was relatively uniform throughout the grid and decreased with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.25 mbs.

GPR depth profiles for T-069 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 which occurred around 0.10 mbs. No utilities were observed in the profile although an electric line was encountered during excavation. The maximum depth of clean signal return was approximately 0.90 mbs

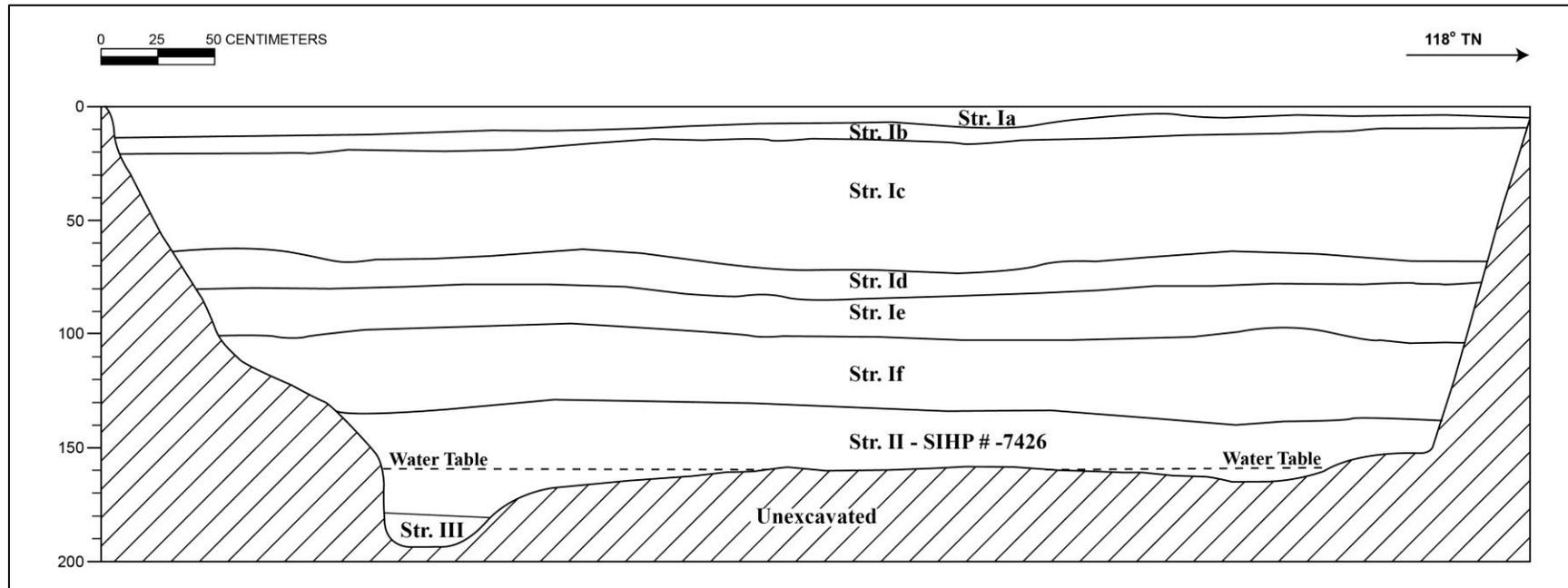
**Summary:** T-069 was excavated to the coral shelf at 1.94 mbs. The stratigraphy of T-069 consisted of fill strata (Ia-If) overlying natural sediment (II-III). The stratigraphy conformed to the USDA soil survey designation of Fill land (FL). The results of the sample analysis indicated that little cultural material was present. Stratum II is considered to be a component of SIHP# 50-80-14-7426 (See Volume I).



T-069 general location, view to west



T-069 northeast profile wall, view to north



T-069 northeast wall profile.

## T-069 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-15	Fill; 10 YR 2/2 (very dark brown); silty loam; structureless, single grain; moist, loose; non-plastic; terrigenous origin; very abrupt, irregular lower boundary; few roots; modern sod
Ib	5-20	Asphalt slab
Ic	10-70	Fill; 10 YR 7/4 (very pale brown); extremely gravelly sand; structureless, single-grain; dry, loose consistency; non-plastic; marine origin; very abrupt, smooth lower boundary; crushed coral fill
Id	65-85	Fill; 10 YR 3/2 (very dark grayish brown); gravelly sandy loam; structureless, single grain; moist, loose consistency; non-plastic; mixed origin; diffuse, wavy lower boundary; few, fine roots
Ie	85-106	Fill; 10 YR 5/3 (brown); silty sand; structureless, single grain; moist, very friable consistency; non-plastic; mixed origin; clear, wavy lower boundary; few, fine roots
If	98-140	Fill; 10 YR 4/3 (brown); silty clay; structureless, massive; moist, firm consistency; plastic; terrigenous origin; diffuse, wavy lower boundary; few, fine roots
II	130-180	Natural; 10 YR 3/1 (very dark gray); clay; structureless, massive; moist, firm consistency; very plastic; mixed origin; very abrupt, smooth lower boundary; few, very fine roots; agricultural wetland sediment; component of SIHP #50-80-14-7426.
III	180-194	Natural; 10 YR 3/6 (dark yellowish brown); extremely gravelly clay sand; structureless, single grain; wet, sticky consistency; non-plastic; marine origin; lower boundary not visible; decomposing coral shelf

### 3.23 Test Excavation 70 (T-070)

<b>Ahupua'a:</b>	Kapālama
<b>LCA:</b>	1034 and 8400:3
<b>TMK#:</b>	1-5-020:003
<b>Elevation Above Sea Level:</b>	1.46 m
<b>UTM:</b>	616942.34 mE, 2358148.9 mN
<b>Max Length/Width/Depth:</b>	3.05 m / 0.90 m / 1.6 mbs
<b>Orientation:</b>	128 / 308° TN
<b>Targeted Project Component:</b>	Utility Relocation
<b>USDA Soil Designation:</b>	Fill land (FL)

**Setting:** Test Excavation #70 (T-070) was located on a sidewalk approximately 65 meters southeast of Dillingham Boulevard and Kokea Street intersection. T-070 was located on property owned by City and County of Honolulu. T-070 was located within 3m of an existing drain line. The excavation was level with the surrounding land surface.

**Summary of Background Research and Land Use:** The natural landscape that surrounds T-070 was demonstrated by the 1883 Baldwin map which shows no development but lies south of the Niuhelewai stream bank. According to Monsarrat's 1897 map of Honolulu, the area surrounding the Niuhelewai stream had been developed into rice fields (*lo'i*) and T-070 was located within recorded LCA's 1034 and 8400:3 awarded to Kapauhi for agricultural development purposes. Between the 1919 and 1933 War Honolulu maps show continued urban development of road and railway construction surrounding T-070 throughout this period. The 1953 U.S. Army Mapping Service map shows the channel being redirected 43.5m northwest from its original course and all *lo'i* have been filled in for urban development.

Previous archaeology of the surrounding area includes two studies. An archaeological literature review with limited subsurface testing was conducted approximately 130 m to the northwest, resulting with no historic properties being reported (Pammer and Monahan 2011). Additionally, approximately 85 m to the northeast, an archaeological literature review and field inspection was conducted with no historic properties being reported (O'Hare et al. 2010).

**Documentation Limitations:** T-070 was excavated to a depth of 1.6 mbs, and below the water table at 1.5 mbs. A drain pipe utility running perpendicular near the center of T-070 prevented shoring which limited documentation.

**Stratigraphic Summary:** The stratigraphy of T-070 consisted of fill strata overlying natural sediment to the base of excavation. Observed strata included concrete (Ia), gravel fill (Ib), crushed coral fill (Ic), re-worked natural alluvium (Id), and remnant alluvial clay sediment (II). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL).

**Artifacts Discussion:** No artifacts were observed.

**Features Discussion:** No features were observed.

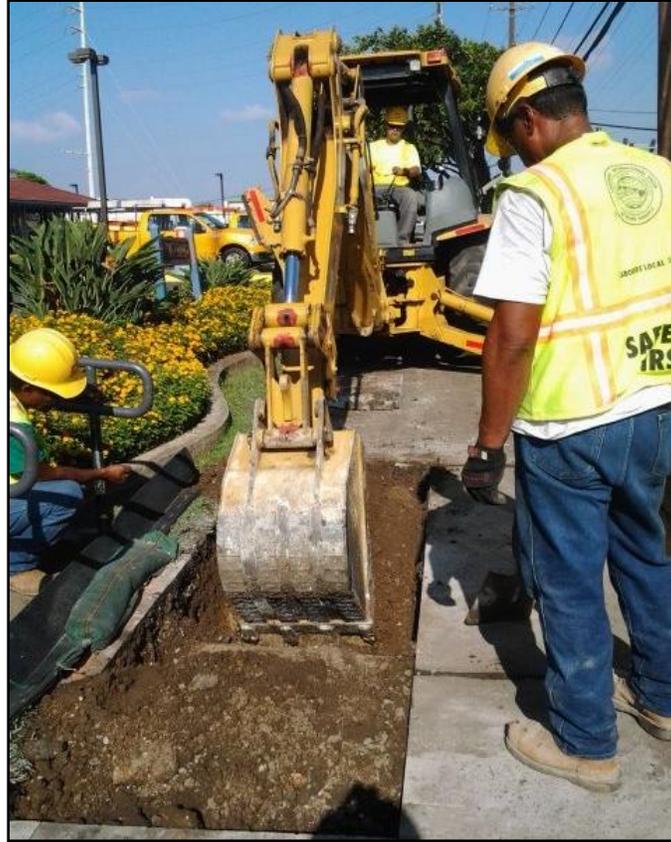
**Terrestrial Faunal Remains Collected During Excavation:** No terrestrial faunal remains were observed.

**Sample Results:** No sample analysis was conducted.

**GPR Discussion:** A review of amplitude slice maps indicated a linear feature which corresponded to the utility pipe that was encountered during excavation. Reflectivity was relatively uniform throughout the grid and decreased with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.50 mbs.

GPR depth profiles for T-070 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 which occurred around 0.20 mbs. An anomaly was observed in the profile and corresponded to the utility that was encountered during excavation. The maximum depth of clean signal return was approximately 0.75 mbs.

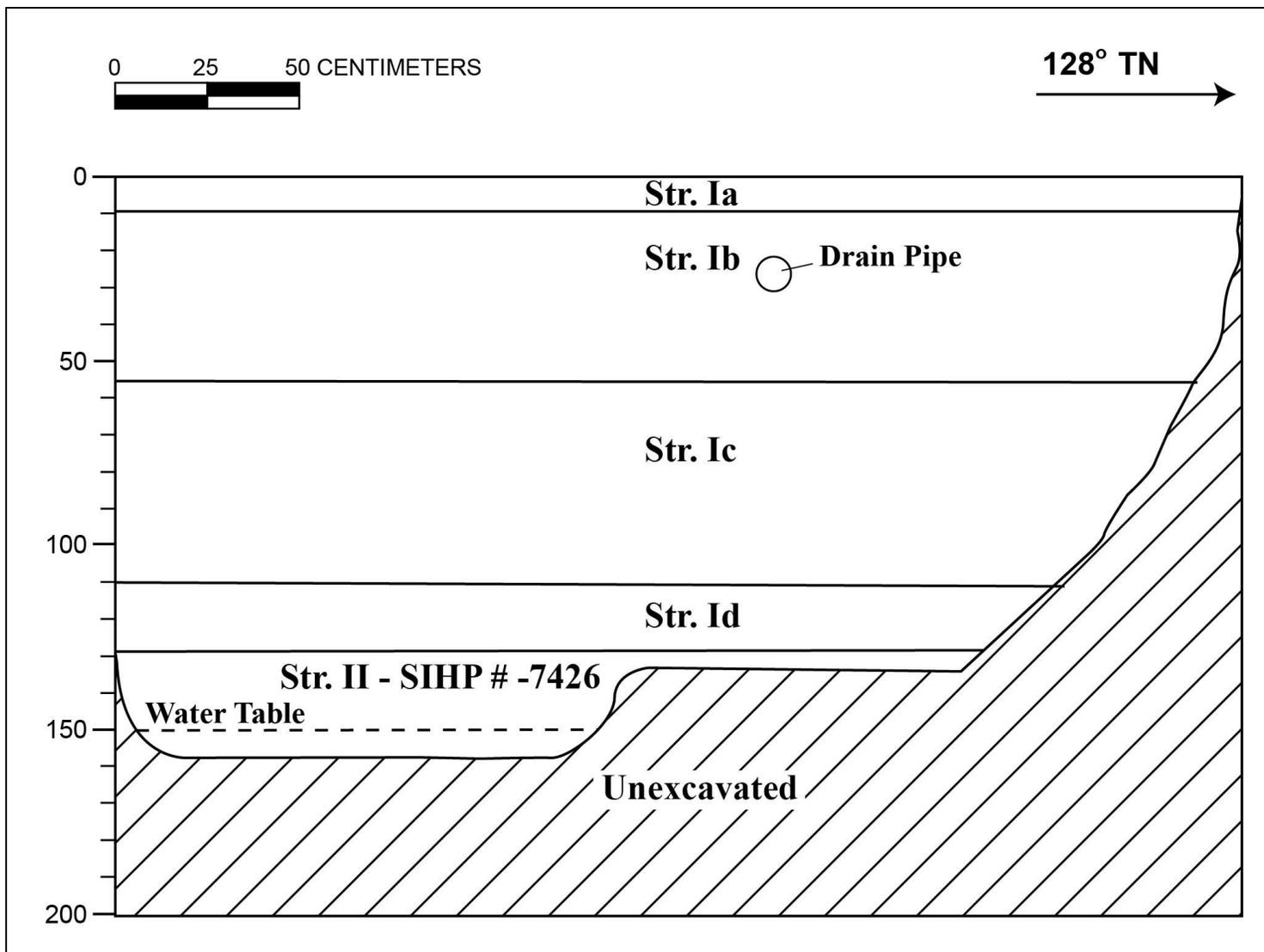
**Summary:** T-070 was excavated to a depth of 1.6 mbs, and below the water table at 1.5 mbs. The Stratigraphy of T-070 consisted of fill strata (Ia-Id) overlying natural sediment (II) to the base of excavation. The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL). Stratum II is considered to be a component of SIHP# 50-80-14-7426 (See Volume I).



T-070 pre-excitation, view to west



T-070 northeast wall profile, view east



T-070 northeast wall profile

## T-070 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-10	Concrete pavement
Ib	10-55	Fill; 10 YR 3/2 (very dark grayish brown); gravelly clay loam weak, fine, crumb structure; moist, friable consistency; slightly plastic; terrigenous origin; abrupt, smooth lower boundary; graded fill material imported for sidewalk parking
Ic	55-108	Fill; 10 YR 5/3 (brown); extremely gravelly coarse sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary; marine fill material loosely laid to raise grade for historic infrastructural development, abundant sea shells
Id	108-128	Fill; 10 YR 3/3 (dark brown); clay; structureless, massive; moist, firm consistency; plastic; terrigenous origin; abrupt, smooth lower boundary; disturbed alluvial mixture with fills above
II	128-160	Natural; GLEY 1 3/1 (very dark greenish gray); clay; structureless, massive; wet, slightly sticky consistency; plastic; terrigenous origin; lower boundary not visible; natural alluvial sediment, considered to be a component of SIHP# 50-80-14-7426

### 3.24 Test Excavation 71 (T-071)

<b>Ahupua'a:</b>	Kapālama
<b>LCA:</b>	591:4
<b>TMK</b>	1-5-015: 008
<b>Elevation:</b>	1.46
<b>UTM:</b>	616956.76 mE, 2358134.86 mN
<b>Max Length/Width/Depth:</b>	3.10 m / 0.95 m / 1.92 mbs
<b>Orientation:</b>	34 / 214° TN
<b>Targeted Project Component:</b>	Station Building
<b>USDA Soil Designation:</b>	Fill land (FL)

**Setting:** Test Excavation 71 (T-071) was located within the CK Auto Repair parking lot on Dillingham Boulevard, approximately 85.0 m southeast of Dillingham Boulevard and Kokea Street intersection. T-071 was located on private property owned by DTC Investments LLC. The excavation surface was level with the surrounding land surface.

**Summary of Background Research and Land Use:** Brown's 1883 Kalihi and Kapālama map placed T-071 within undeveloped natural landscape. T-071 was within LCA 591:4, a 9.64 acre plot awarded to J. Meek. Monsarrat's 1897 map of Honolulu marked the area surrounding the trench as rice fields (*lo'i*) and indicated agricultural developments. The U.S. Army War Department Fire Control map of Honolulu of 1919 showed the disappearance of agricultural lands and urban development between 300.0 to 400.0 m in all directions from T-071. Grid patterns for planned development of the immediate area surrounding T-071 first appeared on the 1933 U.S. Army War Department Fire Control map of Honolulu, with Dillingham Boulevard already constructed in its modern location 10.0 m to the northeast. Development in the immediate area of T-071 did not appear, however, until the 1953 U.S. Army Mapping Service map, with two buildings 40.0 m northwest on the *makai* (seaward) side of Dillingham Boulevard, several buildings about 180.0 m to the east, Kokea Street 40.0 m to the north, and the canalized Niuhelawai Stream in its modern setting 64 m to the northwest.

Previous archaeological investigations in the vicinity of T-071 included two studies. Approximately 150.0 m to the northwest, an archaeological literature review with limited subsurface testing was conducted, wherein no historic properties were reported (Pammer and Monahan 2011). Approximately 115.0 m to the northeast, an archaeological literature review and field inspection was conducted, where no historic properties were reported (O'Hare et al. 2010).

**Documentation Limitations:** T-071 was excavated to the coral shelf at 1.92 mbs, and beneath the water table at 1.9 mbs.

**Stratigraphic Summary:** The stratigraphy of T-071 consisted of fill strata overlying natural sediment to the base of excavation. Observed strata included asphalt (Ia), gravelly sandy silt (Ib), sandy silt loam (Ic), loamy sand (Id), gravelly sandy loam (Ie), sandy clay loam (If), very gravelly silty loam (Ig), gravelly silt loam (Ih), crushed coral (Ii), sandy clay loam (Ij), very

gravelly sand (Ik), silty clay (II), silty clay (III), sandy silty loam (IV). The stratigraphy conformed to the USDA soil survey designation of Fill land (FL).

**Artifacts Discussion:** No artifacts were observed.

**Features Discussion:** No features were observed.

**Terrestrial Faunal Remains Collected During Excavation:** No terrestrial faunal remains were observed.

**Sample Results** Bulk sediment samples were collected from Stratum II at 1.15-1.22 mbs (2.0 L), Stratum III at 1.4-1.55 mbs (3.5 L), and Stratum IV at 1.75-1.85 mbs (1.0 L). All of the bulk samples were wet-screened. The bulk samples collected from Stratum II contained naturally-deposited water rounded shell (0.1g). Stratum III contained charcoal (0.1g). Stratum IV did not contain significant material. The results of sample analysis indicated that little or no cultural material was present.

**GPR Discussion:** A review of amplitude slice maps indicated no linear features although utilities were encountered during excavation. Reflectivity was relatively uniform throughout the grid. A transition from higher reflectivity to lower reflectivity was not observable due to a low depth for the clean signal return.

