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A Preliminary Report of the 1987 Season of the Madaba Plains Project

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**MADABA PLAINS PROJECT
THE 1987 SEASON AT TELL EL-'UMEIRI
AND VICINITY**

by

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Introduction

A second season of excavation and survey at Tell el-'Umeiri and vicinity occurred between June 18 and August 6, 1987 (for a preliminary report of the first season [1984] see Geraty *et al.* 1986 and 1987). A team of slightly more than 100 participants took part in the interdisciplinary project, which included excavations on the tell, surveys and soundings within a 5 km radius of the tell, processing of finds in camp laboratories, and camp logistical activities.¹

Once again the theoretical objectives of the project focused on cycles of intensi-

fication and abatement in settlement and land use in this frontier region between the desert and the sown. Central to this focus was the study of the food systems employed by the inhabitants through time (for a full discussion of the theoretical framework for the project, its history, and previous work done in the region see Geraty *et al.* 1986: 117-119).

The implementation of these objectives was refined during the 1987 season by enlarging the regional survey to three teams, each with its own primary objectives; by expanding excavation areas on the central tell; and by conducting soundings at three hinterland sites, most notably Rujm

1. The authors of this report are especially indebted to Dr. Adnan Hadidi, former Director General of the Department of Antiquities who eased several major problems during the course of the season; former Amman Antiquities Inspector Hefzi Haddad who went out of his way numerous times to make our project a success; and Department of Antiquities representative Nazmiyeh Rida who served as a Square Supervisor and helped solve workers' problems; other members of the Department of Antiquities facilitated our project at several junctures.

The land owner of Tell el-'Umeiri, Dr. Raouf Abujaber, was again generous in allowing our research to proceed unhindered. The officers and staff of the American Schools of Oriental Research and its local affiliate, the American Center of Oriental Research in Amman, provided invaluable assistance; the latter's ex-officers, director David McCreery, administrative director Glenn Peterman and Ibtesam Dababneh, administrative assistant, must be particularly mentioned. Others within Jordan, with whom the excavation would not have been possible, were Prince Raad ibn Zeid who has been a constant supporter and Richard T. Krajczar, Superintendent of the American Community School in Amman, who provided generous logistical support. The Baptist School near

Shmeisani, Amman, through its principal, Wilson Tatum, gave virtually all its very ample facilities to the dig for headquarters.

The expedition took place only because of the financial assistance of Andrews University in consortium with Atlantic Union College, South Lancaster, MA, USA; Canadian Union College, Lacombe, AB, Canada; and Southwestern Adventist College, Keene, TX, USA. Other funds were raised from private donations and volunteer participation fees.

Thanks are also due to each member of the staff who helped to make possible these results. The staff was divided into four sections, responsible for excavation, regional survey, laboratories, and camp logistics. In charge of planning and overall execution of the project were Lawrence T. Geraty, Larry G. Herr, and Øystein S. LaBianca, co-directors of the project.

Field Supervisors included John I. Lawlor (Field A), Douglas Clark (Field B), James Battenfield (Fields C and E), P. Michèle Daviau (Field D), Rusanne Low (Field F), Lorita Hubbard (Rujm Saleem), Gary Christopherson (seasonal site survey), Jon Cole (landuse survey), and Randall Younker (permanent site survey). Roughly 90 volunteers, specialists, and camp staff made up the remainder of the staff.

Saleem, an agricultural settlement ca. 2 km north of Tell el-'Umeiri.

STRATIGRAPHIC EXCAVATIONS AT TELL EL-'UMEIRI

In 1984 four Fields of excavations were opened (Fields A, B, C, and D). This season three of the four were expanded (Fields A, B, and D), one was completed (Field C), and two new fields were opened (Fields E and F) (Fig. 1).

Field A: The Ammonite Citadel (Fig. 2 and Pl. XVII, 1)

Examination of the latest major period of occupation at the site was continued in Field A at the western edge of the acropolis where four squares had been opened in 1984. Four new squares were laid out north of the 1984 excavation in order to outline the northern limits of the Ammonite Citadel discovered in 1984 and to connect with Field B to the north (Fig. 1). It was hoped that the detailed study of this major building in one of the most important parts of the acropolis would help answer our questions regarding the end of occupation at the site. Whereas the 1984 excavations had been inconclusive regarding this question, the finds this season were much more satisfying.

The two major Field Phases (hereafter, FP) discovered the previous season (Geraty *et al.* 1986: 128-129) were again encountered, but additional information was discovered regarding: A) the initial construction of the citadel; B) occupation of the area after the citadel went into disuse; and C) the western and northern limits of the citadel.

Field Phase 5 Although little is yet known of the Iron I settlement, excavations at the western edge of Field A uncovered fragmentary Iron I walls, possibly from a house, and a deep debris deposit immediately to the west of the citadel. The builders of the citadel destroyed all remains except for three walls in the northwest quadrant of Square 7K60 (Fig. 2). North-south Wall 13 formed the

jamb of a door with east-west Wall 14 to the east, while north-south Wall 10 ran to the north, but did not reappear in Square 7K70. After excavating Iron I Fill Layer 16 an Iron I jug was found on the threshold of the door (Pl. XVII,2).

Field Phase 4B (FP 2B in 1984) No other Iron I remains were found at similar levels inside the citadel. Likewise, no foundation trenches were found for any of the citadel walls. It would seem that the builders dug a large foundation area into the Iron I settlement to construct the foundations of the citadel. Just how deep this foundation was dug is still unknown, because the foundation levels of the citadel walls have not yet been found. The lowest floors so far encountered were ca. 1.4 m below the tops of the FP 5 (Iron I) walls. The lack of foundation trenches indicated that this was a large-scale excavation intended to clear a large area for a series of basement rooms.

The northern limit of the citadel of FP 4B seems to have been Wall 7K61:2, or possibly Wall 7K61:3. Its western edge was Wall 7K60:19. Thicker walls may not have been necessary for basement structures. It should perhaps be noted that the walls to the south were generally thicker than those in the north. The eastern and southern limits still lie outside our excavated areas.

The building included a narrow hall to the north (Room 7) with a stairway descending into it, a large, central room (Room 4), a western room (Room 2), a narrow subdivided hall (Room 3), and two small rooms to the south (Rooms 5 and 6). The walls separating these rooms were all over one meter thick and made of roughly-hewn boulders of various sizes with chinkstones. Surfaces for this phase were found in 1984 (Rooms 2 and 5) and included a jar *in situ* (Geraty *et al.* 1986: Fig. 12.1), but no floors were reached for any of the rooms excavated this season, except possibly a higher cobbled pavement in Room 7 at the base of the stairway (7K61:34). The stairway (7K61:30) descended from the north by six narrow steps (Pl. XVIII, 1). The entrance must have been from the top of Wall 7K61:2, but no certain indications

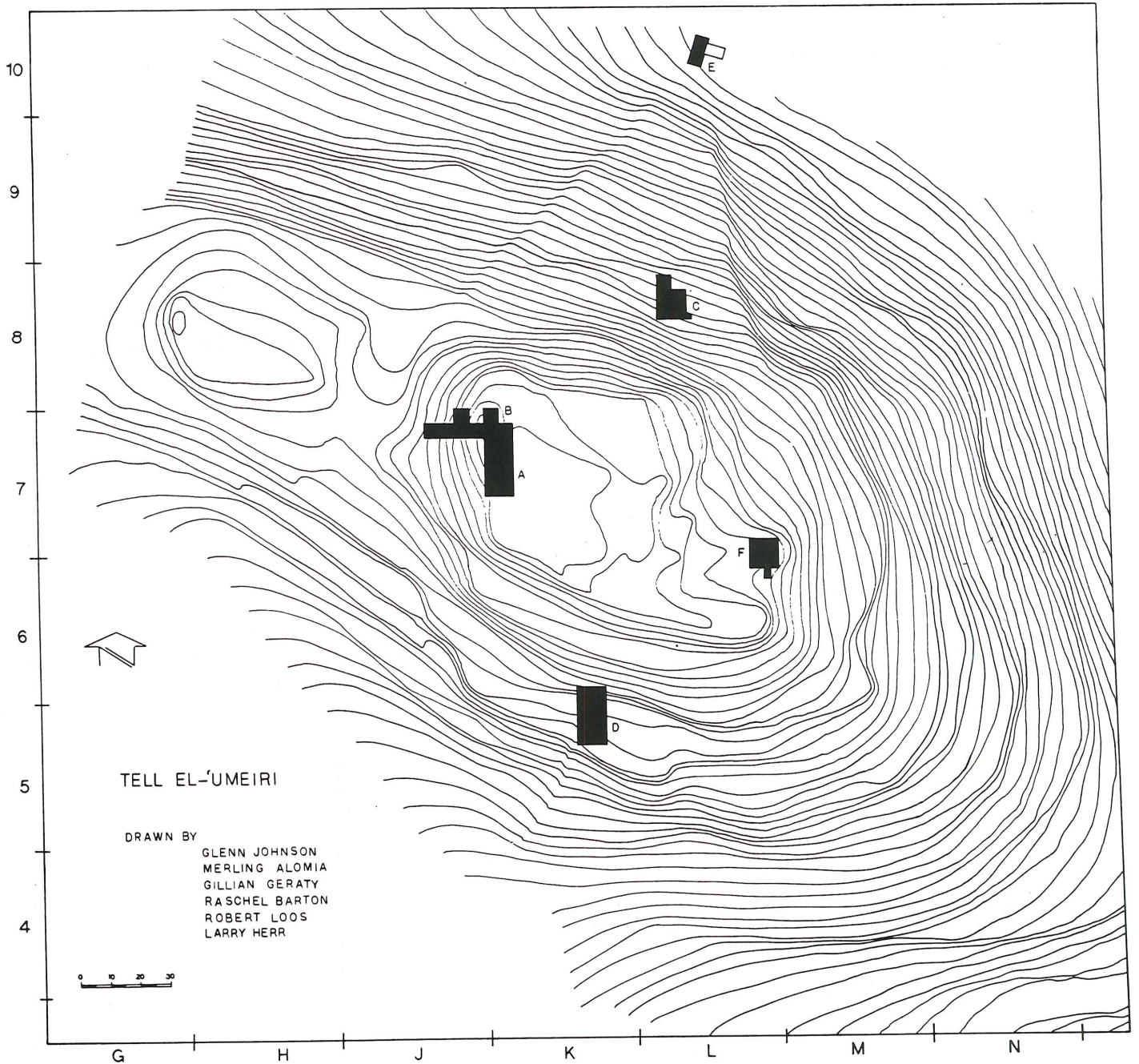


Fig. 1. Topographic map of Tell el-Umeiri with Fields A-F.

of a threshold were observed. The stairway was flanked by two hewn boulders serving as L-shaped jambs.

Unfortunately, no other data that would lend information concerning the specific function of the building in FP 4B was discovered beyond that of the 1984 season (Geraty *et al.* 1986: 129); the thick walls and large size of the complex do not fit a domestic interpretation. This season's work confirmed the monumental nature of the complex, measuring at least 17 m north-south and 12 m east-west with no

signs of the southern and eastern limits.

Precisely when the citadel was constructed is not yet known, because excavations have not reached founding levels. The pottery from FP 4B reflected the corpus typical to central Transjordanian plateau sites in the late Iron II period (Lugenbeal and Sauer 1972; Herr forthcoming a).

North of the citadel were two north-south walls (7K70:17; 7K71:3) that seem to have formed the boundaries of a pillared room (Room 8 with Pillars 7K71:14 and

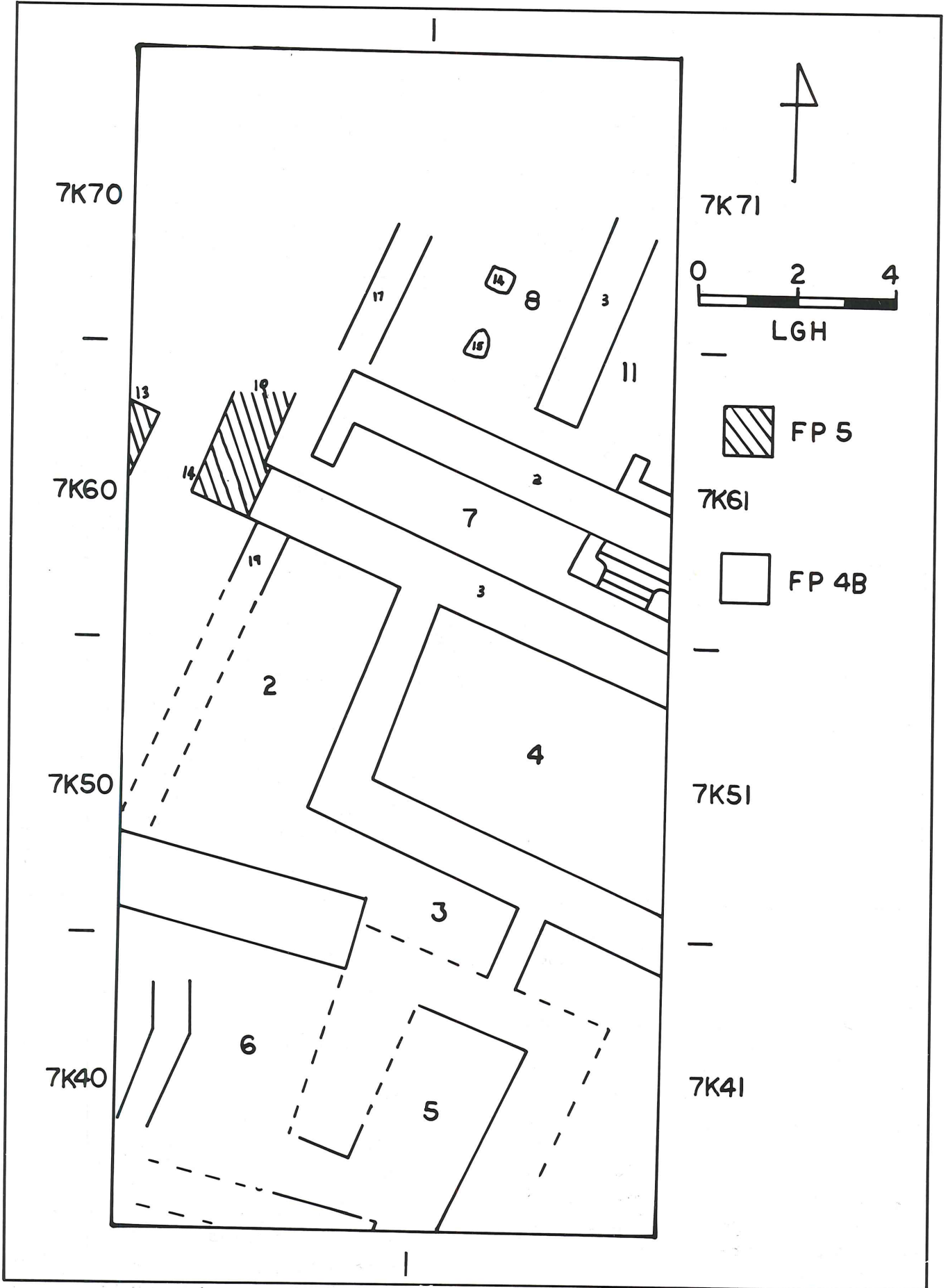


Fig. 2. Composite plan of the FP 5 and 4B architecture in Field A.

