

Table B1. Detailed descriptions of the four sections of Kulanaokuaiki and Uwēkahuna tephra

This table contains detailed descriptions of the four sections of Kulanaokuaiki and Uwēkahuna tephra for which glass analyses are presented in tables A3a–d. Further information on the location of these sections and their field relations can be found in Fiske and others (2009).

The sections are presented in the same order as the analytical data:

1. Tree Molds section notes
2. Uwēkahuna composite section notes
3. South Flank section notes
4. Jack’s Pit section notes

The notes were written by R.S. Fiske and edited for inclusion here by T.R. Rose.
 Note: Observations made using a binocular microscope on dried samples of tephra are inserted into descriptions in FULL CAPS. Carbon-14 dates are in boldface.

Section I. Locality name: S9-17, also informally as “Tree Molds.”

This locality is located in the pali (cliff) face just south of the Tree Molds area of the park.

Interval (cm)	Sample	Field/BINOCULAR description
0-2	S9-17-1	Organic-rich layer with some frothy pumice lapilli, high-fountain type, up to 2 cm diameter. Check for charcoal; this is probably the layer dated by Lockwood. VITRIC ASH, ABUNDANT MED-COARSE NEAR-RETICULITE PUMICE.
2-8	S9-17-2	Dark gray fine ash with Pele's Tears. FINE-MEDIUM GLASSY PUMICE LAPILLI PLUS PELE'S TEARS; PUMICE YELLOW-GREEN ON FRESH BREAK; SCATTERED BITS OF CHARCOAL ROOTLETS COLLECTED. SAMPLED AS S9-17-2C. 690 B.P. (A.D. 1252-1332)
8-12	S9-17-3	Brown, fine to coarse ash with up to 2-cm pieces of reticulite. Tan in upper 5 mm. HIGHLY VITRIC; TAN COLOR CAUSED BY VERY FINE CLAY COATING; ASH CONTAINS ABUNDANT, VERY FINE PELE'S TEARS; POORLY CONSOLIDATED.

This locality is located in the pali (cliff) face just south of the Tree Molds area of the park.—Continued

Interval (cm)	Sample	Field/BINOCULAR description
12-15	S9-17-4	Fine to coarse glassy pumice, crystalline pumice, and common lithics up to 2 cm. Pumice is up to 1.5 cm diameter, but sample is dominated by lithics. HALF LITHIC, HALF PUMICE PLUS PELE'S TEARS PLUS PELE'S HAIR PLUS RETICULITE; NON-LITHIC FRACTION DOMINANT IN FINER MATERIAL.
15-17	S9-17-5	Red-brown, fine-medium ash. A few black Pele's Tears. Might be vesicular. VESC. VITRIC TUFF, BIMODAL, COARSE GLASSY SAND IN VERY FINE VITRIC ASH.
17-19	S9-17-6	Fine to coarse lapilli. Pumice up to 2.5 cm. Many centimeter-size lithics, but the real giants are pumice. One lithic to 2 cm. PUMICE IS CRYSTALLINE TYPE; FINE FRACTION DOMINATED BY LITHICS, BUT ABUNDANT BLACK VITRIC PIECES. <u>Note</u> : Lithics in this layer collected more thoroughly in August 2001, but the bag is labeled S9-17-6.
19-21	S9-17-7	Fine to coarse ash. DOMINANTLY COARSE LITHIC ASH WITH SOME COARSE VITRIC ASH; PIECES OF VESC. VITRIC TUFF.
21-24	S9-17-8	Dominantly fine to coarse crystalline pumice. Some centimeter-size lithics too. ABUNDANT GLASSY PUMICE, DESCRIPTION OTHERWISE CONFIRMED.
24-28	S9-17-9	Moderately well-sorted, pinkish-tan, medium ash. MEDIUM ASH CONSISTS OF ABOUT HALF IS LOOSE CRYSTALS--OLIVINE, WATER-CLEAR PLAGIOCLASE--AND HALF MOSTLY LITHIC AND FINE ASH, GIVING IT PINK COLOR.
28-34	S9-17-10	Dominantly fine to medium ash, with, at top, 1-cm layer of Pele's Tears and hair. Reddened at top. VESICULAR, POORLY SORTED VERY FINE TO MEDIUM ASH WITH COARSE PELE'S TEARS AND TEAR FRAGMENTS AND COMMON WHITE LITHIC FRAGMENTS, WHITE INSIDE WITH LITTLE BLACK FLECKS (HYDROTHERMALLY ALTERED?)
34-43	S9-17-11	Orange reticulite and black Pele's Tears. Reticulite to 2 cm and larger. FIELD DESCRIPTION CONFIRMED. -----HIGH Ti-K GLASS LAYER= K-2 -----
43-48	S9-17-12	Tan, fine-medium ash. VESICULAR TUFF, POORLY SORTED FINE-MEDIUM LITHIC AND CRYSTAL ASH.
48-52	S9-17-13	Fine to very coarse lapilli, dominantly lithic. Lithics up to 6 cm. Nothing like anything in Kulana. ADD: COMMON CRYSTALLINE PUMICE (4 CM PIECE INCLUDED).
52-62	S9-17-14	Vesicular tuff with large lithics in it. Two such lithics are 6 cm. Red, medium ash makes up most of bed. Definitely vesicular. Bottom is very hard. COARSER LAYERS IN VESICULAR TUFF ARE FINE PUMICE AND VITRIC LAPILLI WITH VERY LITTLE FINE MATERIAL.

