Trench 409

Trench 409 was located in the southwest portion of Parcel 3 Mauka within GR 1513; south of Waikapū Stream (see Figures 76, 77). No land use data was available for this Grant, thus trench excavations were performed to ascertain presence/absence of cultural materials. TR 409 measured 4.8 m long by 1.4 m wide by 1.80 m deep and was oriented at 180°. It contained a three layer stratigraphic sequence with excavations terminating in sterile soil and saprolytic bedrock (Figure 82). No cultural materials were observed within TR 400.

Layer I (0-42cmbs): is a dark reddish brown (2.5yr 3/3), clay loam, pastureland and previous agricultural plow zone, with deteriorated drip-lines, slightly-plastic, slightly-sticky, weak, fine to medium grain, slightly hard, blocky, with a low frequency of roots. Boundary was clear and wavy overlying Layer II. No cultural materials were observed in this layer.
Layer II (42-121cmbs): is a dark reddish brown (2.5yr 3/4), clay loam, slightly-plastic, slightly-sticky, weak, fine to medium grain, blocky, slightly hard. No cultural materials were observed in this layer.
Layer III (121 cmbs-BOE) consisted of a clay loam strong brown (7.5YR 4/4) overlying decomposing bedrock.

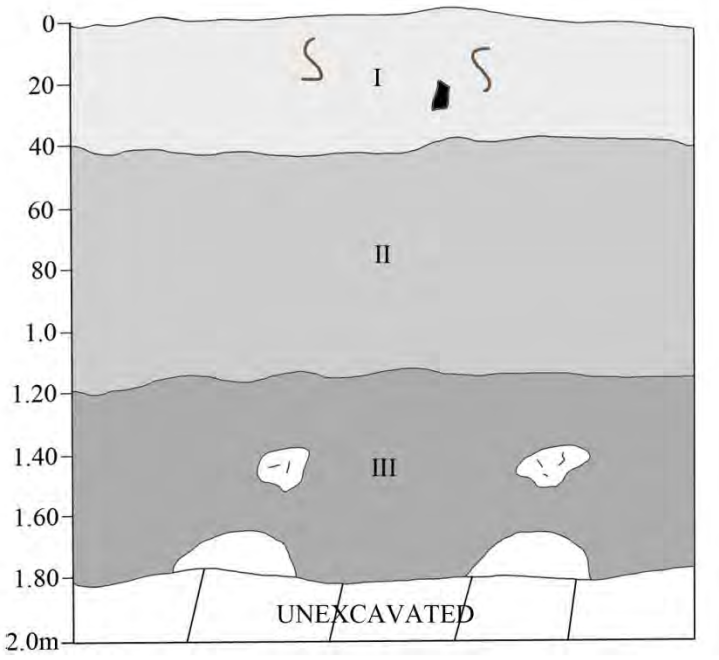


Figure 82. Stratigraphic Profile of TR 409 East Wall

Trench 412

Trench 412 (TR 412) was located in the northeastern portion of Parcel 3 Mauka, south of Waikapū Stream, within LCA 2577:2 and GR 1675 (see Figures 76, 77, 82 and Table XI). This section contained a

two layer stratigraphic sequence with excavations terminating within sterile soils containing medium and large sized boulders (Figures 83 and 84). A 4.9 m long by 1.44 m wide by 1.81 m deep, oriented 180° by 360° section of this area was recorded and is further described below. A single clear glass bottle fragment was recovered approximately 30 cmbs within TR 412.

Layer I (0-78cmbs): is a dark brown (7.5yr 3/3), silt loam, previous agricultural plow zone, with deteriorated drip-lines, slightly-plastic, slightly-sticky, weak, fine to medium grain, slightly hard, blocky, with a high frequency of roots. Boundary was clear and wavy overlying Layer II. A clear glass fragment was recovered.
Layer II (60-181cmbs): is brown (7.5yr 3/4), silt loam, slightly-plastic, slightly-sticky, friable, fine to medium grain, blocky, slightly hard. High frequency of decomposing bedrock and large boulders were noted at base of Layer II. No cultural materials were observed in this layer.

Figure 83. Overview of TR 412 within Parcel 3 Mauka, View to East

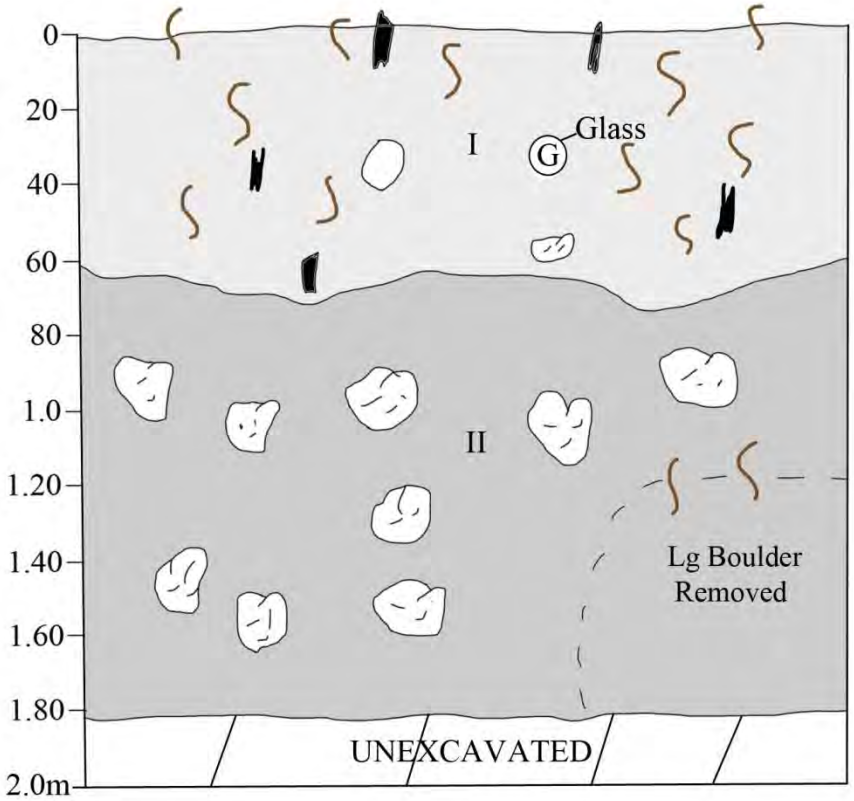


Figure 84. Photograph of TR 412 South Wall (top); and Stratigraphic Profile of TR 412 South Wall (bottom)

DISCUSSION PARCEL 3 MAUKA BACKHOE TRENCHING

Several LCA's and Grants were documented within this northeastern portion of Parcel 3 Mauka. Thus, eleven (11) trenches were excavated to ascertain presence/absence of buried remains. All trenches were negative for cultural materials with the exception of TR's 412 and 414, which contained sparse historic materials on the surface or close to the surface (TR 414) within Layer I (TR 412) and did not constitute a feature designation. Although the testing was negative within this locality of Parcel 3 Mauka, archaeological monitoring during future development is warranted for this northeastern section, and within other LCA's further west, if improvements occur within these small LCA's.

PARCEL 3 WAENA

Parcel 3 Waena (TMK 3-6-004:003 pors.) is comprised of approximately 72-acres and is situated adjacent to Honoa`pi`ilani Highway with Site 5197 (Waihe`e Ditch) bisecting this zone north-south, creating eastern and western sections (see Figures 6 and 7). The portion of land to the east of Waihe`e Ditch (eastern section) is comprised of fallow cane fields and small agricultural plots leased by individuals for various fruit and vegetable cultivation (Figure 85). A total of twenty-seven (27) trenches (TR 1-27) were excavated and stratigraphically recorded within this eastern section (Figure 86 and Tables XII and XIII). Since no LCA's and or Grants were noted in the eastern or western sections of Parcel 3 Waena, backhoe test trenches were spaced to provide a representative sample. Scattered fragments of concrete with large gravel aggregate inclusions were identified throughout the surface area and likely represent demolished foundations and/or irrigation ditches that were utilized during prior sugarcane operations by HC&S. These concrete fragments are the same material that was used in the construction of Site 7883 (pump houses). Three clearing piles Site 7884 Features 3-5 were noted in the eastern (Fes. 4 and 5) and the western (Fe.3) sections (Figure 87). The western section also contains a reservoir and is currently utilized for active sugarcane cultivation (Figure 88). A total of fifteen (15) trenches (TR 01-015) were excavated and stratigraphically recorded in this eastern portion (see Figure 86 and Table XIV).

Figure 85. Overview Photograph of Parcel 3 Waena Eastern Section with Clearing Pile Site 7884 Feature 3 in the background, View to Northwest

Temporary Sites 23-25

TS 23-25 are a continuation of the rock piles identified within Parcel 3 Mauka. TS 23 is a rock pile situated near the northwestern corner of Parcel 3 Waena western (*mauka*) section. It measures 38.10 m (125 ft.) long (E/W) by 27.45 m (90 ft.) wide (N/W) and is comprised of pushed cobbles, boulders soils and vegetation. TS 24 is located in the eastern (*makai*) section within the southwestern corner along the cane haul road. This feature measures 61.0 m (200 ft.) long (NE/SW) by 45.75m (150 ft.) wide and is comprised of the same materials as TS 23. TS 25 is an elongated rock pile consisting of two mounds pushed together. It is situated along the southern boundary of the western section and measures 500 ft. long and ranges from 15.24 m (50 ft) to 30.48 m (100 ft.) wide.

TS 23-25 are agricultural clearing/push mounds associated with sugarcane cultivation. As previously discussed, these rock piles do not meet any of the criteria under significance evaluations, and were not assigned a State site number.

Figure 86. Plan View Topographic Map Showing Trench`s 1-27 and 01-015 and TS 23-25 within Parcel 3 Waena

Figure 87. Overview Photograph of Parcel 3 Waena from TR 22 with Temporary Site 23 Rock Mound, View to Southeast

Figure 88. Overview Photograph of Parcel 3 Waena (Western Section) from Reservoir, View to South

During the testing program, the trenches within the eastern and western sections exhibited a similar stratigraphy. For the eastern portion, a two to seven layer/lens stratigraphic sequence was observed, and for the western section, a three to six layer/lens soil profile was recorded. Representative stratigraphic sequences are presented below for each section.

OVERALL STRATIGRAPHY FOR EASTERN SECTION OF PARCEL 3 WAENA

Layer I consisted of an upper loamy silt layer, that varied from a dark brown, brown or a very dark gray brown (7.5YR 3/2, 3/3 or 10YR 4/3), and varied from 50 to 60 cm thick. This was the plow zone from previous cultivation activities. Layer I was typically mixed with torn black plastic drip-lines, PVC plastic irrigation hoses, and concrete aggregate pieces that had been used during the previous commercial sugarcane cultivation. There was a low frequency of rocks in this layer, but a high frequency of roots from surface vegetation.

Layer II generally consisted to be a silt loam and/or stony silt loam, brown, dark brown, very dark gray brown (10YR 3/2, 4/3, 7.5YR 3/3, 3/4), and varied from 44-127 cm thick, with a low density of roots and a medium frequency of rocks and/or decomposing bedrock. Trenches excavated towards the northwestern end of the project area exhibited a color that tended to be browner or more yellow second layer, which ranged in color from dark brown (7.5 YR 3/4 loam to mottled dark (7.5YR 3/4) and dark reddish brown (5 YR 3/4) silt loam. There was usually a distinct transition between this layer and the plow zone above, as this layer never had any materials from commercial sugarcane cultivation mixed within it and generally appeared less disturbed and contained saprolytic rock.

Layer III was present in two of the trenches. Layer III generally ranged in color from brown to dark yellowish brown (7.5 YR 4/3, 4/4) to dark grayish brown (10 YR 4/2) silt loam, streambed gravel with silt, to gravel with a higher density of pebbles than the upper layers as a result of decomposing bedrock. Layer III has a low density of roots and with a higher density of pebbles than the upper layers as a result of streambed and storm-wash inclusions, along with decomposing bedrock mixed with saprolytic bedrock. No cultural materials were observed in this layer.

Six of the trenches exhibited a two layer profile, two (2) exhibited a tripartite sequence, thirteen (13) trenches contained a four layer sequence, seven (7) trenches a five layer sequence, and one (1) trench exhibited six strata. Representative stratigraphic profiles with associated photographs for TR's 1 are presented below to exemplify the results.

Table XII. Summary of Trench Description for Eastern Section of Parcel 3 Waena

TRENCH	LOCATION	DIMENSIONS	ORIENTATION	STRATIGRAPHY	COMMENTS
1	In the extreme southwest corner	4.7m x 1.4m x 1.4 m	360° x 180° x	I-IV/sand	Non-Cultural
2	In the extreme southern portion	4.6m x 1.41m x 1.66m	270° x 90° x	I-IV	Non-Cultural
3	In the extreme southwest corner	4.7m x 1.41m x 1.9m	360° x 180° x	I-IV	Non-Cultural Charcoal Flecks in Layer IV
4	In the extreme southeast corner	4.6m x 1.42m x 1.8m	270° x 90°	I-IV	Non-Cultural
5	In the western portion	4.6m x 1.42m x 1.9m	360° x 180°	I-IV Layer IV on the east	Non-Cultural
6	In the south central portion	4.7m x 1.41m x 2.3m	270° x 90°	I-V	Non-Cultural
7	In the south central portion	4.7m x 1.42m x 2.0m	360° x 180°	I-V	Non-Cultural
8	In the southeastern central portion	4.7m x 1.43m x 2.3m	270° x 90°	I-IV	Non-Cultural
9	In the southeastern portion	4.7m x 1.41m x 1.4m	360° x 180°	I-V	Non-Cultural
10	In the southwestern portion	4.6m x 1.45m x 2.24m	270° x 90°	I-IV	Non-Cultural
11	In the central southwestern portion	4.7m x 1.42m x 2.32m	270° x 90°	I-IV	Non-Cultural
12	In the central portion	4.6m x 1.42m x 2.08m	270° x 90°	I-IV	Non-Cultural
13	In the central portion	4.6m x 1.45m x 2.24m	360° x 180°	I-IV	Non-Cultural
14	In the eastern central portion	4.6m x 1.42m x 2.3m	270° x 90°	I-VI	Non-Cultural
15	In the northwestern portion	4.7m x 1.45m x 2.34m	360° x 180°	I-V	Non-Cultural
16	In the northwestern central portion	4.6m x 1.44m x 2.2m	270° x 90°	I-IV	Non-Cultural
17	In the northwestern central portion	4.7m x 1.45m x 2.0m	360° x 180°	I-IV	Non-Cultural
18	In the northeastern central portion	4.6m x 1.43m x 1.84m	270° x 90°	I-IV	Non-Cultural
19	In the northeastern portion	4.6m x 1.43m x 1.92m	360° x 180°	I-III	Non-Cultural
20	In the northeastern portion	4.6m x 1.45m x 2.2m	360° x 180°	I-IV	Non-Cultural

Table XIII. cont'd Summary of Trench Description for Eastern Portion of Parcel 3 Waena

TRENCH	LOCATION	DIMENSIONS	ORIENTATION	STRATIGRAPHY	COMMENTS
21	In the north central portion	4.6m x 1.45m x 1.96m	270° x 90°	I-III	Non-Cultural
22	In the northwestern portion	4.7m x 1.42m x 1.84m	270° x 90°	I-II	Non-Cultural
23	In the northwestern portion	4.7m x 1.4m x 1.76m	360° x 180°	I-II	Non-Cultural
24	In the northwestern portion	4.6m x 1.41m x 1.84m	360° x 180°	I-II	Non-Cultural
25	In the extreme northwestern portion	4.7m x 1.42m x 1.12m	360° x 180°	I-II	Non-Cultural
26	In the north central portion	4.7m x 1.41m x 1.85m	270° x 90°	I-II	Non-Cultural
27	In the extreme northeastern portion	4.7m x 1.42m x 1.84m	360° x 180°	I-II	Non-Cultural

Trench 1

Trench 1 (TR 1) was situated in the extreme southwestern portion of Parcel 3 Waena, east of Kamehameha Golf Course and north of the abandoned rock quarry (see Figure 86). It contained deep soil deposits consisting of a four layer soil profile with excavations terminating in sterile soils (Figure 89-91 and Tables XII and XIII). At 1.10mbs a sand lens was identified on the north and east wall directly below Layer III, the deposit was discontinuous and appears to be a previous disturbance or import. No buried pipes were in the vicinity which would utilize sand for pipe bedding. TR 1 measured 4.7 m long by 1.4 m wide by 1.4 m deep and was oriented 360°. No cultural materials were observed within TR 1.

> **Layer I** (0-52cmbs): is a very dark grayish brown (10yr 3/2), silt loam, currently a fallow cane field and previous agricultural plow zone, with deteriorated drip-lines, slightly-plastic, slightly-sticky, weak, fine to medium grain, slightly hard, blocky, friable, with a medium frequency of roots. Boundary was clear and wavy overlying Layer II. No cultural materials were observed in this layer.

Layer II (41-88cmbs): is a very dark grayish brown (10yr 3/2), stony silt loam, slightly-plastic, slightly-sticky, weak, fine to medium grain, blocky, slightly hard, friable with a medium frequency of rocks, cobbles and gravel. No cultural materials were observed in this layer.
Layer III (82-117cmbs): is a dark yellowish brown (10yr 4/4), riverbed stony silt, weakly coherent, non-plastic, non-sticky, loose, single grain to fine to medium grain, with a high frequency of rocks, cobbles and medium to large boulders. Boundary was clear and wavy overlying Layer IV and Layer IIIa along the north, northwest and west section (Figures 90 and 92) overlying Layer IV. No cultural materials were observed in this layer.
Lens/Layer IIIa at 110cmbs a light yellowish brown (10yr 6/4) a fine to medium grain sand deposit was observed in a disturbed context in the north/northeast corner, overlying a sandy gravel extending 1.5 mbs on the north and east, overlying Layer IV on the north, northwest, non-plastic, non-sticky, loose, single grain, structureless, boundary abrupt and broken. No cultural materials were observed in this layer.
Layer IV (115-140cmbs): is a dark yellowish brown (10yr 4/6), gravel silt, observed on the northwestern portion and western portion of trench profile (Figure 92), loose, structureless. No cultural materials were observed in this layer.

Figure 89. Overview Photograph of TR 1 North Wall Profile

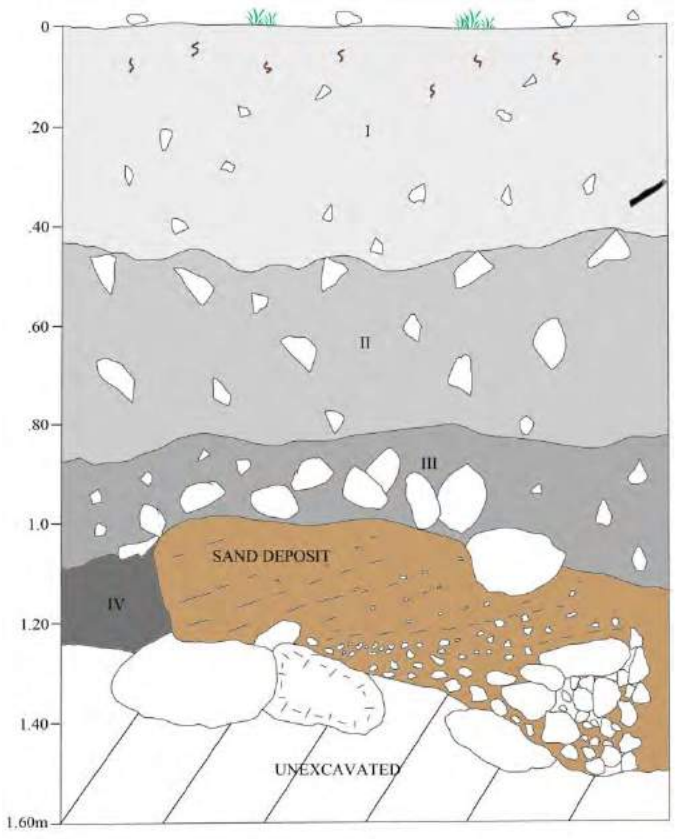


Figure 90. Stratigraphic Profile of TR 1 North Wall Profile

Figure 91. Up Close Photograph of Sand Deposit within TR 1, View to North

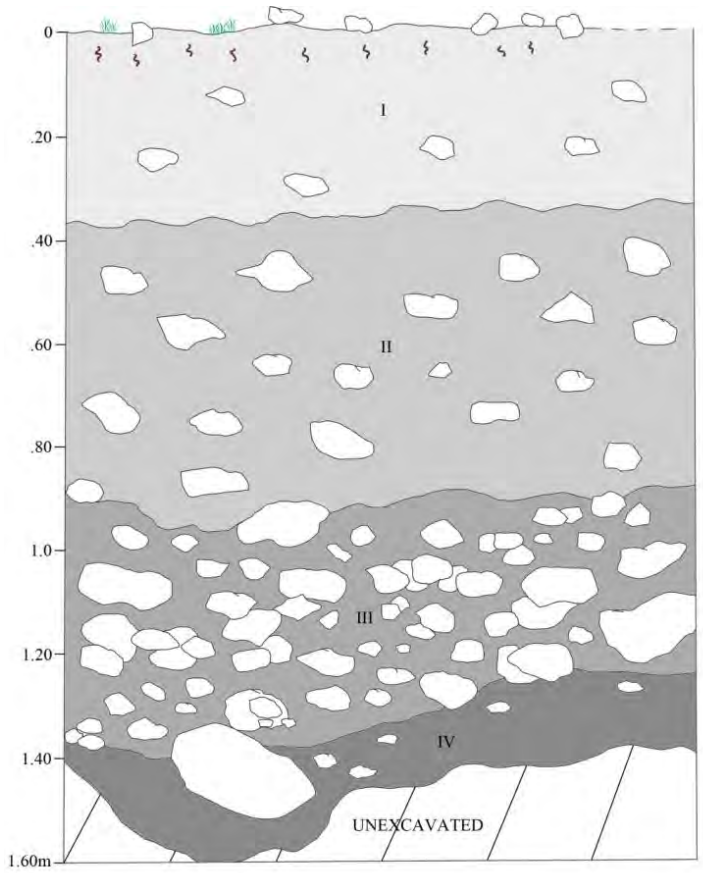


Figure 92. Stratigraphic Profile of TR 1 West Wall Profile

Trench 11

Trench 11 (TR 11) was situated in the central southwestern portion of Parcel 3 Waena, east of Kamehameha Golf Course and west of Site 5197 (Waihe`e Ditch) in an area currently utilized for individual agricultural pursuits. It contained a four layer stratigraphic sequence with excavations terminating within sterile streambed soils (Figure 93 and 94). TR 11 measured 4.7 m long by 1.42 m wide by 2.32 m deep, oriented 190°. No cultural materials were observed within Trench 11 (TR 11).

Layer I (0-60cmbs): is a dark brown (7.5yr 3/2), silt loam, currently a fallow cane field and previous agricultural plow zone, with deteriorated drip-lines, slightly-plastic, slightly-sticky, weak, fine to medium grain, slightly hard, blocky, with a medium frequency of roots and rocks. Boundary was clear and wavy overlying Layer II. No cultural materials were observed in this layer.
Layer II (58-121cmbs): is a dark brown (10yr 3/3), silt loam, slightly-plastic, slightly-sticky, weak, fine to medium grain, blocky, slightly hard, friable, with a medium frequency of rocks, cobbles and gravel. Boundary was clear and smooth overlying Layer III. No cultural materials were observed in this layer.
Layer III (116-212cmbs): is a brown (10yr 4/3), silt loam, weak, slightly hard, slightly-plastic, slightly-sticky, single grain with a high frequency of medium to large boulders. Boundary was clear and wavy overlying Layer IV streambed. No cultural materials were observed in this layer.
Layer IV (202-232cmbs): is a dark grayish brown (10yr 4/2), streambed, gravel silt, loose, fine to large grain, structureless, cobbles, pebbles and gravel. No cultural materials were observed in this layer.

Figure 93. Photograph of Stratigraphic Profile of TR 11 South Wall

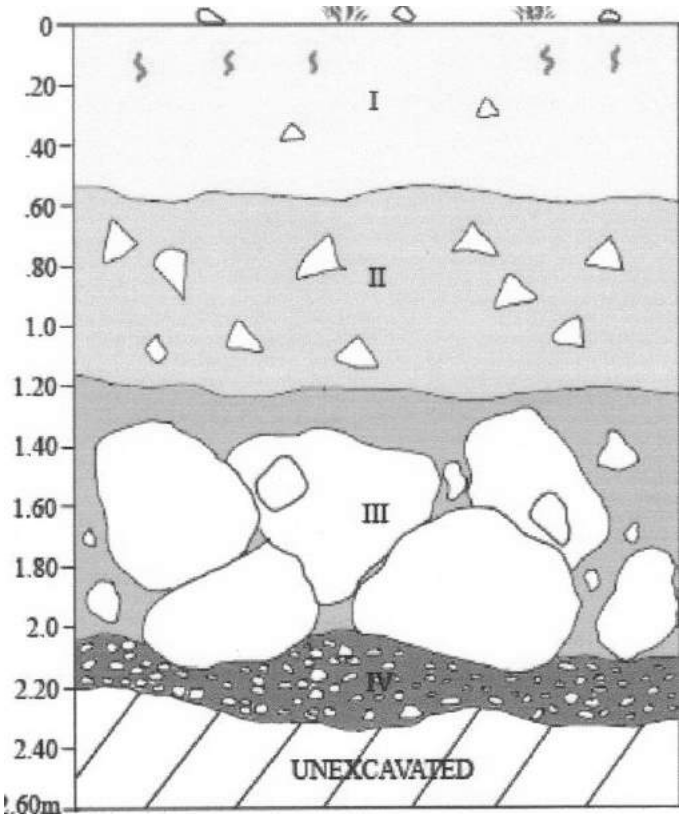


Figure 94. Stratigraphic Profile of TR 11 South Wall

Trench 14

Trench 14 (TR 14) was situated along the eastern boundary of Parcel 3 Waena, west of Waihe`e Ditch and the associated access road (see Figure 86). It contained a six layer/lens stratigraphic sequence with excavations terminating in sterile soils (Figures 95 and 96). Storm wash episodes were identified between 0.65-1.46 mbs and designated Layers Va-Vc. TR14 measured 4.6 m long by 1.42 m wide by 2.3 m deep, oriented 270°. No cultural materials were observed within Trench 14.

Layer I (0-25cmbs): is a dark brown (7.5yr 3/3), silt loam, currently a fallow cane field and previous agricultural plow zone, with deteriorated drip-lines, slightly-plastic, slightly-sticky, weak, fine to medium grain, slightly hard, blocky, friable with a medium frequency of roots. Boundary was clear and wavy overlying Layer II. No cultural materials were observed in this layer.

Layer II (24-48cmbs): is a brown (10yr 4/3), silt loam, slightly-plastic, slightly-sticky, weak, very fine to fine grain, blocky, slightly hard, friable with a medium frequency of rocks, cobbles and gravel. Boundary was abrupt and wavy overlying Layer III. No cultural materials were observed in this layer.

Layer III (44-56cmbs): is a dark grayish brown (10yr 4/2), stony silt, storm wash, weakly coherent, non-plastic, non-sticky, loose, fine to medium grain, with a high frequency of rounded cobbles, pebbles and gravel. Boundary was abrupt and wavy overlying Layer IV. No cultural materials were observed in this layer.

Layer IV (52-70cmbs) is a brown (10yr 4/3) silt loam, slightly-plastic, slightly-sticky, very fine grain, non-plastic, non-sticky, loose, single grain, structureless, boundary was abrupt and wavy overlying Layer Va. No cultural materials were observed in this layer.

Layer/lens Va (65-98cmbs): is a dark grayish brown (10yr 4/2), riverbed stony silt, weakly coherent, non-plastic, non-sticky, compact, medium to coarse grain, structureless, with a low to medium frequency of bedded rounded cobbles, pebbles and gravel overlying Layer Vb storm wash episode. Boundary was clear and wavy. No cultural materials were observed in this layer.
Layer Vb (90-130cmbs): is a dark grayish brown (10yr 4/2), riverbed stony silt, non-plastic, non-sticky, structureless, with medium frequency of bedded rounded cobbles, pebbles and gravel overlying Layer Vc storm wash episode, boundary was clear and wavy. No cultural materials were observed in this layer.
Layer Vc (106-146cmbs): is a dark grayish brown (10yr 4/2), riverbed stony silt, non-plastic, non-sticky, structureless, with a high frequency of bedded rounded cobbles, pebbles and gravel overlying Layer VI. Boundary was abrupt and wavy. No cultural materials were observed in this layer.
Layer VI (138-230cmbs): At 110cmbs is a brown (10yr 4/3), silt loam, weak, blocky, slightly-plastic, slightly-sticky, compact, fine grain. No cultural materials were observed in this layer.

Figure 95. Photograph of Stratigraphic Profile of TR 14 South Wall

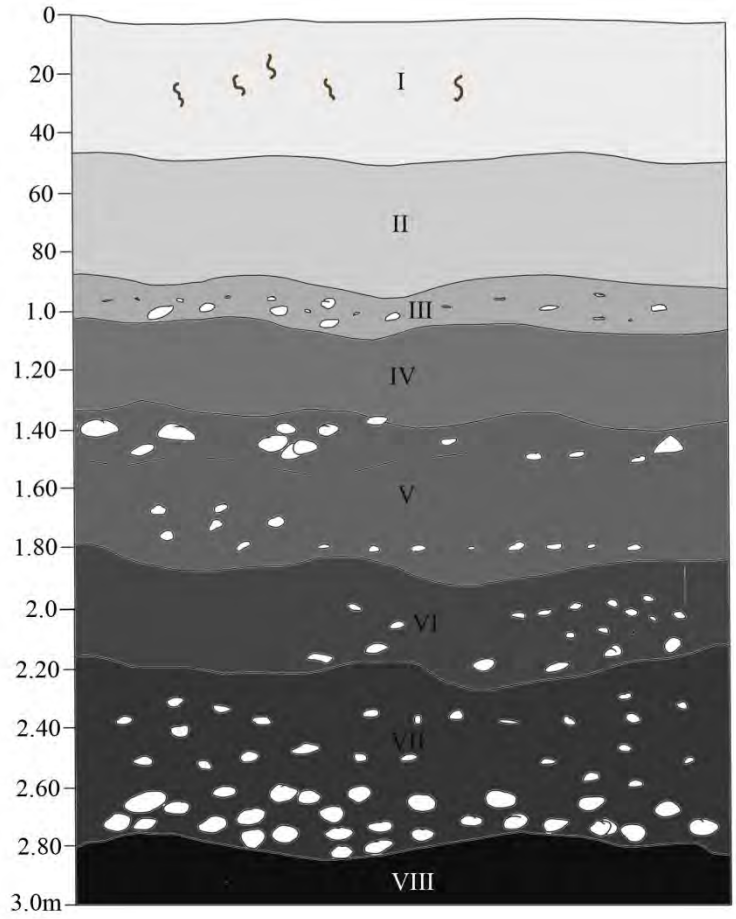


Figure 96. Stratigraphic Profile of TR 14 South Wall

Trench 23

Trench 23 (TR 23) was situated in the extreme northeastern portion of Parcel 3 Waena, juxtaposed by Parcel 3 Mauka and Parcel 6 to the north (see Figure 86). It contained a two layer stratigraphic sequence with excavations terminating in decomposing bedrock (Figures 97 and 98). Trench 23 measured 4.7 m long by 1.4 m wide by 1.76 m deep, oriented 360° by 180° section of this area was recorded and is further described below. No cultural materials were observed within Trench 23 (TR 23).

> **Layer I** (0-64cmbs): is a dark brown (7.5yr 3/3), silt loam, within a previous agricultural plow zone, with deteriorated drip-lines, slightly-plastic, slightly-sticky, weak, fine to medium grain, slightly hard, blocky, friable with a medium frequency of roots. Boundary was clear and wavy overlying Layer II. No cultural materials were observed in this layer.
>
> **Layer II** (64-184cmbs): is a dark brown (7.5yr 3/4), stony silt, slightly-plastic, slightly-sticky, weak, fine to medium grain, blocky, slightly hard, friable with a medium frequency of rocks, and decomposing bedrock. No cultural materials were observed in this layer.

Figure 97. Photograph of Stratigraphic Profile of TR 23 East Wall

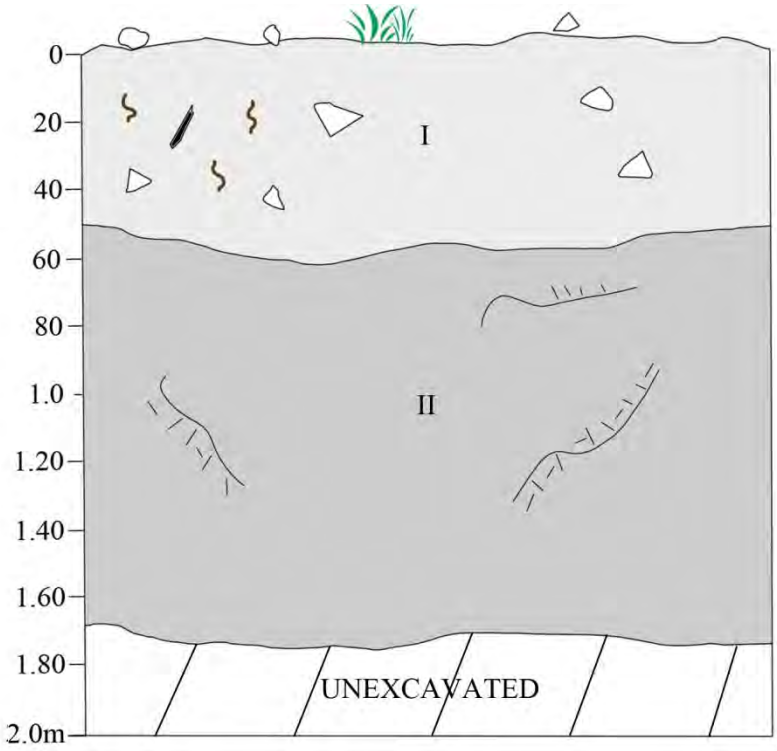


Figure 98. Stratigraphic Profile of TR 23 East Wall

OVERALL STRATIGRAPHY FOR WESTERN SECTION OF PARCEL 3 WAENA

Layer I generally consisted of an upper loamy silt layer, usually a dark brown, or a very dark grayish brown (10 YR 3/3, 3/2), and varied from 30 to 40 cm thick. This was the plow zone from current and previous sugarcane cultivation activities. Layer I was typically a disturbed layer mixed with deteriorated black plastic drip-lines, plastic PVC irrigation pipes, and concrete with gravel aggregate pieces that had been used during the previous commercial sugarcane cultivation era. There was a low frequency of rocks in this layer, but a high frequency of roots from surface vegetation.
Layer II generally consisted of a silt loam, silt or a storm wash stony silt layer, usually a brown to dark brown (7.5yr 4/2, 3/2), and varied from 20 to 140 cm thick and in a few identified trenches contained a dark brown (10YR 2/2 to 7.5YR 3/2) stony silt deposit that varied 60 to 150 cm thick, to a dark reddish brown (5YR 3/3, 3/4) with a low density to absence of roots and a medium to high frequency of rocks. These trenches exhibited the same stratigraphy with a few trenches exhibiting slight variations in color hues.
Layer III ranges from a grayish brown (10YR5/2), silt loam, slightly-plastic, slightly-sticky, blocky, slightly hard, fine to medium grain, with a low frequency of rounded pebbles and gravel. No cultural materials observed in this layer. To a streambed, non-plastic, non-sticky, medium to coarse grain, with a low frequency of roots. structureless, weakly coherent with a high frequency of rounded cobbles, pebbles and gravel No cultural materials observed in this layer.

Table XIV. Summary of Trench Description for Western Portion of Parcel 3 Waena

TRENCH	LOCATION	DIMENSIONS	ORIENTATION	STRATIGRAPHY	COMMENTS
01	Southeast Portion	4.7m x 1.42m x 1.76m	360° x 180°	I-IV	Non-Cultural
02	North of TR-01	4.6m x 1.41m x 1.52m	270° x 90°	I-IV	Non-Cultural
03	North of TR-01 & TR-02	4.6m x 1.42m x 1.8m	360° x 180°	I-III	Non-Cultural
04	East of Reservoir	4.6m x 1.42m x 1.86 m	270° x 90°	I-II	Non-Cultural
05	East of Reservoir	4.6m x 1.41m x 2.04m	270° x 90°	I-II	Non-Cultural
06	South of Reservoir	4.7m x 1.51m x 1.7m	360° x 180°	I-II Terminated / Irrigation Lines	Non-Cultural 8" H2O PVC Irrigation Line Present
07	East of Rock Quarry	4.6m x 1.42m x 1.08m	360° x 180°	I-II	Non-Cultural
08	East of Reservoir	4.6m x 1.43m x 1.58m	360° x 180°	I-IV	Non-Cultural
09	East of Reservoir	4.7m x 1.65m x 1.48m	360° x 180°	I-III	Non-Cultural 12" H2O PVC Irrigation Line Present
010	East of Waihe'e Ditch	4.6m x 1.4m x 1.84m	360° x 180°	I-III	Non-Cultural
011	East of Waihe'e Ditch	4.6m x 1.41m x 1.8m	270° x 90°	I-III	Non-Cultural
012	East of Waihe'e Ditch	4.6m x 1.4m x 1.74m	270° x 90°	I-III	Non-Cultural

013	West of State Highway 30	4.7m x 1.42m x 1.6m	270° x 90°	I-III	Non-Cultural
014	West of State Highway 30	4.6m x 1.41m x 1.83m	270° x 90°	I-II	Non-Cultural
015	West of State Highway 30	4.6m x 1.41m x 1.8m	270° x 90°	I-IV	Non-Cultural

Trench 08

Trench 08 (TR 08) was centrally located within the project area and contained a four layer/lens stratigraphic sequence with an alluvium layer noted at Layer II (Figures 86, 99 and 100). It measured 4.6 m long by 1.41 m wide by 1.8 m deep and was oriented at 270°. Excavations were terminated within a sterile stratum and no cultural materials were observed within TR 08.

