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BIR UMM FAWAKHIR

VOLUME 2

REPORT ON THE 1996–1997 SURVEY SEASONS

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REPORT ON THE 1996–1997 SURVEY SEASONS

by

CAROL MEYER

with contributions by

Lisa Heidorn
Alexandra A. O'Brien
and
Clemens Reichel

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Outlier 2, view toward east

Back Cover Illustration

Main Settlement, view toward north

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in memoriam

Henry Cowherd

1950–2004

Photographer

Expedition to the Dead Sea Plain, Mazra'ah, Jordan

Jerash International Project, Jordan

Bir Umm Fawakhir Project

Petra Scrolls Project

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ABBREVIATIONS

A.D.	*anno Domini*, in the year of the Lord
ARS	imported North African Red Slip ware
B	building
B.C.	before Christ
C	centigrade
ca.	*circa*, about, approximately
cm	centimeter(s)
cu.	cubic
d	depth
dm	diameter
e.g.	*exempli gratia*, for example
est.	estimated
ext.	exterior
f(f).	and following
fig(s).	figure(s)
g	gram(s)
h	height
ill.	illustrated
int.	interior
kg	kilogram(s)
l	length
m	meter(s)
M	mine
Ma	for megaannum, a unit of time equal to one million (10^6) years
max.	maximum
MS	main settlement
no(s).	number(s)
O	outlier
pl(s).	plate(s)
Q	quarry
RN	registration number
SEM-EDS	Scanning Electron Microscope-Energy Dispersive Spectroscopy
sq.	square
w	width

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CHAPTER 1

INTRODUCTION

Carol Meyer

The Bir Umm Fawakhir Project of the Oriental Institute of the University of Chicago carried out four seasons of archaeological survey at the site of Bir Umm Fawakhir, in 1992, 1993, 1996, and 1997; one season of excavation in 1999; and one study season in 2001. This is the final report on the 1996 and 1997 seasons; the 1992 and 1993 final reports appeared in Meyer 1995 and Meyer et al. 2000. The report on the 1999 and 2001 seasons is in progress. The site lies about five kilometers northeast of the Wadi Hammamat (fig. 1) at the approximate midpoint on the ancient route from Quft (ancient Coptos) on the Nile River to Quseir al-Qadim (Roman Myos Hormos) on the Red Sea. Here in the central Eastern Desert of Egypt, the Precambrian continental crust that underlies the eastern edge of Africa juts up in rugged mountains dissected by steep-sided wadis. The geology of the Eastern Desert is complex, but Bir Umm Fawakhir sits on the Precambrian Fawakhir granite (= 590 Ma), which itself was injected into still older Precambrian rocks. To the west, these include the Hammamat graywackes, the *bekhen* stone prized by the ancient Egyptians. The Fawakhir granite is the reason for the existence of the ancient site of Bir Umm Fawakhir. First, there is water, all-important in a hyper-arid desert. The water comes from rare but heavy rainstorms and flash floods. It is trapped in fine cracks in the granite and flows westward until the dense ultramafic rocks west of the Fawakhir stock trap it. Here the wells are sunk and probably always have been. Secondly, quartz veins injected into the granite are enriched with a range of metallic minerals and

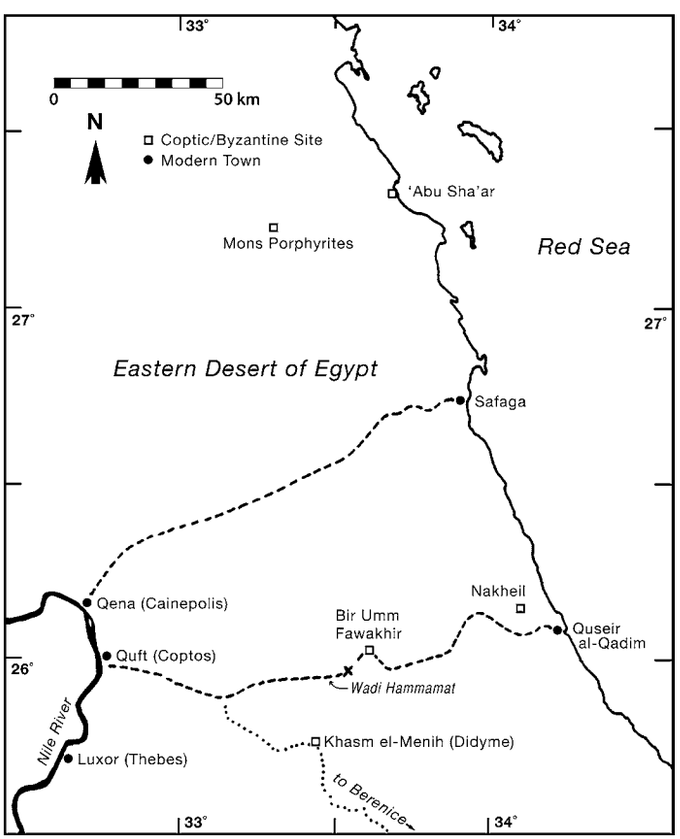


Figure 1. Coptic/Byzantine sites in the Eastern Desert of Egypt



Figure 2. Satellite image of Bir Umm Fawakhir and Wadi el-Sid. The main settlement is circled

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gold, especially near the contact zones with the surrounding Precambrian rocks. The gold mines in the Wadi el-Sid about four kilometers southeast of Bir Umm Fawakhir have been called the richest in Egypt.

Prior to the work done by the Bir Umm Fawakhir Project, no archaeological surveys or excavations had ever been undertaken at the site, though there had been a great deal of mining, and in their reports or publications some of the geologists and mining engineers included brief accounts of ancient ruins and artifacts, many of which are now lost. Bir Umm Fawakhir was originally investigated in 1992 because it seemed anomalous. In the literature it was usually called a Roman caravan station, but the sherds were not at all like the Roman pottery known from Quseir al-Qadim, and the site looked nothing like the orthogonal Roman forts elsewhere on the Quft–Quseir route. On the contrary, the ancient town of Bir Umm Fawakhir sprawled for about half a kilometer down a long, narrow, steep-sided wadi whose sandy bottom served as a main street (fig. 2). Sherds were so abundant that it was difficult to walk without crunching them, hence the site name Bir Umm Fawakhir, "Well of the Mother of Potsherds."

The Eastern Desert is not always open to archaeological work for military or security reasons, and at best housing and logistics are difficult. We were therefore limited to short seasons, usually two weeks, and small teams, usually seven people including a driver, because that is how many fit in a Peugeot taxi. Conditions were so uncertain that we never had the luxury of long-range planning but rather went out season by season as funds, staff availability, and other considerations permitted. Therefore, with limited time, money, and staff, we focused on a specific set of questions each season.

SUMMARY OF THE RESULTS OF THE 1992 AND 1993 SEASONS

The goal of the 1992 season was to map the site, take a sample of the pottery, and determine the date and function of the site. Mapping what turned out to be 237 buildings in two weeks proved hopelessly optimistic, but the project did determine that the site dated to the fifth–sixth century A.D. Coptic/Byzantine period and that it was primarily a gold-mining town. We considered several functions: caravan station, military post, granite quarry, and gold mine. While the wells did — and still do — provide water for travelers and their animals, Bir Umm Fawakhir has no ruins that resemble the Roman forts (*praesidia*) elsewhere on the route. What was probably the Roman part of the site has been so thoroughly clawed up by modern mining that no structures survive (see *Chapter 2* for a discussion of the pre-Coptic remains). Also, the site is far too big for the small number of people needed to maintain a watering station. We rejected the idea that the site was a military post because it has no walls or fortifications whatsoever and no trace of the organization expected of a military installation. The houses sprawl everywhere, not only in the main settlement but also in even less defended outliers. We could not reject granite quarrying so easily; it requires a large labor force. Quarrying did take place, probably in the Roman period, but it seems to have been a minor activity, possibly exploratory. There are some places where blocks have been quarried out or naturally split boulders have been further worked (figs. 21a, 23b, 25, 26; pls. 12b, 55b). They are dated by a few pieces of Roman amphorae and by the wedge marks, which are like those at the much larger first- and second-century granodiorite quarry at Mons Claudianus, 90 km to the north. However, the vast bulk of the pottery at Bir Umm Fawakhir is Coptic period, there are no shelters for the draft animals needed to haul granite along the road back to the Nile, the quarries seem too small to require the large population of ancient Bir Umm Fawakhir, and there is as yet no indication that the pinkish Fawakhir granite was used, much less prized, the way the salt-and-pepper Mons Claudianus granodiorite was. At least two of the main settlement houses (Buildings 126 and 176, *Chapter 3*) incorporate quarry blocks, which means that the abandoned, quarried blocks were at least a little earlier. As for gold mining, the quartz is gold bearing, the hillsides around the town are riddled and trenched with opencast and deep mines, crushing and grinding stones for ore reduction are the second most common find after potsherds themselves, mining gold from a hard rock source such as quartz veins in granite requires a large labor force, and the Bir Umm Fawakhir and the Wadi el-Sid mines were still producing gold in the twentieth century.[1]

The 1992 survey began at the southeast end of the site because at that point the site is sharply delimited by a high, pinkish, felsite dyke. There is a natural gate here and no houses beyond. Also, the houses at the southeast

[1] See Meyer 1995 for the final report on the 1992 field season.

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end were better preserved and hence easier to map and interpret. At the northwest end of the site, many houses are more tumbled or more deeply buried in wind-blown or water-borne sand.

The site of Bir Umm Fawakhir was quite well preserved. Not only were the outlines of the houses visible but also walls were preserved as much as a meter and a half high, doorways were generally visible, and even built-in features such as benches and wall niches survived. All walls were dry-stone granite cobble masonry with chinking, skillfully laid but not cut. With such good preservation, it was therefore possible to map the outlines of the entire town without excavation. As early as the 1992 season, the layout of the main settlement became clearer. The houses were built on the sandy wadi bottom, up to the point where the surrounding cliffs made construction difficult. The steep wadi walls constituted natural boundaries north and south, the sandy wadi bottom served as the main street, and the wadi mouth at the northwest end formed a natural gate. The basic construction unit was a two- or three-room house. Larger agglomerated buildings of as many as twenty-two rooms (e.g., Building 106, *Chapter 3*) consisted of six or so houses stuck together with party walls. At least in some cases, they appear to have been created by enclosing the space between smaller houses, linking them into one large structure. Next to many of the house units are dumps or middens with exceptionally heavy sherd scatter. Since the site has not been reworked, flattened, rebuilt, or reoccupied since antiquity, the contents of the trash heaps most likely pertain to the houses closest to them, which is a rather special archaeological opportunity. Scattered around the houses are a number of one-room outbuildings. A few of them high on the slopes may have been guardposts, but judging from the results of the 1999 excavations, the outbuildings within the main settlement and outliers are not kitchens.[2] The outbuildings might have been storerooms, workshops, animal shelters, or latrines, or served several functions in succession. Courtyards, a very common feature in Near Eastern architecture, were seldom evident at Bir Umm Fawakhir. Instead, a cluster of houses might face an internal "plaza" or a short side alley rather than the main wadi bottom "street."

In 1992, the project succeeded in mapping fifty-five buildings, and in 1993 another fifty, or roughly half the main settlement (fig. 3). With a detailed plan of so many houses, we were able derive a preliminary estimate of the population of the main settlement, a little over 1,000 souls, assuming that no one at all lived in any of the outliers. The population estimate was based on two measures: so many persons per house and so many square meters per person in a house. Using conservative ratios of 3.5 to 5 people per house gives estimates ranging from 819 to 1,280. Using the figure of 10 sq. m per person, which is surprisingly consistent cross-culturally, gives an estimate of 1,084 people in the main settlement.[3] Even today a thousand or more people is a much larger settlement than any on the road between Laqeita (ca. 40 km east of Quft) and Quseir. Another goal of the 1993 season was to carry out a walking survey of the vicinity of the main settlement. Seven outlying clusters of ruins of the same date as the main settlement were investigated and labeled Outliers 1 through 7. At least three of the outliers closest to the main settlement, Outliers 1, 2, 6, and probably 7, seem to have been residential rather than day shelters for workmen at more distant mines. In addition, we found the first of the cemeteries and a guardpost high on a peak over the main settlement. The latter has no formal structure, just some large boulders utilized as windbreaks, but it is marked as ancient by graffiti, and it does command a fine view of the central part of the main settlement, Outlier 2, and all three roads leading to the wells (see *Chapter 2*).[4]

Another conclusion drawn from the 1992–1993 seasons' work was that the ancient miners were not prisoners of war or criminals. This characterization goes back to Diodorus Siculus of the first century B.C., who based his description on Agatharchides of the preceding century. They dwelt at length on the miseries of the miners who were worked "until, exhausted by the abuse they have suffered, they die in their miseries" (Burstein 1989: 63). Note that neither Agatharchides nor Diodorus ever called the miners slaves. Moreover, at Bir Umm Fawakhir we have no indication that the workers were captives of any sort. There are no walls to keep people in or out, there is no sign of central planning in the main settlement or any of the outliers, and the grain silos in Outlier 2 look more like wages paid to individual households than like rations doled out to prisoners. The conclusion that

[2] The 1999 excavations focused on two houses, two trash heaps, and one outbuilding. For preliminary reports on the 1999 and 2001 seasons, see Meyer 1999 and Meyer 2001.

[3] For further details, see the chapter on "Ancient Population of Bir Umm Fawakhir" in Meyer et al. 2000.

[4] See Meyer et al. 2000 for the final report on the 1993 field season.

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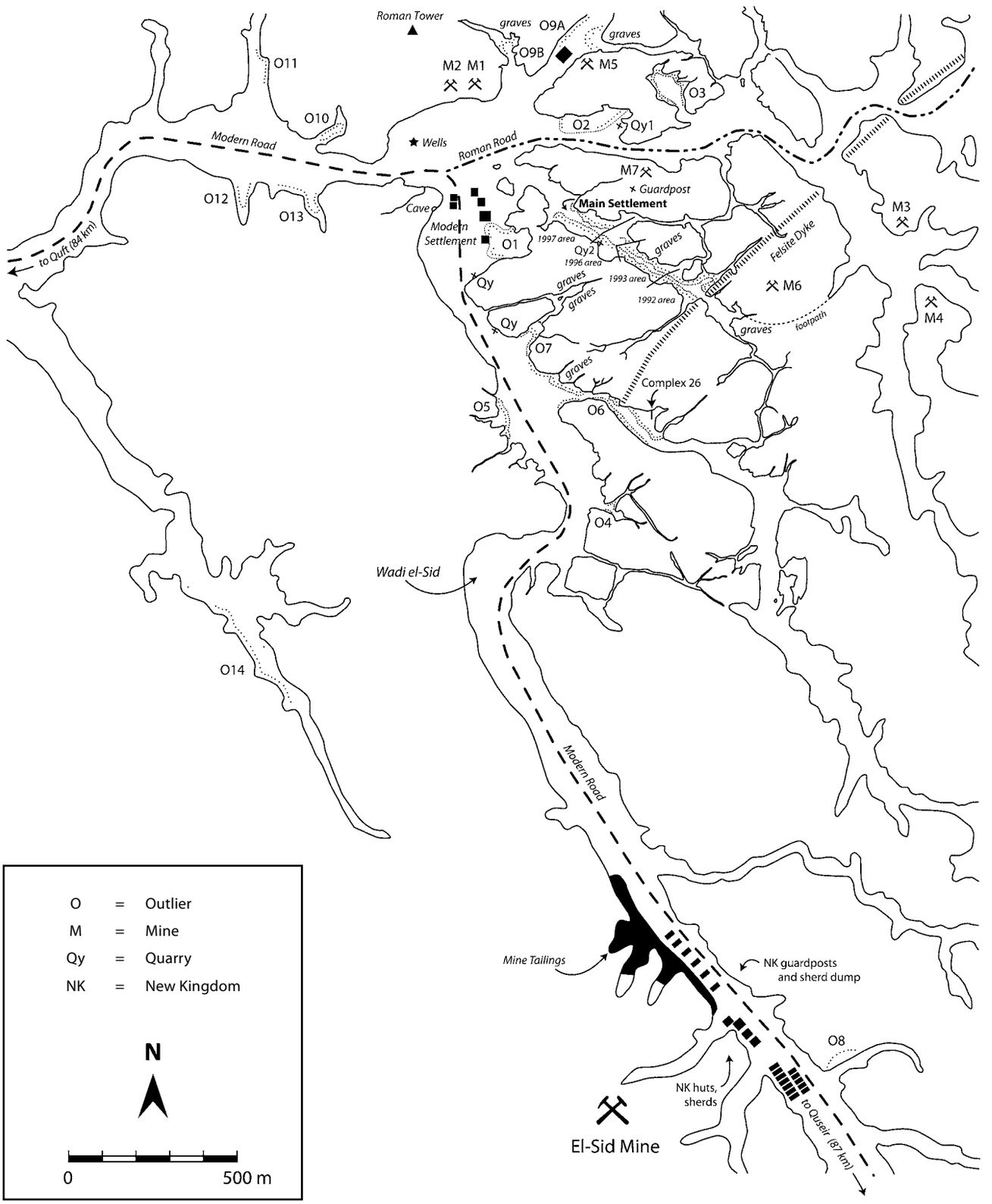


Figure 3. General plan of Bir Umm Fawakhir showing major features

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the workers were career miners is further supported by the results of the 1999 excavations, and by the first- and second-century A.D. pay lists from the large granodiorite quarry at Mons Claudianus (Cuvigny 1996: 139–40).

GOALS OF THE 1996 AND 1997 SEASONS

The goals of the 1996 and 1997 field seasons were to complete the detailed map of the main settlement, to continue the investigation of the outlying clusters of ruins or "Outliers," and to address some specific questions such as the ancient gold-extraction process. The 1996 season was the shortest and most difficult of all the field seasons. The survey contract and security clearance were delayed so long that the December weeks were lost, and work did not start until January. Almost everyone caught a severe respiratory ailment that cut further into working time. In the end, the field season was only ten days, from January 9 to 18, 1996, and one of the season's goals, investigating the ancient mines, had to be dropped. For all that, it was a surprisingly productive season: forty-eight more main settlement buildings were mapped in detail, Outlier 8 was investigated, and above all New Kingdom and other pre-Coptic remains were discovered in the Wadi el-Sid.

Although the 1997 season was curtailed by a shortage of funding, it nonetheless had the biggest team, nine staff and two inspectors, and a solid four weeks in the field, from November 16 to December 10, 1997. We made a concerted effort to finish the detailed map of the main settlement, and despite problems with equipment batteries, we succeeded in plotting the remaining 84 buildings for a total of 237. This makes Jême and the main settlement at Bir Umm Fawakhir the only completely mapped towns of the period in Egypt, and most of Jême, across the Nile from Luxor, was removed in order to reach the mortuary temple of Ramesses III, better known as Medinet Habu. In addition, we continued the walking survey of the vicinity of Bir Umm Fawakhir and discovered Outliers 9 through 14, as well as some more cemetery areas. We also attempted to make a more nearly complete record of some of the outliers of special interest, though none could be recorded with the same detail as the main settlement. Clemens Reichel plotted most of Outlier 2, which preserves features not found in the main settlement, in detail. A few more buildings were shot in 1999; for the sake of clarity they are included in this report. Outlier 6, which lies in the long, narrow wadi parallel to the main settlement on the southwest, and Outlier 7, which almost connects them, were sketched, described in detail, and photographed, but not mapped. Outlier 1, which is separated from the main settlement only by a low granite ridge, was photographed panoramically in 1999 but is included here for the sake of consistency. Outliers 12 and 13 were sketched and described because it was thought that there might be remnants of slag there, but this proved not to be the case. Outliers 9, 10, 11, and 14 were only briefly visited and noted. However, the investigation of the ancient remains in the vicinity of the main settlement makes Bir Umm Fawakhir a remarkably complete town; not only is the main settlement plotted room for room and door for door, but also features such as guardposts, cemeteries, paths, roads, wells, outlying clusters of ruins, and mines are known, and some of these are features not always readily detectable archaeologically.

In 1997 we were finally able to address the question of ancient mining. It had already become clear that the term "gold mine" did not explain the operations at Bir Umm Fawakhir. Most of the discussions of ancient Egyptian gold mining actually dealt with panning gold in Nubia, and panning alluvial gold is a far different operation from hacking out quartz veins, grinding the ore to powder, and washing and smelting the residue. Panning can be carried out by a few people with minimal equipment, but hard rock mining — quartz veins in granite — requires a large, organized, fed, and sheltered labor force. Furthermore, the ore is so low grade that it could have been worthwhile only when the operator, the Byzantine government in this case, was desperate for gold. Mining, miners, and ore reduction are treated in detail in *Chapter 8*.

TERMINOLOGY AND METHODOLOGY

In this volume we use the term "Coptic/Byzantine" for the time period between the foundation of Constantinople in A.D. 324 and the Islamic conquest in A.D. 640. Some historians start the Byzantine period with the victory at the Milvian Bridge in 313 or with the Edict of Milan in 314, but since the settlement at Bir Umm Fawakhir did not start until roughly the fifth century, A.D. 324 seems reasonable. "Coptic" is the usual term for this time period in Egypt, but it tends to obscure the fact that Egypt was part of the Byzantine empire, and a very important part, too. Political control of Egypt in the Coptic/Byzantine period was in the hands of the Byzantine government. Neither "Byzantine" nor "Coptic/Byzantine period" is intended to refer to a people, to any specific ethnicity.

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The project used the same equipment and followed the same mapping procedure each season. We used a Lietz-Sokkia SET 3 Total Instrument Station (TIS), which took a team of three. One person sketched the outlines of a building and noted features such as niche dimensions, grinding stones, or other surface finds in or around the structure, height of walls, or the like. Another person held the prism pole at the corner, door, or other numbered feature to be shot, and the third person operated the TIS. Each evening the points were plotted on graph paper and the structures drawn in; if necessary, points could be rechecked the next day. Topology usually waited until the weekend in order to have enough points to interpolate the contour lines. The basic graph-paper map was inked on mylar; for this volume, all the mylar maps, including the already published 1992 and 1993 segments, were scanned, cleaned via Adobe Photoshop, and relabeled. The nearly complete 1996 and 1997 maps were field checked in 2004. The exception to this procedure was the map of Outlier 2. Clemens Reichel mapped the ruins with the old Oriental Institute Nubian Survey optical transit and prepared the final maps via Adobe Illustrator. He was assisted in the survey by Henry Cowherd, Leslie Boose, Lisa Heidorn, Alexandra O'Brien, and Mohamed Omar. Work at Outlier 2 began November 30, 1997, and finished on the last day of the survey, December 10. Unlike at the main settlement, there was no opportunity for field checking the map that season or in 2004.

In the following pages, *Chapter 2* discusses the pre-Coptic material, much of which comes from the Wadi el-Sid. *Chapters 3* and *4* are as detailed a discussion of the remains in the main settlement and outliers as possible. We fear for their preservation. The cemeteries were never investigated in detail, but what we did note is presented in *Chapter 5*. The problem here is that Eastern Desert graves appear to have little in common with contemporary Nile Valley burials. The Coptic/Byzantine pottery, small finds, and dipinti (labels on wine amphorae) are presented in *Chapters 6* and *7*. The mining study in *Chapter 8* includes some of the most important findings from Bir Umm Fawakhir. It is the first intensively studied ancient gold-mining town in Egypt, and the investigation of the ancient mining and ore-reduction techniques show that they were far more labor intensive and technologically sophisticated than simply panning alluvial gold.

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CHAPTER 2

PRE-COPTIC REMAINS

Carol Meyer and Lisa Heidorn

Given the importance of the Hammamat road from Early Dynastic times onward, the *bekhen*-stone quarries and their famous inscriptions only five kilometers from Bir Umm Fawakhir, the sixty-odd intervisible watch towers along the route, the dozen large and fortified Roman-period *presidia* and their wells and cisterns, the Roman port at Myos Hormos (Quseir al-Qadim), and of course the good wells at Bir Umm Fawakhir, one of the first questions about the site is, "where are the Roman remains?" Perhaps the only remarkable aspect of the Roman finds at Bir Umm Fawakhir and its vicinity was that they were so few. Much more surprising were the New Kingdom remains.

Although no archaeological survey or excavation had ever been undertaken at the site prior to the Bir Umm Fawakhir Project, decades of geologists, travelers, and archaeologists published notes on Fawakhir and its area.[5] One of the earliest and most interesting is Weigall's description of the little Ptolemy III Euergetes temple, which was "constructed of rough stones augmented by well-made basalt columns. It was dedicated to the god Min, the patron of the Eastern Desert; but … it was only about 12 feet by 22 in area" (Weigall 1909: 49–50). Couyat (1910: 533–36) mentioned some 10,000 cu. m of crushed quartz at Fawakhir, and finds such as coins, beads, and lamps; his seems to be the sole publication of two battered, classical-style statues, and a papyrus, now lost, found in the "quarries." Guéraud (1942: 143) says that the Egyptian Mining and Prospecting Company worked at Bir Umm Fawakhir in 1940 and 1941 with little profit. The company did, however, recover antiquities such as lamps, beads, a few coins, and about sixty ostraca, apparently from the crushed ore dumps near the wells. A recent restudy of the ostraca indicates that most of them are letters exchanged with people from Krokodilo (Wadi Muwayh) and Maximianon (Zarqa), *praesidia* west and east of Fawakhir on the Hammamat road. Most of the ostraca can be dated to the second century A.D., though at least one, no. 29, is third century B.C. (Brun 2003: 98–99), more or less contemporary with the Min temple (Guéraud 1942: 183).

Lethbridge (1946: 222–25) gives a very interesting account of his visit to Bir Umm Fawakhir in 1944. He mentions the modern workings around the well, tin-roofed sheds, a water tower, a small leaching plant, and the miners' bungalow some "hundreds of yards up valley to left." He adds that "for some hundreds of yards around [the well] were mounds of sand and gravel and it was from here that the gold-bearing samples had been taken." The original size of the dump was hard to estimate even in 1944 as it lay in the path of the road and flash floods. Still, some 70,000 tons of material passed through the "primitive" leaching plant nearby, presumably the ruined tanks still existing west of the entrance to Bir Umm Fawakhir. The gravels were low grade, circa 3 dwt/sq. ton (4.665 g/ton),[6] but only half that was recovered; the leaching was completed before the war, circa 1939. Work at the dumps turned up many artifacts, including an inscribed column, though he does not say what language or script, "alabaster feeding bowls made perhaps 40 centuries ago," votive statuettes of which one was "highly improper" (Min perhaps?), a dice box and dice that could be Roman, and a small sarcophagus that at that time was set in cement for a camel trough. Prospecting around the Fawakhir wells "brought to light one of the most extensive complexes of ancient workings in the whole Eastern Desert district" (Lethbridge 1946: 223).

In the first two centuries of this era, Quseir al-Qadim, ancient Myos Hormos, was a very active port serving the trade to India and the east coast of Africa. The main route to Myos Hormos lay through the Wadi Hammamat and past the wells at Bir Umm Fawakhir. There is a Roman (or perhaps earlier) tower on the mountain overlooking the wells; it is one of the chain of intervisible towers along the road from the Red Sea to the Nile at Coptos. On the one hand, Fawakhir lacks anything like the fortified *praesidia* so well preserved elsewhere on the route, but on the other, it is hard to believe that the ancient caravans ignored a good water source such as

[5] See Meyer 1995: 40–43, for a summary of other previous accounts.

[6] Dwt = pennyweight (Troy), 1.555 grams.

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that at Fawakhir. Whatever may have existed in antiquity, the area around the wells has since been thoroughly reworked by flash floods and modern mining activity.

During the 1992–1993 seasons, the Bir Umm Fawakhir Project located a variety of pre-Coptic remains. A cave behind the modern teahouse (fig. 3) preserves painted and cut graffiti dating to the first through third centuries A.D. (Wilfong 1995), and a handful of sherds, amphora toes, bits of faience, and one sherd of red Roman-period glass were found. The scattered, small-scale granite quarries appear to be Roman, perhaps exploratory (Meyer 1995: 46–47). As for gold mining, it is possible that some was attempted at Bir Umm Fawakhir, though there is no evidence for large-scale works such as those of the Coptic/Byzantine period. Rather, such evidence as there is suggests that the richer Wadi el-Sid mines were the ones worked in the Roman period.

Further evidence of Roman presence at Bir Umm Fawakhir and vicinity was recovered in 1996 and 1997, including some intact vessels and lamps from the Wadi el-Sid mining camp. New, however, was the recovery of some Roman sherds from the tailings at the modern Wadi el-Sid mine and the discovery of New Kingdom remains on hilltops on both sides of the Wadi el-Sid.

NEW KINGDOM REMAINS

Remains of New Kingdom guardposts and a sherd dump were discovered in 1996 and further explored in 1997, and evidence of very ancient mining activity was found in 1997 at the Wadi el-Sid.