This locality is located in the pali (cliff) face just south of the Tree Molds area of the park.—Continued

Interval (cm)	Sample	Field/BINOCULAR description
62-64	S9-17-15	Dark gray to green, vitric vesicular tuff. Different color from that of overlying unit and not nearly as hard. COARSER GRAINS IN VESICULAR TUFF ARE BLACK GLASS IN A MATRIX OF YELLOW-TAN, MUCH FINER, GLASS; OCCASIONAL LOOSE OLIVINE CRYSTALS. SORTING BIMODAL.
64-65	S9-17-16	Pink, very fine ash with abundant coarse sand to fine lapilli grains. Filters down into rubbly top of underlying a`a flow at 65 cm. COARSE ASH WITH ABUNDANT VITRIC COMPONENT COATED WITH YELLOW WAXY ALTERATION; POSSIBLE ACCRETIONARY LAPILLI (ONLY ONE CONFIRMED).
65	S9-17-17	Orange reticulite in pockets in a`a flow. DOMINANTLY HIGH-FOUNTAIN PUMICE WITH BLACK PELE'S TEARS.

Section II. Locality names: F9-6, F9-7, F02-26, informally known as “Uwēkahuna Bluff.”

This is a composite of several sections at the base of and part way up the Uwēkahuna Bluff.

F9-7. Upper part of Uwēkahuna ash just south of northern end of Uwēkahuna laccolith. Continue a kind of composite section, because of better developed upper beds here. Started section at top of bed with gigantic lithics, at 119-139 in F9-6. Sample interval was measured from the base of the section.

Interval (cm)	Sample	Description
20-36	F9-7-5	Compacted pumice and fine ash and Pele's tears. Resembles golden pumice. F02-26-26 is this same deposit.
18-20	F9-7-4	Poorly sorted coarse sand to medium lithic lapilli. F02-26-25 is an approximate equivalent.
14-18	F9-7-3	Very dark green to black Pele's tears, hair, and vitric ash. Upper surface has reddened color.
10-14	F9-7-2	Reddish brown, fine-coarse sand, irregularly bedded. Upper portion has red speckled appearance with free olivine. Lower part is better-sorted fine ash with scattered vesicles.
0-10	F9-7-1	Thickness variable because of irregular underlying surface. Glassy, medium greenish-gray pumice, high fountaining type. A few clasts to 4 cm of frothy pumice. Scattered lithics to several centimeters across.