GPR depth profiles for T-071 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 which occurred around 0.10 mbs. No utilities were observed in the profile however abandoned utilities were revealed in the excavation. The maximum depth of clean signal return was approximately 0.50 mbs

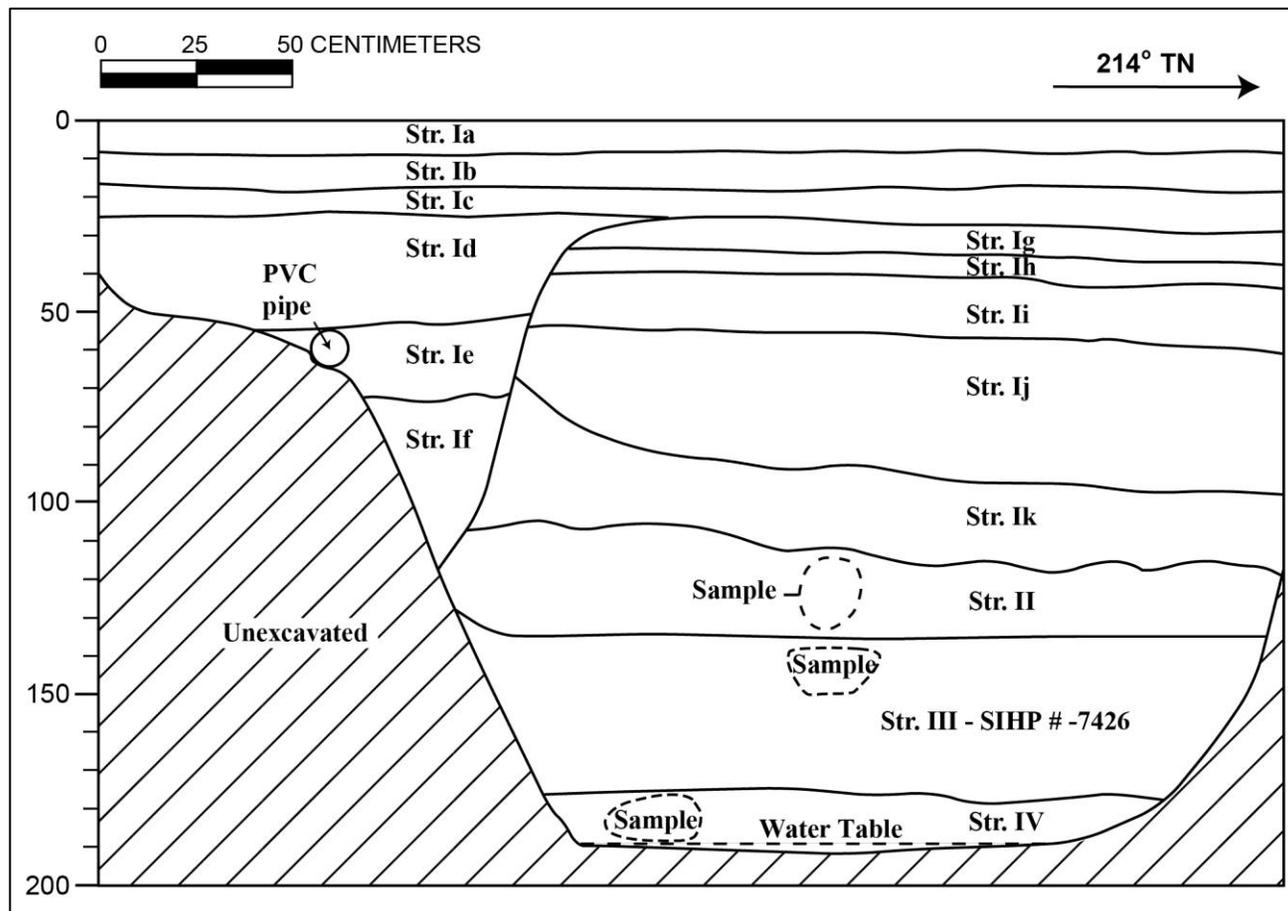
**Summary:** T-071 was excavated to the coral shelf at 1.92 mbs, and beneath the water table at 1.9 mbs. The stratigraphy of T-071 consisted of fill strata (Ia-Ik) overlying natural sediment (II-IV). The stratigraphy conformed to the USDA soil survey designation of Fill land (FL). The results of sample analysis indicated that little or no cultural material was present within Stratum II-IV. Stratum III is considered to be a component of SIHP# 50-80-14-7426 (see Volume I).



T-071 general location, view to the east



T-071 southeast wall profile



T-071 southeast wall profile

## T-071 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-10	Asphalt
Ib	9-17	Fill; 7.5 YR 8/2 (dark brown); gravelly sandy silt loam; weak, fine, crumb structure; moist, very friable consistency; non-plastic; terrigenous origin; clear, smooth lower boundary; base course
Ic	17-25	Fill; 10 YR 5/6 (yellowish brown) with common mottles of 10 YR 4/2 (dark gray brown); sandy silt loam; weak, fine, crumb structure; moist, very friable consistency; slightly plastic; mixed origin; clear to diffuse, smooth lower boundary; with <15%, some coral and basalt gravels
Id	25-55	Fill; 10 YR 5/3-5/4 (brown); loamy sand; weak, fine, crumb structure; moist, very friable consistency; non-plastic; mixed origin; clear, smooth lower boundary; coral, shell, and gravel inclusions
Ie	50-75	Fill; 10 YR 4/3 (brown); gravelly sandy loam; weak, fine, crumb structure; moist, very friable consistency; non-plastic; mixed origin; clear, smooth lower boundary; few, fine roots
If	72-115	Fill; 10 YR 4/3 (dark gray brown); sandy clay loam; moderate, blocky, crumb structure; moist, friable consistency; plastic; mixed origin; clear, smooth lower boundary; few, fine roots; some coral and basalt gravels, mix of underlying clay (II) and fill (clumps of II)
Ig	25-37	Fill; 10 YR 2/2 (very dark brown); very gravelly silty loam; weak, fine, crumb structure; moist, very friable consistency; non-plastic; terrigenous origin; clear, smooth lower boundary; abundant small basalt gravels
Ih	35-45	Fill; 7.5 YR 5/3-4/3 (brown); gravelly silt loam; weak, fine, blocky, crumb structure; moist, very friable consistency; non-plastic; terrigenous origin; clear, smooth lower boundary
Ii	40-60	Fill; 10 YR 7/2 (light gray); extremely gravelly sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; clear, smooth lower boundary; contained 1-5 mm lens of brownish silt loam, crushed coral fill
Ij	55-96	Fill; 10 YR 4/2 (dark grayish brown); sandy clay loam; moderate, fine, crumb structure; moist, friable consistency; plastic; terrigenous origin; clear, smooth lower boundary; few, fine roots; contained large area of rusted wires and platy object; contained small chunks of III, large wood piece (possible root severed by adjacent water line)
Ik	65-116	Fill; 10 YR 6/3 (pale brown); very gravelly sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; clear, wavy lower boundary; coral inclusions
II	105-135	Natural; 10 YR 4/3 (brown); silty clay; structureless, single-grain; moist, firm consistency; very plastic; terrigenous origin; clear, smooth lower boundary; few, very fine to medium roots; possible natural clay; some fine, oxidized root stains
III	135-180	Natural; 10 YR 4/1 (dark bluish gray); silty clay; structureless, single-

		grain; moist, firm consistency; very plastic; terrigenous origin; smooth lower boundary; few, very fine roots; contains some observed charcoal flecks, streaks (tried to get in sample); natural wetland clay with fine roots, considered to be a component of SIHP# 50-80-14-7426
IV	175-192	Natural; GLEY 2.5/1(greenish black); sandy silty loam; moderate, fine, blocky structure; wet, slightly sticky consistency; non-plastic; mixed origin; lower boundary not visible; common, very fine to fine roots; abundant black organics, with coral and shells, decomposing coral shelf

### 3.25 Test Excavation 72 (T-072)

<b>Ahupua'a:</b>	Kapālama
<b>LCA:</b>	591:4
<b>TMK#:</b>	1-5-015 [Plat]
<b>Elevation Above Sea Level:</b>	1.47 m
<b>UTM:</b>	616982.07 mE, 2358130.88 mN
<b>Max Length/Width/Depth:</b>	6.1 m / 0.75 m / 1.35 mbs
<b>Orientation:</b>	127 / 307° TN
<b>Targeted Project Component:</b>	Utility Relocation
<b>USDA Soil Designation:</b>	Fill land (FL)

**Setting:** Test Excavation 72 (T-072) was located within the *makai* lane of the southeast-bound lane of Dillingham Boulevard, approximately 130.0 m east of the Niuhelewai stream. Utilities located near T-072 included a water line 3.0 m southwest, and an AT&T line 4.8 m southwest. The excavation surface was level with the surrounding land surface.

**Summary of Background Research and Land Use:** According to Brown's 1885 map of Kalihi and Kapālama, Test Excavation 72 was located within LCA 591 which was a 9.58 acre lot awarded to J. Meek. No land use description was given. Several surrounding LCAs were described as having taro *lo'i*, pastures (*kula* land), and *loko* (fishpond). T-072 was located 530.0 m northwest of the Kūwili Fishpond SIHP # 50-80-14-5368. According to Monsarrat's 1897 map of Honolulu, T-072 was located within a rice field. By 1919, Kapālama had some urban development, but the area immediately surrounding T-072 was still largely undeveloped, according to the 1919 U.S. Army War Department Fire Control map. According to the 1933 U.S. Army War Department Fire Control map, heavy urban development had occurred and a large roadway had been constructed where T-072 was located. Development continued in the mid-twentieth century, according to the 1943 U.S. Army War Department and the 1953 U.S. Army Mapping Service maps.

Very few archaeological studies have been conducted in Kapālama near the East Kapālama Zone. However, three studies have been conducted in areas adjacent to the East Kapālama Zone. Tulchin and Hammatt (2013) was a current archaeological inventory survey that includes some sub-surface testing for Kamehameha Schools. Pammer and Monahan (2011) performed an archaeological literature review and field inspection with limited subsurface testing for the Kapālama Shopping Center Redevelopment Project. No historic properties were identified, however *lo'i* were observed beneath fill layers. O'Hare, Shideler, and Hammatt (2010) performed an archaeological literature review and field inspection for the Honolulu Community College Advanced Technology Training Center Project. No subsurface testing was conducted for this study. Several studies were conducted in the vicinity of the East Kapālama Zone (Dunn, Kalima, and Goodfellow 1991, Jourdan 1994, and Moore and Kennedy 1999) in which human skeletal remains were identified (SIHP #s 50-80-14-3373, 50-80-14-4929, and 50-80-14-5581, respectively). In all three cases, the remains were believed to be post-Contact. All of the studies

were located outside of the East Kapālama Zone corridor. An additional cultural resource was identified adjacent to and to the southeast of the East Kapālama Zone (the Kūwili Fishpond SIHP # 50-80-14-5368)

**Documentation Limitations:** T-072 was excavated to a depth of 1.36 mbs and beneath the water table at 1.32 mbs. A large concrete utility jacket on the south end of T-072 prevented further excavation. Only the north quarter was able to be excavated and documented. A concrete utility jacket along the northeast wall was encountered at 0.66 mbs, which required hand-excavation of the adjacent area to the water table.

**Stratigraphic Summary:** The stratigraphy of T-072 consisted of fully fill strata to the base of excavation. Observed strata included asphalt (Ia), basalt cobble base course fill (Ib), crushed coral fill (Ic). The stratigraphy conformed to the USDA soil survey designation of Fill land (FL).

**Artifacts Discussion:** No artifacts were observed.

**Features Discussion:** No features were observed.

**Terrestrial Faunal Remains Collected During Excavation:** No terrestrial faunal remains were observed.

**Sample Results:** No sample analysis was conducted.

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

GPR depth profiles for T-072 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 which occurred around 0.15 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 1.00 mbs

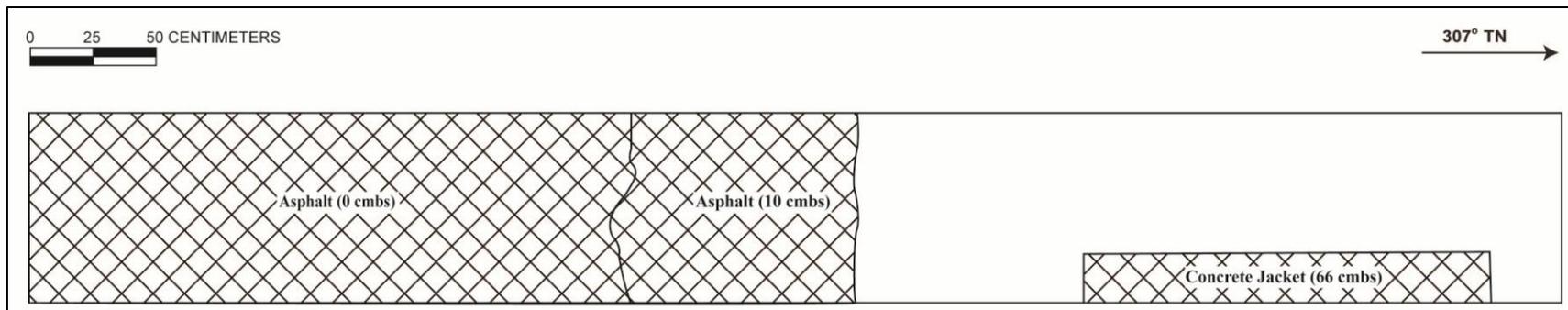
**Summary:** T-072 was excavated to a depth of 1.36 mbs, and beneath the water table at 1.32 mbs. The stratigraphy of T-072 consisted of fill strata (Ia-Ic) to the base of excavation. The stratigraphy conformed to the USDA soil survey designation of Fill land (FL). No natural sediment was observed. T-072 is located within the boundary of SIHP# 50-80-14-7426 (see Volume I).



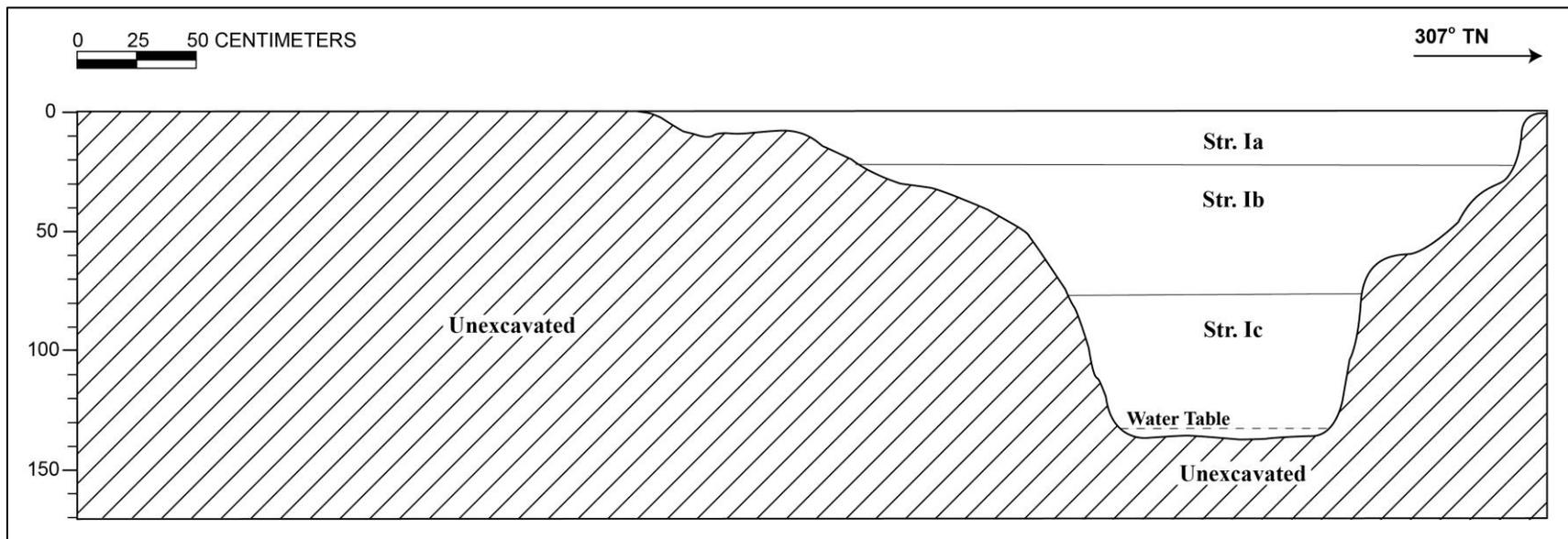
T-072 general location, view to the southeast



T-072 southwest profile wall



T-072 plan view



T-072 southwest wall profile

## T-072 Stratigraphic Description

<b>Stratum</b>	<b>Depth (cmbs)</b>	<b>Description</b>
Ia	0-20	Asphalt
Ib	20-75	Fill; 10 YR 3/1 (very dark gray); basalt cobbles, small boulder; structureless, single-grain; dry, loose consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary; common, very fine to fine roots; imported fill basalt cobble to small boulder
Ic	75-136	Fill; 2.5 YR 7/2 (light gray); extremely gravelly sand; structureless, single-grain; moist, loose consistency; non-plastic; terrigenous origin; lower boundary not visible; crushed coral fill to water table

### 3.26 Test Excavation 73 (T-073)

<b>Ahupua'a:</b>	Kapālama
<b>LCA:</b>	N/A
<b>TMK#:</b>	1-5-015 [Plat]
<b>Elevation Above Sea Level:</b>	1.47 m
<b>UTM:</b>	617063.66 mE, 2358096.07 mN
<b>Max Length/Width/Depth:</b>	7.35 m / 0.70 m / 2.15 mbs
<b>Orientation:</b>	110 / 290° TN
<b>Targeted Project Component:</b>	Utility relocation (Electric Line)
<b>USDA Soil Designation:</b>	Fill land (FL)

**Setting:** Test Excavation 73 (T-073) was located approximately 151.0 meters northwest of Dillingham Boulevard and Alakawa Street intersection, within Dillingham Boulevard. T-073 was located on property owned by City and County of Honolulu. The excavation surface was level with the surrounding land surface.

**Summary of Background Research and Land Use:** Brown's 1885 map of Kalihi and Kapālama indicated that T-073 was located within government land surrounded by multiple LCAs. W.A. Wall's 1887 map of Honolulu indicated that T-073 was located within a marsh/wetland environment with Kūwili Fishpond approximately 4.4 m southeast of T-073. Monsarrat's 1897 map of Honolulu indicated the area surrounding area of T-073 was within rice fields and 1.4 m east of a stream. The beginning of urban development was shown approximately 2.0 m northeast of T-073. The 1953 U.S. Army Mapping Service map indicated T-073 located within newly developed Dillingham Boulevard.

T-073 was not located within an LCA, however, was within close proximity to multiple LCAs including LCA 591 awarded to J. Meek approximately 5.7 m west of T-073. LCA 1053 awarded to Kahenawai which was approximately 32.2 m northeast of T-073, and LCA 11056 awarded to Maui which was roughly 23.7 m southeast of T-073.

**Documentation Limitations:** T-073 was excavated to a depth of 2.15 mbs, and beneath the water table at 1.85 mbs. The central portion of T-073 remained unexcavated in an effort to stabilize the excavation sidewalls. A copper utility pipe located at the east end of T-073 also limited excavation.

**Stratigraphic Summary:** The stratigraphy of T-073 consisted of fill strata overlying natural sediment to the base of excavation. Observed strata included asphalt (Ia), extremely cobbly silty sand (Ib), stony loamy clay (Ic), extremely cobbly silty sand (Id), gravelly crushed coralline sand (Ie), clay (If), and natural clay (II). The stratigraphy conformed to the USDA soil survey designation of Fill land (FL).

**Artifacts Discussion:** One artifact was collected from the backdirt that was considered to be associated with Stratum II. The artifact included a single milled wood plank fragment (Acc. # 073-A-1). The artifact lacked any datable attributes.