15), while Wall 7K61:2 formed the southern wall (Fig. 2). A doorway led into the room from the east (Room 11) between the end of Wall 7K71:3 and Wall 7K61:2. The surfaces for both Rooms 8 and 11 have not yet been reached. Nevertheless, it may be suggested that Rooms 8 and 11 formed part of a domestic complex, partially destroyed by the pool and silo of FP 2 (below).

Field Phase 4A (FP 2A in 1984) Remains from this ephemeral phase were not found this season (see Geraty *et al.* 1986: 129 for the remains found in 1984).

Field Phase 3B (FP 1B in 1984) (Fig. 3) The northern portion of the citadel remained much the same in FP 3B as it had been in FP 4B. The stairway in Room 7 went out of use as the surface was raised (Surface 7K60:10) and the space between the stairs and Wall 7K61:3 was blocked with stones. Room 2 was enlarged by dismantling the western wall (7K60:19) and constructing a new, battered wall (7K60:3) farther west against the Iron I debris of FP 5. These changes conformed well to those found in 1984 (see Geraty *et al.* 1986: 129): 1) Rooms 2 and 3 were separated by extending Wall 7K50:4 to the south; 2) access to Room 3 was gained by constructing a doorway through Wall 7K51:3; Room 4 was divided in two long rooms (Rooms 9 and 10) by Wall 7K51:5; Room 5 was enlarged by moving all its walls back 0.50 m or more, making Room 1; and Room 6 was probably enlarged to the west, forming Room 12. Surfaces have so far been found in Rooms 1, 2, 3 and 10 in 1984 and this season in Rooms 2 (7K60:9) and 7 (7K61:10). The domestic complex to the north seems to have continued with a new stone threshold. Surface 7K71:8 = 7K61:20 was found in Room 8 and Surface 7K61:12 was traced in Room 11.

More can now be said about the date of the end of FP 3B than before. Within one of the earth layers sealed below Surface 7K61:10 was an Attic sherd. A few other sherds of early Persian date appeared together with those of the late Iron II

corpus in the rest of the earth layers and surfaces. It would thus appear that the citadel was in use well into the Persian period. The ceramic rhyton found in Room 11 would support this (Pl. XVIII, 2).

Field Phase 3A (FP 1A in 1984) No remains from this ephemeral phase were found in 1987 (see Geraty *et al.* 1986: 129).

Field Phase 2 (Fig. 3) After the pillared domestic complex went out of use (no signs of a final destruction were found), the FP 2 builders constructed two underground installations, destroying much of the house. The first installation was a small plastered pool whose interior measured 2.0 x 2.75 m and was originally ca. 2.0 m deep (Pl. XIX,1). The installation was buttressed strongly on all four sides by over a meter of well-laid stones (no mortar). Five steps descended steeply into the pool from the north (only the upper three stretched the width of the pool), but the dimensions of the buttressing stones indicated that most likely one, and possibly two, others existed originally. The interior was covered with two layers of plaster, suggesting that it had been repaired and thus used over a period of time.

The superstructure of the pool probably was constructed of finely hewn ashlar blocks, because ca. 15 such stones, otherwise found nowhere else on the site, were found in the fill inside the pool. One fragmentary surface was found associated with the installation, containing pottery from the late Iron II and early Persian periods, similar to that found in the fill inside the pool.

The second installation was a narrow, stone-lined silo, measuring ca. 1.25 m in diameter at the lip and narrowing slightly as it descended to its bottom 2.80 m deep (Pl. XIX,1, upper center). The fill from the silo contained nothing that suggested its function, but it may have served to hold jars which were lifted by means of rope or a hooked stick.² No surfaces were found in association with the silo.

Field Phase 1 (Fig. 3) Running over the southwestern corner of the FP 2 pool

2. This was suggested by Gloria London, our ceramic technologist.

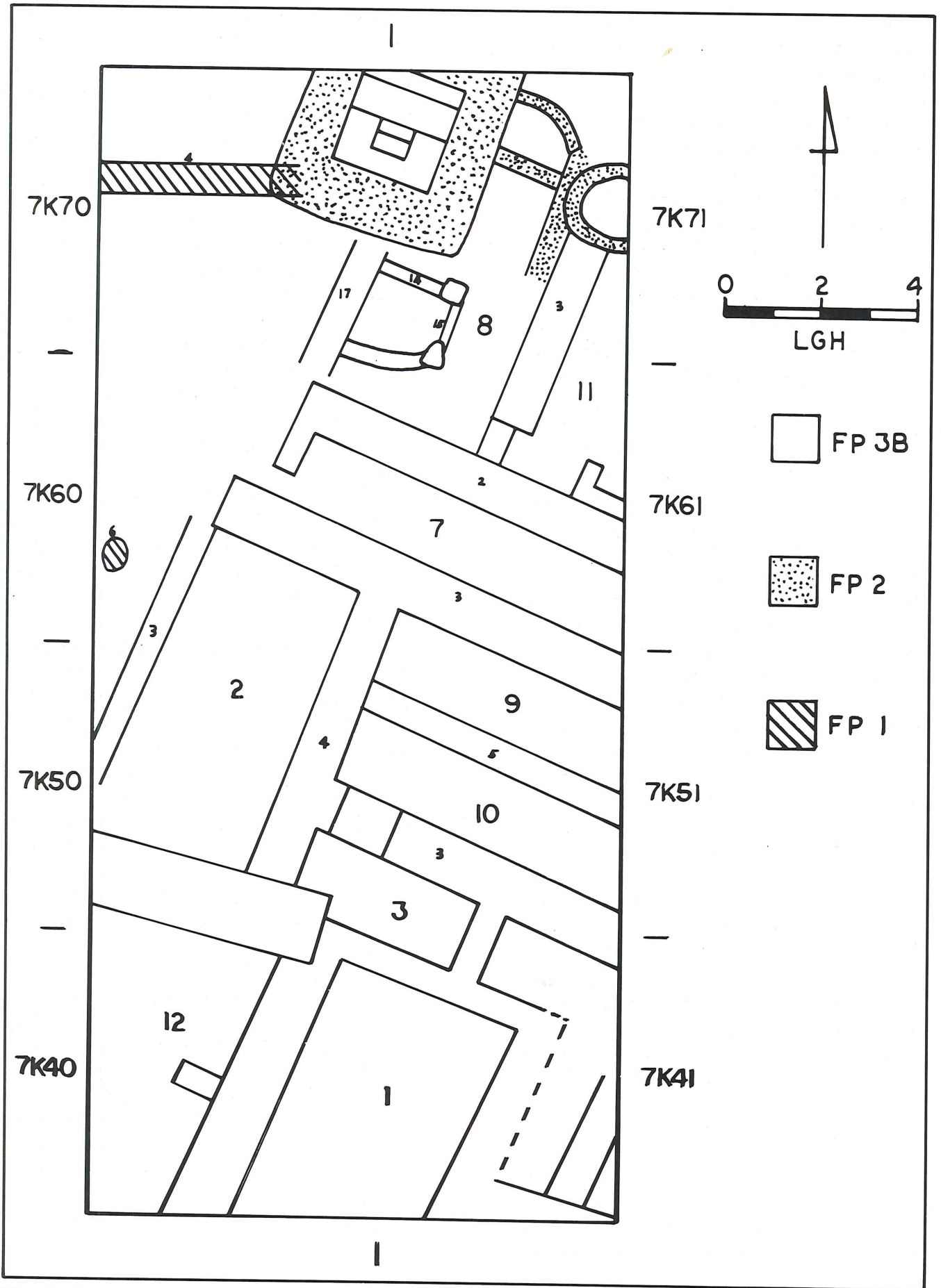


Fig. 3. Composite plan of the FP 3B, 2, and 1 architecture in Field A.

and just beneath topsoil was a one-row terrace wall (7K70:4), which retained shallow debris to the north from spilling onto lower ground to the south.

Related to the terrace wall, perhaps, was Surface 7K60:5, which seems to have reused Walls 3 and 14 as a possible seasonal settlement. Near its northern extent, a small stone hearth (7K60:6) was found. Ashes from the hearth lay strewn over the surface. An Ottoman pipe fragment suggested a bedouin encampment. There is no stratigraphic reason to connect this feature with the terrace wall to the north, except that they were both the latest features in the Field.

Field B: The Western Defense System

The objectives for Field B on the western slope of the acropolis were to examine the changes which took place in the defences of the site through time. For this reason four squares and part of another were opened in 1984 (Geraty *et al.* 1986: 129-130). This season, the Field was expanded to seven squares (Fig. 1). Excavation was thus started on the complete slope (at no point was bedrock reached) and connections were made with the northern squares of Field A. A total of ten phases have been encountered during the two seasons.

Field Phase 10 (FP 7 in 1984) The large mudbrick structure uncovered in Square 7K90 (Geraty *et al.* 1986: 129) was again found in 7K80 and 7K81. However, the bricks were fragmentary and not laid in any coherent pattern in spite of the white, chalky mortar found throughout. So far the structure measures at least 9 m wide and 10 m long. All subsequent features in the area were constructed into or on top of the mudbrick structure. Because the Iron I walls of FP 9 were laid into it, the structure dates to or prior to Iron I.

Field Phase 9 (FP 6 in 1984) (Pl. XVII, 1 and Fig. 4) This season the revetment wall at the bottom of the fortification system was found (Wall 7J86:6). We thus have a coherent picture of the latest

fortification system on the western side of the site, including 1) a casemate wall system at the top of the slope partially set into the mudbrick structure of FP 10; 2) a beaten-earth rampart sloping 32° downward to a stabilizing line of stones (in 7J98) and then steepened to 40°; and 3) the revetment wall at the bottom.

The outer casemate wall seems to have been constructed in tandem with the rampart. As one course of the wall was constructed, a layer of rampart was laid. As each course of stones was laid in the wall the exterior row was outset *ca.* 0.10 m until the desired thickness of the wall was reached. The rampart was thus constructed to support the outset wall and the fill behind it, protecting the wall from collapse due to the weight of debris inside the city.

One crosswall between the two casemate walls had been found in 1984 at the north balk of 7J89. This season, 5 m to the south, a second crosswall was located in the southwest corner of the square, bonding with the outer casemate wall.

A small probe in the corner between the outer casemate wall and the new crosswall uncovered ashy destruction debris with pottery dating to Iron I. Because there was no sign of a later wall and because the rampart seems to have been repaired at least twice in the Iron II period, it would seem that this wall was used until the end of the urban settlement in the early Persian period. The date of the construction of the wall cannot yet be ascertained. No foundation trenches have been encountered. It would appear to have been Iron I or earlier.

Field Phase 8 (FP 5 in 1984) Excavation in 1984 ceased at a cobbled surface in the western part of Square 7J89. This surface was found to cover the destruction debris of FP 9, but was higher than the preserved courses of the outer casemate wall, against which it may have been laid. The transitional date between the Iron I and early Iron II periods suggested in 1984 was confirmed.