Layer I (0-36cmbs): is a dark brown (7.5yr 3/2), silt loam, agricultural plow zone, slightly-plastic, slightly-sticky, blocky, fine to medium grain, with a medium frequency of roots. No cultural materials were observed in this layer. Boundary was clear and broken overlying Layer IIa on the north and Layer III on the south.
Layer IIa (29-56cmbs): is a brown (7.5yr 3/2), streambed, non-plastic, non-sticky, medium to coarse grain, with a low frequency of roots, structureless, weakly coherent with a high frequency of rounded cobbles, pebbles and gravel. No cultural materials observed in this layer. Boundary was clear and broken overlying Layer III.
Layer IIb (60-104cmbs): is a brown (7.5yr 3/2), streambed, non-plastic, non-sticky, medium to coarse grain, with a low frequency of roots. structureless, weakly coherent with a high frequency of rounded cobbles, pebbles and gravel . No cultural materials observed in this layer. Boundary was clear and broken overlying Layer III on the north and Layer IV on the south.
Layer III (24-100cmbs): is a brown (7.5yr 3/2), streambed, non-plastic, non-sticky, medium to coarse grain, with a low frequency of roots. structureless, weakly coherent with a high frequency of rounded cobbles, pebbles and gravel . No cultural materials observed in this layer. Boundary was clear and a plane overlying Layer IV.
Layer IV (92-160cmbs): is a brown (7.5yr 4/2), silt, slightly-plastic, slightly-sticky, blocky, slightly hard, medium grain, with a low frequency of rock and the absence of roots. No cultural materials observed in this layer.

Figure 99. Photograph of Stratigraphic Profile of TR 08 West Wall

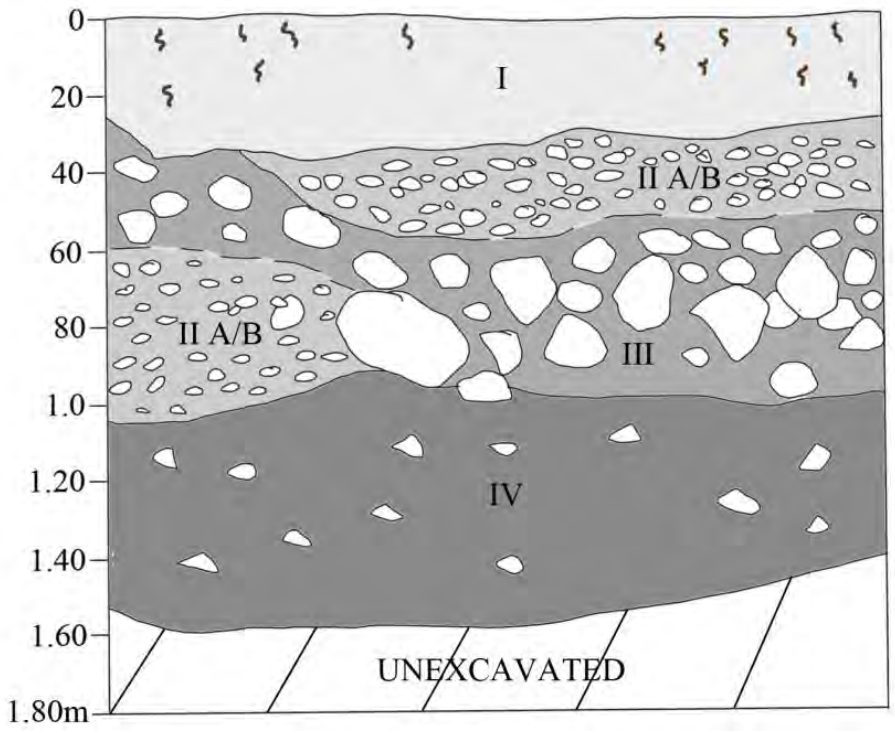


Figure 100. Stratigraphic Profile of TR 08 West Wall

Trench 011

Trench 011 (TR 011) was situated within the central portion of the project area and contained a tripartite stratigraphic sequence (see Figures 86, 101, 102 and Table XIV). It measured 5.0 m long by 1.41 m wide by 1.8 m deep, oriented at 270° where no cultural materials were observed. A section along the south wall was recorded and further described below.

> **Layer I** (0-30cmbs): is a dark brown (7.5yr 3/2), silt loam, agricultural plow zone, slightly-plastic, slightly-sticky, blocky, fine to medium grain, with a medium frequency of roots. No cultural materials were observed in this layer. Boundary was clear and broken overlying Layer IIa on the north and Layer III on the south.
> **Layer II** (28-157cmbs): is a brown (7.5yr 4/2), silty loam, slightly-plastic, slightly-sticky, blocky, slightly hard, medium to coarse grain, with a high frequency of rounded pebbles and gravel. No cultural materials observed in this layer. Boundary was clear and wavy overlying Layer III.
> **Layer III** (157-180cmbs): is a brown (7.5yr 3/2), streambed, non-plastic, non-sticky, medium to coarse grain, with a low frequency of roots. structureless, weakly coherent with a high frequency of rounded cobbles, pebbles and gravel . No cultural materials observed in this layer.

Figure 101. Photograph of Stratigraphic Overview of TR 011 South Wall

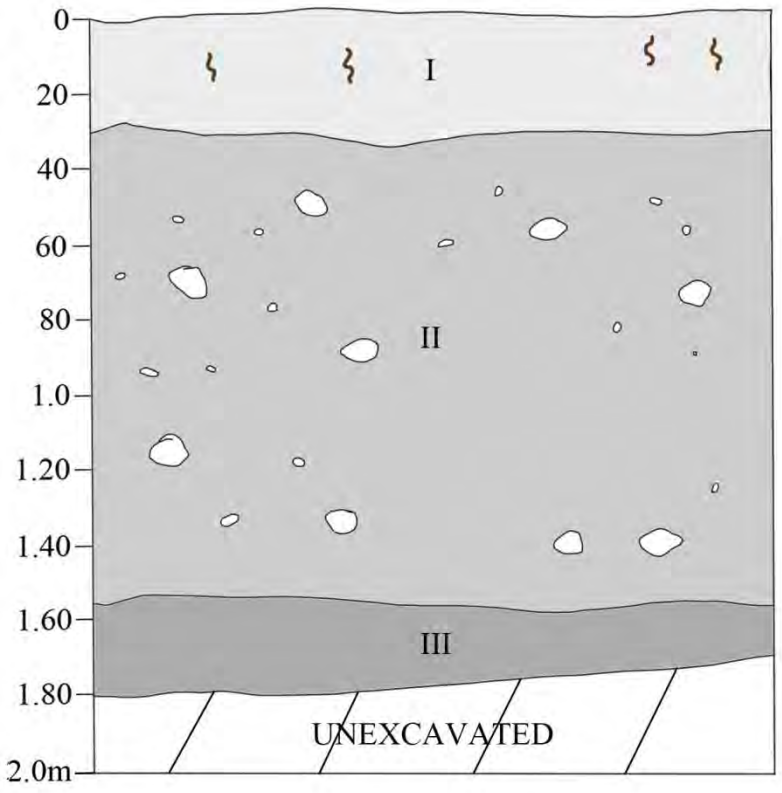


Figure 102. Stragraphic Profile of TR 011 South Wall

Trench 015

Trench 015 (TR 015) was situated within the northwestern portion of the project area adjacent to the western edge of an active sugarcane field (see Figure 86). A four layer stratigraphic sequence which contained alluvial episodes and sterile soils was recorded for TR 015. It measured 4.8 m long by 1.41 m wide by 1.8 m deep and was oriented at 270°.

Layer I (0-32cmbs): is a very dark brown (7.5yr 2.5/2), silt loam, agricultural plow zone, slightly-plastic, slightly-sticky, blocky, fine to medium grain, with a medium frequency of roots. No cultural materials were observed in this layer. Boundary was clear and wavy overlying Layer III on the north and Layer III on the south.
Layer IIa (24-90cmbs): is a brown (7.5yr 4/2), silty loam, slightly-plastic, slightly-sticky, blocky, friable, fine grain, with a low frequency of rounded pebbles and gravel. No cultural materials observed in this layer. Boundary was clear and a plane overlying Layer IIb.
Layer IIb (90-110cmbs): is a dark grayish brown (10yr 4/2), streambed, non-plastic, non-sticky, medium to coarse grain, with an absence of roots, structureless, with a high frequency of rounded cobbles, pebbles and gravel. No cultural materials observed in this layer. Boundary was clear and a plane overlying Layer III.
Layer III (100-180cmbs): is a grayish brown (10yr 5/2), silt loam, slightly-plastic, slightly-sticky, blocky, slightly hard, fine to medium grain, with a low frequency of rounded pebbles and gravel. No cultural materials observed in this layer. No cultural materials observed in this layer.

Figure 103. Photograph of Stratigraphic Profile of TR 015 North Wall Profile

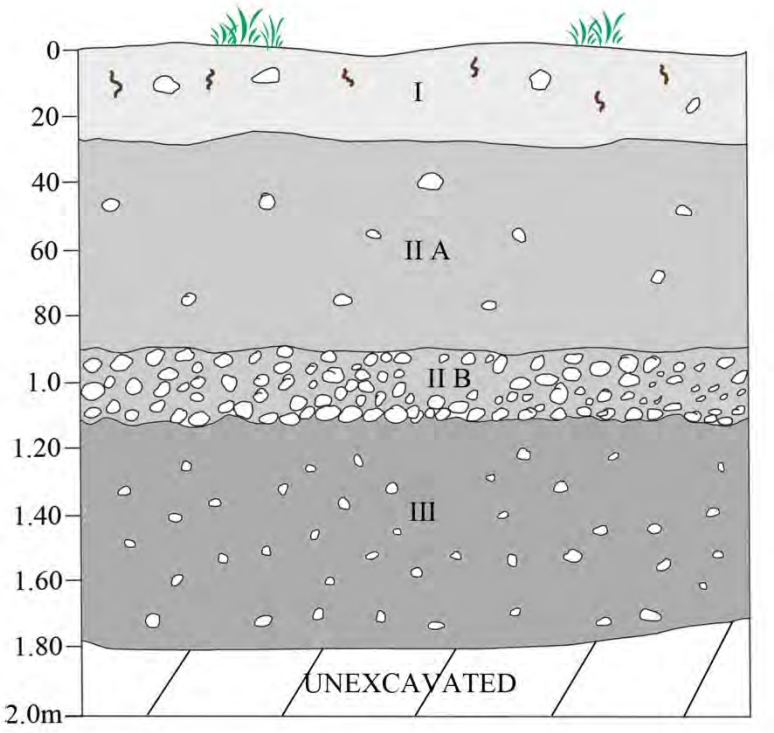


Figure 104. Stratigraphic Profile of TR 015 North Wall Profile

DISCUSSION PARCEL 3 WAENA BACKHOE TRENCHING

No cultural materials were recovered within the 27 trenches excavated within the eastern half of Parcel 3 Waena. Although the absence of material is noteworthy, most of the information is geologically related. Ten (10) trenches exhibited an alluvium stratum (water deposited layer and/or lens). TR`s 5, 6, 11 in the southern portion and TR`s 15, 16, 18 located to the north contained a deep streambed layer. TR`s 9, 10, 12, and 14 contained episodic storm wash activity or periodic flood episodes in the form of water affected pebbles and gravel layers and/or lens, juxtaposed by silt layers above and below. These trenches are located in the central portion of the parcel between the identified streambed trenches, and are oriented west/east. Six (6) trenches (TR 22-27) excavated along the northwestern portion of the project area, adjacent to large agricultural clearing piles exhibited a distinct stratigraphy consisting of a much grayer colored, extremely rocky Layer I and Layer II, particularly within the lower undisturbed stratum. Although these trench profiles show an upper plow-zone layer and a distinct lower layer, these layers consist of mainly of decomposing bedrock and/or saprolytic rock. These trenches are probably in areas that have either been very extensively bulldozed or previously mined of topsoil, leaving the underlying layers closer to the surface. Additionally, these trenches are located near a fairly deep ravine or gulch that was devoid of water. The remaining eleven (11) trenches, (TR 1-4, TR 7, TR 8, TR 13, TR 17, TR 19, TR 21, and TR 2) contained a deep soil deposit, with TR 1 containing a fairly thick sand deposit approximately 1.0 mbs (see Figure 86). No buried utility lines were noted in the area where the sand would be interpreted as pipe bedding. Although, the sand layer does not appear to be native, it contained the cross-bedding lines indicative of aeolian deposition.

A total of 15 trenches were undertaken on the western side of the parcel, which were also negative for buried remains. Five (5) trenches (TR 07-010 and TR 015) excavated along the western boundary, parallel with Site 5197 (Waihe`e Ditch) exemplified storm wash episodes in the form of water-affected basalt cobbles, pebbles and gravel, identified as a layer and/or lens (see Figure 86). Five (5) trenches (TR 01-03, TR 012 and TR 013) excavated along the eastern boundary, parallel with State Highway 30 (RT30) exhibited a high frequency of rock in both Layers II and Layer III silty loam. Trenches (TR 04-06, and TR 011) contained a deep soil deposit. Underground irrigation utilities were encountered in Trenches (TR0 6 and TR 09) and exhibited previous disturbances.

PARCEL 3 MAKAI

Parcel 3 Makai (TMK 3-6-002:003) comprises a total of 250 acres that is bounded on the east by Honoa`pi`ilani Highway (RT 30). Waikapū Stream and Waiko Road are located on the north and an active sand mining borrow pit and Kuihelani Highway (RT 380) are located on the east. Parcel 3 Makai is

currently cultivated in HC&S commercial sugarcane cultivation. One Grant formerly utilized for sugarcane, and a former reservoir were also noted in the central portion of the project area (Figure 105). Six trenches (TR's 110, 113, 116, 119, 127 and 140) were excavated within the Grant, and a total of forty-two (42) trenches (TR 100-141) were excavated and documented (Figure 105 and Tables XV and XVI). Most of the trenches excavated exhibited a similar stratigraphy. Generally, a three to four stratigraphic layer sequence was observed throughout the parcel with Layer I being the agricultural plow zone. All trenches were non-cultural.

OVERALL GENERAL STRATIGRAPHY

Layer I generally consisted of an upper loamy silt layer, usually a dark brown, or a very dark grayish brown (10 YR 3/3, 3/2), and varied from 50 to 80 cm thick. This was the plow zone from previous cultivation activities. Layer I was typically a disturbed layer mixed with deteriorated black plastic drip-lines, plastic PVC irrigation pipes, and concrete with gravel aggregate pieces that had been used during the previous commercial sugarcane cultivation era. There was a low density of rocks in this layer, but a high density of roots from surface vegetation.

Layer II generally consisted of a fine silt, loamy silt, and in a few identified trenches contained a silt clay and/or a silt gravel, and varied from a brown, dark brown, very dark grayish brown, and a dark grayish brown (10YR 4/3, 3/2, 3/2, 4/2) or a dark reddish brown (5YR 3/3) and/or brown, dark brown, strong brown (7.5YR 3/2, 3/4, 4/3,4/6) with a low density of roots and medium-sized cobbles to medium-sized boulders.

Layer III generally consisted to be very fine silt loam and/or clay with a low density of roots and medium-sized cobbles to large-sized boulders. Trenches excavated along the north eastern end of the project area exhibited an orange or strong brown layers, which ranged in color from dark brown (7.5YR 3/4, 5/6, 4/6) that may be a result of soil oxidation or chemicals used in sugarcane cultivation.

Eleven (11) trenches exhibited a two layer sequence, sixteen (16) trenches exhibited a three layer sequence, ten (10) trenches exhibited a four layer sequence, four (4) trenches exhibited a five layer sequence and one (1) trench exhibited a six layer sequence.

Representative stratigraphic profiles with photos for Trenches 100, 102, 110, 116, 121, 125 and 137 are presented below to exemplify the results.

Table XV. Summary of Backhoe Trenches Parcel 3 Makai East of State Highway 30

TRENCH	LOCATION	DIMENSIONS	ORIENTATION	STRATIGRAPHY	COMMENTS
100	Northeastern Boundary	4.7m x 1.41m x 1.5m	270° x 90°	Layer I-IV	Non-Cultural
101	Northeastern Boundary	4.7m x 1.40m x 1.36m	270° x 90°	Layer I-III	Non-Cultural
102	Northeastern Portion	4.7m x 1.42m x 1.5m	270° x 90°	Layer I-III	Non-Cultural
103	Northeastern Portion	4.7m x 1.41m x 1.8m	360° x 180°	Layer I-III	Non-Cultural
104	East of TR-103	4.6m x 1.43m x 1.5m	270° x 90°	Layer I-III	Non-Cultural
105	Northeastern Boundary	4.7m x 1.42m x 1.32m	270° x 90°	Layer I-III	Non-Cultural
106	North Central	4.6m x 1.41m x 0.92m	270° x 90°	Layer I-II	Non-Cultural
107	East of TR-106	4.7m x 1.42m x 1.2m	270° x 90°	Layer I-II	Non-Cultural
108	Northeastern Portion	4.7m x 1.41m x 1.8m	270° x 90°	Layer I-III	Non-Cultural
109	Northeastern Boundary	4.6m x 1.42m x 2.0m	270° x 90°	Layer I-III	Non-Cultural
110	Central	4.7m x 1.43m x 1.6m	270° x 90°	Layer I-IV	Non-Cultural
111	East of TR-110	4.7m x 1.42m x 1.64m	270° x 90°	Layer I-IV	Non-Cultural
112	Central Eastern Boundary	4.7m x 1.41m x 1.76m	270° x 90°	Layer I-III	Non-Cultural
113	Central	4.7m x 1.43m x 1.8m	270° x 90°	Layer I-II	Non-Cultural
114	East of TR-113	4.7m x 1.45m x 1.7m	270° x 90°	Layer I-VI	Non-Cultural
115	Central Eastern Boundary	4.6m x 1.44m x 1.6m	270° x 90°	Layer I-II	Non-Cultural
116	Central Southern Grant 2747:2	4.7m x 1.45m x 2.0m	360° x 180°	Layer I-III	Non-Cultural
117	East of TR-116	4.7m x 1.46m x 1.8m	270° x 90°	Layer I-IIa	Non-Cultural
118	Southeastern Boundary	4.7m x 1.43m x 1.6m	270° x 90°	Layer I-IV	Non-Cultural
119	South Central	4.6m x 1.45m x 1.6m	270° x 90°	Layer I-III	Non-Cultural
120	East of TR-119	4.7m x 1.44m x 1.6m	270° x 90°	Layer I-III	Non-Cultural

Table XVI. cont'd Summary of Backhoe Trenches Parcel 3 Makai East of State Highway 30

TRENCH	LOCATION	DIMENSIONS	ORIENTATION	STRATIGRAPHY	COMMENTS
121	Southeastern Boundary	4.7m x 1.44m x m	270° x 90°	Layer I-IV	Charcoal Lens in Layer III
122	Southeastern Boundary	4.8m x 1.43m x m	270° x 90°	Layer I-V	Non-Cultural
123	Southeastern Boundary	4.7m x 1.44m x m	270° x 90°	Layer I-V	Non-Cultural
124	Southern Boundary	4.8m x 1.44m x m	360° x 180°	Layer I-V	Non-Cultural
125	Southern Boundary	4.9m x 1.43m x m	360° x 180°	Layer I-IV	Non-Cultural
126	Southwestern Boundary	4.9m x 1.45m x m	270° x 90°	Layer I-IIa	Non-Cultural
127	Western Boundary	4.7m x 1.43m x m	270° x 90°	Layer I-II	Non-Cultural
128	West of TR-110	4.8m x 1.44m x m	270° x 90°	Layer I-IV	Non-Cultural
129	East of TR-138	4.8m x 1.42m x 1.62m	270° x 90°	Layer I-III	Non-Cultural
130	East of TR-137	4.7m x 1.41m x 1.45m	270° x 90°	Layer I-III	Non-Cultural
131	Southeast of TR-133	4.8m x 1.42m x 1.31m	270° x 90°	Layer I-II	Non-Cultural
132	Northern Boundary	4.8m x 1.45m x 1.75m	270° x 90°	Layer I-V	Charcoal lens in Layer II
133	Northern Boundary	4.6m x 1.41m x0.81 m	270° x 90°	Layer I-II	Non-Cultural
134	South of TR-135	4.7m x 1.42m x 1.41m	270° x 90°	Layer I-II	Non-Cultural
135	Northern Boundary	4.7m x 1.41m x 1.21m	270° x 90°	Layer I-III	Non-Cultural
136	Northwestern Boundary	4.8m x 1.43m x 1.39m	270° x 90°	Layer I-II	Non-Cultural
137	Southeast of TR-138	4.8m x 1.44m x 1.52m	270° x 90°	Layer I-IV	Non-Cultural
138	Western Boundary	4.7m x 1.41m x 1.17m	360° x 180°	Layer I-III	Non-Cultural
139	Western Boundary	4.8m x 1.40m x 1.65m	270° x 90°	Layer I-IV	Non-Cultural
140	Western Boundary	4.8m x 1.45m x 1.29m	270° x 90°	Layer I-IV	Non-Cultural
141	East of TR-40	4.9m x 1.44m x 1.8m	270° x 90°	Layer I-III	Non-Cultural

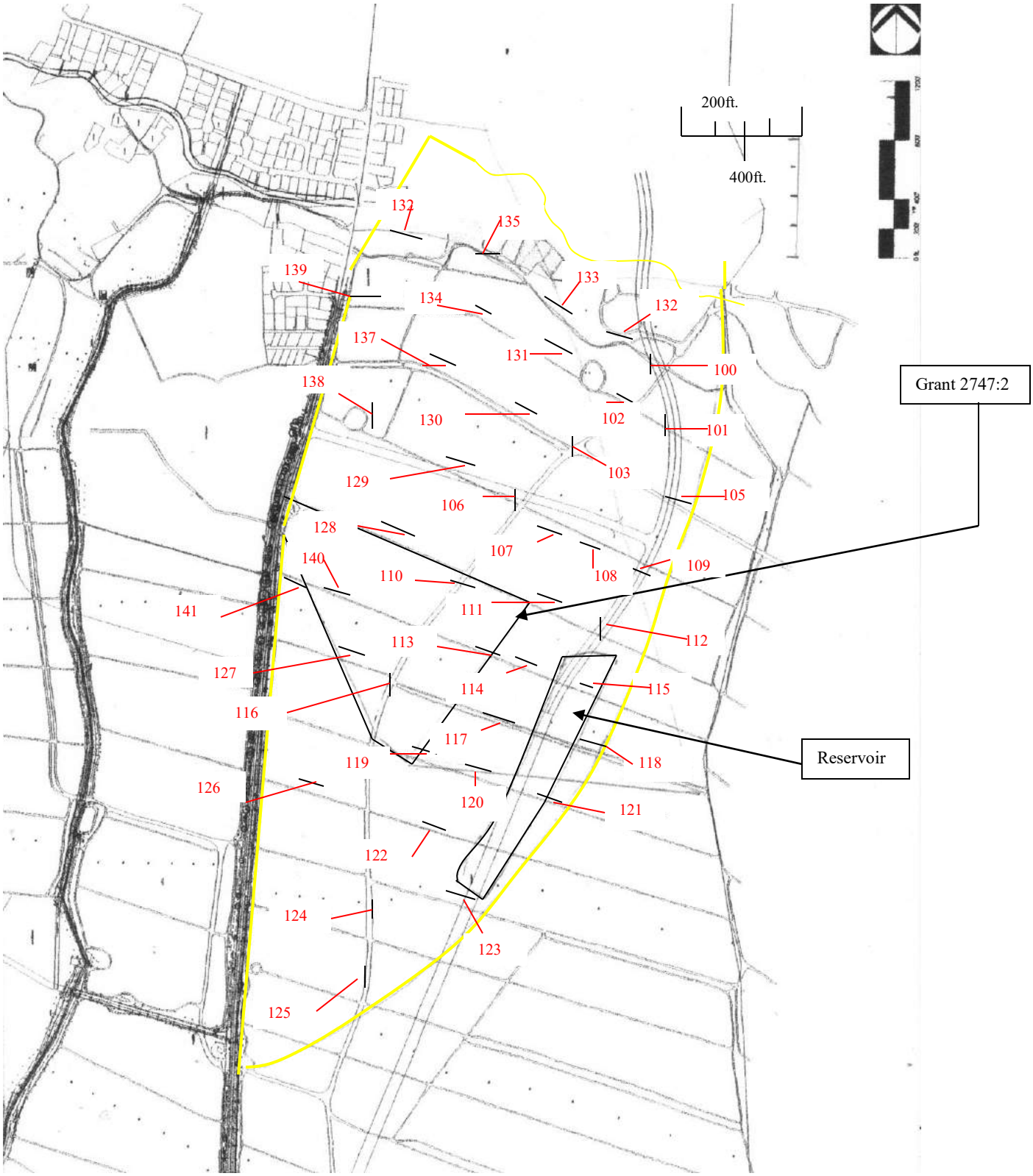


Figure 105. Plan View Topographic Map of Parcel 3 Makai (Yellow) Showing Location of Trenches 100-141, Grant and Reservoir

Trench 100

Trench 100 (TR 100) was situated in the northeastern portion of the project area along the western edge of a cultivated sugarcane field (see Figure 86). This section contained a four layer stratigraphic sequence with excavations terminating in sterile streambed soils (Figures 106 and 107). No cultural materials were observed within TR 100 which measured 4.7 m long by 1.41 m wide by 1.5m deep.

Layer I (0-68cmbs): is a dark brown (10yr 3/3), loamy silt, plow zone, non-plastic, non-sticky, fine to medium grain, with a medium frequency of roots. No cultural materials were observed in this layer. Boundary was clear and wavy overlying Layer II on the east and Layer III streambed on the west.
Layer II (33-132cmbs): is a very dark brown (10yr 3/2-3/3), silty loam, non-plastic, slightly-sticky, very fine grain. No cultural materials observed in this layer. Boundary was clear and abrupt overlying Layer IV on the east and Layer III on the west.
Layer III (58-150cmbs): is a dark yellowish brown 10 YR 3/6), imported gravelly silt, non-plastic, slightly-sticky, medium to coarse grain. No cultural materials observed in this layer. Boundary was clear and abrupt overlying Layer II.
Layer IV (130-150cmbs): is a dark brown (7.5yr 3/3) sandy loam with sub-rounded small basalt cobbles and lithified sand stone peds, non-plastic, slightly-sticky, fine to medium grain, with a low frequency of roots. No cultural materials were observed in this layer. Boundary was clear and broken abutting Layer III on the west.

Figure 106. Photograph of Stratigraphic Profile of Trench 100 South Wall with Streambed Deposit

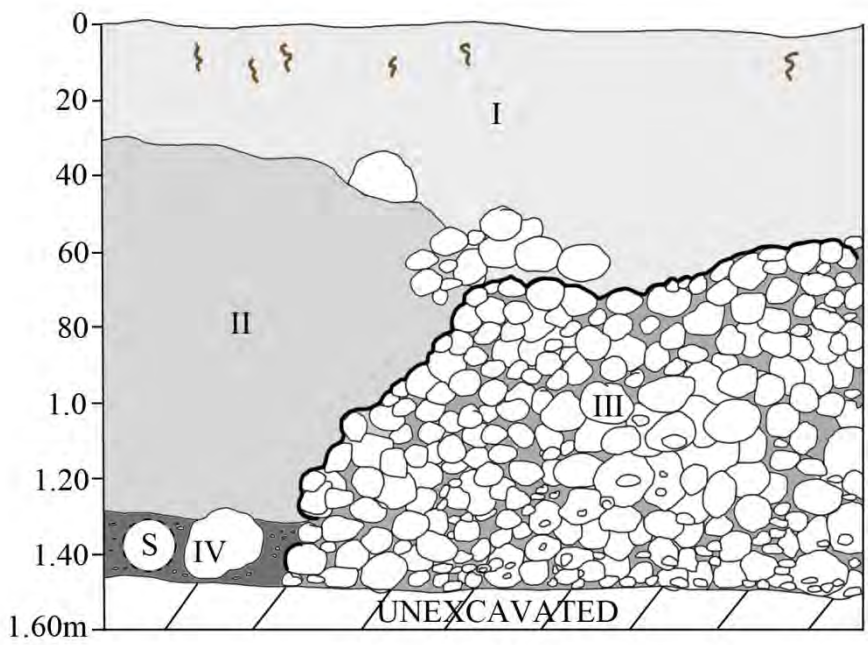


Figure 107. Stratigraphic Profile of Trench 100 South Wall

Trench 102

Trench 102 (TR 102) was located in the northeastern portion of the project area within an access road and the edge of a cultivated sugarcane field (see Figure 86). This trenched contained a three layer stratigraphic sequence with excavations terminating in sterile silty soil (Figures 108 and 109). Trench 102 was non-cultural and measured 4.7 m long by 1.42 m wide by 1.5m deep.

Figure 108. Photograph of Stratigraphic Profile of Trench 102 with Streambed Deposit, View to West

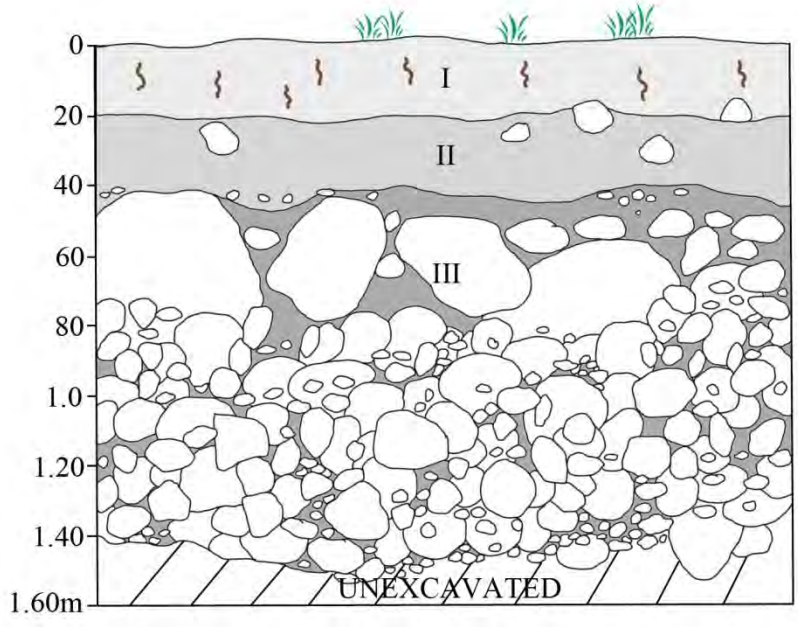


Figure 109. Stratigraphic Profile TR 102 South Wall

Trench 110

Trench 110 (TR 110) was situated in the central portion of the project area within Grant 2747:2 to Eugene Bal (see Figure 86 and Table IX). Land use for the grant was listed as sugarcane and a reservoir. The stratigraphic record for TR110 contained four layers which were the similar to TR's 108-109 (Figures 110 and 111). No cultural materials or evidence of the reservoir were observed within the trench which measured 4.7 m long by 1.43 m wide by 1.6 m deep.

Layer I (0-38cmbs) is the till zone it is a dark grayish brown (10YR5/2), loamy silt, non-plastic, non-sticky, fine to medium grain, with medium frequency of roots, and black plastic irrigation. No cultural materials were observed in this layer. Layer I has a clear, smooth boundary with underlying Layer II.
Layer II (38-78 cmbs) consisted of a dark grayish brown (10YR5/2), loamy silt with cobble inclusions, non-plastic, non-sticky, fine to medium grain, low frequency of fine roots. Layer II is similar to Layer I but contains small cobble sub angular rocks and devoid of irrigation piping. Layer II is non-cultural. Boundary is abrupt and smooth.
Layer III (78-101/118 cmbs) is a reddish brown silty clay (5YR3/3), compact, non-plastic slightly sticky, with gravel inclusions. Layer III is non-cultural and has an abrupt, smooth boundary.
Layer IV (118-BOE cmbs**)** is a dark reddish brown (7.5YR4/6) gravelly silty clay with mottling of Layer III saprolytic rock. No roots, linear gravel inclusions and sub angular rock. Layer IV is non-cultural and excavations terminated within this layer.

Figure 110. Photograph of South Wall of Trench 110

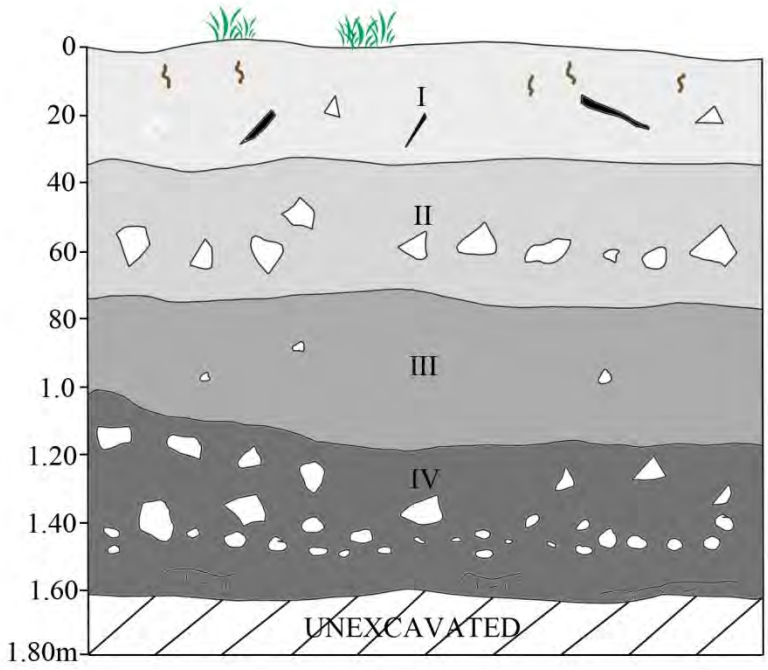


Figure 111. Stratigraphic Profile of South Wall of Trench 110

Trench 116

Trench 116 (TR 116) was situated in the central portion of the project area also within Grant 2747:2 which was formerly utilized as sugarcane and a reservoir (see Figure 86 and Table IX). The stratigraphic record for TR116 contained four layers including one sand lens which interrupted the upper portion of Layer II (Figures 112 and 113). No cultural materials were observed within this trench which measured 4.7 m long by 1.45 m wide by 2.0m deep.

> **Layer I** (0-25cmbs) is a light grayish brown (10YR5/2), loamy silty clay with gravel for access road, non-plastic, non-sticky, fine to medium grain, with low to medium frequency of roots. No cultural materials were observed in this layer. Layer I has abrupt clear boundary with underlying sand lens (Layer Ia).
> **Layer II** (25-160) generally consisted of a fine silty clay, dark reddish brown (5YR 3/3) with grayish brown and gravel inclusions, non-plastic, non-sticky, fine to medium grain, low quantity of fine roots with clay ped inclusions. Layer II is non-cultural. Boundary is clear and wavy and overlies Layer III.
> **Layer IIa** (42/45-55/57 cmbs) is a sand lens which was likely aeolian deposited. Layer IIa is non-cultural.
> **Layer III (**150-200 cmbs**)** is a dark brown, strong brown (7.5YR3/2, 4/3, 4/6) very fine silt loam, non-plastic, non-sticky, fine to medium grain, with a low density of roots. Layer III is non-cultural and excavations terminated within this layer.