At the very beginning of the 1996 season, Alexandra O'Brien discovered some huts and non-Byzantine-period sherds on the steep hill across the road from the Egyptian Geological Survey and Mining Authority (EGSMA) mining camp in the Wadi el-Sid that served as the expedition base (fig. 3). The following day, she, Lisa Heidorn, and Steven Cole returned to the locale, and Heidorn identified the sherds as New Kingdom. In particular, she noted burnished marl store jars, a number of blue painted sherds (possibly from one vessel only), marl bowls, and a marl, black painted small jar. Further investigation of the slopes beyond led to the discovery of half dozen or so looted graves (fig. 4) and Outlier 8; the latter is discussed in *Chapter 4*. There was a small amount of bone scatter around the graves and some burnished New Kingdom pottery. Later, on the first and only Friday of the field season, the entire crew revisited the New Kingdom site and sketched the guardposts and some of the sherds.

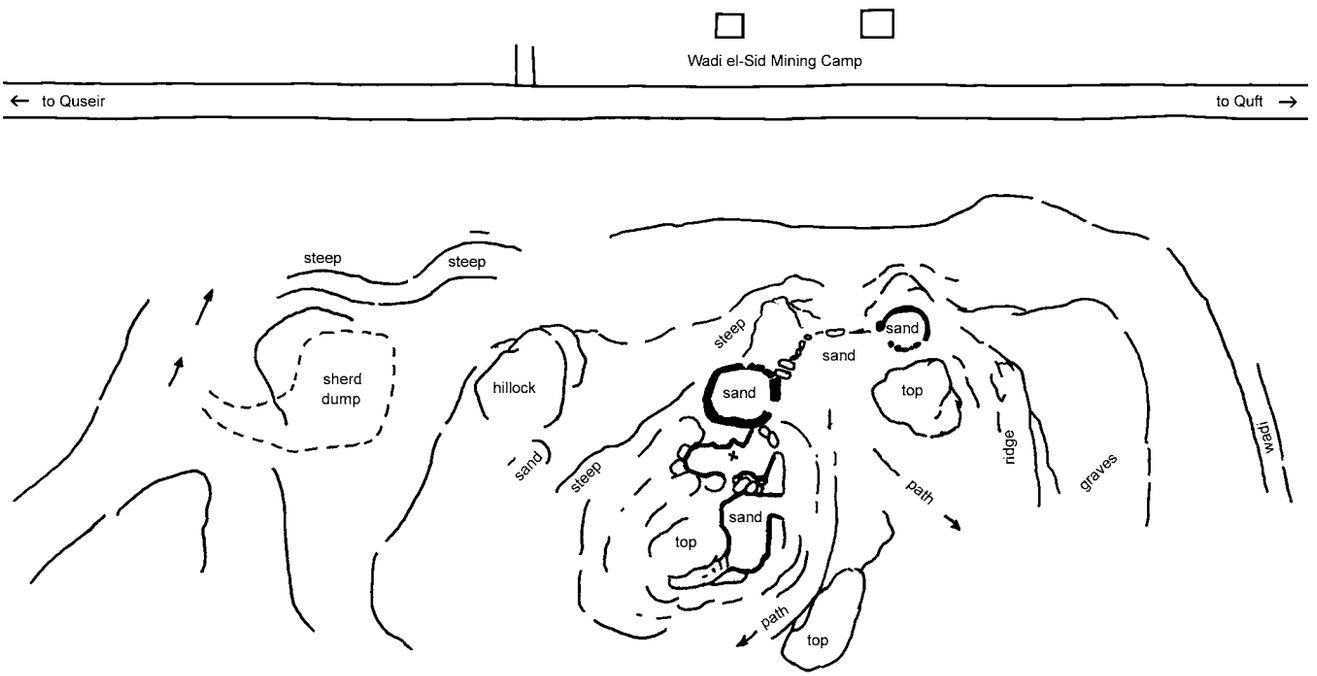
The largest of the guardposts commands a fine view over the Wadi el-Sid, where it narrows, and across the road to the modern mine. The walls of the guardpost are massive and built of boulders, large stones, and cobbles. The interior dimensions are circa 5.8×4.2 m, and the room now has a sandy floor. There is another constructed room a few paces north, and two more rooms or shelters were roughly built around large boulders. Figure 4 is a sketch only; plans to plot and excavate the New Kingdom remains in 1999 could not be executed.

The New Kingdom sherd dump is scattered down a ridgetop that is a little south of the guardposts, which are on the highest point of this stretch of the road. The sherd dump looks like debris from the guardposts, which themselves have few sherds. Almost all the sherds center on a Nineteenth–Twentieth Dynasty date, with the exception of no. 32, a surprising piece of Eighteenth Dynasty "palace ware" (fig. 8 below).

Across the road from the New Kingdom guardposts, on the very top of the knob of the hill right above the modern crushing mill, some more New Kingdom remains were discovered in 1997. There are two badly preserved huts and some sherds, including pieces of a large jar with a rim, fired reddish with black smudges. Downslope, on the opposite side of the hill from the modern crushing mill, are the ancient mines. They are opencast trenches almost completely silted in after 3,000 years, but they are marked as ancient by large, flat crushing stones with a small dimple in the middle (see *Chapter 8* for the mining study). About two kilometers farther west of the road in the Wadi Shemamiya, New Kingdom and later remains have been reported (Klemm and Klemm 1994: 219–20), though the area has now been thoroughly disturbed by modern mining activity. The project collected a few sherds here as well.

A few notes on the pottery drawings are called for. We tried to make notations of ware type, temper, and color, but time was too short to permit all sherds to be described so fully. If the sherd represented less than a quarter of the diameter of the vessel, the sherd should have been outlined on the reconstructed pot, but again time was lacking. The discussion of the sherds is based on Heidorn's study.

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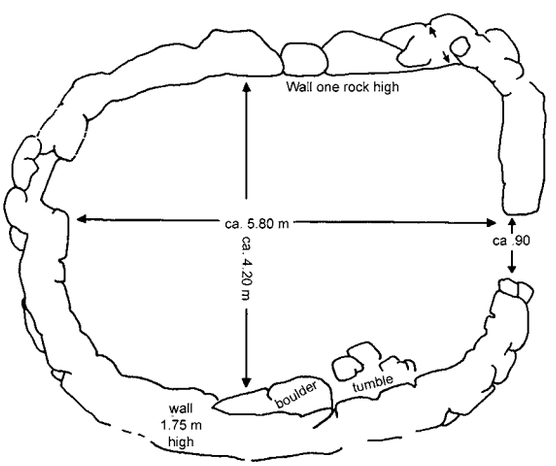


Figure 4. Sketch map of New Kingdom remains in the Wadi el-Sid (not to scale) and sketch plan of largest guardpost (not to scale)

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NEW KINGDOM POTTERY

Most of the pottery from the sherd dump is typical New Kingdom of the Ramesside period. The precise date within the Ramesside period is uncertain, though parallels to some of the forms are dated in either the Nineteenth or Twentieth Dynasty.

A number of blue painted sherds, including handle fragments, may have come from one vessel (fig. 8:31). Colin Hope believes that the manufacture of blue painted pottery began in the middle of the Eighteenth Dynasty and ended sometime after the reign of Ramesses III in the Twentieth Dynasty (Hope 1989b: 56; 1991: 17). He cites references to tomb groups at Deir el-Medina, to dumps in the Valley of the Kings, and to Memphis. Blue painted sherds were found in small numbers in a dump outside the tomb of Ramesses IV in the Valley of the Kings at Luxor (Aston and Aston 1987: 27–28). The blue painted decoration on the sherds illustrated, indicative of their Ramesside origin, consists of linear bands surrounded by thin lines of black or red-brown paint.

The amphora necks appear to be long in relation to what the total height of the jars may have been if fully preserved. Hope cites this as a trait of the Ramesside period (Hope 1989b: 55). Recent research indicates, however, that both fabric and form are important for dating purposes (Aston 2004: 175–213). Unfortunately, we were not able to carry out detailed study of the clay fabrics, particularly due to the absence of a specialist in later New Kingdom pottery, but nonetheless it can easily be seen that the Wadi el-Sid corpus is mostly from the late Nineteenth or early Twentieth Dynasty.

The predominance of marl fabrics is confusing; many of these forms are usually found in silt fabrics. We were aware of the problem, but visual examination most often indicated that the sherds were made of some type of marly, nonsilt clay. Speaking of Qantir, Aston says that marl clay vessels are less apparent in the strata of the Twentieth and Twenty-first Dynasties there, and elsewhere in Egypt (Aston 1998: 608).

POTTERY DESCRIPTIONS

FIGURE 5. NEW KINGDOM POTTERY

1. Three sherds from bowls with slight carination above a flat-rounded base with scraped finish on exterior, and circa 22 cm diameter rims. Two sherds have prefiring potmarks. The sherds appear to be made of a soft marly(?) fabric, with lots of sand and mica, limestone chunks. Wadi el-Sid, New Kingdom sherd dump. For an exact parallel at Saqqara, but made of silt, see Bourriau and Aston 1985: pl. 35:18; the tomb in question is dated late in the reign of Ramesses II (Bourriau and Aston 1985: 51). Similar silt bowls with red slip are noted in tomb 359 at Deir el-Medina of Ramesses III–VI date (Nagel 1938: fig. 26:153; see also fig. 27:191, for a silt bowl with a red rim band). Other parallels have been published from tombs at Qustul/Adindan (tomb V 48, Ramesside; Williams 1992: fig. 108h). See also Qantir, no. 776, with a "tree" potmark a little lower down, of I.E.01 fabric (sandy silt; Aston 1998: 63, 244–45, citing Gurob examples; Petrie 1891: pl. xix.6.G; and Brunton and Englebach 1927: pl. xxxiii.5R).
2. Bowl with conical form and simple rim (23 cm dm). Tan surfaces with whitish section layers and tan core. Marl; sand and perhaps black bits, mica on surface. Wadi el-Sid, New Kingdom buildings.
3. Conical bowl (24 cm dm). Marl. Wadi el-Sid, New Kingdom sherd dump.
4. Simple bowl with direct rim (24 cm dm). Wadi el-Sid, New Kingdom remains north of road.
5. Simple bowl with direct rim (ca. 24 cm dm). Wadi el-Sid, New Kingdom remains north of road.
6. Carinated bowl, reconstructed from two non-joining sherds (rim ca. 44 cm dm). Exterior 7.5YR 7/4; tan fabric with grayer core 5YR 6/4; very thin red slip 10R 6/6 on interior and exterior rim and neck, black drips on rim, smoothed interior surface. Wadi el-Sid, New Kingdom remains north of road. Similar decorated bowls are found at Thebes (see nos. 66 through 73 from Qurna; Myśliwiec 1987: 39–42). These are dated from the Eighteenth to the early Nineteenth Dynasty. Qantir examples include Marl F nos. 1972 and 1973 of Nineteenth Dynasty date (Aston 1998: 502–03). For a bowl (coarse brown clay) from Medinet Habu dateable to Ramesses IV, see Hölscher 1939: 116–17; pl. 56:4b.
7. Basin or large bowl (ca. 34 cm rim). Tan exterior with yellow-tan exterior surface. Marl, whitish section; sand; black bits. Wadi el-Sid, New Kingdom sherd dump. There is a somewhat similar parallel at Qantir, bowl no. 2134 with a more vertical stance, rim diameter 30 cm, of a mixed clay fabric and dateable to the Nineteenth Dynasty (Aston 1998: 526–27). See also no. 1703, cream slipped (Aston 1998: 466–67).

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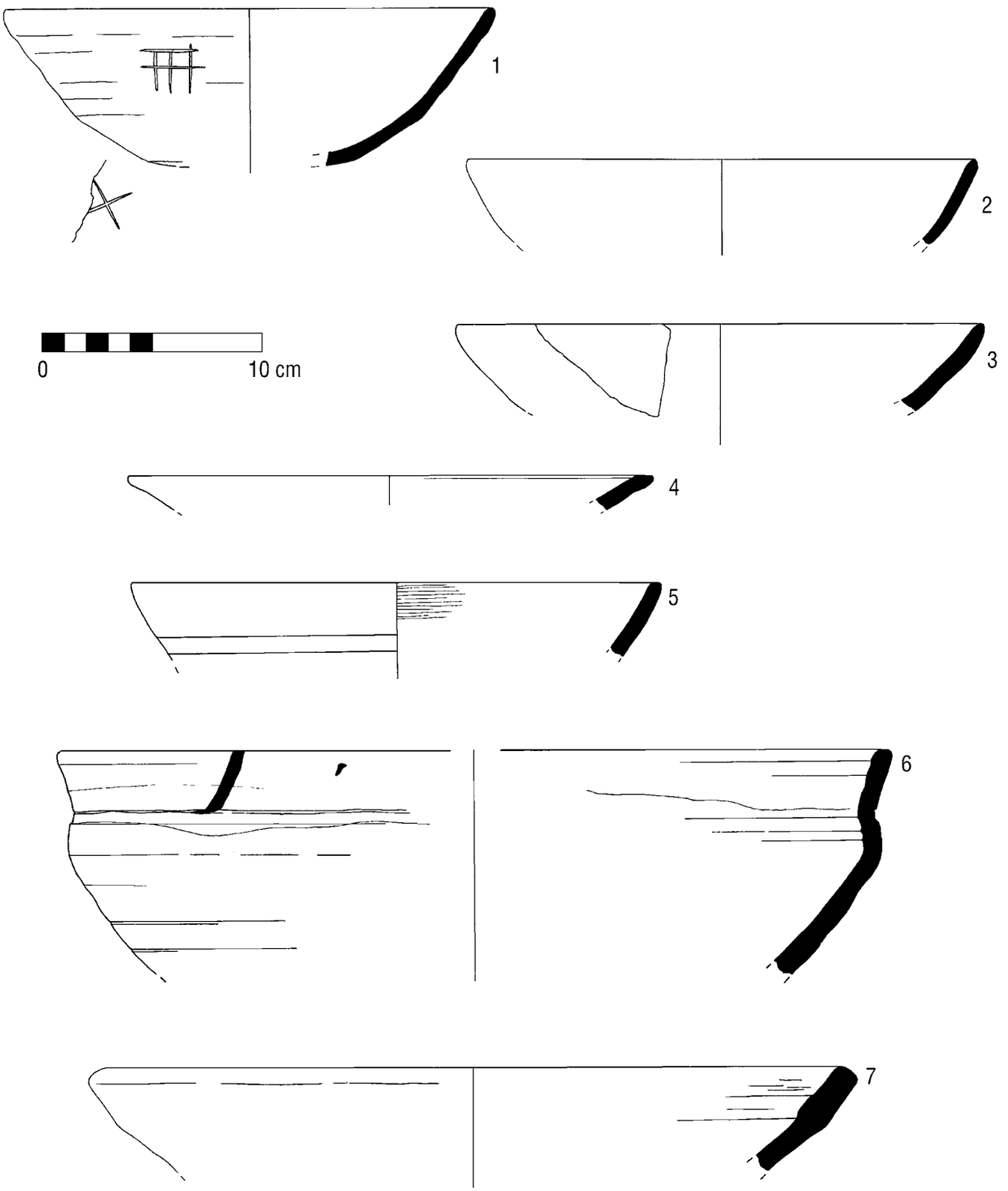


Figure 5. New Kingdom pottery (nos. 1–7)

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FIGURE 6. NEW KINGDOM POTTERY (*CONT.*)

8. Large basin or bowl with thickened rim (33 cm dm). Marl. Wadi el-Sid, New Kingdom sherd dump. See no. 7 above.
9. Large basin rim or large potstand base (28 cm dm). 10YR 7/3, light tan in breaks, pink core 10YR 7/3. Gritty greenish marl. Wadi el-Sid, New Kingdom remains north side of road. Date indeterminate. See no. 37 below.
10. Large platter with rope impressions on exterior surface (ca. 48 cm dm). Thickened rim with slight overhang on exterior. Two horizontal lines of rope marks below rim on exterior. Described as marl, but this type of vessel is usually manufactured of silt. Wadi el-Sid, New Kingdom sherd dump. Types like nos. 10 and 11 are fairly common throughout the New Kingdom and into the first millennium B.C.
11. Large platter with rope impressions on exterior surface (ca. 50 cm dm). 5Y 8/2, surface 7.5YR 6/4. Green marl with tan surface, abundant sand and small dark bits. Wadi el-Sid, New Kingdom sherd scatter and building north of road.
12. Bowl or jar with everted simple rim (26 cm dm). Cream on interior and exterior surfaces, light red section layers with thin tan core. Perhaps marl. Wadi el-Sid, sherd scatter across road from mining camp, at foot of cliff. For possible parallel from Saqqara, see Bourriau and Aston 1985: pl. 36:54–55 (late Ramesses II).

The neckless jars shown in nos. 13–16 are common in the late New Kingdom and into the first millennium B.C. For general parallels, see late Ramesses II examples at Saqqara (Bourriau and Aston 1985: pl. 36:66); a silt sherd from the Twentieth Dynasty tomb of Iurudef at Memphis (Aston 1991: pl. 53:70), Qantir no. 2525 from Twentieth to Twenty-first Dynasty contexts (a mixed clay with cream coat; Aston 1998: 623), and Sanctuary Y at Elephantine, which has a Marl A4 example of the Twentieth to Twenty-first Dynasties (Aston 1999: 54–55, no. 318). Elephantine examples nos. 66 and 67, and the like, perhaps originally had two handles, were made of uncoated Nile silt, and dated to the period from Merneptah to Ramesses IX (Aston 1999: 27, 29).

13. Neckless jar (18 cm dm). Creamy yellow exterior surface, greenish tinge in section break, brown-tan interior surface. Marl, abundant sand, medium to small black bits, some mica, small burnt-out voids in section. Wadi el-Sid, New Kingdom sherd dump.
14. Neckless jar (19 cm dm). Light red-brown with creamy surface (fired). Marl. Wadi el-Sid, New Kingdom remains south of mining camp.
15. Neckless jar (16 cm dm). Tan-cream fabric, rosy core, creamy-white gritty surface. Wadi el-Sid, New Kingdom remains north of road.

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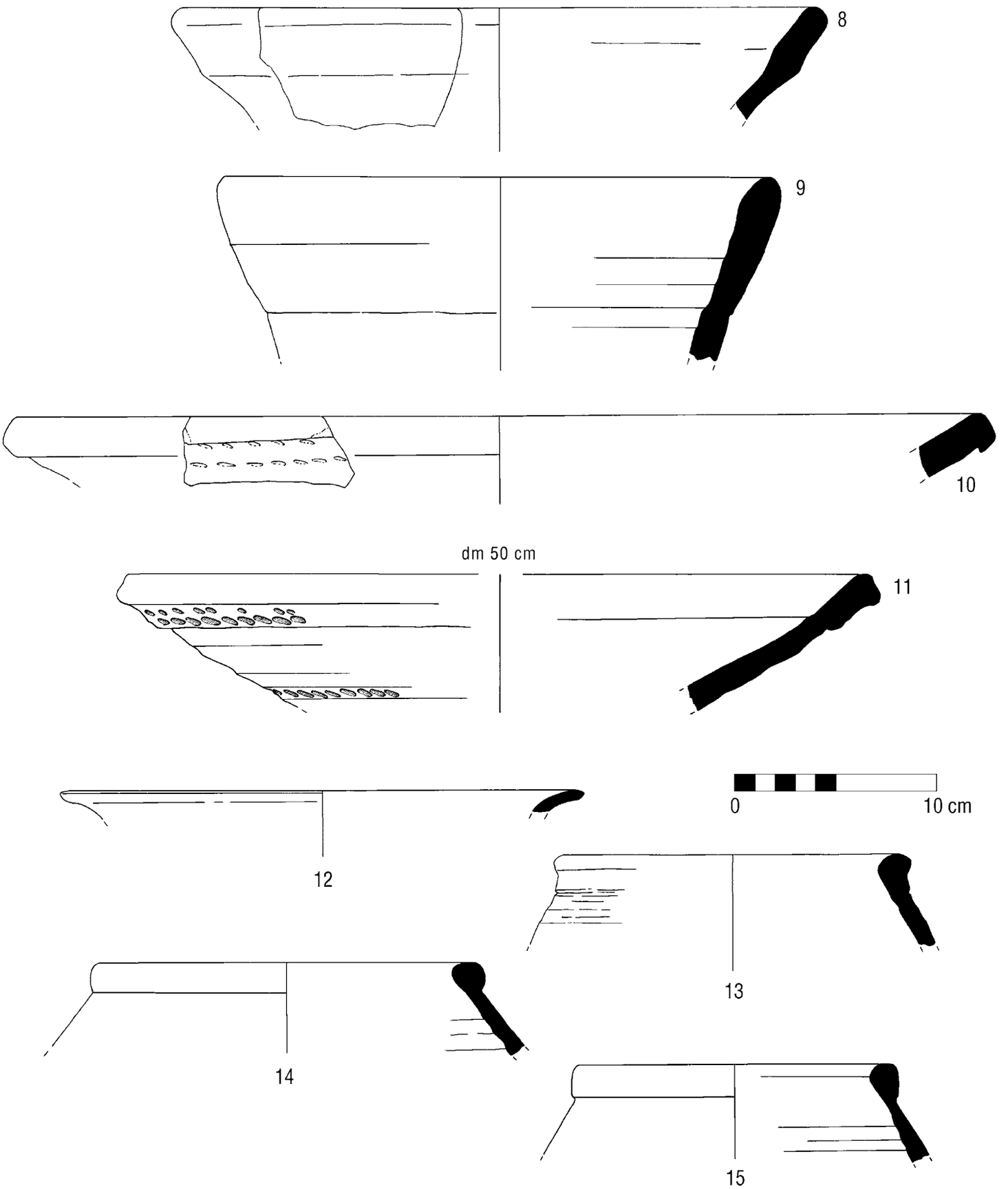


Figure 6. New Kingdom pottery (*cont.*) (nos. 8–15)

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FIGURE 7. NEW KINGDOM POTTERY (*CONT.*)

16. Neckless jar (18 cm dm). No fabric description. Wadi el-Sid, New Kingdom remains north of road.
17. Jar neck with rounded rim (18–20 cm dm). Cream exterior, light red-brown interior surface, pink section. Marl, lots of mica. Wadi el-Sid, sherd scatter across road from mining camp, at foot of cliff. Possibly a neckless jar rim, but it seems like a Marl D-type amphora rim. For a possible Nineteenth–Twentieth Dynasty parallel, see Qantir no. 1785, a Marl D amphora rim (Aston 1998: 472–73) and figs. 7e and 8a–b in Aston 2004 (189, 192).
18. Jar with stepped rim (14 cm dm). Tan surface, grayish core. Marl, black bits, sand, mica, red chunk. Wadi el-Sid, New Kingdom sherd dump. Perhaps not New Kingdom.
19. Jar or bottle rim with cream coating on exterior (11 cm dm). Creamy exterior, pinkish section. Marl, lots of limestone bits, black bits, plentiful mica. Wadi el-Sid, New Kingdom sherd dump. For Egyptian parallels, see somewhat similar rim nos. 991, 993, and 994 from Qantir, all made from Nile E fabric, Nineteenth Dynasty (Aston 1998: 308–09). For possible Canaanite parallels, see the Nineteenth Dynasty parallel no. 2676 from Qantir (Aston 1998: 652–53), amphora types A1–A3 (Aston 2004: figs. 2–3, and especially fig. 3c from early in the reign of Ramesses II), and sherd no. 283 from the area of the tomb of Ramesses IV in the Valley of the Kings (Aston, Aston, and Brock 1998: 158, 200, pl. 34). A Nineteenth Dynasty marl bottle from Qantir, no. 1641, with less of a pillow on the rim interior, is also a possibility (Aston 1998: 452–53).

For numbers 20–22 below, see nos. 1695–98 and 1954–69 from Qantir, all of Marl D fabric and with wider rims (Aston 1998: 464–65). Also see Elephantine no. 40 (Aston 1999: 21, 23) of Marl D and Nineteenth Dynasty date. Elephantine nos. 177–79 and nos. 797–803 and 807–08 are of marl or cream-slipped mixed-clay fabrics (Aston 1999: 39–40, 99). The latter are all dated between the reigns of Merenptah and Ramesses XI (Aston 1999: 84). For a late Ramesses II example from Saqqara, see Bourriau and Aston 1985 (pl. 36:87–88 and passim). Parallels may also be found in Hope 1989c (93–94, fig. 2:4, of Ramesses II date, and fig. 3:7, of possible Twentieth Dynasty date).

The taller-necked amphora rims and necks, whether from large or small amphorae, are all similar to the Twentieth to Twenty-first Dynasty Marl A4 examples, nos. 2491–93, at Qantir (Aston 1998: 610–11). Although some of the Wadi el-Sid amphora sherds do not indicate the beginning of the neck and shoulder region, namely, nos. 20–22, we can see that nos. 23–24 here are not particularly tall. For a comprehensive study of amphorae, besides the earlier study of Hope (1989c), see Aston 2004: 175–213. See also the discussion accompanying the bases illustrated in nos. 41–44 below.

20. Amphora rim and neck (ca. 10 cm dm). The interior of the neck is lightly ribbed. See also no. 21 below. Red-brown fired fabric, cream slip exterior and into interior. Red-brown compact fabric, small amount of sand, abundant limestone and medium-size chunks, abundant black bits and mica. Wadi el-Sid, New Kingdom sherd dump. For a close Nineteenth Dynasty parallel, see Qantir no. 1675, of Marl D (Aston 1998: 460–61), though it has a wider rim diameter.
21. Amphora rim and neck with worn surface (12 cm dm). No burnish noted. Creamy tan to light brown. Marl. Wadi el-Sid, New Kingdom sherd dump.
22. Amphora rim and neck, rounded rim (10 cm dm). Marl. Wadi el-Sid, New Kingdom sherd dump.
23. Amphora rim, neck, and shoulder (9 cm dm). 10YR 7/3 surface, 5Y 6/3 in section. Greenish marl; abundant dark bits, gray and dark fine sand; medium amount of limestone chunks and dark red bits; a few yellowish chunks. Wadi el-Sid, New Kingdom remains, sherd scatter near building north of road. This jar may be likened to the sherds nos. 20–22 above and the aforementioned parallels, but the interior and the exterior of the neck are visibly ribbed. For a good parallel, see the decorated marl examples nos. 185–86 from Elephantine, of the Nineteenth and/or Twentieth Dynasty (Aston 1999: 42–43; black or red neck bands). Another Nineteenth Dynasty parallel is found at Qantir, no. 2065, a Marl F fabric with cream slip and burnish (Aston 1998: 514–15). Aston notes that this "corrugated neck" type of East Delta fabric first occurs in the time of Akhenaten but becomes widespread in the reign of Ramesses II and later (Aston 2004: 195–97, fig. 11).
24. Amphora rim and neck (14 cm dm), perhaps a more vertical stance than drawn. Occasional ribbing on the interior and exterior. 10YR 8/3 surface, 2.5Y 7/2 in break. Greenish marl; abundant sand and fine sand, shiny dark particles; medium amount of limestone chunks. Wadi el-Sid, New Kingdom remains, sherd scatter near building north of road. For parallels see Qantir nos. 2322–24, "squat globular jar rims" (dense silt with thick gray core), and nos. 2378–83 (sandy silt), all Twentieth to Twenty-first Dynasty (Aston 1998: 568–69, 580–81). If the neck is indeed more vertical, see some very flat-shouldered amphorae from the mortuary temple of Merenptah at Qurna (Jaritz et al. 1996: 228).
25. Flask or amphora rim and neck (12 cm dm). Marl. Wadi el-Sid, New Kingdom sherd dump. For an example from tomb 359 at Deir el-Medina with horizontal loop handles, see Nagel (1938: fig. 15:37–38, Ramesses III through VI). See also Hope on amphorae with loop handles (1989c: fig. 6:5–8), mostly dated to Ramesside times. Similar Nineteenth Dynasty examples are found at Qantir, no. 1542 (Marl A4), no. 1988 (flask of Marl F), and no. 2061 of Marl F with cream slip and burnish (Aston 1998: 434–35, 504–05, 514–15). Aston illustrates a complete example of this form of the Nineteenth Dynasty, which is an unpublished vessel from the Saqqara tomb of Maya (Aston 1998: 516, fig. 5.10).
26. Amphora rim and neck with triangular rim profile (10 cm dm). 7.5YR 8/4 exterior slip, 10R 5/8 in break. Lots of limestone bits. Wadi el-Sid, south of modern mine. The fabric and rim are very different from the other amphora sherds above. See the earlier amphorae in Hope 1989c: fig. 2:1, dated from Amenhotep II to Horemheb.