Field Phase 7 (FP 4 in 1984) (Fig. 5) Three walls of a storeroom, containing

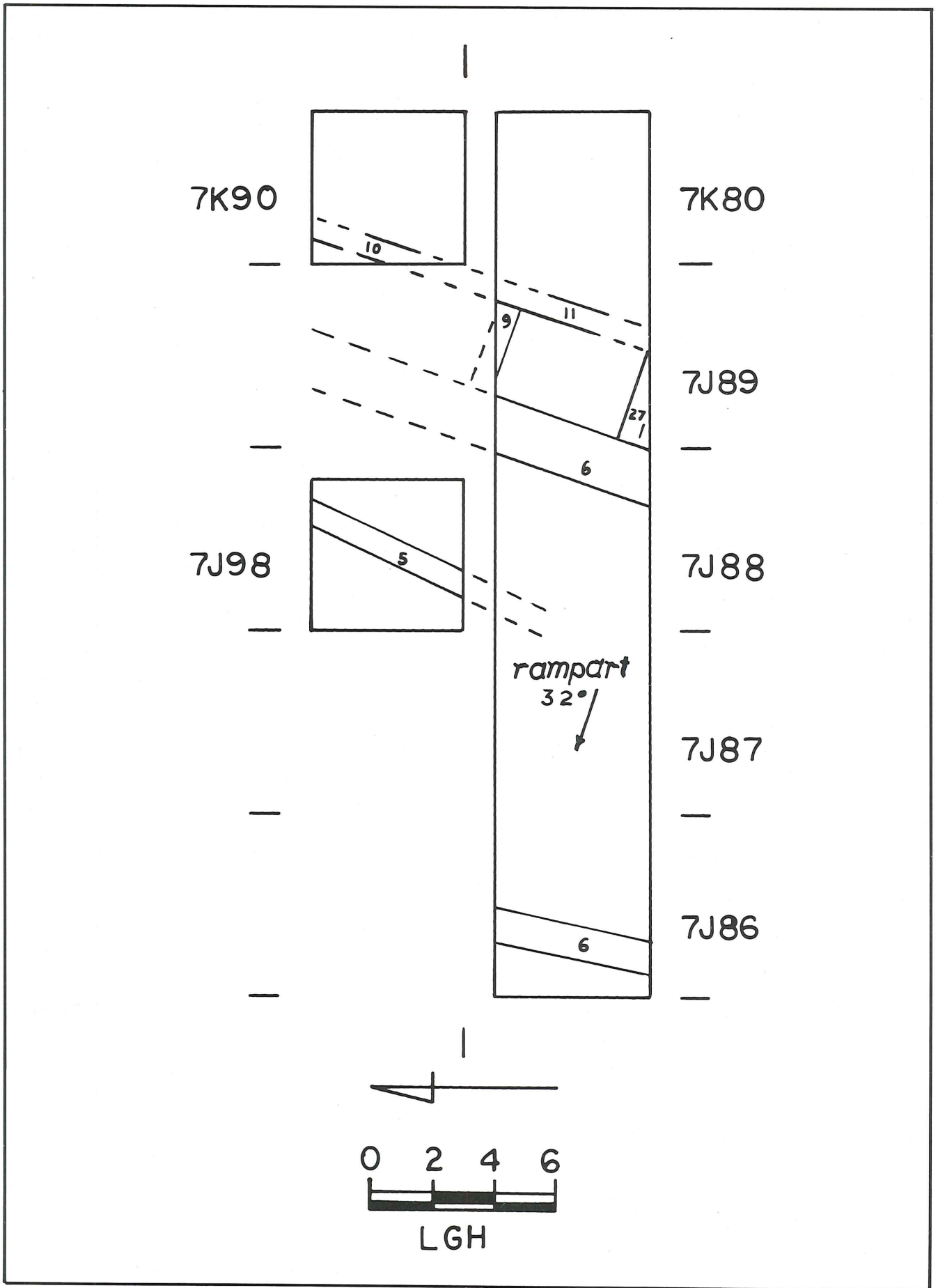


Fig. 4. Field B: Plan of FP 9.

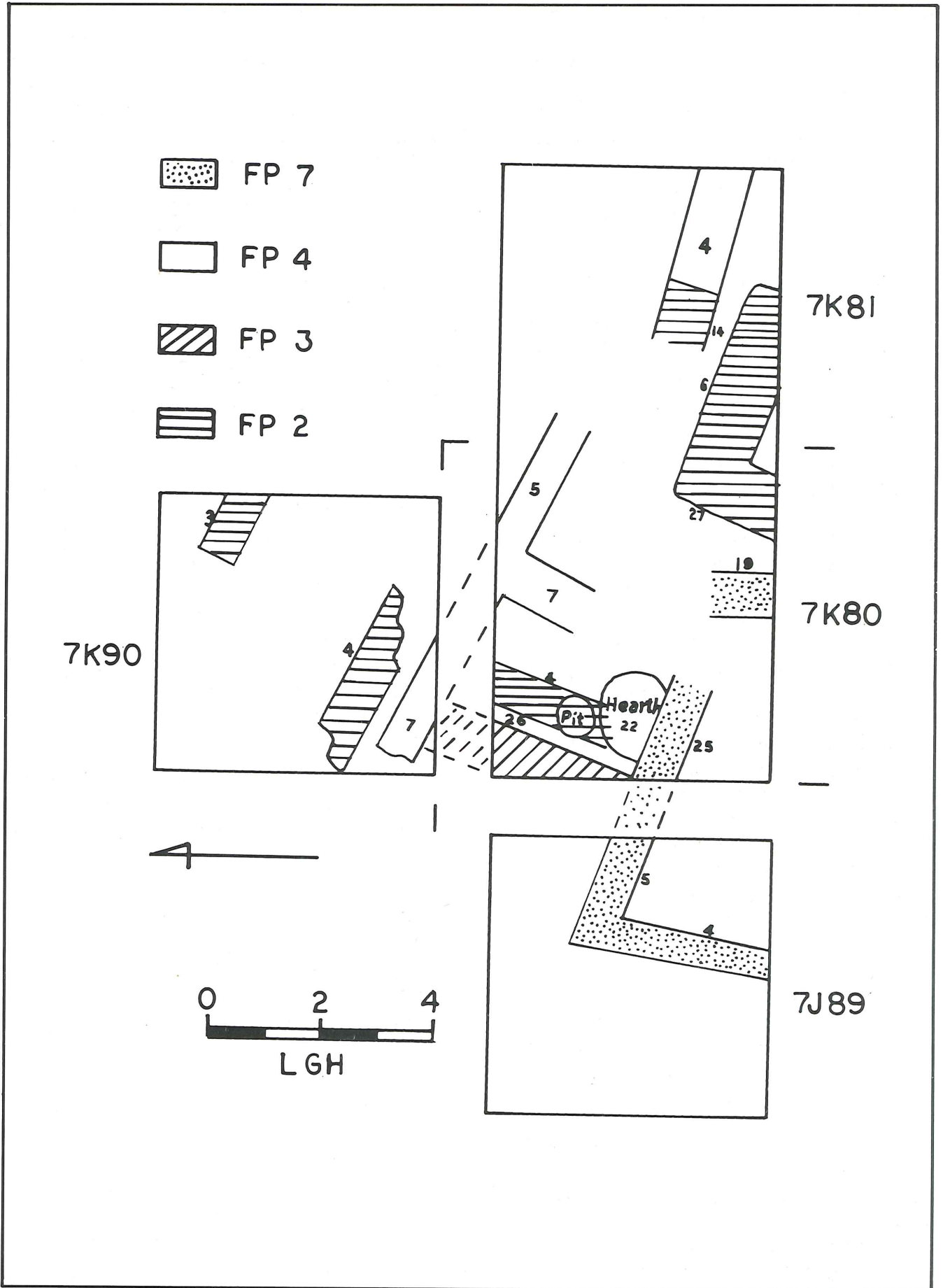


Fig. 5. Field B: Plan of FPs 7, 4, 3, and 2.

storejars and a juglet, were found in 1984. This season more of the room was discovered to the east. The room was 2.5 m wide and at least 3.65 m long (the eastern end had been destroyed by a massive pit of FP 2). The room showed signs of severe destruction with deep layers of ash and the presence of several ballistic missiles. Pottery from the storeroom dated to the early Iron II period.

Field Phases 6 and 5 (FPs 3 and 2 in 1984) Late Iron II repairs to the rampart made up the next two phases. The FP 9 revetment wall at the bottom of the rampart continued to retain the repair layers.

Field Phases 4,3 and 2 (FP 1 in 1984) (Fig. 5) At the top of the slope, inside the fortification system a series of fragmentary walls belonging most likely to domestic complexes were uncovered. A hearth from FP 3 emphasized the domestic nature of the finds. Several of the walls were reused from one phase to another. In 1984 the continuation of several of these walls was discovered above the remains of FP 5. The stratigraphy was thus clear. All three phases contained early Persian pottery.

The builders had apparently removed all previous occupational remains in the area down to the mudbricks of FP 10, because the earliest walls were founded upon the bricks. Later walls were usually founded directly on surfaces (sometimes cobbled), usually with no foundations. Unfortunately, the walls were too fragmentary to make architectural sense out of them. FPs 4 and 3 should perhaps be equated with Field A FPs 3B and 3A respectively. A portion of the Field A pool (FP 2) extended into Field B (FP 2), making secure connections possible. The foundation trench for the pool was clearly visible in Field B (7K81:19), unlike Field A to the south.

A large pit, dug around the north and west sides of the pool destroyed much of the remains from FPs 4-2, including several walls and parts of three late Iron II/early Persian pithoi. No function for this pit has as yet been determined, though possibly it was part of an attempt to remodel the pool.

Field Phase 1 Above the pool and the large pit of FP 2 was a one-row wall made of unhewn stones. It was not connected with any other walls or surfaces and may have been used as a field wall in later centuries when the site was used for agricultural purposes (Geraty *et al.* 1986: 135). Covered by topsoil, it was impossible to date securely, but no pottery later than early Persian was found nearby.

Field C: The Northern Suburb

Five of the six squares in Field C were completed in 1984 (Geraty *et al.* 1986: 132-133). All debris above the Early Bronze Age levels had been disturbed during the late Iron II period, except in the uncompleted square (8L82). Here, excavation had reached undisturbed Iron I levels. Because both the random surface survey and the excavations of 1984 (Geraty *et al.* 1986: 126-128) produced significant numbers of Middle Bronze Age pottery from this area, it was decided to complete excavation of 8L82 in order to examine this period of occupation, a time when the rest of the region was experiencing a lack of settlements.

Field Phase 9 As in the rest of the squares of Field C, EB III remains were found immediately above bedrock. A layer of ash suggested burning activities associated with the occupation, possibly destruction.

Field Phase 8 (FP 6 in 1984) (Fig. 6) Above the ash layer was a beaten-earth surface (8L82:26=27) which ran up to a small terrace wall to the south (Wall 8L82:16). EB III pottery was found on the surface.

Field Phase 7 (FP 5 in 1984) (Fig. 6) To the east of FP 8 Wall 16 was another very small, shallow terrace wall (17) retaining earth (Layers 18 and 19) with EB IV pottery. No surfaces or earth layers appeared to the north of the wall.

Field Phase 6 (Fig. 6) Two phases of fragmentary Middle Bronze Age walls and surfaces were found. Above the FP 8

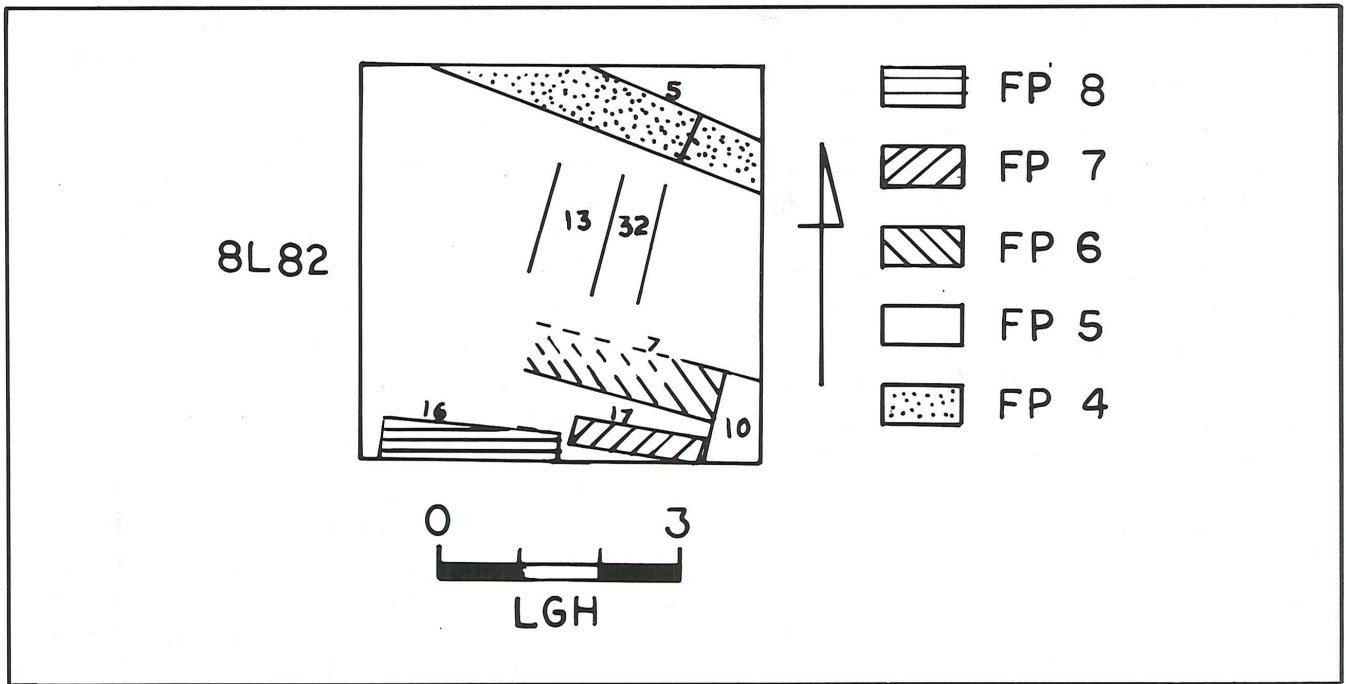


Fig. 6. Field C: Plan of FPs 8, 7, 6, 5, and 4.

surface fragmentary Wall 7 was constructed and was in use with beaten-earth Surface 24=25 to the north. A partial repair of this surface included a small patch of cobble surface (29). Wall 7 seems to have been another terrace wall, holding back EB debris further up the slope to the south. Because the terrace wall was flimsy, it probably did not step up significantly. Little remained that could be used to interpret the function of the terrace wall and its surface, but perhaps they formed a terraced courtyard or street. A small sherd of punctured Tell el-Yahudiyeh ware with white-colored punctures was discovered here.

Field Phase 5 (Fig. 6) In the second MB phase, three walls (10, 13, and 32), of which only fragments were preserved, were built on top of the FP 6 surface. Domestic MB II pottery and objects were found in and on two superimposed surfaces (20 and 21) associated with these walls, including a complete bronze needle; an obsidian fragment suggested trade with Anatolia.

Field Phase 4 (Fig. 6) The walls and surfaces on the MB terrace (and the earlier phases as well) were truncated in the north by an apparent terrace wall built in two parts to a height of at least eight courses

(the bottom has not yet been found, because the wall sloped to the north, disappearing into the balk). The first section, in the west, contained pottery from the end of the Late Bronze Age, while the second, in the east, produced early Iron I sherds. The foundation levels for both parts have not been found. North of the wall a deep layer of ash was encountered. No other remains were found, suggesting that the northern slope was now extramural. It would thus appear from these remains that there was little difference between the LB and Iron I extra-urban utilization of the northern slope.