F9-6. Below southern hump on Uwēkahuna laccolith; same site as UWEB-1
Section log; logged from bottom up, but notes in top-down stratigraphic order

Interval (cm)	Sample	Description
149-176		Compacted vitric golden pumice and ash. Probably crushed as F9-6-5. Also Pele's tears.
139-149		Medium-coarse, red-speckled, dark-brown ash with abundant free olivine crystals, well sorted.
119-139		Very poorly sorted ash to gigantic lithics. Lenses of vitric ash.
104-119		Tan to pink very fine ash, vesicular in places. One prominent layer of fine-coarse lithic lapilli that is very poorly sorted and is about 2/3 to top. Lower third has abundant fine lithic lapilli in fine ash matrix.
102-104		Well-sorted fine lithic lapilli. Section F9-7 (above) is a more complete section from here up.
67-102		Coarse lithics of variable thickness.
61-67	F9-6-5	Compact, somewhat hardened layer of highly vesicular, beautifully glassy pumice, and tears. No void fraction between grains. Could have had reticulite, which is now mashed to make bed somewhat hard. Glass is amber colored.
60-61	F9-6-4	Relatively well sorted, fine-medium lithic lapilli.
54-60	F9-6-3	Green-gray, sand to medium pumice lapilli and scattered lithics. Lithics to 2.5 cm.
10-54		Interbedded very fine to medium ash, dark green beds interlayered with olive glass. Vitric. Many lenticular layers of fine to medium lithic lapilli and glassy ash. Lapilli up to 2 cm. Sample comes from lower third of deposit.
0-10	F9-6-1	Equal mix of crystalline pumice and lithics.

F02-26 (Top down)

Cumul. thickness	Unit thickness (cm)	Sample	Field/BINOCULAR description
0-9	9	F02-26-26	Vitric pumice and coarse ash, dark gray-green. VITRIC PUMICE, MEDIUM ASH TO MEDIUM LAPILLI; GOOD GLASSY SKINS; VESICLES UNUSUALLY SMALL AND OF UNIFORM SIZE.
9-10	<1	F02-26-25	Thin layer of very fine pink ash at the top of unit #24. LITHIC, VITRIC, CRYSTALLINE ASH, POORLY SORTED; ABUNDANT PIECES OF FRESH VITRIC TEARS AND HAIRS; MOST GRAINS COATED WITH VERY, VERY FINE PINK ASH.
10-19	9	F02-26-24	Coarse ash to lapilli, very poorly sorted. Mostly lithic, but see some vitric pumice. FINE ASH TO FINE LAPILLI, LITHIC. BUT SEE SOME VITRIC PUMICE AND DENSE, GLASSY CLASTS. AGAIN, MANY CLASTS COATED WITH FINE RED-BROWN ASH.

This is a composite of several sections at the base of and part way up the Uwēkahuna Bluff.—Continued