**Features Discussion:** No features were observed.

**Terrestrial Faunal Remains Collected During Excavation:** No terrestrial faunal remains were observed.

**Sample Results:** A total of three bulk samples were collected from within T-073 including a sample from the Stratum If/II interface backdirt pile (2.5 L), Stratum II between 1.51 and 1.6 mbs (2.5 L), and Stratum II between 1.57 and 1.68 mbs (3.5 L). The sediment samples were wet-screened. The bulk sediment sample collected from Stratum If/II interface contained charcoal (0.1g), and terrestrial snail shells (3.5g). The bulk sediment sample collected from Stratum II (1.51-1.6 mbs) contained marine and/or terrestrial snail shells (0.4g). The bulk sediment sample collected from Stratum II (1.57-1.68 mbs) contained charcoal (0.2g), and burned or carbonized *kukui* nut shell (0.2g). The results of sample analysis indicated the presence of terrestrial organic content within Stratum II but no significant material within the Stratum If/II interface.

**GPR Discussion:** A review of amplitude slice maps indicated no linear features although a water line was encountered during excavation. Reflectivity was relatively uniform throughout the grid and decreased with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.25 mbs.

GPR depth profiles for T-073 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 which occurred around 0.15 mbs. An anomaly was observed in the profile and corresponded to the water line encountered during excavation. The maximum depth of clean signal return was approximately 0.85 mbs

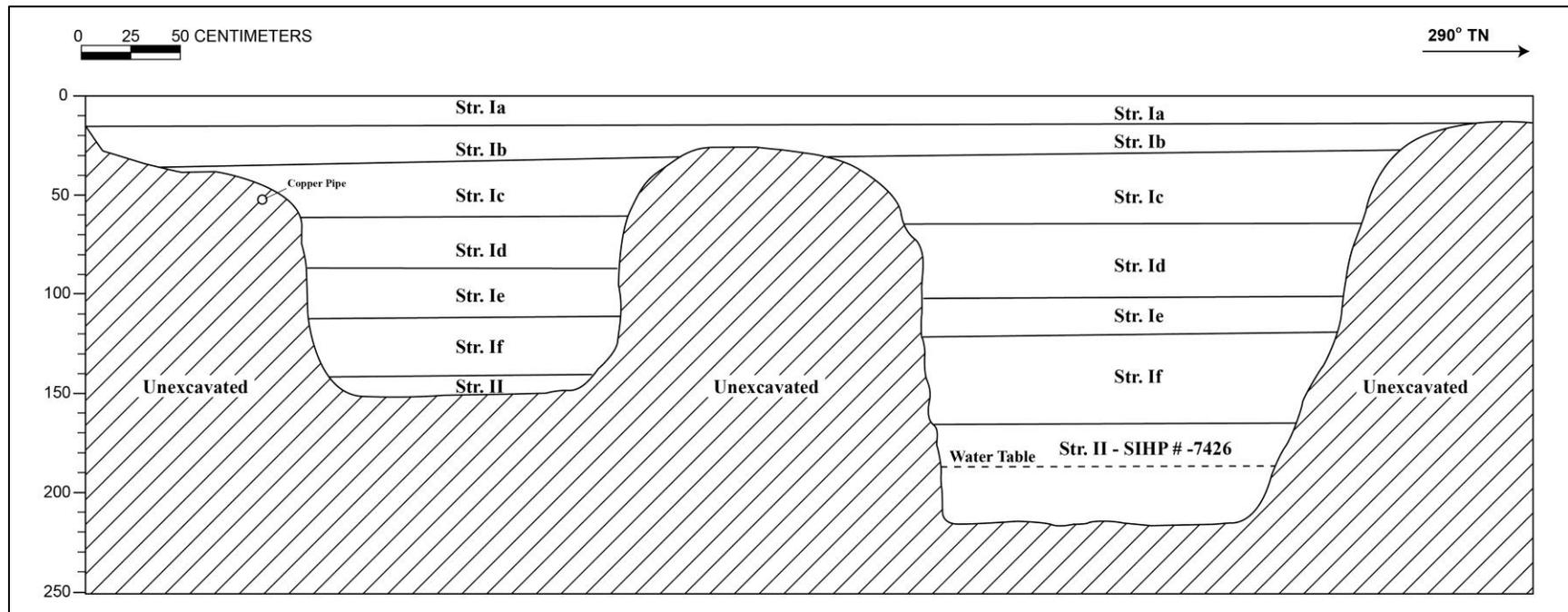
**Summary:** T-073 was excavated to a depth of 2.15 mbs, and beneath the water table 1.85 mbs. The stratigraphy of T-073 consisted of fill strata (Ia-If) overlying natural sediment (II) to the base of excavation. The stratigraphy conformed to the USDA soil survey designation of Fill land (FL). One artifact was collected from the backdirt that was considered to be associated with Stratum II. The artifact included a single milled wood plank fragment (Acc. # 073-A-1). The artifact lacked any datable attributes. A total of three bulk samples were collected from within T-073 including a sample from the Stratum If/II interface backdirt pile (2.5 L), Stratum II between 1.51 and 1.6 mbs (2.5 L), and Stratum II between 1.57 and 1.68 mbs (3.5 L). The results of sample analysis indicated the presence of terrestrial organic content within Stratum II but no significant material within the Stratum If/II interface. Stratum II is considered to be a component of SIHP# 50-80-14-7426 (see Volume I).



T-073 general location, view to north



T-073 southwest wall profile, view to west



T-073 south wall profile

## T-073 Stratigraphic Description

<b>Stratum</b>	<b>Depth (cmbs)</b>	<b>Description</b>
Ia	0-16	Asphalt
Ib	14-35	Fill; 10 YR 3/2 (very dark grayish brown); extremely cobbly silty sand; structureless, single-grain; moist, loose consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary; surge rock, manufactured basalt cobbles 90%; base course
Ic	30-60	Fill; 10 YR 4/2 (dark grayish brown); stony loamy clay; structureless, single-grain; moist, very friable consistency; slightly plastic; terrigenous origin; clear, smooth lower boundary; with basalt, boulders 50%
Id	60-100	Fill; 10 YR 2/2 (very dark brown); extremely gravelly sandy clay; structureless, massive; moist, firm consistency; slightly plastic; terrigenous origin; abrupt, smooth lower boundary; imported fill material
Ie	85-120	Fill; 10 YR 5/4 (light yellowish brown); gravelly crushed coralline sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary
If	110-155	Fill; 10 YR 4/1 (dark gray); clay; structureless, massive; wet, very sticky consistency; very plastic; terrigenous origin; abrupt, smooth lower boundary; contained milled wood plank; pump dredge material
II	140-215	Natural, 10 YR 2/1 (black); clay; massive structure; wet, sticky consistency; plastic; terrigenous origin; lower boundary not visible; contained milled wood planks; buried A-horizon; marsh/wetlands layer; organic clay, considered to be a component of SIHP# 50-80-14-7426

### 3.27 Test Excavation 74 (T-074)

<b>Ahupua'a:</b>	Kapālama
<b>LCA:</b>	11056
<b>TMK#:</b>	1-5-017 [Plat]
<b>Elevation Above Sea Level:</b>	1.45 m
<b>UTM:</b>	617108.15 mE, 2358065.86 mN
<b>Max Length/Width/Depth:</b>	6.1 m / 0.73 m / 2.06 mbs
<b>Orientation:</b>	300 / 120° TN
<b>Targeted Project Component:</b>	Utility Relocation
<b>USDA Soil Designation:</b>	Fill land (FL)

**Setting:** Test Excavation 74 (T-074) was located on City and County of Honolulu owned property in the middle of Dillingham Boulevard roadcut, 96 m west of the Alakawa Street intersection, level with the surrounding roadcut surface and roughly 255 m southeast of Niuhelewai Stream (now known as Kapālama Canal). Utilities within the vicinity include one water line 4.5m south of the location of T-074.

**Summary of Background Research and Land Use:** Test Excavation 74 was located within LCA 11056, where four *lo'i* at Kaukahoku were awarded to Maui. Several other surrounding LCAs were described as having taro *lo'i*, pastures (*kula* land), and *loko* (fishpond) in neighboring areas. T-074 was located 400 m northwest of the Kūwili Fishpond SIHP # 50-80-14-5368. According to Monsarrat's 1897 map of Honolulu, T-074 was located within a rice field. By 1919, Kapālama had some urban development, but the area immediately surrounding T-074 was still undeveloped, according to the 1919 U.S. Army War Department Fire Control map. According to the 1933 U.S. Army War Department Fire Control map, heavy urban development had occurred and a large roadway had been constructed where T-074 was located. Development continued in the mid-twentieth century, according to the 1943 U.S. Army War Department map and the 1953 U.S. Army Mapping Service map.

Previous archaeology in the area included a post-Contact burial (SIHP 50-80-14-04929) located approximately 330 m northeast of T-074, which contained the human remains of one individual (Jourdan 1994). A second post-Contact burial site (SIHP 50-80-14-03373) was located approximately 400 m east of T-074 and contained human remains of at least two adults (Dunn et al. 1991). More recent archaeology included a 2010 literature review and field inspection that resulted in a recommendation for an archaeological monitoring program in the area (O'Hare et al. 2010).

**Documentation Limitations:** T-074 was excavated to a maximum depth of 2.06 mbs, and beneath the water table at 1.7 mbs. There were no factors that limited excavation.

**Stratigraphic Summary:** The stratigraphy of T-074 consisted of fill to beneath the water table. Observed strata included asphalt (Ia), extremely gravelly sand base course (Ib), and gravelly sandy clay containing modern debris including caution tape and Styrofoam (Ic). The stratigraphy conformed to the USDA soil survey designation of Fill land (FL).

**Artifacts Discussion:** No artifacts were observed.

**Features Discussion:** No features were observed.

**Terrestrial Faunal Remains Collected During Excavation:** No terrestrial faunal remains were observed.

**Sample Results** No sample analysis was conducted.

**GPR Discussion:** A review of amplitude slice maps indicated a linear feature located outside the excavation boundaries. Reflectivity was relatively uniform throughout the grid and decreased with depth except for the linear feature. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.75 mbs.

GPR depth profiles for T-074 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 which occurred around 0.20 mbs. No utilities were observed in the profile. The maximum depth of clean signal return was approximately 0.70 mbs.

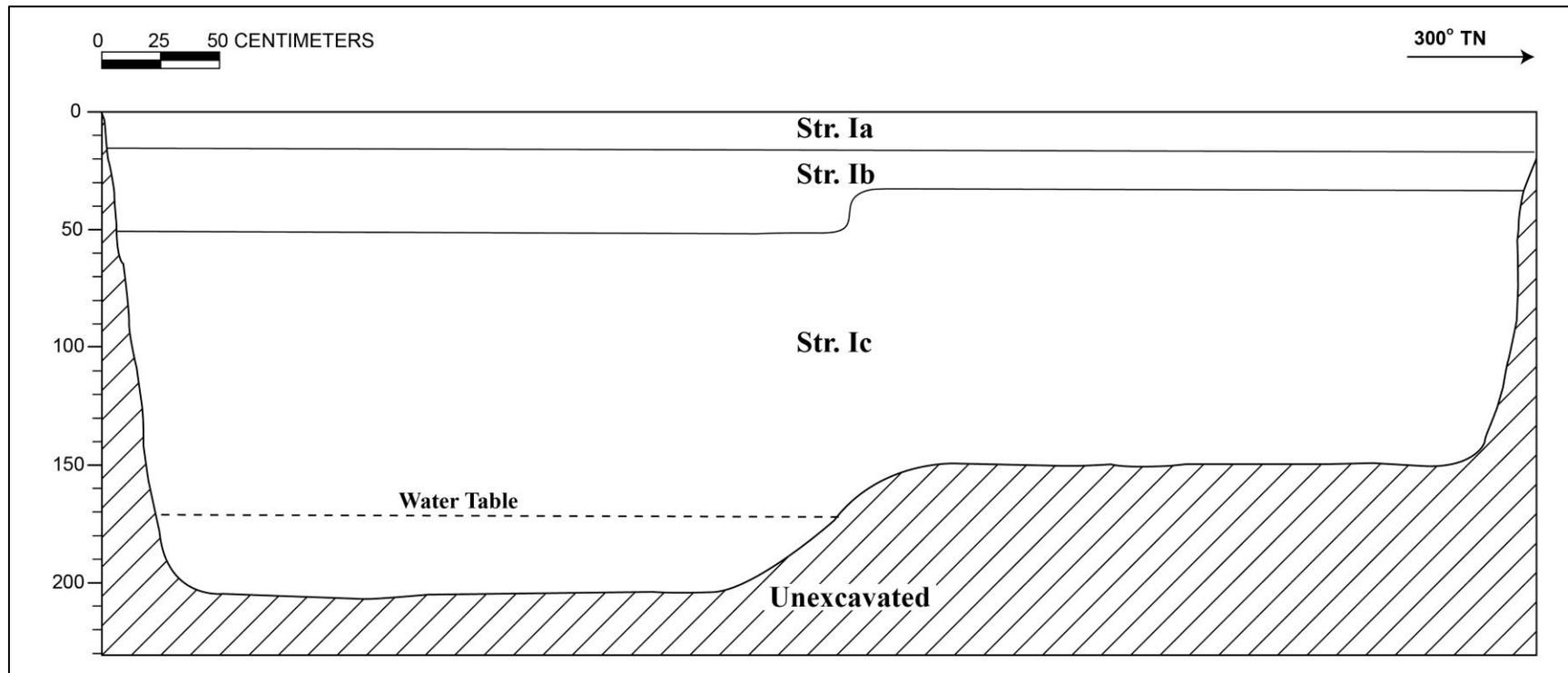
**Summary:** T-074 was excavated to a maximum depth of 2.06 mbs, and beneath the water table at 1.7 mbs. The stratigraphy of T-074 consisted of fill (Ia-Ic) to beneath the water table. The stratigraphy conformed to the USDA soil survey designation of Fill land (FL). No natural sediment was encountered. T-074 was located within the boundary of SIHP# 50-80-14-7426 (see Volume I).



T-074 general location, view to west



T-074 southwest wall profile



T-074 southwest wall profile

## T-074 Stratigraphic Description

<b>Stratum</b>	<b>Depth (cmts)</b>	<b>Description</b>
Ia	0-17	Asphalt
Ib	17-52	Fill; 10 YR 5/1 (gray); extremely gravelly sand; structureless, single-grain; dry, weakly coherent consistency; non-plastic; terrigenous origin; abrupt lower boundary; basalt gravel base course
Ic	34-206	Fill; 5 YR 3/2 (dark reddish brown); gravelly sandy clay; structureless, massive; moist, very friable consistency; plastic; mixed origins; lower boundary not visible; contained caution tape, PVC, Styrofoam, pieces of coral, wood

### 3.28 Test Excavation 75 (T-075)

<b>Ahupua'a:</b>	Kapālama
<b>LCA:</b>	11056, 4034:2
<b>TMK#:</b>	15017 [Plat]
<b>Elevation Above Sea Level:</b>	1.39 m
<b>UTM:</b>	617147.0828 mE, 2358042.690 mN
<b>Max Length/Width/Depth:</b>	6.10 m / 0.73 m / 1.95 mbs
<b>Orientation:</b>	120 / 300° TN
<b>Targeted Project Component:</b>	Utility Relocation
<b>USDA Soil Designation:</b>	Fill land (FL)

**Setting:** Test Excavation 75 (T-075) was located in a roadcut in the middle of Dillingham Boulevard, 15 m northwest of the intersection with Alakawa Street, and approximately 275 m southeast of the Niuhelewai Stream (now known as Kapālama Canal). T-075 was located on property owned by the City and County of Honolulu. Utilities within the area include a water line 2.5 m south and a sewer line 4.5 m south of T-075. The excavation surface was level with the surrounding area.

**Summary of Background Research and Land Use:** Test Excavation 75 was located within LCA 11056, which was awarded to Maui, and it was also partially located within LCA 4034:2, which was awarded to Robert Davis; both parcels of land contained taro *lo'i*. T-075 was located 340 m northwest of the Kūwili Fishpond (SIHP# 50-80-14-5368) and 415 m north from the former shoreline. The W.A. Wall's 1887 map of Honolulu indicated that there was a reform school 305 m to the northeast, a road to the Insane Asylum 380 m to northeast, and the O'ahu Jail 680 m to the southeast. Development was sparse in the area and included a few roads and buildings. According to Monsarrat's 1897 map of Honolulu, the Kūwili Fishpond area became mostly rice fields, including the area of T-075, and the OR&L was constructed approximately 137.0 m to the east. The 1919 U.S. Army War Department Fire Control map of Honolulu indicated that urban development continued to steadily increase but, the area immediately surrounding T-075 was still undeveloped. According to the 1933 U.S. Army War Department Fire Control map, heavy urban development had occurred and a large roadway had been constructed where T-075 was located. Two railroad lines were constructed southwest and northeast of T-075 and further development continued into the mid-twentieth century (1933 and 1943 U.S. Army War Department maps, 1953 U.S. Army Mapping Service map).

Previous archaeology in the area included a post-Contact burial site (SIHP 50-80-14-04929) located approximately 300 m northeast of T-075 that contained the human remains of one individual (Jourdan 1994). A second post-Contact burial site (SIHP 50-80-14-03373) was located approximately 290 m northeast of T-075 and contained human remains of at least two adults (Dunn et al. 1991). More recent archaeology included a 2010 literature review and field inspection that resulted in a recommendation for an archaeological monitoring program in the area (O'Hare et al. 2010).

**Documentation Limitations:** T-075 was excavated to a depth of 1.95 mbs, and beneath the water table at 1.87 mbs. There were no specific factors that limited documentation of T-075.

**Stratigraphic Summary:** The stratigraphy of T-075 consisted of several fill layers overlying natural wetland sediment. Observed strata included asphalt (Ia), cobbly sandy loam base course (Ib), and hydraulic fill silt (Ic), sandy loam or silt loam (Id), and clay (Ie), overlying natural silty clay wetland sediment (IIa and IIb). The hydraulic fill layers were used for land-reclamation to fill in the Kūwili Fishpond (SIHP# 50-80-14-5368) and surrounding area. The stratigraphy conformed to the USDA soil survey designation of Fill land (FL).

**Artifacts Discussion:** No artifacts were observed.

**Features Discussion:** No features were observed.

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

**Sample Results:** A total of six bulk sediment samples were collected from Stratum IIa and IIb (see profile). The sediment samples were wet-screened. Three samples were collected from Stratum IIa between 1.53-1.68 mbs (4 L total) and 1.58-1.68 mbs (2 L). Three samples were collected from Stratum IIb at 1.68-1.95 mbs (8 L total). Reference samples were also collected from the fill strata (Ic-Ie). No sample analysis was conducted for the fill material samples (Ic-Ie). The bulk sample collected from Stratum IIa at 1.53-1.68 mbs contained charcoal (0.2 g), coal or slag (0.3 g), and a fish bone fragment (0.1 g). The sample from Stratum IIa at 1.58-1.68 mbs contained charcoal (<0.2g), non-midden shells (2.4g), and wood fragments (2.7g). The bulk sample collected from Stratum IIb contained charcoal (3.4 g), bivalve fragments (0.1 g), and small root or wood fibers (0.4 g). The analysis of bulk samples collected from Stratum IIa and IIb supported the identification of the natural sediments as a wetland deposit.

The bivalve fragments collected from Stratum IIb were submitted for further identification. The identification of *M. tuberculata* suggested a fresh- or brackish water environment indicating permanent water.

The charcoal (3.4 g) collected from the bulk sediment sample of Stratum IIb was submitted for wood taxa identification. The analysis of the charcoal identified two native tree specimens, 'ohi'a lehua (cf. *Metrosideros polymorpha*) and coconut (cf. *Cocos nucifera*) and one historically-introduced tree (conifer). The results of wood taxa identification indicated the presence of both native and historically-introduced tree species within Stratum IIb.