Field Phases 3-1 No further remains beyond those found in 1984 were discovered from these phases (Geraty *et al.* 1986: 133).

Field D: The Lower Southern Shelf

The 1984 excavations on the lower southern shelf (Geraty *et al.* 1986: 134-135) uncovered two fragmentary phases from the EB IV period. The Field was expanded this season to intercept potentially better preserved EB IV remains beneath what appeared to be deeper debris to the north. Instead, five phases of an EB III domestic complex were found north of a terrace wall

partially uncovered, but unidentified, in 1984 (Geraty *et al.* 1986: 134, Fig. 11).

The EB III domestic complex (Fig. 7 and Pl. XIX, 2) was built on a bedrock terrace that seems to have been carved back in places (note the circular installation). All four phases of the complex reused the major walls, constructing and dismantling other minor walls as house plans changed. Bedrock was reached only in two places, but in each case the walls of the complex were seen to be founded upon bedrock. The most noteworthy feature of the Field was its series of thin (*ca.* 0.05-0.15 m thick) surfaces superimposed upon each other with virtually no interruptions or destructions (in Room 3 these totalled eleven throughout the four phases). The surfaces were not compact, suggesting that they had been laid rapidly during intensive use. Although they were difficult to discern in vertical section, broken ceramic vessels and other objects were frequently found lying on them.

Field Phase 9 (Fig. 7) The major walls of the complex occurred already in the earliest phase: 6K06:18, 13, 8, 24, 5K96:5, 11 and 24. Not all bonded together, however. Rooms 1 and 4 were long rooms with entrances in the east (the threshold to Room 1 was located where it was joined by Room 4). It was difficult to understand the structure of the remaining rooms, because doors were not located or walls were incomplete. No benches were found in the rooms. In Room 2 a small bin was built into the eastern wall where it joined the northern wall. Pottery and other finds from the surfaces of FP 9 were overwhelmingly domestic, including food processing tools (mortars and grinders); jars, bowls, cups and lamps; and flint flakes.

Field Phase 8 (Fig. 7) In this phase minor Walls 5K96:16 and 30 may have partially enclosed Room 3, but Surface 23 could be traced around the eastern end of Wall 16 and on to the southwest. Wall 5K96:24 went out of use, suggesting that Room 2 was now open. Other small walls to the east (5K97:27 and 36) may have been related to the complex. The northern part of the complex remained unchanged.

Again, typically domestic finds were in and on the surfaces. The pottery was EB III (Fig. 8 a, b).

Field Phase 7 (Fig. 7) In this phase the southern portion of the complex again changed. Walls 5K96:30 and 5K97:36 went out of use in the south, while Wall Lines 6K07:32 and 35 may reflect changes in the north, though they were too fragmentary to assess clearly. Plaster with reed impressions from roof and/or wall coating was found in a yellow matrix that was probably earth roof topping (similar finds were made in 1984: Geraty *et al.* 1986: 134). The many finds associated with the FP 7 surfaces again reflected common domestic activities, such as food preparation (mortars, grinders, bones from meat animals and cooking pots), food storage (many large pithoi with flaring, thickened rims and rope molding at the base of the neck - one jar contained *ca.* 4000 chick peas), textile tools (spindle whorls), and tool making (thousands of flint flakes and a few tools).

Field Phase 6B (Fig. 7) In FP 6B only a small portion of Wall 5K96:16 was left above the surface, but a small north-south wall line (Wall 13) was constructed near it to the east. Farther east two mortars or sockets were embedded in a thin (0.05 m) plaster surface near the smashed remains of an EB III necked pithos. In the northeast a large area, made larger by the disuse of Wall 6K06:24, included a mortar-like object made of plaster (6K07:18) in line with two possible stone pillar bases (6K07:31 and 32). A new wall (6K06:30) was constructed along the vertical bedrock face to the north. Although it was difficult to clarify the structural relationship of these remains (an open-air interpretation may perhaps be best defended), the small finds again supported a domestic interpretation for the complex.

Field Phase 6A (Fig. 7) With FP 6A activity in the complex seems to have shifted to the west, for very few structural remains could be located east of Rooms 1 and 2. Fragmentary Walls 5K96:9, 12, and 5K97:10 may indicate small out-buildings or storage features. A large hearth area

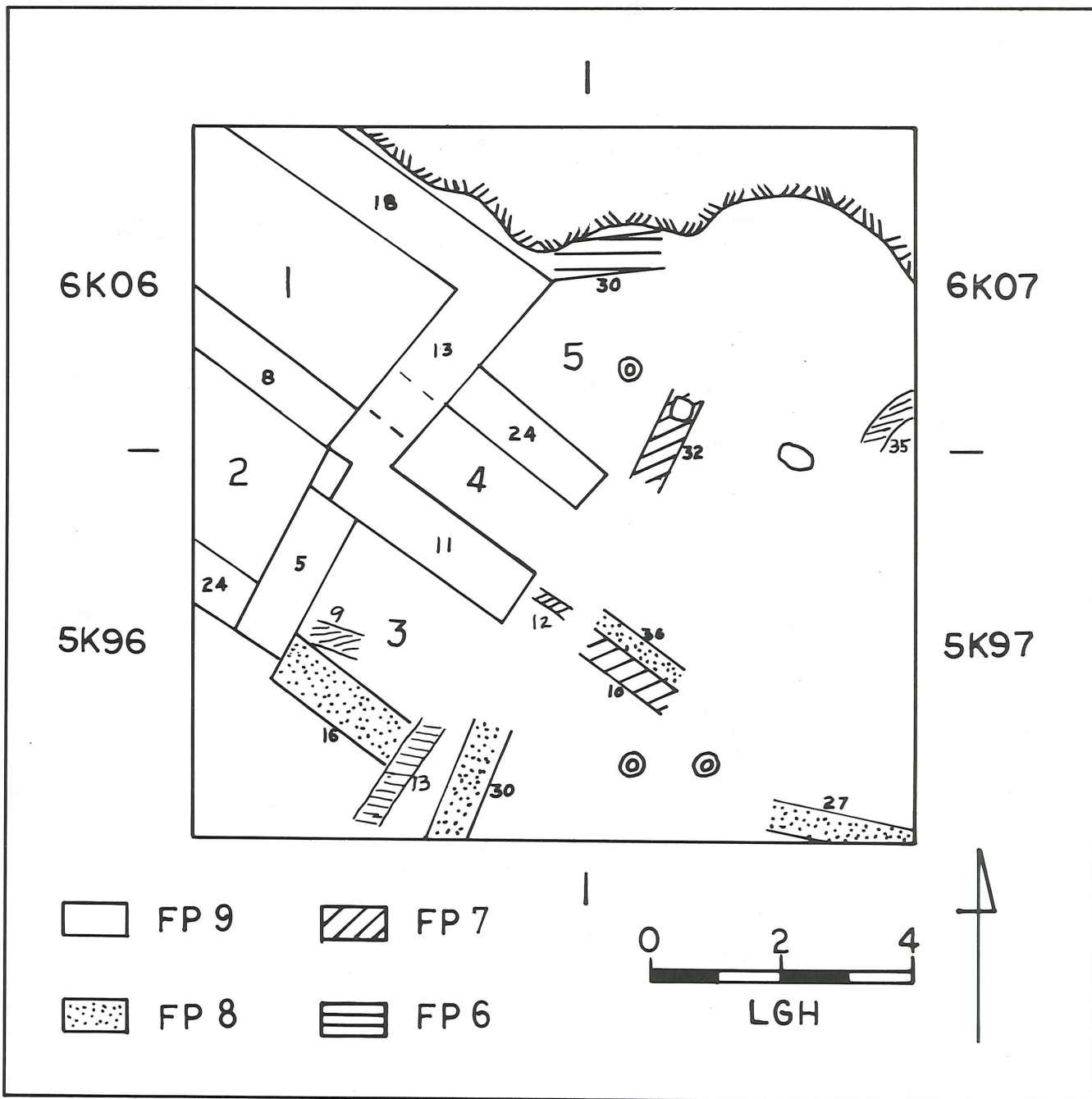


Fig. 7. Field D: Plan of FPs 9, 8, 7, and 6.

(5K96:4) and an oven (5K97:9) were found in this area, as was a large deposit of dump debris containing almost 500 pieces of flint debitage. Other finds on the surfaces again reflected domestic activities.

Field Phases 3-1 After FP 6A the area was abandoned and never reinhabited. Immediately overlying the EB III remains of FP 6A were deposits of eroded material containing predominantly worn late Iron II pottery (FP 3). A large rock tumble, also containing late Iron II pottery, covered this erosional deposit (FP 2). Later, a pathway

of pebbles and thousands of small (*ca.* 0.03 m maximum diameter) sherds crossed the rock tumble and seems to have occurred along with the buildup of topsoil (FP 1).

In its early phases the domestic complex of Field D reflected an economic and social order that was organized and reasonably prosperous. In the later phases the architecture became more flimsy, suggesting the beginnings of a downward trend. A comparison of the remains described above with those of the EB IV phases discovered in 1984 (Geraty *et al.* 1986: 134-135) shows

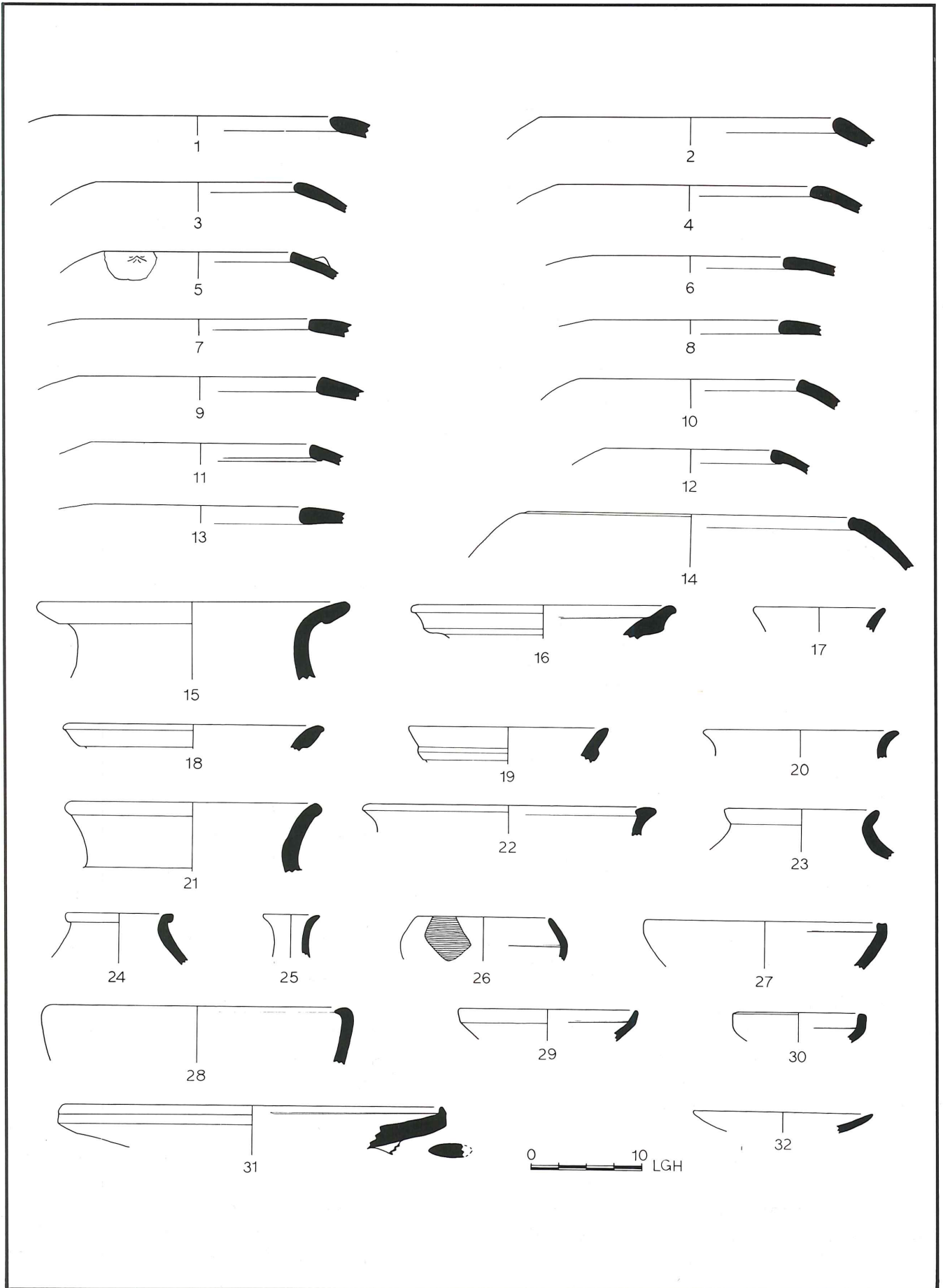


Fig. 8a. Selected EB III pottery sherds from the Field D, FP 8 surfaces.