Figure 112. Photograph of West Wall of Trench 116, View to West

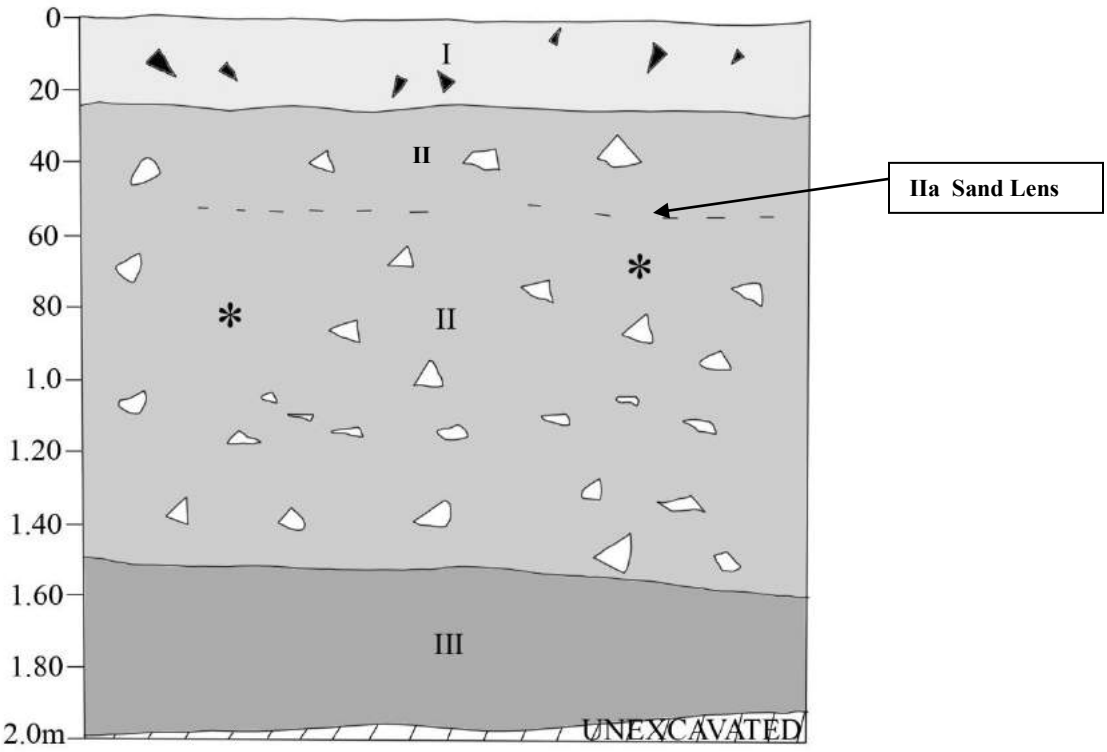


Figure 113. Stratigraphic Profile TR 116 West Wall

Trench 121

Trench 121 (TR 121) was located along the eastern edge of the parcel in the southeast portion along an east-west trending cane haul access road (see Figure 86 and Tables XV and XVI). This trench contained a four-layer stratigraphic sequence with a gravel lens indicative of alluvial deposition, as well as a charcoal stained lens near the base of the trench (Figures 114-116). All layers were non-cultural with the charcoal staining likely due to past cane burning activities. Excavations terminated within Layer IV and TR 121 measured 4.7 m long by 1.45 m wide by 1.66 m deep.

Layer I (0-22 cmbs) consisted of the till zone and is a grayish brown (10YR5/2) loamy silt layer, non-plastic, non-sticky, fine to medium grain. It is disturbed with deteriorated black plastic drip-lines. Layer I contains medium density of rootles with few rocks. Layer I was non-cultural with clear, smooth boundary overlying Layer II.
Layer II (22-60/75 cmbs) comprised of a loamy silt, brown (10YR 4/3) non-plastic, non-sticky, fine to medium grain, with sparse gravel and a low density of roots and medium-sized cobbles to medium-sized boulders. Layer II is non-cultural and contains a clear wavy boundary overlying Layer III.
Layer III (60/75-148) is a very fine silt, dark brown (10YR 4/2. 4/3) few to no roots, non-plastic, non-sticky, fine to medium grain, with gravel lenses identified at 90, 100 and 140 cmbs. No cobble inclusions. Near the bottom of Layer III, the soil becomes finer with depth and charcoal stained lens is apparent at 144 to 148 cmbs, which is the beginning of Layer IV. Layer III is non-cultural with a clear abrupt boundary.
Layer IIIa (148-BOE) is similar to Layer III but appears to be a finer material. It is comprised of dark brown (10YR 4/2.5) very fine silt and contains the linear charcoal staining at the transition with Layer III. Layer IIIa is non-cultural.

Figure 114. Overview Photograph of Trench 121, View to South

Figure 115. Close-up Photograph of South Wall of TR 121 Showing Charcoal Staining

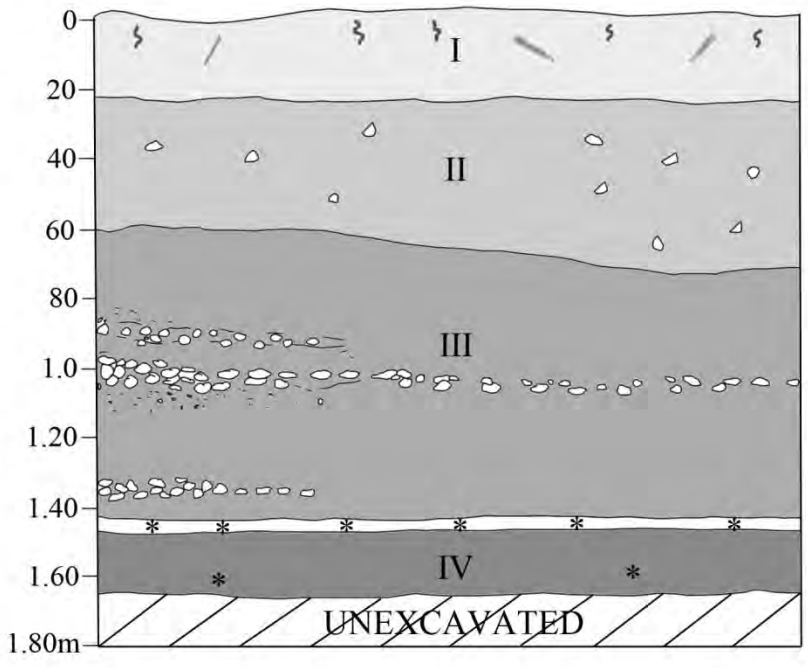


Figure 116. Stratigraphic Profile of South Wall of Trench 121

Trench 125

Trench 125 (TR 125) was located in the southeastern corner the northern side of a cane haul access road (see Figure 86 and Tables XV and XVI). It contained a four-layer stratigraphic sequence with a storm/flood wash layer represented in stratum 2 (Figures 117 and 118). TR 125 was oriented at 360 and measured 4.9 m long by 1.43 m wide by 1.80 m deep and was non cultural.

Layer I (0-20/30 cmbs) is the edge of roadbed and consisted of a light gray imported (10YR5/2) gravel layer. Layer I was non-cultural with clear, smooth boundary overlying Layer II.
Layer II (20/30-60/70 cmbs) is a light grey, non-plastic, non-sticky, fine to medium grain, alluvial deposit comprised of silt and rounded pebbles and small cobbles. Layer II appears to be an *in situ* alluvial deposit which has been utilized as the sub-base for the road bed. It is non-cultural and has an abrupt, smooth boundary overlying Layer III.
Layer III (60/70-142/160 cmbs) is a reddish brown (7.5YR4/6) compact silty clay, non-plastic, slightly-sticky, fine to medium grain, with a few sub-angular and rounded small cobbles. Layer III is non cultural with no roots and has a clear, smooth boundary with Layer IV.
Layer IV (142/160-BOE) is similar to Layer III but is more compact, and comprised of a very fine, reddish brown silt which is devoid of rock inclusions. Layer IV is non-cultural and B.O.E. is at 180 cmbs.

Figure 117. Photograph of West Wall of Trench 125, View to West

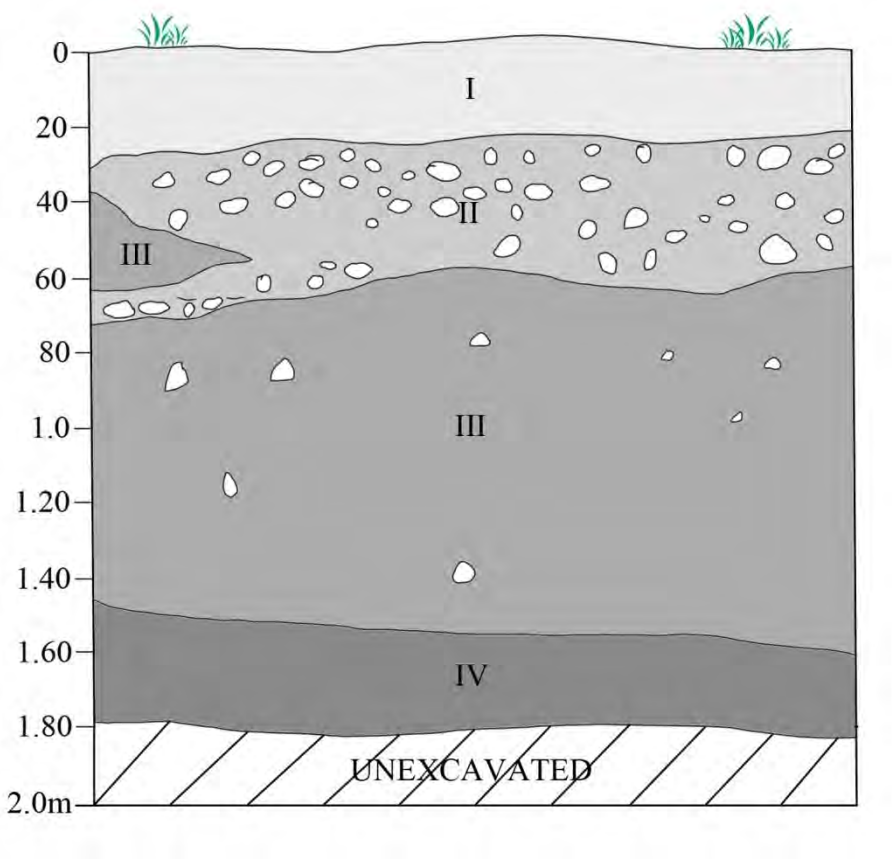


Figure 118. Stratigraphic Profile of West Wall of Trench 125

Trench 137

Trench 137 (TR 137) was located in the northwestern corner near a utility storage shed along the northern side of an access road (see Figure 86 and Tables XV and XVI). It contained a four-layer stratigraphic sequence comprised of alluvial deposition that terminated in decomposing basalt (Figures 119 and 120). TR 137 measured 4.8 m long by 1.44 m wide by 1.50 m deep and was non cultural.

Layer I (0-18/22 cmbs) is the till zone and consisted of a grayish brown (10YR5/2) loamy silt layer with a few rounded pebble and cobbles inclusions. It is disturbed and contains few roots and Layer I was non-cultural with clear, smooth boundary overlying Layer II.
Layer II (22-30/60 cmbs) comprised of a dark reddish brown (5YR 3/3) (7.5YR 3/2, ¾) loamy silt non-plastic, slightly sticky, fine to medium grain, with large cobble inclusions. Layer II is non-cultural and contains a clear wavy boundary overlying Layer III.
Layer III (30/60-122) is a yellowish brown (10YR4/3) gravelly silt with pockets of reddish brown silty clay. Many small and large cobbles with a few medium sized boulders and saprolytic rock, non-plastic, non-sticky, fine to medium grain. Layer III is non cultural with no roots. Layer III is non-cultural has a clear, smooth boundary with Layer IV.
Layer IV (122-BOE) is comprised of decomposing bedrock and smaller cobbles and pebbles with yellowish brown (10YR4/3) fine silt.

Figure 119. Photograph of South Wall of Trench 137

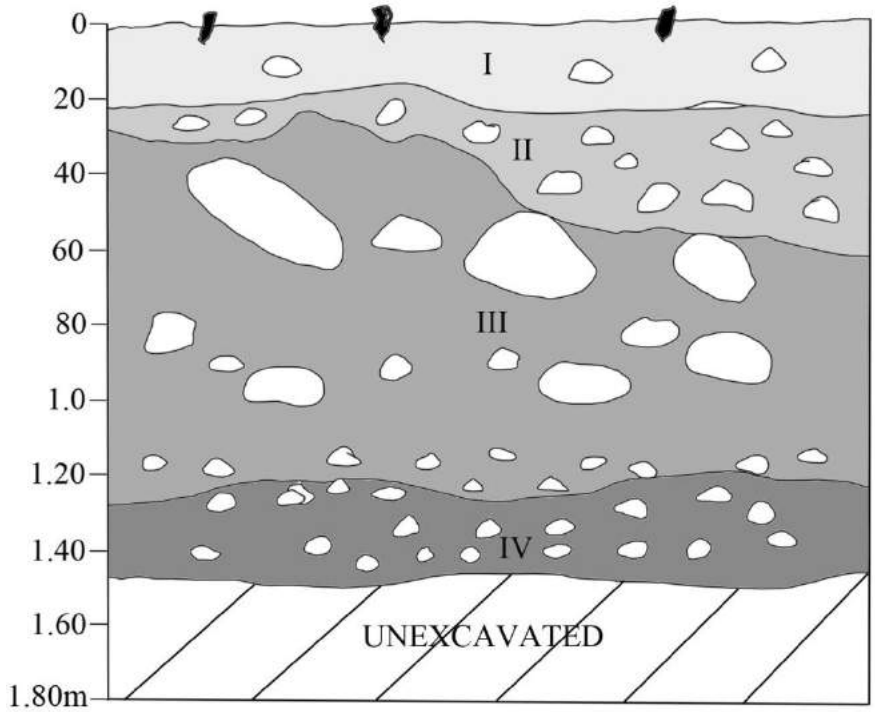


Figure 120. Stratigraphic Profile of Trench 137 South Wall

DISCUSSION PARCEL 3 MAKAI BACKHOE TRENCHING

Trenches (TR 100 and TR 102) excavated in the extreme northeastern portion of the parcel exhibited sand inclusions intermixed within a streambed. The US Soil Survey identified a (PZUE) Pu`uone sand deposits in the adjacent property towards the east and, although no intact sand deposits (only the inclusions in TR's 100 and 102) were encountered during testing, sand was observed on the surface along the eastern boundary of the project area. Twenty-three (23) trenches excavated exhibited a alluvium deposited strata and/or lenses. Trenches (TR 100-102, TR 105, TR 111, TR 114, TR 122, TR 124, TR 128-133, TR 135 and TR 137-139) contained a thick alluvial deposit, likely from a meandering Waikapū Stream as the majority of these trenches were located in the northern portion, in close proximity to the Waikapū Stream. TR's 120, TR 121, TR 123, TR 125, and TR 26 are located in the southern portion of the parcel and exhibited storm wash episodes in the form of water affected pebbles and gravel layers and/or lens identified imbedded in Layer III silt, above and below. Eight (8) trenches, (TR-104, TR-106-108, TR-112, TR-134, TR-136 and TR-141) exhibited bedrock in either Layer II or III. The remaining trenches exhibited a deep silt deposit with depth and/or overlying large boulders.

PARCEL 6

Parcel 6 (TMK 3-6-004:006) contains a total of 52-acres that are located within the central portion of the overall project area (see Figure 1, 2 and 6). It is an L-shaped parcel which is partially bounded to the east by Site 5197 (Waihe`e Ditch) and Parcel 7-Maui Tropical Plantation (see Figure 6). To the north are undeveloped and developed agricultural lands, to the south and southwest is Parcel 3 Waena, and to the west is Parcel 3 Mauka. Parcel 6 was once cultivated entirely in sugarcane; however portions of the north and west are currently fallow with small scale commercial agricultural activities and the southern portion is in active sugarcane by HC&S (Figures 121-123). The subject parcel is slated for small residential lots less than 10,000 sq. ft. in size (see Figure 7).

During the course of the current fieldwork, a total of twenty-six (26) trenches (TR's 200-225) were excavated and stratigraphically recorded (Figure 124 and Tables XVII and XVIII). The trenches exhibited a similar stratigraphy ranging from three to four layers with Layer I being the agricultural till zone. Trenches 200 (TR 200 -203) were placed within the active sugarcane along the southern portion of the parcel and TR's 204-225 (TR 204-225) were situated across the parcel to provide a representative sample of the subsurface conditions, and to test areas that contained LCA's, Grants and flumes (Figure 125 and Tables V, VI, XVII and XVIII) along the western and northern portion of the project area.

OVERALL GENERAL STRATIGRAPHY

Layer I generally consisted of an upper loamy silt layer, usually dark brown, a very dark grayish brown (10 YR 3/3,7.5 YR 3/3, 4/3) that varied from 30 to 60 cm thick. This was the plow zone from previous cultivation activities and current agricultural activities. Layer I was typically a disturbed layer with mixed with deteriorated black plastic drip-lines, plastic PVC irrigation pipes, and concrete with gravel aggregate pieces that had been used during the previous commercial sugarcane cultivation era. There was a low density of rocks in this layer, but a high density of roots from surface vegetation.
Layer II generally consisted of a dark brown (10YR 2/2 to 7.5YR 3/2) to a dark reddish brown (5YR 3/3, 3/4) stony silt loam and clay loam deposit that varied 60-150 cm thick with a few trenches containing decomposing bedrock, with a low density of roots and a medium frequency of rocks.
Layer III generally consisted of a very fine clay loam to a silty clay and varied from a brown to strong brown (7.5YR 4/4-4/6), dark grayish brown (10YR 3/2) and dark reddish brown (5YR 3/3-3/4) with the absence of roots and contained a gravelly stony silt with decomposing bedrock, and medium-sized cobbles with decomposing bedrock.

Four (4) trenches exhibited a two layer sequence, twenty (20) trenches exhibited a three layer sequence, and two (2) trenches exhibited a four layer sequence. All trenches were culturally sterile with the exception of Trench 221(TR 221) where an isolated clear bottle glass fragment was found on the surface. Representative stratigraphic profiles and photographs are presented below and exemplified in TR's 202, 208, 218 and 222 are (see Figure 121).

Figure 121. Overview Photograph of Parcel 6 Showing Commercial Agricultural Activities, View to Northeast

Figure 122. Overview Photograph of Parcel 6 Showing Fallow Sugarcane and Proposed Location of TR 212, View to East

Figure 123. Overview Photograph of Parcel 6 after Mature Sugarcane was Removed, View from TR 223 and to Northwest

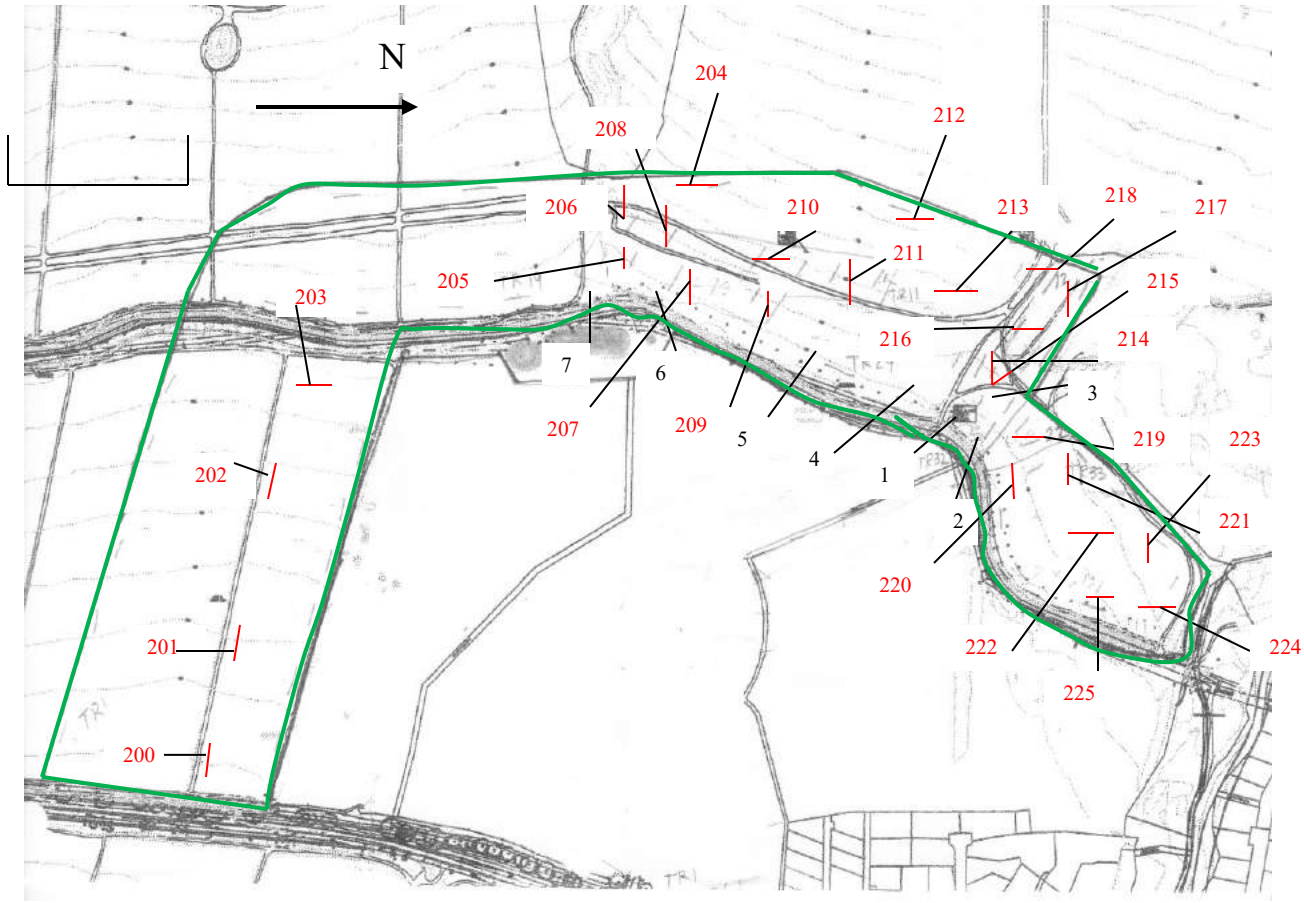


Figure 124. Topographic Map Showing Location of Former Trenches 1-7 (Black), Current Backhoe Test Trenches 200-225 (Red) within Parcel 6 (Green)

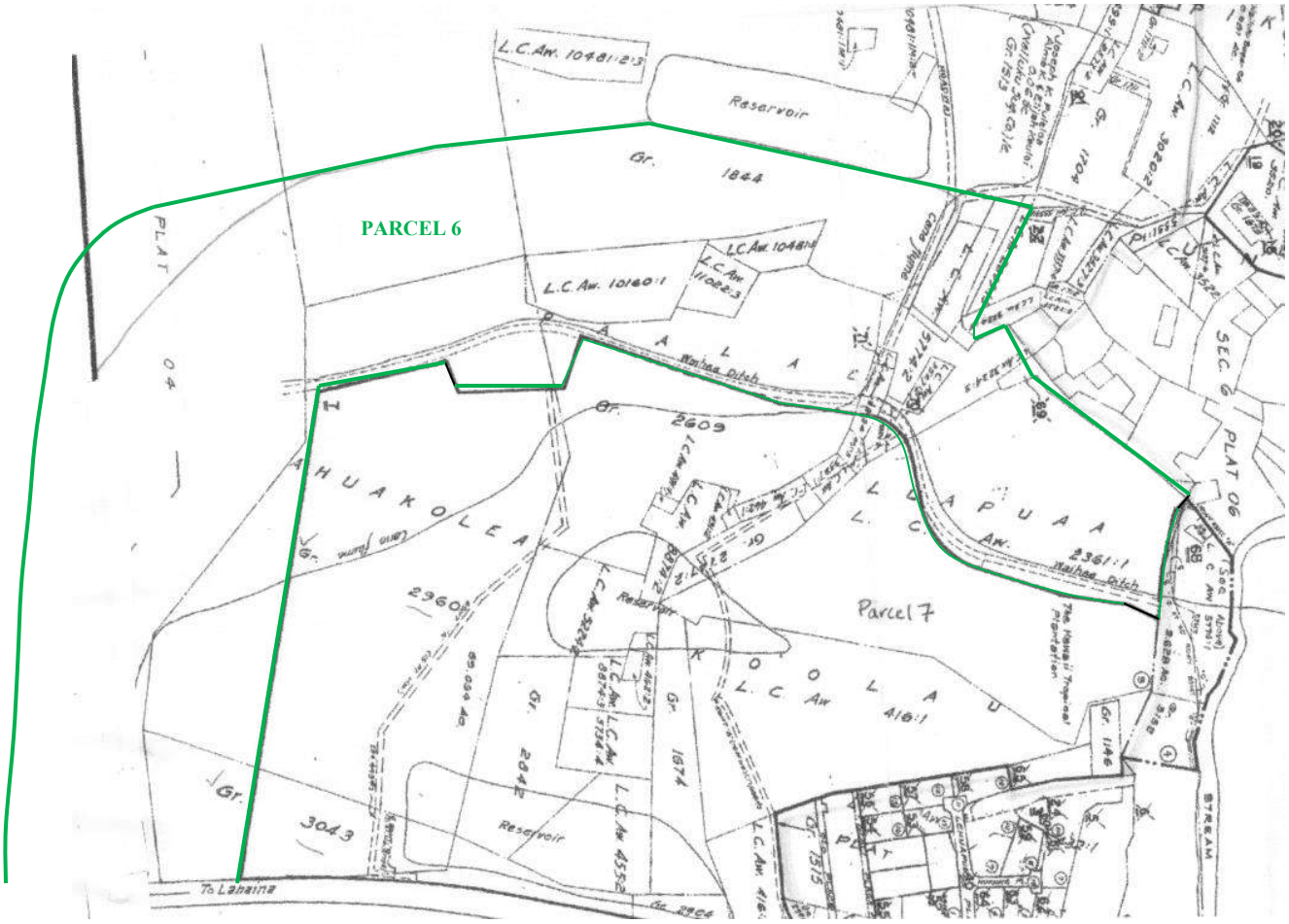


Figure 125. Enlarged Topographic Map of Parcel 6 Showing location of LCA's and Grants

Table XVII. Summary of Backhoe Trenches Parcel 6

TRENCH	LOCATION (Land Use)	DIMENSIONS	ORIENTATION	STRATIGRAPHY	COMMENTS
200	West of State Highway 30	4.6m x 1.4m x 2.0m	270° x 90°	I-III	Non-Cultural
201	East of Waihe'e Ditch in cane field	4.6m x 1.41m x 1.8m	270° x 90°	I-III	Non-Cultural
202	Grant 2960 for sugarcane	4.6m x 1.4m x 2.0m	270° x 90°	I-III	Non-Cultural
203	East of Waihe'e Ditch in cane field	4.7m x 1.41m x 1.6m	360° x 180°	I-III	Non-Cultural
204	West of Waihe'e Ditch, within Grant1844	4.9m x 1.45m x 1.86m	360° x 180°	I-III	Non-Cultural
205	West of ditch, LCA 10160:1 (house lot, kula, lo`i)	4.9m x 1.44m x 1.78m	270° x 90°	I-III	Non-Cultural
206	West of ditch, LCA 10160:1 ((house lot, kula, lo`i)	4.8m x 1.44m x 1.75m	270° x 90°	I-III	Non-Cultural
207	West of ditch, LCA 10160:1 (house lot, kula, lo`i)	4.9m x 1.43m x 1.81m	270° x 90°	I-III	Non-Cultural
208	Grant 1844 poss, within LCA 10160:1	4.8m x 1.44m x 1.81m	270° x 90°	I-IV	Non-Cultural
209	West of ditch, LCA 11022:3(house lot, kula, lo`i)	4.8m x 1.45m x 1.81m	270° x 90°	I-V	Non-Cultural
210	West of Waihe'e Ditch, within LCA 11022:3	4.9m x 1.44m x 1.71m	360° x 180°	I-III	Non-Cultural
211	West of Waihe'e Ditch, within LCA (house lot, kula, lo`i) 10481:1	4.8m x 1.42m x 1.7m	360° x 180°	I-III	Clear glass bottle fragment recovered from surface pre-excavation
212	West of Waihe'e Ditch, Grant1844(sugarcane)	4.9m x 1.44m x 1.79m	360° x 180°	I-III	Non-Cultural
213	West of Waihe'e Ditch, Grant1844 (sugarcane)	4.8m x 1.45m x 1.4m	360° x 180°	I-III	Non-Cultural
214	Within LCA 5774:2 for Lo`i	4.9m x 1.44m x 1.78m	270° x 90°	I-III	Non-Cultural
215	West of ditch, within LCA 5774:2 (lo`i)	4.9m x 1.45m x1.78 m	270° x 90°	I-II	Non-Cultural
216	West of the ditch, LCA 5774:2 (lo`i)	4.8m x 1.44m x 1.81m	360° x 180°	I-III	Non-Cultural
217	West of ditch, within LCA 5774:2 (lo`i)	4.8m x 1.43m x 1.78m	270° x 90°	I-III	Non-Cultural

Table XVIII. cont'd Summary of Backhoe Trenches Parcel 6

TRENCH	LOCATION (Land Use)	DIMENSIONS	ORIENTATION	STRATIGRAPHY	COMMENTS
218	West of Waihe'e Ditch, Cane Flume Esmnt LCA 5774:2 claimed for lo`i	4.9m x 1.45m x 1.79m	360° x 180°	I-III	Ceramic Sherd 2ndry Deposit surface Site 7884Fe2
219	West of ditch, LCA 3527:3 (kula, taro)	4.8m x 1.44m x 1.58m	360° x 180°	I-III	Non-Cultural Concrete frag. LI
220	West of Waihe'e Ditch, within LCA 3527:3	4.9m x 1.45m x 1.79m	360° x 180°	I-III	Non-Cultural
221	West of Waihe'e Ditch, within LCA 2361:1 (no info)	4.6m x 1.4m x 1.81m	270° x 90°	I-III	Non-Cultural
222	West of Waihe'e Ditch, within LCA 2361:1	4.6m x 1.41m x 1.75m	360° x 180°	I-II	Non-Cultural
223	West of Waihe'e Ditch, within LCA 2361:1	4.8m x 1.44m x 1.4m	360° x 180°	I-II	Non-Cultural
224	West of Waihe'e Ditch, within LCA 2361:1	4.9m x 1.45m x 1.75m	360° x 180°	I-II	Non-Cultural
225	West of Waihe'e Ditch, within LCA 2361:1	4.9m x 1.44m x 1.76m	360° x 180°	I-III	Non-Cultural

Trench 202

Trench 202 (TR 202) was situated within the south, central portion of Parcel 6 along a cane access road within an area currently utilized for sugarcane (see Figures 121 and 125). TR 202 was placed within Grant 2960 which was granted to Boardman for Sugarcane (see Table VIII and Figure 125). This section contained a tripartite stratigraphic sequence terminating on saprolytic bedrock (Figures 126 and 127). TR 202 was oriented east/west and measured 4.6 m long by 1.40 m wide by 2.00 m deep. No cultural materials were observed within Trench 202 which is further presented below.

> **Layer I** (0-21 cmbs) is a loamy silt, very dark grayish brown (10 YR 3/3,7.5 YR 3/3, 4/3) till zone. Low to medium density of rootlets from surface vegetation and subangular rocks, non-plastic non sticky. Layer I is non-cultural and has an abrupt smooth boundary overlying Layer II.
> **Layer II** 21-88/140 cmbs) compact very fine silt clay yellowish to dark brown (10YR 4/3 and 3/2), low density of roots and a low frequency of subangular and rounded rocks. Layer II is non-plastic, slightly

sticky, non-cultural. Layer II boundary is abrupt and wavy overlying Layer III.
Layer III (88/140-1.80/194 cmbs) very fine silty clay, dark reddish brown (5YR 3/3-3/4). No roots medium frequency of subangular cobbles with decomposing bedrock at the base. Excavations terminated on the discovery of saprolytic rock (Layer IV).

Figure 126. Photograph of North Wall near Base of Excavation of Test Unit 202

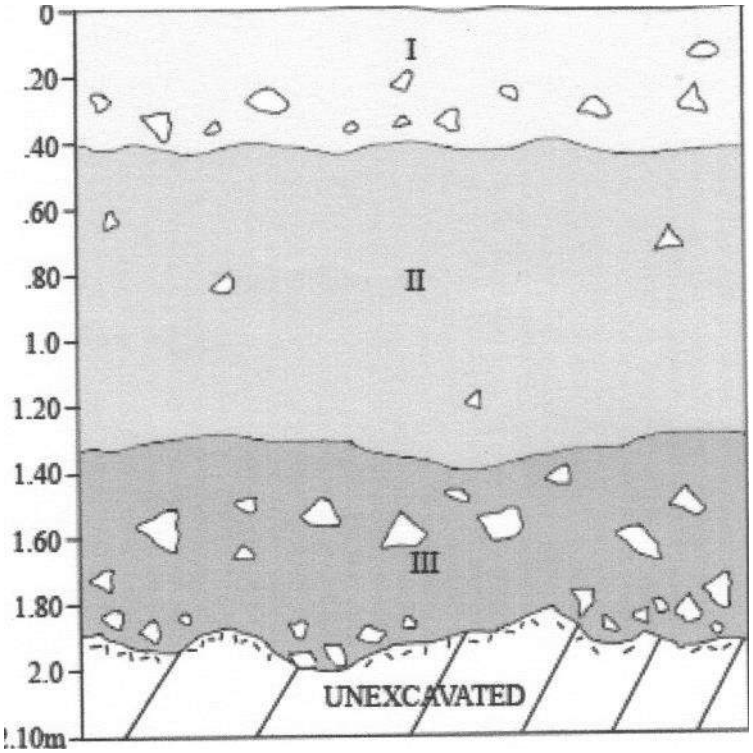


Figure 127. Stratigraphic Profile of North Wall of Test Unit 202

Trenches 205, 207 and 209

TR's 205, 207 and 209 were placed within LCA's 10160:1, 11022:3 and 10481:1 utilized as house lots (10160:1 and 10481:1), *lo`i kalo* and *kula* lands. The trenches contained a similar three layer stratigraphic sequence, yet TR's 207 and 208 contained more yellowish brown mottling (Figures 128-130). One glass fragment was found on the surface of TR 208 but was secondarily deposited. Thus, no clear evidence of domestic or agricultural activities (beyond sugarcane) was recorded.

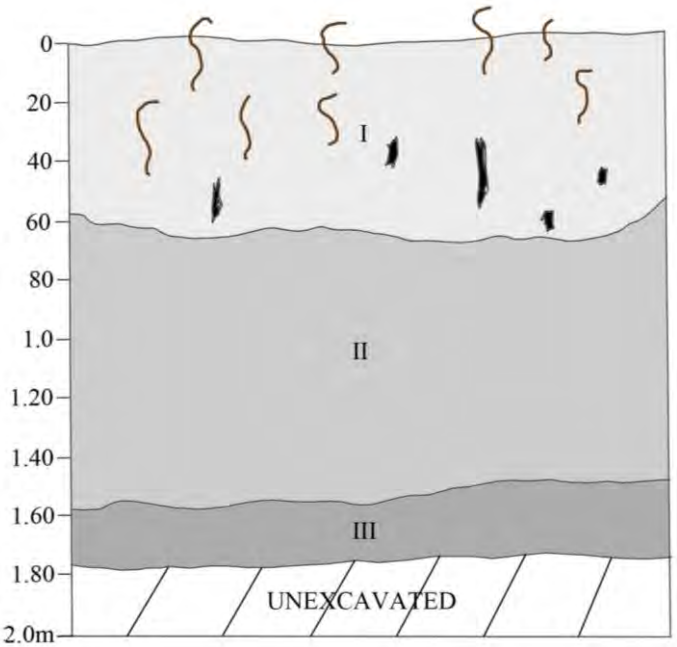


Figure 128. Photograph of South Profile of TR 205 (top); Stratigraphic Profile of South Wall TR 205

Figure 129. Photograph of South Wall of TR 207

Figure 130. Photograph of South Wall of TR 209

Trench 208

Trench 208 (TR 208) was situated within the central portion of Parcel 6 within Grant 1844 and possibly within LCA 10160:1 currently utilized for small scale commercial agriculture (see Figures 121, 125 and 128 and Table XVII). The grant was used for sugarcane and the LCA House lot, kula, *lo`i*) This section contained a four layer stratigraphic sequence with excavations terminating within sterile soils (Figures 131 and 132). A 4.8 m long by 1.44 m wide by 1.81m deep, oriented 270° by 90° section of this area was recorded and is further described below. No cultural materials were observed within TR 208.

Layer I (0-62cmbs): is a dark reddish brown (2.5yr 3/3), silt loam, agricultural plow zone, with deteriorated black drip-lines, slightly-plastic, slightly-sticky, weak, fine to medium grain, blocky, with a medium frequency of roots. No cultural materials were observed in this layer. Boundary was clear and wavy overlying Layer II.
Layer II (58-160cmbs): is a very dark brown to dark reddish brown (2.5yr 3/3), clay loam, disturbed layer, mottled with decomposing bedrock inclusions, slightly-plastic, slightly-sticky, weak, fine to medium grain, blocky. No cultural materials observed in this layer. Boundary was clear and wavy overlying Layer III.
Layer III (110-160cmbs): is a dark brown (7.5yr 3/3), clay loam, mottled with yellowish brown (10YR4/3), slightly-plastic, slightly-sticky, medium to coarse grain, slightly hard, and friable. No cultural materials observed in this layer. Boundary was clear and wavy overlying Layer IV.
Layer IV (119-181cmbs): is a strong brown (7.5yr 4/6) silty clay, weak, fine to medium grain, blocky, slightly hard, friable, slightly-plastic, slightly-sticky, with a low frequency of decomposing bedrock. No cultural materials were observed in this layer.