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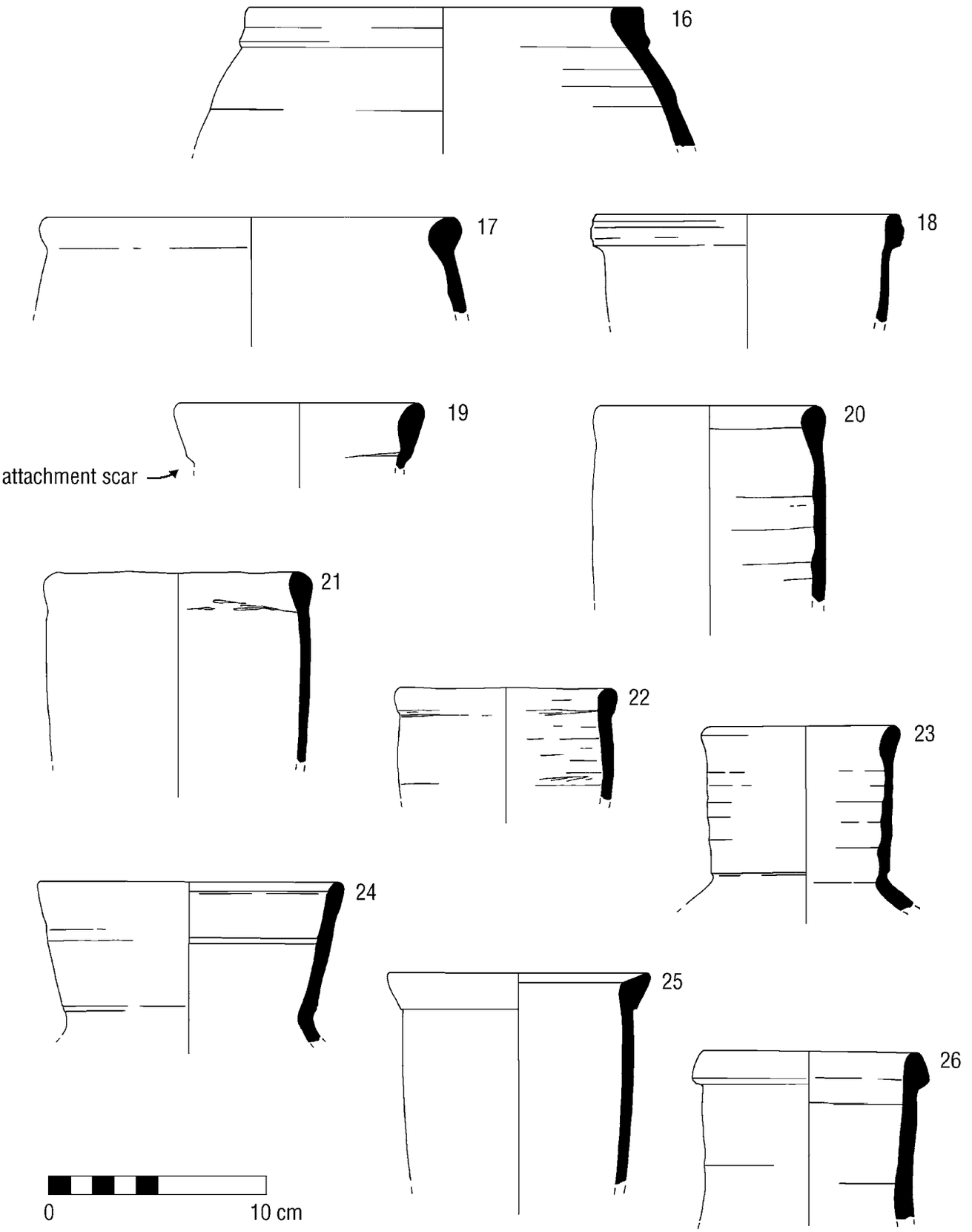


Figure 7. New Kingdom pottery (*cont.*) (nos. 16–26)

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FIGURE 8. NEW KINGDOM POTTERY (*CONT.*)

The jars in nos. 27–29 have a shorter length between the rim and neck than the previous examples. The three sherds have black or possibly red painted bands running around their necks. For a very good parallel, see the Twentieth to Twenty-first Dynasty example from Elephantine, no. 253 of Marl A4 (Aston 1999: 50–51), and black painted shoulder sherd no. 254.

27. Jar rim and neck (18 cm dm), marl with black painted lines. 10YR 7/3 exterior surface, 2.5Y 7/4 in break. Marl; mica, black bits, yellow-orange limestone(?) bits. Wadi el-Sid, New Kingdom sherd dump.
28. Jar rim and neck with black band decoration (10 cm dm). White slip; thin and medium thick black painted lines. Wadi el-Sid, New Kingdom remains south of mine. No description of fabric.
29. Jar rim and neck (10 cm dm). White slip with red painted lines, perhaps decayed black paint. Marl. Wadi el-Sid, New Kingdom remains north of road.
30. Painted jar rim and upper neck (10 cm dm). Blue painted band on rim; blue band on neck rimmed with black line. Burnished exterior and over rim into interior. Light pink in section with tan coating on exterior, blue and black paint. Marl; mica and stone bits, black bits. Wadi el-Sid, New Kingdom sherd dump. For similar types see Qantir nos. 1356 and 1357 (Aston 1998: 382–83).
31. Ten blue painted sherds from small jar with handle (RN 97/55). Marl(?). Black, red-brown, and blue paint in horizontal bands and lines around vessel. Wadi el-Sid, New Kingdom sherd dump.
32. Tall-necked, handled flask (10 cm rim) (RN 97/58). Some evidence of a light polish on exterior. Spiraling wheel marks on interior and a very sloppy manufacture as indicated by excess clay bits on the interior and unmixed clay in fabric. Light red fabric, 2.5YR 6/6 with creamy surface 10YR 8/3. Marly; abundant limestone bits, sand, mica(?), large yellowish stone chunks, lots of unmixed clay chunks. Wadi el-Sid, New Kingdom remains, "NNE of sherd scatter below building." See Deir el-Medina tomb 1099, with a general New Kingdom date (Nagel 1938: fig. 35:2), and the one-handled jar of Marl D, with cream slip and burnish, at Malkata (Hope 1989a: 15, fig. 6e–f). The latter is dated to the late Eighteenth Dynasty (Hatshepsut and on). Also see the type from Amarna (Peet and Woolley 1923: pl. 51: XLI/1056).
33. Flask handles and neck. Burnished exterior surface (RN 97/56). Pink marl with cream coating on exterior; grayish core. Marl; abundant limestone bits and lots of black bits. Wadi el-Sid, New Kingdom sherd dump. For a Twentieth to Twenty-first Dynasty "pilgrim flask," see Qantir no. 2494, of Marl A4 (Aston 1998: 610–11).
34. Small jar with carinated/rounded shoulder. Burnished exterior. Stance and diameter not certain. Marl with cream exterior slip. Wadi el-Sid, New Kingdom sherd dump.
35. Lid or bowl (34 cm dm). Blue painted decoration or spot on exterior, sooted interior and exterior, fabric uncertain. Wadi el-Sid, New Kingdom sherd dump. See silt lids and bowls at Qantir, of smaller diameter, blue painted on cream slip, and dated to the Nineteenth Dynasty (Aston 1998: 372–73, 404–05). See also the Nineteenth Dynasty lid from Elephantine (Aston 1999: 19, no. 26) of blue painted silt.

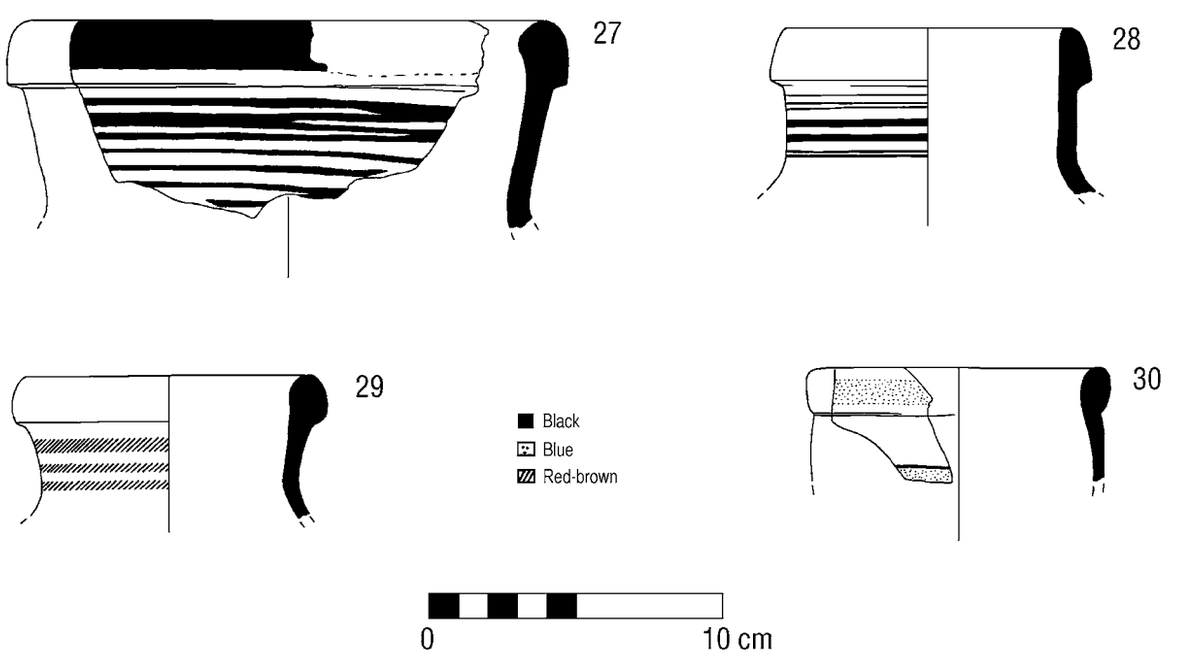


Figure 8. New Kingdom pottery (*cont.*) (27–30)

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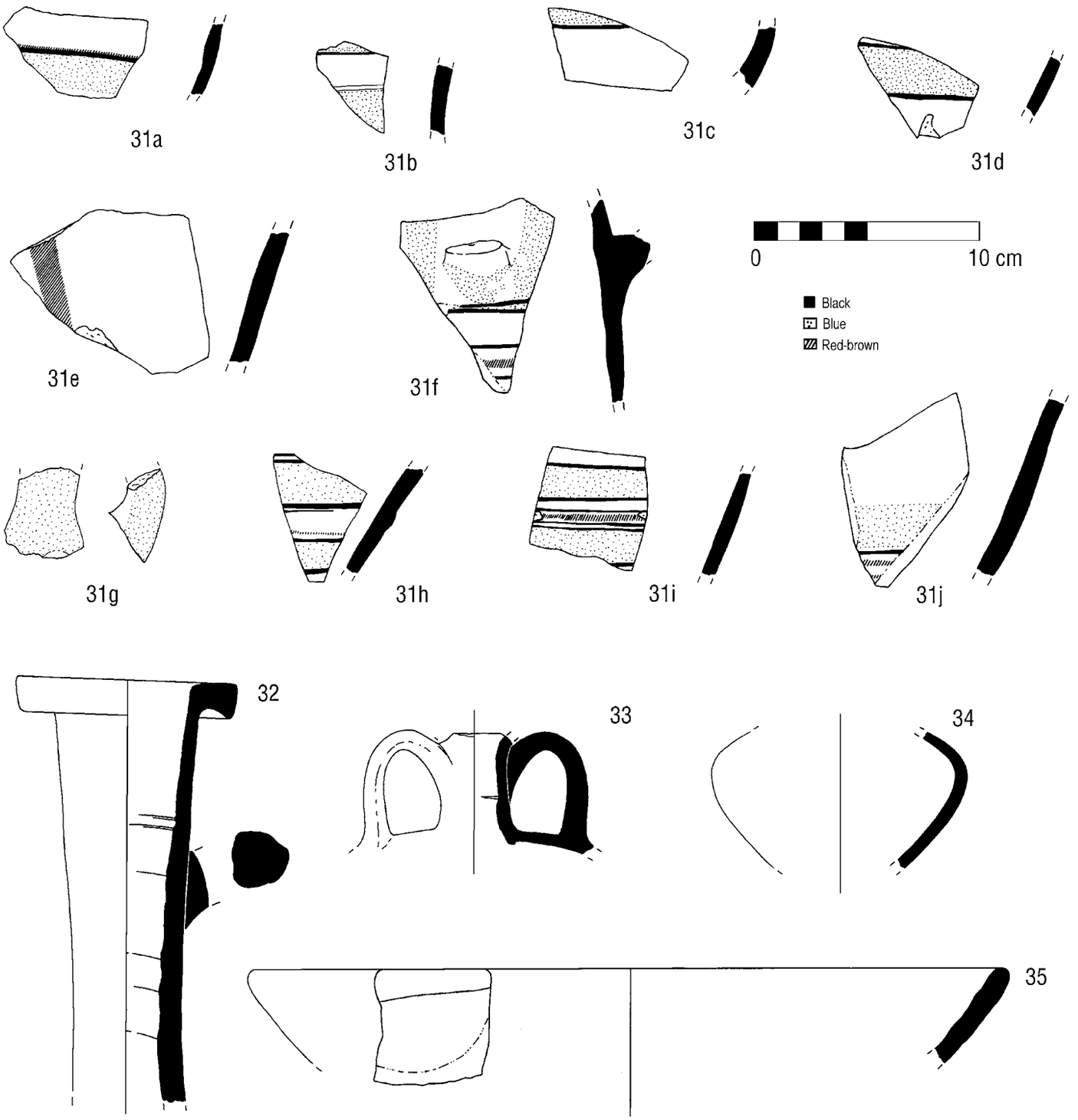


Figure 8 (*cont.*). New Kingdom pottery (*cont.*) (nos. 31–35)

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FIGURE 9. NEW KINGDOM POTTERY (*CONT.*)

36. Potstand (14.5 cm dm at base) (RN 97/57). Marl is an unusual fabric for this form. Creamy tan surface. Marl. Wadi el-Sid, New Kingdom sherd dump. See Elephantine no. 144 (Nile B2, red slipped out, pink slipped in), dated to the period from Merneptah through Ramesses XI (Aston 1999: 36–37).
37. Potstand or large bowl rim (ca. 23–24 dm). 2.5YR 7/2 fired exterior, 5YR 6/6 in break. Marl; abundant limestone chunks and black bits; medium amount of mica, sand, and red bits. Main settlement, west end, wadi surface. For a possible Twentieth to Twenty-first Dynasty parallel, see Elephantine no. 302 from Sanctuary Y, but with flatter stance and wider rim, fabric Nile D with cream/pink slip (Aston 1999: 53, 55).
38. Loop handle from rounded carination of shoulder of small jar. Burnished exterior and smoothed handles. Pink fabric, cream slip(?). Marl. Wadi el-Sid, sherd scatter across road.
39. Flat base, possibly from large bowl. Burnished, burnt exterior. 7.5YR 8/4 slip, 2.5YR 5/6 in break, brown toward innermost layers. Wadi el-Sid, New Kingdom remains south of camp. For parallels, see a silt example from Elephantine, no. 211 from Sanctuary Y, Twentieth to Twenty-first Dynasty (Aston 1999: 46, 49), and a silt piece from the well shaft of Merneptah, no. 28 with a red slip (Aston, Aston, and Brock 1998: 145–46, 169).
40. Large ring base with bulbous bottom (12 cm dm at ring). Drip of black paint on interior. Tan exterior; 2.5YR 6/6 red fired or slipped; interior 10R 5/6. Pink marl. Wadi el-Sid, New Kingdom remains north of road. See two similar bases, nos. 261 and 262, from the Valley of the Kings (Marl A2, uncoated), dateable to Ramesses IV (Aston, Aston, and Brock 1998: 157, 197).

For the following carinated amphora bases, represented by nos. 41–42 and 44, see Hope's type 1a amphorae with mold-made bases of the Nineteenth and Twentieth Dynasties (Hope 1989c: figs. 3:3, 4:6). For a complete jar form from Malkata, see Hope 1991: 58, fig. 19c. Aston believes these slender, carinated-base amphorae continue into the Twentieth Dynasty only in Marl F; the old Marl D fabric of the same shape is replaced by ovoid amphorae with rounded bases in Marl D and Marl A (Aston 2004: 191, 195–97, 199, figs. 8, 11, 13). Also see, for example, the Nineteenth Dynasty Marl A and D carinated-base examples at Qantir (Aston 1998: 436–37, 464–65, 474–75, 498–99).

41. Carinated amphora base (ca. 10 cm dm at carination). Light creamy brown fabric with creamy exterior slip. Abundant mica bits. Wadi el-Sid, sherd scatter and building north of road.
42. Carinated amphora base (ca. 14 cm dm at carination). Medium brown fabric with brownish core; fired purplish brown on surfaces, which are mostly covered with creamy yellow slip on exterior. Perhaps a marl/silt mix; abundant limestone bits, plentiful sand. Wadi el-Sid, New Kingdom sherd dump.
43. Amphora toe (dm as drawn at toe is 5 cm). Some evidence of polish on exterior but very worn. 7.5YR 8/4 exterior surface, 5YR 6/4 in break. Marl; very abundant dark gray bits, lots of sand and mica(?), medium amount limestone bits and gray chunks, some pinkish chunks. Wadi el-Sid, south-southwest of mining camp: For a parallel from Deir el-Medina, see tomb 359, Ramesses III–VI (Nagel 1938: fig. 14:32). Somewhat similar pieces may be noted at the Valley of the Kings, no. 276 (Canaanite fabric), but with a wider toe and much thicker wall, and no. 401 (Canaanite fabric), also wider. They come from Ramesses IV and VII dump clearances (Aston, Aston, and Brock 1998: 158, 200 and 163, 214).
44. Carinated jar base (amphora) with postfiring potmark (ca. 8 cm at carination). Pink marl with creamy tan surface, tan core in section. Marl; lots of mica and black bits, medium amount limestone bits; thin linear voids. Wadi el-Sid, near New Kingdom guardpost. For a similar potmark from Deir el-Medina, tomb 359, dateable between Ramesses III and VI, see Nagel 1938: 50, fig. 32:332. If the diameter were narrower, it would resemble a toe with the same potmark, Nagel 1938: fig. 8:2.
45. Sherd with postfired potmark. Surface "fugitive creamy slip." Marl. Wadi el-Sid, New Kingdom remains around modern mines.
46. Sherd with black painted decoration. Light tan marl with greenish core; exterior fired cream. Marl. Wadi el-Sid, near New Kingdom guardpost.
47. Sherd with black crosshatched decoration. White slip, black paint. Uncertain fabric (marl?). Wadi el-Sid, New Kingdom remains south of mines. For black painted, hatched decoration on the shoulders of Twentieth Dynasty amphorae and flasks, see Aston 1992: 75–77.

Not illustrated, another painted sherd, marl, bit of handle left, horizontal stripe of black-brown paint below.

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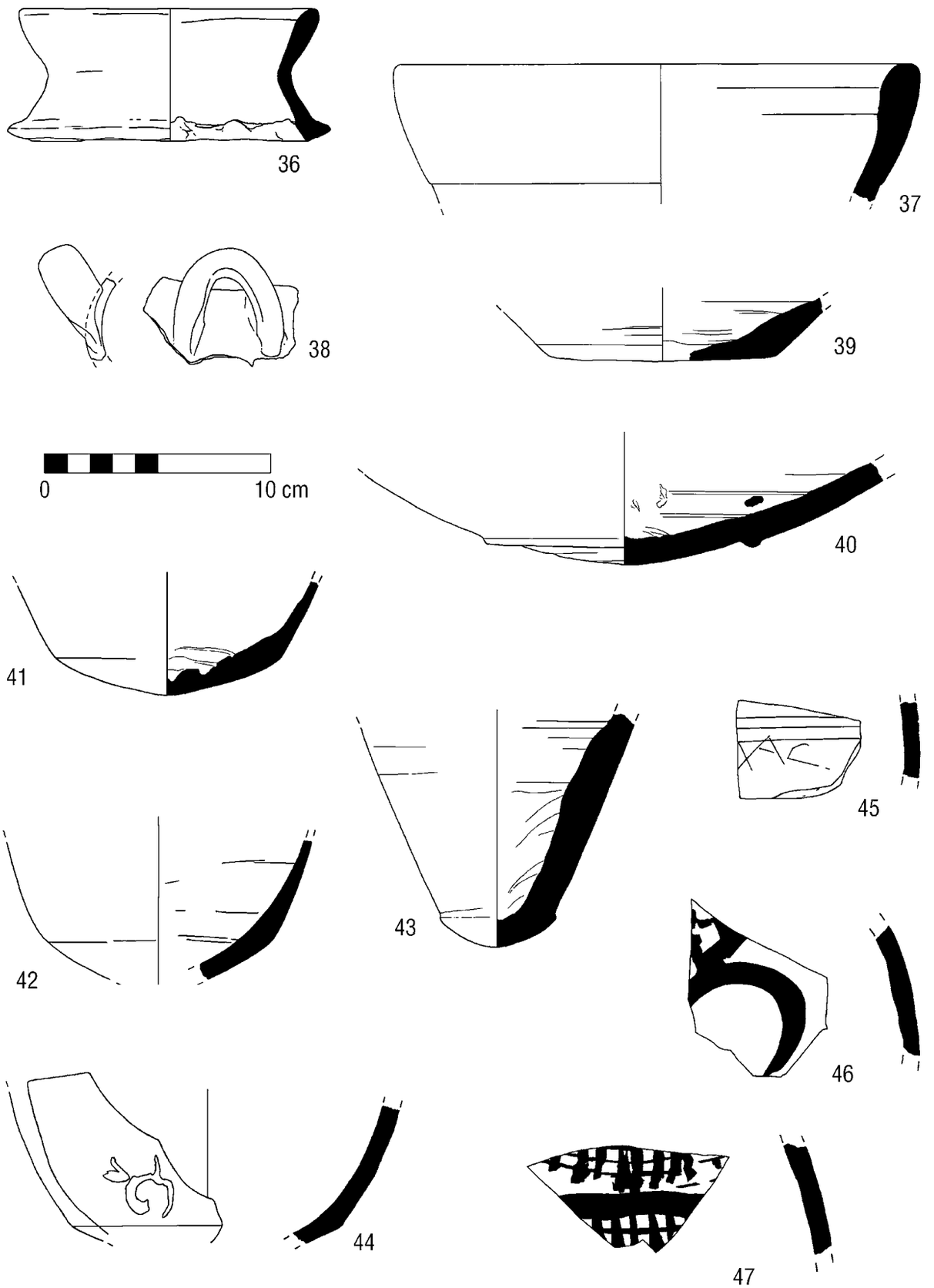


Figure 9. New Kingdom pottery (*cont.*) (nos. 36–47)

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FIGURE 10. POTTERY FROM SHEMAMIYA AND WADI EL-SID MINE TAILINGS

POTTERY FROM SHEMAMIYA

On Friday, January 13, 1996, the project briefly inspected the mining area in Shemamiya to the west of the wadi that now shelters the modern mill and mining camp. The Shemamiya area has been thoroughly clawed up by modern mining activity, and only a few diagnostic sherds were retrieved. We drew one marl bowl from the area of two huts on the gebel above modern buildings in the wadi and took the rest back to camp for sketching. The sherds appear to be of New Kingdom tradition, except possibly no. 49.

48. Bowl (28 cm dm). Tawny surface, light red section. Marl, fairly soft-fired; mica, limestone. Shemamiya 2. See bowls nos. 1, 2, and 3 in figure 5 above, New Kingdom.
49. Bowl (28 cm dm). Marl; black bits, sand, limestone. Shemamiya 1.
50. Bowl (24 cm dm). Light brown. Abundant sand, some limestone bits, mica. Shemamiya 2. For a much larger and heavier New Kingdom bowl with a thickened rim from Deir el-Medina, tomb K 2, see Nagel 1938: pl. 6: K.2. 132.
51. Neckless jar (19 cm dm). Pink section and interior, cream on exterior. Marl; large sand grains, some white bits, abundant mica. Shemamiya 2. See neckless jar no. 15 above.

Not illustrated, a silt jar body sherd, red-brown surfaces, broad ribs interior and exterior.

PTOLEMAIC REMAINS

The Ptolemy III Euergetes column fragment, the sole remaining piece of the Ptolemaic temple to Min that survived until the early twentieth century, was reported with the 1993 results (Wilfong 2000: 26). Some two-handled upper grinding stones and what may be part of an ore concentrator are considered Ptolemaic. They are discussed with crushing and grinding stones in *Chapter 7*. Sherd nos. 53, 55, 56, 71, 72, and perhaps 54 (below) appear to be Ptolemaic as well.

WADI EL-SID MINE TAILINGS

Over the course of several seasons, the project collected sherds from the tailings of the modern mines. Since we expected nothing to survive the modern mill, we were not systematic about the collection. Perhaps the only surprising thing is that any sherds at all were recovered. Most of the identifiable sherds are Roman, a few others are from the Coptic/Byzantine period or unidentifiable in date.

52. Small cup of possible Aswan "pink" ware (12 cm dm). Interior 7.5YR 7/4 (pink); brown exterior and over top of rim, seems fired not slipped, 10R 4/3. Tannish fabric, Aswan type? No sand, many small dark bits, mica; some small limestone bits; one medium red bit (grog?). Wadi el-Sid mine. For parallels from Elephantine, see a thin-walled pink bowl of Trajan–Flavian date (Rodziewicz 2005: pl. 67:1082) and a bowl of late first to early fourth century A.D. (Gempeler 1992: fig. 33:2).
53. Small dish or saucer (16 cm dm). 2.5YR 6/6, red slip interior and rim? Orange ware, much sand, some chaff? Mine camp tailings. A possible Hellenistic/Ptolemaic parallel may be noted at Coptos in red-slipped saucer no. H2.6 with a thickened rim (Herbert and Berlin 2003: 62, 64). Thickened-rim saucers are well attested at Naukratis in late third-century B.C. contexts at Kom Hadid (Berlin 2001: 28, 50–53, figs. 2.1.18, 2.1.19, 2.2.3) and third- to second-century B.C. contexts at Kom Ge'if (Berlin 1997: 144, 162–63, figs. 6.7.4, 6.7.20, and passim). Note also the red-slipped plates Types C and D from Naukratis broadly dated from the second century B.C. to the first century A.D. (Coulson 1996: 30–31, fig. 14). For first- to second-century A.D. parallels from Elephantine, see Rodziewicz 2005: 171, bottom half of pl. 61, and a first-century A.D. example in Gempeler 1992: 89, fig. 33:1.
54. Small bowl (19 cm dm). Dark brown exterior surface 5YR 5/3 (but browner fired color); tannish interior surface 7.5YR 7/4; section 5YR 6/4. Light brown fabric, some sand, small orangeish bits (grog?), dark bits, very few limestone bits, some mica. Wadi el-Sid mine. For nos. 54 and 55, see similar Roman-period types (nos. 122–28) from Mons Claudianus (Tomber 2006: 129–30).