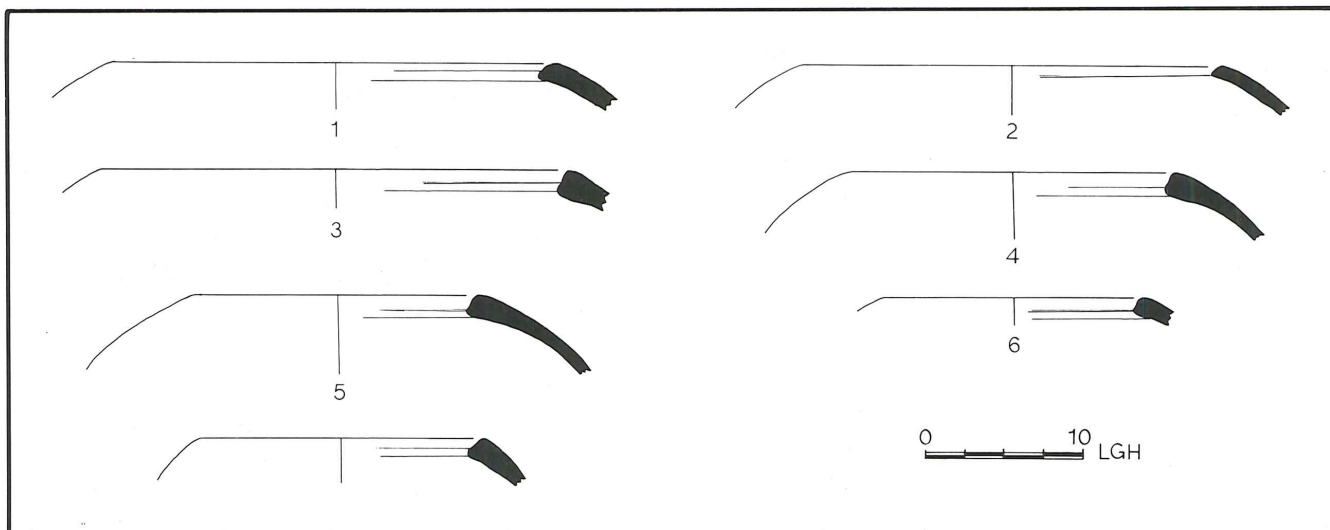


Fig. 8b. Selected EB III pottery sherds from the Field D, FP 8 surfaces.

that prosperity further declined in the following period. The EB IV houses were much smaller with poorly constructed walls, while the individual housing units were farther removed from each other, reflecting a reduced population density.

Field E: The Water System

Ever since Tell el-'Umeiri was rediscovered in 1976 (Ibach 1987: 31; for a discussion of the early explorers see Merling forthcoming) it has been assumed that the reason it was occupied, and indeed remained settled throughout the years when the region was largely uninhabited (MB and LB), was the presence of the only year-round source of water between Amman and Madaba. The tell itself is not the highest and most easily fortified hill in the region; its views to the north, west, and south are limited by higher hills immediately adjacent. The availability of water thus seems to have overcome strategic weaknesses in the choice of the site. Even after the site was abandoned, other settlements arose nearby which could still utilize the water source (Geraty *et al.* 1986: 118-119).

The present water installation is located at the foot of the northern slope of the site (Fig. 1), immediately outside the convergence of the V-shaped walls of the northern suburb (Geraty *et al.* 1986: Fig. 10). It is presently dry. Raouf Abujabar,

whose family has owned the land on which the water source is located since late Ottoman times, reported that it had produced water until the 1930s. When it became dry his family capped the installation with reinforced concrete.

At present a hole has been opened in the capping by vandals, which serendipitously allowed us to study the interior of the structure to a depth of ca. 5 m. Ashlar blocks made up the four walls of a large shaft ca. 2.5 x 3.5 m in size. The bottom was filled with rubble and recent garbage. Two architectural phases could be discerned in the ashlar, with the top two courses showing much less desiccation due to the ravages of time than the lower courses. The top course of the lower phase included the springstones of an arch. At the bottom an arched channel or tunnel led to the west but ended after ca. 1 m.

It was decided not to excavate the interior of this structure, because fill debris inside a water installation seldom provides evidence either for construction date or associated use patterns. Instead, two squares were opened on the western side of the installation in order to examine: A) foundational features of the present structure; B) any previous structures that may have been preserved; and C) the question whether the source was a spring or a well. Early explorers spoke of it as a spring (Merling forthcoming), but the present shaft-like structure appears more like a

well in which ground water was collected.

Although no architectural remains have so far come from the EBA, several earth layers produced significant amounts of pottery from that period, confirming that the water source most likely played a role in the earliest occupation of the site. The vessels were almost always short-necked jars with a slightly flaring rim, probably used as water jars.

Field Phase 5 (Fig. 9 and Pl. XX, 1) In Square 2, two parallel walls made of unhewn boulders (E2:9 and 11) ran east-west and apparently stopped. From there a plaster surface (E2:23) continued farther east for a few centimeters before being cut by a large foundation pit of FP 3. Between the two walls was a layer of debris (E2:22) clearly removed from the water source during a cleaning operation; hundreds of sherds from jugs and water jars were found, to the virtual exclusion of all other types. Other dumps with similar remains (totalling 1026 diagnostic sherds) were found north of the walls (E2:5, 8, 17B, and 18). Interestingly, very few so-called decanters were found in these dumps. Much more frequent were the necked jars and jugs with ribbing on the neck, typical to central plateau sites in Jordan (Lugenbeal and Sauer 1972: nos. 428 and 433). Unfortunately, the remains do not yet give us a clear picture of how the water system was used during this phase, dating to the late Iron II/early Persian period.

Field Phase 4 (Pl. XX, 1) A semicircular wall line replaced the remains of FP 5 (Walls E1:6=E2:7, and possibly E2:13). Inside the wall another very hard plaster floor (E2:16=E1:13) was found, again in only small fragments due to the cutting of the FP 3 foundation pit. Debris layers originating from the periodic cleaning of the system were again found to contain almost exclusively high-collared water jugs and jars from the early Roman period.

Field Phase 3 A deep, wide pit was excavated into the earlier remains (Pl. XX,1) which, at present, is being interpreted as a foundation for the lower ashlar courses of the water system structure presently visible. The reason the pit was dug

so far west was that the builders needed to create room for the western tunnel mentioned above. The north and south limits of the pit lined up approximately with the north and south edges of the structure. No superstructure features have been identified with this phase. The pottery from the fill contained a few sherds tentatively dated to the late Roman period.

Field Phase 2 Several layers of soil containing a mixed assortment of worn pottery from many periods were found above and to the north of this pit (E2:6 and 14). It is likely that the pottery was worn during agricultural activities in the fields around the source and was deposited in the proximity of the water source between late Roman and modern times. It is tempting to suggest that the source was dry and unused in those periods, while the primary population center of the region moved from Tell el-'Umeiri (East) to survey Site 57 ca. 3 km southwest where a large Byzantine and Islamic site was discovered by our survey team.

Field Phase 1 Into these layers a wide foundation trench was dug to lay the upper courses of the present structure in preparation for the capping that occurred in the 1930s. Modern items such as tin cans and china ware were found in the trench.

Field F: The Eastern Shelf

During the 1984 random surface survey the eastern shelf produced the most balanced series of ceramic readings anywhere on the site; that is, pottery quantities from all major periods of settlement at the site were represented in more-or-less equal percentages (Geraty *et al.* 1986: 126-128; Herr forthcoming b). There were also surface indications that the southern city wall, running along the edge of the acropolis, ended here in a tower (Fig. 1). North of the "tower" was a depression running up the slope from the east and flanked by another possible tower (a stone pile) on the north, suggesting the existence of a gateway to the acropolis. It has been hypothesized that the King's Highway ran just to the east of the site, roughly where

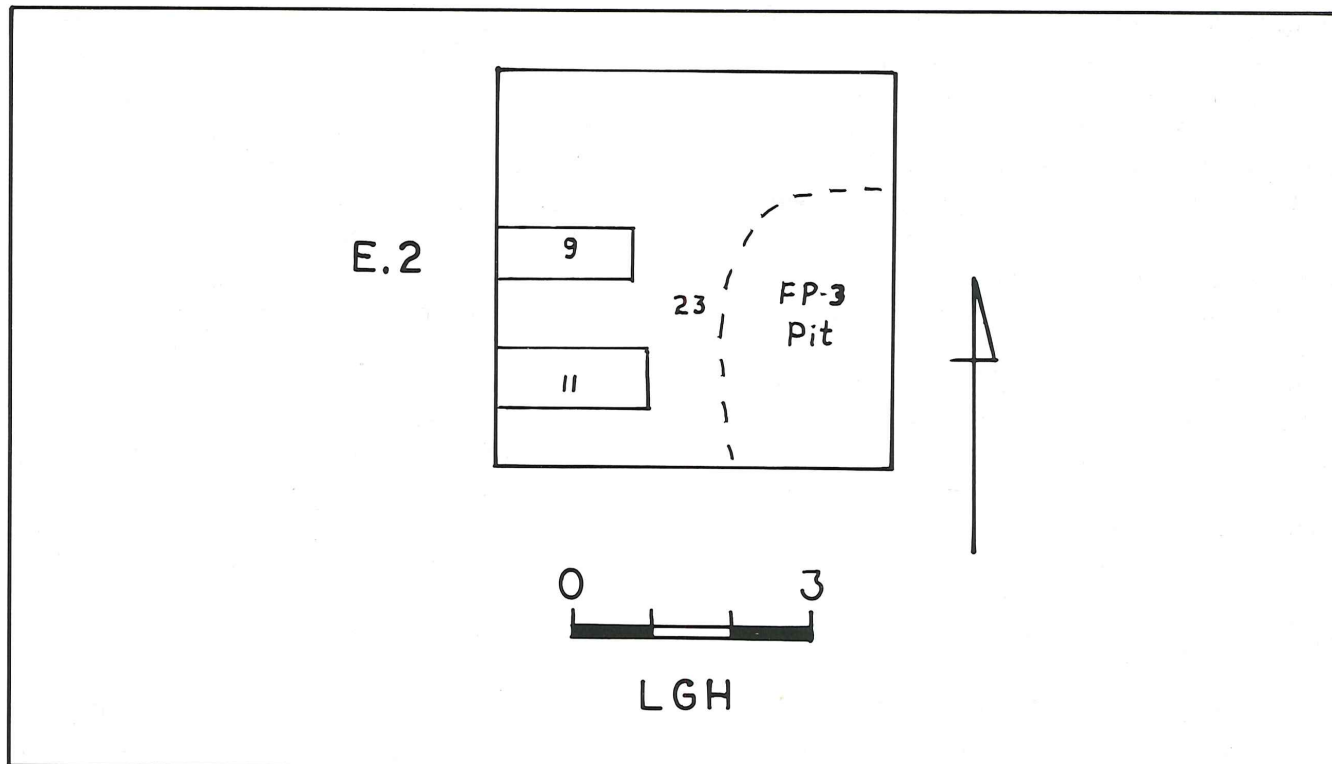


Fig. 9. Field E: Plan of FP 5.

the modern Queen Alia International Airport Highway runs today (Redford 1982). If so, the most likely location for the gate to the city would be on the eastern side. Four squares were initially laid out to intersect the eastern side of the northern "tower" of the proposed gateway and to examine the eastern shelf as it approached the structure (Fig. 1). A fifth square was later added to the south in the topographic depression.

Field Phase 7 This phase was found only in small areas of probes. A small part of a wall made of yellow and red mudbricks (7L09:31) appeared just before excavation ceased for the season. Running up to it was a beaten-earth surface (7L09:32). Immediately above the surface a layer of loess contained Iron I pottery. A probe in the square to the south located an identical surface at the same level (6L99:22) which also contained Iron I pottery. Directly above these deposits was a thin (1-2 cm) powdery ash layer (7L09:29=6L99:21=29=7L08:40A). It would appear that the ash constituted the destruction of the Iron I settlement in this area of the site.

Field Phase 6 The information for this phase was again isolated in probes. Direct-

ly above the destruction layer a boulder-and-chink wall (6L99:25) was founded, but only a small portion of the northeastern face has been so far revealed. Although no surface was seen to run up to the wall, a beaten-earth surface containing early Iron II pottery was found a short distance north of the wall (7L09:24=6L99:20). An ostracum with very weak traces of writing was discovered here. Subsequent surfaces, again found in limited areas of probes, included one from early Iron II (6L99:19=7L09:22=27) and another from late Iron II (6L99:18=?7L08:25=39=40) with no sign of architectural or functional change. Domestic activities were indicated for the next surface (7L09:22=27) by basalt mortar and grinder fragments and sherds of cooking pots. Also included were a fragment of a ceramic animal figurine and a ceramic bead. Another, subsequent surface yielded similar indications of domestic activities, complete with a hearth. An ash layer blanketed this surface, probably from a destructive fire. The latter surface, probably running into the next square to the west, 7L08, contained the *šm'z* seal in its makeup (below). Although this phase began in the 9th or 8th

century B.C., the late 6th century date of the script on the seal would suggest a date of around 600 B.C. for later stages.

Field Phase 5 (Fig. 10) A shallow foundation trench was dug into the FP 5 surfaces and a major north-south wall (7L09:3=6L99:11=15) was constructed, primarily of semi-hewn large boulders with chinkstones. It was two rows wide and four courses remained in the north, where the wall seems to have been truncated by stone robbing. It has been suggested that an eastward extension took off from this point (earlier, higher surfaces to the north and west preclude any extension in those directions). Two other eastward extensions were found farther south (6L99:8 and 9), both ending in squared-off, finished stubs, while a third may have existed even farther south (6L89:5). North of Wall 8 was a standing stone, almost a meter high (6L99:30, Pl. XX,2). Surface 6L99:14 ran up to both the wall and the monolith. Next to the monolith on the south side a jar had been placed into a stone-lined pit (6L99:23), dug through the surface. On the north was a boulder with a hole carved through one end, possibly used as a tethering stone. The pottery in the surface and a subsequent resurfacing (7L09:10=6L99:6=12) was late Iron II. Small sherds of flat-lying pottery and a very hard, compact surface indicated extensive human occupation. The presence of several ballistic missiles and a javelin point suggested military activities in the area. Wall 6L98:44 may also have belonged to this phase, but stratigraphic relationships were lacking. Sealing against the wall was ashy Surface 6L98:39, which contained late Iron II pottery. The remains of FP 5 must postdate the šm'z seal from FP 6, but predate the emergence of early Persian pottery in FP 3. A date in the first half of the 6th century thus seems likely.

Field Phase 4 After the bastion went out of use, erosional debris was deposited north of Wall 7L09:3. Founded upon this debris a northward extension was added to the wall (7L09:12). Surface 7L09:5=6L99:6 ran up to the modified wall on the east, but was marked by an erosion-

al discontinuity a short distance farther east, where the surface has broken off and moved downslope. West of the wall was Surface 7L09:8. Both surfaces contained domestic artifacts, including spindle whorls and grinding stones. Remains of this phase to the west have been destroyed by subsequent pitting activities. The pottery from the surfaces was late Iron II.