**GPR Discussion:** A review of amplitude slice maps indicated no linear features that might have indicated the presence of utilities. Reflectivity was relatively uniform throughout the grid and decreased with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.50 mbs.

GPR depth profiles for T-075 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, which occurred around 0.15 mbs. No utilities were observed in the profile. The maximum depth of clean signal return was approximately 0.75 mbs.

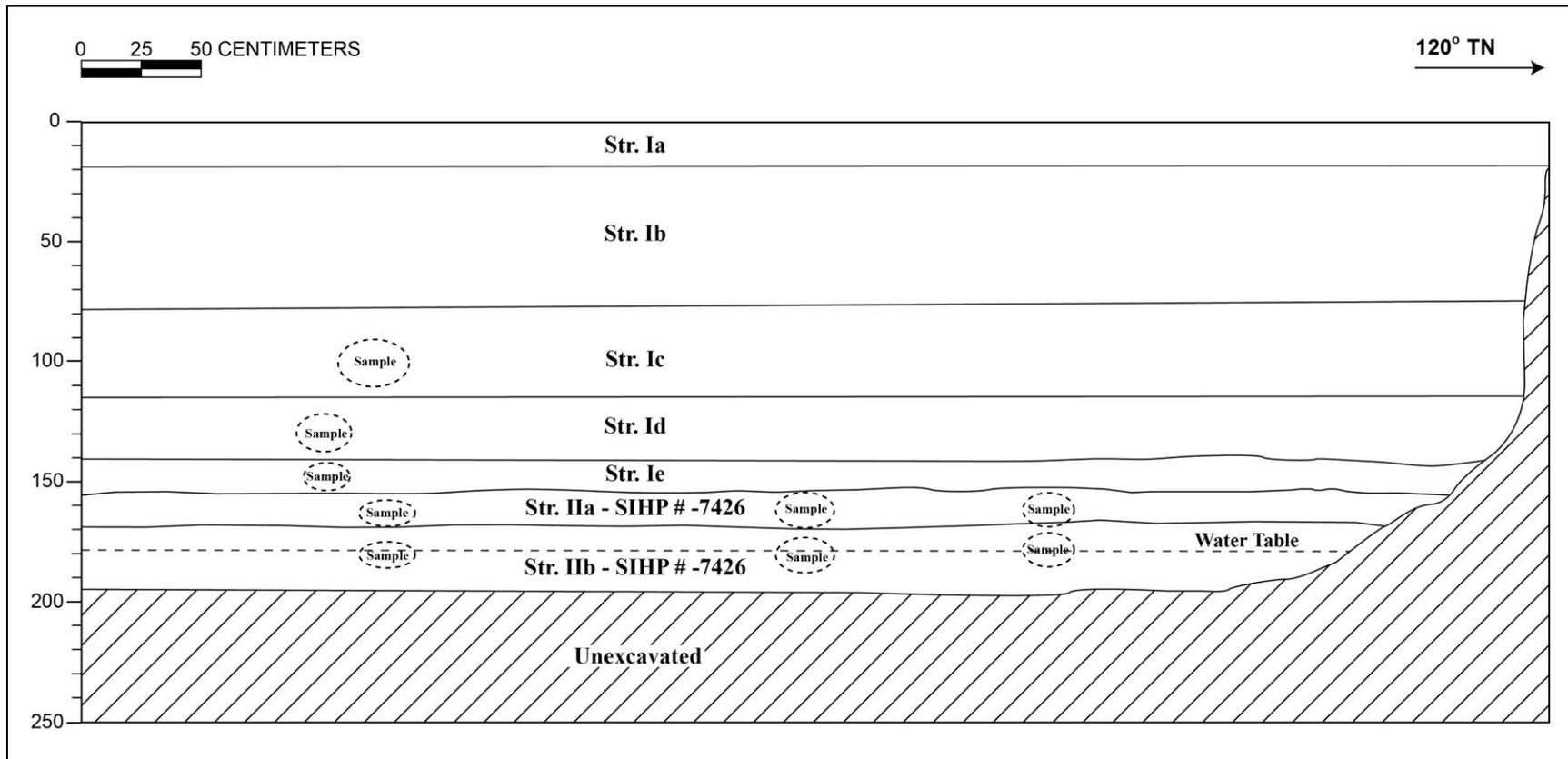
**Summary:** T-075 was excavated to a depth of 1.95 mbs and beneath the water table at 1.87 mbs. The stratigraphy of T-075 consisted of several fill strata (Ia-Ie) overlying natural wetland sediment (IIa and IIb). The stratigraphy conformed to the USDA soil survey designation of Fill land (FL). A total of six bulk sediment samples were collected from Stratum IIa and IIb. Sample analysis of bulk sediment samples collected from Stratum IIa and Stratum IIb supported the identification of the natural sediments as a wetland deposit. The bivalve fragments collected from Stratum IIb were submitted for further identification. The identification of *M. tuberculata* suggested a fresh- or brackish water environment indicating permanent water. The results of wood taxa identification indicated the presence of both native and historically-introduced tree species within Stratum IIb. Stratum IIa and IIb are considered a component of SIHP# 50-80-14-7426 (see Volume I).



T-075 general location, view to southwest



T-075 northeast profile wall, view to east



T-075 northeast wall profile

## T-075 Stratigraphic Description of northeast Profile

Stratum	Depth (cmbs)	Description
Ia	0-18	Asphalt; road surface
Ib	18-77	Fill; 10 YR 5/2 (grayish brown); very gravelly cobbly sandy loam; structureless, massive; moist, firm consistency; non-plastic; terrigenous origin; very abrupt, smooth lower boundary; contained manufactured basalt gravels and coral gravels and cobbles; road surface base course, mix of basalt and coral gravel
Ic	77-115	Fill; Gley 2 6/10B (bluish gray); silt; structureless, massive; moist, friable consistency; non-plastic; marine origins; very abrupt, smooth lower boundary; pump dredge sediment fill layer with micro stratigraphy
Id	115-140	Fill; Gley 1 4/5G (greenish gray); alternating bands of sandy (very fine) loam and silt loam (0.5-1.5 m thick); structureless, massive; moist, very friable consistency; slightly plastic; marine origins; very abrupt, smooth lower boundary; pump dredge sediment fill layer with clear micro stratigraphy layers, laminate imbedded silt loam and very fine sandy loam
Ie	140-153	Fill; Gley 2 6/10B (bluish gray); clay; structureless, massive; moist, firm consistency; very plastic; marine origins; very abrupt, smooth lower boundary; pump dredge sediment; extremely homogenous
IIa	153-168	Natural; Gley 1 3/N (very dark gray); silty clay; moderate, fine, medium, granular structure; moist, firm consistency; very plastic; terrigenous origin; gradual, smooth lower boundary; few, fine roots; alluvial deposit, some roots similar to wetland sediments in Stratum II in T-080, considered a component of SIHP# 50-80-14-7426
IIb	168-195	Natural; Gley 1 3/N (very dark gray); with common medium mottles 10 YR 4/1 (dark gray); silty clay; moderate, fine to medium, granular structure; moist, firm consistency; very plastic; terrigenous origin; few, fine to medium roots; alluvial deposit similar to IIa—more organic inclusions—preserved plant material; contained terrestrial snails; likely related to former wetland sediments (compare to T-080), considered a component of SIHP# 50-80-14-7426

### 3.29 Test Excavation 76 (T-076)

<b>Ahupua'a:</b>	Kapālama
<b>LCA:</b>	2073:1 / 1723 B:2
<b>TMK#:</b>	1-5-017 [Plat]
<b>Elevation Above Sea Level:</b>	1.53 m
<b>UTM:</b>	617160.84 mE, 2358021.544 mN
<b>Max Length/Width/Depth:</b>	6.58 m / 0.71 m / 2.0 mbs
<b>Orientation:</b>	120 / 300° TN
<b>Targeted Project Component:</b>	Utility relocation (Electric Line)
<b>USDA Soil Designation:</b>	Fill land (FL)

**Setting:** Test Excavation 76 (T-076) was located within a Dillingham Boulevard road cut, 39.7 m northeast of the Alakawa Street intersection. T-076 was located on property owned by the City and County of Honolulu. T-076 was 2.3 m northeast of a gas utility, 3.0 m southwest of an electric utility and 5.1 m southwest of sewage line. The excavation area was level with the surrounding roadcut surface and roughly 0.14 m below the adjacent sidewalk level.

**Summary of Background Research and Land Use:** The W.A. Wall's 1887 map of Honolulu indicated that T-076 was located within reclaimed wetlands used for agriculture. According to Brown's 1885 map of Kalihi and Kapālama, the area was situated 12.0 m southwest of LCA 1723 B:2 (1 house lot, 2 houses, and 2 tombs, and 3 *lo'i*) awarded to Neddles, within LCA 4034:2 (1 *lo'i*) awarded to Robert G. Davis, and 15.0 m West of LCA 2073 (5 ½ *lo'i*) awarded to Kaula'iwa. Monsarrat's 1897 map of Honolulu indicated the area of T-076 transitioned to agricultural rice fields with urban development present 129.0 m northeast. The 1919 U.S. Army War Department Fire Control map showed T-076 still composed of wetlands in the surrounding area and continued development with the OR&L present 0.76 m west of T-076. Urban development continued through the 1950s, as shown on the 1953 U.S. Army Mapping Service map, which indicated multiple schools within the area and the addition of Nimitz Highway and Dillingham Boulevard.

Previous archaeology in the area included a post-Contact burial site (SIHP 50-80-14-04929) located approximately 300 m northeast of T-076 that contained the human remains of one individual (Jourdan 1994). A second post-Contact burial site (SIHP 50-80-14-03373) was located approximately 290 m northeast of T-076 and contained human remains of at least two adults (Dunn et al. 1991). More recent archaeology included a 2010 literature review and field inspection that resulted in a recommendation for an archaeological monitoring program in the area (O'Hare et al. 2010).

**Documentation Limitations:** T-076 was excavated to a depth of 2.0 mbs, and beneath the water table at 1.9 mbs. A thickly compacted concrete and rock surface was encountered at 0.3 mbs, but was excavated in order to reach a natural termination depth. There were no factors that limited the excavation of T-076.

**Stratigraphic Summary:** The stratigraphy observed within T-076 consisted predominately of fill sediment material (Ia-Ih), overlying the natural sediment (II). Observed strata included asphalt (Ia), extremely gravelly loam base course (Ib), concrete and rock mixture (Ic), crushed coralline sand (Id), silty sandy loam (Ie), crushed coralline sand (If), sandy loam (Ig), hydraulic fill (Ih), and a natural clay loam (II). Stratum II was a natural alluvium with evidence (freshwater snail, peat material within the upper boundary) of the former wet/agricultural lands. The stratigraphy conformed to the USDA soil survey designation of Fill land (FL).

**Artifacts Discussion:** No artifacts were observed.

**Features Discussion:** No features were observed.

**Terrestrial Faunal Remains Collected During Excavation:** No terrestrial faunal remains were observed.

**Sample Results:** Two bulk sediment samples were collected from Stratum II at 1.59 mbs (5 L) and 1.70 mbs (2 L). The bulk samples were wet-screened. The sample from Stratum II at 1.59 mbs contained charcoal (1.4 g) and *Ruppia maritima* seeds (0.1 g). The sample from Stratum II at 1.70 mbs contained charcoal (0.1 g), a kukui nut shell (0.1 g), a wood fragment (0.4 g), *Ruppia maritima* seeds (0.4 g), and naturally-occurring marine shell (16.9 g). The results of sample analysis indicated that little cultural material was present.

**GPR Discussion:** A review of amplitude slice maps indicated a linear feature located outside excavation boundaries. Reflectivity was relatively uniform throughout the grid and decreased with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.25 mbs.

GPR depth profiles for T-076 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 which occurred around 0.15 mbs and again around 0.35 mbs. An anomaly was observed in the profile located outside the excavation boundaries. The maximum depth of clean signal return was approximately 0.90 mbs.

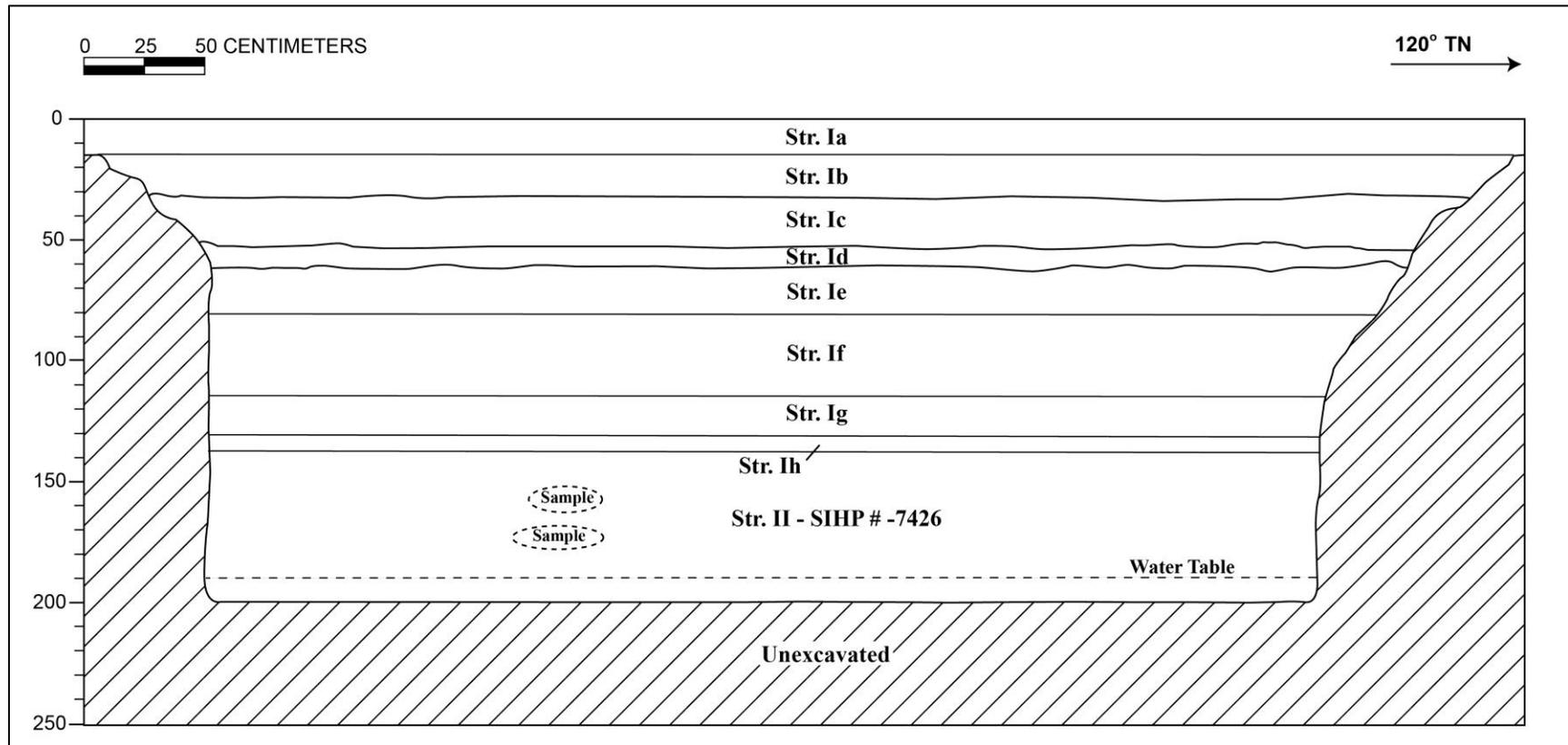
**Summary:** T-076 was excavated to a depth of 2.0 mbs, and beneath the water table at 1.9 mbs. The stratigraphy observed within T-076 consisted predominately of fill sediment material (Ia-Ih), overlying the natural sediment (II). The stratigraphy conformed to the USDA soil survey designation of Fill land (FL). The results of sample analysis indicated that little cultural material was present. Stratum II is considered a component of SIHP# 50-80-14-7426 (see Volume I).



T-076 general location, view to the southeast



T-076 northeast wall profile, view to east



T-076 northeast wall profile

## T-076 Stratigraphic Description

<b>Stratum</b>	<b>Depth (cmts)</b>	<b>Description</b>
Ia	0-15	Asphalt
Ib	15-34	Fill; 10 YR 3/2 (very dark grayish brown); extremely gravelly loam; structureless, single-grain; moist, loose-consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary; gravel base course, with over 80% cobbles
Ic	34-54	Fill; 10 YR 7/1 (light gray); concrete and rock; structureless, single-grain; dry, loose consistency; non-plastic; terrigenous origin; abrupt, wavy lower boundary; contained 80% concrete rock, boulders imported fill
Id	54-62	Fill; 10 YR 8/2 (very pale brown); extremely gravelly sand; structureless, single-grain; dry, loose consistency; non-plastic; marine origin; abrupt, wavy lower boundary;
Ie	62-80	Fill; 10 YR 5/4 (yellowish brown); silty sandy loam; structureless, single-grain; dry, loose consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary; alluvium, imported fill material
If	80-115	Fill; 10 YR 7/4 (very pale brown); extremely gravelly sand; structureless, single-grain; dry, loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary; crushed coral finer than Stratum Id
Ig	115-133	Fill; 10 YR 4/3 (brown); sandy loam; structureless, single-grain; moist, very friable consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary; alluvium, possible locally procured fill
Ih	133-138	Fill; 7.5 YR 5/1 (gray); clay; structureless, massive; wet, slightly sticky consistency; slightly plastic; not visible, abrupt, smooth lower boundary; hydraulic fill layer
II	138-200	Natural, buried A-horizon; 10 YR 2/1 (black); clay; structureless, massive; wet, sticky consistency; plastic; terrigenous origin; lower boundary not visible; natural sediment reworked by agricultural activity, organic material, considered a component of SIHP# 50-80-14-7426

### 3.30 Test Excavation 77 (T-077)

<b>Ahupua'a:</b>	Kapālama
<b>LCA:</b>	8504:3
<b>TMK#:</b>	1-5-017 [Plat]
<b>Elevation Above Sea Level:</b>	1.55 m
<b>UTM:</b>	617224.15 mE, 2357997.16 mN
<b>Max Length/Width/Depth:</b>	7.35m / 0.75m / 2.40 mbs
<b>Orientation:</b>	319 / 139° TN
<b>Targeted Project Component:</b>	Utility Relocation
<b>USDA Soil Designation:</b>	Fill land (FL)

**Setting:** Test Excavation 77 (T-077) was located within Dillingham Boulevard, 33.0 m east of the Alakawa Street intersection. It was located on property of the City and County of Honolulu. Utilities within the area of T-077 included water lines that were located 1.9 m and 15 m southwest of T-077. The topography of the excavation area was level.

**Summary of Background Research and Land Use:** Test Excavation 77 (T-077) was located within LCA 8504, awarded to George Holmes. Several other surrounding LCAs were described as having taro *lo'i*, pastures (*kula* land), and *loko* (fishpond) in neighboring areas. T-077 was located 260 m northwest of the Kūwili Fishpond SIHP # 50-80-14-5368. According to Monsarrat's 1897 map of Honolulu, T-077 was located within a rice field just 175 m west of a reform school. By 1919, Kapālama urban development was present to the east of T-077, but the area immediately surrounding T-077 was still undeveloped, according to the 1919 U.S. Army War Department Fire Control map. According to the 1933 U.S. Army War Department Fire Control map, heavy urban development had occurred and Dillingham Boulevard had been constructed where T-077 was located. Development continued in the mid-twentieth century, according to the 1943 U.S. Army War Department map and the 1953 U.S. Army Mapping Service map.