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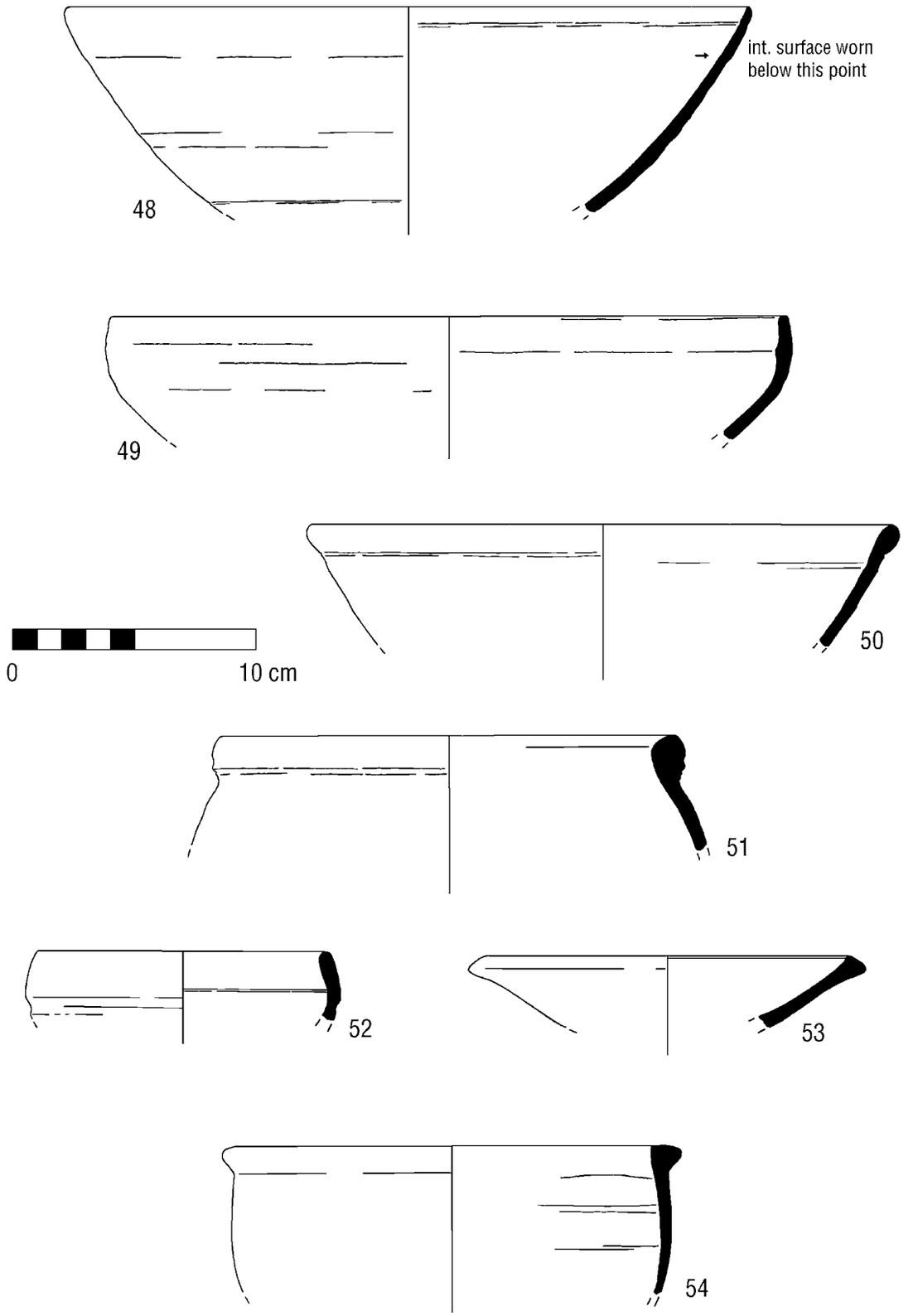


Figure 10. Pottery from Shemamiya (nos. 48–51) and Wadi el-Sid mine tailings (nos. 52–54)

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FIGURE 11. POTTERY FROM WADI EL-SID MINE TAILINGS (*CONT.*)

55. Large bowl (28 cm dm). Red-orange section with brown core 10R 5/8, fired red. Sand, some limestone. Wadi el-Sid mine tailings. For a possible parallel at Naukratis, see a third-century B.C. "ledge-rim dinos" with a chaff-tempered fabric (Berlin 1997: 142, 156–57, 355, fig. 6.4.10).
56. Large bowl or casserole (32 cm dm). Red-brown interior and exterior layers in section 2.5YR 5/8; creamy coating exterior, atop rim, into interior surface 10YR 7/3; brownish core 2.5YR 5/4. Sand, limestone, maybe mica, black bits. Wadi el-Sid mine tailings. For a Hellenistic/Ptolemaic parallel at Coptos, see ledge-rim krater no. H1.8, light red marl with light brown core (Herbert and Berlin 2003: 48).
57. Large, thick-walled bowl (27 cm dm). Light brown 5YR 5/3, very thin light red slip exterior and interior 2.5YR 6/6. Coarse fabric, light brown silt; some chaff and sand; limestone; medium amount yellowish and grayish bits; some red and black bits. Wadi el-Sid mine tailings.
58. Large bowl with three prefired slashes on rim, uncertain fabric (40 cm dm). Orange-pink interior 5YR 7/6; gray core; light whitish exterior (slip?) 5YR 7/3. Sand, lots of grits, little chaff. Mine tailings.
59. Deep bowl or beaker (28 cm dm). Red-brown 5YR 5/4; cream slip exterior and atop rim 10YR 7/3. Abundant sand and small and medium-size limestone chunks, some dark bits. Wadi el-Sid mine. A very similar vessel may be noted at Elephantine, second half of the fifth to perhaps as late as seventh century A.D. (Gempeler 1992: fig. 114:6).
60. Large bowl (34 cm dm). Red slip interior and exterior 10R 4/4; body 5YR 7/6. Orange ware. Mine camp tailings. The clubbed rim and nearly straight sides have few parallels; but see perhaps a sherd from Elephantine, IIB (silt) or IIIA fabric, smaller diameter, probably fifth to sixth century (Gempeler 1992: fig. 87:8).
61. Cooking pot (14 cm dm, but not certain). 5YR 5/6; brown interior and exterior (slip?) 2.5YR 5/4. Fine silt; mica, small dark bits common. Wadi el-Sid mine. For some first- to second-century examples with handles, see Quseir al-Qadim (Whitcomb 1982: pl. 28h) and Elephantine (Gempeler 1992: fig. 101:5; also Rodziewicz 2005: pl. 94:1544).

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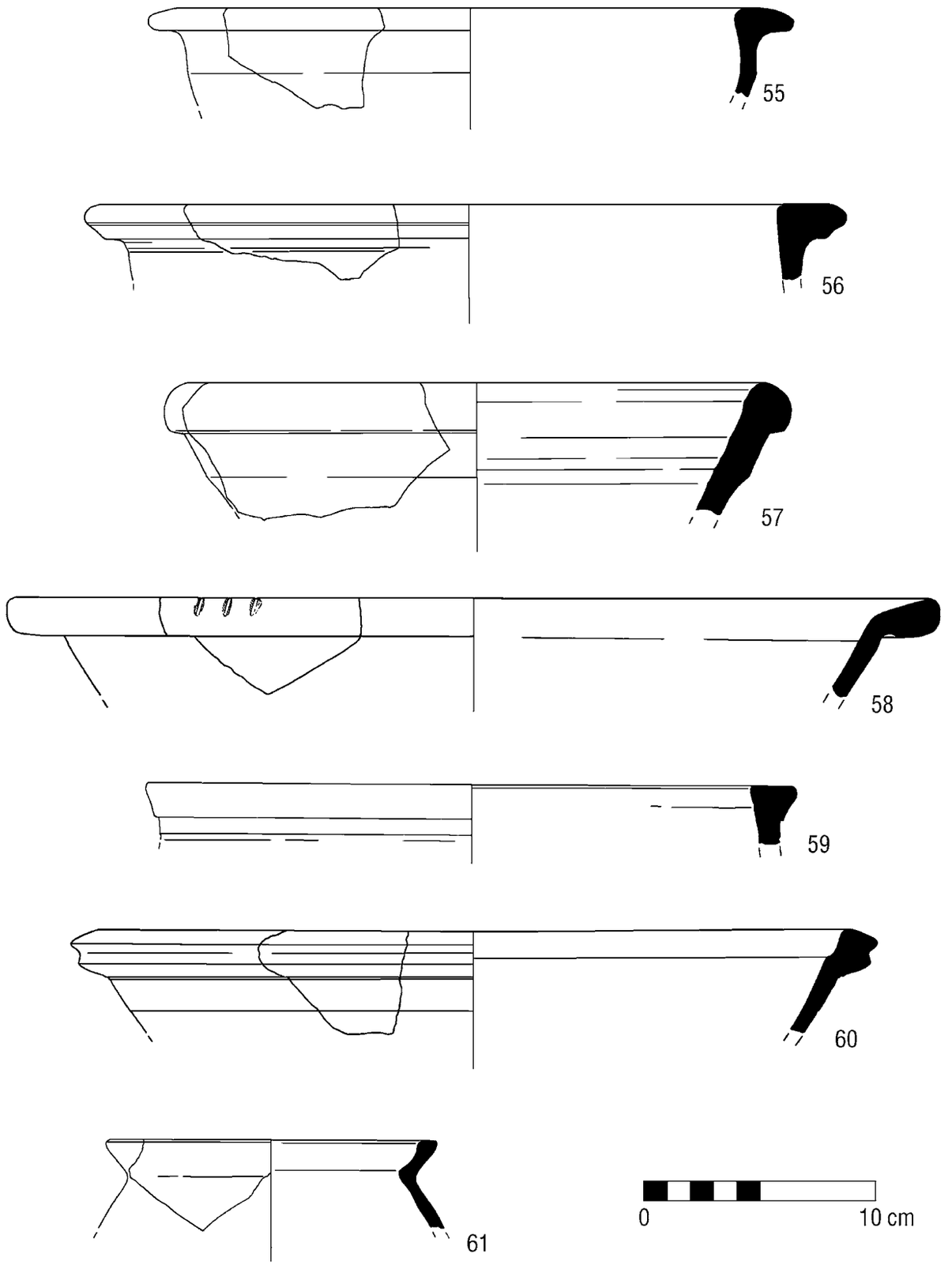


Figure 11. Pottery from Wadi el-Sid mine tailings (*cont.*) (nos. 55–61)

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FIGURE 12. POTTERY FROM WADI EL-SID MINE TAILINGS (*CONT.*)

62. Cooking pot (dm uncertain). Red-brown 2.5YR 5/6; possible red slip on exterior 10R 4/4. Silt; abundant sand and limestone. Wadi el-Sid mine tailings. Similar Roman-period pots may be noted at Quseir al-Qadim (Whitcomb 1982: pl. 10c) and Elephantine (Rodziewicz 2005: pl. 94:1546, Nile clay). See also cooking pot or jar no. 28-357 at Mons Claudianus, dateable to the Antonine period (Tomber 2006: 77, 79).
63. Cooking pot (15 cm dm). Red-brown exterior and interior rim (slip?) 2.5YR 5/4; orange interior. Much chaff. Mine camp tailings.
64. Jar or amphora (10 cm dm). Excess clay on rim, handle scar below. Marl? Wadi el-Sid mine tailings. See first- to second-century examples at Quseir al-Qadim (Whitcomb 1982: pl. 24a–b).
65. Jar (12 cm dm). 2.5YR 5/4 to 7.5YR 5/4 (brown); exterior creamish coating 10YR 8/3 (very pale brown). Marl? Heavy temper, abundant sand, medium and small dark bits, white bits, medium reddish bits (grog?). Sandy feel, minuscule gritty, shiny bits noted on surface. Wadi el-Sid mine tailings. Date uncertain.
66. Flask rim and neck (rim dm 4.8 cm). Red slip exterior and part way into interior. Pink Aswan ware. Mine camp tailings. For a close parallel in shape but a very micaceous fabric, see water jar no. R3+.19 from Coptos, fourth–fifth century A.D. (Herbert and Berlin 2003: 125–26).
67. Keg rim and neck (6.5 cm dm). Poorly formed; another body sherd of similar ware was also found. Interior and exterior remnant red slip 10R 4/8. Orangeish ware, most likely Oasis or Aswan clay. A few large pebbles, some marl, reddish chunks, limestone bits, small and dark red bits, mica. Wadi el-Sid mine tailings.
68. Amphora (12 cm dm). Brown surface 5YR 5/4; red-brown section with brownish core 2.5YR 4/6. Silt? Much mica, some sand, limestone bits. Wadi el-Sid mine. For first- to second-century A.D. parallels, see Quseir al-Qadim (W. R. Johnson 1979: pl. 24h; Whitcomb 1982: pls. 26p, 27h).
69. Amphora (11 cm dm). Handle scar. Exterior surface 5YR 6/4; red-brown section 5YR 5/4. Silt; mica, limestone and dark bits; no chaff or organic temper. Wadi el-Sid mine. Somewhat similar rims at Quseir al-Qadim (Whitcomb 1982: pl. 27) and Elephantine (Rodziewicz 2005: pl. 88:1468).
70. Amphora (11 cm dm). Red-brown 5YR 5/4. Much chaff, scaly. Mine camp tailings. Well attested at Quseir al-Qadim, very tall amphora with solid, pointed toe like no. 73 below (W. R. Johnson 1979: pls. 22e, 28k, 29m; Whitcomb 1982: pl. 14f–g). Very common at Mons Claudianus, dateable to the mid-first century A.D. through the Severan period (Tomber 2006: 143–44).
71. Amphora toe. Red-brown exterior 2.5YR 5/4, gray core and interior 10YR 5/1. Very sandy. Mine camp tailings. For hollowed-out amphora toes, see Coptos amphorae 12–15, 21, and 22, dated third–second century B.C. into the first century B.C. (Lawall 2003: 165, 168–70).
72. Amphora toe. Dark brown fired surface 2.5YR 3/4; red-brown section 5YR 6/4; gray core. Silt; finely levigated, hard-fired, no chaff. Wadi el-Sid mine tailings. See no. 71 for parallels.
73. Amphora toe. Brown. Silt. Wadi el-Sid mine tailings. See no. 70 above.

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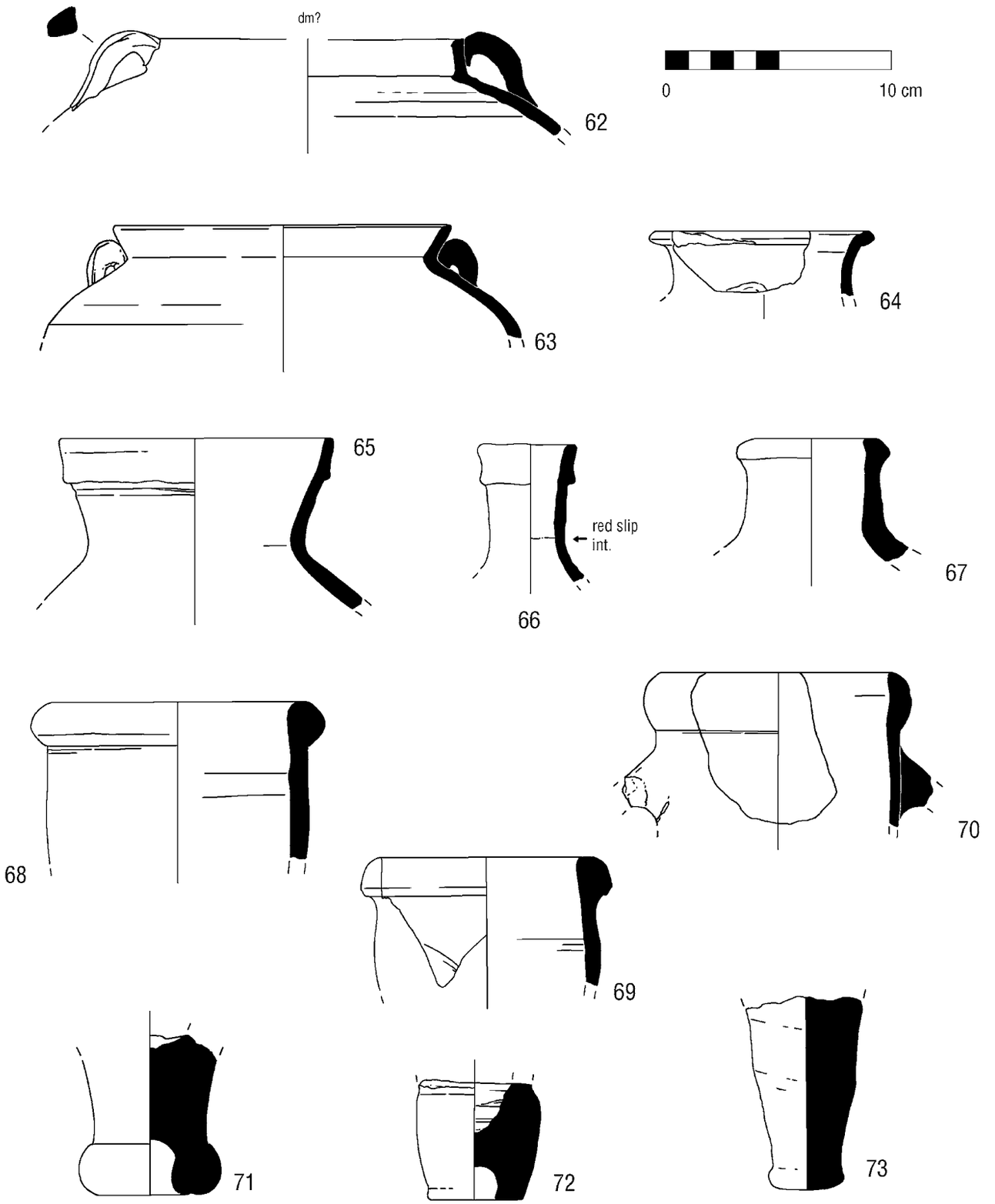


Figure 12. Pottery from Wadi el-Sid mine tailings (*cont.*) (nos. 62–73)

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FIGURE 13. POTTERY FROM WADI EL-SID MINE TAILINGS (*CONT.*)

74. Base. Very sandy fabric; looks like silt but inclusions are marl-like. Some limestone and mica bits. Wadi el-Sid mine tailings.
75. Base. Exterior red slip; red-brown section 2.5YR 5/8; grayish core. Plentiful sand, some limestone chips or slivers; medium amount dark bits, perhaps mica. Wadi el-Sid mine tailings.
76. Amphora handle. Buff with gray-green cast. Chaff and coarse temper. Mine tailings.
77. Small ring base (5 cm dm). Red slip exterior 10R 4/8; section 5YR 6/6. Silt? Sand, some mica on surface, black bits. Wadi el-Sid mine tailings.
78. Large ring base (10 cm dm). Orange-pink exterior 2.5YR 6/6 with buff slip(?) 10YR 7/4; gray core and interior 10YR 6/2. Hard-fired; sand temper. Mine tailings.
79. Base (9 cm dm at bottom). Creamy interior and exterior; pinkish section. Marl; medium to abundant sand, dark bits and limestone; some larger limestone chunks. Wadi el-Sid mine tailings.
80. Cord-marked sherd with white paint. Surface smoothed or slipped 5YR 8/4, white paint added; interior gray 10R 4/2; fabric "sandwiched" red-brown to gray 10R 5/6. Coarse; some chaff and small white bits, many medium-size sand grains. Wadi el-Sid mine tailings.
81. Worked sherd. Brown surface 2.5YR 6/6 to 7.5YR 7/4; gray core 5Y 5/1. Sand temper. Mine tailings. At least two edges have been ground or scraped smooth, but the sherd is not trimmed to a circle like the disk shown in *Chapter 7,* figure 49m (below).
82. Worked sherd. Red-brown slip exterior 2.5YR 5/8; interior surface and section 2.5YR 6/6. Abundant small white bits (limestone?), a few medium to large white and red bits. Wadi el-Sid mine tailings. An amphora body sherd with two edges ground or scraped smoothed, like no. 81 above but larger.

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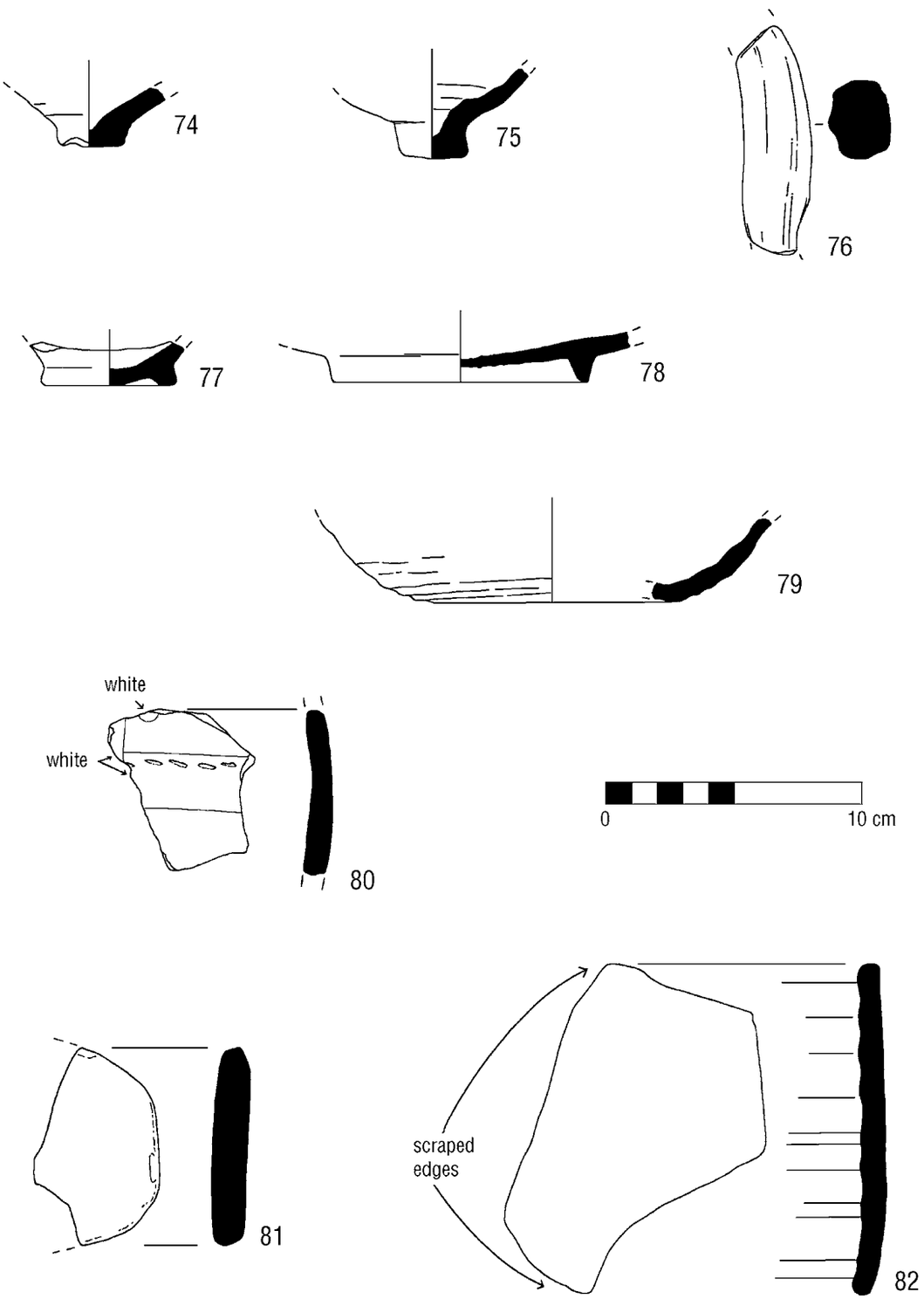


Figure 13. Pottery from Wadi el-Sid mine tailings (*cont.*) (nos. 74–82)

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FIGURE 14. ROMAN SMALL FINDS

As might be expected from the Romans' wide-ranging exploitation of Eastern Desert resources, there is historical and archaeological evidence for Roman activity in the Bir Umm Fawakhir area; the Roman potsherds from the Wadi el-Sid mine tailings are described above.

The Roman slotted grain mill (fig. 14a and pl. 1b) that was reported as early as 1944 (Lethbridge 1946: 222) was finally collected from Outlier 9, registered (RN 97/64), and sent to the Quft magazine. It is made of vesicular basalt with a deep, longitudinal, V-shaped groove on top that cuts through to the slot on the bottom. The bottom is deeply scored with diagonal lines, and one end has a lead plug and the letters "AP" carved to the right. The two notches on top held a crossbar that served as a handle for pivoting the stone over a lower grinding block. This kind of "hopper-rubber" is well attested at Olynthus, Greece, primarily dateable to 432–348 B.C. (Cahill 2002: 24–25, 163–64), and a good parallel was excavated at the first- to second-century A.D. Roman villa at Quseir al-Qadim (Meyer 1982: 204–05), which gives such grinding stones a wide geographical and chronological range.

Several unprovenanced Roman artifacts held at the Wadi el-Sid mill were documented and registered, including an intact amphora (RN 96/18; pl. 2a). The oil juglet (RN 96/19; fig. 14b) is made of a light red-brown fabric (2.5YR 6/4) with a red slip (10R 4/4). It lacks a handle, and a pick punched a hole in one side. The small, lopsided jar with a broken rim and string-cut base (RN 96/20; fig. 14c) is made of red-brown silt (2.5YR 5/4). The sooted miniature cooking pot (RN 96/21; fig. 14d) with a string-cut pick-damaged base is made of a marly fabric (2.5Y 7/4). These two vessels are considered Roman because of their association with the amphora, oil juglet, and the lamps, but this may be fortuitous. One of the three lamps in the group (RN 96/23; pl. 2b left) preserves a rosette design on the surviving half of the upper discus. The second lamp (RN 96/22; fig. 14e and pl. 2b center) has two crouching men on either side of the oil hole. It is made of a light brown fabric (10YR 7/3), and the snout is fire-blackened. It has a precise parallel at Medinet Habu, where the design is called "two boys or embryos" (Hölscher 1954: 69, fig. 90c, pl. 40:12). It is considered related to the more common frog lamps, which in turn are dated to the third to fourth centuries A.D. (Hölscher 1954: 68). The third lamp (RN 96/24; pl. 2b right) is too flaked to see whether it ever had any pattern on the top. One small fragment of the rim of a faience bowl (RN 97/21; fig. 14f) was found in one of the huts on the slope above Mine 1. Other pieces of faience were noted in the 1992 survey season (Meyer 1995: 46).

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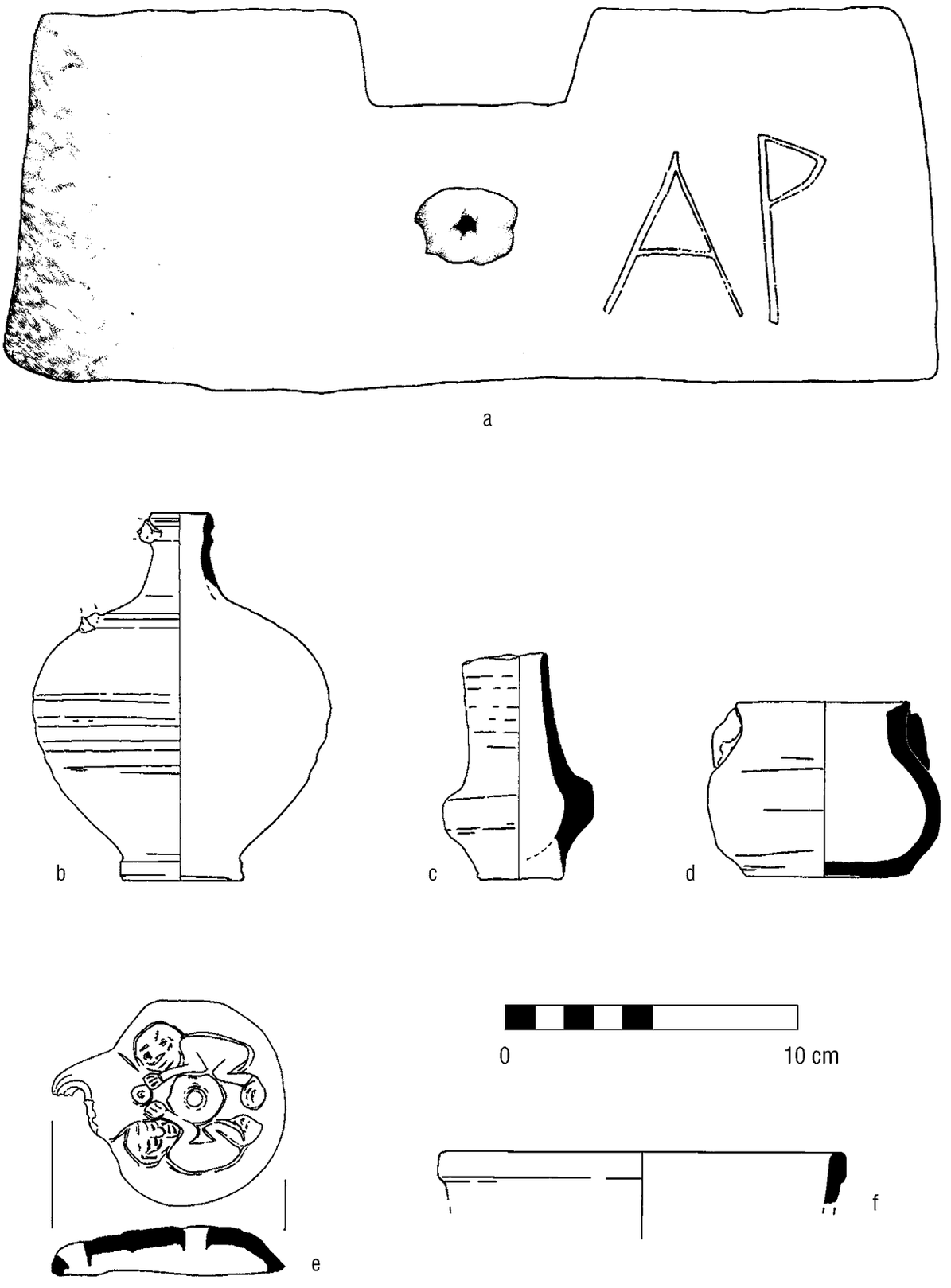


Figure 14. Roman small finds

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CHAPTER 3

MAIN SETTLEMENT 1996 AND 1997 SURVEYS

Carol Meyer

The 1996 and 1997 seasons completed the detailed mapping of the main settlement at Bir Umm Fawakhir that began in 1992. The first season's work started at the far southeast end of the main settlement because a pink felsite dyke cutting through the granite stock clearly marks the end of the site, and because the buildings at this end are better preserved (Meyer 1995). The 1992 season mapped Buildings 1 through 55, and the work was continued in 1993 with Buildings 56 through 105 (Meyer et al. 2000). With a detailed map of nearly half the ancient town, it was possible to estimate the population of the main settlement at a little over 1,000, far larger than any modern town between the Nile and the Red Sea (barring the very recent growth of Laqeita). The estimate also assumes that not a single person lived in any of the fourteen outlying clusters of ruins of the same date identified so far, and at least three of the outliers seem to have been residential.

The main settlement at Bir Umm Fawakhir lies in a long, narrow wadi running southeast–northwest (figs. 2–3, 15–16). The mouth of the wadi opens on a broad sandy area where ancient and modern roads meet. At the western end of this broad sandy area, the modern (and ancient) road passes through a natural gate in the mountains, bends southwest toward the Wadi Hammamat, and thence to the Nile Valley at Quft (fig. 3, pl. 1a). Close to the natural gate, just north of the modern road, are the wells, vital in a hyper-arid desert. Running east out of the crossroads area is the old Roman road in a wadi bed north of the main settlement. The modern asphalt road, in contrast, bends south and runs through the Wadi el-Sid and on to Quseir on the Red Sea. Thus the southeast–northwest wadi that shelters the main Bir Umm Fawakhir settlement lies at an angle between the east–west wadi with the Roman road and the north–south wadi with the modern road. Unlike the road-bearing wadis, however, the one that houses the ancient town leads nowhere; it peters out in granite heights at its southeast end. The main settlement is not visible from either of the roads, and it was probably sheltered from the worst of the flash floods that wash out the Wadi Hammamat and other large wadis from time to time.