Field Phase 3 (Fig. 11) This phase was characterized by the presence of extra-urban terrace walls. Constructed first was Wall 6L98:14=19. Downslope from the wall was a very large midden, full of potsherds, bones (primarily sheep/goat, but also some cattle and pig), and organic debris (6L98:32), used possibly as a dump or landfill. Other, smaller pits were also found in the area, one of which (6L98:23=24) contained a small smelting cup, suggesting local metallurgical activities. West of the wall was Exposure Surface 6L98:20. The midden, the pits, and the surface contained pottery from the early Persian period. Later, another small terrace wall was built (6L98:6=?16,) and many pits were dug. None of the pits were found in 6L99.

Field Phase 2 (Fig. 11) In 6L98, a large semi-circular wall (6L98:4=6L99:3=7L09:3) bisected wall 14 = 19 of FP 3 and was founded atop the midden, also of FP 3. It seemed to reuse FP 5-4 Wall 7L09:3/12. It retained debris and a surface to the west which included large amounts of Byzantine pottery. Above the surface Wall 7L08:5=8 was constructed. Associated earth layers contained Byzantine pottery and a large mortar, suggesting domestic activities nearby. A distinctive type of vat with incurved rim dominated the ceramic repertoire; this may have been used to collect and store the produce of the farm for processing. There is thus good evidence for a Byzantine farmstead at the eastern edge of the acropolis.

Field Phase 1 This phase contained primarily colluvial deposition by erosion upslope. Within this material three burials were found. The best preserved was a fully articulated skeleton of a young adult male, exhibiting no observable pathology. He

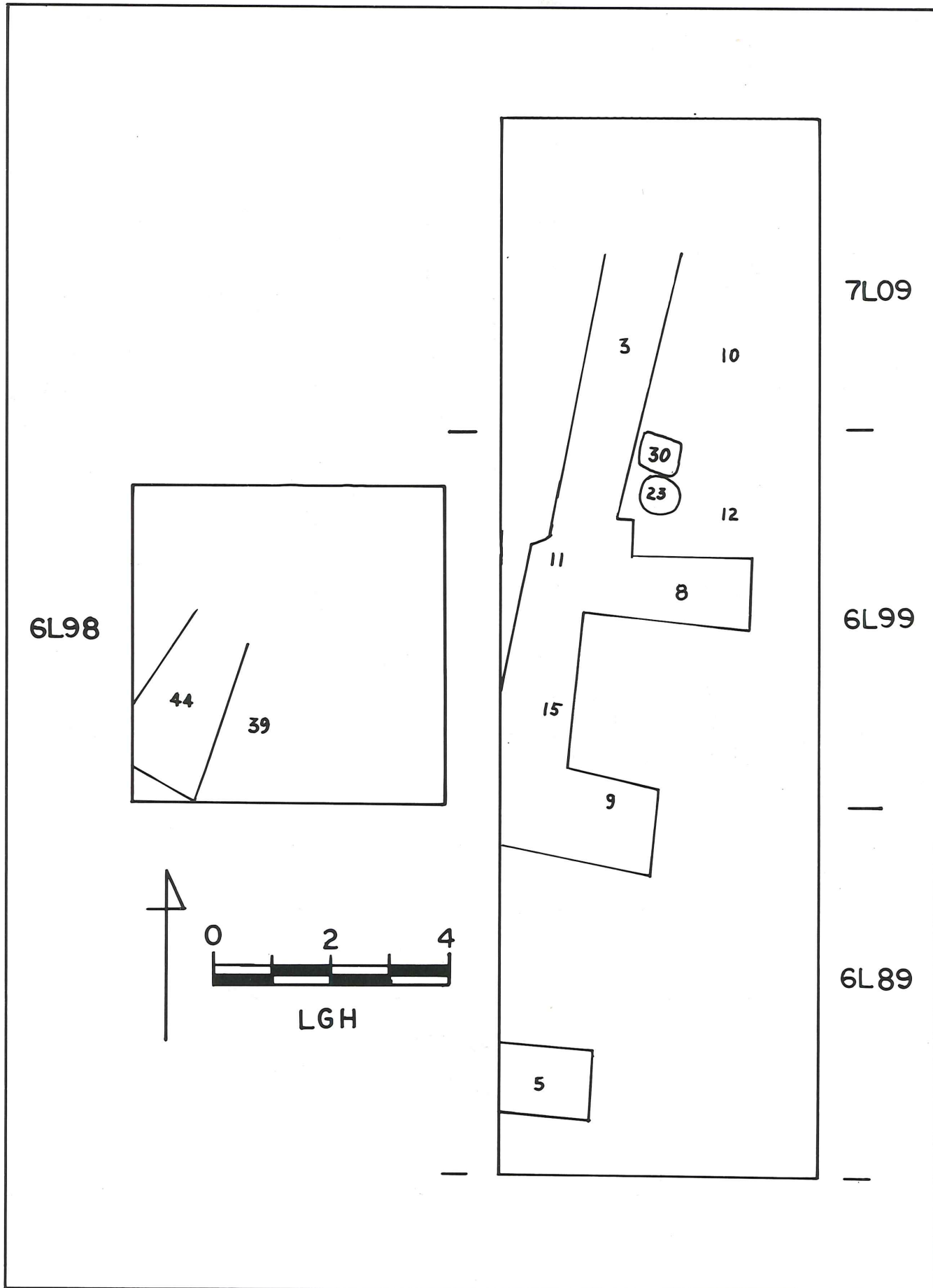


Fig. 10. Field F: Plan of the possible gate bastion in FP 5.

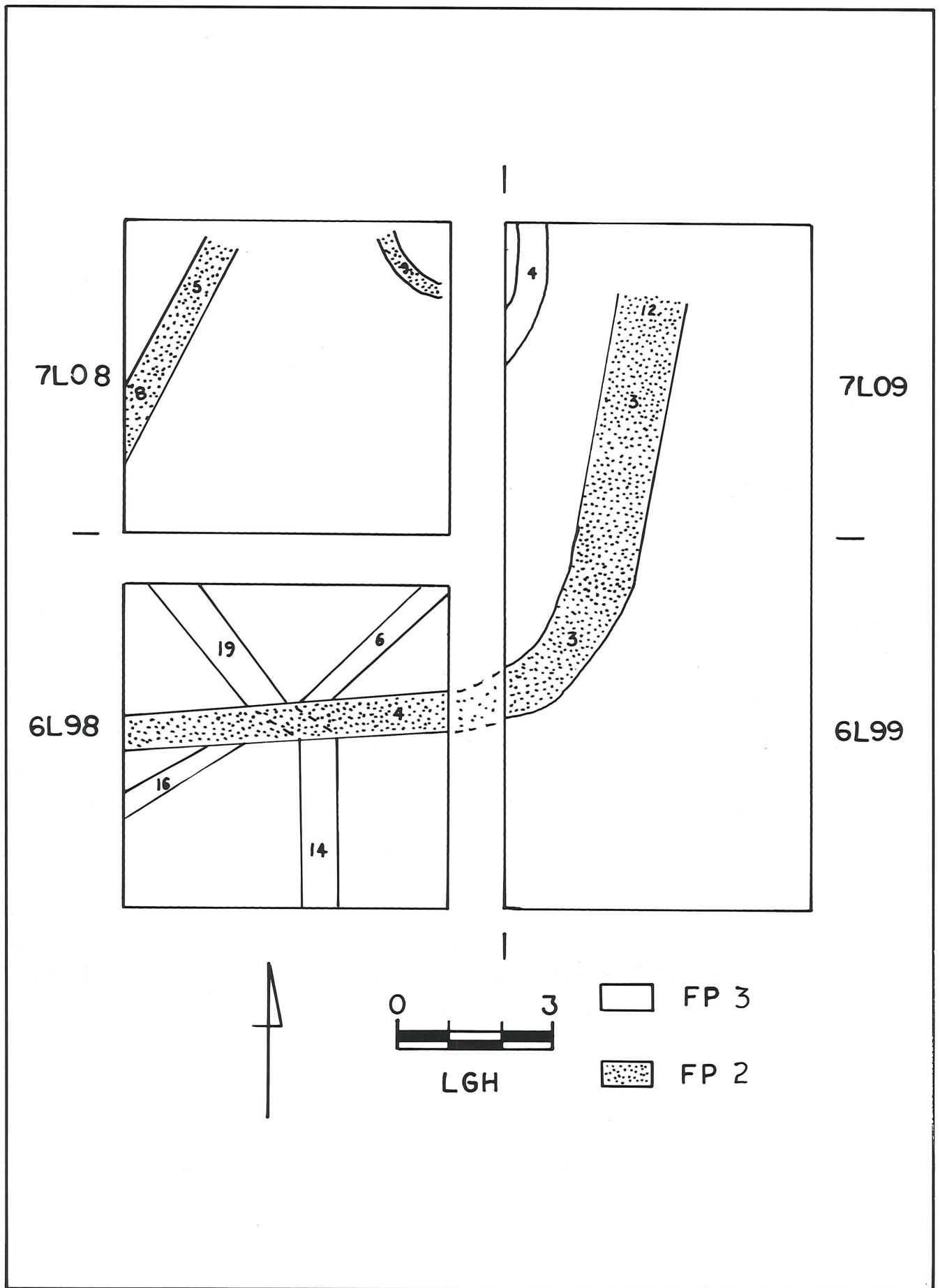


Fig. 11. Field F: Plan of the terrace walls in FPs 3 and 2.

was buried fully extended with the head facing south in a stone-lined cyst. The apparent cause of death was injury resulting from an iron spear point found *in situ* in the pelvic cavity (Pl. XXI, 1). Two infant burials, one more articulated than the other, were found nearby. One was aged less than 18 months, while the other was between 18 months and 4 years.

Seal of Shem'az

Although two small ostraca with fragmentary signs of script were discovered this season, the most important epigraphic find was a small scaraboid seal made of red limestone found *in situ* in Field F (Pl. XXI, 2). Both the low quality of the red limestone and the inscribed materials on the seal suggest that it did not belong to a wealthy person. The first four letters of the inscription appeared on the top line with the last letter on the second; the remainder of the second line was empty. There was no iconography. The Ammonite script was typical of the late 7th century B.C. and read *lšm'z* "belonging to Shem'az". Especially distinctive was the *zayin*, carved in the shape of a squat Z, typical of late Ammonite forms. But most diagnostic chronologically for this period was the slightly open 'ayin.

Thutmose III Scarab-seal Impression

Another significant find from this season included a scarab-seal impression on a jar handle (Pl. XXI, 3). As described by Donald Redford of the University of Toronto, the impression is dominated by an upright cartouche containing the prenomen of Thutmose III, *Mn-hpr-r'*. The cartouche is flanked on the left by *ntr nfr nb t³ (wy)*, "the Good God, the Lord of the Two Lands", and on the right by a winged uraeus.

It is known that scarabs of Thutmose III continued to be made long after his reign. The format of the 'Umeiri impression with a winged uraeus taking the place of epithets known to be used on earlier Thutmose III seals suggests that the

'Umeiri seal-impression dates to the time of Ramses IV (see Matouk 1971; Jaeger 1982: 133f, 1060).

THE REGIONAL SURVEY

Permanent Site Survey

As in 1984, the work of the regional survey staff was limited to investigation of the region within 5 km radius of Tell el-'Umeiri. Among the accomplishments of the 1984 season were the following: delineation of the salient features of the climate, plant life, and present-day landuse and settlement conditions within the project area; investigation of plant successional patterns to determine the nature of the natural floristic climax community in antiquity; mapping and description of 55 archaeological sites, including 32 agricultural sites, 15 road sites, 17 funerary sites and one major prehistoric site; and mapping and description of 38 "random squares" (*cf.* Geraty *et al.* 1986).

The agenda for the 1987 season was a direct outgrowth of the research completed during the 1984 season. Four teams were organised as follows: a landuse survey team continued investigation of ancient landuse and water management practices; a seasonal site survey concentrated efforts on locating and studying archaeological traces of semi-nomadic residents of the project area in the recent past; a permanent settlement survey continued to investigate and classify the various types of agricultural sites and installations located in this region; and a hinterland excavation team began stratigraphic investigation at Rujm Saleem, one of the agricultural sites found in 1984.

As we have presented elsewhere (Geraty *et al.* 1986) an analytical overview of the principal findings of each of these four teams, we present below a brief descriptive summary of each of the sites which form the foundation for our study of cycles of food system intensification and abatement in this region (Fig. 12). A more in-depth report on each of these sites is forthcoming.