No previous archaeological studies have been completed within 200 m of T-077. A post-Contact burial (SIHP 50-80-14-04929) was documented approximately 280 m northeast of T-077 (Jourdan 1994). A second post-Contact burial (SIHP 50-80-14-03373) was located approximately 300 m northeast of T-077 and contained human remains of at least two adults (Dunn et al 1991). More recent archaeology included a 2010 literature review and field inspection that resulted in a recommendation for an archaeological monitoring program in the area (O'Hare et al. 2010).

**Documentation Limitations:** T-077 was excavated to a depth of 2.4 mbs, and beneath the water table at 2.3 mbs. There were no factors that limited the excavation of T-077.

**Stratigraphic Summary:** The stratigraphy of T-077 consisted predominately of fill strata (Ia-Id), overlying natural sediments (IIa-IIb) to the base of excavation. Observed strata included asphalt (Ia), very stony sandy loam fill (Ib), gravelly sandy clay fill (Ic), very gravelly coarse sand and crushed coral fill (Id), overlying natural silty clay (IIa) and silty clay (IIb) to the base of

excavation. The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL).

**Artifacts Discussion:** No artifacts were observed.

**Features Discussion:** No features were observed.

**Terrestrial Faunal Remains Collected During Excavation:** No terrestrial faunal remains were observed.

**Sample Results:** No sample analysis was conducted. One column sample was collected within T-077 from near the interface of Stratum IIa (1.88 mbs) to within Stratum IIb (2.08 mbs). The column sample consisted of four subsamples that represented 5 cm increments within the column. The column sample was not submitted for further analysis.

**GPR Discussion:** A review of amplitude slice maps indicated no linear features that might have indicated the presence of utilities. Reflectivity was relatively uniform throughout the grid and decreased with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.25 mbs.

GPR depth profiles for T-077 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 which occurred around 0.25 mbs. No utilities were observed in the profile. The maximum depth of clean signal return was approximately 0.80 mbs.

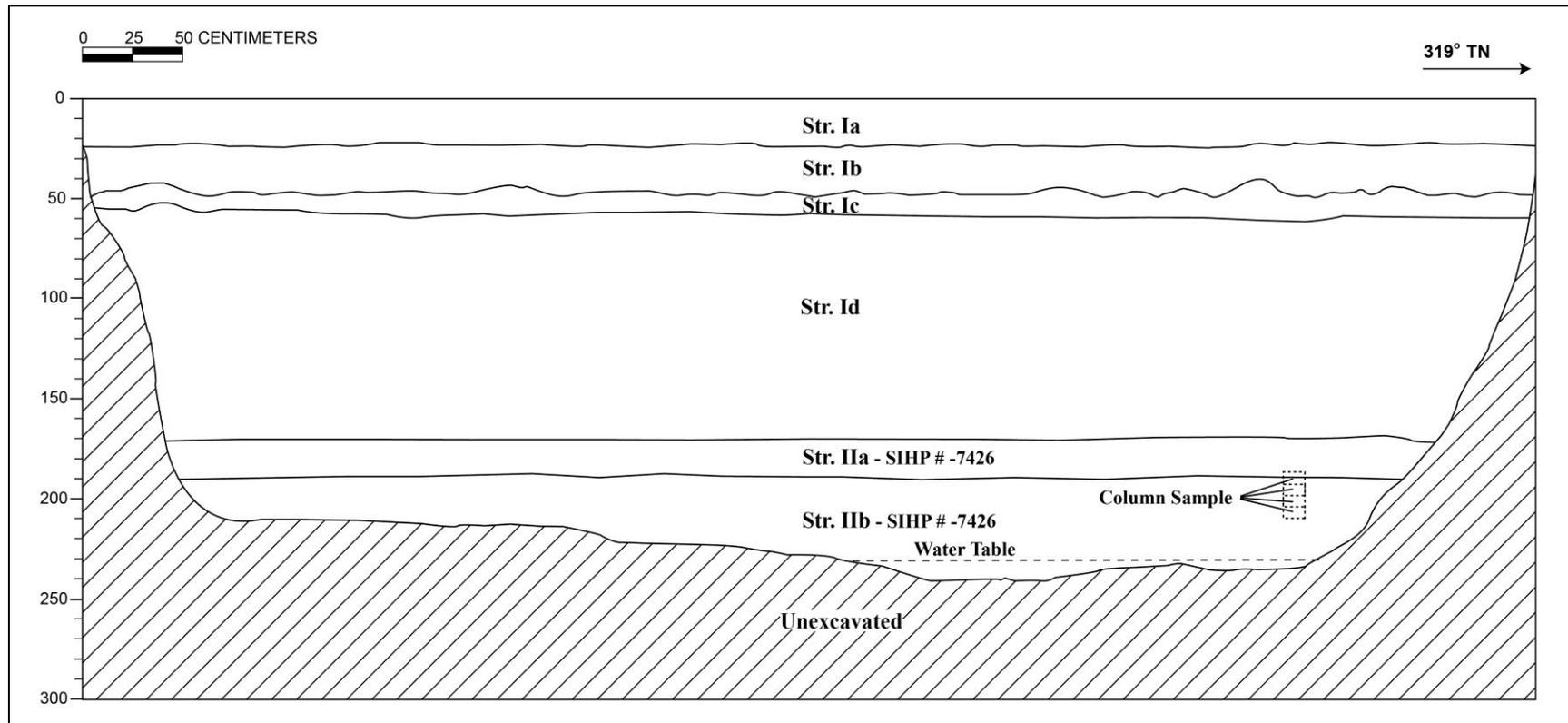
**Summary:** T-077 was excavated to a depth of 2.4 mbs, and beneath the water table at 2.3 mbs. The stratigraphy of T-077 consisted predominately of fill strata (Ia-Id), overlying natural sediments (IIa-IIb) to the base of excavation. The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL). No sample analysis was conducted. The natural sediment within T-077 (IIa and IIb) are considered components of SIHP# 50-80-14-7426 (see Volume I).



T-077 general location, view to the west



T-077 southwest wall profile, view to south



T-077 southwest wall profile

## T-077 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-25	Asphalt
Ib	25-50	Fill; 10 YR 4/2 (dark gray brown) with mottles 10 YR 8/1 (white); very stony sandy loam weak, fine, crumb structure; moist, friable consistency; non-plastic; mixed origins; abrupt, smooth lower boundary; contained basalt boulders in sandy loam matrix
Ic	50-62	Fill; 10 YR 4/4 (dark yellow brown); gravelly sandy clay; weak, medium, blocky structure; moist, firm consistency; slightly plastic; mixed origin; abrupt, smooth lower boundary; imported fill material, coral and basalt gravels in sandy clay matrix
Id	62-170	Fill; 10 YR 8/3 (very pale brown); very gravelly coarse sand; single-grain structure; moist, loose consistency; non-plastic; marine origin; abrupt, diffuse lower boundary; crushed coral fill material
Ila	170-190	Natural, buried A-horizon; 10 YR 4/3 (brown); silty clay; weak, coarse, blocky structure; moist, firm consistency; plastic; terrigenous origin; diffuse, smooth lower boundary; few, fine to medium roots; considered a component of SIHP# 50-80-14-7426
Ilb	190-240	Natural; Gley1 2.5/1 (greenish black), with few fine mottles 10 YR 8/1 (white); silty clay; moist, firm consistency; plastic; terrigenous origin; lower boundary not visible; former rice field soil, considered a component of SIHP# 50-80-14-7426

### 3.31 Test Excavation 78 (T-078)

<b>Ahupua'a:</b>	Kapālama
<b>LCA:</b>	8504:3
<b>TMK#:</b>	1-5-015 [Plat]
<b>Elevation Above Sea Level:</b>	1.58 m
<b>UTM:</b>	617250.06 mE, 2357965.71 mN
<b>Max Length/Width/Depth:</b>	6.1 m / 0.70 m / 1.8 mbs
<b>Orientation:</b>	120 / 300° TN
<b>Targeted Project Component:</b>	Utility Relocation
<b>USDA Soil Designation:</b>	Fill land (FL)

**Setting:** Test Excavation 78 (T-078) was located in the southeast-bound, right lane of Dillingham Boulevard, across from the Bank of Hawai'i accounting building. T-078 was located approximately 50 m southeast of the intersection of Dillingham Boulevard and Alakawa Street. T-078 was located 2.4 m *mauka* of a storm drain and 0.9 m northwest of a gas line. The test excavation was level with the surrounding road surface.

**Summary of Background Research and Land Use:** T-078 was located within LCA 8504:3 awarded to George Holmes. The award contents included eleven *lo'i* and one fishpond. According to Monsarrat's 1897 map of Honolulu, T-078 was located within wetlands/rice fields. By 1919 T-078 was 180 m north of the former OR&L railway and west of a heavily developed area (1919 War Department map). By 1933 T-078 was within the road that was currently Dillingham Boulevard (1933 War Department map). According to the Army map Service map, by 1953 T-078 was located on the edge of Dillingham Boulevard.

Previous archaeology in the area included a post-Contact burial site (SIHP 50-80-14-04929) 300 m northeast of T-078 that contained the human remains of one individual (Jourdane 1994). A second post-Contact burial site (SIHP 50-80-14-03373) was located 290 m northeast of T-078 and contained human remains of at least two adults (Dunn et al 1991). More recent archaeology included a 2010 literature review and field inspection that resulted in a recommendation for an archaeological monitoring program in the area (O'Hare et al. 2010).

**Documentation Limitations:** T-078 was excavated to a depth of 1.95 mbs. A gas line at 0.7 mbs limited excavation in the eastern end of T-078.

**Stratigraphic Summary:** The stratigraphy of T-078 consisted of fill strata overlying natural wetland sediment. Observed strata included asphalt (Ia), gravelly, cobbly silty sand (Ib), extremely gravelly silt base course (Ic), crushed coral fill (Id), gravelly cobbly sand fill (Ie), and medium-grain sand fill (If) overlying natural silty sand (IIA) grading into silty clay (IIb). The stratigraphy of T-078 generally conformed to the USDA soil survey designation of Fill land (FL).

**Artifacts Discussion:** No artifacts were observed.

**Feature Discussion:** No features were observed.

**Terrestrial Faunal Remains Collected During Excavation:** Faunal remains collected from Stratum IIb between 1.8 to 1.9 mbs and 1.85 to 1.94 mbs consisted of unidentified fish bone. The faunal remains collected from Stratum IIb had little cultural significance.

**Sample Results:** A total of four bulk sediment samples were collected from T-078. Samples were collected from Stratum If at 1.55-1.65 mbs (1 L), Stratum IIa at 1.73-1.75 mbs (0.45 L), and 6.6 L from Stratum IIb between 1.8-1.9 mbs and 1.85-1.94 mbs (see profile). All of the sediment samples were wet-screened. The sample from Stratum If (fill) contained charcoal (1.5 g) and naturally-deposited marine shell. The sample from Stratum IIa contained charcoal (0.2 g), coal (0.1 g), and a fish bone fragment (0.1 g). The sample from Stratum IIb (1.8-1.9 mbs) contained charcoal (0.7 g), terrestrial snail shells (47.9 g), bivalve fragments (3.4 g), and wood fragments (0.3 g). The sample from Stratum IIb (1.85-1.94 mbs) contained charcoal (0.4 g), terrestrial snail shells (60.0 g), bivalve fragments (3.8 g), wood fragments and fibers (17.7 g), and a small fish bone fragment (0.1 g). The results of bulk sediment sample analysis supported the interpretation of Stratum IIa and IIb as wetland sediment, and no cultural material within Stratum If.

The charcoal (0.7 g) that was collected from Stratum IIb (1.8-1.9 mbs) was submitted for wood taxa identification. The analysis of the charcoal identified two native tree specimens, *'ohi'a lehua* (cf. *Metrosideros polymorpha*) and coconut (cf. *Cocos nucifera*) and one historically-introduced tree (conifer). The results of wood taxa identification indicated the presence of both native and historically-introduced tree species within Stratum IIb.

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

GPR depth profiles for T-078 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, which occurred around 0.25 mbs. An anomaly was observed in the profile that corresponded to a utility that was encountered during excavation. The maximum depth of clean signal return was approximately 0.75 mbs.

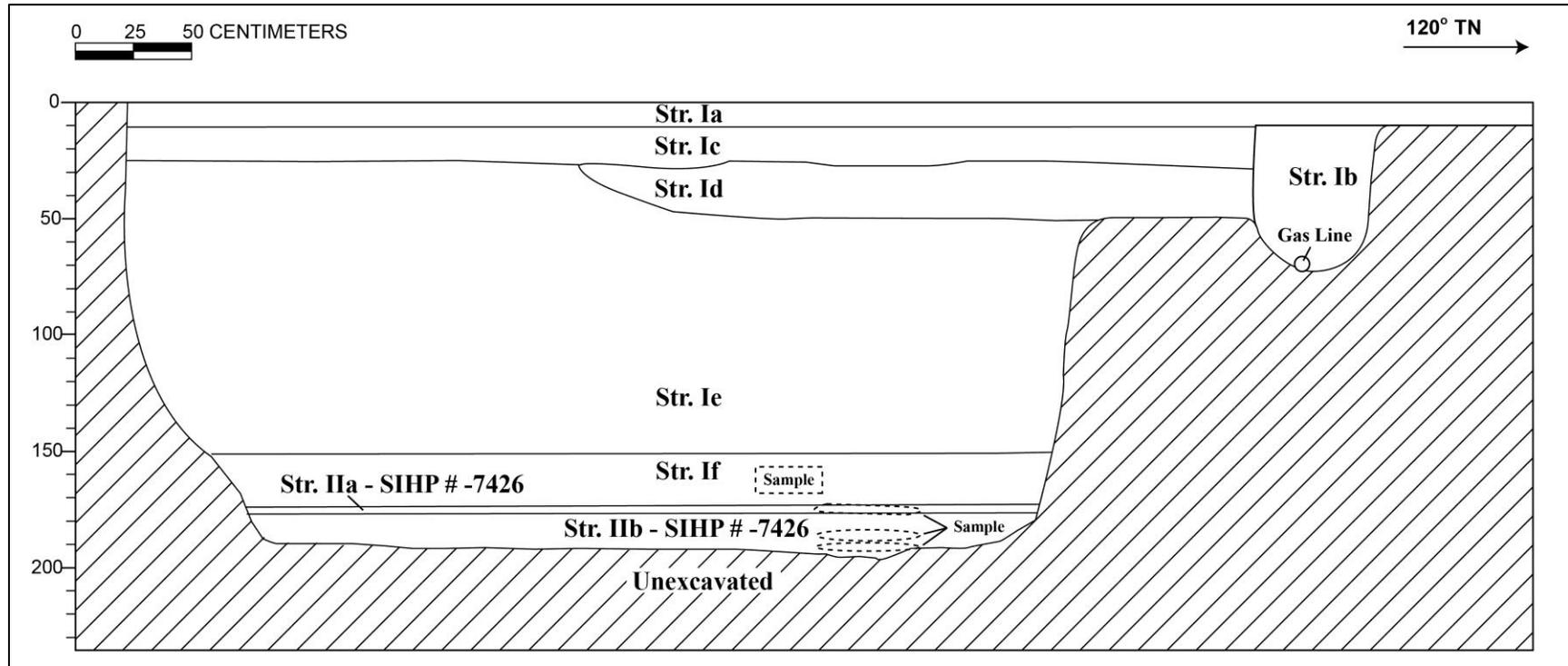
**Summary:** T-078 was excavated to a depth of 1.95 mbs. The stratigraphy of T-078 consisted of fill strata (Ia to If) overlying natural wetland sediment (IIa and IIb). The faunal remains collected from Stratum IIb had little cultural significance. The results of bulk sediment sample analysis supported the interpretation that Stratum IIa and IIb was a wetland sediment, and documented the absence of cultural material within Stratum If. The results of wood taxa identification indicated the presence of both native and historically-introduced tree species within Stratum IIb. The natural sediments (IIa and IIb) are considered components of SIHP# 50-80-14-7426 (see Volume I).



T-078 general location, view to north



T-078 north wall profile



T-078 north profile wall

## T-078 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0-14	Asphalt
Ib	10-75	Fill; 10 YR 3/2 (very dark gray brown); gravelly, cobbly silty sand; weak, very fine, granular structure; moist, loose consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; common, fine to medium roots; fill soil for gas line
Ic	14-25	Fill; 10 YR 4/1 (dark gray); extremely gravelly silt; strong, coarse, blocky structure; moist, loose consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary; base course, crushed or pebble basalt
Id	25-50	Fill; 10 YR 8/1 (white); gravelly sand; moderate, coarse, blocky structure; moist, friable consistency; non-plastic; marine origin; abrupt, wavy lower boundary; compacted crushed coral fill
Ie	25-150	Fill; 10 YR 3/2 (very dark gray brown); gravelly cobbly sand; weak, fine, blocky to crumb structure; moist, very friable consistency; non-plastic; mixed origin; smooth lower boundary; common, fine to medium roots; contained cobble to boulder size basalt rock at top of layer
If	150-173	Fill; 10 YR 6/2 (light brown gray) with few, mottles 10 YR 4/2 (dark grayish brown); medium grain sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary; contained hard black material that was possibly cane slag; beach sand with small shells and coral gravels; one bulk sample collected
IIa	173-176	Natural; 10 YR 4/2 (dark gray brown); silty sand; weak, very fine, granular structure; moist, very friable consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary; one bulk sample collected, considered a component of SIHP# 50-80-14-7426
IIb	175-195	Natural; 10 YR 4/1 (dark gray); silty clay; moderate, very fine, granular, crumb structure; wet, sticky consistency; slightly plastic; terrigenous origin; lower boundary not visible; fresh water/land snail and matted grass; two bulk samples collected, considered a component of SIHP# 50-80-14-7426

### 3.32 Test Excavation 79 (T-079)

<b>Ahupua'a:</b>	Kapālama
<b>LCA:</b>	7681:5
<b>TMK#:</b>	1-5-015 [Plat]
<b>Elevation Above Sea Level:</b>	1.5 m
<b>UTM:</b>	617289.35 mE, 2357942.44 mN
<b>Max Length/Width/Depth:</b>	6.5 m / 0.75 m / 2.50 mbs
<b>Orientation:</b>	120 / 300° TN
<b>Targeted Project Component:</b>	Utility Relocation
<b>USDA Soil Designation:</b>	Fill land (FL)

**Setting:** Test Excavation 79 (T-079) was located on Dillingham Boulevard approximately 120 m southwest of Alakawa Street. T-079 was located on public property belonging to the City and County of Honolulu. There were no subsurface utilities present in the immediate vicinity of T-079. The test excavation was located within a shallow road cut, approximately 0.10 m below the surrounding ground surface.

**Summary of Background Research and Land Use:** T-079 was located within LCA 7681:5, which was awarded to Kekai. Several other LCAs were also located in close proximity to T-079 including LCA 1723 (to the northeast), LCA 23 FL (to the southeast), LCA 2937:2 and 8504:3 (to the west), and LCA 4747:3 (to the southwest). The 1919 U.S. Army War Department Fire Control map indicated T-079 was located within the immediate right-of-way of the OR&L. By 1933, according to the U.S. Army War Department Fire Control map, urban development in the vicinity of T-079 continued, indicated by grid development.

T-079 was located approximately 250.0 m southwest of SIHP 50-80-14-03373 (Dunn et al, 1991), a subsurface cultural deposit with two associated post-Contact burials. T-081 was located approximately 175.0 m northwest of Kūwili Fishpond (SIHP 50-80-14-05368) (McDermott and Mann 2001).

**Documentation Limitations:** T-079 was excavated to a depth of 2.50 mbs, and beneath the water table 2.20 mbs. There were no factors that limited the excavation of T-079.

**Stratigraphic Summary:** The stratigraphy of T-079 consisted of various fill layers overlying natural sediment. Observed strata included concrete (Ia), extremely gravelly sand base course (Ib), basalt boulder fill layer in sand matrix (Ic), and crushed coral fill (Id), overlying natural clay (II). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL).