Figure 131. Overview Photograph of Trench 208 Pre-excavation within Parcel 6, View to East

Figure 132. Photograph of Stratigraphic Profile of Trench 208 (TR 208), North Wall

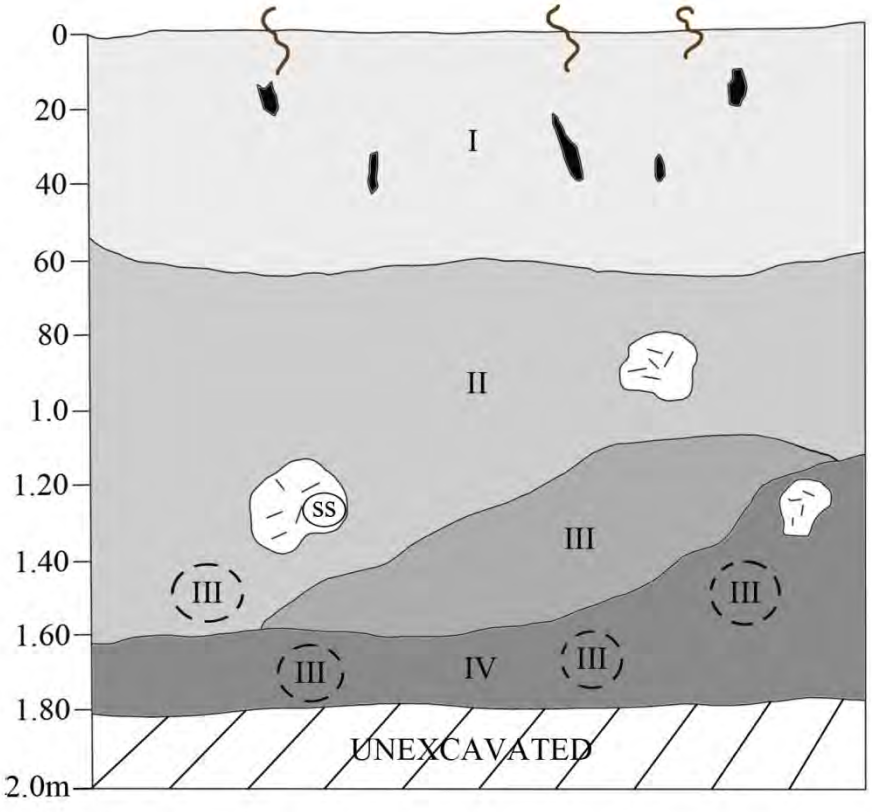


Figure 133. Stratigraphic Profile of North Wall of Trench 208 (TR 208)

Trench 218

Trench 218 (TR 218) was situated within the extreme northwestern portion of Parcel 6, within LCA 5774:2 award, utilized for *lo`i kalo,* and a portion of the cane flume easement (see Figures 121, 125 and Table XVIII). TR 218 measured 4.9 m long by 1.45 m wide by 1.79m deep and was oriented 360° by 180°. No *in situ* cultural materials were observed; however secondarily deposited domestic items were recovered from the surface area around TR 218 and assigned Site 7884 Feature 2 (Figure 134). These materials may have been from the house lots LCA's to the south where TR's 205, 207 and 209 were placed. Trench 218 contained a tripartite stratigraphic sequence with excavations terminating in sterile soils and decomposing bedrock (Figure 135).

> **Layer I** (0-52cmbs): is a dark reddish brown (2.5yr 3/3), silt loam, agricultural plow zone, with deteriorated drip-lines, slightly-plastic, slightly-sticky, weak, fine to medium grain, slightly hard, blocky, with a medium frequency of roots. Boundary was clear and wavy overlying Layer II. No cultural materials were observed in this layer.
> **Layer II (**41-138cmbs): is a dark red (2.5yr 3/6), clay loam, mottled with a high frequency of decomposing bedrock inclusions, slightly-plastic, slightly-sticky, weak, fine to medium grain, blocky. Boundary was clear and wavy overlying Layer III. No cultural materials were observed in this layer.
> **Layer III** (138-179cmbs): is a brown (7.5yr 4/4) silty clay, weak, fine to medium grain, blocky, slightly hard, weakly coherent, slightly-plastic, slightly-sticky, with a high frequency of medium and large boulders. No cultural materials were observed in this layer.

Figure 134. Photograph of Site 7884 Feature 2 Secondarily Deposited Historic Materials around TR 218

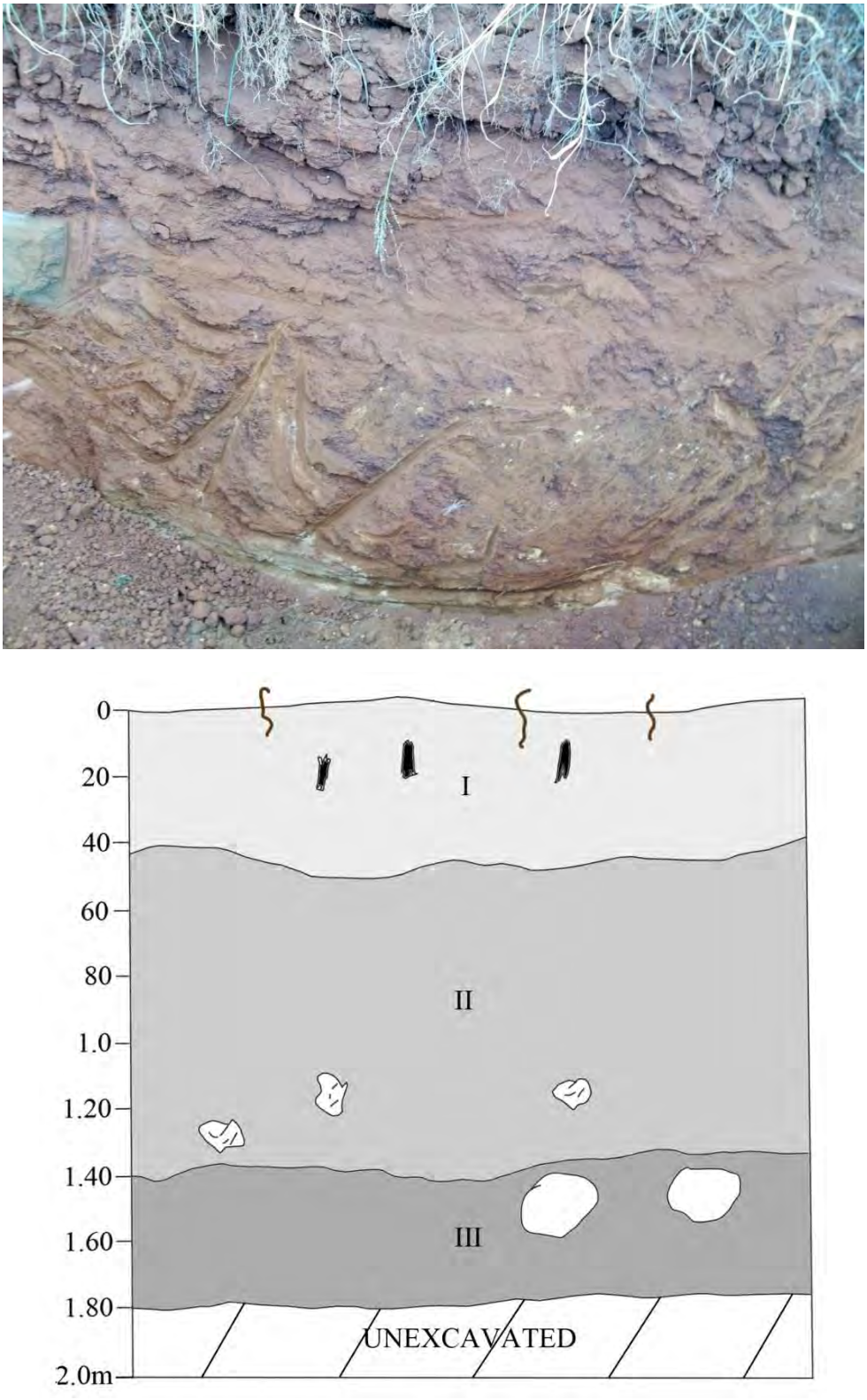


Figure 135. Photograph of West Wall of Trench 218 (top) Stratigraphic Profile of Trench 218 (TR 218) West Wall

Trench 222

Trench 222 (TR 22) was situated within the northern portion of Parcel 6, within fallow sugarcane field (see Figures 121, 125 and Table XVIII). The trench contained a two layer stratigraphic sequence with excavations terminating within decomposing bedrock (Figures 136 and 137). TR 222 measured A 4.9 m long by 1.45 m wide by 1.79m deep, oriented at 360° and was non-cultural and is further described below.

> **Layer I** consisted of a loamy silt very dark grayish brown (7.5 YR4/3) till zone from sugarcane cultivation activities Layer I contained numerous roots and irrigation black plastic drip-lines with few rocks. The soil was slightly sticky, slightly plastic, blocky texture. Boundary was clear and wavy overlying layer II.
> **Layer II** dark reddish brown (5YR 3/3, 3/4) stony silt loam and clay loam deposit that varied 60-150 cm thick with a few trenches containing decomposing bedrock, with a low density of roots and a medium frequency of rocks.

Figure 136. Photograph of West Wall of Trench 222 within Parcel 6

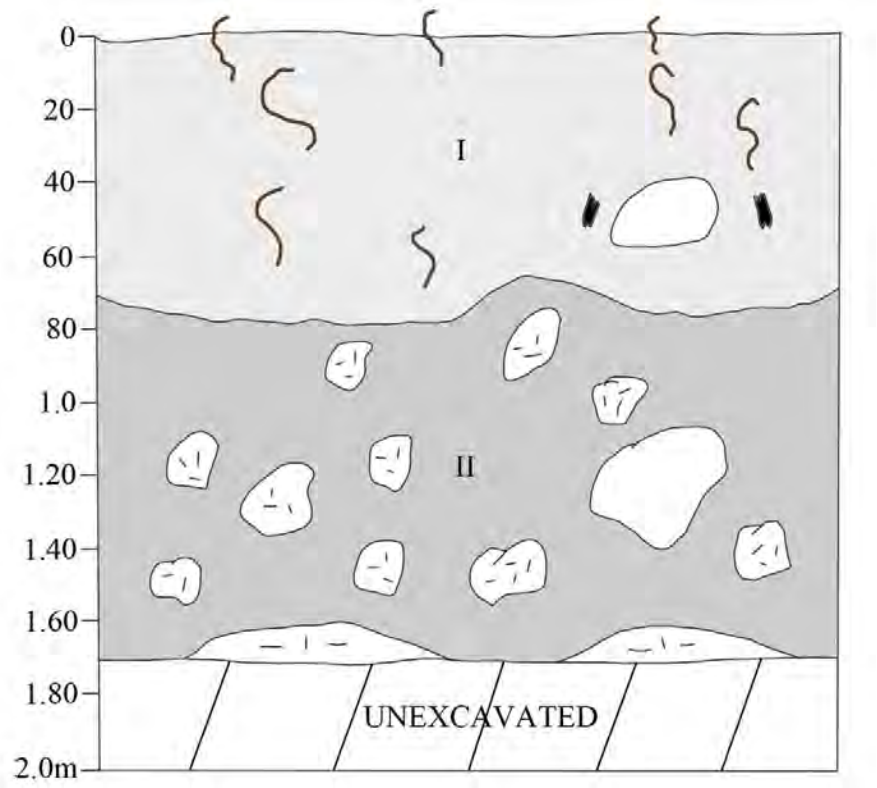


Figure 137. Stratigraphic Profile of West Wall of Trench 222

DISCUSSION PARCEL 6 BACKHOE TRENCHING

A total of 26 trenches were excavated within Parcel 6, and no intact cultural layer or deposit was noted. The majority of the LCA's are located in the central and north portion of the project area around the cane flume easement; however testing was performed throughout the parcel. Trenches 200-203 were excavated in the southern portion of Parcel 6 along the northern boundary of Parcel 3 Waena within an area of active sugar-cane cultivation. These trenches exhibited the same stratigraphy that was identified in Parcel 3 Waena. Trenches 205-213 were excavated in the central portion, and TR's 214-225 were situated in the northern portion where Grants, LCA's and flumes are concentrated. Trenches 205, 206, and 210-218 were similar. Trenches 207-209 and 219-225 exhibited a similar stratigraphy with a few showing slight variations in color hues and decomposing bedrock in Layers II and Layer III.

Similar to the other zones within the project area; initial archaeological monitoring of areas containing LCA's and Grants is warranted. A Monitoring Plan detailing the proposed areas to be monitored will be prepared and submitted to SHPD prior to development.

PARCEL 7 MAUI TROPICAL PLANTATION

Parcel 7 (TMK 3-6-005:007) is an improved parcel and the current site of the Maui Tropical Plantation located within the central portion of the overall project area (see Figures 1, 2 and 6). It contains a total of 59 acres that is bounded to the west by Site 5197 (Waihe`e Ditch) and Parcel 6, residential development of Waikapū Town towards the north, Honoapi`ilani Highway bounds the east and active sugarcane cultivation within Parcel 3 Waena towards the south. As the subject parcel has been partially developed, it contains not only active agricultural production (botanical gardens, private and commercial plantings, landscaping), open fields, a reservoir and several ancillary buildings (Figures 138-140). Test trenches were excavated within the open areas among the agricultural activities and around the periphery of the buildings.

During the current undertaking, a total of twenty-five (25) trenches designated TR's 300-324 were excavated within Parcel 7 to provide a representative sample of the subsurface conditions, and to test areas along flumes and within LCA's and Grants (Figure 141 and Tables VII, VIII, XIX and XX). Most of the trenches contained three to four stratigraphic layers with Layer I designated as the former till/agricultural zone and or grass lawn. Trenches 300 (TR 300 -303) were placed within the southern portion of the parcel, TR 305-309 were placed within the west central section of the project area along the former cane flume and numerous LCA's, TR's 311-316 were placed in the northern portion of the subject parcel where most of the maintenance buildings and storage facilities are located, and TR's 317-324 were situated in the east central portion along the same cane flume easement as TR's 305-309 in the vicinity of several LCA's and Grants.

Figure 138. Overview Photograph of Parcel 7 in area of TR 300-303, View to West

Figure 139. Overview Photograph of Parcel 7 in area of TR-320, View to East

Figure 140. Overview Photograph of Parcel 7 in area of TR 318, View to West

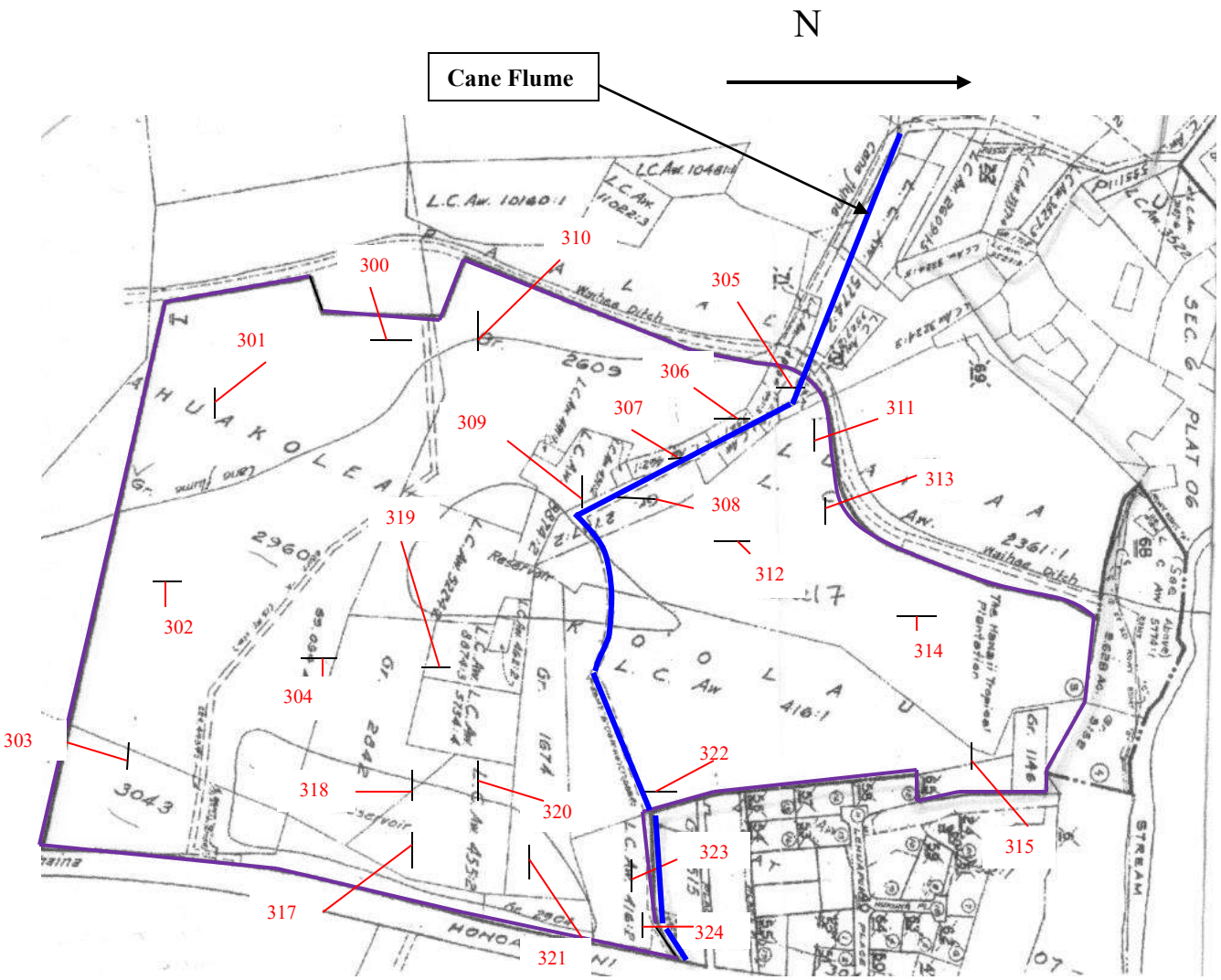


Figure 141. Tax Map Key of Parcel 7 Showing Location of Trenches 300-324, LCA's and Grants

OVERALL GENERAL STRATIGRAPHY

Trenches 300-303 were placed in the open field within Grants 2960 and 3043 surrounding the Maui Tropical Plantation on the south; TR's 300 and 304 were located near the southern cane flume easement and GR2960 and TR's 305-309 and 322-324 were situated along the northern cane flume easement and locality of numerous LCA's and a few Grants. Trenches 311-316 and 322-324 were located in the northwestern and eastern portions of the parcel. The trenches exhibited similar soil profiles within the respective zones of which they were excavated. All trenches were non-cultural and the stratigraphic sequences are presented below.

Layer I generally consisted of an upper loamy silt layer, that varied from a dark brown, brown or a very dark gray brown (7.5 YR 3/2, 3/3 or 10YR 4/3), and varied from 40 to 60 cm thick. This was the plow zone from previous cultivation activities. Layer I was typically mixed with torn black plastic drip-lines, PVC plastic irrigation hoses, and concrete aggregate pieces that had been used during the previous commercial sugarcane cultivation. There was a low frequency of rocks in this layer, but a high frequency of roots from

surface vegetation.
Layer II generally consisted of a silt loam layer, that varied from a dark reddish brown, brown (2.5yr 3/4, 7.5yr 4/4) or a silt clay loam, that varied from a dark reddish brown, dark brown (2.5yr 2.5/4, 7.5 YR 3/4), and varied from 30 to 150 cm thick. There was usually a distinct transition between this layer and the plow zone above, as this layer never had any materials from commercial sugarcane cultivation mixed within it and generally appeared less disturbed and contained medium frequency of rocks. In a few trenches excavated previous disturbances were identified and contained Layer I inclusions and materials from commercial sugarcane cultivation mixed within it.
Layer III generally consisted of a silt loam and/or clay loam layer that varied from a dark reddish brown (2.5yr 3/3, 5 YR 3/4), strong brown (7.5yr 4/6) and/or dark yellow brown (10yr 4/4). Layer III varied from streambed and/or storm wash deposits and in a few identified trenches contained decomposing bedrock, Layer III varied from 30 to 160 cm thick overlying Layer IV or terminated in decomposing bedrock or saprolytic bedrock with a medium to high frequency of rocks with the absence of roots. The streambed and/or storm wash deposits consisted of water-affected cobbles, pebbles and gravel.
Layer IV generally consisted of a silt loam and/or clay loam layer that in a few excavated trenches varied from exhibited a water deposited layer and/or lens, that varied from dark reddish brown, strong brown (2.5yr 2.5/4 to 7.5yr 4/6). Layer IV varied from streambed and/or storm wash deposits and in a few identified trenches contained decomposing bedrock or saprolytic bedrock with a medium to high frequency of rocks, with the absence of roots.

Six (6) trenches 305, 312, 314, 320, 323, and 324 exhibited an alluvium deposition recorded as a layer and/or lens which may be attributed to a meandering stream or episodic flood events. This alluvium was in the form of water affected cobbles, pebbles, and gravel, imbedded between silt layers. Three of these trenches are located in the eastern portion of the parcel and three are located on the western portion. These six trenches were intentionally excavated in LCA's or Grants and are as follows: TR 305 in LCA 9324 5824, TR 312 in LCA 2361:1, TR 314 in LCA 2361:1, TR 320 in LCA 455:2, TR 323 and 324 in LCA 416:2 (see Figure 141 and Tables VII and VIII). The land use for these areas was primarily un known with the exception of House lot and sugarcane for LCA 455:2 and House lot for LCA 416:2.

Nine (9) trenches (TR's 300-304, 315, 317-319) exhibited a darker soil that contained a clay loam or silty clay. Five of these trenches are located in the southern portion of the parcel, three are in the eastern section and the remaining solitary trench was in the extreme southeastern area. Trenches that were intentionally excavated in known LCAs or Grants are as follows: TR's 300-302 are within Grant 2960, TR 303 in Grant 3043, TR 304 within Grant 2842 and TR 315 partially within LCA 416:1. Trenches 317 and 318 in LCA 455:2, TR 319 in LCA 5734:4 and TR 320 within LCA 455:2. Former land use for these Grants is unknown; however the LCA's were a house lot (455:2) and house lot and *`auwai* (416:1). Eleven (11) trenches TR 306-311, 313, 315, 316, 321, and 322) exhibited a distinct stratigraphy that tended to have reddish and yellowish hues. Trenches that were intentionally excavated in known LCAs or Grants are as follows: TR 306 in LCA 491:3 was utilized for *lo`i* and LCA 3527:1 for *kula and lo`i*; TR 307 in LCA 462:1 for house lot, *kula* and *lo`i* and Grant 2747:2 (reservoir and sugarcane); TR 308 in Grant 2747:2, TR 309 in LCA 8874:2 (house lot and *lo'i*) and Grant 2747:2, TR 310 in Grant 2609, TR

311 in LCA 2361:1, TR 312 in LCA 2361:1, TR 313 in LCA 2361:1, TR 315 in LCA 2361:1 and LCA 416:1 house lot and *`auwai* , TR 316 in LCA 2361:1, TR 321 in Grant 2904 (no land use info), TR 322 within LCA 416:1.

As previously discussed and exhibited in blue on Figure 141, several of the above LCA follow the linear, and curvilinear cane flume easement. Testing was concentrated along this easement to ascertain presence/absence of historic residential use; as well as evidence of traditional use. Prior to this waterway being utilized historically for sugarcane and residential use, it is surmised that this path may follow an ancient watercourse or *auwai*. Unfortunately, no evidence of traditional or historic habitation was noted during the test trench excavations.

Two (2) trenches exhibited a two layer sequence, sixteen (16) trenches exhibited a three layer sequence, and seven (7) trenches exhibited a four layer sequence.

Table XIX. Summary of Backhoe Trenches Parcel 7

TRENCH	LOCATION	DIMENSIONS	ORIENTATION	STRATIGRAPHY	COMMENTS
300	Open Field, within Grant 2960	4.8m x 1.45m x 1.8m	360° x 180°	Layer I-III	Non-Cultural
301	Open Field, within Grant 2960	4.8m x 1.44m x 1.82m	270° x 90°	Layer I-III	Non-Cultural
302	Open Field, within Grant 2960	4.9m x 1.44m x 1.8m	360° x 180°	Layer I-III	Non-Cultural
303	Open Field, within Grant 2960 and 3043	4.8m x 1.43m x 1.82m	270° x 90°	Layer I-III	Non-Cultural
304	South of Parking Lot within Grant 2842	4.9m x 1.45m x 1.81m	360° x 180°	Layer I-III	Non-Cultural
305	Within LCA 5824 and/or 9824	4.8m x 1.44m x 1.7m	360° x 180°	Layer I-III	Non-Cultural
306	Within LCA 491:3 (lo`i) and 3527:1 Kula and Lo`i	4.8m x 1.45m x 1.81m	360° x 180°	Layer I-III	Non-Cultural, charcoal flecks in Layer III
307	Within LCA 462:1 and Grant 2747:2 House lot, kula lo`i	4.8m x 1.44m x 1.78m	360° x 180°	Layer I-III	Non-Cultural
308	North of (MTP) Buildings within Grant 2747:2	4.9m x 1.46m x 1.82m	360° x 180°	Layer I-III	Non-Cultural
309	North of Buildings within LCA 8874:2 and Grant 2747:2	4.8m x 1.45m x 1.75m	270° x 90°	Layer I-III	Non-Cultural
310	East of Site 5197-Waihe'e Ditch, within Grant 2609	4.9m x 1.45m x 1.75m	270° x 90°	Layer I-III	Non-Cultural
311	East of Site 5197-Waihe'e Ditch, within LCA 2361:1	4.8m x 1.46m x 1.61m	360° x 180°	Layer I-II	Non-Cultural
312	East of Waihe'e Ditch, within LCA 2361:1	4.9m x 1.45m x 1.6m	360° x 180°	Layer I-IV	Non-Cultural
313	South of Waihe'e Ditch, within LCA 2361:1	4.9m x 1.46m x 2.2m	270° x 90°	Layer I-VI	Non-Cultural
314	Maintance/Auxiliary Buildings Area Within LCA 2361:1	4.9m x 1.45m x 1.8m	360° x 180°	Layer I-III	Non-Cultural
315	Maintance/Auxiliary Buildings Area in LCA's 2361:1 and 416:1 House lot and `auwai	4.8m x 1.43m x 1.78m	270° x 90°	Layer I-III	Non-Cultural

Table XX cont'd . Summary of Backhoe Trenches Parcel 7

TRENCH	LOCATION	DIMENSIONS	ORIENTATION	STRATIGRAPHY	COMMENTS
316	Within the (MTP) Parking lot within LCA 2361:1	4.9m x 1.44m x 1.78m	360° x 180°	Layer I-III	Non-Cultural
317	West of State Highway 30 and within LCA 455:2 House lot and Ko	4.8m x 1.31m x 1.85m	270° x 90°	Layer I-IV	Non-Cultural
318	West of State Highway 30 and within LCA 455:2 and Grant 2842	4.8m x 1.32m x 1.85m	270° x 90°	Layer I-III	Non-Cultural
319	West of Highway 30 within LCA's 8874:3 5734:4 House lot	4.9m x 1.33m x 1.75m	360° x 180°	Layer I-III	Non-Cultural
320	West of State Highway 30 and within LCA's and 455:2 House lot and Sugarcane	4.9m x 1.45m x 1.81m	270° x 90°	Layer I-III	Non-Cultural
321	West of State Highway 30 and within Grant 2904	4.9m x 1.44m x 1.79m	270° x 90°	Layer I-IV	Non-Cultural
322	West of State Highway 30 and within LCA 455:2 House lot and Sugarcane	4.9m x 1.45m x 1.55m	360° x 180°	Layer I-IV	Non-Cultural
323	West of State Highway 30 and within LCA 416:2 house lot	4.9m x 1.45m x 1.78m	270° x 90°	Layer I-IV	Non-Cultural
324	West of State Highway 30 and within LCA 416:2 house lot	4.8m x 1.43m x 1.55m	270° x 90°	Layer I-IV	Historic Materials, Glass and Metal

Trench 302

Trench 302 (TR 302) was situated within the open fields of the southern portion of Parcel 7within former Grant 2960 (see Figures 141 and 142). No land use information was available for this Grant; however TR 302 contained a three layer stratigraphic sequence with excavations terminating at 1.82 mbs (Figures 143-144). No cultural materials were observed within TR 302 which measured 4.9 m long by 1.44 m wide by 1.8 m deep and was oriented north south. The stratigraphic sequence is further described below.

Layer I (0-51cmbs): is a dark brown (7.5yr 3/3), silt loam, agricultural plow zone, slightly-plastic, slightly-sticky, blocky, fine to medium grain, with a high frequency of coconut roots and a high frequency of rocks. No cultural materials were observed in this layer. Boundary was clear and wavy overlying Layer II .
Layer II (40-143cmbs): is a dark brown (7.5yr 3/4), clay loam, slightly-plastic, slightly-sticky, blocky, weak, fine to medium grain, with a low frequency of rocks and a high frequency of coconut roots . No cultural materials were observed in this layer. Boundary was clear and a plane overlying Layer III.
Layer III (140-182cmbs): is a brown (10yr 4/3), clay loam, slightly-plastic, slightly-sticky, blocky, slightly hard, fine to medium grain, with a low frequency of roots and a high frequency of rocks and decomposing bedrock. No cultural materials were observed in this layer.

Figure 142. Overview Photograph of Trench 302 Pre-Excavation within Parcel 7, View to East

Figure 143. Photograph of East Wall of TR 302 within Parcel 7

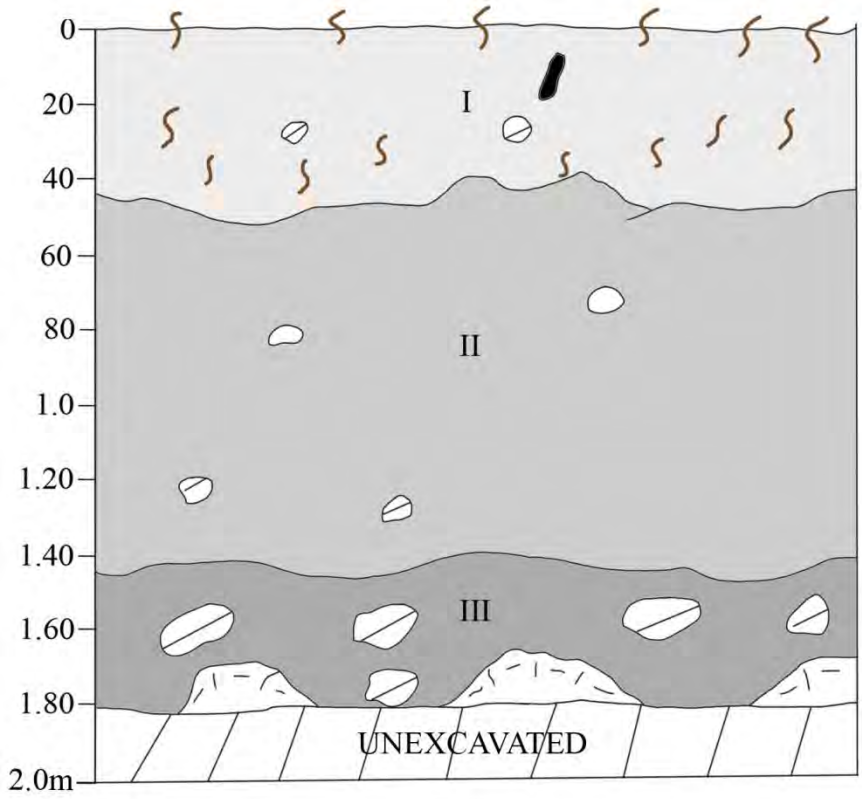


Figure 144. Stratigraphic Profile of TR 302 East Wall

Trench 306

Trench 306 (TR 306) was situated within the north eastern portion of the project area along the cane flume easement within LCA's 491:3 and 3527:1 (see Figures 141 and 146 and Table XIX). LCA 491:3 was for *lo`i* and 3527:1 was claimed for *kula* and taro *pauku.* This section contained a four layer stratigraphic sequence within an area that contained silt and clay dark soil loams (Figures 147 and 148). A 4.8 m long by 1.45 m wide by 1.45 m deep, oriented at 360°. The testing within TR 306 was negative for cultural materials.

Figure 145. Overview Photograph of TR 306 Pre-Excavation, View to South

Layer I (0-30cmbs): is a dark reddish brown (2.5yr 3/3), silt loam, within a previous agricultural plow zone, with deteriorated drip-lines, slightly-plastic, slightly-sticky, weak, fine grain, blocky, friable with a medium frequency of roots. Boundary was clear and a plane overlying Layer II. No cultural materials were observed in this layer.
Layer II (25-110cmbs): is a dark reddish brown (2.5yr 3/4), with dark grey brown silt clay loam, slightly-plastic, slightly-sticky, weak, fine to medium grain, blocky, slightly hard, a low frequency of roots and rocks. Boundary was clear and wavy overlying Layer III.
Layer III (99-123cmbs): is a dark reddish brown (2.5yr 2.5/3), clay loam, slightly-plastic, slightly-sticky, weak, fine to medium grain, blocky, slightly hard, with a low frequency of roots and rocks. Boundary was clear and wavy overlying Layer III. Charcoal flecks were noted scattered in layer.
Layer IV (120-155cmbs): is a dark reddish brown (2.5yr 2.5/4), clay loam, slightly-plastic, slightly-sticky, weak, fine to medium grain, blocky, slightly hard, with a low frequency of roots with a high frequency of rocks and yellowish brown decomposing bedrock along the northern edge. No cultural materials were observed in this layer.

Figure 146. Photograph of East Wall of TR 306

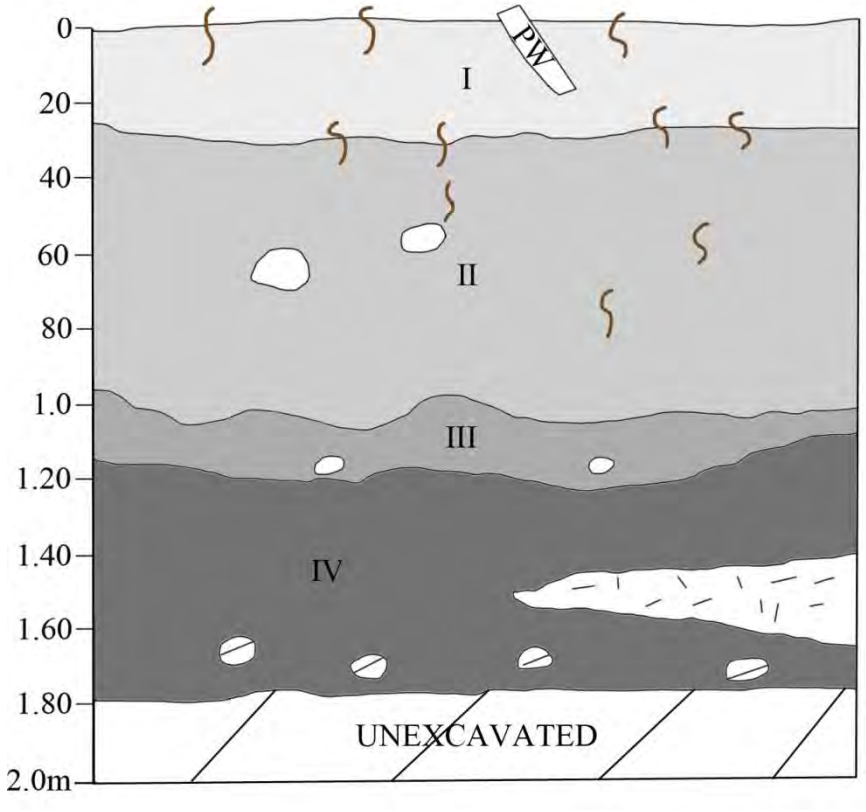


Figure 147. Stratigraphic Profile of TR 306 East Wall

Trench 309

Trench 309 (TR 309) was situated within the north eastern portion of the project area along the cane flume easement in the vicinity of 305-308 within LCA's 8874:2 and Grant 2747:2 (see Figures 141 and 146 and Table XIX). LCA 88742:2 was for a house lot and taro *pauku (*section) and Grant 2747:2 was claimed for sugarcane and reservoir. TR 309 contained a tripartite layer stratigraphic sequence that was negative for cultural remains (Figures 148 and 149). A 4.8 m long by 1.45 m wide by 1.75 m deep, oriented at 360°. The testing within TR 309 was negative for cultural materials.

Layer I (0-21cmbs): very dark gray brown (10YR4/3) silt loam within a previous agricultural plow zone, slightly-plastic, slightly-sticky, weak, fine grain, blocky, friable with a medium to high frequency of roots and low frequency of rock. Boundary was clear and smooth overlying Layer II. No cultural materials were observed in this layer.
Layer II (21-77cmbs): is a dark gray brown (7.5 YR 3/2) with dark reddish brown (2.5yr 3/4) silt clay loam, slightly-plastic, slightly-sticky, weak, fine to medium grain, slightly compact, a low frequency of roots and rocks. Boundary was clear and wavy overlying Layer III. Non-cultural.
Layer III (77-175cmbs): is a dark reddish brown (2.5yr 2.5/3), clay loam, slightly-plastic, slightly-sticky, weak, fine to medium grain, blocky, slightly hard, with a low frequency of rocks and decomposing bedrock.