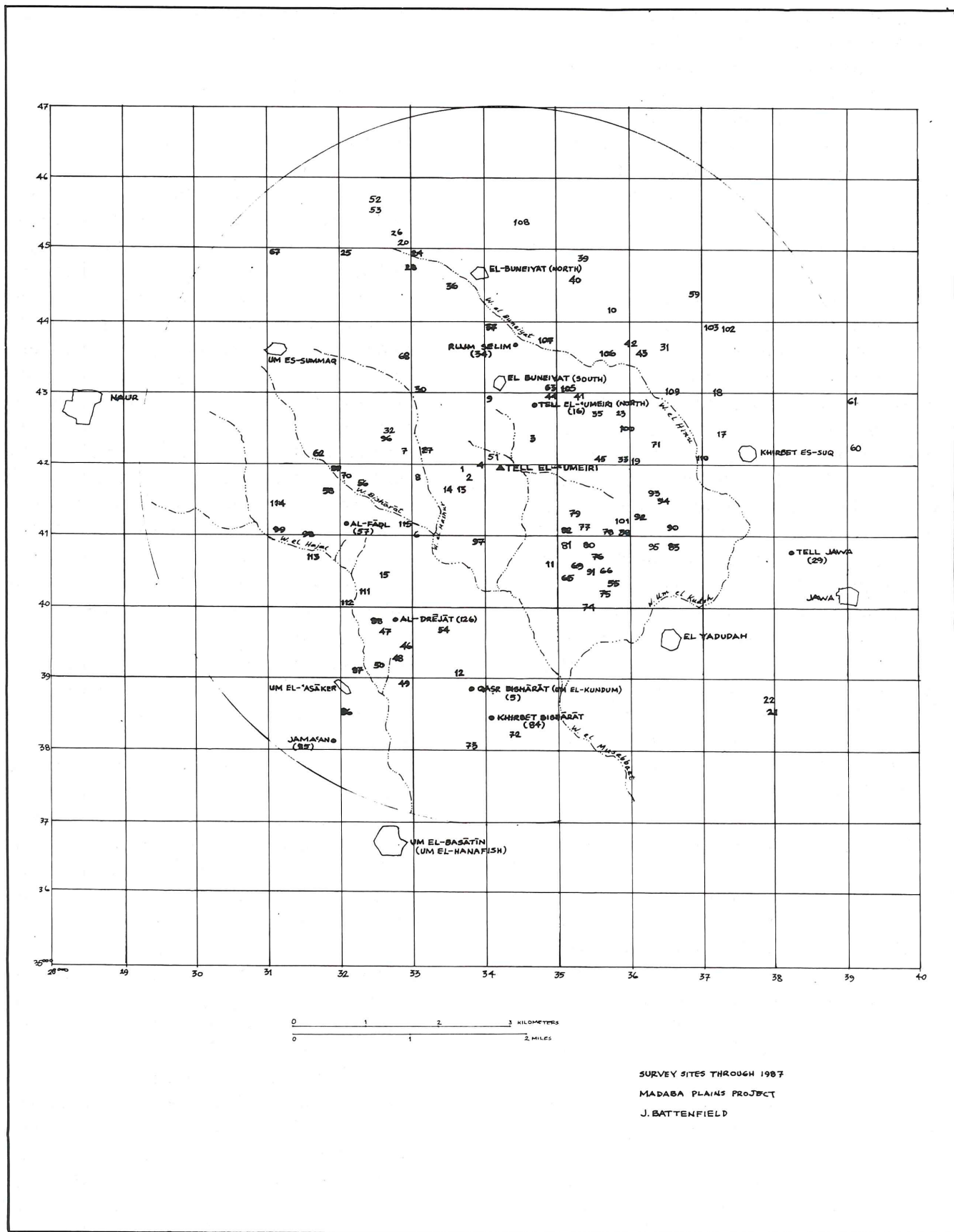


Fig. 12. Map of the regional survey with numbered sites.

Site 56. Wadi el-Bishara 141.7;232.2.

The site actually was composed of a number of features scattered on the northern slope of Wadi el-Bishara (Wadi el-Bishara is parallel to and north of Wadi el-Hajal). These features included two kilns, terraces, a rectilinear structure of uncertain purpose, bedrock cupholes, and ca. six stone piles. Several agricultural embankments and dams were noted on the floor of the wadi. A collapsed dolmen was also noted on the northern slope to the west of the two kilns.

Examined on June 19, 1987.

Pottery: Byz.

Site 57. (Hesban Site 142) 141.2;232.1.

This site, located on a high hill (elev. 928 m), overlooks Wadi el-Bishara to the north and the broad Wadi el-Hajal to the south. The site is actually a large tell with major walls running around the tell's perimeter. There are some straight stretches of wall extending to over 100 m in length. Even though the site appears to have been abandoned sometime during the Byzantine or Umayyad periods, resettled in the Ayyubid/Mamluk period, and again abandoned, numerous features indicate that there has been occasional occupation of the tell in recent times. These features include a kiln on the southern spur as well as two large herding stations on the northwest shoulder. The latter consisted of well constructed rectangular pens of field stones and included well maintained cave systems. Other features that were noted include winepresses, a pavement, and various architectural elements.

Examined on June 26 and July 17, 1987.

Pottery: Byz; Ay/Mam dom.

Site 58. 141.6;231.9.

Site 58 is situated on the northern bank of a small tributary wadi that feeds into Wadi el-Bishara from a southwest direction. Sites 70 and 89 can be seen across Wadi el-Bishara 200-300 m to the northeast. The major features of Site 58 include terraces, an agricultural embankment, a cistern, and a cave.

Examined on June 26, 1987.

Pottery: None.

Site 59. 144.4;236.9.

Straddling a shallow secondary wadi this site appears to have served as an agricultural site. Fields lie above and below an earthen embankment whose purpose was clearly to aid in water control and to prevent soil erosion. Further downslope is a winepress surrounded by six cupholes. Between the winepress and the embankment is a cave with a soot-blackened ceiling, possibly used seasonally. Near the cave are quarry marks and a recent hearth. Just north of the cave is the only area where a significant number of potsherds was found. Near the crest of the hill, about 150 m northeast of the cave is a 3.7 m square, rock-cut, reservoir(?). A cistern had been cut into the rock beside it. A roadway, running almost due south, passes near this installation and runs until it meets another roadway which passes over the embankment. Additional cisterns and some tombs are located to the west of the major features of this site.

Examined on July 1, 1987.

Pottery: Byz.

Site 60. 142.3;239.1.

Intensive quarrying over the last 15 years has greatly disturbed the major features of this site. Nevertheless, numerous cisterns and caves dot the site, many of them collapsed or cut into from the quarrying. Although the site is relatively flat, there is a slightly elevated area upon which the remains of a rectilinear structure can be seen. On the southeast edge of the site a well preserved winepress was found. Along the northern edge runs the possible line of an ancient road, near which a stone watering trough was located.

Examined on July 3, 1987.

Pottery: 1 Mod bod; Byz dom; LR; ER; few Iron bods.

Site 61. 142.8; 239.1.

The major feature of this site consisted of a well built wall line — possibly a field wall. From 1.0 to 1.5 m thick, it runs

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for several hundred meters, apparently following the contours of the terrain. On the southern side of the wall are a number of cisterns and a stone watering trough. Quarry marks could be seen on the north side.

Examined on July 3, 1987.

Pottery: Prob. Byz bods; ER; few Iron bods.

Site 62. 142.2;231.7.

The major features of this site included gullied earth embankments, terraces, and a herding station (the latter was most likely of recent vintage).

Examined on June 26, 1987.

Pottery: None.

Site 63. 143.0; 234.9.

On the eastern hill's crest are some rectangular shaft tombs. Near the modern road which passes near the site are some cisterns, some still in use, and across the wadi a cut stone has been reused in an embankment.

Examined on July 3, 1987.

Pottery: None.

Site 64. 139.7; 237.9

This site is situated on a slight slope of exposed bedrock. It consists of two wall lines, some quarry marks and a cuphole. The walls are ephemeral but definitely meet in a right angle. The north wall is approximately 7.0 m in length and the western wall about 10.0 m. The area enclosed by the walls is exposed bedrock with a cuphole towards its edge. On the border of the site are quarry marks. The site is presently surrounded by a wheat field. In this field half of a "donut" shaped basalt object was found.

Examined on July 7, 1987.

Pottery: LR; Iron II.

Site 65. 140.4; 235.1

Located in a pine forest, this site is presently used by locals as an unofficial park and campground. Large portions of the site consist of exposed bedrock with much evidence of quarrying. There are also several caves in the area, two of which

have had their openings enlarged and dressed. Cisterns were also found in the area. Near two of them small rectangular recesses have been cut into the bedrock, complete with drain holes. These were apparently used as water troughs at some time.

Examined on July 7, 1987.

Pottery: Mod dom; few Byz; Iron bods.

Site 66. 140.5;235.6.

Located about 200 m northwest of a hill (elev. 888), about 30 m above the wadi floor, the principle feature at this site is a wine press. The wine press, which is about 3.2 x 3.7 m and 0.10 m deep, drains into a large round basin (cuphole?) 0.75 m wide and 0.40 m deep. This round basin, in turn, drains into a large square basin, 1.2 x 1.2 m. Numerous smaller cupholes (some square, others round) and grooves were cut into and next to the wine press. These may have been used to support various apparatuses connected with the operation of the press. About 20 m to the north of the press is the opening to a cave, which could have functioned as wine cellar. The style of the wine press suggests it could have been used in Roman/Byzantine times. Evidence of quarrying could be seen about 2 m to the northeast of the installation. No pottery was found at the site.

Examined on July 13, 1987.

Pottery: None.

Site 67. Na'ur intersection 144.9;231.1.

Located northeast of the intersection of the main road in Na'ur this site is an apsidal pit. There are stones placed around the rim of the depression suggesting that the pit is more than a hole dug in the ground, although its function is not readily apparent.

Examined on July 9, 1987.

Pottery: None.

Site 68. 143.7; 232.9.

A line of stones running along the natural contours of a hill roughly paralleling the new airport highway appear to be the curb stones of a (ancient?) road. The

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stones are visible at this location for about 75 m. There are some possible cobble stones scattered about but none were seen *in situ*.

Examined on July 9, 1987.

Pottery: Byz bods; ER bods.; Iron II bods.

Site 69. 140.6;235.3.

Located downslope, southeast from a hill (elev. 876), across from Site 66 (seen to the east), this site consists of a large rectilinear structure (15 x 30 m) which may have originally been a building but whose foundation stones now serve as a terrace. The south wall, if it ever existed, is totally absent. There is evidence for extensive quarrying on both sides of the wadi to the north, especially on the southern side.

Examined on July 15, 1987.

Pottery: 1 early Persian sherd; late Iron II bods.

Site 70. 141.9; 232.0

The circular installation (about 5 m internal diameter) found at this site was the second of its kind found during the 1987 season (see Site 56 above). Excavation conducted subsequent to the initial survey revealed almost 0.70 m of slag in the bottom of this structure indicating that it served as a kiln. The installation is built of small field stones cemented together. On the west side is a corbeled passageway over 3 m in length.

Examined on June 26, 1987.

Pottery: Byz; Iron bods.

Site 71. 142.3;236.3

This site, which overlooks Wadi el-Hinu, is located 300-400 m downslope from and to the northeast of Sites 19 and 33 (see forthcoming report on the 1984 season). The main feature is small rectilinear structure (2.5 x 3.0 m). Foundation stones for the structure are relatively large (0.80 x 1 x 0.50 m). About 5 m west of the structure begins an embankment which runs downslope for some distance. It could be a buried field wall. A cuphole appears in bedrock a couple of meters from the southeast corner of the structure. The size

and location of this structure suggests that it could have functioned as an agricultural "field tower" or "watch tower". If contemporary, it could have functioned in conjunction with Sites 33 and/or 19. No pottery was found at this site; however Rom-Byz bods and Iron I and II sherds were found just upslope at Site 19.

Examined on July 21, 1987.

Pottery: None.

Site 72. 138.3;234.4.

A water channel (probably modern) is the dominant feature of this site, located just south of the Bisharat family home. From near the crest of the ridge, it runs to the rich agricultural fields below. Nearby are two cisterns, presently used by shepherds to water their flocks. Associated with the lower cistern are two water diversion walls which direct the flow into the cistern. Both cisterns have modern caps on them. About 100 m southeast of the cisterns is the curblin of a road. Further east are several embankments used to control runoff in the small wadi.

Examined on July 9, 1987.

Pottery: Rom bods; Rom/Byz bods; Byz bods; Iron bods; 1 Byz rim.

Site 73. 138.1; 233.8

Located on a hilltop just south of the Bisharat family home, the dominant features of this site are the tombs. At least 40 of them are visible, several of which appear to be EB shaft tombs. Also characteristic of this site are the many cisterns, the majority of which are no longer in use and either filled with debris or collapsed. South of this hilltop are several wall lines — apparently field walls.

Examined on July 9, 1987.

Pottery: Um; late Byz; few Iron bods; EB dom.

Site 74. 140.0;235.5

Located about 1.5 km northwest of el-Yadudeh on the southernmost shelf of a hill (elev. 888), the central feature of this site is a rectilinear structure approximately 5.3 x 4.1 m. Nearby on the south side are two caves/cisterns(?), as well as six bed-

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rock cupholes. A field wall and terraces are located to the west and north respectively. A smaller (3 x 5 m) rectilinear structure (a field tower?) can be seen to the west. Near it is a bedrock wine press. The combination of features indicate that this is an agricultural complex.

Examined on July 14, 1987.

Pottery: Bz dom; Rom; Iron II; EB.

Site 75. 140.3;235.6

This site, located 200-300 m downslope from Site 55 (hill elev. 888) and upslope to the northeast of Site 74, consists of a small rectilinear structure, 4.8 x 3.5 m. The two corner stones on the west each have a cuphole in the center of the top surface (0.05 wide and 0.04 m deep). The edges of the cupholes are sharp, not worn, suggesting they served some purpose other than grinding, perhaps for holding wooden posts(?). If so, the site could have served as a field shelter — either a tent or a lean-to. Field walls can be seen downslope to the west. Upslope and to the north another field wall can be seen.

Examined on July 13, 1987.

Pottery: None.

Site 76. 140.7;235.6

Located on a low, southern projecting, bedrock ridge, this site is another wine press installation. The central feature is a square depression, 4.6 x 4.3 m. Numerous cupholes, and basins have been cut into the bedrock around the central depression, most of them connected by various channels. At least two different periods of use can be surmised from the way the features have been cut.

Examined on July 14, 1987.

Pottery: None.

Site 77. 141.2;235.4

Presently located in the middle of a pine forest, this site appears to be another field tower. The remains consist of the foundation stones of a small, almost square structure (3 x 3.3 m). Terracing is evident on slopes to the northwest and west. Quarry marks can also be seen a short distance to the west and southwest. The

forest floor is heavily covered with pine needles and no pottery was found.

Examined on July 14, 1987.

Pottery: None.

Site 78. 141.1;235.7.

Located on top of a hill (elev. 899), the most obvious feature at this site is a kiln (4.3 m internal diameter). The kiln appears to have been dug into earlier archaeological remains, judging from the unusually large number of sherds (most kilns were devoid of sherds). Other features included a large collapsed cistern/cave(?), and a rectilinear structure (13 x 11 m). Twenty meters to the west of the rectilinear structure is a small square vat and a square cuphole.