There is a modern settlement at Bir Umm Fawakhir. It is the halfway point on the road between Quft and Quseir, so most buses and taxis stop at one of the two teahouses for refreshment. In addition, there is a police post, a new mosque, two government buildings, and a few houses. Roughly half a kilometer to the northeast, in Outlier 9 (see *Chapter 4* on outliers), there are some abandoned houses of the British mining engineers who supervised work at the Fawakhir mines before World War II.

The main settlement at Bir Umm Fawakhir, some 237 structures in all, is built along either side of its wadi, up to the point where the enclosing cliffs rise too steeply for much if any construction, much less dwellings (figs. 15–16). The site has no planned layout at all. Rather, the houses and their outbuildings conform to and take advantage of the surrounding topography. The middle of the sandy wadi bottom served as the main street, but since there is no evidence whatsoever for any paving, references to the wadi "street" are always in quotation marks.

A landmark and reference point within the main settlement is a high granite knob labeled the "Hillock" (figs. 15, 17, 21b; pl. 3a). It is a little north of the halfway point up the wadi; the 1996 survey ended here. The Hillock is separated from the northeastern cliffs of the wadi by a deep gully that has houses packed on either side, though there are only two on top of the Hillock itself (Buildings 176 and 177). The Hillock, the gully, and the bay to their south hid so many building from sight that they presented our most serious mapping problem.

HOUSE CONSTRUCTION AND FEATURES

All the walls in all the buildings are dry-stone masonry; there is no evidence for mortar of any sort. The walls are nonetheless skillfully made, typically with two faces of granite cobbles and a filling of smaller stones and the occasional potsherd (see, e.g., Building 134 below). Since granite is, literally, cheaper than dirt at Bir Umm

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Fawakhir, nothing so big as a wall seems ever to have been made of brick. Bricks either unbaked or baked are so rare that they are marked individually on the master plan. In many cases a small, rounded room appears to have been attached to the exterior of a house; on the top plans, such a room looks as if it had been "hooked on." These small rooms seldom interconnect with the main part of a house; they might have been secondary storage space or a pantry, and they may have had flimsier walls and roofing, matting perhaps. The project was careful to note nonbonded walls, but since the requirement was that the join be visible from both sides, joints at very tumbled or sand-filled corners or walls were probably missed. Nonetheless, in a few cases the lack of bonding did permit some reconstruction of building sequences (e.g., Building 140).

Doorways, where reasonably well preserved, have larger stones for jambs, sometimes set upright; there is no sign of rebates, much less locks. The 1999 excavations showed that thresholds were large, flat-laid stones. Steps down into rooms may be noted in Outlier 2 buildings. Doors and roof beams presumably were made of wood, but since wood is so precious in the desert, these would have been among the first elements stripped away. There is no trace of any roofing material, but presumably it was something fairly light such as matting over beams and stringers. There is no evidence for stone roofs like those at Mons Claudianus or for second stories.

A number of houses have built-in stone benches or mastabas; the two terms are used interchangeably here. The mastabas have sides made of thin, flat, upright stones and apparently a filling of smaller stones (e.g., Building 134 below). Many more houses have tumbled remains that might have been benches, but they seem to have been favorite targets of looters. A few houses appear to have utilized smooth, handy boulders as benches (e.g., Building 208). Another common built-in feature is niches. They are simply boxes floored, sided, and topped with thin granite slabs set in the thickness of a wall. Where the back of a niche has fallen away, it can look like a window (or a cat door if the room is deeply sanded in), but there is very little solid evidence for real windows at Bir Umm Fawakhir.

Unless well preserved, doors and mastabas on the house plans are subject to one caution. It is possible for wall fall to fill in a former door or to give the impression of a bench or the corner of a bench. Only excavation can determine which is a damaged feature and which is mere tumble. Since wadi wash, wall fall, and sand fill are much more extensive at the northwest end of the site, the problem of determining doors and other features there is more serious than at the southeast end, where the project began mapping in 1992 and 1993.

By and large, courtyards, a common feature of Near Eastern architecture, are not well attested at Bir Umm Fawakhir. For the purposes of this report, "courtyard" means a walled but not roofed space within or attached to a house. The few courtyards that were tentatively identified and blocked out in gray in figures 18–23 were so labeled because they have doorways wide enough to accommodate an animal such as a donkey (Buildings 27, 29, 50), or they are too large or irregularly shaped to have been roofed easily (Buildings 41, 118, 164, 201, 229), or they would block all light to the interior rooms if roofed (Buildings 84, 195). Proving that they were courtyards, or not, is a matter for excavation, and small internal courtyards may well have been missed.

A few other features may be noted. Some houses have thin internal partition walls that close off a corner (e.g., Buildings 92, 134) or a small stone-rimmed feature that seems too small to be a bench. Some of these might be hearths, but no ash survives, certainly not on the surface (e.g., Buildings 101, 161, 169 [external]). In addition to the already-published stone-lined basin in Building 14 and the cist outside Building 102, there is a rock-cut trough downslope from Building 116.

HOUSES, OUTBUILDINGS, AND OTHER STRUCTURES

Just as the overall layout of the main settlement at Bir Umm Fawakhir lacks any formal plan, so do the individual houses. We can identify an ordinary house plan of two or three rooms, or occasionally more, but Vitruvian it is not. "House" at Bir Umm Fawakhir usually means two or three interconnecting rooms standing free of other structures (Buildings 113, 116, 122, 133, 135, 138, 139, 142, 143, 147, 153, 154, 157, 165, 167, 168, 170, 180, 188, 190, 195a, 200, 226). Sometimes two or more rooms of a house do not interconnect but are so constructed that they most likely functioned together (Buildings 110, 130, 184, 194, 197, 204, 206, 208, 211, 215, 217, 232). A few large one-room buildings are considered houses because they are big enough to constitute small dwellings and/or have domestic features such as benches or niches (Buildings 107, 115 [damaged], 178, 182, 192, 202, 209[?], 210[?]). Other houses have more than three rooms; some of the additional rooms are small, "hooked-on" rooms or side rooms, but some houses just have more rooms (Buildings 118, 129, 160, 169, 172, 177, 199, 216,

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229). Finally, some buildings are so damaged that their layout is uncertain, though they seem more like houses than agglomerated buildings or one-room outbuildings (Buildings 149, 151, 221, 223, 224[?], 235[?]). A similar array of houses has been published for the 1992 and 1993 seasons.

With the possible exception of the "hooked-on" storage rooms or "pantries" that might have been used mainly for storage, we have no means of determining the functions of the house rooms, not from surface survey alone. Room sizes are listed in *Appendix B*. Given that rooms may be described as rounded, trapezoidal, pentagonal, polygonal, irregular, or C-, D-, G-, L-, T-, or Y-shaped, but hardly ever orthogonal, the maximum length and width measurements are useless for calculating room sizes. What might carry some information, however, is the column listing "room interior (sq. m)," which were measured from the millimeter grid squares of the base map. The benches could have served for sitting, work surfaces, or sleeping, though sleeping outdoors in hot weather can be desirable. The niches might have been multifunctional as well and used for storage of dishes or small items, lamps, or even used as house shrines for figurines. Although figurines are very rare at Bir Umm Fawakhir, Frankfurter (1998: 40) does suggest such usage. Features such as hearths on the floors are either buried or ambivalent. Surface sherds and other artifacts are not reliable determinants of room function; they may drop out of wall chinking, or get washed downslope by floods, or get picked up and dropped elsewhere. For instance, vessel no. 1 (RN 93/42) reported from the 1993 season was reconstructed from two joining sherds collected from widely different findspots (Heidorn 2000: 29, 84–85). The basic housing requirements at a site such as Bir Umm Fawakhir in a hyper-arid desert are shelter from the sun in the summer, shelter from the wind in the winter, and storage, particularly of items that could be blown away. The assumption, which can only be tested by excavation, is that most daily work activities took place outdoors in either the warmth of the sun or the coolness and/or wind shadow of the building walls. Shelter from infrequent but blinding sandstorms would have been desirable. When one of the even rarer flash floods hit, the best option would have been to get out of the wadi and up on the slopes.

In many cases several two- or three-room houses have been joined together as larger agglomerated buildings (Buildings 106, 109, 121, 124, 126, 128, 134, 140, 141, 144, 150, 156, 158, 161, 162, 163, 164[?], 174, 175, 176, 186[?], 189, 195, 220[?], 228, and 1992 and 1993 examples). The largest, Building 106, has twenty-two rooms. The smallest, Building 127, has only two large rooms and a closetlike room, but the doors face completely different directions, and the units are further separated by low walls. In the case of Building 140, we can reconstruct some of the building sequence: it started as several one- or two-room units, more rooms were added, and eventually enough connecting walls were erected to clump everything into one thirteen-room structure. Generally speaking, the houses in an agglomerated unit do not appear to have functioned together. They merely share party walls; the exterior doors may face all different points of the compass. Although we did not number or letter rooms during the survey, the rooms of some of the larger agglomerated buildings have here been lettered ("a" though "v" or as needed) in order to make the descriptions easier to follow.

Scattered around the houses and agglomerated buildings are numerous one-room outbuildings. They are defined as one-room (or occasionally two-room), small structures not physically attached to another building. Some outbuildings are very small, rough, and often rounded, while others are somewhat larger and more nearly rectangular; a few do not fit either pattern. The small, rounded, roughly constructed huts on the slopes of the cliffs look like guardposts (Buildings 75, 236) or even latrines (e.g., Buildings 111, 123, 125, 131, 132, 149a, 171, 196, 218, 219), depending on their location. A few of these huts have two rooms (e.g., Buildings 112, 146), but they are still too rough to be considered more than "outbuildings." Many of the more nearly rectangular outbuildings are on the wadi floor rather than the cliffsides (Buildings 108, 119[?], 120, 155, 159, 191[?], 207, 212, 222, 225[?], 231, 233). It is sometimes difficult to draw the line between some of the larger one-room outbuildings and one-room houses, as noted above. Other outbuildings are too different or too poorly preserved to fit them into either pattern (e.g., Buildings 114, 173, 193, 207). Apart from a couple of guardposts, the functions of the majority of the one-room buildings simply are not known, whether for housing, storage, animal shelters, workshops, smithies, or different functions at different times. Judging from the 1999 excavations of Building 93, they are not kitchens, which were located in the open air beside a house. The one-room Building 181, also excavated in 1999, had very few finds, but it was not a latrine. At Mons Claudianus, workmen's huts and several smithies were located around the quarries, away from the fortified town. The smithies were necessary to keep the quarry tools sharp (Maxfield and Peacock 1997: 233–51), and the miners of Bir Umm Fawakhir probably needed similar facilities, but they would not necessarily have been located within the main settlement. A number of one-room buildings

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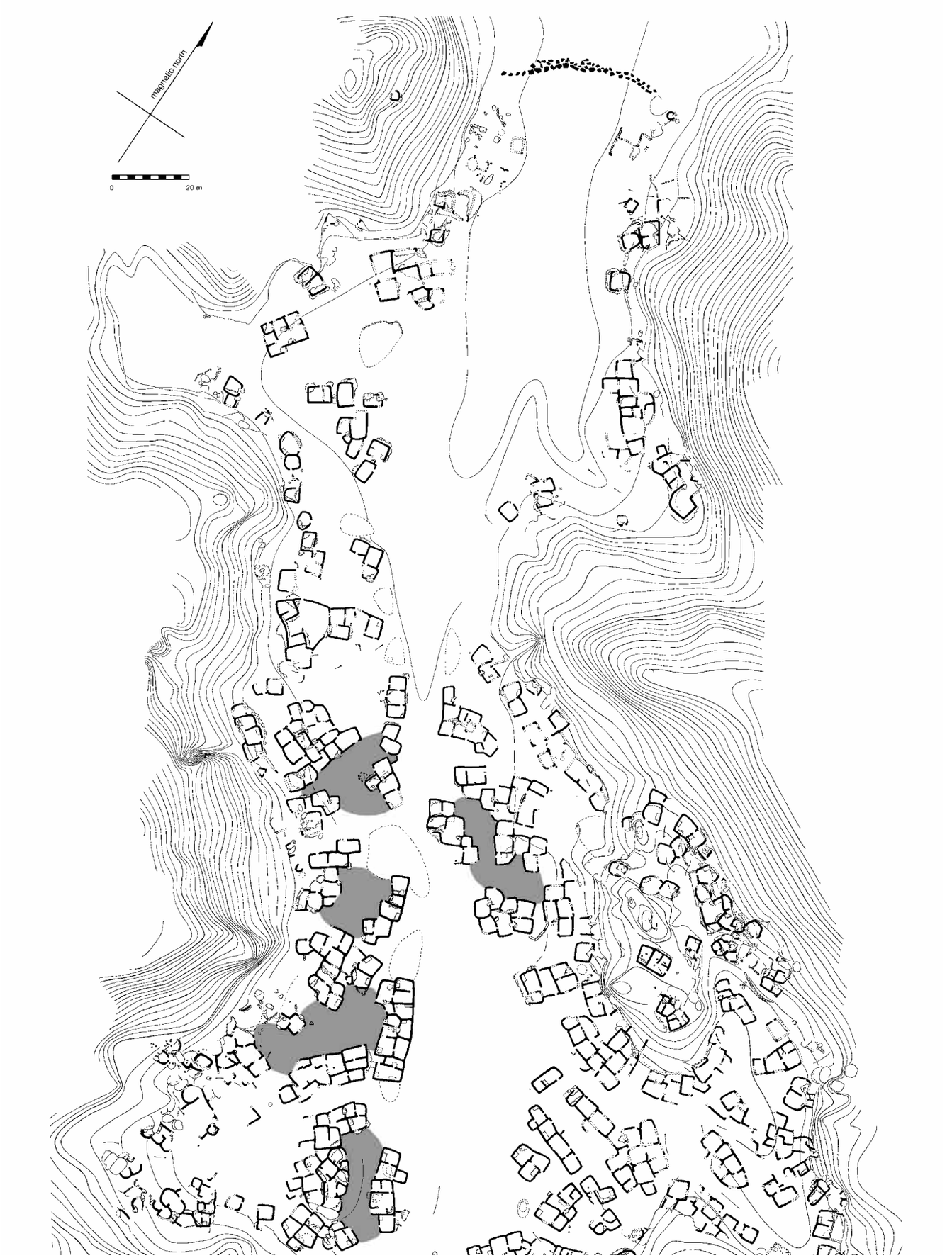


Figure 15. Map of main settlement, northwest half; “plazas” shaded gray

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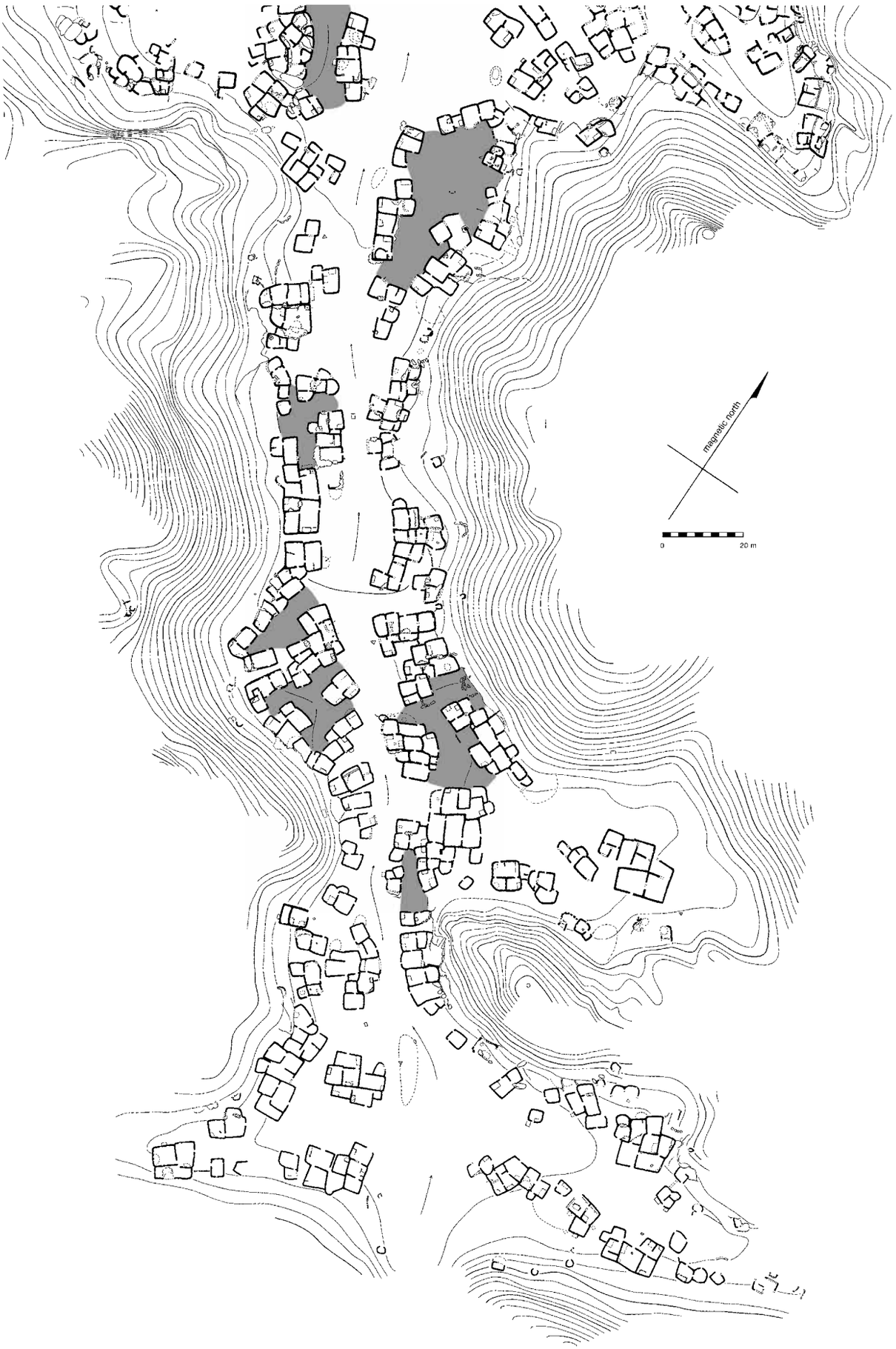


Figure 16. Map of main settlement, southeast half; “plazas” shaded gray

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of the same period at Shenshef were shrines, but they are fairly large (2.7 × 2.2 m to 7.74 × 6.26 m) and very well constructed with niches or niche rooms in the back wall, and they have a special setting on gentle slopes around the town. Several have little terraces in front, and one even has a possible offering table (Aldsworth and Barnard 1996: 399–401). Since none of the one-room buildings at Bir Umm Fawakhir shares this configuration of traits, we do not think any were shrines.

The project also mapped the retaining walls on the slopes around the main settlement. Some of the retaining walls seem to have been constructed as back walls of rooms (e.g., Buildings 129, 155) or open areas (e.g., between Buildings 164, 157, and 159) or as support for ramps or steps up (Building 170). Most retaining walls, however, seem to have been intended to impede the sand and debris tumbling downslope.

Although not structures in the same sense as houses or retaining walls, a very distinctive feature of Bir Umm Fawakhir is the ancient trash heaps. They generally lie behind and a little upslope from the houses or in an open space between them. Since Bir Umm Fawakhir is basically a one-period fifth–sixth century A.D. site that was never reworked, built over, leveled, or trenched by later activity, the presumption is that the contents of the trash heaps most likely pertain to the closest buildings. Two trash heaps adjacent to Building 93 were in fact excavated in 1999 (to be published with the volume on the excavations).

In all, 133 structures were mapped during the 1996 and 1997 seasons. Of these, twenty-six are agglomerated buildings, sixty-two are houses, and forty-four are outbuildings. Building 201 is a compound unlike the other agglomerated buildings and thus is listed as "Other." The 105 buildings mapped in 1992 and 1993 comprise twenty-eight agglomerated buildings, thirty-eight houses, and thirty-nine outbuildings (see *Appendix B* for details). The total counts[7] for all four survey seasons break down thus:

	1992	1993	1996	1997	**Total**
Agglomerated	10	18	12	14	**54**
House	21	17	20	42	**100**
Outbuilding	24	15	17	27	**83**
Other	—	—	—	1	**1**
Total	**55**	**50**	**49**	**84**	**238**

Thus, although we can group the structures at Bir Umm Fawakhir very generally into one of three types — outbuildings, houses, and agglomerated buildings — all have so many variants and irregularities that no formal typology such as "Type Ia1" was even attempted. Exceptions are likely to be as common as rules when it comes to house layouts at this particular site. The problem at Bir Umm Fawakhir is further compounded for the 1996 and 1997 results by the fact that the northwest end of the site is much more washed out and sanded in, so it is much harder to define buildings. Buildings whose scrappy remains look like one structure on the first pass turn out to be two after detailed inspection and mapping, for example, Building 213. Or the converse can be true; two separately numbered houses would probably have been considered one structure had the connecting walls been more convincing, for example, Buildings 129 and 130. Finally, at the far northwestern end of the site, close to the wadi mouth, some buildings are so destroyed they are little more than house mounds (Building 225) or disjointed wall segments (Building 235).

SITE LAYOUT AND FEATURES

Since we have only surface survey data, we hesitate to present a study of the settlement pattern of Bir Umm Fawakhir or any spatial analysis of the houses, though the data presented here may be of use to those who are engaged in this type of statistical research. A few preliminary observations on the site layout are possible, however.

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[7] In all, 237 buildings were numbered, but Buildings 93 and 234 turned out to be no more than retaining walls, and Buildings 61a, 149a, and 195a were added to the sequence, hence the total of 238.

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Figure 23a Figure 23b

Figure 22a Figure 22b

Figure 21a Figure 21b

Figure 20a Figure 20b

Figure 19a Figure 19b

Figure 18a Figure 18b

Figure 17. Bir Umm Fawakhir Project (1992–1997) key to detailed maps

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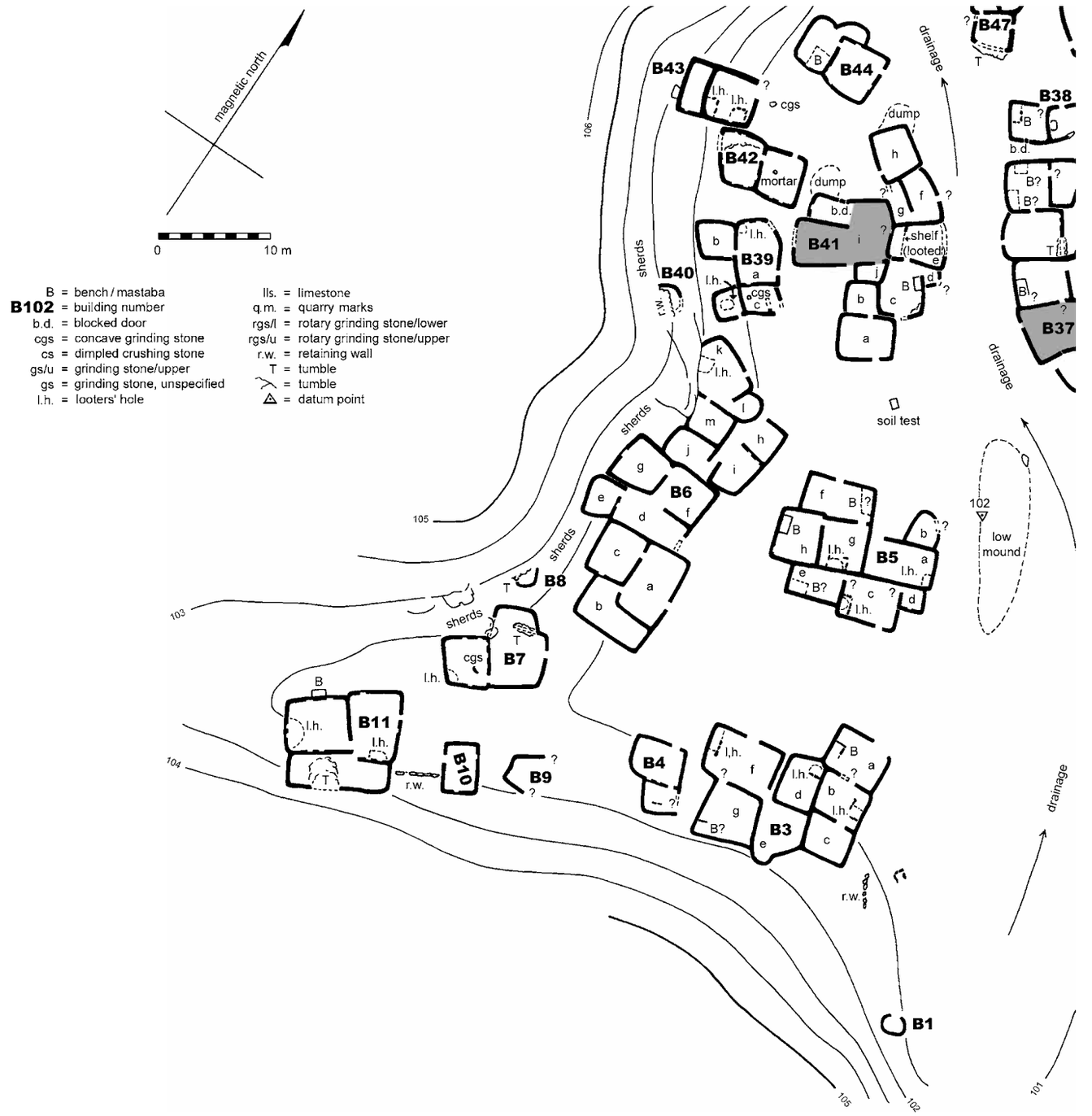


Figure 18a. Detailed map of main settlement, Buildings 1, 3–11, 39–44, 47; courtyards shaded gray

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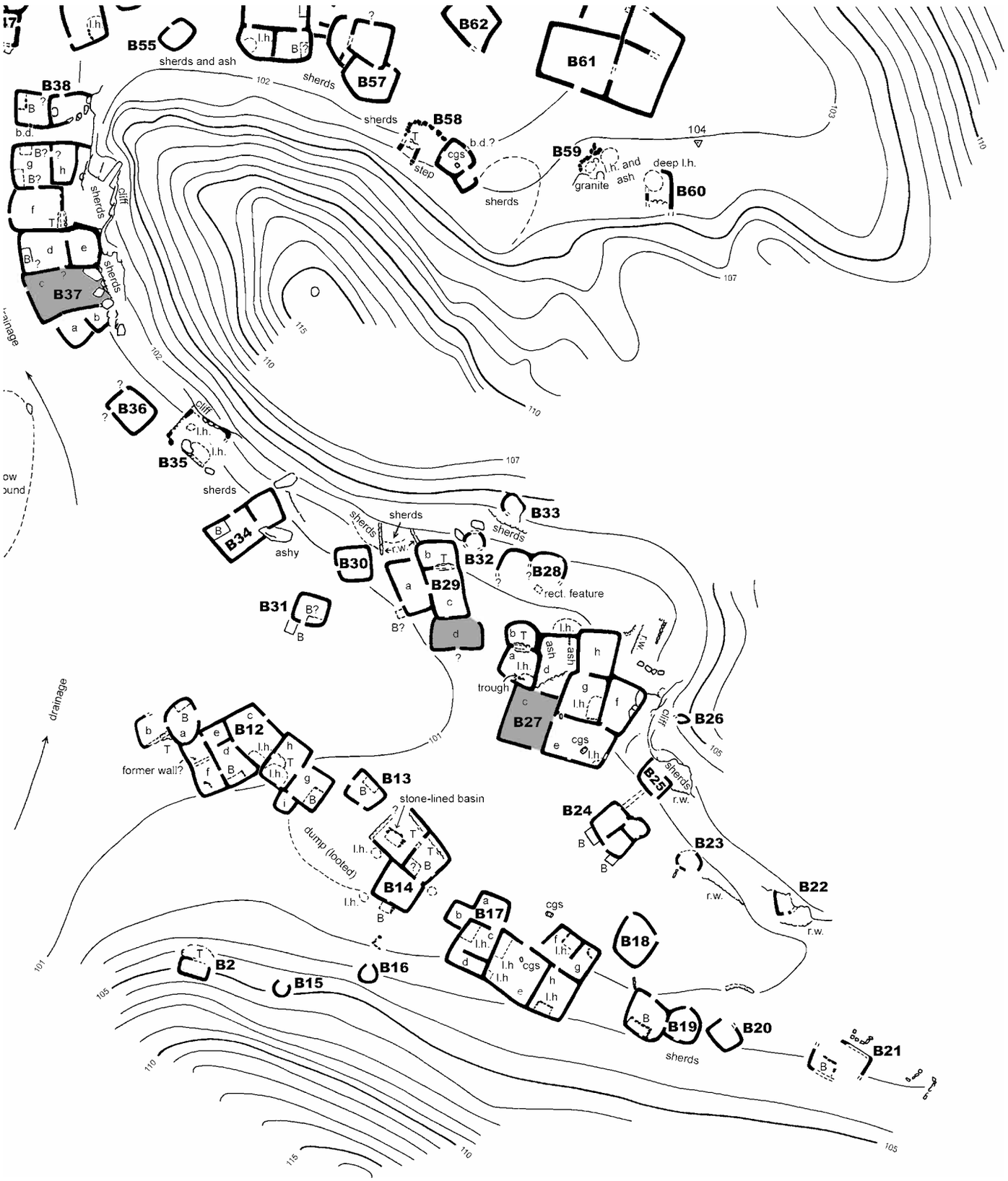