F02-26 (Top down)—Continued

Cumul. thickness	Unit thickness (cm)	Sample	Field/BINOCULAR description
19-22	3	F02-26-23	High-fountain pumice, lens with maximum thickness of 3 cm. Probably the unit with high MgO glass. VITRIC PUMICE; BIMODAL VESICLE SIZES; SOME GLASSY SKINS; NOT VERY FRESH LOOKING.
22-37	15	F02-26-22	Very fine tan vitric? ash, vesicular. An 18-cm rock forms a prominent sag in this unit. LEDGE-FORMING VERY FINE ASH TO FINE LAPILLI, VERY POORLY SORTED. MOST CLASTS APPEAR TO BE LITHIC, BUT ALL ARE COATED BY VERY, VERY FINE ASH. THE THIN SECTION WE HAVE OF THIS UNIT SHOWS IT TO CONTAIN LOTS OF VITRIC DEBRIS.
37-58	21	F02-26-21	Fine-coarse lithic ash and fine-coarse lithic lapilli (to 4 cm). FINE ASH TO MEDIUM LAPILLI, MOSTLY LITHIC, BUT COMMON VITRIC PUMICE.
58-61	3	F02-26-20	Green vitric ash, Pele's tears, pumice lapilli. Many lapilli are iridescent. Lithics from the above unit penetrate through this unit. VITRIC PUMICE (WITH SKINS) AND COMMON LITHICS. ASH MATRIX LOOKS LIKE CRUSHED PUMICE.
61-64	3	F02-26-19	Very poorly sorted, coarse lithic ash to coarse lapilli; lithics and scoria-spatter? Clasts have red-orange surfaces. ASH TO LAPILLI, MOSTLY VITRIC PUMICE (COATED WITH VERY FINE RED ASH). MINOR LITHICS; MATRIX IS VITRIC.
64-71	7	F02-26-18	Fine to medium lapilli; scoria and vitric pumice. Some fine ash matrix. MEDIUM ASH TO MEDIUM LAPILLI; 98 PERCENT IS VITRIC PUMICE WITH SKINS. A FEW LITHICS.
71-82	11	F02-26-17	Coarse ash to medium lapilli, lithic. Poorly sorted. At the base of the bluff, we found cored bombs and pieces of gabbro, but we don't see these here. MEDIUM ASH TO MEDIUM LAPILLI, VITRIC PUMICE, 60 PERCENT; LITHICS, 40 PERCENT. PUMICE SKINS.

This marks the top of the conspicuous dark vitric ash interval. This interval is 41 cm thick.

Cumul. thickness	Unit thickness (cm)	Sample	Field/BINOCULAR description
82-92	10	F02-26-16	Laminated fine greenish-gray vitric ash; also see a lithic component. VERY FINE TO MEDIUM ASH, VITRIC. SCATTERED SMALL PUMICE FRAGMENTS.
92-100	8	F02-26-15	Medium to coarse vitric-lithic ash. Basal 2 cm is coarser. Top 2 cm has abundant lithics to 3 cm. MEDIUM TO COARSE VITRIC ASH; A FEW PUMICE CHUNKS; SCATTERED LITHIC ASH. THE FINER GRAINED VITRIC CLASTS ARE ONLY MODERATELY VESICULAR.
100-109	9	F02-26-14	More poorly sorted, fine, green-gray vitric ash with abundant coarse lithic ash and lithic lapilli. Many lithics are reddened. The top 2 cm is rich in vitric pumice (some in bag). SAME AS F02-26-15 ABOVE.
109-123	14	F02-26-13	Very fine, green-gray vitric ash; contains a <1 cm layer of medium ash. Thin bedded and laminated. VERY FINE TO MEDIUM VITRIC ASH; SCATTERED PUMICE LAPILLI; SEE NO LITHICS.

This marks the base of the conspicuous well-bedded dark vitric ash.

Cumul. thickness	Unit thickness (cm)	Sample	Field/BINOCULAR description
123-125	2	F02-26-12	Pumice lapilli, fresh, vitric. Stringers of pink ash run through the unit (probably lithic-crystalline ash). In places, this unit thickens to 5 cm and contains large lithics. Large cored bombs locally disrupt the unit. One softball-size cored bomb completely penetrated the unit and rests at the top of the underlying unit. We sampled this softball as a non-numbered sample. It is loose in the packing box. MEDIUM ASH TO SMALL PUMICE LAPILLI; VITRIC (SKINS); SCATTERED LITHIC LAPILLI.
		02-26-12A	Cored bomb fragments plus some pink ash.
125-129	4	F02-26-11	Black-skinned pumice lapilli in fine vitric ash. Probably a continuation of the unit below. FINE ASH TO MEDIUM PUMICE LAPILLI, VITRIC; LOTS OF SKIN, TEARS. SEE NO LITHICS.
129-133	4	F02-26-10	Black-skinned ash, tears, and pumice lapilli; fresh. COARSE ASH TO MEDIUM LAPILLI, VITRIC PUMICE. LOTS OF SKIN; SEE NO LITHICS.
133-146	5-13	F02-26-9	Fine ash to medium lapilli (lithic), poorly sorted, orange. Its' top surface has lithic lapilli that stick up into the overlying unit. Note: any black vitric material in this sample filtered down from above. FINE ASH TO MEDIUM LAPILLI, LITHIC. VERY FINE ASH COATS CLASTS.