Examined on July 14, 1987.

Pottery: Byz bods; Rom/Byz bods; Iron bods.

Site 79. 141.3;235.3.

This site, located just beyond a junction on the right side of a dirt road between two hills (elevs. 888 and 899), is also dominated by a kiln (6.4 m internal diameter). The slopes to the east and south show signs of ancient terraces.

Examined on July 15, 1987.

Pottery: None.

Site 80. 140.9;235.4

Another kiln site is located on the northeast side of the central fork of a triple forked wadi system. The internal diameter is 3.7 m. Some slag was found. Evidence for terracing can be seen across the wadi to the west.

Examined on July 15, 1987.

Pottery: None.

Site 81. 140.9;235.2.

The only feature at this site is a rectilinear depression (4.7 x 5.6 m) cut into bedrock. The average depth is about 0.60 m. Two 1.0 m niches were cut into the south face of the installation and a circular opening (plugged cistern) was cut into the rock between them. Two small steps have been cut into the southeast corner. The original function of the feature is uncer-

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tain; it may have served as a wine press. Most recently it has been reused as a fire pit or hearth.

Examined on July 15, 1987.

Pottery: None.

Site 82. 141.1;235.2.

This kiln (internal diameter 3.0 m) overlooks a cultivated wadi to the south. Pieces of slag were found around the edge of the installation. Evidence for quarrying could be seen across the road to the west.

Examined on July 15, 1987.

Pottery: 2 Byz bods.

Site 83. 140.8;236.4.

Located on the south side of a dirt road on an eastward projecting spur from a hill (elev. 899), this site includes a number of features typical of a small agricultural complex. The central feature consists of the foundation course of a square structure, 4.5 x 4.5 m. Other nearby features include a possible wine press, a large collapsed cistern (whose opening has been since widened), cupholes, and a terrace wall (near fields which are presently under cultivation).

Examined on July 15, 1987.

Pottery: Iron II and Iron bods.

Site 84. 138.4;234.1.

This site, located at the base of an electrical tower southeast of the Bisharat family home, is another good example of an agricultural complex. The central feature is a square structure, about 8 x 8 m. At least three wine presses, two of which are associated with cupholes, are located nearby. Evidence for quarrying and terraces can also be seen.

Examined on July 9, 1987.

Pottery: Prob. Byz bods; prob. EB bods.

Site 85. 138.2;231.9.

Another agricultural complex is located on the crest of the ridge just south of the blacktop road beyond Umm el-Hanafish. The central feature is a square (6 x 6 m) structure which has several courses still surviving. Two wine presses associated

with numerous cupholes were located within a hundred meters of this structure. A cave/cistern(?), and quarry marks are also located nearby.

Examined on July 14, 1987.

Pottery: Few Byz; late Iron II dom.

Site 86. 138.7;232.0.

The sole feature of this site is an earthen embankment, an important agricultural feature being studied by the Landuse Survey Team.

Examined July 14, 1987.

Pottery: 1 Iron bod.

Site 87. 139.3;232.3.

This site is also being studied by the Landuse Survey Team and includes an agricultural embankment. Determining the age of these embankments is quite difficult. It is possible that many were originally constructed an antiquity and continue to be used by the current farmers in the region.

Examined July 14, 1987.

Pottery: None.

Site 88. 139.9;232.4.

This site consists of two round structures. The easternmost is composed of large boulders (0.80 x 0.60 m), two courses wide and, in places, two courses high. It is constructed similarly to the kilns described elsewhere; however no slag was found. Four meters to the northwest is a smaller circular structure, constructed of smaller stones. Its location suggests it may have served as a watchtower.

Examined on July 31, 1987.

Pottery: Iron I; LR; few Byz.

Site 89. No site.

Site 90. 141.2;236.6.

This site, which overlooks a wadi to the south, could possibly be classified as a small agricultural complex. The central architectural remains consist of the foundation of a rectilinear structure (about 3 x 4 m). A large installation, which was cut into the bedrock just to the east, may be a wine press. Other cupholes of various shapes

and sizes have been cut into the bedrock nearby. A large opening in the rock may be a plugged up cistern. Up the slope are some terraces and a field wall.

Examined on July 15, 1987.

Pottery: None.

Site 91. 140.7;235.3.

Located about 300 m northwest of Site 66 is what appears to be another wine press installation. A large cistern has been cut into one side of the installation. Cupholes have also been cut into the rock at various spots.

Examined on July 15, 1987.

Pottery: None.

Site 92. 141.3;236.2.

This site, located at a junction of wadis, served both industrial and agricultural purposes at different times. The central feature is a circular kiln (5.2 m internal diameter). About 30 m to the southwest is a large (5.2 x 4.5 m) square installation cut into bedrock. Several smaller basins and cupholes have also been cut into the rock nearby. There are also a few caves in the vicinity.

Examined on July 21, 1987.

Pottery: Iron bods; Byz/Rom bods; UD bods.

Site 93. 141.5;236.3.

Located about 75 m northwest of an ancient road (Site 94), the central feature of this site is a rectangular hole which has been quarried out of bedrock (0.80 m deep x 3.4 m x 3.8 m). Two hewn stones are lined up on its southern side. Two cupholes, one round and one square, have been cut into the bedrock about 7 m west of the large hole. A line of stones — a field wall? — runs in an east-west direction about 15 m to the north.

Examined on July 21, 1987.

Pottery: Iron bods; Rom/Byz bods; UD bods.

Site 94. 141.4;236.4.

The major feature of this site, located just southwest of a dirt road, is an "inter-field" road which runs between two field

walls for about 85 m. The road is about 2.7 m wide along its entire length. Terraces run off the field walls in a northwest and southeast direction.

Examined on July 21, 1987.

Pottery: 1 Iron bod.

Site 95. 140.9;236.3.

An ancient road stretches for about 75 m along the top of a ridge. It is about 2.3 m wide and is bordered by parallel curb-stones.

Examined on July 21, 1987.

Pottery: None.

Site 96. 142.4;232.6.

Upslope and to the west of Site 7, on a hill (elev. 918), the major feature of this site is a cistern. The original bedrock opening has been blocked off with several large stones and a modern opening constructed a meter or so to the north. A peculiar rectangular basin has been cut into the rock 1.5 m to the northwest of the original cistern opening. A channel leads from this basin into the cistern. A semi-circular retaining wall of small angular field stones has been constructed south of the cistern — to hold back water?

Examined on July 27, 1987.

Pottery: None.

Site 97. 140.9;233.7

This site, located on a slope below the southern extent of the Amman National Park south of Tell el-'Umeiri, consists of a kiln (around which some slag was found), a double cistern (divided internally at one time by a wall), and a small cuphole.

Examined on July 27, 1987.

Pottery: None.

Site 98. 141.0;231.4.

Site 98, another kiln site, is located 0.75 km southwest of Site 57 and overlooks Wadi el-Hajal. Some slag was found around the area of the kiln (4.9 m internal diameter). A corbelled opening, typical of many of these kilns, opened to the west.

Examined on July 29, 1987.

Pottery: 1 Iron bod.

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Site 99. 141.1;231.2.

Another kiln site is located about 200 m slightly northwest of Site 98. Slag was found on the surface around the area of the kiln. Again, this kiln had a corbelled opening on the west.

Examined on July 29, 1987.

Pottery: 1 UD.

Site 100. 142.6;236.0.

Yet another kiln appears as a feature at this site, along with a number of features typical of an agricultural complex. As with Site 78, the kiln, which revealed traces of slag, appears to have been added to the site much later than the other features. The latter included terraces, a field wall, a perimeter wall, quarry marks and cupholes, as well as the foundation course of a rectilinear structure. A cave was also located in the vicinity. Overall the site is comparable to Rujm Saleem (Site 34).

Examined on July 31, 1987.

Pottery: Iron II bods dom.

Site 101. 141.3;235.9.

This site, located on the border of the Random Survey Square 60, also exhibits a cluster of features that identify it as an agricultural complex. One wall line runs for about 100 m across a wadi and up the opposite slope. To the northwest of this wall line is a quarry with ten cut stones still waiting to be removed. A rectilinear structure with large foundation stones, other wall lines, a cistern, caves/tombs, a wine press (with a couple of associated rectangular cupholes) and seven cupholes complete the list of features at this site.

Examined on July 21, 1987.

Pottery: Iron II; Byz.

Site 102. 143.9;237.5.

Located south of the Royal Shooting Club, this site is another agricultural complex. The main architectural feature is a small square structure (3 x 3 m). Other features include terraces, a large wine press with vats and channels, a small wine press, a cistern, two cave/tombs, caves, cupholes, possible field walls and a second rectilinear structure in line with some

possible curb stones.

Examined on July 21, 1987.

Pottery: Mod; Byz; few Iron bods.

Site 103. 143.9;237.2.

This site consists of a few fragmentary agricultural remains — specifically three terrace walls, an isolated cuphole, and some quarry marks.

Examined on July 21, 1987.

Pottery: 1 Mod bod; Byz bods; Iron bods.

Site 104. No site.

Site 105. 143.0;235.3.

Located on the hill southwest of Random Square 55, this site consists of a bedrock wine press with two basins. Quarrying was evident downslope along with the possible entrances to some tombs. Several cupholes were ground into the bedrock not far from the wine press but probably not associated with it.

Examined on July 30, 1987.

Pottery: None.

Site 106. 143.6;235.7.

Located on a hillside overlooking Wadi el-Buneyyat, this site consists of a rectilinear structure and three stone piles which may be collapsed field towers. Three partially eroded terraces can be seen nearby.

Examined on July 30, 1987.

Pottery: None.

Site 107. 143.7;234.8.

This site, in a wadi below Site 34 (Rujm Saleem), exhibits several agricultural features, although it is not an agricultural complex proper. The features include a number of old embankments, and terraces.

Examined on July 30, 1987.

Pottery: None.

Site 108. 146.4;234.4.

The features at this site, located just east of the radio transmission towers, are limited to a cistern, a square installation cut into bedrock (possibly a blocked up tomb entrance) and two cupholes.

Examined on July 30, 1987.

Pottery: None.

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Site 109 143.0;236.6.

The cluster of features at this site, near the *Via Nova*, identify it as an agricultural complex. The features include terraces, agricultural embankments (somewhat destroyed by erosion), a wine press, cupholes, a cistern, a wall line, some stone piles of uncertain use, and the foundation remains of a rectilinear structure.

Examined on July 31, 1987.

Pottery: Byz.

Site 110. 142.2;237.0.

This site, typical of those examined by the Landuse Survey Team, consisted of some terraces and embankments in Wadi el-Ḥinu, near Khureibet es-Suq. Interesting was the attempt of the local farmers to repair apparently ancient embankments.

Examined on July 31, 1987.

Pottery: None.

Site 111. 140.3;232.3.

Terraces were the object of study at this site by the Landuse Survey Team. Of particular interest are some concrete structures that have recently been built in Wadi el-Ḥajal as part of a long-existent system of embankments and terraces. A hearth (probably recent?) was noted in the vicinity.

Examined on July 31, 1987.

Pottery: None.

Site 112. 140.0;232.1.

Located in the mouth of a tributary to Wadi el-Mash'ur, this site consists of another kiln. As at many of the kilns, a number of small pieces of slag were found, including an unusual reddish sample. Quite a bit of pottery was found, unusual for kiln sites unless they have been constructed on top of older ruins.

Examined on July 31, 1987.

Pottery: 1 prob. Byz; Rom bods; Iron bods.

Site 113. 140.8;231.7.

This kiln site is located at the base of a terraced slope south of Wadi el-Ḥajal. Some slag was found on the surface.

Examined on July 31, 1987.

Pottery: 1 ER bod.

Site 114. 141.5;231.1.

The kiln site was located at the base of a tributary which feeds into Wadi el-Ḥajal. Slag was found immediately on the surface.

Examined on July 31, 1987.

Pottery: 2 Byz bods.

Site 115. 141.3; 232.9.

The final site recorded for the 1987 season was another kiln site, located immediately north of the new paved road south of Wadi el-Bishara. The new road has cut the structure in half and filled in the centre of the kiln. Some slag was found in the debris.

Examined on July 31, 1987.

Pottery: 1 Iron bod.

The Large Agricultural Complex at Rujm Saleem (Pl. XXII,1).

In 1984, a hypothesis suggested that the large stone megalithic structures, heretofore known as "towers", were, in reality, large agricultural complexes (Gerty *et al.* 1986: 123-124). To test this hypothesis, excavations were conducted at Rujm Saleem, ca. 2 km north of Tell el-'Umeiri (survey Site U34). Associated features included two cisterns (Pl. XXII,1) south and northeast of the central structure), three wine presses (Pl. XXII,1 east, southeast, and immediately north of the central structure), quarry marks, and a variety of cup holes. An ancient roadway passed near the site. The central building was constructed in the megalithic style typical of agricultural complexes in the region, probably because the local cherty limestone was more easily quarried in that fashion. A perimeter wall surrounded the complex to the north and other terrace walls were located nearby.

Excavations in five squares produced six phases of occupation in three periods. The site seems to have been first built in the late Iron II period and continued with slight alterations into the early Persian period. The settlement included the central structure (Pl. XXII,2), a courtyard to the north, and a plaster installation in the courtyard. Possibly also included were the

two cisterns. Finds included a trilobate arrowhead, three ceramic loom weights, spindle whorls, and sherds from a water jug.

After a hiatus during the late Persian and early Hellenistic periods, the site was again occupied, probably during the late 3rd century B.C., based on a coin of Ptolemy II (280-243 B.C.), preserved in excellent condition (Pl. XXIII, 1,2), and lasted to the very beginnings of the early Roman period. The plan of the central structure was changed slightly and a stone floor was laid. The majority of the objects from the site were from this period, including the coin mentioned above, a bronze pin clasp, two spindle whorls, a crushed cooking pot, a jug, and a lamp.

The site seems to have been aban-

doned in the early Roman period and was not used again until the modern period when evidence for nomadic use was found, such as the remains of tent pegs, nails, and soda bottle fragments.

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