Figure 18b. Detailed map of main settlement, Buildings 2, 12–38, 55, 57–60; courtyards shaded gray

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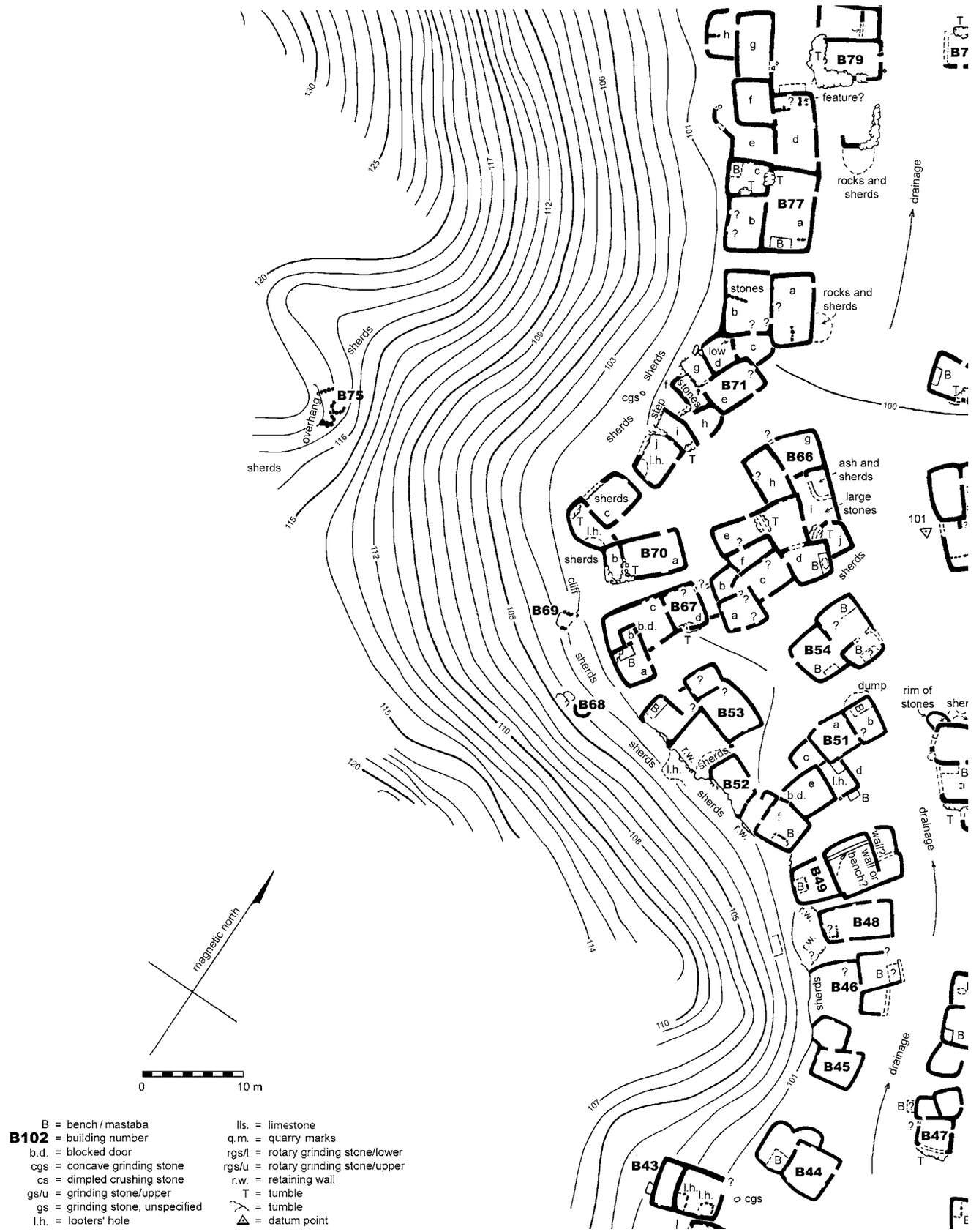


Figure 19a. Detailed map of main settlement, Buildings 43–49, 51–54, 66–71, 75, 77

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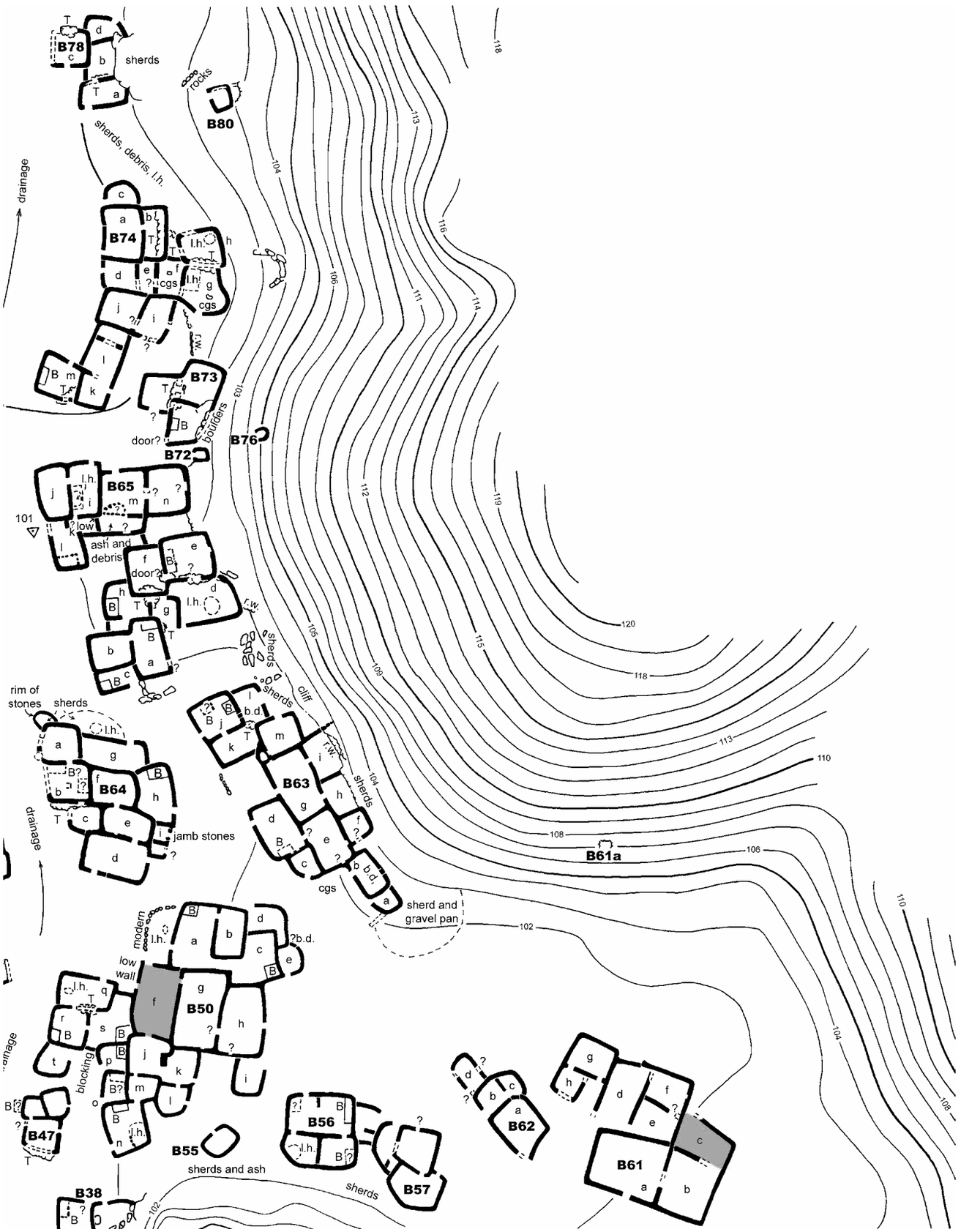


Figure 19b. Detailed map of main settlement, Buildings 47, 50, 55–57, 61–65, 72–74, 76, 78, 80; courtyards shaded gray

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Figure 20a. Detailed map of main settlement, Buildings 78–79, 81–96, 100; courtyard shaded gray

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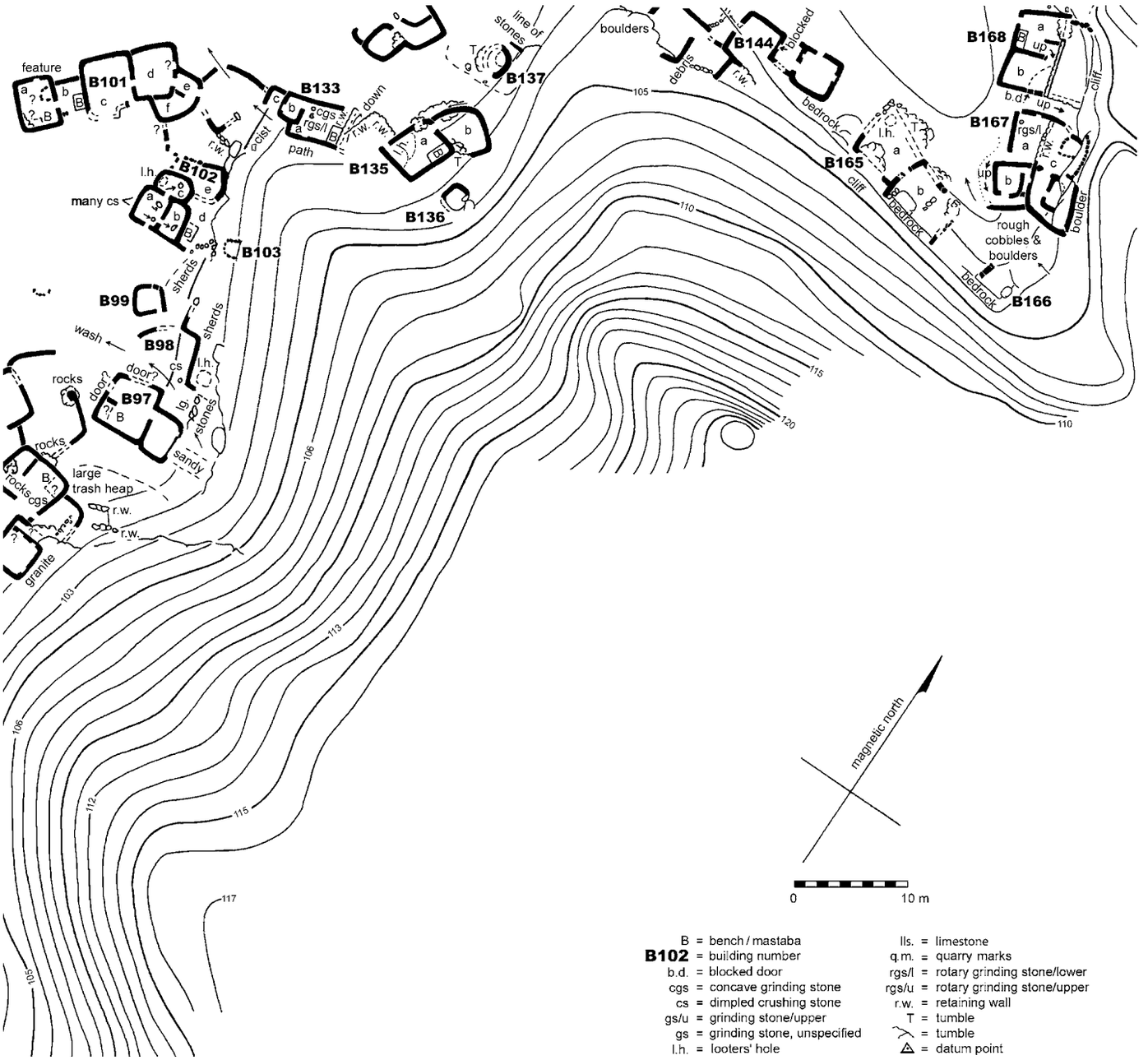


Figure 20b. Detailed map of main settlement, Buildings 97–99, 101–03, 133, 135–37, 144, 165–68

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Figure 21a. Detailed map of main settlement, Buildings 104–32, 152, and Quarry 2; courtyards shaded gray

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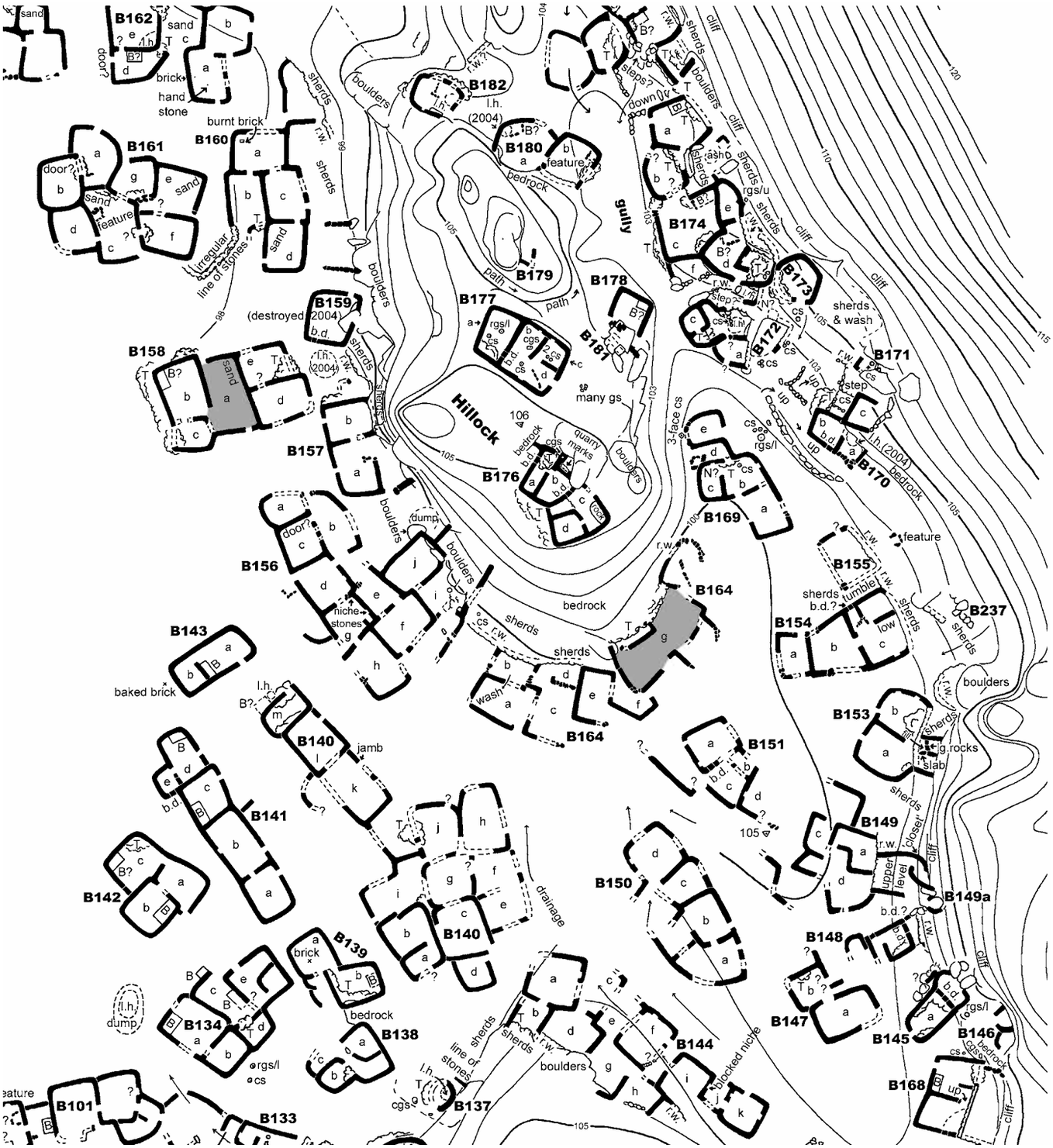


Figure 21b. Detailed map of main settlement, Buildings 134, 137–51, 153–61, 164, 169–74, 176–82, 237; courtyards shaded gray

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B = bench / mastaba
B102 = building number
b.d. = blocked door
cgs = concave grinding stone
cs = dimpled crushing stone
gs/u = grinding stone/upper
gs = grinding stone, unspecified
l.h. = looters' hole
lls. = limestone
q.m. = quarry marks
rgs/l = rotary grinding stone/lower
rgs/u = rotary grinding stone/upper
r.w. = retaining wall
T = tumble
= tumble
= datum point

Figure 22a. Detailed map of main settlement, Buildings 130–32, 192–210; courtyards shaded gray

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Figure 22b. Detailed map of main settlement, Buildings 162–63, 175, 183–91, 226–28

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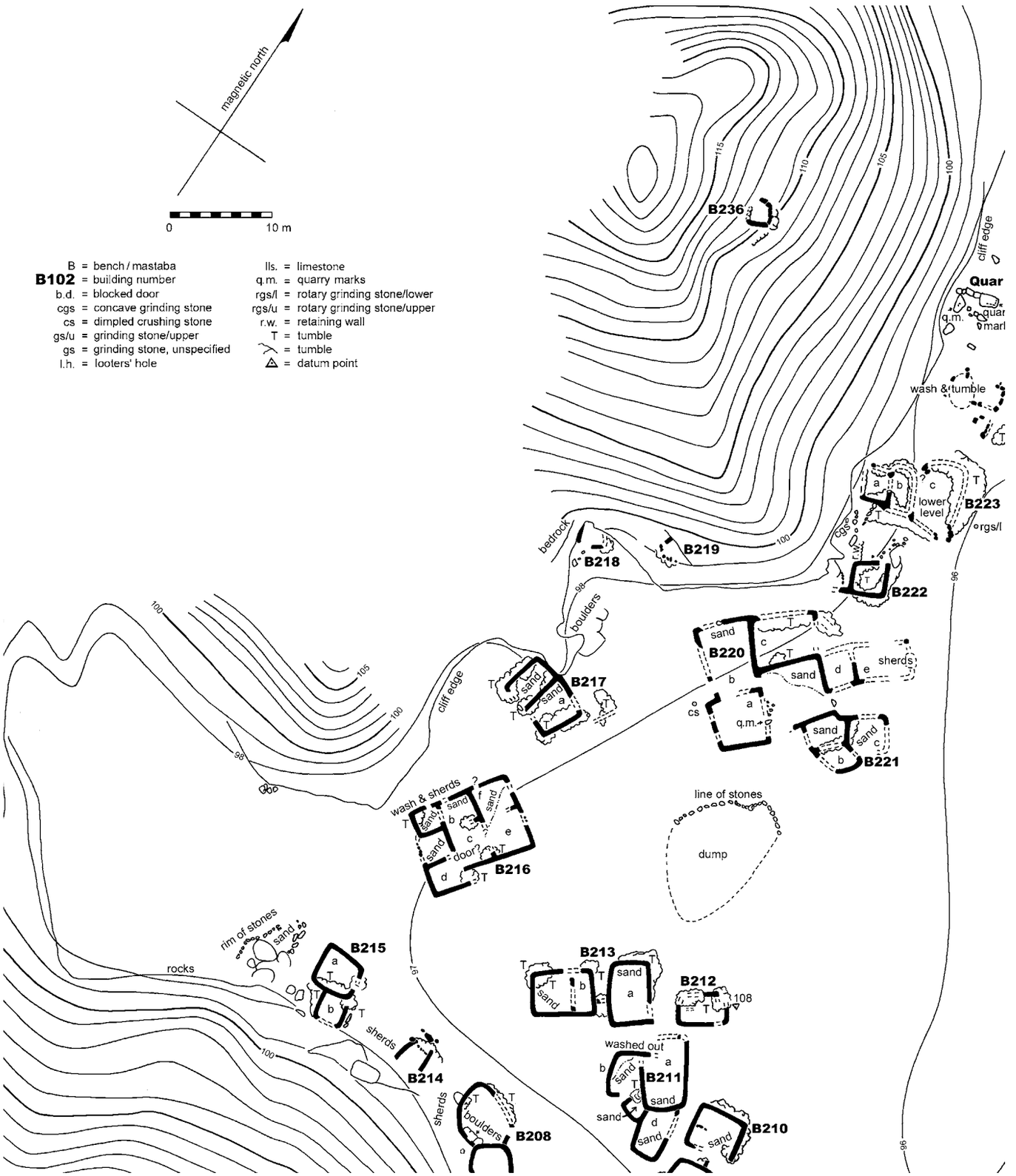


Figure 23a. Detailed map of main settlement, Buildings 210–23, 236

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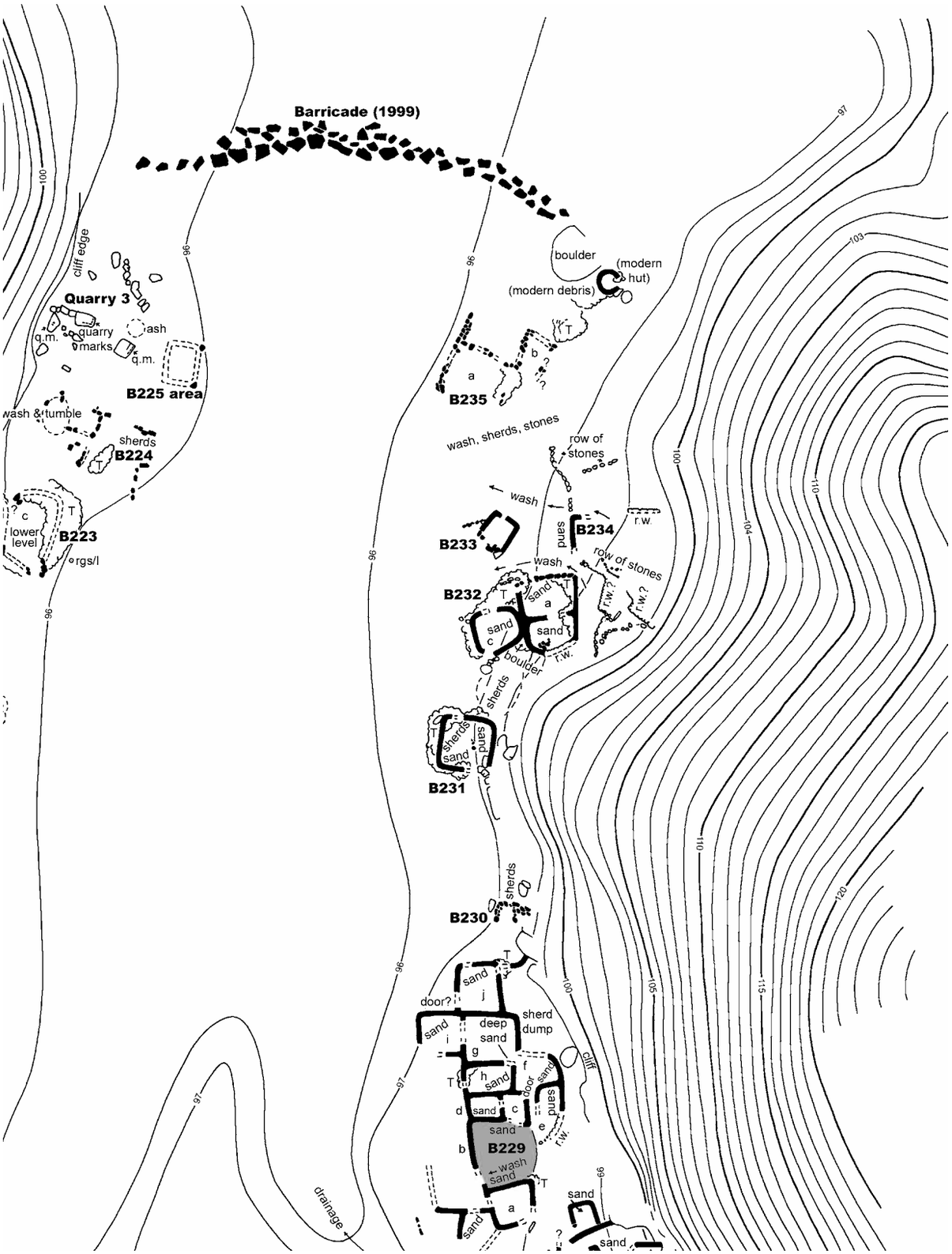


Figure 23b. Detailed map of main settlement, Buildings 223–25, 229–35, and Quarry 3; courtyard shaded gray

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First and most obviously, there is no formal town grid system; the sandy wadi bottom serves as the main "street." Houses are built on either side of the "street" on the relatively flat wadi bottom, up to the point where the cliffsides become too steep for construction, though small outbuildings may be built upslope, under, or around boulders.

The current assumption is that the inhabitants of the houses at Bir Umm Fawakhir were related by blood, marriage, or other close relationship such as adoption. The impression of kin-based or at least elective households, rather than assigned, is supported by the fact that the Bir Umm Fawakhir houses do not have the regimented layout of military barracks, as may be seen at Abu Sha'ar (Sidebotham 1994: 135) or the workers' barracks at the modern mining camp in the Wadi el-Sid.

In several places the houses encircle and face onto a more nearly private open space. The first of these loosely enclosed spaces, surrounded by Buildings 91–93 and 97–102, was identified by the 1993 survey and labeled the "plaza," largely for lack of a better name (fig. 16 upper right, and Meyer et al. 2000: 7). This and similar groups of houses around open, sandy areas are blocked out in gray in figures 15 and 16. The defining characteristic of these "plazas" is three or more house units that surround an open space and have doors that open onto this space rather than onto the wadi "street." Agglomerated buildings may have back-to-back units facing two different "plazas," for example, Buildings 66 (fig. 19a) and 126 (fig. 21a). The eleven "plazas" blocked out in figures 15 and 16 are only the clearest examples. Some smaller groups of houses might be considered to group this way, for example, Buildings 42, 43, 44, and part of 41 (fig. 18a). In other areas such as the deep bay southeast of the Hillock (figs. 20b, 21b) and the north end of the main settlement (figs. 23a–b) the doors are too poorly preserved to be certain which way they face. At the far south end of the settlement, where the survey started, the buildings are more spread out, so it is difficult to say whether they enclosed a "plaza" or "plazas" or merely open onto the far ends of the wadi "street." At the same time, it is clear that Buildings 140 and 141 (fig. 21b) do not enclose a "plaza"; the doorways of Building 141 face the back of Building 140. Likewise the gully between the Hillock and the cliffs (fig. 21b) cannot be considered a "plaza." Whatever footspace can be found there is given over to a narrow path, though these crammed-together houses presumably cooperated with or at least acknowledged the activities of the others. The assumption is that the houses around a "plaza" coordinated their activities to some extent. If nothing else, there seems to be a tendency to pile rubbish on the dumps between "plazas," as may be seen most clearly in figure 16.

After five seasons of survey and excavation, there is still no evidence of any major public buildings; all the structures in the main settlement appear to be domestic. The one possible exception, judging solely from surface survey and top plans, is Building 201, which has two large areas that are probably courtyards (fig. 22a). None of the other rooms are, however, remarkable enough to make Building 201 look like an official, elaborate, or administrative structure. The site has no fortifications or walls to keep people in or out, only some guardposts high on the mountaintops overlooking the site (Meyer et al. 2000: 19, figs. 45 and 46; and Buildings 75 and 236). Given the fact that security is often a problem in the desert, the lack of fortifications is curious, but perhaps the density of the settlement and the steep surrounding cliffs afforded some protection to the main settlement, if not to the outliers. No churches have been located, and by the sixth century A.D., the time of Justinian and Theodora, some of the population from which the miners were recruited would presumably have been at least nominally Christian. However, the little shrine to Min built by Ptolemy III Euergetes (246–22 B.C.) was still accessible; it was not destroyed until the early twentieth century. (The question of religion is treated in *Chapter 5.*) Most surprisingly of all, given the estimated population of the main settlement, there are no especially large or well-constructed or specially designed buildings that could be mine offices, warehouses, animal shelters, or mine managers' quarters. These buildings may have existed in the sandy, open area near the crossroads and the wells, precisely the area most damaged by flash floods and by twentieth-century mining activity, and more or less the area now covered by the modern settlement.

A great deal of work has been done on the functions of rooms of houses at sites such as Pompeii in Italy (Allison 2004), Olynthus in Greece (Nevett 1999; Cahill 2002), and El Ceren in El Salvador (Allison 1999). All these are excavated sites, none of them Near Eastern, and in their day Pompeii and Olynthus were probably not intended to be ephemeral. What does emerge from this literature is the conclusion that the sites most likely to provide insight into Bir Umm Fawakhir are mining towns. For a useful review of the characteristics and patterns of mining camps all the way from small, seasonal, family operations in Africa to hermetic South African company towns, see Knapp 1998.