**Artifacts Discussion:** No artifacts were observed.

**Features Discussion:** No features were observed.

**Terrestrial Faunal Remains Collected During Excavation:** No terrestrial faunal remains were observed.

**Sample Results:** A total of two bulk sediment samples were collected from T-079 including one sample from Stratum Id between 1.45-1.61 mbs (2L) and one from Stratum II at 1.68-1.84 mbs (3.5 L). Both samples were collected from the excavation floor and are not depicted on the stratigraphic profile. The sediment samples were wet-screened. The sample from Stratum Id contained minimal amounts of water-worn shell. The bulk sample from Stratum II (3.5 L) contained large round seeds (2g), charcoal (0.1g), and various non-midden shell. The results of sample analysis documented the absence of cultural material within Stratum Id and a sparse amount of organics within Stratum II.

**GPR Discussion:** A review of amplitude slice maps indicated a linear feature located outside excavation boundaries. Reflectivity was relatively uniform throughout the grid and decreased with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.50 mbs and increased again around 0.75 mbs.

GPR depth profiles for T-079 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, which occurred around 0.25 mbs and again around 0.60 mbs. An anomaly was observed in the profile located outside excavation boundaries. The maximum depth of clean signal return was approximately 1.0 mbs.

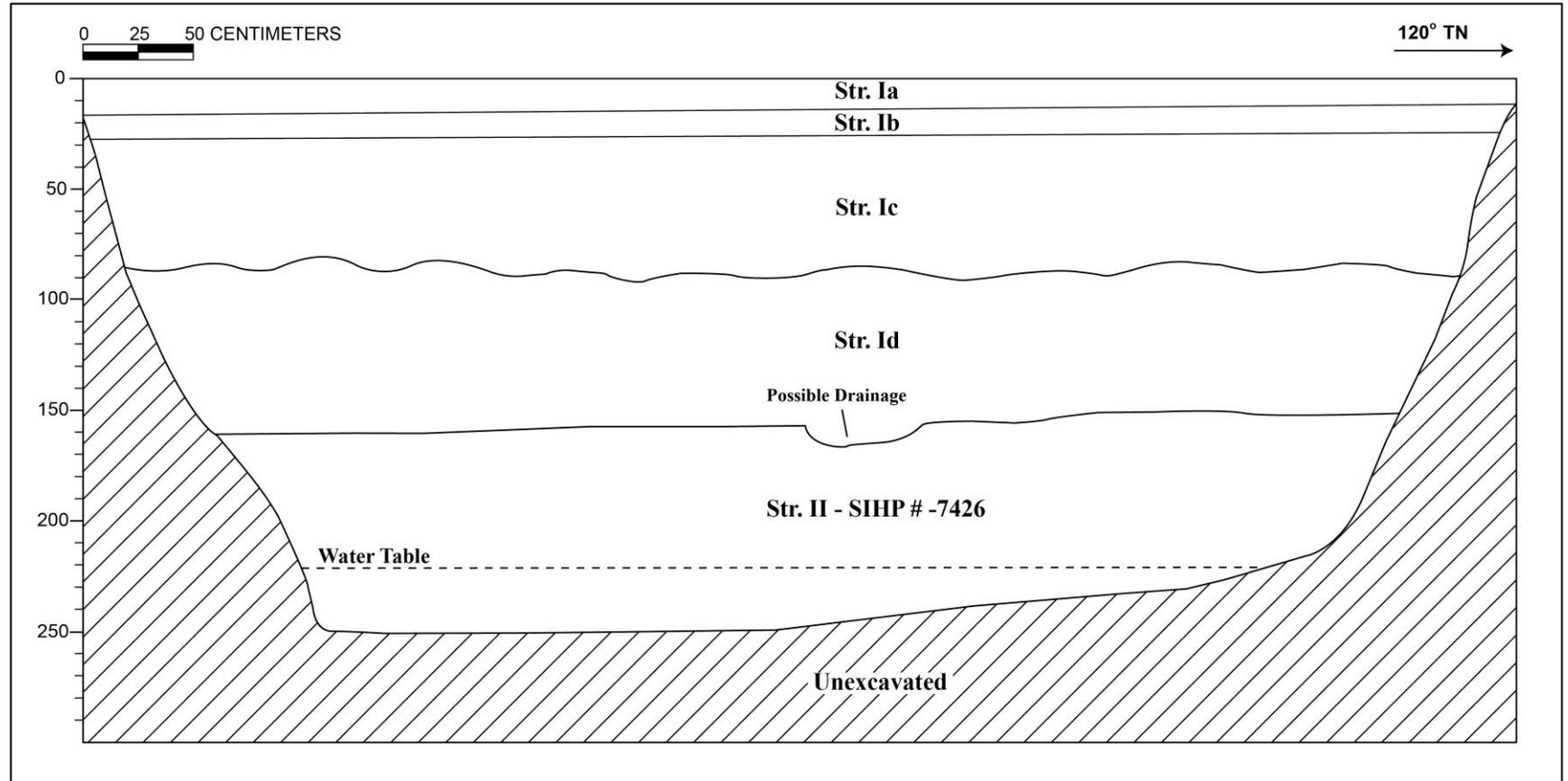
**Summary:** T-079 was excavated to a depth of 2.50 mbs, and beneath the water table at 2.20 mbs. The stratigraphy of T-079 consisted of various fill layers (Ia-Id) overtop of natural sediment (II). The stratigraphy conformed to the USDA soil survey designation of Fill land (FL). The results of sample analysis documented the absence of cultural material within Stratum Id and a sparse amount of organics within Stratum II. Stratum II was designated a component of SIHP# 50-80-14-7426 (see Volume I). An anomaly in the upper boundary of Stratum II (SIHP# -7426) was considered to be a possible drainage channel, but may also have been created during disturbance associated within the deposition of overlying fill deposits. The possible drainage was documented, but was not considered to be a feature of SIHP# -7426.



T-079 general location, view to southeast



T-079 northeast wall profile showing possible drainage left of photographic scale



T-079 northeast wall profile

## T-079 Stratigraphic Description

Stratum	Depth (cmts)	Description
Ia	0-16	Concrete
Ib	16-28	Fill; 10 YR 3/1 (very dark gray); extremely gravelly sand; structureless, single-grain; dry, loose consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; sand matrix contained 95% angular basalt cobbles, crushed basalt base course
Ic	28-93	Fill; 10 YR 4/2 (dark grayish brown); extremely stony sand; structureless, single-grain; dry, loose consistency; non-plastic; mixed origin; diffuse, wavy lower boundary; sand matrix contained 90% subangular to rounded small to medium basalt "blue rock" boulders, compacted fill
Id	80-160	Fill; 10 YR 8/3 (very pale brown); very cobbly sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; clear, smooth lower boundary; crushed coral fill
II	155-250	Natural; 10 YR 2/1 (black); clay; structureless, massive; slightly sticky consistency; very plastic; terrigenous origin; lower boundary not visible; possible agricultural sediment related to taro/rice <i>lo'i</i> agricultural sediment, considered a component of SIHP# 50-80-14-7426

### 3.33 Test Excavation 80 (T-080)

<b>Ahupua'a:</b>	Kapālama
<b>LCA:</b>	7681:5
<b>TMK#:</b>	1-5-015 [Plat]
<b>Elevation:</b>	1.45
<b>UTM:</b>	617306.3675 mE, 2351930.92 mN
<b>Max Length / Width / Depth:</b>	6.1 m / 0.80 m / 2.01 mbs
<b>Orientation:</b>	120 / 300° TN
<b>Targeted Project Component:</b>	Utility Relocation
<b>USDA Soil Designation:</b>	Fill land (FL)

**Setting:** Test Excavation 80 (T-080) was located within the southernmost east-bound lane of Dillingham Boulevard 132 m southeast of the Alakea Street intersection. T-080 was located within the utility corridor for the HHCTCP. Utility lines that were located in the generally vicinity included two water lines (8.5 m and 13.5 m to the north), and a storm drain (8 m to the north). The topography of the excavation area was level.

**Summary of Background Research and Land Use:** Test Excavation 80 (T-080) was located within LCA 7681 that was awarded to Kekai. Several other surrounding LCAs were described as having taro *lo'i*, pastures (*kula* land), and *loko* (fishpond). T-080 was located 160.0 m northwest of the Kūwili Fishpond SIHP # 50-80-14-5368. According to Monsarrat's 1897 map of Honolulu, T-080 was located within a rice field just 138.5 m west of a reform school. The 1919 War Honolulu map indicated urban development to the east of T-080, but the area immediately surrounding T-080 was still undeveloped. The 1933 U.S. Army War Department Fire Control map documented heavy urban development and the layout of present-day Dillingham Boulevard at the location of T-080. Development continued into the mid-twentieth century.

T-080 was located approximately 245.0 m southwest of SIHP 50-80-14-03373 (Dunn et al, 1991), a subsurface cultural deposit with two associated post-Contact burials. T-081 was located approximately 160.0 m northwest of Kūwili Fishpond (SIHP 50-80-14-05368) (McDermott and Mann, 2001).

**Documentation Limitations:** T-080 was excavated to a depth of 2.01 mbs, and beneath the water table at 1.93 mbs. There were no factors that limited the excavation of T-080.

**Stratigraphic Summary:** The stratigraphy of T-080 consisted of fill overlying natural wetland sediment to the base of excavation. Observed strata included asphalt (Ia), extremely gravelly sand base course (Ib), crushed coral fill (Ic), fine to medium grain sandy clay hydraulic fill (Id), and silty clay hydraulic fill (Ie) overlying natural silty clay loam wetland sediment (II). Stratum Id and Ie were consistent with land reclamation fill (hydraulic fill) and contained micro-stratigraphic banding. The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL).

**Artifacts Discussion:** No artifacts were observed.

**Features Discussion:** No features were observed.

**Terrestrial Faunal Remains Collected During Excavation:** No terrestrial faunal remains were observed.

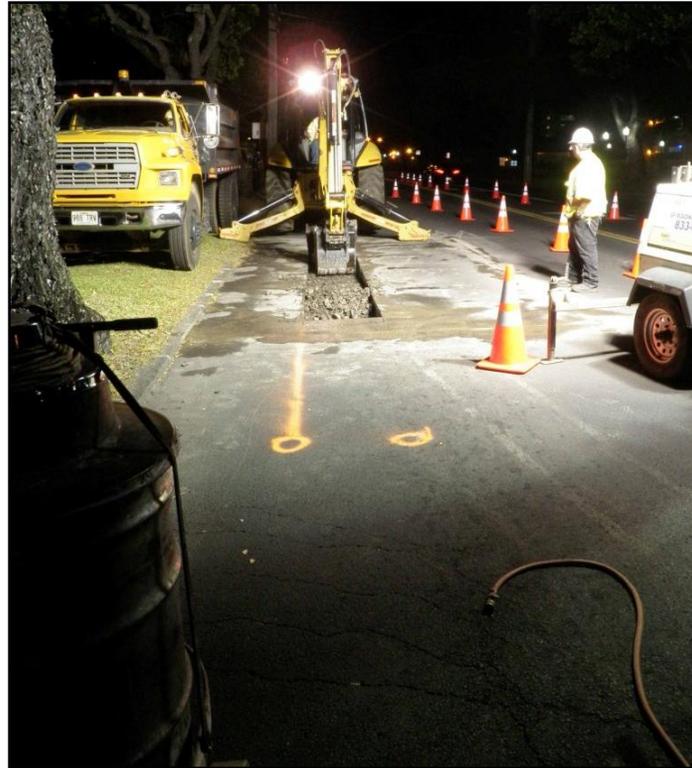
**Sample Results:** Three bulk sediment samples were collected from Stratum II between 1.4 and 1.6 mbs (4 L), 1.6 and 1.75 mbs (5 L), and 1.75 and 1.85 (4 L). The sediment samples were wet-screened and analyzed. No material was recovered from the sample between 1.4 and 1.6 mbs. The sample collected from 1.6 and 1.75 mbs contained charcoal (0.1 g), terrestrial snails (168.8 g), and bivalve fragments (3.9 g). The sample collected from 1.75 and 1.85 mbs contained naturally-deposited marine shell (1.8 g), and wood or root fragments (0.1 g). The results of sample analysis indicated that Stratum II was consistent with naturally-deposited wetland sediment.

One column sample with six 1.0 L increments was collected from Stratum II between 1.40 and 1.88 mbs. Three of the six column samples were submitted for pollen analysis. Pollen analysis indicated a high concentration of pollen (60,000 pollen per cubic centimeter) in each sample. The upper sample between 1.4 and 1.43 mbs contained taro (*Colocasia sp.*) pollen. The middle sample between 1.63 and 1.67 mbs contained coconut tree (*Cocos nucifera sp.*) and *honohono* (*Commelina sp.*) pollen. The lowest sample between 1.85 and 1.88 mbs contained 'anunu (*Sicyos sp.*) pollen. The two upper samples between 1.4 and 1.67 mbs contained Poacea (grass) and *kiawe* (*Prosopis sp.*) pollen. All three samples contained cattail (*Typha sp.*) pollen. Pollen results indicated the presence of both endemic and introduced plant species. The presence of *Colocasia sp.* pollen and *Commelina sp.* pollen indicated post-Contact agricultural activity in the vicinity.

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

GPR depth profiles for T-080 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, which occurred around 0.25 mbs. No utilities were observed in the profile. The maximum depth of clean signal return was approximately 1.0 mbs.

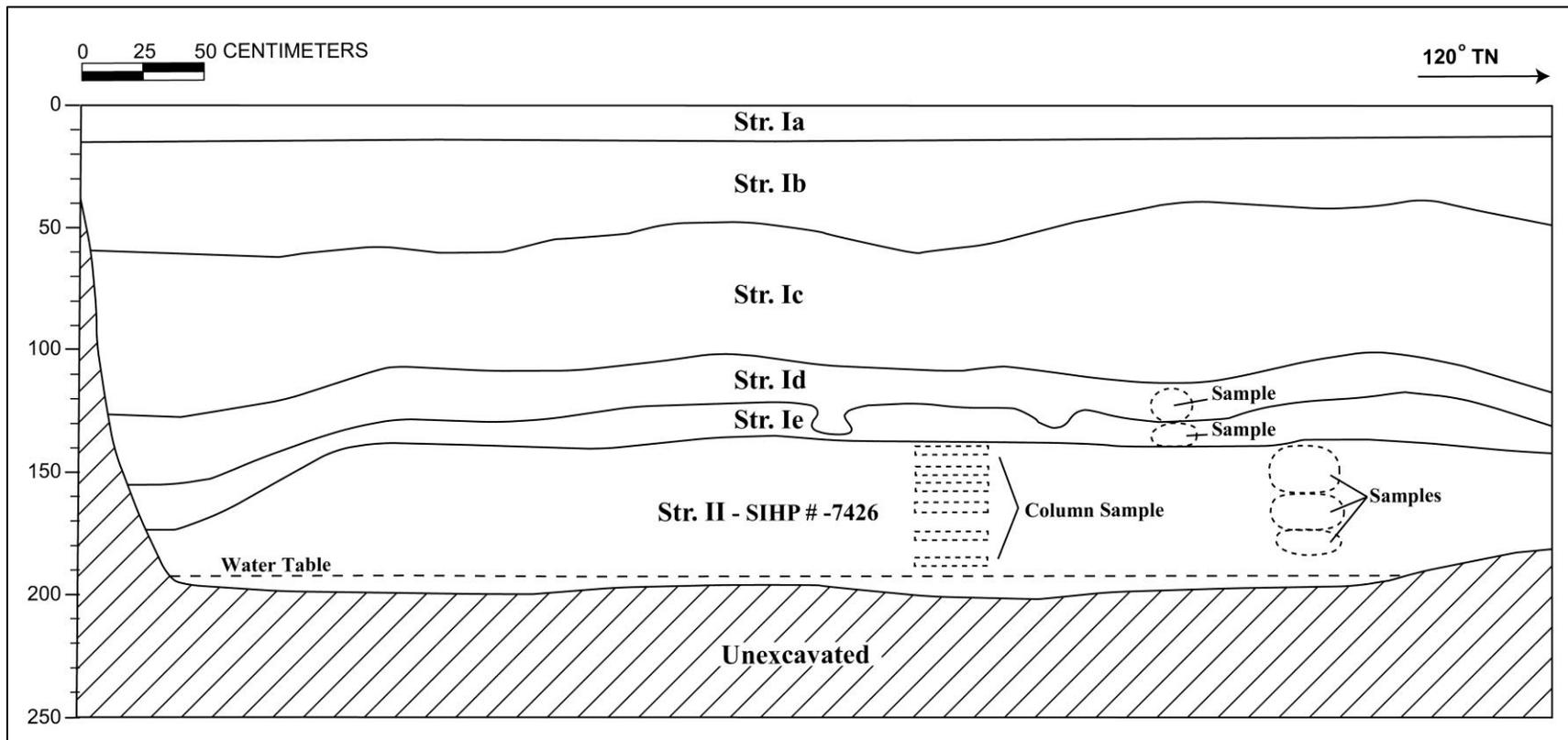
**Summary:** T-080 was excavated to a depth of 2.01 mbs, and beneath the water table at 1.93 mbs. The stratigraphy of T-080 consisted of fill (Ia-Ie) overlying natural wetland sediment (II) to the base of excavation. The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL). The results of sample analysis indicated that Stratum II was consistent with naturally-deposited wetland sediment. The presence of *Colocasia sp.* pollen and *Commelina sp.* pollen indicated post-Contact agricultural activity in the vicinity. Stratum II is considered to be a component of SIHP# 50-80-14-7426 (see Volume I).



T-080 general location, view to the northwest



T-080 northeast wall profile



T-080 northeast wall profile

## T-080 Stratigraphic Description

<b>Stratum</b>	<b>Depth (cmbs)</b>	<b>Description</b>
Ia	0-14	Asphalt (road surface)
Ib	14-60	Fill; 10 YR 5/1 (gray); extremely gravelly sand; structureless, single-grain; dry, loose consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; contains 90 percent basalt gravel; base course
Ic	40-127	Fill; 10 YR 8/3 (very pale brown); extremely gravelly sand; structureless, single-grain; dry, loose, consistency; non-plastic; marine origin; clear, smooth lower boundary; contains 90 percent coral gravel; crushed coral fill
Id	103-155	Fill; 10 YR 6/3 (pale brown); fine to medium sandy clay; structureless, massive; moist, friable consistency; plastic; mixed origins; very abrupt, wavy lower boundary; hydraulic fill
Ie	120-175	Fill; Gley2 4/10B (dark bluish gray); silty clay; structureless, massive; wet, sticky consistency; non-plastic; marine origin; very abrupt, smooth lower boundary; hydraulic fill
II	137- 201	Natural, buried A-horizon; Gley2 3/10B (very dark bluish gray); silty clay loam; moderate, very fine, blocky structure; wet, sticky consistency; terrigenous origin; lower boundary not visible; natural wetland sediment, considered a component of SIHP# 50-80-14-7426

### 3.34 Test Excavation 81 (T-081)

<b>Ahupua'a:</b>	Nu'uano
<b>LCA:</b>	23FL
<b>TMK #:</b>	N/A
<b>Elevation:</b>	1.2 m
<b>UTM:</b>	617354.59 mE, 2357907.20 mN
<b>Max Length / Width / Depth:</b>	7.2 m / 0.71 m / 2.12 mbs
<b>Orientation:</b>	118 / 298° TN
<b>Targeted Project Component:</b>	Utility relocation (Electric Manhole)
<b>USDA Soil Designation:</b>	Fill land (FL)

**Setting:** Trench Excavation 81 (T-081) was located within the Dillingham Boulevard road cut approximately 111 m northwest of the Dillingham Blvd. and Akepo Lane intersection. T-081 was located within a utility corridor. Utilities that were located within the vicinity of T-081 included two sewage lines (2.0 m to the southwest and 5.3 m to the north) and a water line (4.6 m to the southeast). The topography of the excavation area was level and the test excavation was 0.14 m below the sidewalk surface.