Figure 148. Photograph of South Wall of Trench 309

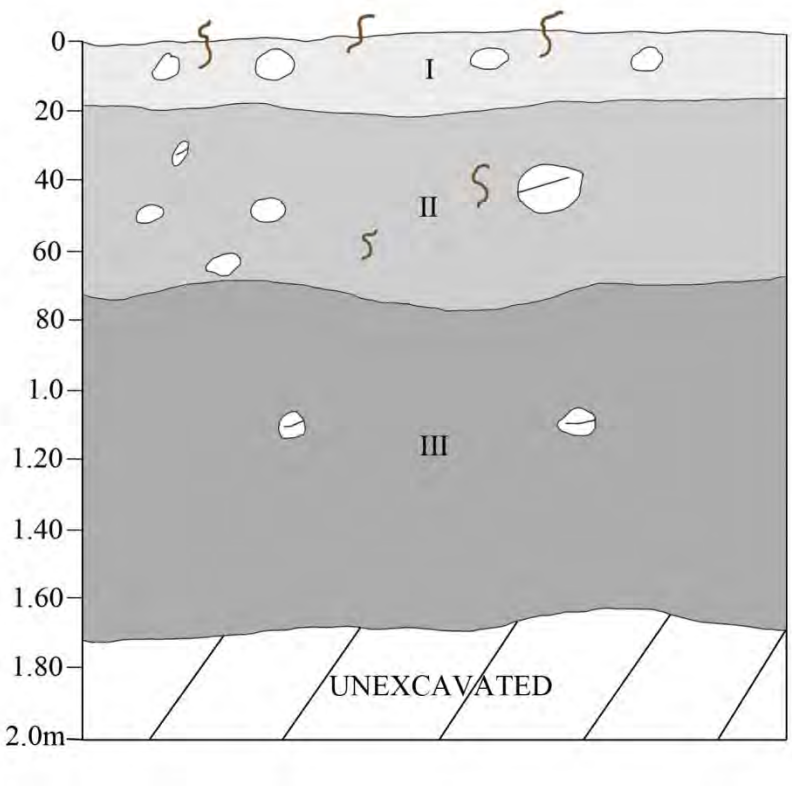


Figure 149. Stratigraphic Profile of South Wall of Trench 309

Trench 310

Trench 310 (TR 309) was situated near the western boundary and Waihe`e Ditch within the southwestern quadrant and Grant 2609 (see Figure 141 and Table XIX). There was no land use information about this Grant however no cultural materials were noted in any of the strata. TR 310 contained a three-layer soil profile with Layers I and II exhibiting a gradual transition between the lower boundaries (Figures 150 and 151). It measured 4.9 m long by 1.45 m wide by 1.75 m deep, oriented east/west.

Layer I (0-18cmbs) consisted of a loamy silt layer, very dark gray brown (10YR 4/3) probable former till zone, now portion of grass lawn. A high frequency of roots from surface vegetation and a few rocks. Soil is non-plastic, non-sticky, blocky, boundary is gradual and wavy. Layer I is non-cultural.
Layer II (18-41 cmbs) is a silt loam, reddish brown to yellowish brown (2.5yr ¾ to 10YR4/3). It contained low frequency of rocks and roots, non-sticky, non-plastic, slightly compact. Boundary is gradual and smooth.
Layer III (41-BOE) consisted of a silty clay brown to yellowish brown (10YR3/4 and 4/3) with saprolytic rock and decomposing bedrock.

Figure 150. Photograph of South Wall of Trench 310

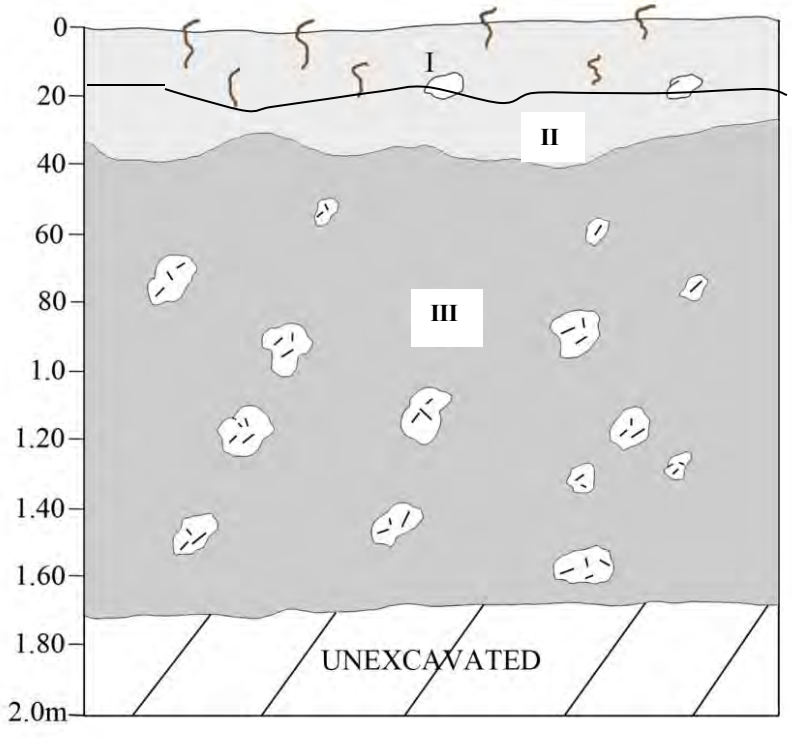


Figure 151. Stratigraphic Profile of South Wall of Trench 310

Trench 318

Trench 318 (TR 318) was situated along the southern side of the entrance road within LCA 455:2 and Grant 2842 (see Figures 141, 152 and Table XX). LCA 455:2 was claimed as a house lot and for sugarcane; although no land use information was available for Grant 2842 a "pie shaped" reservoir was noted on the tax map key in the area of TR 318 and 317 (see Figure 141).TR 318 measured 4.8 m long by 1.32 wide by 1.85 m deep and was oriented east/west. It contained a four layer stratigraphic sequence (Figures 153 and 154) which included lenses of alluvium gravel designated Layer III. No cultural materials were observed within the soil profile.

Layer I is a disturbed loamy silt layer, dark gray brown (10YR 4/3), which contained a grass lawn. The layer has a high frequency of roots and rocks which are sub rounded cobbles, non-plastic, slightly sticky. Boundary is clear and smooth overlying Layer II.
Layer II disturbed and consisted of a silty clay loam dark reddish brown (2.5yr 3/4) that contained a medium frequency of rocks and high frequency of roots. Very slightly, plastic, slightly sticky, granular and crumbly, non-cultural. Layer II had a clear wavy boundary. Near the base an intrusive lens or pocket of grayish brown gravel. Very abrupt, smooth boundary within Layer II.
Lens/Layer III disturbed gravelly silt (10YR4/3) numerous roots, low frequency of sub rounded cobbles, high frequency of pebbles, appears to be an alluvial deposit possibly from a streambed or the former reservoir. The deposit was thickest in the central portion tapering at both ends.
Layer IV is a silty clay, dark reddish brown (2.5yr 3/4), slightly plastic, slightly sticky, few sub rounded cobbles and gravel, very low frequency of roots. Non-cultural. Layer IV is similar to Layer II in color and soil texture but not content (rock and roots) and may represent an undisturbed portion of Layer II.

Figure 152. Overview Photograph of Trench 318 Base of Excavation

Figure 153. Photograph of South Wall of Trench 318

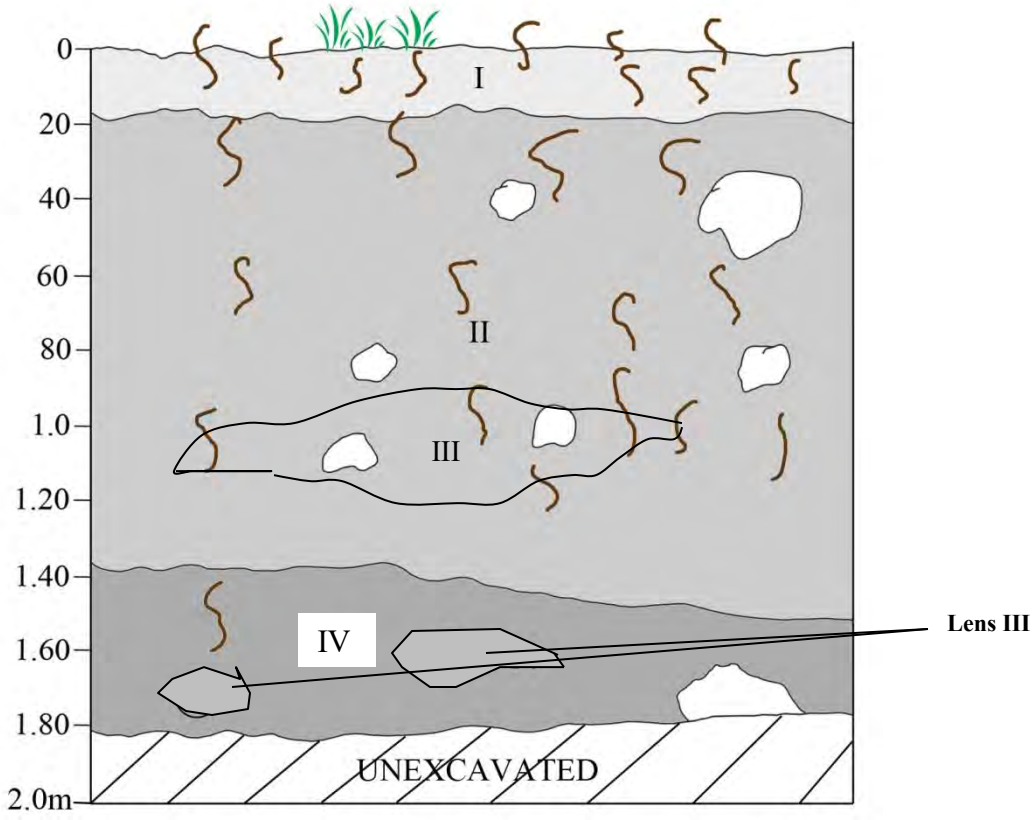


Figure 154. Stratigraphic Profile of South Wall of Trench 318

Trench 319

Trench 319 (TR 319) was situated along the southern side of the entrance road to capture a portion of LCA 8874:3 which stated *lo`i* for land use and LCA 5734:4 that had no information (see Figures 141, 156 and Table XX). Unfortunately, the entire area was previously disturbed as evidenced by the numerous roots and presence of a cable near the base of the trench (see Figure 156). No cultural materials or gleyed soils indicative of *lo`i kalo* were recorded. TR 319 measured 4.9 m long by 1.33 wide by 1.75 m deep and was oriented north/south. It contained three layers, of which Layers I-II and upper portion of III were disturbed.

Figure 155. Photograph of TR 319 West Wall

Trench 324-Site 7884 Fe. 3

Trench 324 (TR 324) was placed along in the northeastern corner of Parcel 7 within LCA 416:2 which was claimed as a house lot (see Figure 141, 156 and Table XX). It contained a four layer stratigraphic sequence within an area where alluvial deposits (stream and or flood episodes) were documented within TR 320, 322 and 323 (Figure 157). At the interface of Layers I and II, a small historic trash deposit designated Site 7884 Feature 3 consisting of glass, ceramics and a burning event was identified from 20-40 cmbs (Figures 158-159). Layers III and IV were comprised of rounded small cobbles and boulders, interspersed with smaller pebbles and gravel surmised to be from an intermittent streambed or episodic flood events. TR 324 measured 4.8 m long by 1.43 m wide by 1.55 m deep and was oriented east west.

The cultural materials were sparse and considered domestic, utilitarian items possibly associated with the LCA but more likely the adjoining residential area with neighbors throwing trash over the property line.

Layer I (0-20cmbs): is a dark brown (7.5yr 3/3), silt loam, within a previous agricultural plow zone, with deteriorated drip-lines, slightly-plastic, slightly-sticky, weak, fine to medium grain, slightly hard, blocky, friable with a medium frequency of roots. Boundary was clear and wavy overlying Layer II. No cultural materials were observed in this layer.
Layer II (22-120cmbs): is a brown (7.5yr 4/4), is a disturbed layer a silt loam, slightly-plastic, slightly-sticky, weak, fine to medium grain, blocky, slightly hard, a low frequency of rocks. Cultural materials were observed in this layer at 20-40cmbs in the form of a burned deposit of bottle glass and ceramics identified along the north eastern profile. At ca. 102-118cmbs and 120 to 130cmbs water affected pebbles and gravel were identified along the northwestern wall. Boundary was clear and broken overlying Layer III on the west and overlying Layer IV on the east
Layer III (82-117cmbs): is a dark yellowish brown (10yr 4/4), riverbed stony silt, structureless, non-plastic, non-sticky, loose, single grain to fine to medium grain, with a high frequency of rocks, cobbles. Boundary was clear and wavy overlying bedrock. No cultural materials were observed in this layer.
Layer IV (120-155cmbs): is a dark yellowish brown (7.54/6), riverbed stony silt, weakly coherent, non-plastic, non-sticky, loose, single grain to fine to medium grain, with a high frequency of rocks, cobbles, structureless. No cultural materials were observed in this layer

 .

Figure 156. Overview Photograph of TR 324 Pre-excavation, View to East

Figure 157. Photographs of North Wall of TR 324 (top); and Close-up of Gravel Deposit along North Wall

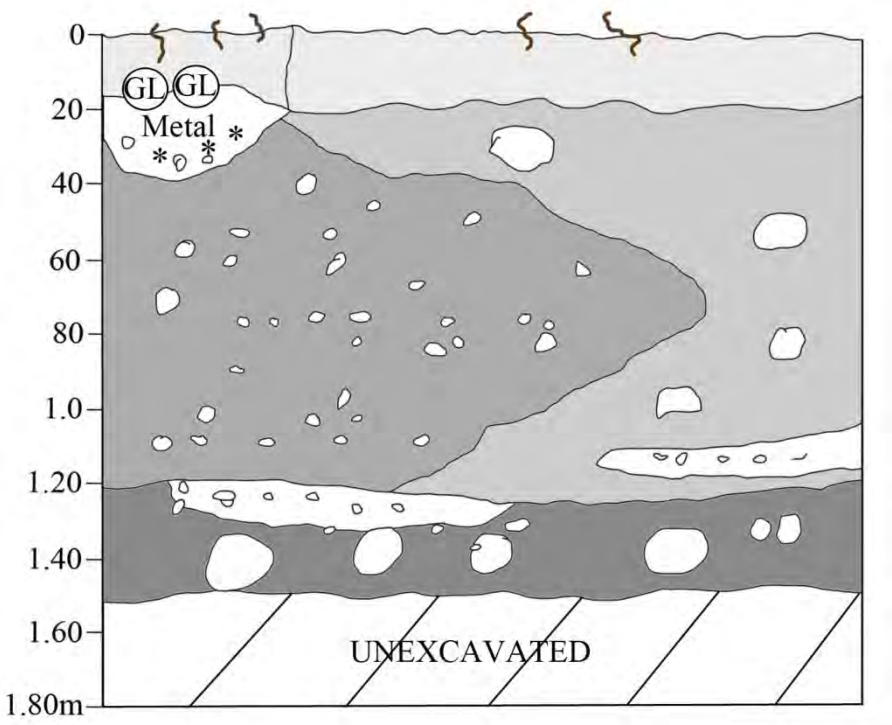


Figure 158. Stratigraphic Profile of Trench 324 North Wall

Figure 159. Historic Material from Site 7884 Feature 3 (TR 324) North Wall

Site 5197 Waihe`e Ditch

Site 5197 Waihe'e Ditch (Waihe'e Canal) was built by the Maui Agricultural Company (MA) in cooperation with the Wailuku Sugar Company for the irrigation of sugarcane. The construction started in June 1905 and was completed in May 1907. The water source for the Waihe'e Ditch originates in the upper Waihe'e Valley from the Waihe'e stream, the water intake from the stream follows a course from the north towards the south thru Waihe'e, Waiehu, Iao Valley, and Waikapu (Na Wai `Eha – the four great waters) with water intake along its route, thru tunnels, flumes, open ditches, reservoirs and penstocks terminating into the West Maui reservoir (Figures 160 and 161). The Spreckles Ditch also originates in the upper portion of the Waihe'e Valley and follows a similar southerly direction at a lower elevation and empties into the Waiale Reservoirs.

Within the boundaries of the larger project area the Waihe'e Ditch (Site 5197) flows from the north towards the south along the central portion encompassing an area approximately 7000 ft long. Specifically, beginning in the northern property boundary the Waihe'e Ditch (Site 5197) defines the western boundary of Parcel 7 and the eastern boundary of Parcel 6. Along the southern half of the parcel, Site 5197 bisects Parcel 3 Waena east/west.

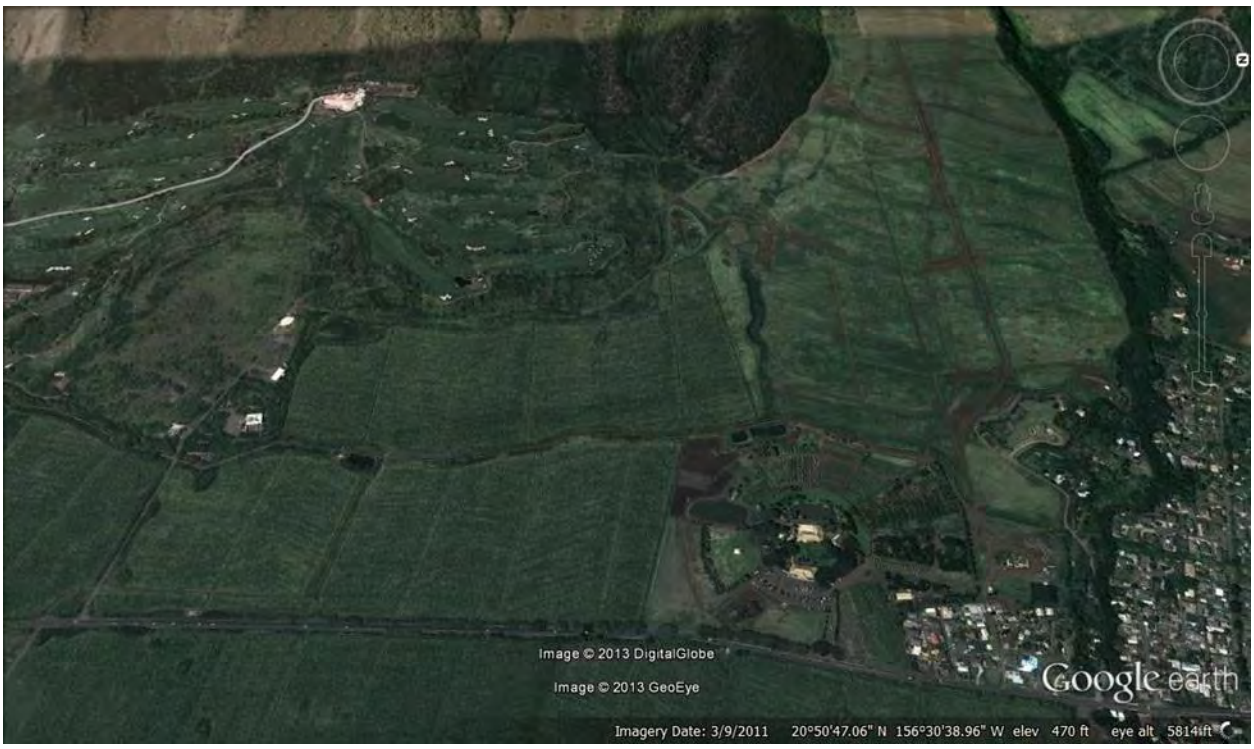


Figure 160. Overview Photograph of Site 50-50-04-5197 Waihe'e Ditch Extending North to South thru the Waikapū Tropical Plantation Land Holdings (Google earth 2013)

At the extreme northern property boundary the Waihe'e Ditch (Site 5197) emerges from an earthen underground tunnel (Figure 162) from an adjoining parcel that is located adjacent to the Waikapū Stream. It is at this juncture that Waihe'e Ditch (Site 5197) emerges into an open earth ditch on the south for a length of 6.0 m and continues thru a basalt keystone arched and faced tunnel for a length of 8.5 m and emerges on the south from an arched basalt keystone and faced tunnel (Figures 163-164). This tunnel appears to have supported a possible bridge in the past as it is covered with a dirt access road. The tunnel measures 3.1 m wide and 2.2-2.4 m in high above the active water course. The keystone faced arch is constructed of keystone cut basalt blocks that measure 45 cm in length and 40 cm in width. The interior of the tunnel is concrete lined. The southern section of the Waihe'e Ditch following the southern end of the tunnel for a distance of 29.5 m is presumably original construction consisting of a concrete lined ditch with the upper slopes stacked, faced, basalt water-worn and sub-angular cobbles, four courses high, measuring 1.3 m above the cement lined base that measures 1.1 m above the water level (Figures 165-166). The width at this juncture measures 2.1 m to 3.1 m. The ditch transitions from stacked, faced sides into being completely cement lined, (a modern modification) measuring 2.1 m wide, and 1.1 m in height above the water level with sections along the southern water course containing remnants of previous construction of rock faced sides.

Bridges are located along the central and southern sections of the ditch within the project area crossing over to Parcel 3 Mauka. Figures 167 and 168 depict the construction of concrete and re-bar reinforced, metal beamed and wooden bridges, the last being the more recently constructed.

Site 5197 is in good condition and is maintained by HC&S. The ditch remains consistent in terms of construction all along the water course towards the southern terminus of the project area beginning after the first 44 m from the northern section. The first 44 meters beginning from the northern property boundary is the only area of the ditch that exhibits a difference in construction, that being, an earlier original construction with stacked rock and faced sides and a tunnel with keystone arches. The continuing ditch along the southern portion of the project area clearly exhibits modern modifications and modern penstocks (PVC pipes, sluice gates and pipe valves) to existing irrigation routes and reservoirs. Tee bars are located atop the ditch as reinforcements and are primarily located along the southern sections as depicted on Figures 169-170. Along the southern route of the ditch are remnants of older penstocks, drainage culverts and shut-off valves that are predominately located near the bridges. Figures 171-174 show these areas.

Figure 161. State Department of Agriculture Map Showing Site 5197 Waihe`e Ditch and Spreckels Ditch

Figure 162. Overview Photograph Site 5197 Waihe'e Ditch Emerging from an Underground Culvert from the Northern Property Boundary, View to North

Figure 163. Overview Photograph of Waihe'e Ditch from an Underground Keystone Tunnel/Bridge, View to South

Figure 164. Overview Photograph of Keystone Arched Tunnel/Bridge, View to South

Figure 165. Overview Photograph of Site 5197 Waihe`e Ditch Showing two Types of Construction along the Ditch (photo from atop the keystone arched tunnel/bridge), View to South

Figure 166. Overview Photograph of Site 5197 Waihe'e Ditch Showing Older Construction with Stacked Rock Atop the Concrete Lined Ditch (View of Western Side Wall

Figure 167. Overview Photograph of Second Bridge from the North, Metal Beam and Cement Construction (background), Older Drainage Culvert (foreground), View to Northeast

Figure 168. Photographic Overview Second Bridge, Metal Beam and Concrete Construction, View to West

Figure 169. Photographic Overview from Second Bridge with Tee-Bar Reinforcements Across Ditch, View to Southwest

Figure 170. Overview Photograph of Third Bridge from North, Cement Construction with PVC Drainage, View to North

Figure 171. Overview Photograph of Third Bridge with Older Penstock with Metal Shut-off Valve (left), View to South

Figure 172. Overview Photograph of Fourth Bridge from North, West of Maui Tropical Plantation and Reservoir with Modern Wooden Construction, View to North

Figure 173. Overview Photograph of Site 5197 Waihe'e Ditch with Modern Concrete Lining, View to Northeast

DISCUSSION OF PARCEL 7

Parcel 7 currently contains commercial structures, subsurface utilities, a large reservoir, botanical gardens and ancillary buildings for lessee's and the Maui Tropical Plantation. As exhibited on Figure 141, the subject parcel formerly contained numerous LCA's and Grants due in part to the presence of cane flumes (in blue) and reservoirs, as well as the proximity to Old Waikapū Town. Portions of the cane flume easements and concrete lined ditches also noted in Parcels 3 Mauka and Waena may have been prior non-commercial waterways and or *`auwai* during the pre-Contact period. Today, a shallow, narrow concrete lined swale (Figures 174 and 175) approximately 48 to 60 cm wide by 10 cm deep is present along portions of the curvilinear and linear cane flume easement noted in blue on Figure 141. Site 5197 Waihe`e Ditch is prevalent and utilized for current agricultural activities along its north-south route.

Although several LCA's and Grants were present within the subject property, the backhoe test excavations were primarily negative with the exception of a small historic trash dump, Site 7884 Feature 3, near the surface of TR's 323 and 324 in the northeast corner of the parcel. The negative results are likely due to several factors, consisting of the compounded disturbances across the parcel from prior sugarcane cultivation, the development of the Maui Tropical Plantation and the inherent bias from backhoe sampling.

Sites 5197 (Waihe`e Ditch) and 7884 have been adequately documented at the inventory level and require no further work beyond construction monitoring during removal (if applicable) or grading activities near the historic properties.

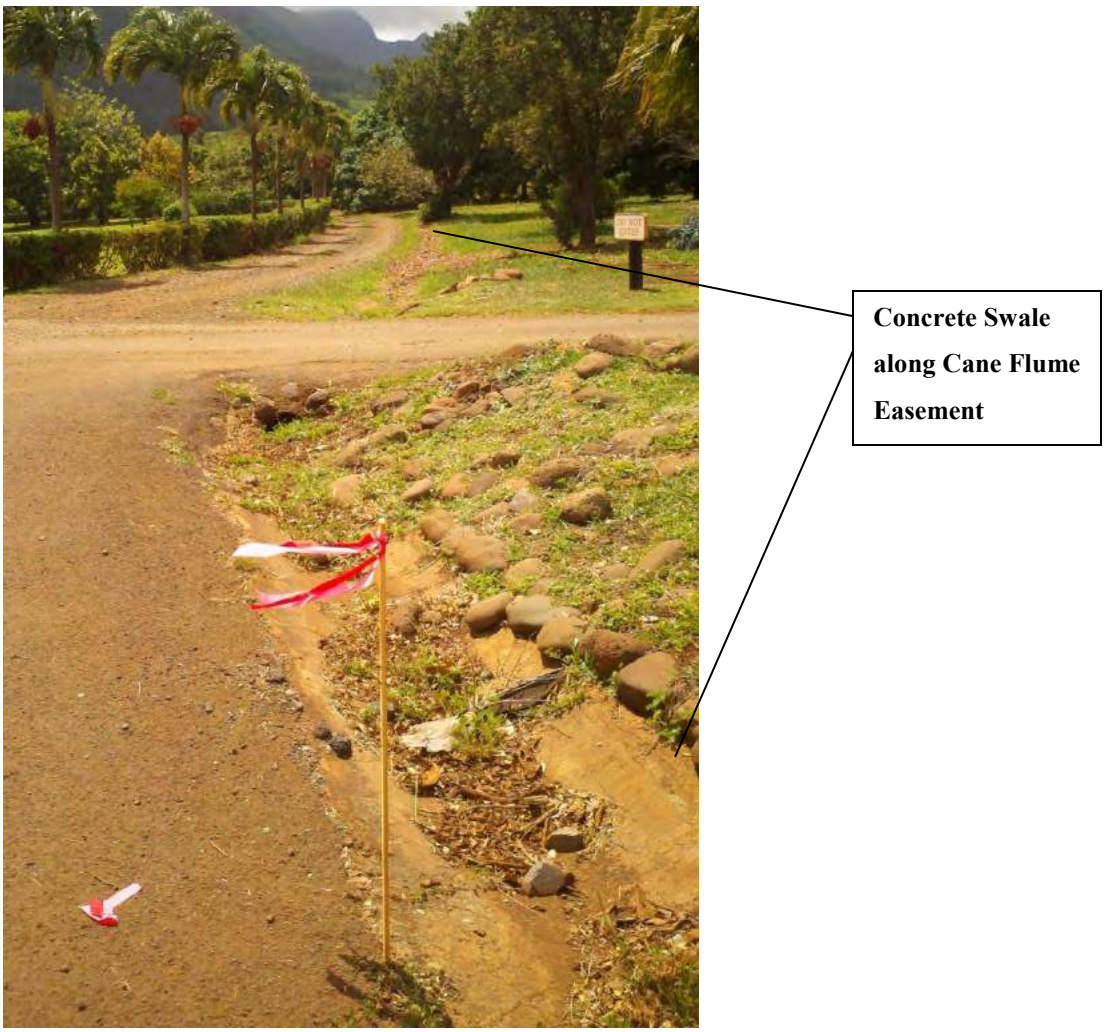


Figure 174. Overview Photograph of Extant Portion of Concrete Swale along Northern Cane Easement in Parcel 7

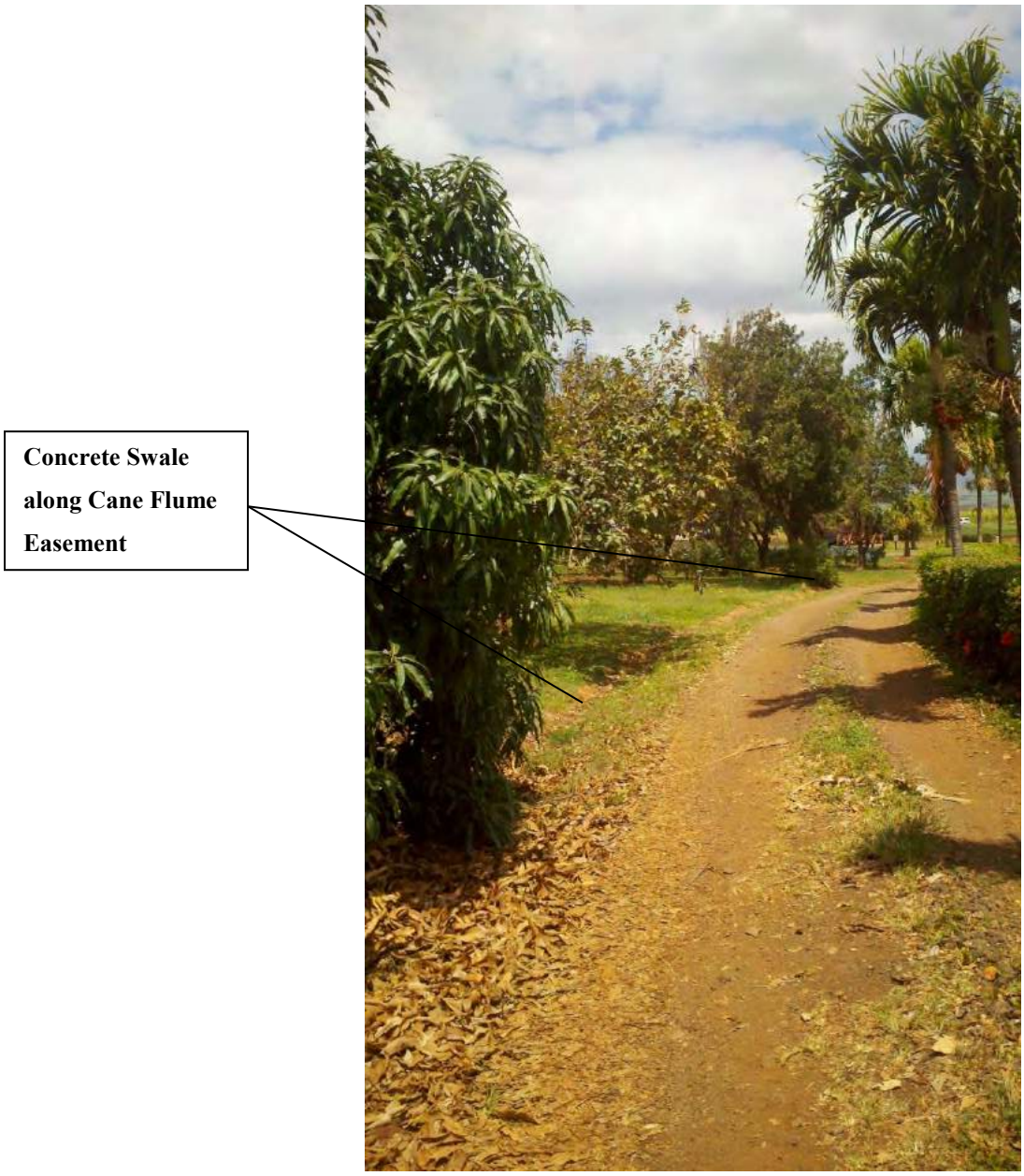


Figure 175. Overview Photograph of Concrete Swale along Cane Flume Easement

CULTURAL MATERIALS

During the archaeological investigations, a relatively small assemblage of historic artifacts was recovered (Figures 160-165). The majority of these artifacts consisted of utilitarian ware and was recovered from a secondary context either from the surface or within disturbed soil layers during backhoe test trenching. Trenches which contained fragments of historic artifacts consist of the following: from Parcel 6 TR 218; Parcel 7 TR's 323 and 324. The surface finds noted within Parcel 3 Mauka designated Site 7884 Feature 1, is a scatter of historic materials was noted around the open ditch, Site 7881 Feature 2, in between Waikapū Stream to the north and the access service road to the south. These materials may have washed down from further upslope, or may have been dumped with various other trash from the service road. Two ceramic sherds were also collected by the picnic table by Site 7881 Feature 3 (reservoir). Site 7884 Feature 1assemblage is from the late 1940's to the early 1950's. The historic artifacts from Parcel 6 assigned Site 7884 Feature 2 comprises a secondary deposit of historic domestic items from the early to mid 1900's. Parcel 7, TR 324 designated Site 7884 Feature 3 is probably the earliest deposit dating from the late1800's to early 1900's century based on diagnostic traits of the bottle glass. This trench was located in an LCA 416:2 that claimed a house lot in the award.

Ceramics

The ceramic assemblage consists of fragments that primarily represent three vessel forms: bowls, plates, cups including rice bowls and tea cups fragments. Three general material classes were present, including earthenware, porcelains, and stone-wares. From TR 324, an Italian scene was depicted around the perimeter of the plate and consisted of blue on white floral design, and a gondola. The rice bowl shards contained a greenish glaze with an Asian motif depicting Koi fish. Two ceramic sherds that were recovered from the surface area surrounding the upper reservoir by a picnic table and old tree growth belonged to a crock pot. This earthen ware contained a blue stenciled stamp that is typical of English crock pots. It contained a partial makers' mark that appears to have "sell" and maybe a portion of a ribbon design after the letter "s". The ceramics recovered from Site 7884 Feature 2 were plates and bowls. The plates are blue glazed and are from the "Fiesta Wear" type and the other plate was white glazed and had a discontinuous makers mark that appeared to say "Adam Stewa" and the rest was not discernible but likely Stewart.

Glass

Dating analysis was based on the key manufacturing techniques developed during the 19th century. Manufacturing techniques changed considerably during the 19th and early 20th century, and at the end of the 19th century, mechanization began. The manufacturing technique utilized for most of the bottle types recovered was mechanization. The bottle openings from TR 324 are applied lips and a blown in mold for

the dark olive green colored wine bottle had a push up bottom with a pontil scar, and the aqua colored bottle was machine made molds for the body. Bottle types include medicinal, wine or whiskey and unidentifiable. The colors were dark brown, dark olive green, olive green, aqua and clear.

Figure 176. Photograph of a Dark Olive Green Wine Bottle from Site 7884 Feature 3 at Parcel 7 TR324

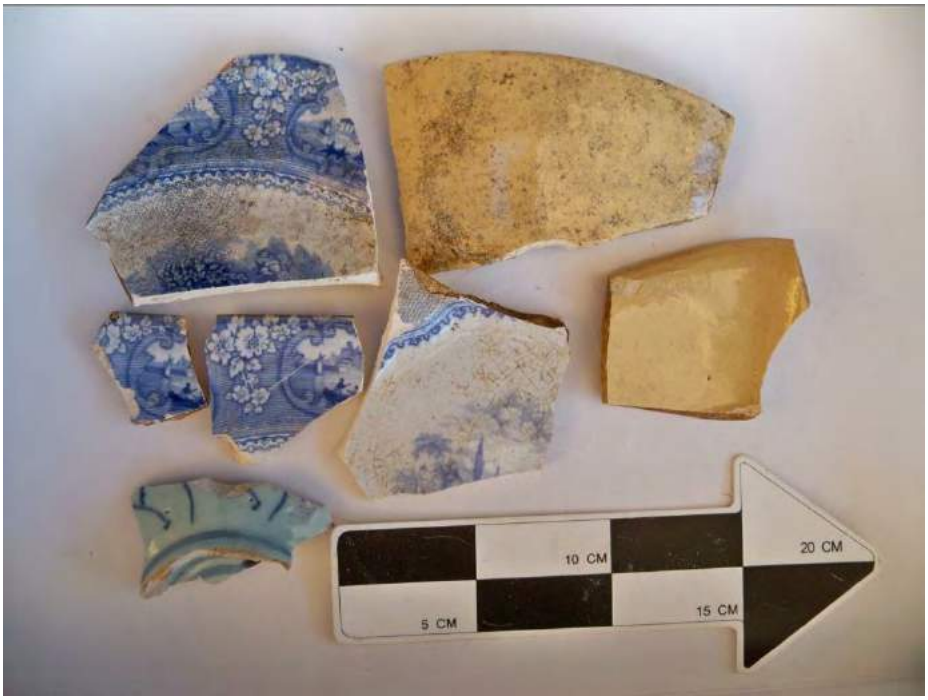


Figure 177. Photograph of Site 7884 Feature 3 from Parcel 7 TR324 Ceramic Assemblages

Figure 178. Photograph of Glass Assemblages from Site 7884 Feature 3 Parcel 7 TR324

Figure 179. Photograph of Ceramic Sherds on Surface by Site 7881 Feature 3 (Reservoir) Parcel 3 Mauka

Figure 180. Photograph of Site 7884 Ceramics within Parcel 3 Mauka

INITIAL SIGNIFICANCE ASSESSMENT

The sites identified during the survey are assessed for significance based on the below criteria outlined in the Rules Governing Procedures for Historic Preservation Review (DLNR 1998: Chapter 275). A site may be considered significant if it meets one or more of the following criteria:

> **Criterion A:** associated with events that have made an important contribution to the broad patterns of our history;
>
> **Criterion B:** associated with the lives of persons important in our past;
>
> **Criterion C:** embody the distinctive characteristics of a type, period, or method of construction; represents the work of a master; or possesses high artistic value;
>
> **Criterion D:** have yielded, or is likely to yield, information important for research on prehistory or history; and
>
> **Criterion E:** have an important traditional cultural value to the native Hawaiian people or to another group of the state due to associations with traditional cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events, or oral accounts; these associations being important to the groups history and cultural identity.