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First of all, mining towns are relatively ephemeral. Many mines play out quickly, especially with ancient technologies. The dates we are using for Bir Umm Fawakhir are based almost entirely on the pottery and glass corpora, which center on the fifth and sixth centuries A.D. Within this period, however, it is likely that the mines were worked for 150 years at the very most, and not continuously at that. Our reasons for thinking that operations were not continuous are some hints from the three levels of occupation revealed by the 1999 excavations (Meyer 1999), the intermittent quarrying at Mons Claudianus, and the high cost of exploiting the Bir Umm Fawakhir mines. The Mons Claudianus quarries are earlier, mid-first to early third centuries A.D. (Maxfield and Peacock 2006: xxi), but they are similar to Bir Umm Fawakhir in that they represent hard rock excavation, if granodiorite columns rather than quartz veins in granite. Judging from the ostraca, Mons Claudianus was most active during parts of the reigns of Trajan, Hadrian, and Antoninus Pius and less active under other first- to third-century emperors (Maxfield and Peacock 2006: xxi–xxii), presumably when the emperors demanded monumental columns and could pay for them. At Bir Umm Fawakhir, the situation would have been exacerbated by the fact that gold ore, unlike granodiorite, plays out relatively quickly, and the Fawakhir ores were not especially rich in the first place (see *Chapter 7*). Thus the miners would have expected to work in a remote desert only as long as their rations and pay arrived regularly, which is to say, as long as the officials authorizing such expenditures found it worthwhile. Both the need for gold and the ability to expend wealth in the form of labor and grain in order to get gold fluctuated under the Byzantine government. The resources and organization to supply reliably a thousand or more people in the central Eastern Desert are formidable: grain, flour or bread, flasks of oil, sacks and baskets of other food, amphorae full of wine and other liquids, tools, pottery, clothing, matting, glassware, and the camel trains to carry it all. The miners, like the Mons Claudianus quarrymen, probably kept up contact with Nile Valley towns partly for the sake of personal supplies and partly because their villages and kin — their roots — were there and they could return there if necessary. (The question of the makeup of the Bir Umm Fawakhir labor force is treated in *Chapter 8*.)

The likelihood that ancient Bir Umm Fawakhir was expected to be a short-term, expedient settlement is boosted by the fact that it has no local subsistence base. No subsistence agriculture has succeeded in this part of the Eastern Desert at any point in history or prehistory. There is evidence in the Roman-period ostraca that a place called Persou was growing green vegetables and sending them to *praesidia* along the Wadi Hammamat route (Brun 2003: 99). "Persou" may originally have meant the settlement in the Wadi Hammamat, but the name was later applied to Bir Umm Fawakhir (Brun 2003: 8). The wells at Fawakhir are generous and could probably have watered gardens to supply a population the size of the *praesidia* at Maximianon or Krokodilo, though whether there would have been enough water for a thousand or more people at the height of the occupation of Bir Umm Fawakhir, as well as a number of animals and gardens, is another question. Still, we have to allow for the possibility that some fresh vegetables could have been raised. More importantly, a few sheep and goats could have been maintained at Bir Umm Fawakhir, and more might have been obtained from nomads. Today the residents of Bir Umm Fawakhir keep (or kept) only one donkey, some dogs, and little else, though Bedouin and their flocks pass through from time to time. Their sheep and goats could have been a useful source of milk, leather, and wool in addition to meat. The fact remains, however, that all basic supplies were hauled in from the Nile Valley.

Another feature of Bir Umm Fawakhir is that it, like most mining towns, is focused on one and only one occupation: mining. In the case of Dolly's Creek, an Australian gold-rush town, 277 out of 314 men were miners, and virtually all the others could be considered to have supporting occupations such as bakers, blacksmiths, builders, or masons, this in an area with potential for farming (Lawrence 1998: 48). At Bir Umm Fawakhir, one does not expect the range of farming and craft operations found in a Nile Valley village, though a few support occupations such as animal tenders, blacksmiths to sharpen tools, and caravaneers would have been necessary. Given the lack of feed, the ancient Fawakhiris probably did not own large flocks, and the animals attempting to live off local vegetation would perforce have been widely scattered. Smithing and tool sharpening may have been carried out close to the mines rather than in the town; this was the case at the Mons Claudianus quarries (Maxfield and Peacock 1997: 190). The buildings at Bir Umm Fawakhir thus may be expected to include few if any specialized craft workshops, or even long-term storage facilities.

Since Bir Umm Fawakhir was a remote and relatively expedient and ephemeral settlement, it is likely to appear relatively egalitarian. Necessities would have been hauled in, but few luxuries. Knapp remarks on "the lack of variability in material culture" characteristic of many mining towns. The miners were not wealthy, and

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if they became so, they took their money elsewhere. Further, stores and supplies available in mining camps tend to be limited in variety and often expensive (Knapp 1998: 5). Discussing mining towns in the American West, Hardesty (citing Brooks 1995) observes that expecting a short stay "levels or equalizes differences in the material culture of social formations within the community" or even encourages "a minimalist material culture such as dugout housing" (Hardesty 1998: 84). The Bir Umm Fawakhir houses are better than dugouts; they have well-made walls, but they are cobbles with chinking. No one invested in cut stone, even though as miners they could have roughed some out had they wanted. Some houses do have more rooms, but on the basis of surface survey alone, we cannot say whether this was due to greater wealth or larger families.

Another feature of mining towns such as Bir Umm Fawakhir is a population heavily weighted to young men, especially during the first years of the settlement. There are few elderly or disabled, and women are often in short supply. For instance, the 1861 census of the Australian gold-rush camp at Dolly's Creek revealed that 80 percent of the population was under forty, and there were 122 women fifteen or older for 286 men (Lawrence 1999: 134). (The question of the labor force is dealt with in more detail in *Chapter 8*.) Although we are working with the assumption that many or most of the inhabitants of the Bir Umm Fawakhir houses were related by blood, marriage, or other close relationship, that does not necessarily mean a man, a wife, and their children. There may have been a large number of brothers, other male relatives, or perhaps even male nonrelatives sharing living quarters.

The apparent lack of differentiation among the houses in the main settlement at Bir Umm Fawakhir, then, seems to accord with the pattern seen at other mining towns: as a short-lived settlement, there was little investment in elaborate architecture, limited availability of luxury goods, and perhaps a shortage of women and hence families and children and the need for larger houses.

THE 1996 AND 1997 SURVEY AREAS

The area plotted during the 1996 season was roughly the middle fifth of the main settlement, Buildings 106 through 153 (fig. 3). The wadi and its "street" follow a northwest–southeast fault in the Fawakhir granite, which in turn was cross-faulted at nearly right angles. The shorter cross-faults now open up as a series of bays on either side of the wadi "street." Two of these, one on the east and one on the west, were the focus of the 1996 survey season (pl. 3a). Buildings 106 through 132 and 152 lie in the west bay; Buildings 133 through 151 and 153 lie to the east (pl. 17a).

Between 1996 and 1997, at least one heavy rain fell in the Wadi Hammamat area. Much more sand and rock was washed over the site and some sherd beds were further covered, but the sudden blooming of desert plants gave the site "almost a garden-like quality" (Heidorn 1997 field notes).

Figures 18a–b, 19a–b, and most of 20a–b show the area mapped in 1992 and 1993. They were published in Meyer 1995 and Meyer and colleagues 2000 but are included here for convenience and completeness. They were rescanned and relabeled in order to match the format of the 1996 and 1997 maps; if there are any discrepancies in the labels, the original publication should be accepted.

One of the primary goals of the 1997 season was to finish mapping the remainder of the site (figs. 3, 20b, 21–23), including some buildings at the extreme end of the east bay that the 1996 survey could not reach (fig. 20b). These last few buildings could not be sighted around the spur of the cliff from datum point 104, and there was no time to set up a new point, much less sketch and plot the rear buildings. The "Hillock," a high granite knob on the east side of the wadi where the 1996 season ended, has houses all around it and so presented surveying problems; the houses are not necessarily numbered sequentially here. In sum, the 1997 season plotted Buildings 154 through 237 and enough of the surrounding topography to include the limits of the site, the point at which the cliffs rise too steeply for habitation.

The structures are described in considerable detail below because we have little hope for the long-term preservation of the site. The reader is invited to compare the two photographs in figure 24, one taken in 1901 (Alford 1901: pl. 2) and the other in 1996. The dry-stone masonry walls crumble a little more each year, and excavation, much less consolidation, of so many hundreds of buildings is not feasible. Worse, looters could destroy the site house by house. Between 1999 and 2004, Buildings 115 and 159 were completely destroyed by looters, Building 172 was damaged, and more than likely there was other destruction in the back part of the site that could not be checked in 2004. Perhaps the best friend of this site is the sand that blows in a little more year by year.

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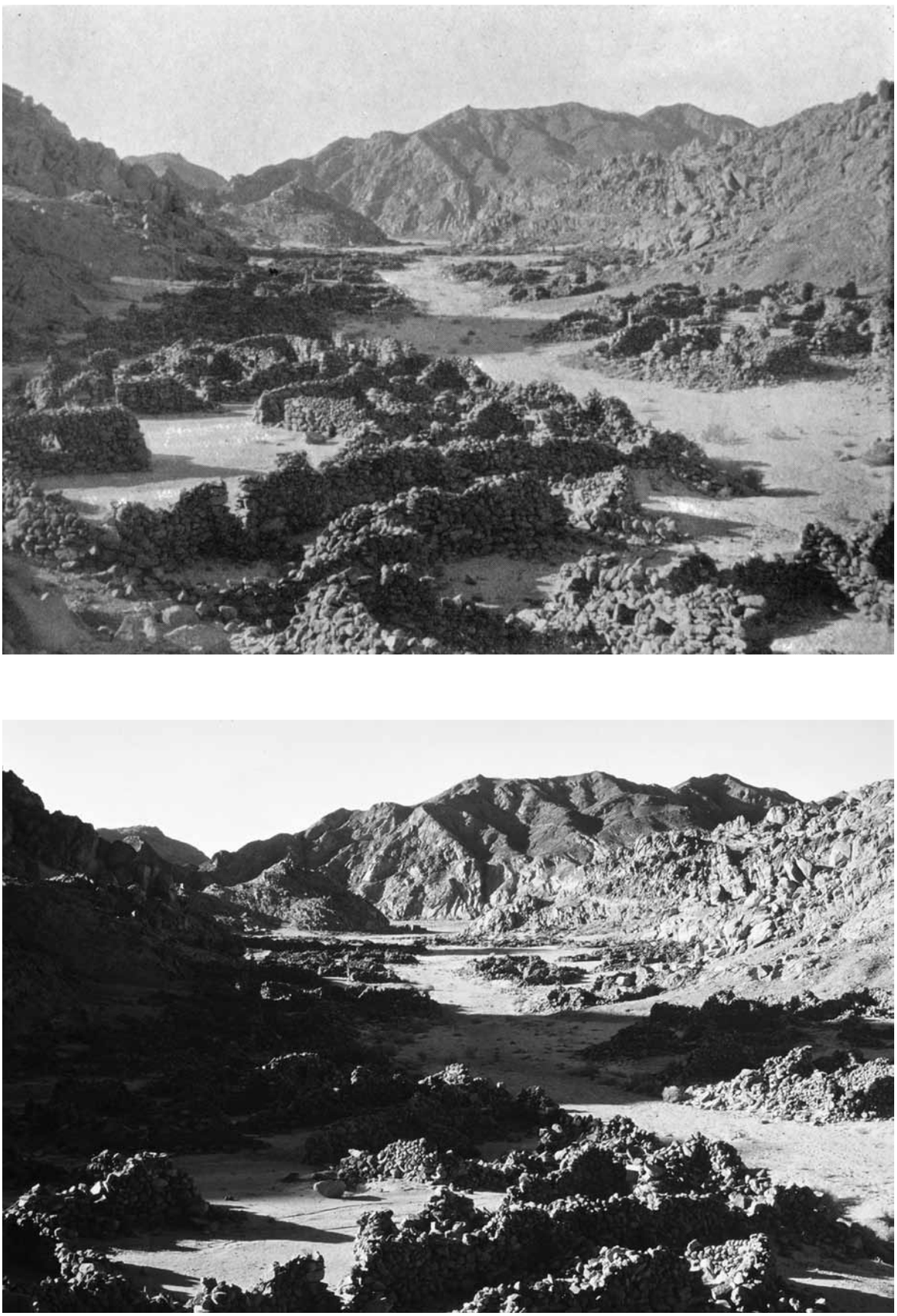


Figure 24. View of main settlement in (top) 1901 and (bottom) 1996

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DESCRIPTION OF BUILDINGS 106–53 (1996)

Building 106 (fig. 21a, pls. 4b, 11b): twenty-two room house. This is the largest agglomerated building on site, larger even than the twenty-room Building 50 plotted in 1992. Six house units can be distinguished, though wall tumble obscures some of the details of the layout. Further, no thanks to difficulties with the TIS, the angles and hence the room sizes of Building 106 may be skewed, though the layout and alignment to surrounding buildings are correct and were double-checked in 2004. Rooms a through c at the north end of Building 106 seems to constitute one house unit. The most likely location for the outside door is in the south wall of room a, though wall fall now fills the gap. Alternatively, the tumbled east corner might have had an external doorway, or perhaps room c connected to the adjacent house unit. Room a contains a now-looted bench, and room c, the remains of a small hearth or bench. The second three-room house unit, rooms d–f, has no remarkable features, even though the walls are preserved as much as 78 cm up from the present surface. A wall running west from room f hooks south a little but does not enclose a room. The next house unit to the south, rooms g and h, is well preserved but contains no special features. The wall running west of room g and the irregular room i might have belonged to this house unit. Judging from the way the walls north and south of rooms g–h abut, this house unit may originally have been independent, a core for later additions. The rather rambling house unit to the southwest consists of two main rooms, m and n, plus three added-on ones, j, k, and l. The innermost room, n, has a looted bench and remnants of a possible niche, now reduced to a wide, flat stone 70 cm up from the ground surface. Room k has also been looted. The remaining houses open to the east onto the wadi "street." The middle house unit, rooms o and p, is now damaged by wall fall and looters' holes; room o has a striated and ground concave grinding stone in it, as well as an unusual amount of sherds and debris. The southeast house unit seems to have five rooms, q through u, making it uncommonly large. The outermost room, q, has very tumbled walls, which also obscure the presumed connection between it and room r. Room q contains fragments of a grinding stone; room r, a bench now partly hidden by wall fall; and room u, a possible niche remnant whose collapsed top stone gives the niche a trapezoidal appearance. The last room in Building 106, v, seems to have been built into the angle between the two units on the north but not opening onto either (though the wall between v and r is significantly damaged). Room v is built up against the large boulder that forms the south end of Building 106 and the north side of Building 104, mapped in 1993. The tumbled fill of room v includes a lot of ash as well as a grinding stone. Two small pounding stones were noted in the Building 106 area; one was quartz, about one quarter broken off, and 4.5 cm thick, and the other was basalt, about two-thirds missing, diameter about 6.6 cm.

Some of the buildings have sherd chinking instead of the usual small stones. Since sherd chinking represents pottery available before the wall was built, we made some attempt to date the chinking, though most of the sherds we could see or retrieve without damage to the walls were nondiagnostic. In the case of Building 106, however, sherds noted in the east walls of rooms a, b, and q included Late Roman Amphora 1 handles, Late Roman Amphora 7 toes, ridged and smooth brown silt-ware amphorae, and ridged and smooth red-slipped body sherds (see *Chapter 6*, nos. 102, 103, 105).

Building 107 (fig. 21a, pls. 4b, 5a): one-room house(?). To the southwest, at the foot of the cliff slope, a retaining wall seems to help shelter the doors of Buildings 107 and 108 from wash. Two walls running out from the south wall of Building 107 partly enclose a space between it and the cliff, and upslope from that lies a small trash heap. In addition to sherds, the dump contained a corner of a rectangular steatite vessel with a polished interior and maximum surviving dimensions 7.0 × 4.1 cm and a coarsely crystalline, pinkish granite handstone ("mano") measuring 10.0 × 7.5 × 3.7 cm.

Building 108 (fig. 21a, pl. 5a): one-room outbuilding. The north corner is severely damaged. In addition to the door in the southeast wall, one surviving jamb in the southwest wall indicates a second entrance. The stub of wall projecting from the east corner might actually have been a small bench, and Building 108 is big enough (about 3 × 3 m internally) to have been a modest dwelling. There is a small sherd dump behind the building and a possible remnant of a retaining wall (not on map).

Building 109 (fig. 21a, pl. 5b): agglomerated building with two or three house units. As plotted, Building 109 is a rambling six-room structure that almost certainly had some functional connection to Building 110. The sandy space or courtyard between them is bounded on the south by a badly preserved retaining wall along the cliff and, on the north, by a wall over a boulder. The latter wall stands as much as 74 cm on the inside, and with the

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boulder base, as much as 106 cm high on the outside, but the raised, sand-filled space inside has no doorway to anything. The two small rooms (a, b) in the middle of Building 109 seem to be the core of the structure. The wall between the two rooms incorporated a basalt concave grinding stone worked on both sides. The northernmost room (c) of Building 109 appears to have been a separate one-room structure originally; the walls that link it to the rest of Building 109 abut. The irregular space (d) in between has a concave grinding stone in it. The two rooms at the south end of Building 109 do clearly interconnect, but wall fall obscures possible exterior doors on the east and/or west. The back (south) wall is built atop boulders at the foot of the cliff slope. The east room (f) contains a mastaba measuring roughly 120 × 100 cm. One of the sherd samples was collected from the dump southeast of Building 109.

Building 110 (fig. 21a, pl. 5b): four-room house. Building 110 consists of a large front room (a) and three smaller back rooms (b–d). Rock tumble covers possible doors between the front and back rooms, but the latter do have one well-preserved external doorway opening to the west. An upper rotary grinding stone is incorporated into one wall of the front room a. A piece of a wall running north from room a may have helped enclose the open space like a courtyard between Buildings 109 and 110. There is a small pocket of sherds between Building 110 and the cliffs behind it.

Building 111 (fig. 21a, pl. 6a): one-room outbuilding. West of Building 110, at the far end of the western bay (cross-fault), Building 111 is very small and crudely constructed. It is little more than a curved back wall, a short front wall, and tumble downslope to a line of rocks too damaged by wash to preserve any structural coherence. Between Buildings 110 and 111 lies a fragment of a crude basin (pl. 6b). A possible retaining-wall fragment runs behind Building 111, below Building 125.

Building 112 (fig. 21a, pl. 7a): a small, two-room outbuilding next to a boulder. The outer "room" (a) seems to have been open to the north, but remains of a retaining wall and tumble may indicate that the space was once more completely enclosed.

Building 113 (fig. 21a, pl. 7b): three-room house. Building 113 probably had three rooms, but wadi wash has removed most of the east wall. The rear two rooms are built up against, and partly under, some large boulders.

Building 114 (fig. 21a, pl. 8a): one-room outbuilding. It might conceivably have been part of Building 115, but the ruins are so damaged by wash here that it is difficult to determine relationships. A mud brick was noted in the wash south of Building 114.

Building 115 (fig. 21a, pl. 8b): multiroom house(?). Building 115 consisted of one room sheltered by large boulders, but judging from wall fragments connected to it or nearby, it could have been larger originally. At least seven grinding- and crushing-stone fragments were scattered around Building 115 (pl. 9a). A coarse sherd, perhaps handmade, with one large and one small loop handle on the rim, was noted by the door of Building 115 (*Chapter 6*, no. 185). Looters completely destroyed Building 115 at some time between 1999 and 2004.

Building 116 (fig. 21a, pl. 9b): two-room house. It is a very crude two-room structure built upslope from Building 118 and over and under two large boulders on the cliff slope. Including the boulder, the middle wall still stands about 2 m high, and some of the walls have sherd chinking. Immediately downslope, between Buildings 116, 118, and 115, is a rock-cut trough that now contains a dimpled crushing stone.

Building 117 (fig. 21a, pl. 10a): one-room outbuilding. It is a crude but solidly constructed room on the cliff slope above Building 116. The doorway is well preserved but only 35 cm wide. Scattered around Building 117 are at least two fragments of the upper stones of rotary querns, at least two lower, concave grinding stones, and at least seventeen dimpled crushing stones, some of which seem to have been placed as steps up to the door of Building 117. Below the "steps" lies a sliced, roughly wedge-shaped piece of black-green steatite.

Building 118 (fig. 21a, pl. 10b): five- or six-room house. All the better-preserved rooms have enough doorways or jambs to show that they interconnect. The exception may be the backmost room, tucked into the cliff slope. Here, two bits of walls enclose a small space bounded for the most part by retaining walls and a boulder, but whether the space connected to the rest of the house is not clear. The westernmost room (e) has a dimpled crushing stone; a slightly sinuous wall crossing its south wall may be a later renovation to split one room into two

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smaller ones. The room behind (d), built up against some large boulders, may have had a bench. It is tentatively suggested that room b might have been a courtyard because it is hard to see how so large a space could have been roofed. Some pieces of walls south of Building 118 have been severely damaged by wadi wash, but they might once have enclosed a couple more rooms. The dense trash heap upslope behind Building 118 and around Quarry 2 yielded bits of shell and glass, two dipinti (RN 96/3–4; *Chapter 7*, fig. 50c–d), and fragments of Roman amphorae, in addition to abundant sherds. Also in the vicinity of Quarry 2 were one dimpled crushing stone and pieces of three upper grinding stones ("manos"); one of them measured 17 cm wide × 9.5 cm thick × 16 cm long (broken) (*Chapter 7* and pl. 95b).

Building 119 (fig. 21a, pl. 10b): one-room outbuilding(?). Only one corner survives of what must have been a fairly large room, roughly 3 × 3 m. Any former connection to other rooms or buildings has been lost in wadi wash. In fact, this whole open, sandy area may once have been built up as densely as the bay on the other side of the wadi "street."

Building 120 (fig. 21a, pl. 11a): one-room outbuilding. If it was ever part of neighboring Building 121, the connection has been lost in wall tumble. Sherd chinking was noted in some of the walls.

Building 121 (fig. 21a, pl. 11b): seven- or eight-room agglomerated building, severely damaged. The clearest section of Building 121 is a two-room house unit at the north end. A two-room unit on the southeast side of Building 121 is also fairly clear, but the rest of the building is so damaged by wash that the arrangement of the rooms can no longer be determined, at least from surface remains. The door or gap at the southwest corner is, however, offset, as is the oddly touching — not overlapping or abutting — wall segment to its north. The middle room contains a concave grinding stone; a dipinto was also found in Building 121 (RN 96/1; *Chapter 7*, fig. 50a). Although Buildings 121 and 124 are very close to each other, the two seem always to have been separated by an alley, now choked with rubble.

Building 122 (fig. 21a, pl. 12a): two-room house. The north wall is tumbled, probably due to a looters' hole, and the southwest corner is partly a retaining wall built into the cliff, partly a granite boulder. One of the walls has sherd chinking. Immediately upslope are at least seven granite blocks with quarry slots. Datum point 104 lies outside the northeastern corner.

Quarry 2 is smaller than Quarry 1 close to Outlier 2 (fig. 3), but it does have at least eight partly quarried granite blocks, seven around Building 122 and one built into Building 126 (pl. 12b). Quarry 2 therefore is older than the houses of the main settlement. Since the quarry slots in the blocks match the ones at the major first- and second-century A.D. granodiorite quarries at Mons Claudianus, and there were some Roman amphora pieces in the thick sherd dump around Quarry 2, it is tentatively dated to the Roman period. However, there are no remains at Bir Umm Fawakhir that come close to resembling the major Roman quarrying towns at Mons Claudianus and Mons Porphyrites. Also, the route from Fawakhir back to the Nile has no animal shelters to accomodate the large number of draft animals needed to haul blocks of stone to the Nile Valley. Thus the quarries do seem to represent Roman activity at Bir Umm Fawakhir, but, in contrast to the mass of fifth- to sixth-century material, they seem to have been fairly minor, possibly only exploratory.

Building 123 (fig. 21a, pl. 13a): one-room outbuilding. Building 123 is only a tumbled wall enclosing a small space next to some large boulders on the cliff slope. The wall has some sherd chinking. There is a thick sherd dump downslope, down to Quarry 2.

Building 124 (fig. 21a, pl. 13b): twelve-room agglomerated building. Despite being mostly filled with sandy wadi wash, this large structure is fairly clearly articulated. The southern two rooms (a and b) form a house unit. Although quite close to Building 121 at this point, Building 124 seems to have been separated by a narrow gap. The middle unit of Building 124 is a three- or four-room house (rooms c–f). The central room (c) had a bench, now looted; entrance room (e) has a looters' hole and a large dimpled crushing stone of porphyritic granite. Wall fall between this room and room f on the east may mask a doorway; there is no other obvious entrance to this room, which has a small mastaba but no other features. The northernmost unit of Building 124 comprises three rooms (j, k, and l), two of which have been looted. The innermost room (k) has the remnants of a possible bench. The remaining two rooms (h and i) in the middle of the building were probably another house unit, but

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the loss of one of the walls between rooms h and j makes this less than certain. The inner room (i) has a bench and a concave grinding stone of granite; the outer room (h) is very irregular, as is the single room (g) to its south. Pieces of three rotary grinding stones were noted in Building 124 as well, and to the north and south there are two large trash heaps.

Building 125 (fig. 21a, pl. 14a): one-room outbuilding. Building 125 is little more than a remnant of a wall enclosing an angle in the cliffs above and behind Building 111.

Building 126 (fig. 21a, pl. 14b): nine-room agglomerated building. It appears to consist of three houses, but enough interior partitions are damaged to make the sections somewhat uncertain. The smallest house unit is rooms a and b at the southeast end. The exterior door is well preserved, and the front room (a) has a bench. The second house unit consists of the two (or three) rooms in the southwest part of Building 126 (rooms c–d). Outside the exterior doorway of room c are the possible remains of a small bench, almost completely destroyed by a looters' hole. The large, L-shaped front room c has a step up on the west side, onto a rock shelf that might have served as a sort of bench. The large back room d might have once been two rooms, as suggested by a wall stub and a large amount of wall tumble across the middle. The third house unit is the most problematic. It opens from the northwest corner into an irregular central room, perhaps a courtyard (e). The door from room e to the western room is clear, as is the one to the east room, but the connection, if any, to the south room (h) is obscured by wall fall; the south room could even have been part of the southwest house unit at one point. Finally, an exterior room (i) has been "hooked on" to the west corner of Building 126. There is a sherd scatter here, and a patch of dark brown organic debris. Buildings 126 and 127 are connected by two low walls and a rim of stones, but they are so low that the buildings are structurally independent. Perhaps the most important feature of Building 126 is its south wall, which is built over one of the slotted granite blocks of Quarry 2 (pl. 12b). This is one of the primary reasons for considering Quarry 2 earlier than the main settlement.

Building 127 (fig. 21a, pl. 14b): two- or three-room house. The two big rooms do not interconnect; one (a) opens west, and the other (b), south, both more or less onto the back of Building 126. Room b has a tiny (2 sq. m) closetlike space (c) added to its southwest wall. Building 127 has three benches, one external (looted) and two internal, and perhaps a fourth one buried in wall fall in the south room. The rooms are large enough to have served as modest one-room dwellings, and they do have one potentially domestic feature, benches, so they might be small houses.

Building 128 (fig. 21a, pl. 15a): six-room agglomerated building. It seems to consist of two three-room house units. The only noteworthy feature of the south unit (a–c) is a bench in its western room (b). None of the three rooms on the north end (d–f) opens on the others, but since all three exterior doors are side by side, the rooms could have functioned reasonably well as a house. The north room (f) has a mastaba with a looters' hole next to it, and the south room (d) has a mastaba and a concave grinding stone. One of the largest trash heaps on site lies to the north.

Building 129 (fig. 21a, pl. 15b): three- or four-room house. If the walls between Buildings 129 and 130 were not so severely damaged, they might have been considered one structure. The south part of Building 129 consists of two rooms (a–b) backed up against the cliff; the inner room (b) has a small looters' hole. A rim of stones too low to be called a wall curves out from the east wall. Two more rooms (c–d) adjoin on the north, and here again, the inner room (d) is built into the cliff slope and, in this case, partly around a boulder. Upslope behind Building 129 are two sherd dumps.

Building 130 (fig. 21a, pl. 15b; see also Buildings 192 and 193 below): four-room house. The two center rooms interconnect. The north room (c) probably opened to the exterior, but wall fall may obscure a connection to the middle two rooms (a–b) as well. The fourth room (d), on the south, is clearly constructed as part of Building 130, but judging from the position of the exterior doorways, it looks as if it functioned with Building 129 instead. However, the poor state of the walls that might have connected the two buildings makes this uncertain.

Building 131 (figs. 21a and 22a, pl. 16a): one-room outbuilding. This is a small, horseshoe-shaped structure upslope from Buildings 129 and 130. There is a looters' hole in the sherd dump between it and Building 129.

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Building 132 (figs. 21a and 22a, pl. 16b): one-room outbuilding. Building 132 consists of a short wall on the north, a retaining wall in the cliff slope, and a large boulder on the south. Another bit of wall south of the boulder encloses an even smaller space.

At this point the survey crossed to the eastern side of the wadi; see the detail maps (figs. 20b and 21b) and overviews (pls. 3a, 17a).