**Summary of Background Research and Land Use:** T-081 was located within LCA 23FL, Fort Lands, that was awarded to Moeino. Several other surrounding LCAs were described as having taro *lo'i*, pastures (*kula* land), and *loko* (fishpond). T-081 was located 115 m northwest of the Kūwili Fishpond (SIHP # 50-82-14-5368). According to Monsarrat's 1897 map of Honolulu, T-081 was located within a rice field approximately 120.0 m west of a reform school. The 1919 U.S. Army War Department Fire Control map of Honolulu depicts urban development to the northeast of T-081 and the OR&L tracks approximately 8 m to the south. The 1933 U.S. Army War Department Fire Control map depicts heavy urban development in the area of T-081, which has continued to present.

T-081 was located approximately 225.0 m southwest of SIHP 50-80-14-03373 (Dunn et al, 1991), a subsurface cultural deposit with two associated post-Contact burials. T-081 was located approximately 115.0 m northwest of Kūwili Fishpond (SIHP 50-80-14-05368) (McDermott and Mann, 2001).

**Documentation Limitations:** T-081 was excavated to a depth of 2.12 mbs, and beneath the water table at 2.02 mbs. The upper 1.0 meter of the southwest end of T-081 was hand-excavated due the possibility of encountering utilities.

**Stratigraphic Summary:** The stratigraphy of T-081 consisted of a thick fill deposit overlying natural wetland sediment and marine sand near water table. Observed strata included asphalt (Ia), extremely stony silty sand (Ib), extremely gravelly silty loam (Ic), and clay loam fill (Id) overlying a buried clay A-horizon (IIa) and natural sand (IIb). The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL).

**Artifacts Discussion:** No artifacts were observed.

**Features Discussion:** No features were observed.

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

**Sample Results:** A total of two bulk sediment samples were collected from Stratum IIa at 1.90-1.95 mbs (3 L), and from Stratum IIb at 2.0-2.05 mbs (3 L). Both sediment samples were wet-screened. The sediment sample from Stratum IIa contained charcoal (1.5 g), terrestrial snail (31.0 g), and limpet fragments (2.8 g). The sediment from Stratum IIb contained naturally-deposited waterworn marine shell. The results of sample analysis indicated a mixed depositional origin for Stratum IIa, and a natural marine depositional origin for Stratum IIb.

**GPR Discussion:** A review of amplitude slice maps indicated no linear features that might have indicated the presence of utilities. Reflectivity was relatively uniform throughout the grid and decreased with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.25 mbs.

GPR depth profiles for T-081 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, which occurred around 0.15 mbs and again around 0.50 mbs. No utilities were observed in the profile. The maximum depth of clean signal return was approximately 1.00 mbs.

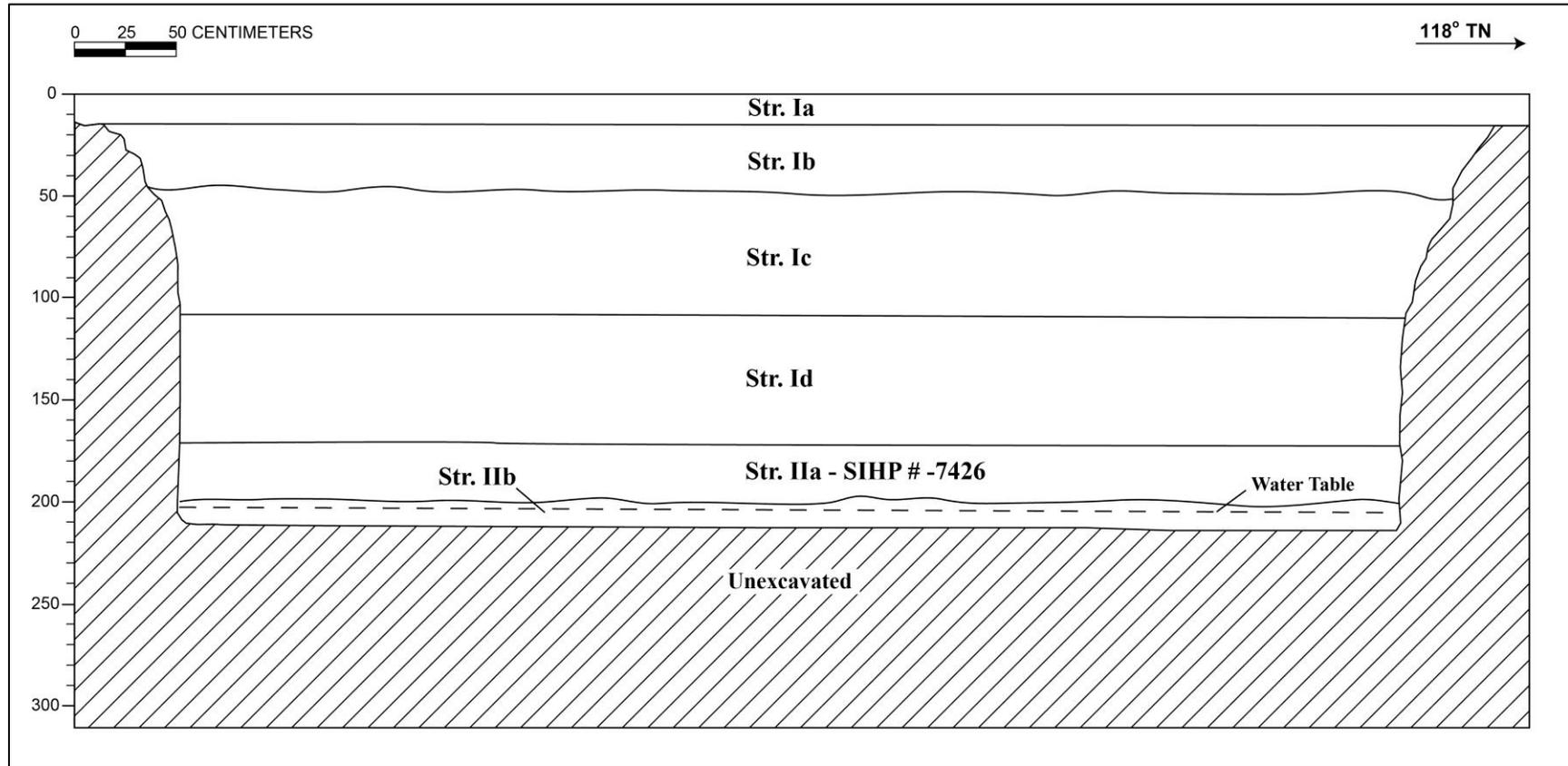
**Summary:** T-081 was excavated to a depth of 2.12 mbs, and beneath the water table at 2.02 mbs. The stratigraphy of T-081 consisted of thick fill deposits (Ia-Ic) overlying natural sediment (IIa) and marine sand (IIb) near water table. The stratigraphy generally conformed to the USDA soil survey designation of Fill land (FL). The results of sample analysis indicated a mixed depositional origin for Stratum IIa, and a natural marine depositional origin for Stratum IIb. The buried A-horizon (IIa) within T-081 is considered to be a possible wetland deposit and is designated a component of SIHP# 50-80-14-7426 (see Volume I).



T-081 general location, view to the west



T-081 northeast wall profile, view to northwest



T-081 northeast wall profile

## T-081 Stratigraphic Description

<b>Stratum</b>	<b>Depth (cmbs)</b>	<b>Description</b>
Ia	0-15	Asphalt
Ib	15-48	Fill; 10 YR 3/1 (very dark gray); extremely stony silty sand; structureless, single-grain; moist, loose consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary; imported fill layer, subangular boulders
Ic	48-108	Fill; 10 YR 4/4 (dark yellowish brown); extremely gravelly silty loam; structureless, single-grain; moist, loose consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary; imported fill layer
Id	108-172	Fill; 10 YR 3/4 (dark yellowish brown); clay loam; structureless, massive; wet, sticky consistency; plastic; terrigenous origin; abrupt, smooth lower boundary; slag material; fill possibly locally procured
IIa	172-200	Natural, buried A-horizon; 10 YR 2/2 (very dark brown); clay; structureless, massive; wet, sticky consistency; plastic; mixed origin; abrupt, smooth lower boundary; natural sediment layer, consistency with marsh/wetlands, contained freshwater shell, considered a component of SIHP# 50-80-14-7426
IIb	200-212	Natural; 10 YR 4/2 (dark grayish brown); sand; structureless, single-grain; wet, slightly sticky consistency; non-plastic; marine origin; lower boundary not visible;

### 3.35 Test Excavation 82 (T-082)

<b>Ahupua'a:</b>	Nu'uuanu
<b>LCA:</b>	23FL
<b>TMK #:</b>	1-1-015 [Plat]
<b>Elevation Above Sea Level:</b>	1.55 m
<b>UTM:</b>	617369.25 mE2357896.81 mN
<b>Max Length, Width, Depth:</b>	3.76 m / 0.90 m / 2.0 mbs
<b>Orientation:</b>	126 / 306° TN
<b>Targeted Project Component:</b>	Utility Relocation/ column foundation
<b>USDA Soil Designation:</b>	Ewa silty clay loam (EmA)

**Setting:** Test Excavation 82 (T-082) was located within the northernmost southeast-bound lane of Dillingham Boulevard, approximately 96 m northwest of the Dillingham Blvd. and Akepo Lane intersection, within the utility corridor for the HHCTCP. Utilities that were located in the vicinity of T-082 included two water lines (approximately 4.5 m and 9.6 m to the north), and a storm drain (6.4 m to the south). The topography of the area surrounding T-082 was level. T-082 was relocated to 0.55 m north of the original excavation location.

**Summary of Background Research and Land Use:** T-082 was located within LCA 23FL, Fort Lands, that was awarded to Moeino. Several other surrounding LCAs were described as having taro *lo'i*, pastures (*kula* land), and *loko* (fishpond). T-082 was located 105 m northwest of the Kūwili Fishpond (SIHP # 50-82-14-5368). According to Monsarrat's 1897 map of Honolulu, T-082 was located within a rice field 112.5 m west of a reform school. The 1919 U.S. Army War Department Fire Control map of Honolulu depicts urban development to the northeast of T-082 and the OR&L tracks approximately 8 m to the south. The 1933 U.S. Army War Department Fire Control map depicts heavy urban development in the area of T-082, which has continued to the present.

T-082 was located approximately 220.0 m southwest of SIHP 50-80-14-03373 (Dunn et al, 1991), a subsurface cultural deposit with two associated post-Contact burials. T-082 was located approximately 105.0 m northwest of Kūwili Fishpond (SIHP 50-80-14-05368) (McDermott and Mann 2001).

**Documentation Limitations:** T-082 was excavated to the coral shelf at 2.0 mbs and beneath the water table at 1.98 mbs. There were no factors that limited the excavation of T-082.

**Stratigraphic Summary:** The stratigraphy of T-082 consisted of fill deposits overlying natural sediment near the coral shelf. Observed strata included asphalt (Ia), extremely gravelly sand base course (Ib), extremely gravelly sand fill (Ic), cobbly sandy loam fill (Id), very fine silty sand fill (Ie), cobbly sandy clay locally-procured fill (If), and locally-procured clay fill with boulder inclusions (Ig) overlying natural extremely gravelly sand (II). The stratigraphy did not conform to the USDA soil survey designation of Ewa silty clay loam (EmA).

**Artifacts Discussion:** A total of 33 artifacts (see following table and photographs) were collected from Stratum Id between 0.38 and 0.7 mbs. The artifacts included seven ceramic fragments (Acc. # 082-A-1 to A-6) from a minimum of six vessels, 15 glass fragments (Acc. # 082-A-7 to A-12) from a minimum of 6 bottles, and 11 miscellaneous items (Acc. # 082-A-13 to A-24), including bricks, an OR&L rail spike dating to 1889-1947, and barbed wire. Datable attributes that were present include two glass bottle fragments (1840s-1920s, post 1870s), and one glass cosmetic jar (post 1903), which indicate an age range of manufacture between 1840 and the 1920s. Artifacts collected from Stratum Id (cobble sandy loam fill) indicated that the stratum dates from the late nineteenth-early twentieth century.

**Features Discussion:** No features were observed.

**Terrestrial Faunal Remains Collected During Excavation:** No terrestrial faunal remains were observed.

**Sample Results** No sample analysis was conducted.

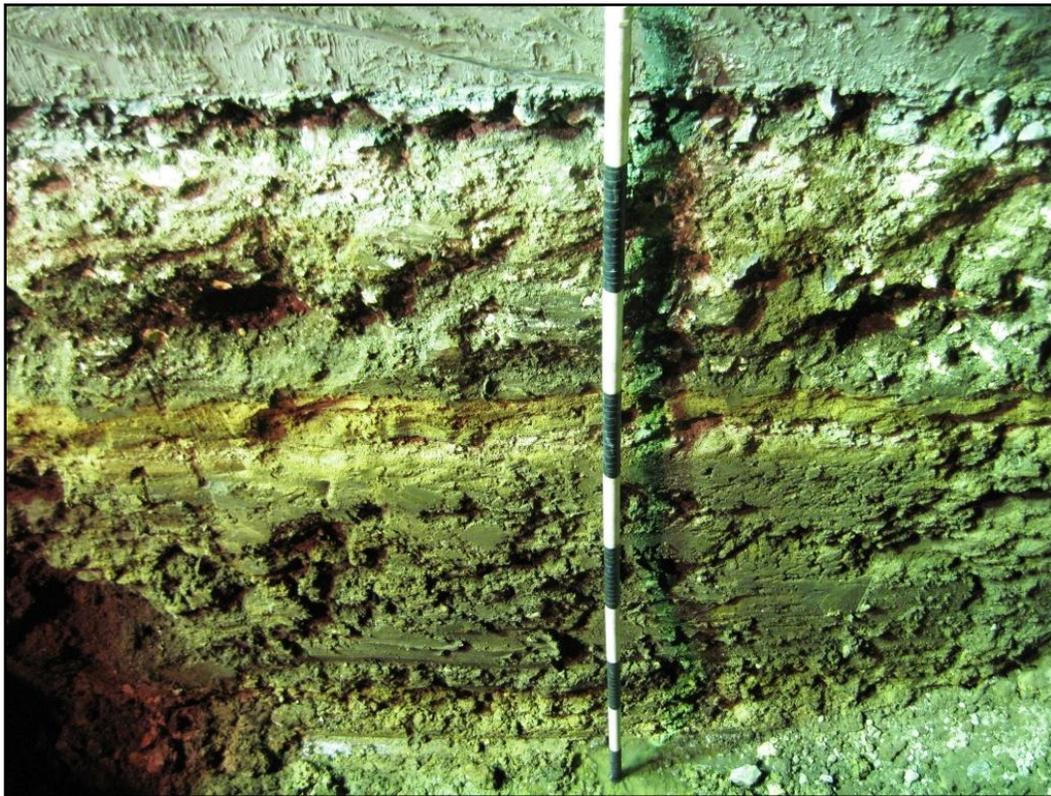
**GPR Discussion:** A review of amplitude slice maps indicated no linear features that might have indicated the presence of utilities. Reflectivity was relatively uniform throughout the grid and decreased with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.25 mbs.

GPR depth profiles for T-082 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, which occurred around 0.15 mbs. An anomaly was observed in the profile, but it was not encountered during excavation. The maximum depth of clean signal return was approximately 0.90 mbs.

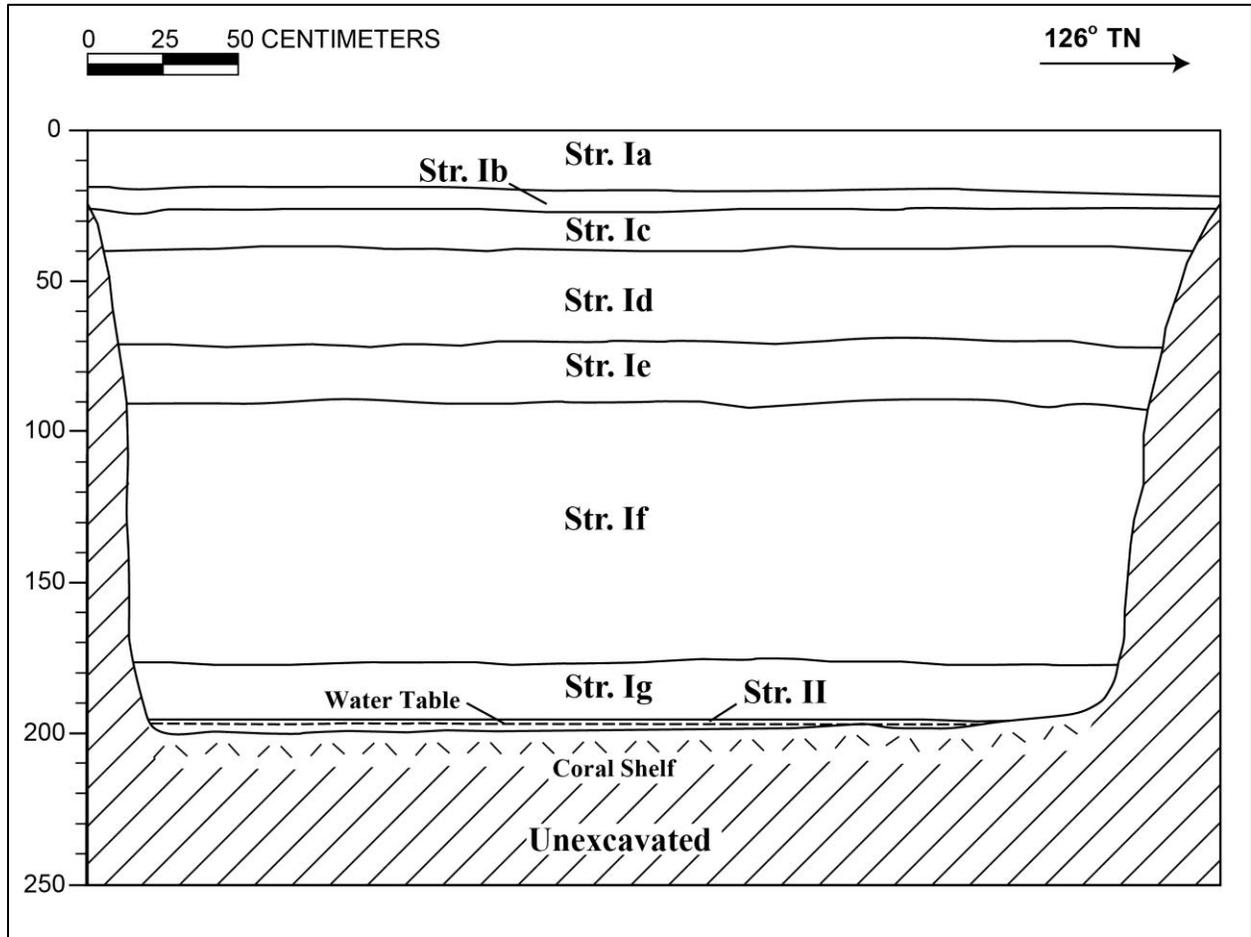
**Summary:** T-082 was excavated to the coral shelf at 2.0 mbs and beneath the water table at 1.98 mbs. The stratigraphy of T-082 consisted of fill deposits (Ia-Ig) overlying natural sediment (II) near the coral shelf. The stratigraphy did not conform to the USDA soil survey designation of Ewa silty clay loam (EmA). Artifacts collected from Stratum Id (cobble sandy loam fill) indicated that the stratum dates to the late nineteenth-early twentieth century. T-082 was within the boundary of, but did not contain wetland sediments from, SIHP# 50-80-14-7426 (see Volume I).