Based on the above criteria, Sites 50-50-04-7881-7884 are assessed a significance of Criterion D, as they have yielded, or have the potential to yield significant information pertaining to the history of the area. Site 7883 the WWII bunker may also be significant under Criterion C, as a distinct method of construction during a certain era.

DISCUSSION

Since the time of the Mahele and prior to; the *ahupua'a* of Waikapū has been utilized for agriculture, religious and habitation activities. LCA testimony, historical research and archaeological studies have documented pre-Contact and historic sites within the project area and neighboring parcels. During the current investigation, no evidence of traditional Hawaiian, with the possible exception of Site 7882 (remnant retaining wall or terrace) activities was recorded. These negative results are primarily due to the compounded disturbances from sugarcane cultivation, historic habitation and modern land use; and possibly the inherent bias of random sampling during the inventory survey testing.

The current survey consisted of a pedestrian survey and backhoe test trenches across the project area consisting of approximately 503-acres divided into five zones. A total of 150 backhoe trenches were executed during the undertaking in the following zones; Parcel 3 Mauka-15 trenches (TR400-414); Parcel 3 Waena-42 trenches (TR1-27 and 01-015); Parcel 3 Makai-42 trenches (TR100-141); Parcel 6-26 trenches (TR200-225) and Parcel 7-25 trenches (TR300-324). This survey documented four historic properties Sites 50-50-04-7881-7884 from the post-Contact era, and only one feature was documented subsurface (Site 7884 Feature 3).

As discussed in the foregoing section, Sites 7881-7884 are considered significant under Criterion D, and one historic property, Site 7883 may be considered significant under Criterion C. Site 7881 Features 1-18 is comprised of historic agricultural irrigation features consisting of a reservoir, concrete and earthen ditches, as well as sluice gates. These features are located along the northern boundary of Parcel 3 Mauka outside the proposed A.P.E. and will not be adversely affected. Site 7882 is a remnant L-shaped retaining wall or terrace also located in the Parcel 3 Mauka within the northeast corner. This feature may have been constructed during the traditional period, but this supposition is inconclusive. Site 7883 consists of a World War II bunker located within the east central portion of Parcel 3 Mauka. This site has been documented at the inventory level and may or may not be affected by proposed development. Site 7884 comprises surficial scatters of historic domestic refuse (Features 1 and 2) and Feature 3 is a small historic trash dump, likely associated with former habitation. A section of Site 5197 Waihe`e Ditch bisects the central portion of the project area in a north/south direction. This historic property was also recorded during the current undertaking and may be covered (though continue to be operational) during construction.

RECOMMENDATIONS

Based on the proposed development plan, Site 7884 Features 2-3 (historic trash scatter and refuse pit); a section of Site 5197 (Waihe`e Ditch) and possibly Site 7883 (WWII bunker) may be adversely affected during the development activities. These aforementioned historic properties have been properly recorded and may be removed and or altered during construction; however if it is recommended that if Site 7883, the WWII bunker cannot be preserved in place within the planned development, an interpretive plaque commemorating this site should be erected. Additionally, Sites 7881 (agricultural waterways, sluice gates, reservoirs) and 7882 (L-shaped retaining wall) may be removed and or altered during construction; although no ground-altering activities are planned at this time.

Archaeological monitoring of Parcel 3 Mauka and Waena is primarily recommended for those areas which contain former LCA's and Grants, as well as extant historic properties; however spot monitoring inspections of other localities not expressed above may also be instituted. Parcels 6 and 7 contain numerous LCA's and Grants; thus monitoring will initially be full time until the nature of the subsurface conditions in relationship to the proposed ground-altering activities is determined. Similarly for Parcel 3 Makai, monitoring will initially be full-time; yet it is envisioned that the primary focus will be along the eastern and western perimeters which are close to Waiale and Waiko Roads, known areas to contain traditional and historic burials.

Prior to the commencement of construction, an Archaeological Monitoring Plan (AMP) detailing the localities to undergo monitoring procedures will be prepared and submitted to SHPD for review and approval.

REFERENCES

Armstrong, R.W., J.A. Bier, and S. Chang

1983 *Atlas of Hawaii,* University of Hawaii Press, Honolulu.

Bassford, Q.S., and M. Dega

2007 *An Archaeological Assessment Report for 208 Acres in Waikapū Ahupua'a, Wailuku District, Island Maui, Hawaii, [TMK: (2) 3-6-04:03 por. And :por.].* Prepared for Steven Kikuchi. Scientific Consultant Services Inc. Honolulu.

Board of Commisssioners

1929 Indices of Awards Made by the Board of Commissioners to Quiet Land Titles in the Hawaiian Islands. Commission of Public lands, Territory of Hawaii. Honolulu.

Brisbin, J., and A.E. Haun

1991 *Archaeological Data Recovery Excavation Waikapū Mauka Partners Golf Resort Project Area, Land of Waikapū , Wailuku District, Island of Maui.* Prepared for Waikapū Mauka Partners. Paul H. Rosendahl, Ph.D., Inc. Hilo.

Buffum, A., and M. Dega

2001 *Archaeological Inventory Survey of 7.5 Acres in Waikapū Ahupua'a, Wailuku District, Island of Maui, Hawai'i (TMK: 3-5-04:92).* Scientific Consultant Services, Inc., Honolulu.

Creed, Victoria

1993 *Settlement Pattern for Waikapū , Wailuku District, Maui, Hawaii, Vol. I*. Cultural Surveys Hawaii.

1993 *Vol. II: LCAs for the Ahupua'a Wailuku, Maui, Hawaii*. Cultural Surveys Hawaii.

Dega, M.F.

2003 *Archaeological Inventory Survey in the Intermediate Dry Zone of Wailuku, Wailuku Ahupua'a, Wailuku (Kula) District, Maui Island Hawai'i (TMK:3-5-001:portion of 100).* Scientific Consultant Services, Inc. SCS Report No. 385-2, Honolulu.

2004 *An Intermediate Zone Archaeology Inventory Survey Located in Wailuku, Wailuku Ahupua'a, Wailuku (Kula) District, Maui Island, Hawai'i (TMK: 3-5-001: portion of 001).* SCS Report N. 396-2. Prepared for Stanford Carr. On file at SHPD, Kapolei, Hawaii.

Denham, T., J. Kennedy, and L. Reintsema

1992 *Inventory Survey with Subsurface Testing Report for a Property at TMK:3-503:01, Wailuku Ahupua'a, Wailuku District, Island of Maui.* Archaeological Consultants of Hawaii, Inc., Haleiwa. On file as report M-395 at SHPD, Kapolei, Hawaii.

Donham, T.K.

1991 *Field Inspection of a Water Pipeline Easement Across Waikapū Stream, Waikapū , Maui TMK 3-5-04:14 and 3-6-04:2.* On file as report M-347 at SHPD, Kapolei, Hawaii.

1995 *Field Inspection of the Richardson Family Cemetery (50-50-04-4001), Kukuialamaka, Waikapū , Wailuku District, Island of Maui (TMK:3-5-04:22).* SHPD. Kapolei, Hawaii.

1996 *A Summary of Archaeological Finds in Wailuku Showing Settlement Patterns.* Paper Presented at the 9th Annual conference for the Society of Hawaiian Archaeology in Wailea, Maui.

Gibson, Erica

2011 *Ceramic Maker's Marks.* Left Coast Press, Inc. Walnut Creek Ca. 94596

Google Earth

2013 Data USGS, Geoeye, Image 2013 Digital Globe, Data S/O, NOAA, U.S. Navy, NGA GEBCO.

Foote, D., E.L. Hill, S. Nakamura, and F. Stephens

1972 *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai*. U.S.D.A. Soil Conservation Service, U.S. Government Printing Office, Washington, D.C.

Handy, Craighill E.S.

1940 *The Hawaiian Planter* – Vol. I. Bishop Museum Bull. 161. Honolulu: Bishop Museum Press.

Handy, E.S. Craighill, and Elizabeth Green Handy

1972 *Native Hawaiian Planter in Old Hawaii; their life, lore and environment.* Bishop Museum Bull. 233. Honolulu: Bishop Museum Press.

Munsell Color

1974 *Munsell Soil Color Charts*. MacBeth Division, Kollmorgan Corporation, Baltimore.

Neal, M.C.

1965 In Gardens of Hawaii. Bishop Museum Special Publication 50. Honolulu: Bishop Museum Press.

Pantaleo, Jeffrey

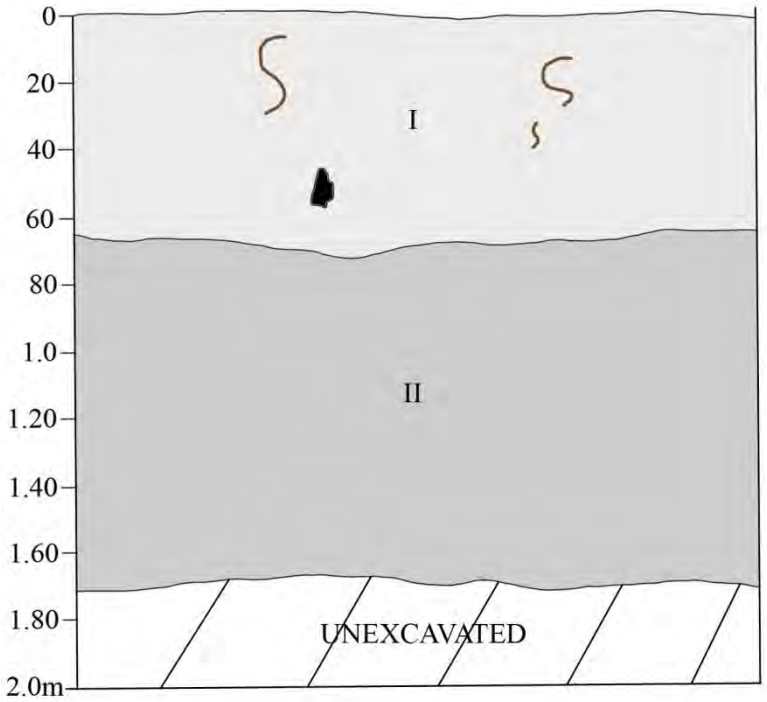
2005 *Archaeological Inventory Survey Report of an Approximate 3-Acre Parcel, Waikapū Ahupua'a, Wailuku District, Island of Maui TMK 3-6-07:2.* For Mark Miller. Archaeological Services Hawaii, Wailuku.

Wilcox, Carol

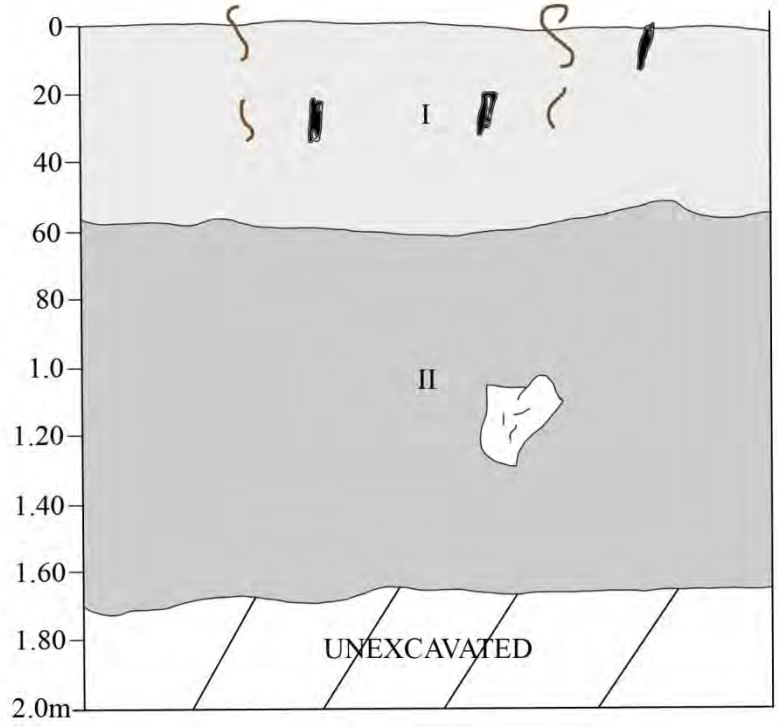
1996 *Sugar Water Hawaii's Plantation Ditches.* University of Hawaii Press, Honolulu.