This marks the base of the conspicuous well-bedded dark vitric ash.—Continued

Cumul. thickness	Unit thickness (cm)	Sample	Field/BINOCULAR description
146-166	20	F02-26-8	Fine ash to gravel, extremely poorly sorted. Lithics (to 5-6 cm) are distributed throughout the unit. The ashy matrix is lithic, with crystals and vitric ash(??) --High Ti-K glass = K-2 – MEDIUM ASH TO MEDIUM LAPILLI, LITHIC. RARE VITRIC PUMICE.

Here we first note that steeply dipping normal faults cut the section. One fault appears to cut all units in the hole and has a displacement of 12 cm, caldera side up! The other fault abruptly dies at the top of unit F02-26-12, the base of the 41-cm dark vitric interval described above. This could be evidence that there is a hiatus in the section and that this fault formed before the overlying vitric interval was deposited.

Cumul. thickness	Unit thickness (cm)	Sample	Field/BINOCULAR description
166-167	1	F02-26-7	Black-skinned Pele's hair, tears, and pumice; fresh glass. This thin unit is pockety on the top of unit #6 below. -- High Ti-K glass = K-2 -- COARSE ASH TO MEDIUM LAPILLI; VITRIC PUMICE, FRESH SKINS, A FEW LARGE TEAR FRAGMENTS.
167-176	9	F02-26-6	Orange-brown, very poorly sorted vitric ash to coarse lapilli; altered. Note pieces of scoria and lithics in the sample—also one small cored bomb. The bottom and top of this unit are irregular (“unconformity bounded”). Note a near vertical fracture filling that might suggest this is an old deposit. -- High Ti-K glass= K-2 -- MEDIUM ASH TO MEDIUM LAPILLI; LITHIC/VITRIC RATIO = 70/30. FINE VITRIC ASH COATS PUMICES.
		F02-26-6A	Fairly dense pumice lapilli from upper part of unit.

SECTION III. Locality name: S0-7, informally known as "South Flank."

Location: Pit dug just north of fire road on Ainahou Ranch. Depth in centimeters below ground surface.