T-082 general location, view to southeast



T-082 northeast profile wall



T-082 northeast wall profile

## T-082 Stratigraphic Description

<b>Stratum</b>	<b>Depth (cmbs)</b>	<b>Description</b>
Ia	0-17	Asphalt
Ib	17-25	Fill; 10 YR 3/1 (very dark gray); extremely gravelly sand; structureless, single-grain; dry, loose consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; gravel base course, 90% angular crushed basalt
Ic	25-38	Fill; 10 YR 8/2 (very pale brown); extremely gravelly sand; structureless, single-grain; dry, loose consistency; non-plastic; mixed origin; clear, smooth lower boundary; crushed coral base course, 70% crushed coral
Id	38-70	Fill; 10 YR 2/2 (very dark brown); cobbly sandy loam; weak, fine crumb structure; moist, friable consistency; non-plastic; mixed origin; clear, smooth lower boundary; glass, ceramic, brick, metal, railroad spike; contained 20% crushed coral cobbles to small boulders
Ie	70-90	Fill; 10 YR 5/6 (yellowish brown) with common, silt mottles of 10 YR 3/3 (dark brown); very fine silty sand; structureless, single-grain; moist, loose consistency; non-plastic; mixed origin; diffuse, smooth lower boundary; non-local fill sand mixed with silt
If	90-175	Fill; 10 YR 3/2 (very dark grayish brown); very cobbly sandy clay; moderate, medium crumb structure; moist, firm consistency; plastic; mixed origin; diffuse, smooth lower boundary; possible locally procured fill, contained water rounded cobbles (river rock)
Ig	175-196	Fill; 7.5 YR 3/2 (dark brown); stony clay; structureless, massive; moist, firm consistency; very plastic; terrigenous origin; diffuse, smooth lower boundary; metal barbed wire (2x); possibly locally procured fill
II	196-200	Natural, 10 YR 4/4 (dark yellowish brown); extremely gravelly sand; structureless, single-grain; wet, non-sticky consistency; non-plastic; marine origin; lower boundary not visible; decomposing coral shelf overlaying coral shelf.

## T-082 Historic Artifact Analysis

Acc. # 082-A-	Prov.	Ceramic Type	Portion	No.	Paste; Decoration	Origin; Age	Comments
1	T-082, St. Id	Hollow- ware - cup	Base to body	2	Porcelain; Painted underglaze	Japanese, post 1921	"Made in Japan Porcelain / Trademark Minida".
2	T-082, St. Id	Flatware	Rim	1	Earthenware, Refined; Painted underglaze		Blue shell-edge on interior rim
3	T-082, St. Id	Dinner- ware	Rim	1	Porcelain; Transfer-print	Asian	Small square fragment with blue shell-edge rim
4	T-082, St. Id	Dinner- ware	Body to rim	1	Earthenware, Refined		Thin
5	T-082, St. Id	Hollow- ware	Base	1	Earthenware, Refined		
6	T-082, St. Id	Dinner- ware	Body	1	Earthenware, Refined		
Acc. # 082-A-	Prov.	Glass Type	Portion	No.	Color	Origin; Age	Comments
7	T-082, St. Id	Bottle, Beverage	Lip	1	Aqua	1840s- 1920s	Blob top
8	T-082, St. Id	Bottle	Body	3	Aqua		
9	T-082, St. Id	Bottle	Body/ neck	2	Clear	1870s- post	
10	T-082, St. Id	Bottle	Body	2	Green		
11	T-082, St. Id	Bottle	Body	1	Olive		
12	T-082, St. Id	Jar, Cosmetic	Body	6	White	1903- post	Milk glass; Pond's Cold Cream; ABM lip
Acc. # 082-A-	Prov.	Type	Portion	No.	Material	Origin; Age	Comments
13	T-082, St. Id	Brick	Fragment	2	--		Red color
14	T-082, St. Id	Brick	Fragment	1	--		Red color, machine- made
15	T-082, St. Id	Brick	Fragment	1	--		Red color, machine- made
16	T-082, St. Id	Insulator	Half	1	Ceramic		White glaze porcelain
17	T-082, St. Id	Possible Pipe Fitting	Fragment	1	Metal		Metal semi circle piece, possible pipe fitting
18	T-082, St. Id	Rail Spike	Complete	1	Metal	1889- 1947	Rail spike, bent into serpentine shape
19	T-082, St. Id	Unknown	Fragment	1	Composite		Block of coal-like material
20	T-082, St. Id	Wire	Fragment	1	Metal		Rusty metal wire
21	T-082, St. Ig	Barbed Wire	Fragment	2	Metal		Two twisted wires; too corroded to see ties



T-082 ceramic fragments (Acc. # 082-A-1 to A-6, shown left to right and top to bottom) from Stratum Id



T-082 “Made in Japan” ceramic artifact (Acc. # 082-A-1) from Stratum Id



T-082 glass bottle/jar fragments (Acc. # 082-A-7- to A-12) from Stratum Id

### 3.36 Test Excavation 83 (T-083)

<b>Ahupua'a:</b>	Nu'uuanu
<b>LCA:</b>	665
<b>TMK #:</b>	1-5-006 [Plat]
<b>Elevation:</b>	2.12 m
<b>UTM:</b>	617412.15 mE, 2357885.44 mN
<b>Max Length / Width / Depth:</b>	7.4 m / 1.2 m / 1.3 mbs
<b>Orientation:</b>	306 / 126° TN
<b>Targeted Project Component:</b>	Utility relocation (Tel Com Manhole)
<b>USDA Soil Designation:</b>	Ewa silty clay loam (EmA)

**Setting:** Test Excavation 83 (T-083) was located within the northernmost west-bound lane of Dillingham Boulevard adjacent to the sidewalk, approximately 52 m northwest of the Dillingham Blvd. and Akepo Lane intersection. Utilities that were located within the vicinity of T-083 included three water lines approximately 1.5 m west, 3.6 m east, and 1.2 m north of the excavation. The topography of the excavation area was level.

**Summary of Background Research and Land Use:** Brown's 1885 map of Kalihi and Kapālama depict T-083 within LCA 665 and 60.0 m north of the former shoreline. W.A. Wall's 1887 map of Honolulu indicated that T-083 was within wetlands. Monsarrat's 1897 map of Honolulu showed urban development and a Chinese hospital present approximately 16.0 m north of T-083. As development continued, the 1919 U.S. Army War Department Fire Control map of Honolulu indicated that T-083 was located within the footprint of a house or structure. The 1933 U.S. Army War Department Fire Control map of Honolulu indicated the development of the OR&L track which was located approximately 12.0 m west T-083. The development of the area surrounding T-083 was generally consistent from 1953 to the present day as evidence by historic maps.

T-083 was located approximately 180.0 m south of SIHP 50-80-14-03373 (Dunn et al, 1991), a subsurface cultural deposit with two associated post-Contact burials. T-083 was located approximately 70.0 m northwest of Kūwili Fishpond (SIHP 50-80-14-05368) (McDermott and Mann, 2001).

**Documentation Limitations:** T-083 was excavated to the coral shelf at 1.30 mbs. There were no factors that limited excavation.

**Stratigraphic Summary:** The stratigraphy of T-083 consisted of a modern A-horizon (topsoil) and fill to the coral shelf. Observed strata included modern A-horizon top soil (Ia) and crushed coralline sand (Ib) overlying the coral shelf. The stratigraphy did not conform to the USDA soil survey designation of Ewa silty clay loam (EmA).

**Artifacts Discussion:** No artifacts were observed.

**Features Discussion:** No features were observed.

**Terrestrial Faunal Remains Collected During Excavation:** No terrestrial faunal remains were observed.

**Sample Results:** No sample analysis was conducted.

**GPR Discussion:** A review of amplitude slice maps indicated a linear feature but not within the excavation boundaries. Reflectivity was relatively uniform throughout the grid and decreased with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.75 mbs.

GPR depth profiles for T-083 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, which occurred around 0.15 mbs. Several anomalies were observed in the profile, which seemed to correspond to several roots that were encountered during excavation. The maximum depth of clean signal return was approximately 1.0 mbs.

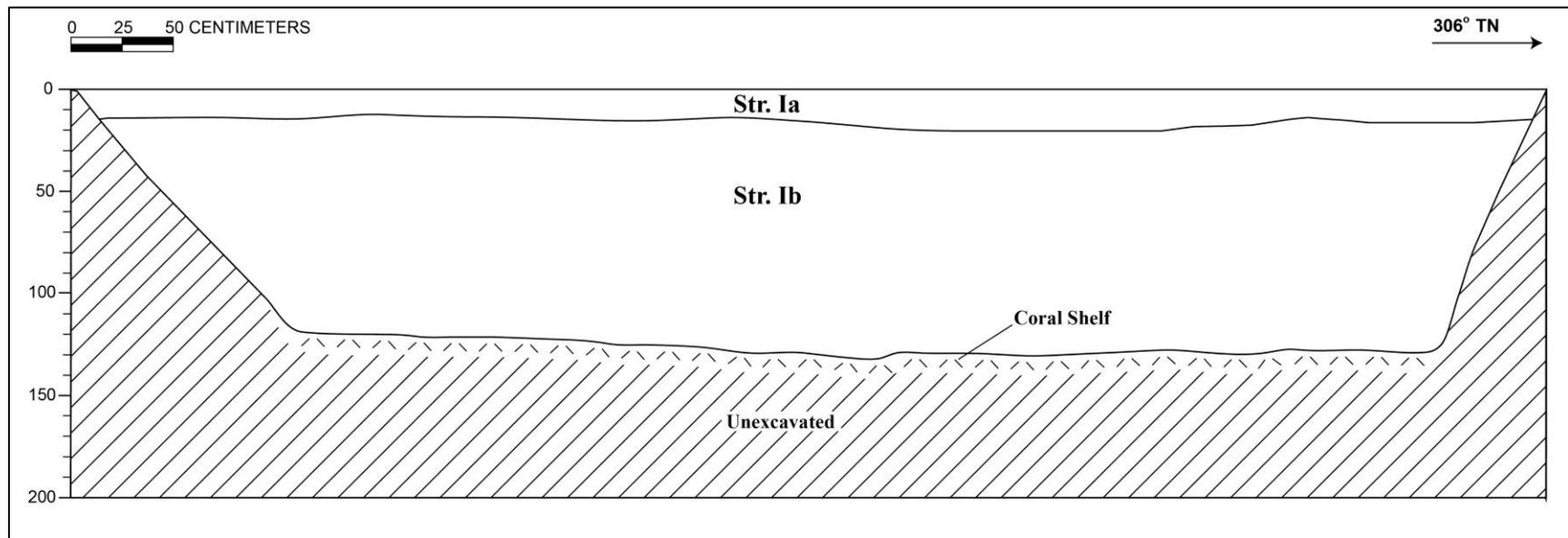
**Summary:** T-083 was excavated to the coral shelf at 1.30 mbs. The stratigraphy of T-083 consisted of a modern A-horizon (Ia) and fill (Ib) to the coral shelf. The stratigraphy did not conform to the USDA Ewa silty clay loam (EmA) soil designation.



T-083 general location, view to the southeast



T-083 southeast wall profile, view to south



T-083 southeast wall profile

## T-083 Stratigraphic Description

<b>Stratum</b>	<b>Depth (cmbs)</b>	<b>Description</b>
Ia	0-20	Modern A-horizon; 10 YR 3/1 (very dark gray) with common, fine-coarse sand mottles 10 YR 3/1 (very pale brown); silt loam; structureless, single-grain; dry, loose consistency; non-plastic; terrigenous origin; abrupt, wavy lower boundary
Ib	16-130	Fill; 10 YR 8/2 (very pale brown); extremely cobbly sand; structureless, single-grain; dry, loose consistency; non-plastic; marine sediment; common, medium to very coarse roots; lower boundary not observed; contains 80% coral cobbles; crushed coralline sand

### 3.37 Test Excavation 84 (T-084)

<b>Ahupua'a:</b>	Nu'uuanu
<b>LCA:</b>	655
<b>TMK #:</b>	1-5-006 [Plat]
<b>Elevation:</b>	1.9 m
<b>UTM:</b>	617447.10 mE, 2357849.72 mN
<b>Max Length / Width / Depth:</b>	3.0 m / 0.75 m / 0.75 mbs
<b>Orientation:</b>	122 / 302° TN
<b>Targeted Project Component:</b>	Guideway Column
<b>USDA Soil Designation:</b>	Ewa silty clay loam (EmA)

**Setting:** Test Excavation 84 (T-084) was located within a road cut or causeway, approximately 7.5 m southwest of the Dillingham Blvd. and Akepo Lane intersection. T-084 was located on public property belonging to the City and County of Honolulu. Utilities that were located in the vicinity of T-084 included a telephone line (approximately 4.2 m north) and a water line (approximately 4.2 m south). The surrounding topography of T-084 was fairly level.

**Summary of Background Research and Land Use:** According to the 1885 Brown and Kapālama map T-084 was located within LCA 655 awarded to Kahaleaahu. T-084 was also located 7.0 m south of a former building footprint. The Kūwili Fishpond shoreline was approximately 30.0 m north (*mauka*) of T-084 according to the 1887 Wall map. Monsarrat's 1897 map of Honolulu map indicated some development within the area including a Chinese hospital, which was roughly 76.9 m north of T-084. According to the 1919 U.S. Army War Department Fire Control map urban development proliferated with the major addition of the OR&L tracks, which are located approximately 64.3 m west of T-084. The development of the area surrounding T-084 was generally consistent from 1953 to the present day as evidence by historic maps.

T-084 was located approximately 230.0 m south of SIHP 50-80-14-03373 (Dunn et al, 1991), a subsurface cultural deposit with two associated post-Contact burials. T-084 was located approximately 30.0 m northwest of Kūwili Fishpond (SIHP 50-80-14-05368) (McDermott and Mann, 2001).

**Documentation Limitations:** T-084 was excavated to the coral shelf at 0.4 mbs. To insure that the dense coral at 0.40 mbs was the natural coral shelf, the excavation continued to a depth of 0.75 mbs. There were no factors that limited the excavation of T-084.

**Stratigraphic Summary:** The stratigraphy of T-084 consisted of fill to the coral shelf. Observed strata included asphalt (Ia), crushed coral (Ib), and the coral shelf (II). The stratigraphy did not conform to the USDA soil survey designation of Ewa silty clay loam (EmA).

**Artifacts Discussion:** No artifacts were observed.

**Features Discussion:** No features were observed.

**Terrestrial Faunal Remains Collected During Excavation:** No terrestrial faunal remains were observed.

**Sample Results** No sample analysis was conducted.

**GPR Discussion:** A review of amplitude slice maps indicated a linear feature located outside excavation boundaries. Reflectivity was relatively uniform throughout the grid and decreased with depth, except for the linear feature. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.25 mbs.

GPR depth profiles for T-084 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, which occurred around 0.30 mbs. No utilities were observed in the profile. The maximum depth of clean signal return was approximately 1.0 mbs.

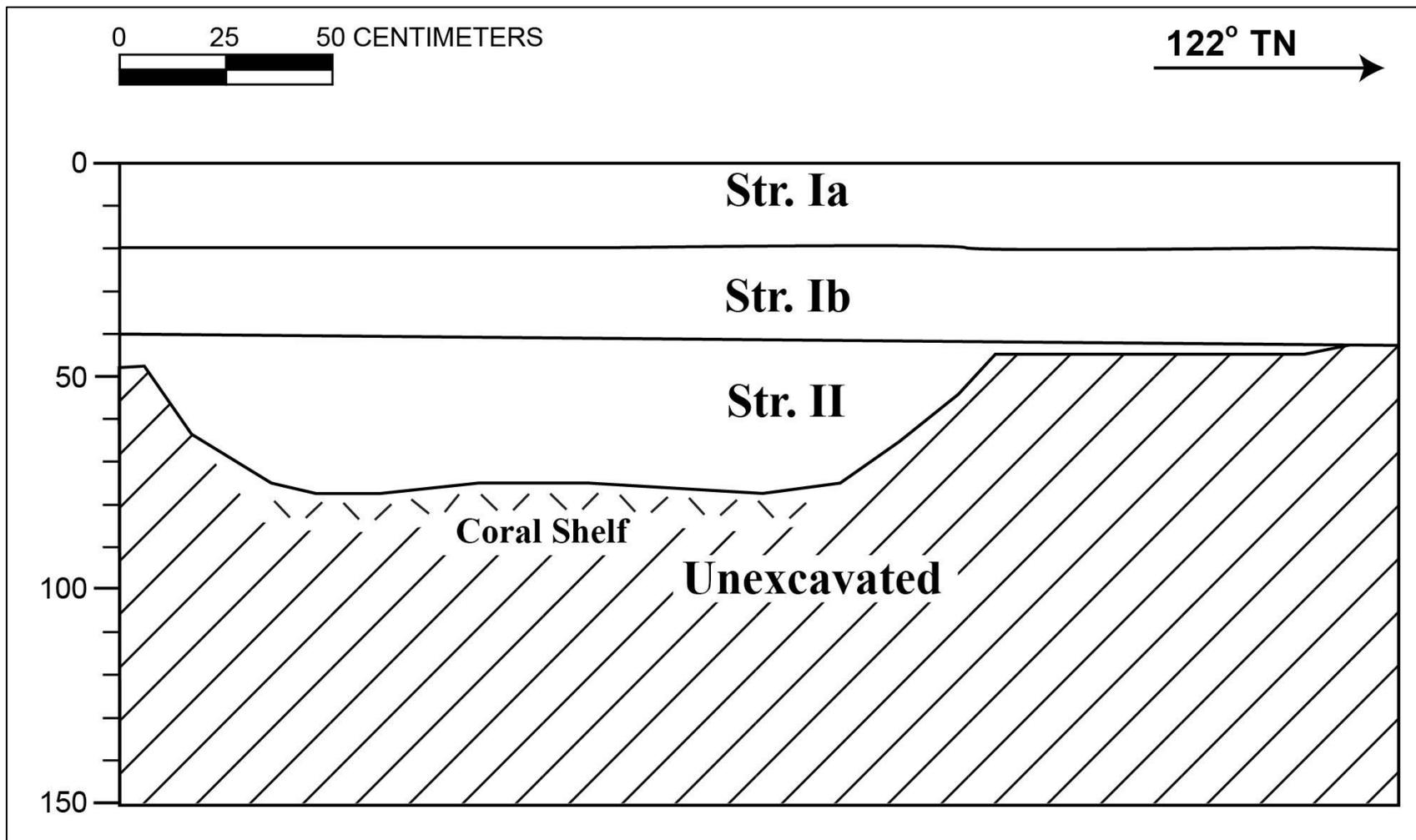
**Summary:** T-084 was excavated to the coral shelf at 0.4 mbs and into the shelf to 0.75 mbs. The stratigraphy of T-084 consisted of fill (Ia and Ib) to the coral shelf (II). The stratigraphy did not conform to the USDA soil survey designation of Ewa silty clay loam (EmA).



T-084 general location, view to the southeast



T-084 southwest wall profile view (opposite of profile wall)



T-084 northeast wall profile

## T-084 Stratigraphic Description

<b>Stratum</b>	<b>Depth (cmbs)</b>	<b>Description</b>
Ia	0-20	Asphalt
Ib	20-40	Fill; 10YR 8/2 (very pale brown); extremely gravelly sand; structureless, single-grain; dry, loose consistency; non-plastic; marine origin; very abrupt, smooth lower boundary; crushed coral base course
II	40-75	Natural, coral shelf