APPENDIX A

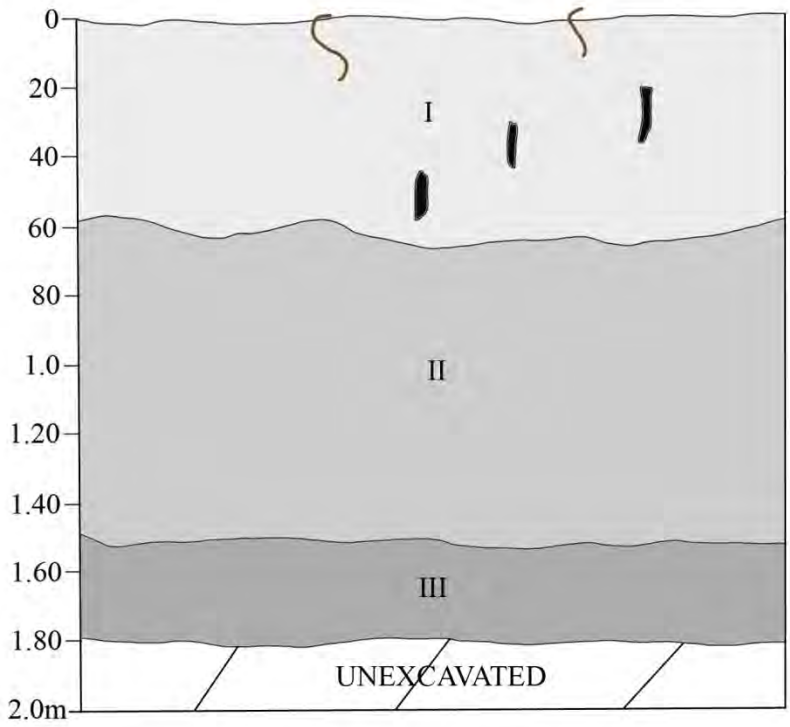
PARCEL 3 MAUKA



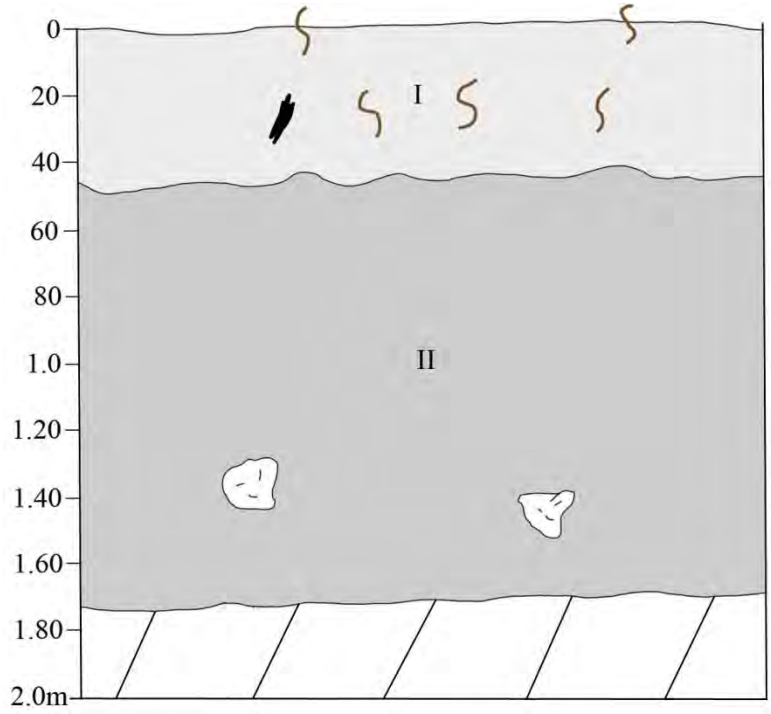
Trench 402



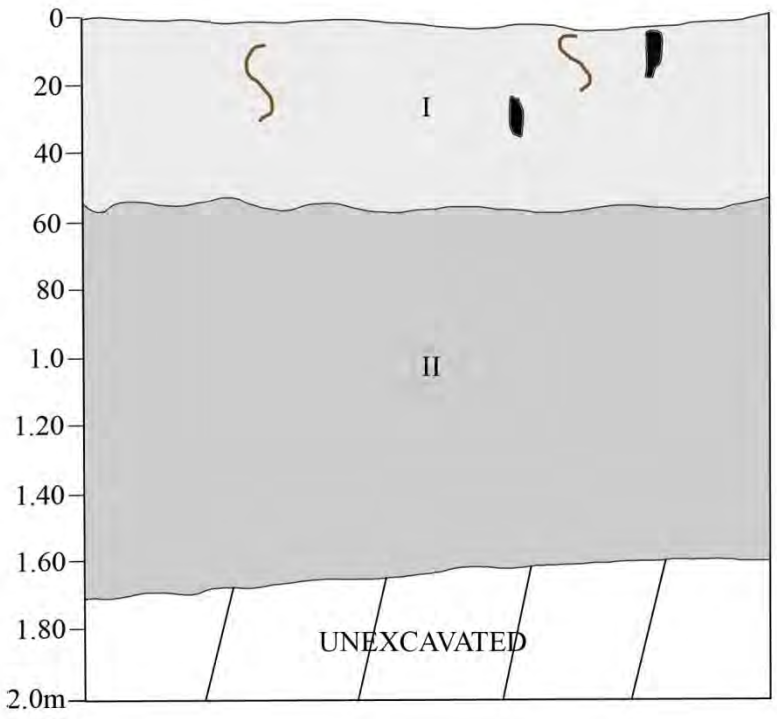
Trench 403



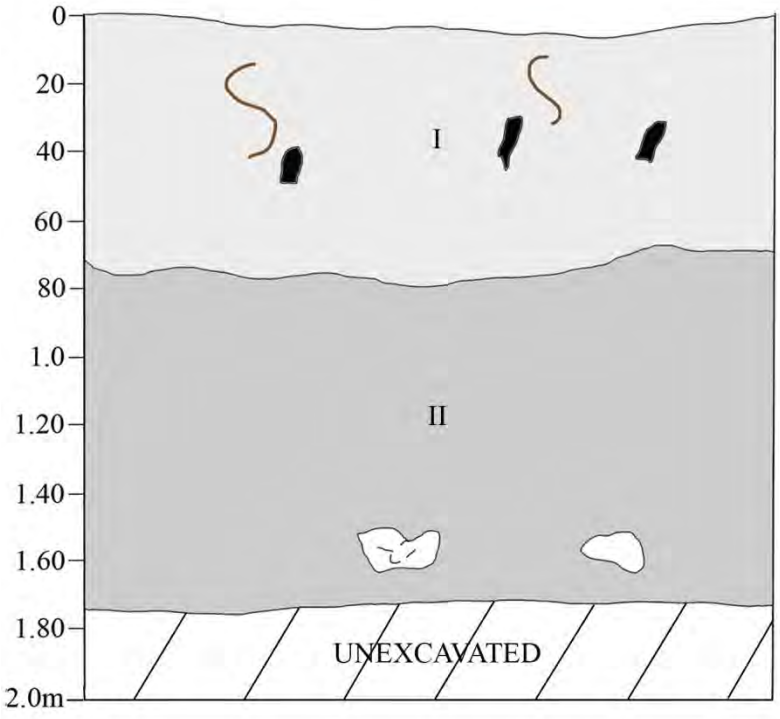
Trench 404



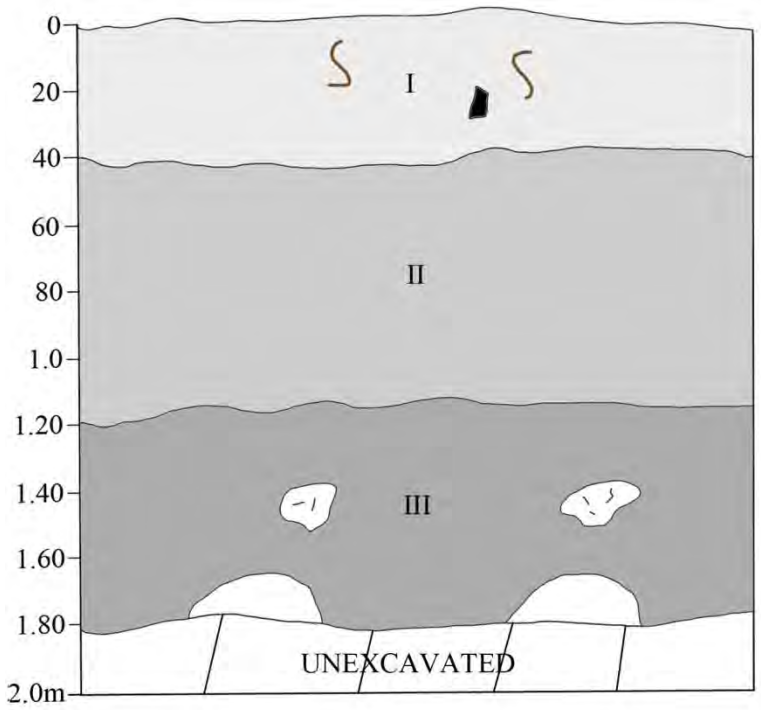
Trench 405



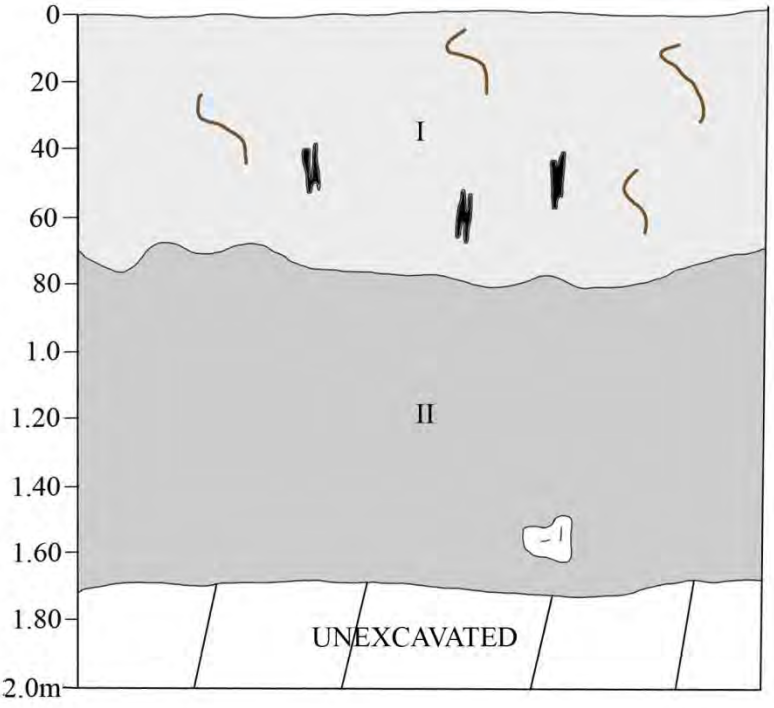
Trench 407



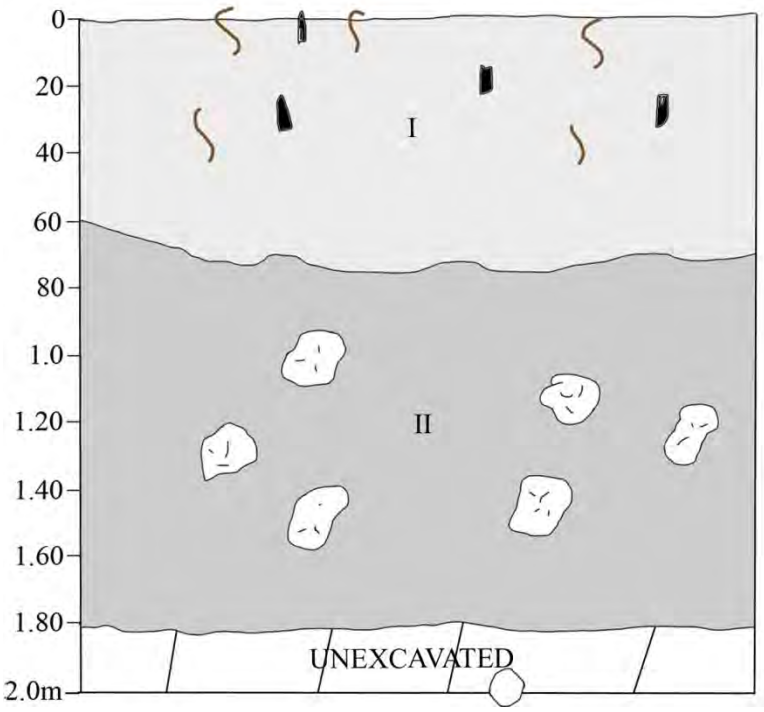
Trench 408



Trench 409

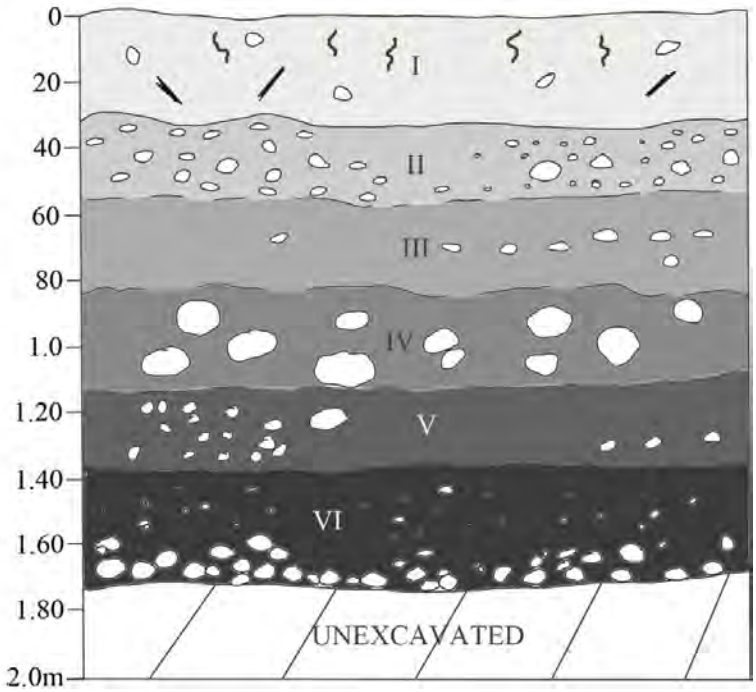


Trench 411

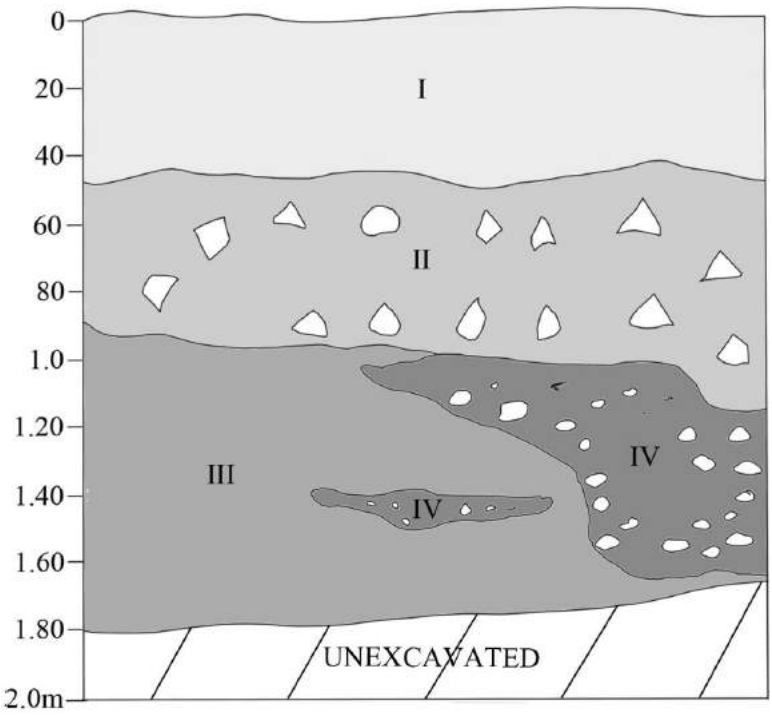


Trench 413

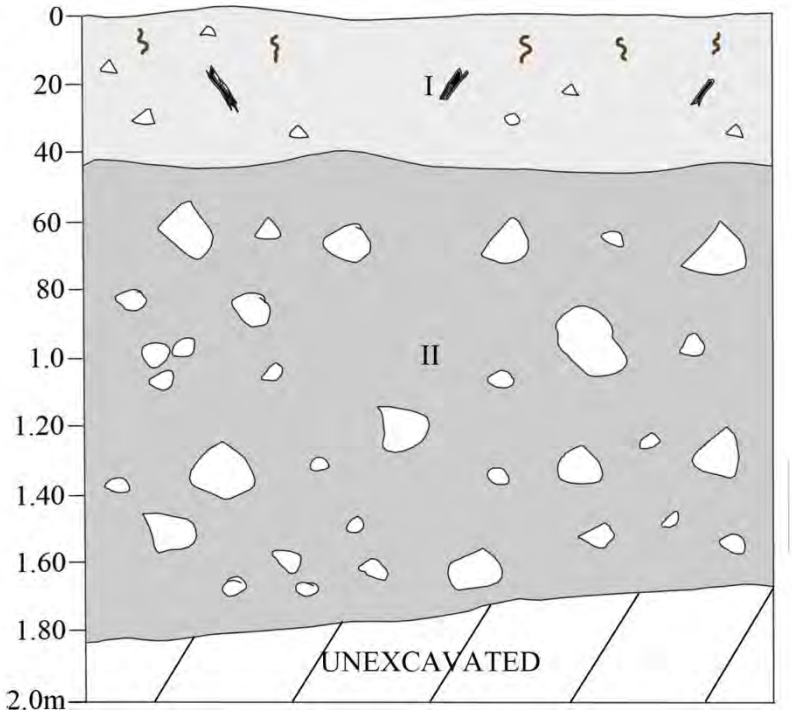
PARCEL 3 WAENA



Trench 01

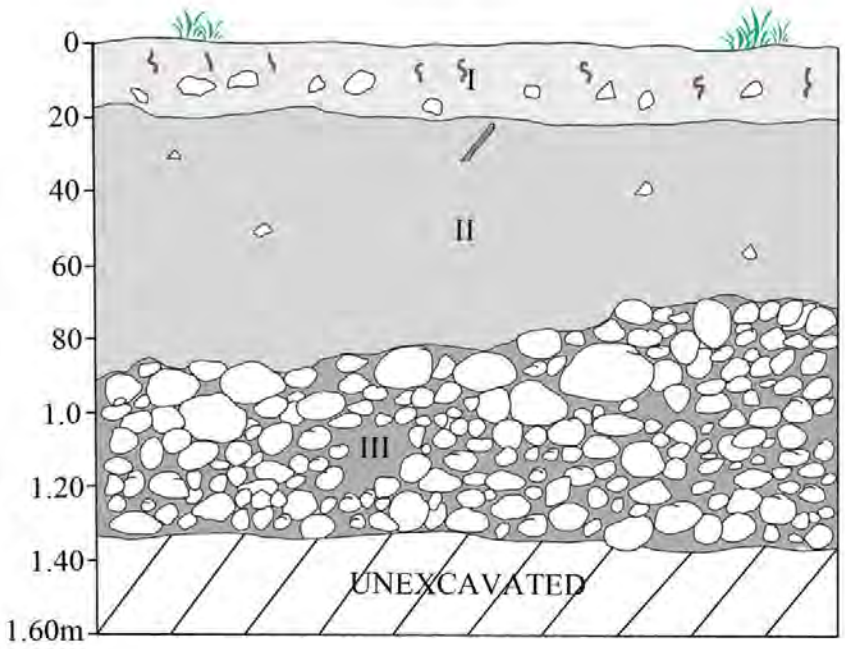


Trench 03

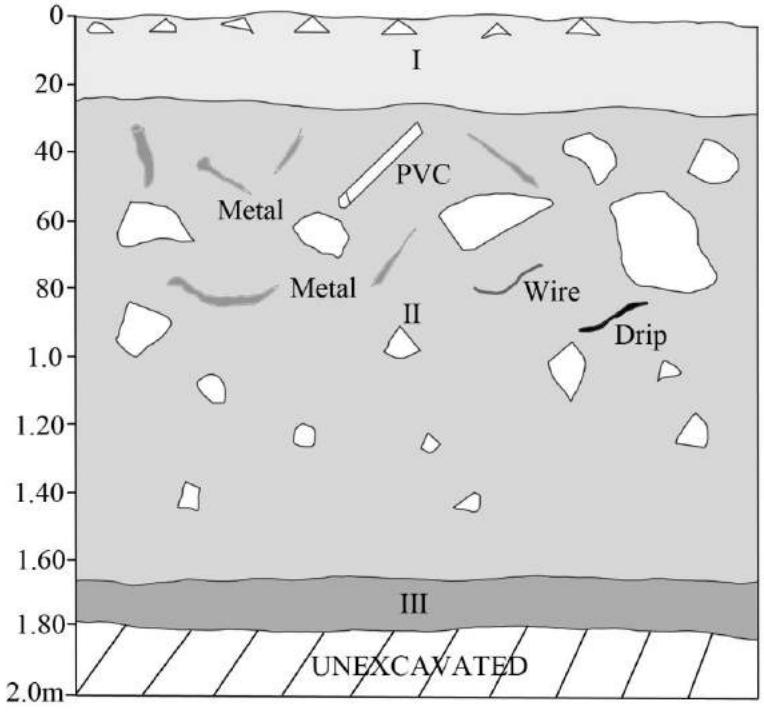


Trench 015

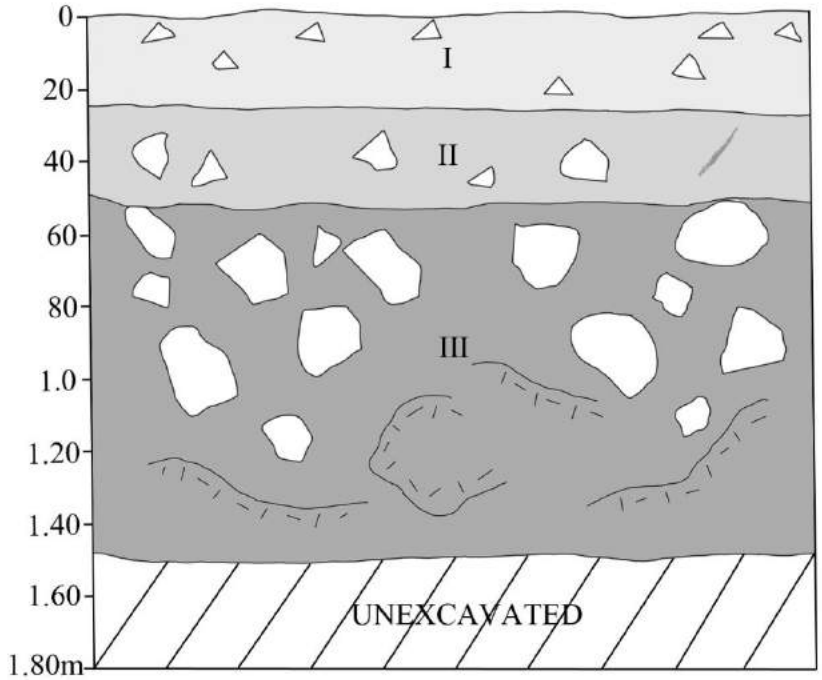
PARCEL 3 MAKAI



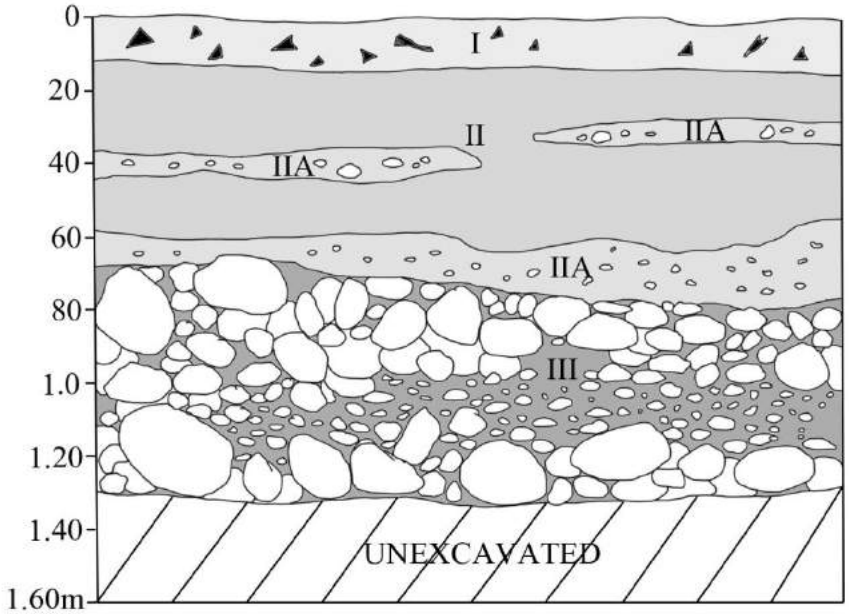
Trench 101



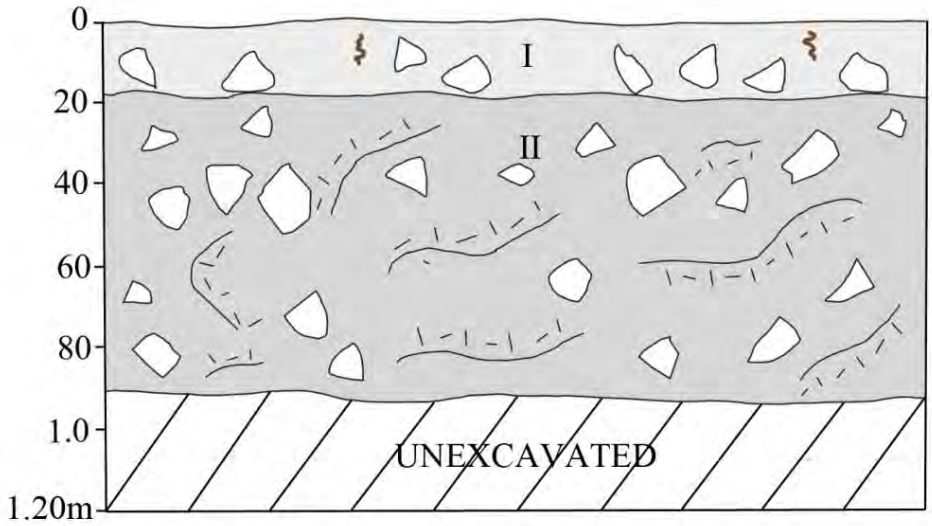
Trench 103



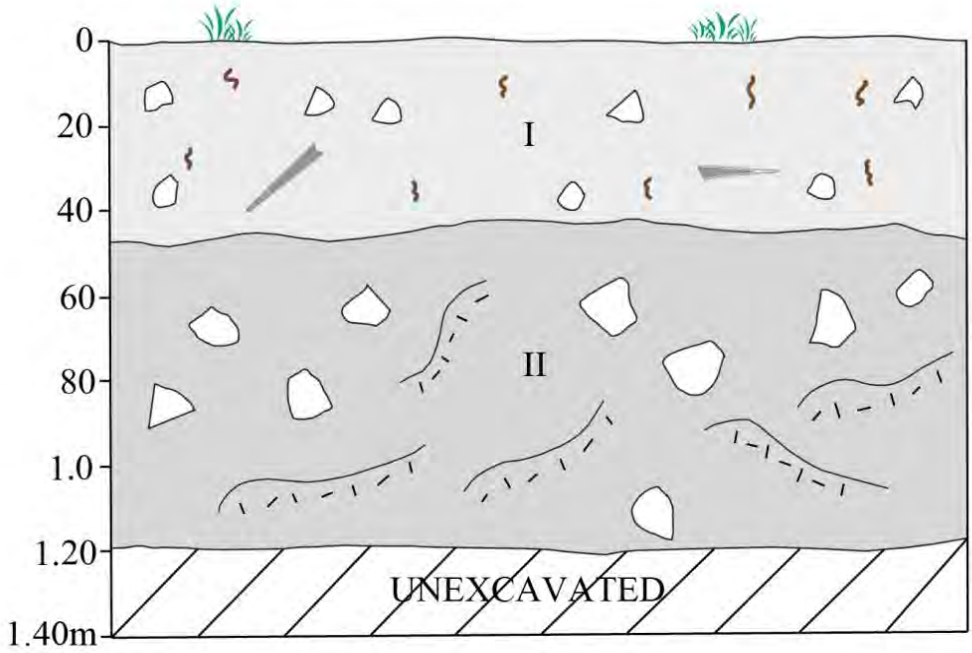
Trench 104



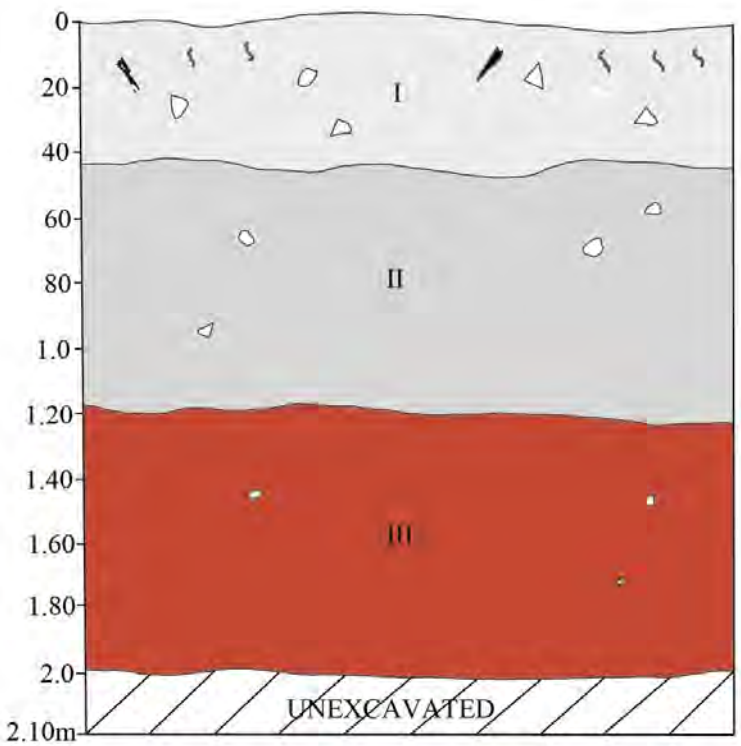
Trench 105



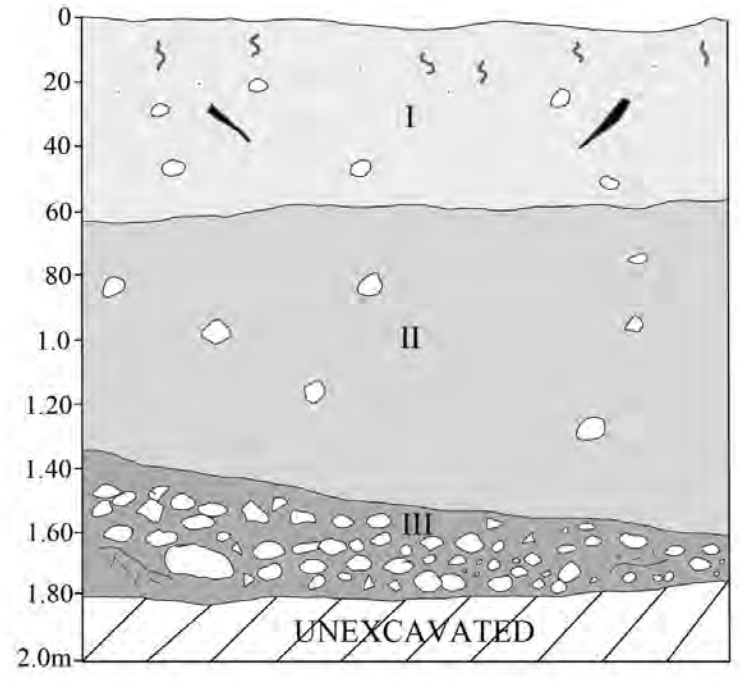
Trench 106



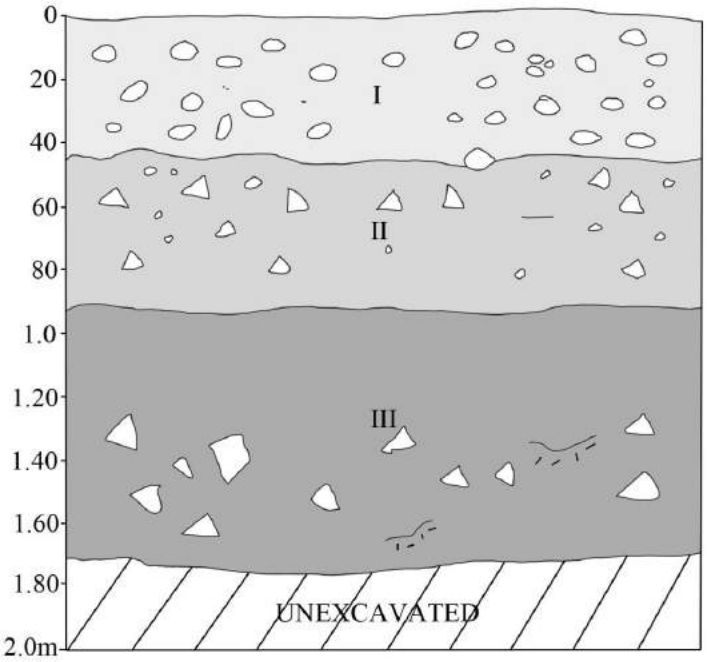
Trench 107



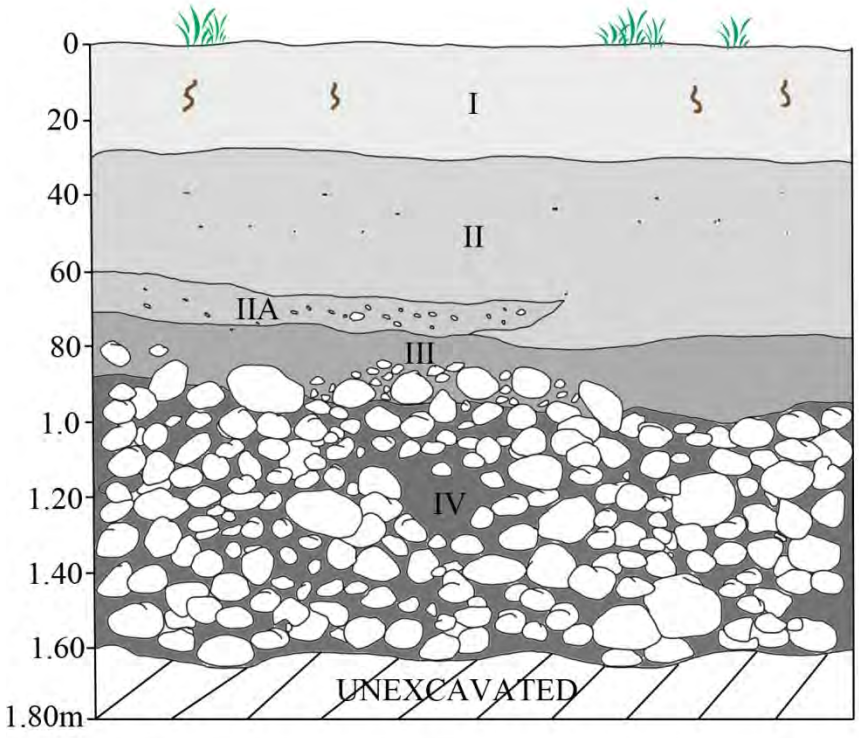
Trench 109



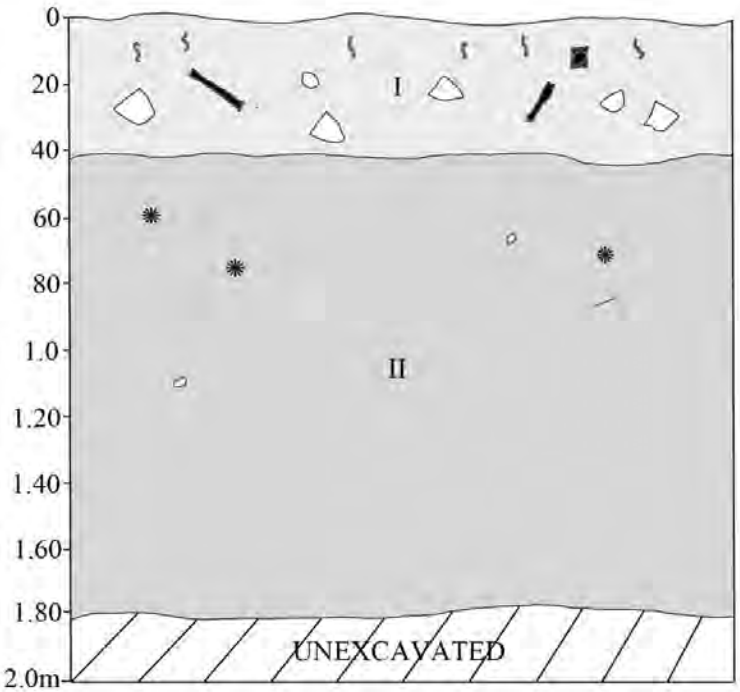
Trench108



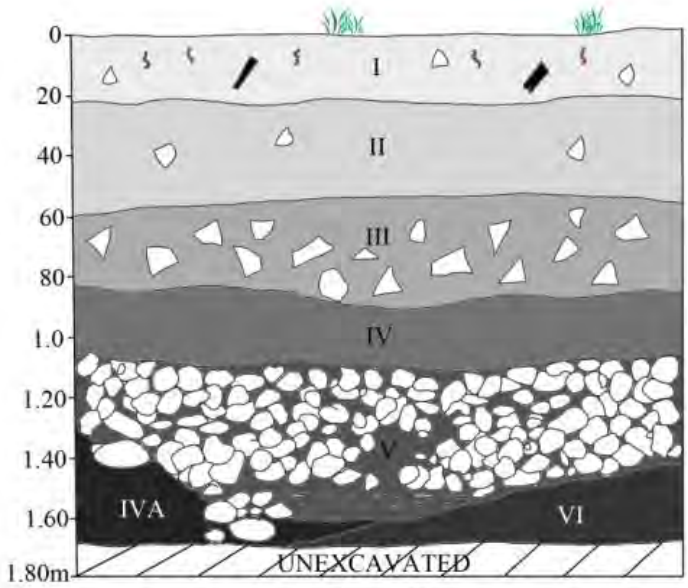
Trench 112



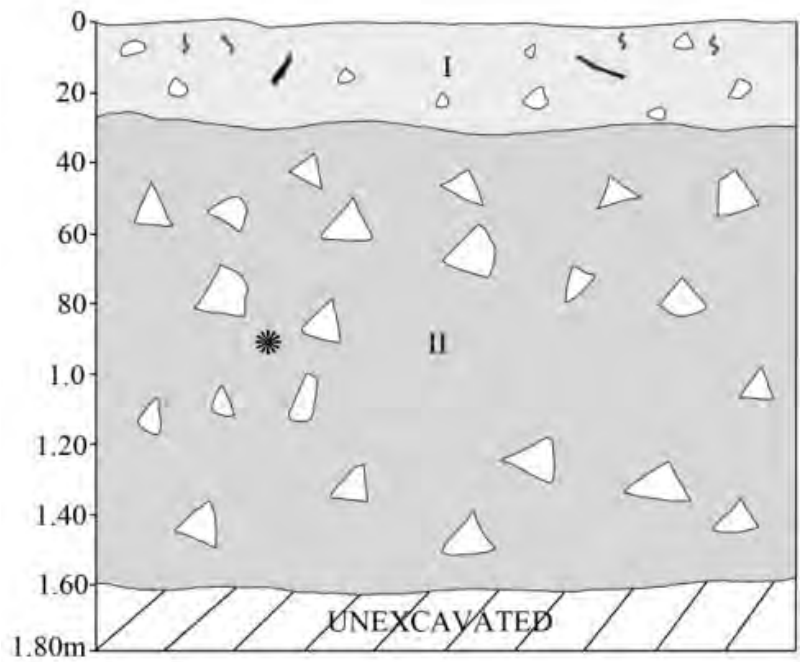
Trench 111



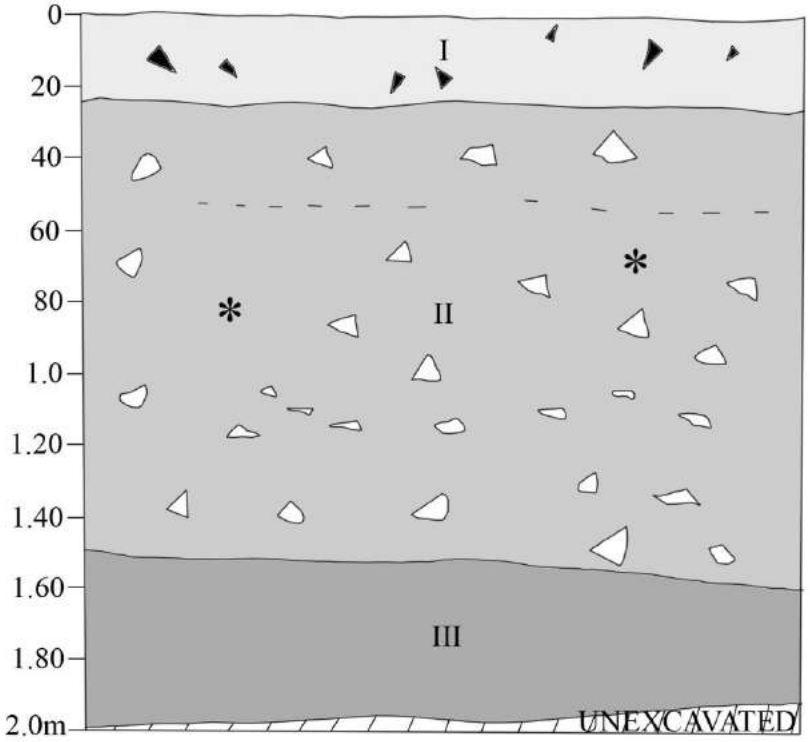
Trench 113



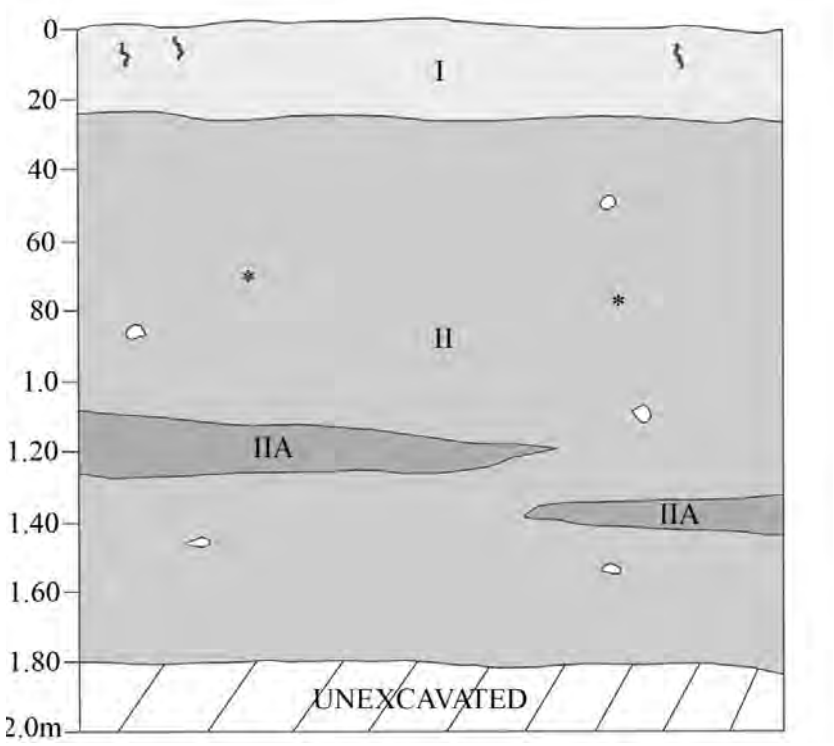
Trench 114



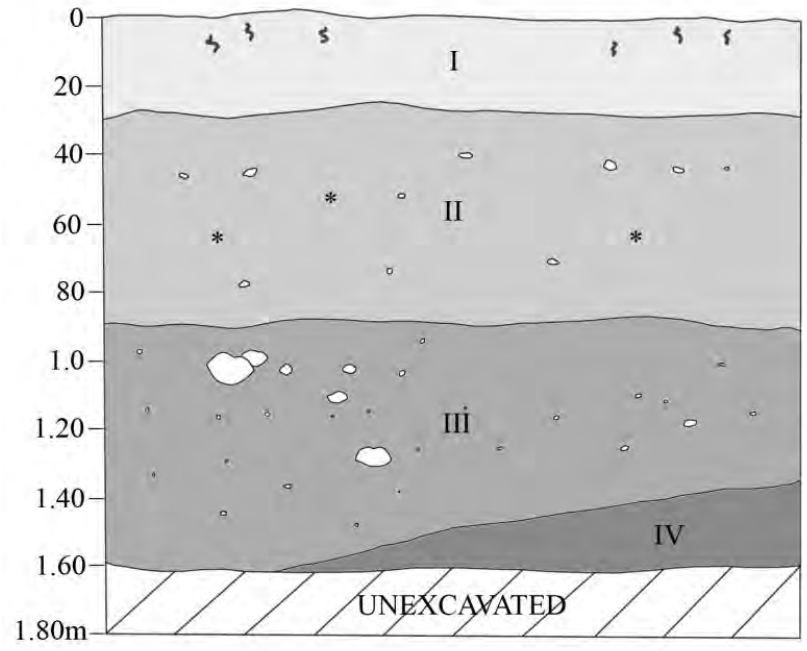
Trench 115



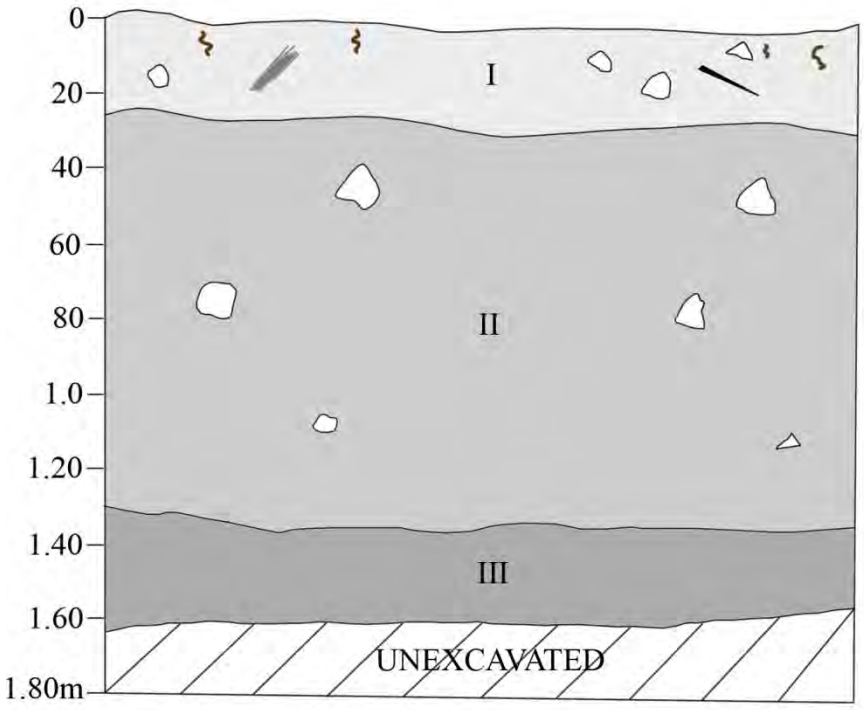
Trench 116



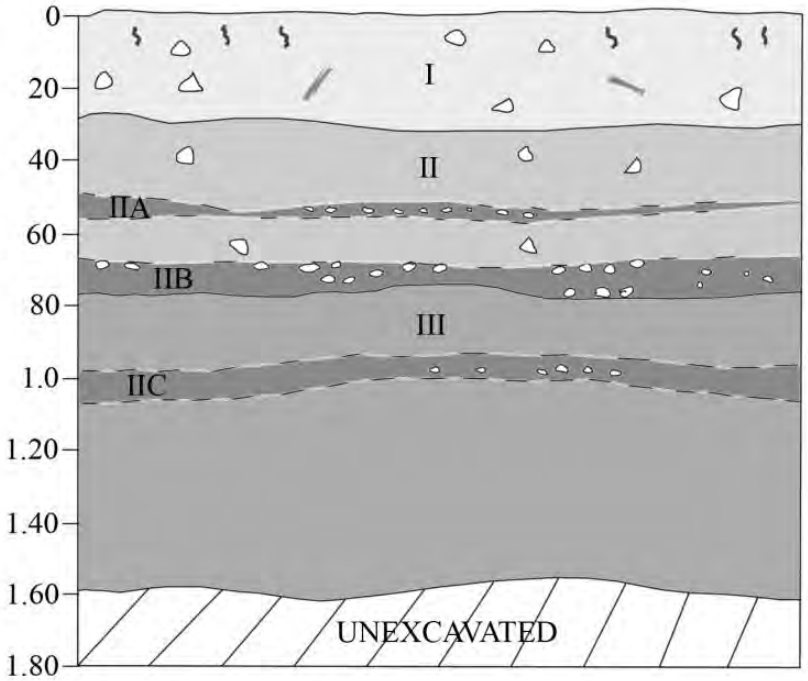
Trench 117