Interval (cm)	Unit	Sample	Field/BINOCULAR description
0-20	?		Very poorly sorted, fine ash to medium pumice lapilli. Contains roots at top. Beautiful glassy pumice. Common medium lithic lapilli. No bedding; looks reworked.
20-23	Keanakāko‘i?	S0-7-1	Contains abundant charcoal. Dominantly coarse ash to medium glassy-type pumice lapilli with some lithic lapilli of medium size. CHARCOAL PICKED. Could be layer 6. MIX OF GLASSY AND CRYSTALLINE PUMICE (DOMINANT) WITH SOME RETICULITE; COMMON LITHICS IN FINE LAPILLI RANGE. STILL LOTS OF CHARCOAL AFTER PICKING. 630 B.P. (A.D. 1292-1401)
23-26	Keanakāko‘i?	S0-7-2	Dark gray, poorly sorted, fine ash to medium lapilli. Organic rich. Charcoal present. CHARCOAL PICKED. Might be reworked Kulanaokuaiki but just above unreworked Kulanaokuaiki. CONFIRMED; ABUNDANT CHARCOAL REMAINS AFTER PICKING. 510 B.P. (A.D. 1319-1352)
26-28	Kulanaokuaiki	S0-7-3	Brown, dominantly coarse ash and fine lapilli. This layer demarks a color change in the pit, with brown below. CHARCOAL PICKED. COMMON PELE’S HAIR AND BLACK GLASS FRAGMENTS.
28-32	Kulanaokuaiki	S0-7-4	Dark gray, very poorly sorted, organic-rich, fine ash to large pumice lapilli. On eastern side of pit, the layer thins and may actually pinch out. CHARCOAL PICKED, BUT NOT SUBMITTED. ABUNDANT PELE’S TEARS/HAIR AND RETICULITE FRAGMENTS.
32-34	Kulanaokuaiki	S0-7-5	Brown, fine-medium, crystalline-type pumice and lithics. Looks very much like Kulanaokuaiki 3. Has big chunks of reticulite too. Not much matrix. CONFIRMED. CHARCOAL PICKED BUT NOT SUBMITTED.
34-36	Kulanaokuaiki	S0-7-6	Very poorly sorted, fine ash to medium glassy pumice lapilli. Organic rich and charcoal bearing. Possibly the High Ti-K layer. CHARCOAL PICKED. NO OBVIOUS VITRIC MATERIAL OTHER THAN PUMICE 1290 b.p. (A.D. 656-783) -----High Ti-K glass = K-2 -----
36-39	Kulanaokuaiki	S0-7-7 S0-7-7C	Poorly sorted, fine ash to medium, commonly glassy, lapilli. Really gradational upward to the next layer. Gray to gray-brown color. Kulanaokuaiki 1? CHARCOAL PICKED. COMMON LITHICS. A FEW BLACK GLASS FRAGMENTS. 1310 B.P. (A.D. 642-782) -----High Ti-K glass = K-2 -----
39-54	?	S0-7-8	Pretty well sorted, very fine ash, with occasional lapilli scattered throughout. Brown at top and bottom and red in middle. No bedding seen. A few glassy pumice lapilli to 1.5 cm diameter. CONFIRMED.
54-56		S0-7-9	Fine ash with abundant lithic lapilli, commonly to 2 cm. Rests directly on flow surface, which dips southeast. CONFIRMED.

Section IV. Locality name: F0-1 and F01-2, also informally as "Jack's pit."

This pit is in the southwest corner of the Ola`a tract and was originally opened by Jack Lockwood and others. It is 2 meters inside the fence along Wright Road. It has also been studied by soil scientists.

Interval (cm)	Unit	Sample	Field/BINOCULAR description
0-10	Ku	F0-1-0.5	Fine brown ash with abundant rootlets; high Ti, K glass = K-2.
10-12	Ku	F0-1-1	Pumice with glassy skin in muddy matrix. BLACK SKIN PUMICE AND TEARS.
12-30	Ku	F0-1-1.5	Green-brown, moderately well sorted fine ash, vesicular. In places see coarse lithic ash grains.
30-32	Ku	F0-1-2	Dark gray, moderately sorted, medium-grained vitric ash. Gradational to unit above. Base of unit highly undulatory. DARK GRAY VITRIC ASH, MEDIUM GRAINED.
32-45	Ku	F0-1-3	Thickness variable. Gray, poorly sorted fine ash to medium pumice lapilli. Coarsely vesicular and hardened. Some pumice approaches reticulite. All pumice seems to be glassy, highly vesicular, high-fountain type. PUMICE IS HIGHLY VESICULAR, GLASSY. APPROACHES RETICULITE. MATRIX CONTAINS ABUNDANT GLASSY FRAGMENTS.
45-48	Ku	F0-1-3.5	Buff-tan ash, reddened at top. Extremely fine—almost like modeling clay. LOTS OF BLACK GLASS AND RETICULITE.
At 48	Ku	F0-1-4	Isolated clasts of reticulite along this level. Note that there is an obvious color change here; tephra is brownish above and reddened below. This may be the vestiges of the basal Keanakakoi reticulite. Also noteworthy is that bedding below this level is very uniform. GOOD RETICULITE.
48-53	Ku	F0-1-4.5	Very fine, brown ash. The upper part locally appears dark (near black) and might be organic-rich. LOTS OF BLACK GLASS AND RETICULITE.
53-56	Ku	F0-1-5	Poorly sorted, very fine to coarse ash. Probably altered glass with free olivine crystals. Contains conspicuous cream-white clasts, which might be altered pumices. LOTS OF FREE OLIVINE CRYSTALS; FEW PELE'S HAIRS AND TEARS. THE LIGHT-COLORED CLASTS ARE PROBABLY ALTERED PUMICES.
56-64	Ku	F0-1-6	Brown, poorly sorted, very fine ash to medium lapilli. Pumice is mix of crystalline and glassy types. A few lapilli are lithics. LOTS OF PELE'S HAIR AND BLACK GLASSY FRAGMENTS; PUMICE RANGES TO >2 CM AND IS CRYSTALLINE; SEE FEW >1 CM LITHICS.
64-67	Ku	F0-1-7 F0-1-7c	Dark gray-black, possibly organic rich, very fine ash. VITRIC/CRYSTAL ASH BOUND TOGETHER WITH BROWN ORGANIC MATERIAL. LOTS OF PELE'S TEARS. THIS MAY BE THE HIGH TI-K UNIT?? WILL TRY TO PICK OUT ORGANIC MATERIAL LATER (F0-1-7c). 1470 B.P. (A.D. ~ 530)

This pit is in the southwest corner of the Ola`a tract and was originally opened by Jack Lockwood and others. It is 2 meters inside the fence along Wright Road. It has also been studied by soil scientists. —Continued

Interval (cm)	Unit	Sample	Field/BINOCULAR description
67-87	Ku	F0-1-8C	Very poorly sorted fine ash with occasional pumice lapilli; stringers of dark carbon-bearing material, look like plant fragments and leaves. Sample F0-1-8C taken from lens in middle of unit. One of these dark stringers extends laterally to limb cast "hole." This hole is about 10 cm in diameter, and we easily stick the measuring tape 70 cm horizontally into it! VERY FINE, DARK-BROWN ORGANIC SOIL WITH COARSE LITHIC ASH.
87-94	Ku	F0-1-9	Greenish-gray, medium-coarse pumice lapilli. Lapilli surfaces are reddened. Occasional lithic lapilli to 3 cm. Probably a mix of crystalline and glassy pumice. SEE RARE GLASSY PUMICE AND RARE LITHIC LAPILLI. THE CRYSTALLINE PUMICE, WHICH IS BY FAR DOMINANT, DOES NOT APPEAR TO CONTAIN OLIVINE PHENOCRYSTS.
94-96	Ku/Uwe?	F01-2-1	Fine ash, red. HIGHLY ALTERED VITRIC ASH WITH ABUNDANT FRESH BLACK GLASS SHARDS.
96-102	Ku/Uwe?	F01-2-2	Fine ash, brown, with some coarse ash. THE COARSE ASH IS MOSTLY LITHIC; FEW LITHIC LAPILLI TO 1.5 CM. RARE BLACK GLASS FRAGMENTS.
102-104	Ku/Uwe?	F01-2-3	Vitric, orange. HIGHLY ALTERED VITRIC ASH; RARE BLACK GLASS FRAGMENTS AND A FEW ALTERED MEDIUM PUMICE LAPILLI.
104-105	Ku/Uwe?	F01-2-4	Ash, fine, dark brown. Rests directly on lava toe, possibly organic-rich. Not recognized last year, hence the added 1-cm thickness. GRAY, FINE ASH WITH ABUNDANT BLACK GLASS SHARDS. FEW ORANGE PUMICE LAPILLI; SOME CHARCOAL. (Note: We collected additional material from this site and will combine the charcoal recovered with that already separated from this unit.)
At 105			Top of lava flow toe. C-14 by J. P. McGeehin yielded 2770 +/- B.P. (W5345).
>105		F1-1-10C	Just below toe: dig out pocket of dark ash rich in plant fragments(?). There is more tephra below the lava which was considered to be "Pāhala Ash" (age 23 ka b.p) by previous workers. GOOD CHARCOAL. 2090 B.P. (202-16 B.C.)