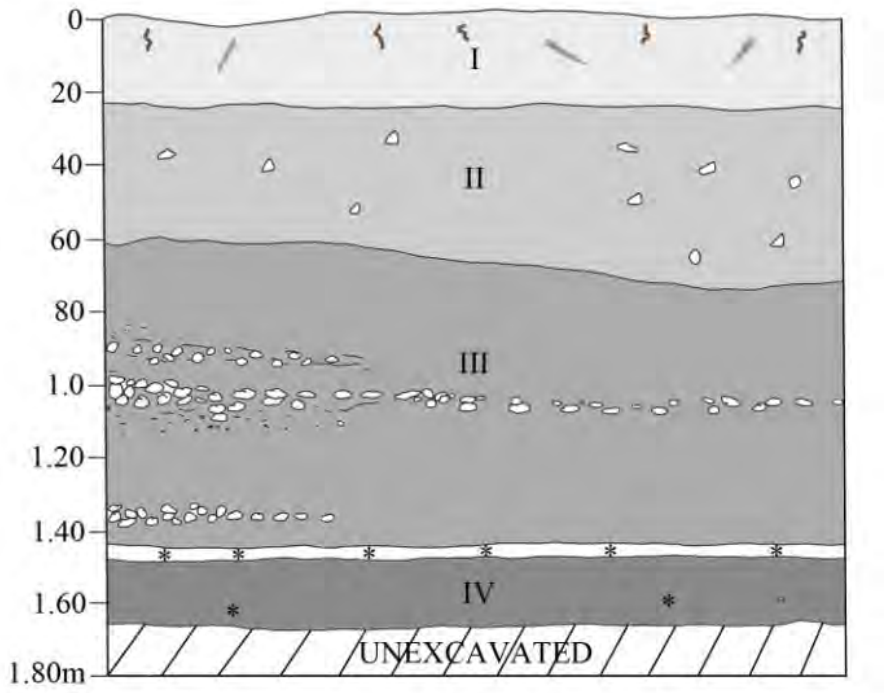
Trench 118



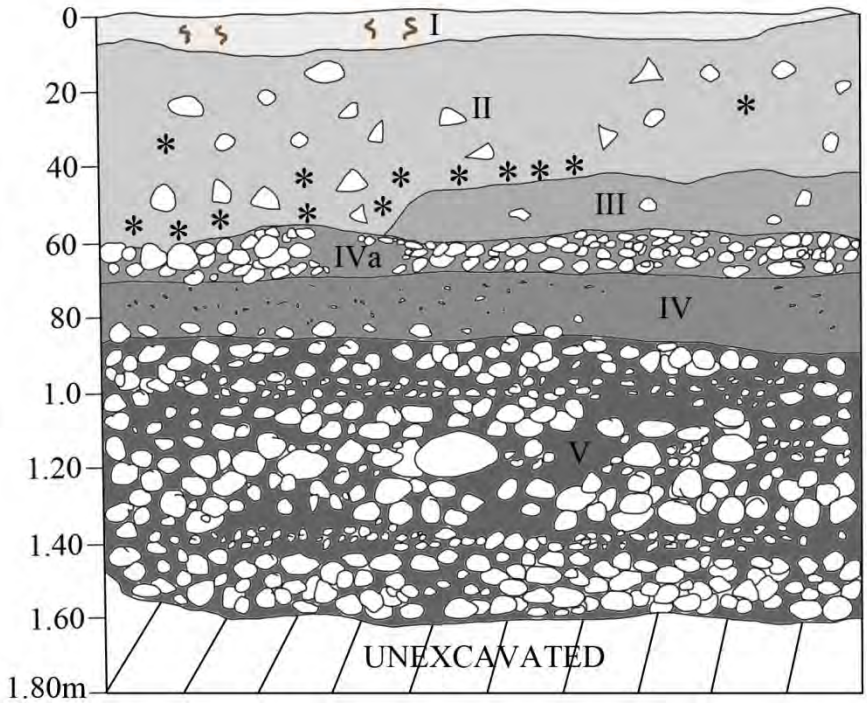
Trench 119



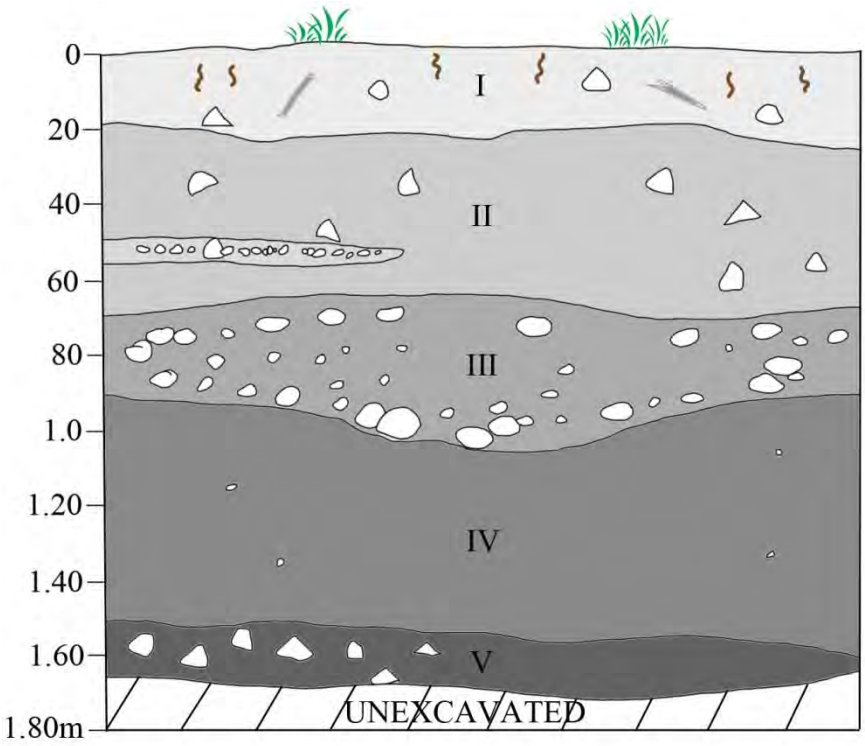
Trench 120



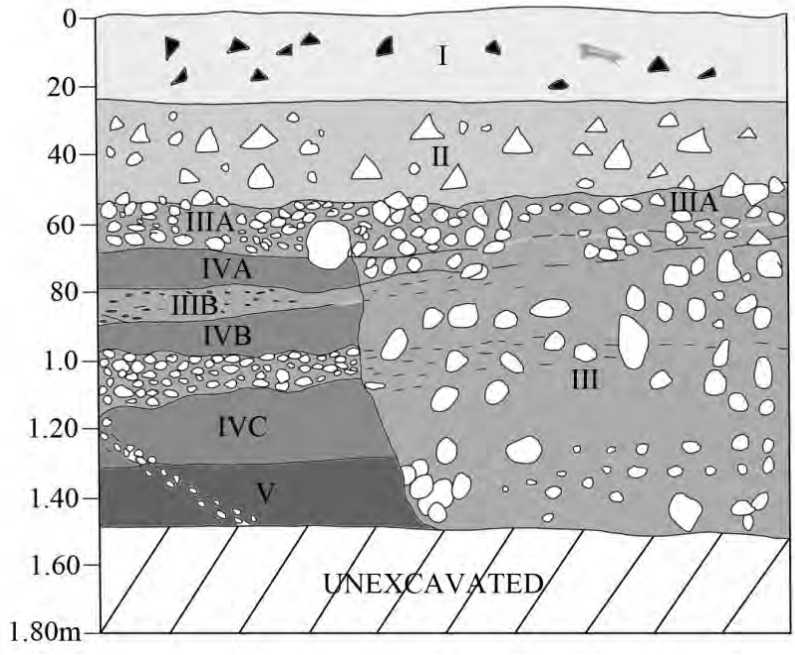
Trench 121



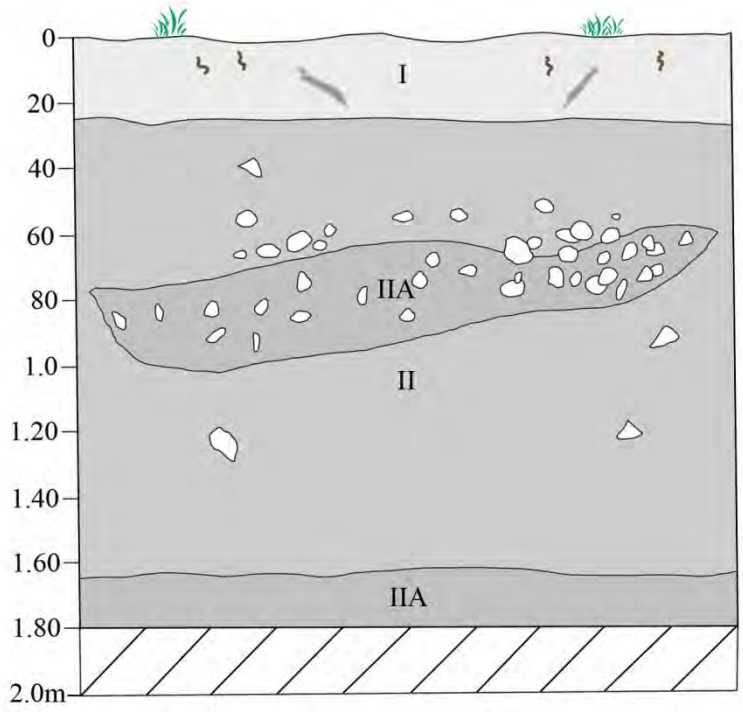
Trench 122



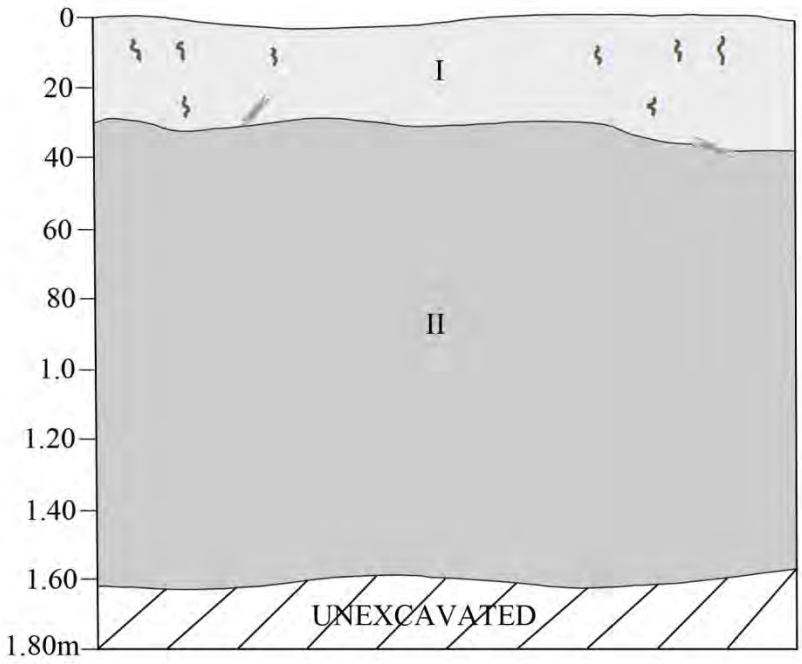
Trench 123



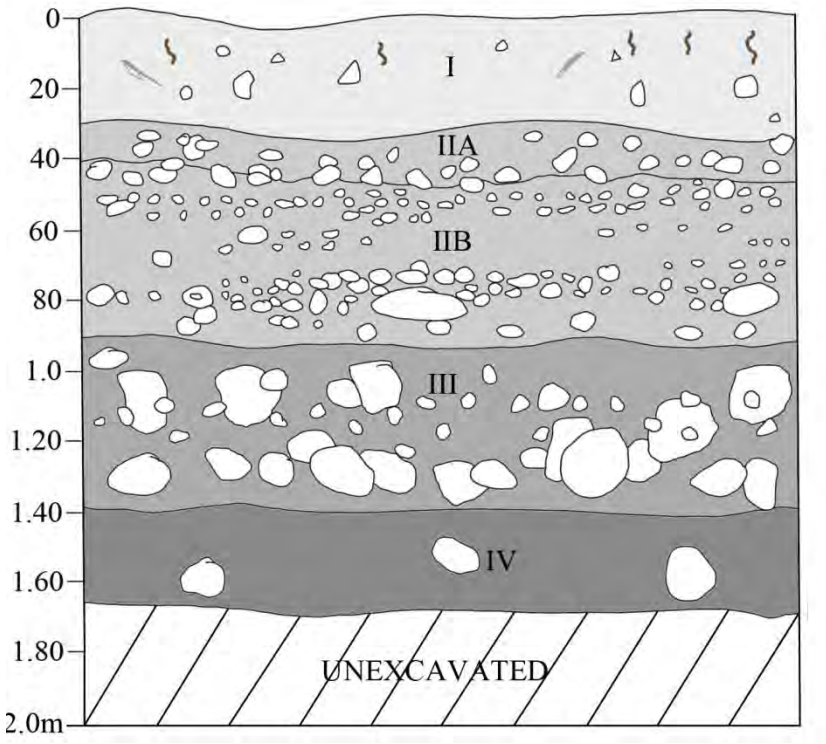
Trench 124



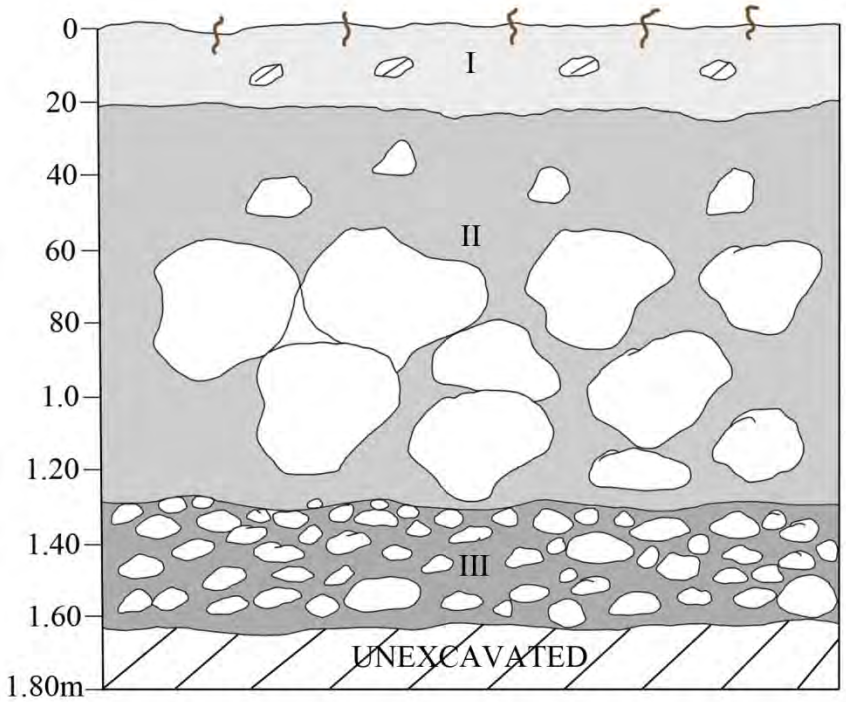
Trench 126



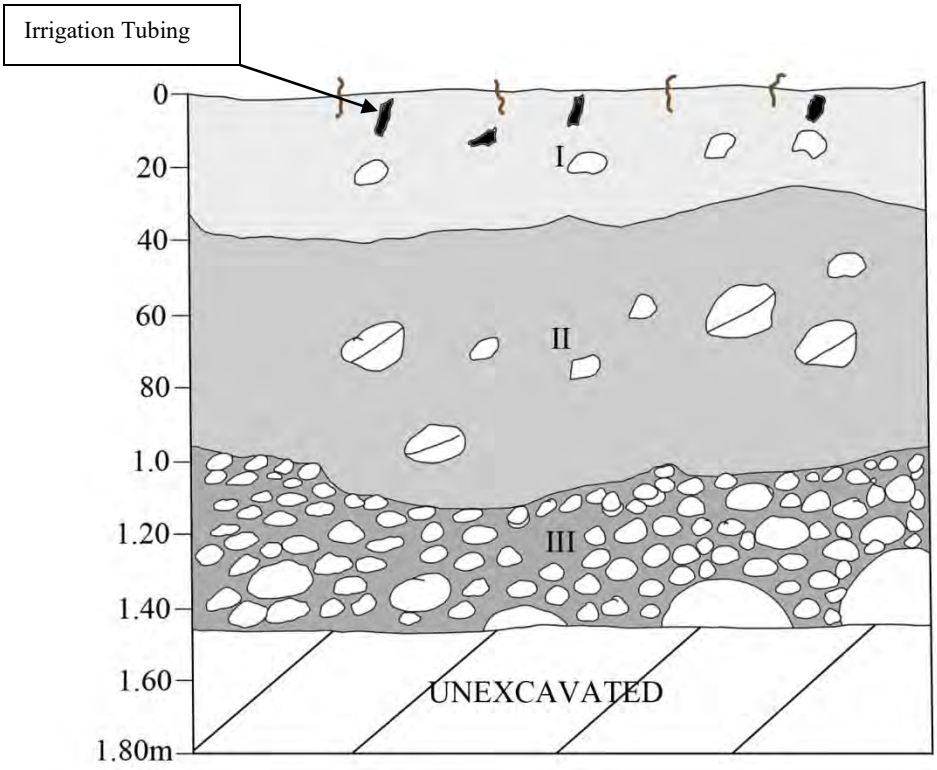
Trench 127



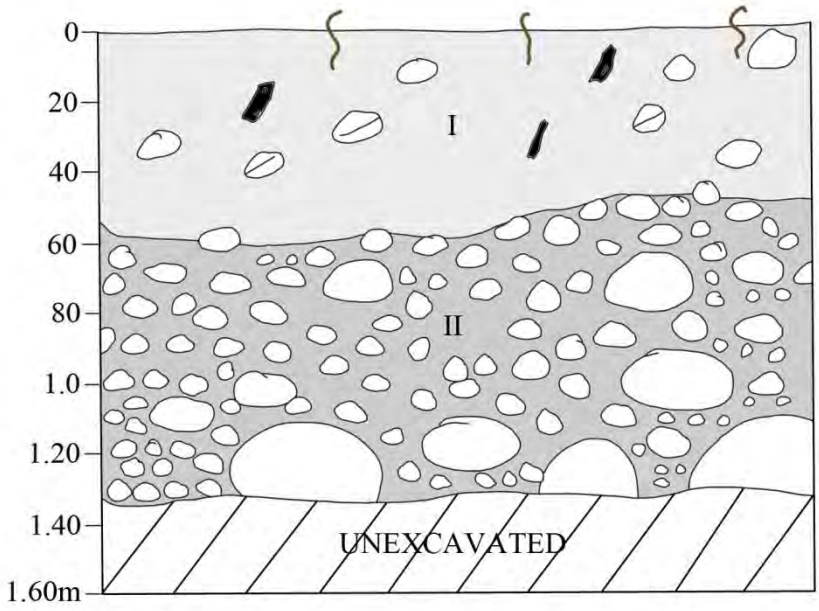
Trench 128



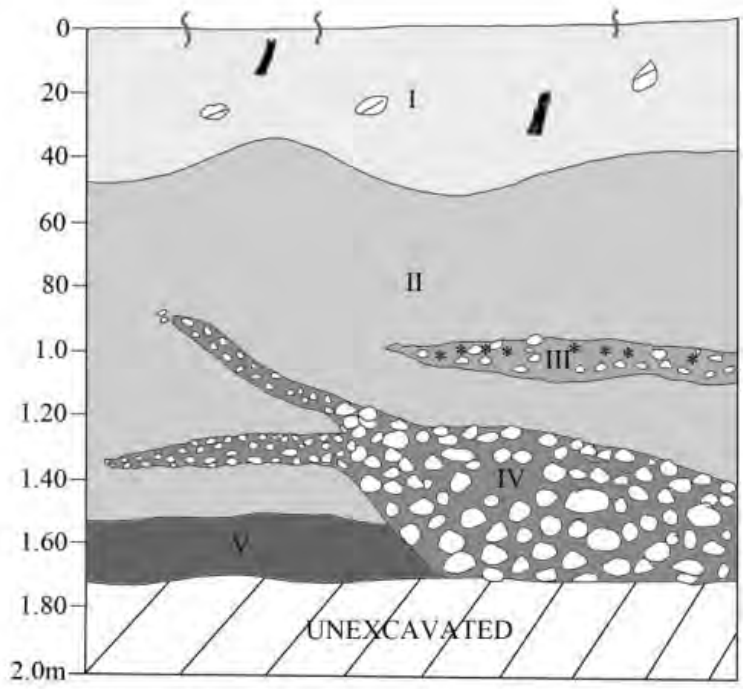
Trench 129



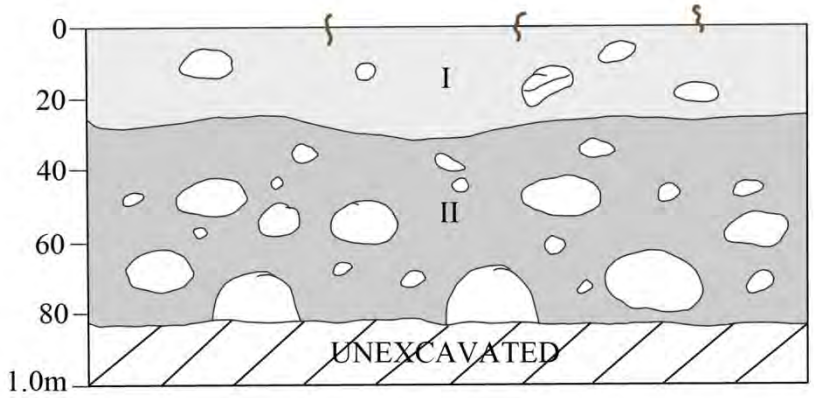
Trench 130



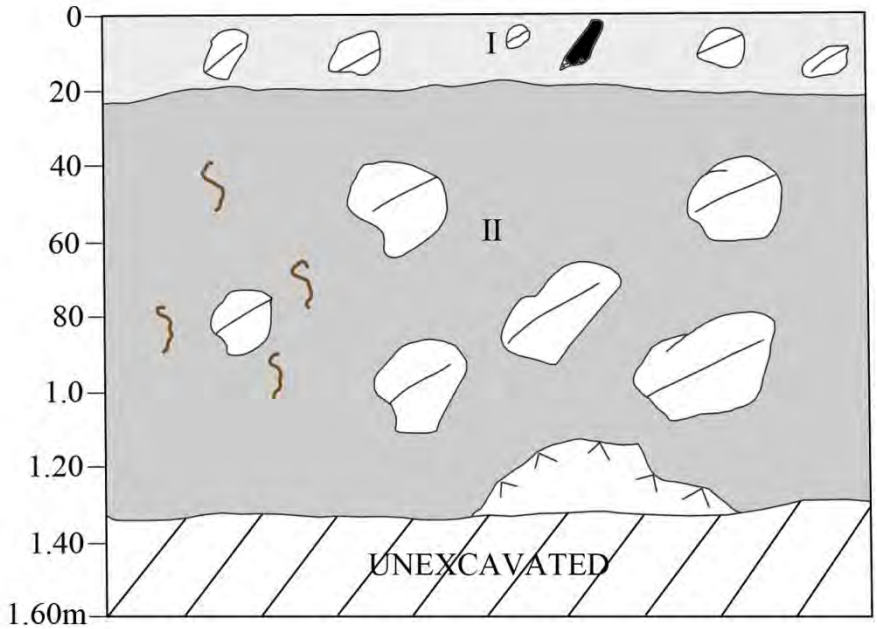
Trench 131



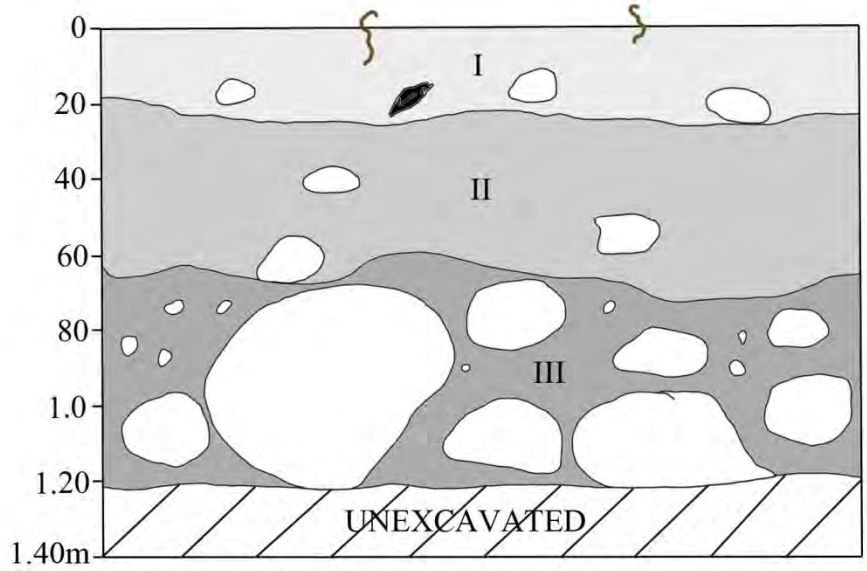
Trench 132



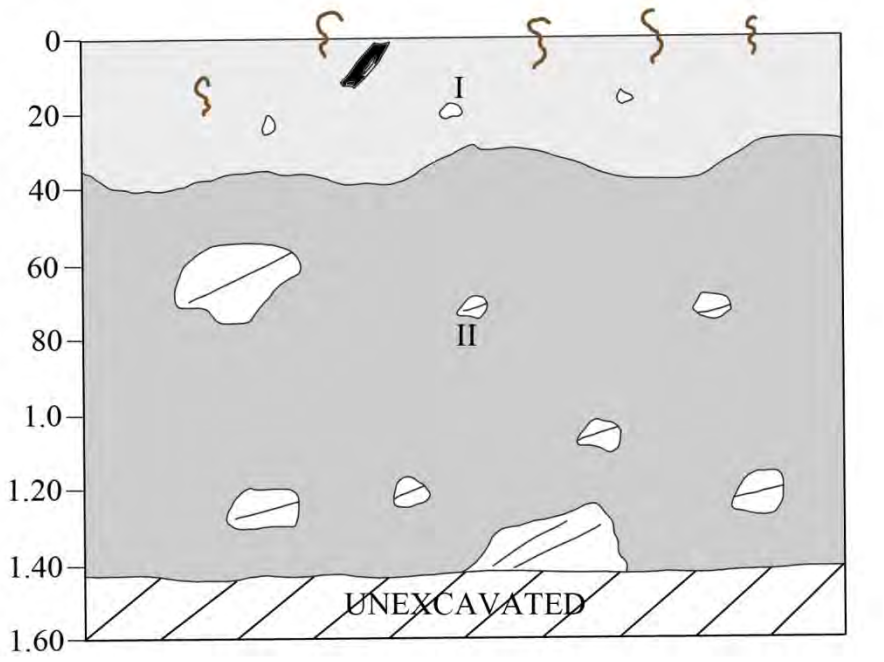
Trench 133



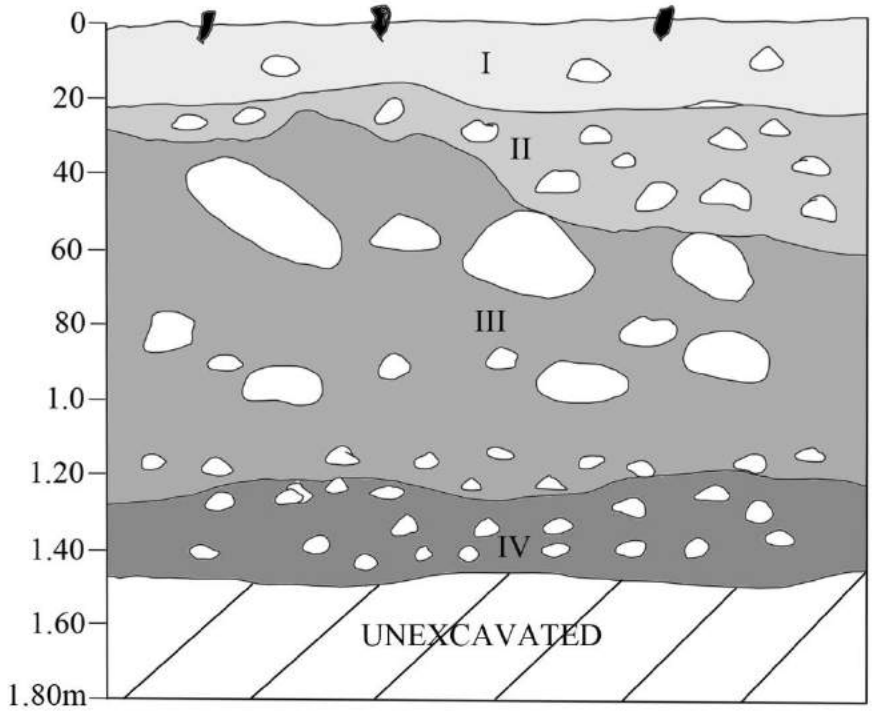
Trench 134



Trench 135

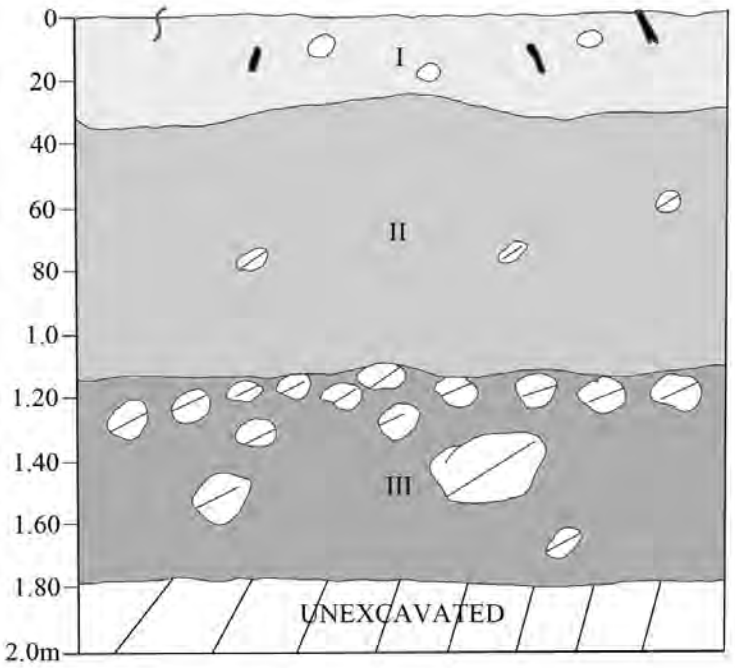


Trench 136

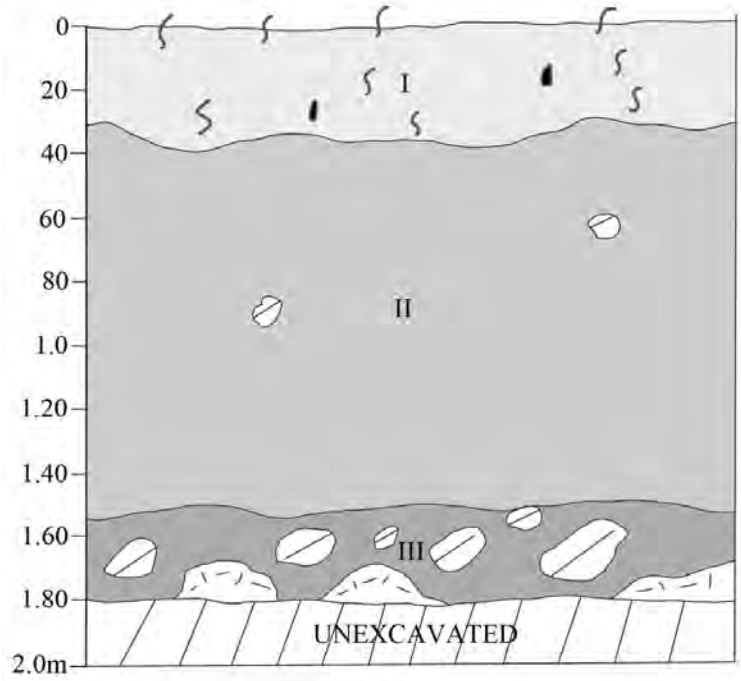


Trench 137

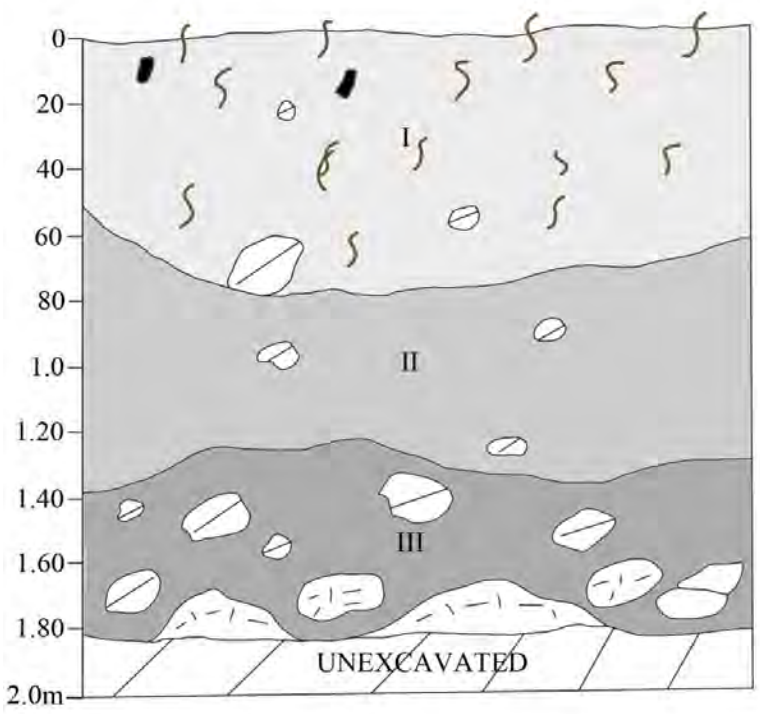
PARCEL 7 TRENCHES



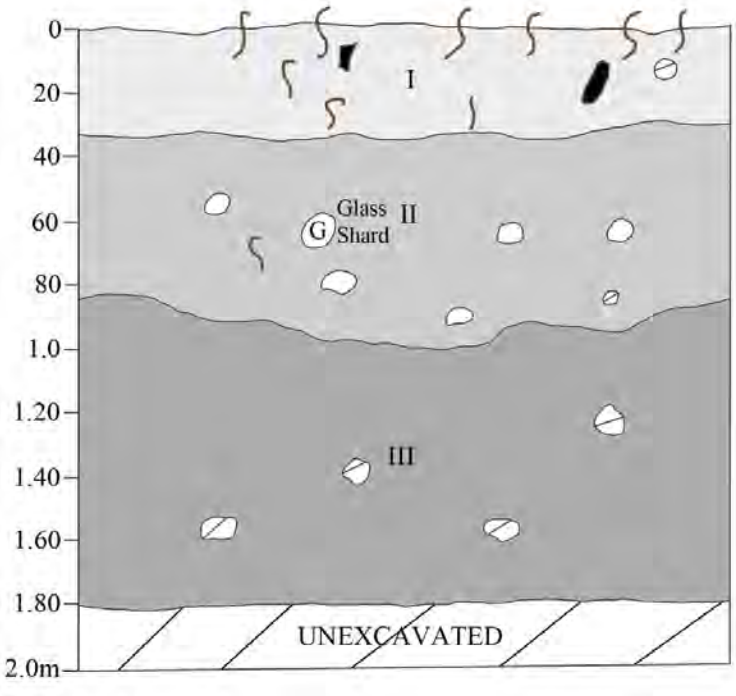
Trench 300



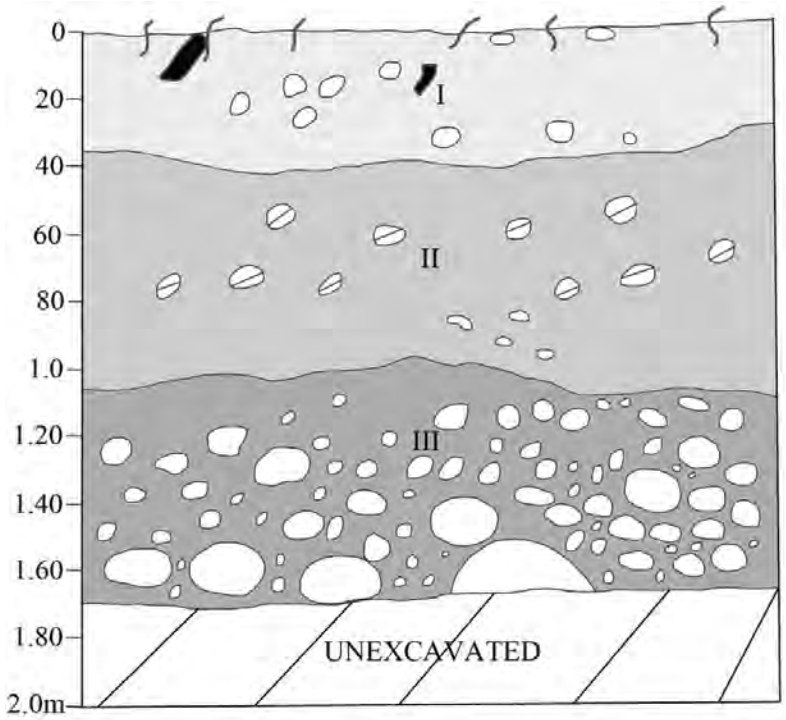
Trench 301



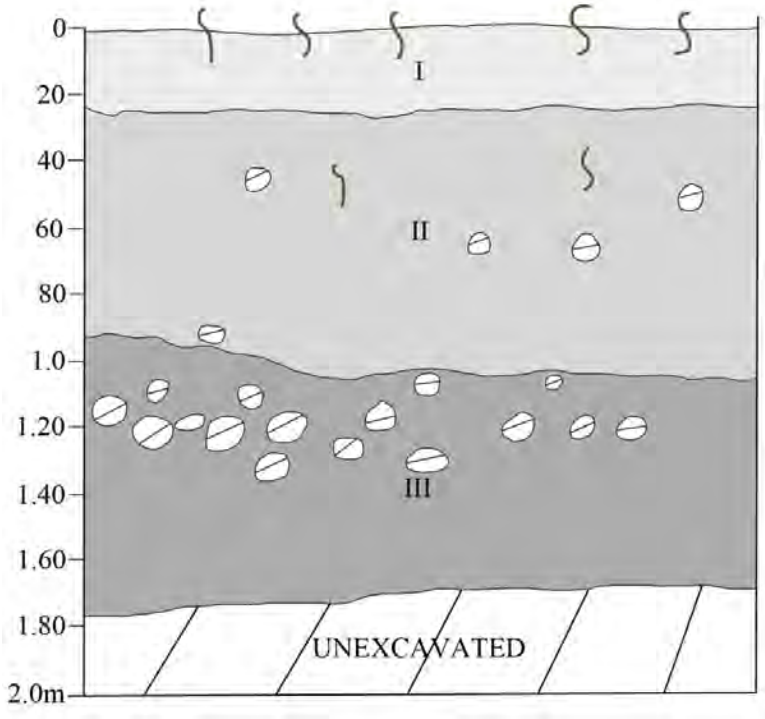
Trench 303



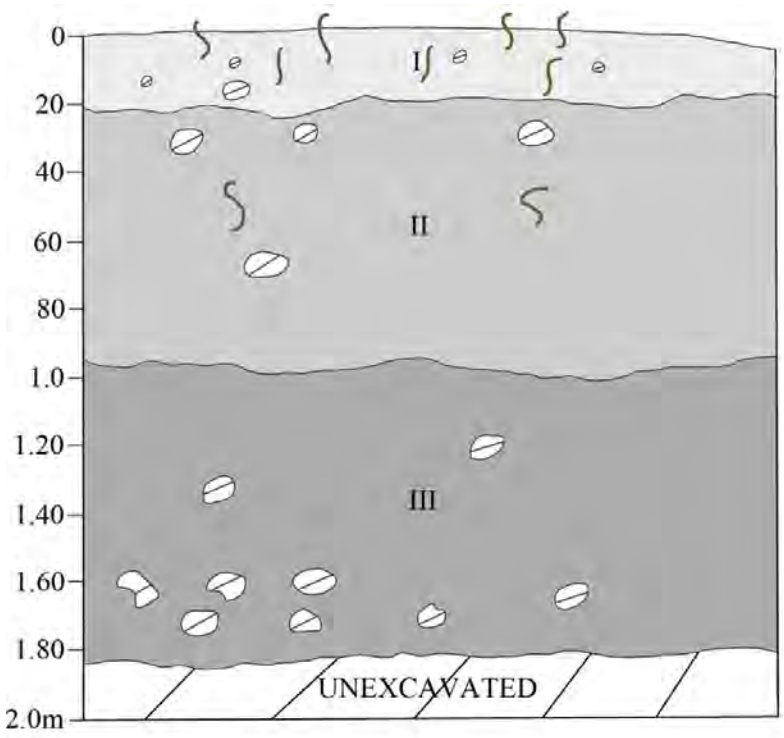
Trench 304



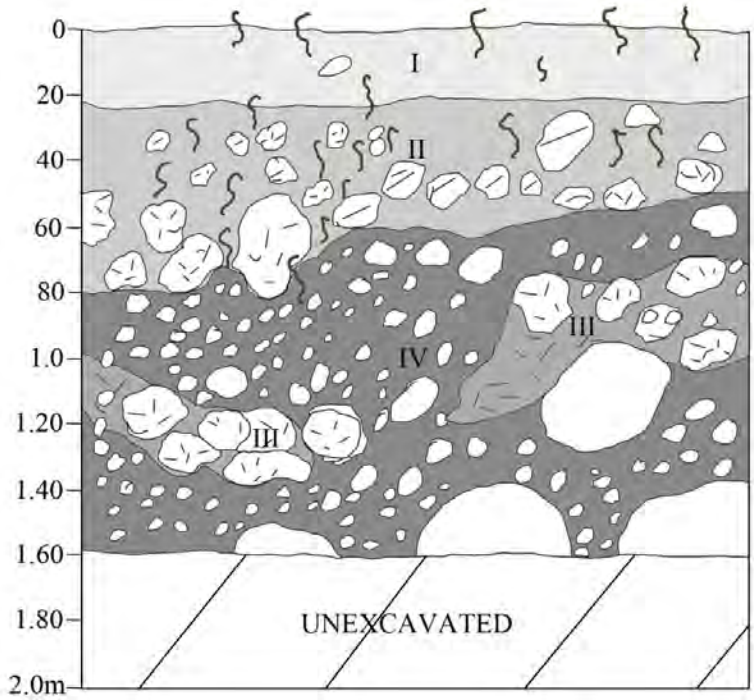
Trench 305



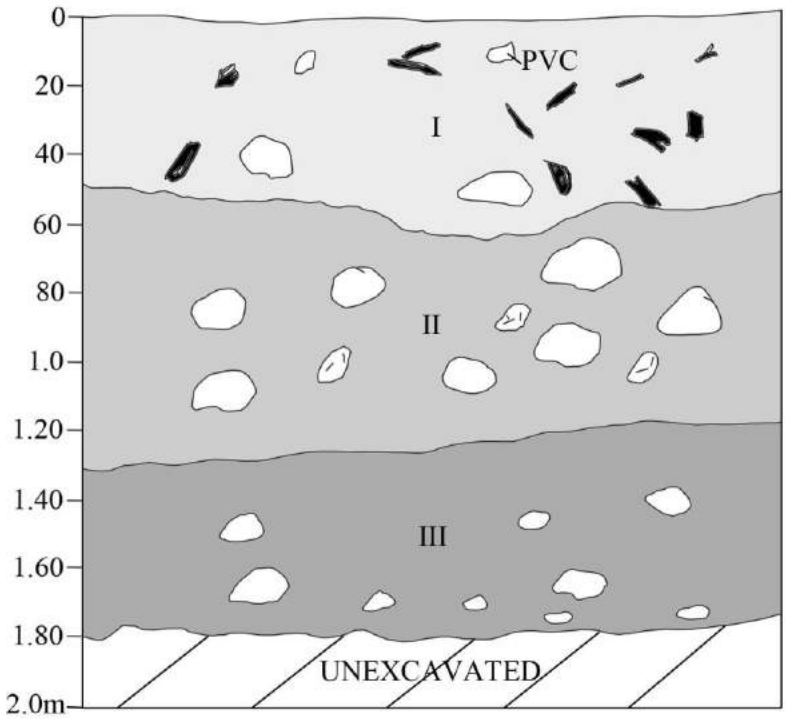
Trench 307



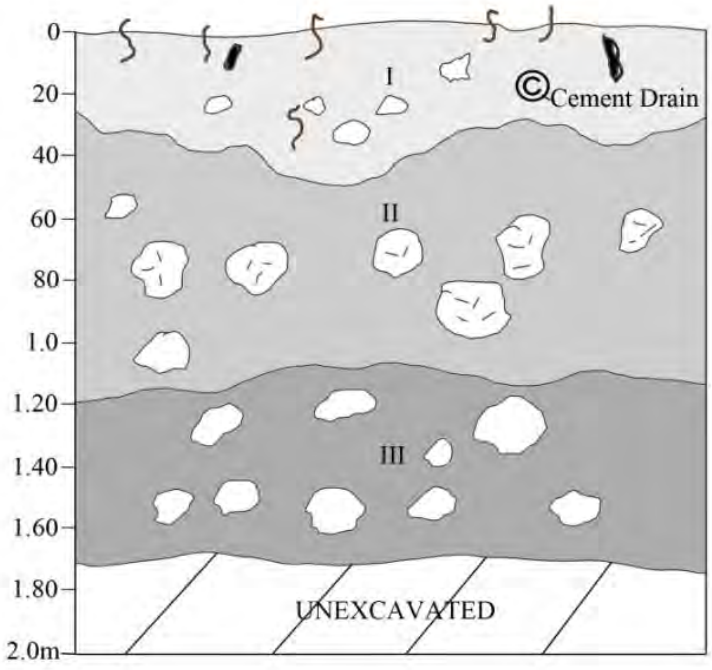
Trench 308



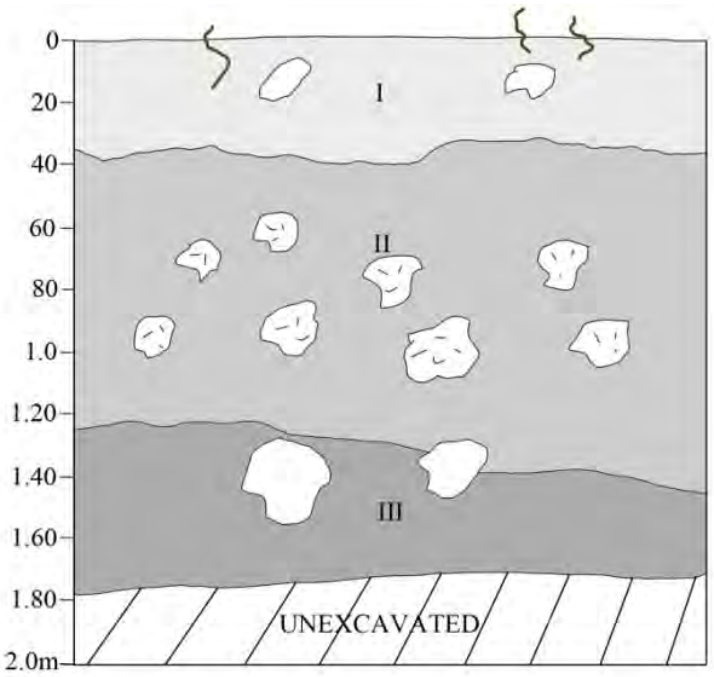
Trench 312



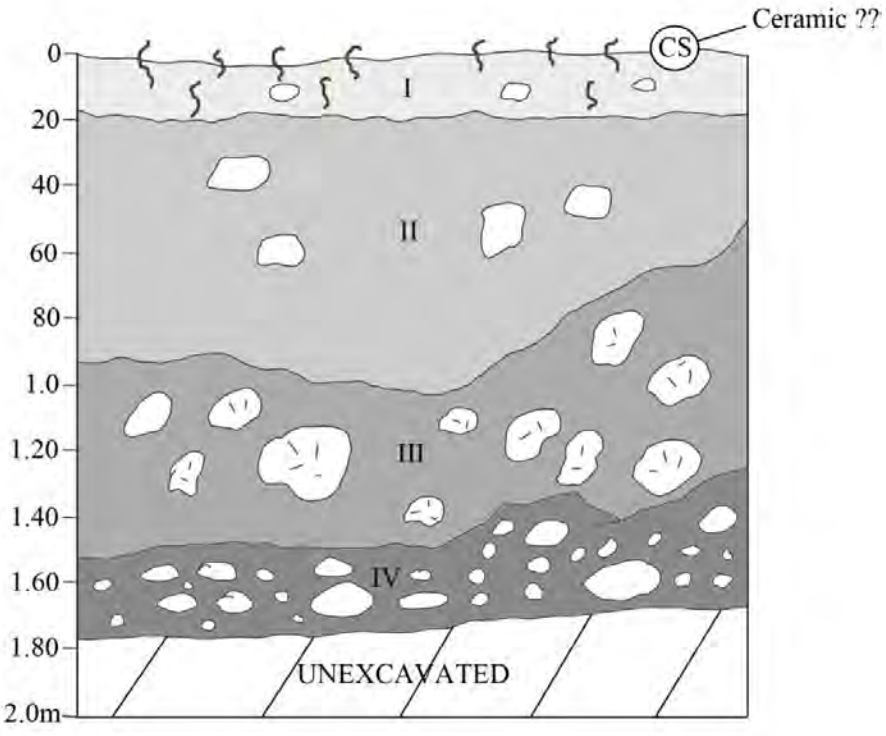
Trench 314



Trench 315



Trench 316



Trench 323