Building 133 (fig. 20b, pl. 17b): three-room house. This is the first structure in the east bay mapped during 1996, and it links, via a couple of low walls around a spur of the cliff, to Building 101, plotted in 1993. The main room (a) of Building 133 has a probable bench in the southeast corner, a concave, lower grinding stone, and the bottom of a rotary quern (pl. 18a). This and the adjoining room (b) both have niches. The one in room a is about 85 cm up from the present surface, 25 cm wide × 50 cm high, but the bottom stone has fallen or been pulled out. The niche in the inner room b is better preserved (pl. 18a). It is 50 cm high × 55 cm wide, 35 cm up from the ground. A third room (c) has been "hooked on" to the west wall; it opens south rather than north. The east wall of Building 133 runs up against not one but two retaining walls, at different levels. The lower, western one now offers the best path to Building 135 on a higher level and may once have been a ramp or stairs.

Building 134 (fig. 21b, pls. 18b, 19a–b): five-room agglomerated building. It comprises two house units; the southern one consists of two rooms (a–b), one of which (a) probably opened to the south. The wall between the two rooms is broken. Room a has an exceptionally well-preserved bench (pl. 19a). The rest of Building 134 is a three-room house unit (rooms c–e) whose precise connections are now obscured by wall fall. The external door into the middle room c is clear, however. This room has a probable mastaba inside and a smaller one near the outside door. The north room (e) has an odd interior partition, which may not have risen to roof height. The right side of plate 19b shows a good example of the double-faced, rubble-filled, dry-masonry wall construction typical of Bir Umm Fawakhir. Outside Building 134, to the east, is the lower part of a rotary quern and a dimpled crushing stone, and to the west, a small dump with a looters' hole in it.

Building 135 (fig. 20b, pl. 20a): two-room house. It is built against the cliff face; part of the south wall of the inner room (b) is actually a retaining wall. The west room (a) has a bench and a large looters' hole. The building may have been approached by a ramp or steps up one of the retaining walls east of Building 133.

Building 136 (fig. 20b, pl. 20b): one-room outbuilding. It consists of a circular wall built into the cliffside, upslope from building 135.

Building 137 (figs. 20b and 21b, pl. 21a): one-room outbuilding. It is only a circular wall whose western portion has fallen downslope to the west. The tumble includes a concave grinding stone and a small handstone ("mano"). There are looters' holes inside as well as in the sherd dump to the west.

Building 138 (fig. 21b, pl. 18b): three-room house. The larger north room (a) appears to have been partitioned into two by an L-shaped wall.

Building 139 (fig. 21b, pl. 18b): two- or three-room house. The east room (b), which contains a looted bench, seems to have been built first; the west room (a) abuts. Two small walls were later "hooked on," but the outer doorway is so wide (1.5 m) that it probably could not have been closed.

Building 140 (fig. 21b, pls. 13b, 21b, 25b): thirteen-room agglomerated building severely damaged by wadi wash. Although now filled with sand, enough of the walls and especially the corners survive to permit a tentative reconstruction of the building history. Building 140 seems to consist of a core of one three-room house (e–g) and three two-room units (a–b, c–d, i–j), plus a series of single rooms attached in an even more rambling fashion than usual. The southernmost house, rooms a and b, has one reasonably well-preserved exterior doorjamb on the eastern wall. The back wall of the inner room (b) is curiously overlapped, as if the room's south wall and half its west wall had been rebuilt, maladroitly. The room adjoining on the north (c) looks as if it was attached later. Its walls abut house unit a–b, or even overlap and run double for roughly a meter. This attached room in turn has its own "hooked-on" room (d); their entrances are side by side, so they could have functioned together easily. Northeast of unit c–d is a three-room house (rooms e–g) opening onto to a sandy wadi "street." Although damaged by sand and water washing down, it does preserve a plan of two front rooms plus one in the back. Judg-

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ing from the odd way the walls abut, this unit appears to have been a later fill-in construction. The large, single room (h) to the northwest may have been a free-standing building at one point. The rambling two-room house (i–j) in the middle of Building 140 opens to the south. Room j has two good doorjambs in the south corner and a possible door in the north wall. House i–j seems to be a fill-in unit between the houses discussed and the three or four single rooms (k, l, and m) to the west. In particular, the very irregular east wall of room i is the result of the clumsy joins of rooms b, c, and g. The two westernmost rooms of Building 140 (l and m) appear to have been built together even though the two rooms do not interconnect. Room m has remnants of a possible bench outside its west wall and two looters' holes nearby. The single room to the east (k) came later, as did the "hooked-on" wall to the south. Room k is quite sanded in, but it does have one good jamb stone to indicate a door opening northeast. Finally, a wall connecting the east and west segments of Building 140 and enclosing a space between i, j, and k was built. It may or may not have been roofed; the walls are almost all washed out. The tooled base of a glass goblet or bowl was retrieved from Building 140 (*Chapter 7*, fig. 48e).

A minimal building sequence can be reconstructed, with the proviso that it might have been even more complicated.

1. Rooms m and l, house unit a–b, and room h were built separately.
2. Room k, the "hooked-on" wall at room l, the rebuilding of the southwest walls of room b, and the addition of room c could have come next.
3. Rooms d and g added.
4. Rooms e and f added in front of g, and i and j built behind it.
5. Construction of the wall linking rooms i and k.

Building 141 (fig. 21b, pls. 13b, 18b): five-room agglomerated building. The eastern two rooms (a and b) each have external entrances, but they also interconnect and thus look like a house unit. Room b has a niche. A stub of wall projecting into the space between Buildings 141 and 140 seems to separate the east and west ends of Building 141, but the division may be more apparent than real. Both western rooms (c and d) have benches, and room d at the far end of the row has a very small room (e) projecting south. It is separated from room d by a wall that was built (or rebuilt) in segments.

Building 142 (fig. 21b, pls. 13b, 18b, 22b): three-room house. The south room (b) has a bench, and the west room (c), a blocked doorway and tumble that might indicate a mastaba.

Building 143 (fig. 21b, pls. 13b, 22a): two-room house. This is an unusually solidly built house at the edge of the wadi "street." Its walls are about 60–70 cm thick, though the interior partition wall is thinner than usual. A mastaba in room a is backed up against it. The ground level drops noticeably from east to west here, which may explain why the building seems to have been constructed on a leveling platform. (If it were a question of an exceptionally thick sand fill, one would expect a similar platform effect at other buildings nearby.) In any case, Building 143 has suffered less from wadi wash than its neighbors. A rare baked brick (15.5 cm wide × 15.0 cm long but broken × 7.0 cm thick) was noted in the "street" to the west.

Building 144 (fig. 21b, pl. 22b): eleven-room agglomerated building. Building 144 consists of four house units sprawling around the base of the cliff. The northern house (a–b) has two very sanded-up rooms; the door was probably in the now-missing north corner. The front room (a) has a remnant of a niche now at surface level; the bottom is buried in the sand. The northwest wall has sherd chinking. The back room (b) ends in tumble at the base of the cliff. The second two-room unit (c–d) probably opened north, but this wall is almost completely washed away. The rear of the back room (d) is a retaining wall and a boulder. The third house unit (e–i) may have had as many as five rooms. The central room (f) has one good doorway facing east and a remnant of a niche now at ankle level; the top is missing, and the bottom is buried in the sand. A bit of wall running west from this central room indicates that the space to the west (e) was at least partly enclosed, and the area to the south (g) certainly was. Room h, on the east, is also backed against the cliff. Room i has one good doorjamb indicating an entrance from the little passageway between it and the central room f, but the back of room i peters out at a retaining wall and a sandy slope. The last two rooms in Building 144 constitute another house unit (j–k). Room j has a very wide opening and an unusual blocked niche now filled with stones. The easternmost room (k) has two niches, one of which is intact. The north wall has sherd chinking.

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Building 145 (fig. 21b, pl. 23a): two-room house. It lies at the far east end of the east bay, on the slopes and up against the boulders and cliff face. The west wall is a full meter thick. The door to the back room (b) has been blocked, and the front room (a) is now much encumbered by wall fall.

Building 146 (fig. 21b, pl. 23b): two-room outbuilding. It consists of two closet-sized rooms built against the cliff face, up a steep slope from Building 145. The south room has a small looter's hole.

Building 147 (fig. 21b, pl. 24a): damaged two-room house. The east room (a) is on a higher level, and despite damaged walls, its plan is fairly clear. The same cannot be said of the west room (b). Its north wall is so broken it cannot be determined which of two gaps was the door or what the stub of wall running parallel to the east room may represent. It is even possible that the entrance to Building 147 was at the tumbled southwest corner.

Building 148 (fig. 21b, pl. 24b): one-room outbuilding(?). It now consists of one room at the end of the east bay. The pocket between it and the cliff is enclosed by a retaining wall, boulders, and a filled-in wall or blocked doorway. If the pocket was ever accessible from the main room, that door has been blocked as well. Southwest and downslope from the door into Building 148 lies another U-shaped wall that runs double thick against the other wall so far as it can now be traced. The lower U-shaped wall is so tumbled it is not certain whether it ever enclosed another room.

Building 149 (fig. 21b, pl. 25a): four- or five-room house. Structures at this end of the bay are built on such a steep slope that they tend to be very irregular, but Building 149 is almost incoherent. It seems to have three or four rooms at a lower level, a walled-in space at an upper level, and some other, indeterminate walls. The best-preserved room is an L-shaped one (a) backed up against a retaining wall on the east. In front of that room is another (c) that has doors on the north and south. The remaining very irregular space (d) is big enough for two rooms, though no partition walls can now be detected at the surface. Since the walls on the outside of Building 149 are only a few courses high, no niches or other features survive. The two walls running out from the north wall of Building 149 look as if they shelter the north external door; there is no evidence of another wall to enclose another room. To the southwest, some more bits of walls form a lazy-Z no longer connected to anything. The upper level (b) of Building 149 consists of two walls running from the retaining wall to the cliff. A curious J-shaped wall running from the cliff, along a boulder, and toward the middle of room b encloses a closetlike space.

Building 149a (fig. 21b): one-room outbuilding. Unfortunately, it was discovered while shooting some topographic points the very last day of the 1996 season. It should have been numbered "B154," but that number was assigned to the very first building plotted during the 1997 season. Building 149a is only two short walls enclosing a small horseshoe-shaped space between some boulders upslope from Buildings 148 and 149.

Building 150 (fig. 21b, pl. 25b): severely damaged four- or five-room agglomerated building. A two-room unit (a–b) at the east end of Building 150 can be picked out, including an unusual C-shaped room (a), but whether the wall fragments to the southwest made a third room cannot now be determined. Another two-room unit (c–d) on the west end of Building 150 is fairly clear, barring the isolated wall stub running south. The westernmost room (d) even preserves a niche in one wall; the top slab has collapsed to the right. Behind Building 150 there is a good example of the lower part of a rotary quern, measuring 34 cm across.

Building 151 (fig. 21b, pl. 26a): severely damaged four- or five-room house. The best-preserved room (a) has two doors, one blocked door, and a niche (back and left side only, bottom buried in sand). To the east, stubs of wall suggest two more rooms (b and c), and east of them, a wall with a collapsed niche suggests yet another room (d). Finally, south of the main room a, two walls and a good doorjamb indicate a fifth room.

Building 152 (fig. 21a): one-room outbuilding. It was discovered at the end of the 1996 season while shooting topographic points around the west bay. Building 152 is merely a curved wall helping enclose a small space between two boulders, upslope from Building 117.

Building 153 (fig. 21b, pl. 26b): two-room house. Both rooms back up to a retaining wall in the cliff face, and there are some more pieces of walls upslope. Room b has two niches. The dump behind Building 153 had some bone as well as the usual mass of sherds.

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DESCRIPTION OF BUILDINGS 154–237 (1997)

Building 154 (fig. 21b, pls. 27a–b): three-room house. The east room (c) is very solidly constructed; its east wall is a retaining wall built into the cliff slope. Two smaller, low internal walls partition off one corner, and there is a blocked doorway in the north wall, just where the partition wall meets it, and a niche in the opposite wall. The middle, trapezoidal room (b) has been sufficiently damaged by wadi wash that it can no longer be determined whether the door(s) were in the north or south walls. The west room (a), however, has two external doorways. A sherd dump is scattered upslope behind the retaining wall on the east.

Building 155 (fig. 21b, pl. 27b): one-room outbuilding. Due to severe erosion damage, it is hard to distinguish Building 155 from Building 154, but the former does have a south corner, a retaining wall on the east, and a fairly clear north wall with a probable doorway. There is also a rectangular, stone-rimmed feature upslope from Building 155.

Building 156 (fig. 21b, pls. 13b, 28a, 35a): ten-room agglomerated building below the Hillock. It may have had more rooms, but it is now so sanded up that this cannot be demonstrated. The northernmost room (a) may or may not have interconnected with other rooms, but room b opened onto rooms c and d at least. The space between rooms b, d, and e might have been an enclosed, roofed room, but it now has no northeast wall. Room d has a collapsed niche, a door onto the wadi "street," a stone-rimmed feature just outside the door, and perhaps a door into room g. Room e opens onto f, which has an exterior door. Rooms h and g interconnect and so seem to form one house unit. Room g has some flat slabs in the north and west walls that were probably once niches, and a "hooked-on" wall may have enclosed a small room originally. Rooms i and j, built against the granite of the Hillock, form another house unit. The partly enclosed space outside room i may well have been another room, but it no longer has a south wall. Two walls continue up the side of the Hillock, and a retaining wall at wadi level curves around to Building 164. There is a sherd dump outside room j and a dimpled crushing stone among the sherd debris between Buildings 156 and 164.

Building 157 (fig. 21b, pls. 28a–b, 29a): two- or three-room house. The two main rooms each had an exterior doorway, but they also interconnected. A short wall running from the cliff behind room a enclosed a space that may or may not have been roofed. Tumble at the north corner might hide an external bench, and there are a few traces of walls beyond that. A retaining wall connects to Building 159 on the north. There is a sherd dump upslope from Building 157, or, in other words, downslope from Building 177 on the Hillock. In this dump was found a dipinto (RN 97/2; *Chapter 7*, fig. 51c).

Building 158 (fig. 21b, pls. 15a, 29a, 29b, 31a, 35a): five-room agglomerated building near the Hillock. It has suffered from wadi wash, particularly on the west side, where there is a lot of wall tumble. The large central space (a) could perhaps have been a courtyard. It leads to the two rooms on the west (b–c). The larger, north room (b) might have had a mastaba in one corner. Neither of the two east rooms (d–e) opened onto the central room or courtyard. Room d exited onto a small open space, now looted, bounded by the Hillock and Buildings 157, 158, and 159. As for the north room (e), its entrance could have been in any of three walls, all of which have been damaged by wadi wash or obscured by wall fall.

Building 159 (fig. 21b, pls. 29a, 30a, 30b): one-room outbuilding. The back (east) wall has been built partly over boulders at the foot of the Hillock. The north wall is somewhat damaged, but the door seems to have been there; the south wall has a blocked door. Building 159 is large enough to have functioned as a small house. It was completely destroyed some time between 1999 and 2004 by a very deep looters' hole.

Building 160 (fig. 21b, pl. 31a): four-room house. All the rooms appear to interconnect, though some of the walls are very damaged by wadi wash. The north room (a) had a fragment of a burnt brick. The most puzzling feature is the door at the south corner of room b. A small bit of wall clearly starts to turn south there, and on the other side of the jamb, a low, irregular, but fairly wide row of stones bends around to approach the east corner of Building 161. A curved piece of wall north of Building 160 encloses a triangular space, but the slope to the east is shallow enough that this may never have been a roofed room. Likewise, the space between Building 160 and the Hillock has been partly partitioned by walls, but most likely was open. The space has a thick deposit

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of sherds and rocks washed down from the Hillock, but a considerable amount of animal bone and a glass rim fragment were found here as well.

Building 161 (fig. 21b, pls. 15a, 31a, 31b, 35a): seven-room agglomerated building. It has suffered from wall fall to an extent, but it appears to have been three two-room house units plus one single room. The northwestern unit (a–b) has an exterior door on the north, but the probable location of the door from the exterior room (a) to the interior room (b) is now choked by tumble. The southwest unit (c–d) had a door on the south opening onto a very irregular front room (c). It has a square, stone-rimmed feature against its west wall and a door into the inner room (d). The eastern unit (e–f) opened east, and the front room (e) probably connected to the one on its south (f). The collapsed part of the west wall of room f probably had a niche rather than a door. Room g opens north, and it most likely did not interconnect with other parts of the building, but its south wall is so tumbled that this is not certain.

Eight pieces of brick were noted in the area of Buildings 160 and 162. Brick of any sort is very rare at Bir Umm Fawakhir.

Building 162 (fig. 22b, pls. 30b, 31a, 32a, 32b, 46a): sixteen agglomerated rooms. There is too much damage from wadi wash and sand fill to attempt a reconstruction of the building sequence. The two rooms at the southeast corner of the building form one house unit (a–b). A piece of a brick and a piece of a quartz pounding stone were found in room a. Rooms d and e form another unit. Room d contains the remains of a possible bench, and room e, a looters' hole. Room c may have been part of the d–e unit, but the wall collapsed just where a doorway might have existed. Rooms f, g, h, and i seem to have functioned together. Room f may have had two normal-width (ca. 50 cm) doors, but since the whole north half of the east wall is lacking, room f has something of the appearance of a courtyard. Rooms g and h open off it on the west, and room i is attached to the north end. Just outside the door to room i lies a striated concave grinding stone (24 × 44 cm) with a pecked depression in the middle showing that it was reused for pounding. Room j might have connected to room e, but it seems much more likely to have formed a part of a three-room unit with rooms k and l. Room k now contains a dimpled crushing stone. Rooms m and n seem to have been semi-independent, one-room elements. Rooms o and p at the northwest form another two-room house unit; the wall stub in room o might have pertained to a small bench or seat.

Building 163 (fig. 22b, pls. 30b, 46a): six-room agglomerated building. Although parts are obscured by wall fall and some rooms are full of sand, the layout of this building on the wadi "street" is fairly well preserved. The northern and southeastern rooms form two two-room houses (a–b and c–d); it is the middle two rooms (e and f) that are odd. The very large central room (e) may have had a mastaba in one corner and a partition wall closing off another corner. The next room (f) must have been reached through it, but what looks like a rock-choked passage leading to the "street" suggests an entrance passage as well.

Building 164 (fig. 21b, pls. 26b, 33a, 33b, 34a): seven-room agglomerated structure. Building 164 wraps around the base of the Hillock on the southeastern side. The side-by-side rooms suggest a magazine more than the usual house units. The westernmost two rooms (a–b) are fairly clear, if damaged by wadi wash; each has at least one definite door and might have had more. The front (south) wall of the next room east (c) is almost totally washed away, and the existing gap on the east is too wide (ca. 2.5 m.) ever to have been a normal door. The back of this enclosed space, however, was partitioned off into something more nearly resembling a room (d). The next room to the east (e) also has a very broad opening (ca. 1.6 m). The next room in line (f) may owe its irregularity to one or more reconstructions of its north wall. The next enclosed space in the row, room g, is lopsided, badly preserved, and large enough to have functioned as a courtyard. One of the doors seems wider than usual (ca. 1.3 m), but two of the walls are so damaged that it cannot be determined whether there were other doors there as well. A small closet-sized space was walled off in one corner, up against a boulder and the side of the Hillock. Wall remnants to the southeast may indicate a former room there, but the rim of stones north of the "courtyard" seems too low to mark a room. All of the rear rooms in Building 164 back up against retaining walls or boulders at the foot of the Hillock. The thick sherd dumps behind and upslope could pertain to Building 176 up on the Hillock as easily as to Building 164.

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Buildings 165, 166, 167, and 168 were out of sight, around a spur of a cliff, from the 1996 datum point 104, so they had to be shot from a new station in 1997. Their immediate neighbors are Buildings 144 and 145 at the far end of the deep bay south of the Hillock.

Building 165 (fig. 20b): two-room house. It lies at the far end of a deep bay (cross-fault), but unlike Buildings 167 and 168 nearby, Building 165 was in the way of runoff from the cliff. The front walls are so tumbled that it is hard to follow their outline. The rear (south) walls back up against the cliff face, and the southeast room (b) utilizes a boulder as a bench. The northwest room (a) has a small looters' hole.

Building 166 (fig. 20b): one-room outbuilding. It lies upslope from Buildings 165 and 167 and consists of a cleft in bedrock on two sides, a boulder and large stones on a third, and a short wall on the west.

Building 167 (fig. 20b, pl. 22b): three- or four-room house. Its position at the far end of a deep bay seems to have protected Building 167 from most erosion, and it was solidly built up against the cliff face in the first place. The two western rooms are on a lower level and are approached by a ramp up from the sandy wadi floor. The northwest room (a) has a curious, small gap at the north corner, an intact niche in the north wall, and pieces of the lower part of a rotary quern. The east wall is the thick revetment that supports the upper level. The next room south (b) has a south-facing door protected by a sort of entrance passage. The room itself has a small closetlike space next to the revetment on the east. A niche remnant in the revetment and the way the south wall is built in two segments suggest a reworking of the room. The upper level (c) of Building 167 is reached by a ramp — perhaps steps originally — that serves both Buildings 167 and 168. The north half of the upper terrace might have been open. A rim of stones in the northeast corner seems to partition off a closet-sized space; the row of stones on the cliff immediately above now looks too insubstantial to support much if any roofing, but it may have simply tumbled down. The south end of the upper terrace, however, has better evidence for roof support. If the large stone opposite the one well-preserved jamb is in fact the second jamb, then there was a door here, and the space makes sense as a roofed room. Further supporting this interpretation, the wall built atop the cliff on the east is rather substantial. Within this room or space, another small space has definitely been walled off. Its east side is the granite cliff, and a deep hole in it may well have been utilized as a natural storage niche. It measures 45 cm wide × 40 cm high, and a good 140 cm deep.

Building 168 (fig. 20b, pl. 22b): two-room house. Like Building 167, Building 168 is solidly constructed on two levels and well preserved due to its location at the far end of a bay. The north room (a) has a mastaba in the southwest corner, and in the southeast corner, a ramp (or steps originally?) leading up to the south room (b). Room b has a blocked doorway to the ramp between Buildings 167 and 168. This ramp is, however, the only way to reach the upper terrace of Building 168. The granite cliff rises on the east, and the north end is blocked by a row of very large stones. Outside, to the north, a basalt concave grinding stone and a dimpled crushing stone lie on the steep slope.

At this point the project started to map Buildings 169 through 184 on the Hillock and packed into the gully behind it. The Hillock (fig. 21b, pl. 35a) is separated from the eastern cliffs by a gully that opens to the southeast, roughly parallel to the axis of the main wadi "street." The buildings on either side of the gully are thus somewhat secluded from the rest of the main settlement. Buildings 170 through 175, and 184, are built into the steep slopes on the east, and the less elaborate Buildings 178, 180, and 182 line the west side of the gully. The steepness of the cliff required some of the houses to be built on a split level or staggered upslope.

Building 169 (fig. 21b, pls. 34b, 35a, 35b): five-room house. Its walls are preserved only to a height of 30 or 40 cm, but for the most part, the layout is still visible. The southernmost room (a) is the most damaged. It is no longer possible to say whether the 2.6 m gap in the west wall was originally a wall that enclosed the room, much less whether it had a door. The damaged east wall could have had a door as well. The next room north (b), however, has two good doors, a dimpled granite crushing stone, and a remnant of a niche in the northeast wall. The next room west (c) also has a damaged niche. Although now mostly filled with tumble, the door to the next room north (d) is definable. The little stubs of walls at its outside door and the rim of stones that complete the square are add-ons, but what they represent — a hearth, jar stand, or some other feature — is not clear. The final, northernmost room (e) does not interconnect but opens to the east. Its back wall is partly a retaining wall

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against the Hillock. Perhaps the most noteworthy feature of Building 169 is the number of crushing and grinding stones around it. As surface finds, they could have been moved here recently, but they are nonetheless interesting examples. Outside the west wall of the northern room lay a dimple stone that had been turned and used on two faces (*Chapter 7*; pl. 94b). East of the building lay a cluster of three basalt dimpled crushing stones, a basalt concave grinding stone, and one of the best examples of the lower part of a rotary quern. In addition, chunks of porphyritic granite and black basalt, perhaps fragments of other crushing stones, lay scattered about Building 169.

Building 170 (fig. 21b, pls. 35, 36a): three-room house. It was built on two levels and has the best-preserved stairs on site. Where the path to the gully between the Hillock and the eastern cliff passes between Buildings 169 and 170, there is a high, well-preserved revetment supporting a terrace and a ramp up to Building 170. Presumably the two lower rooms (a–b) of Building 170 opened onto the terrace, but the door to one room (b) has been deliberately blocked, and the other room (a) has no convincing entrance, only a south wall made of a single thickness of very large stones. The walls of room b stand 145 cm high or more, and those of room a, 130 cm, at least in part. A branch of the ramp runs east, zigzags up some steps, and comes out onto a higher terrace with a dimpled granite crushing stone and an entrance to another room (c). Its east wall is built into the cliff, and the entrance is further protected by a large boulder in the side of the cliff. The south wall survives as much as 130 cm high, and the north wall, as much as 180 high.

Building 171 (fig. 21b, pl. 36b): one-room outbuilding. This consists of an L-shaped bit of wall that encloses a crevice in the granite upslope from Building 170. The steps to the upper room (c) of Building 170 continue far enough upward to provide access to Building 171, and there is a sherd dump and considerable wash debris between Buildings 171 and 173. Building 171 looks like nothing so much as a latrine.

Buildings 172, 173, and 174 practically abut, but they were constructed on different levels on the cliff slope, so there is considerable vertical separation.

Building 172 (fig. 21b, pls. 35a, 37): four-room house. The lower three rooms were probably entered through a door in the south wall of the building. This first room (a) opens onto an odd Y-shaped room (b). Its north and east walls are built atop boulders. A line of stones, including two dimpled crushing stones, may indicate a partition of the room. Off in the west corner, a small room (c) has been walled off. The fourth room (d) lies east and upslope from the lower rooms; they share a thick wall but do not interconnect. The north and east walls of this upper room are retaining walls against the cliff, and a gap in the granite (67 cm wide × 127 cm deep) seems to have been utilized as a ready-made storage niche. Although this room no longer has a visible door, it must have been approached by the path running around the east side of Building 172 and up to Building 173. Five dimpled crushing stones of gabbro, basalt, and granite are scattered around the southeast side of the room. The Y-shaped room b was severely looted between 1999 and 2004, so its plan is now even harder to follow.

Building 173 (fig. 21b, pls. 35a, 37a): one-room outbuilding. This roughly pentagonal building lies upslope from Building 172, right against a shoulder of the cliff. The field notes record “fab view,” but also the probable lack of windows to enjoy it. The door of Building 173 gives on to a path that curves around Building 172 and down to the gully bottom. There is a sherd dump between Building 173 and 171 and a black dimpled crushing stone outside the door of Building 173.

Building 174 (fig. 21b, pls. 35a, 37b): six- or seven-room agglomerated building. This rambling structure is built into the steep eastern side of the gully, and it seems to comprise three house units (a, b; c; and d, e, f). The northernmost room (a) opened onto the gully path. The entrance was sheltered by an angled wall around a step up to the door. The northeast wall of the room was built into the cliff, and there was a large mastaba in the north corner. Right next to the boulders, there might have been a door to the next room south (b), but there is a lot of rockfall here. Room b does seem to have had an exterior door, and it just might have had one leading to the third room south (c), though this seems less likely. Upslope, among the boulders, there is an ash pit, a rectangular feature with ash, though this is an unlikely location for a hearth, and a grinding stone and a lot of sherds. Room c was probably entered from the gully path; unfortunately the condition of the walls makes this uncertain. If it was entered from the exterior only, then this large space would have constituted a separate unit. It does have the remains of a large but looted mastaba in one corner. The third house unit (d, e, f) is clearly reached by a

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little walkway off the gully path. The walkway runs south of Building 174 and up to the door to an irregular and very tumbled room (d). Within it, one corner has been walled off to make a small room. The very thick (up to 1.2 m) west wall of this small room has a damaged niche, the north retaining wall is built into the cliff, and the east wall is a massive structure running below Building 173 and then curving north and upslope from Building 174. At the other end of room d, a line of stones marks a feature that might be the remnant of a bench, though it is in an awkward spot given the entrance right behind it into the next room (e). Its door is also awkward, being only 30 cm wide, and the room itself is bounded on the north and east by the curving line of the cliff. There is a sherd dump upslope outside. Just outside the external door of room d, there is a small space that looks like a doorman's post. It has been looted. Downslope, where the walkway leaves the gully path, it passes another room (f). It does not interconnect with the rest of the building, and its front wall consists of a single thickness of very large stones.

Building 175 (fig. 22b, pls. 38a, 38b): five-room agglomerated building. The two solidly constructed rooms (a–b) on the upper level make up the core of the house. It is approached by a fairly steep path up the gully behind the Hillock, past a couple of low, crude walls that may delimit an open courtyard, and up what look like rough steps. The entrance room (a) has a possible mastaba in one corner. The east wall is partly a retaining wall, partly some large boulders. A hollow in one forms a natural niche. The back room (b) has no fewer than two benches (one looted) and five niches. There seems to be a little mud plaster under niche 4 in the north wall; if so, it is virtually the only plastering visible on site. South of the core rooms, a tumbled slope (perhaps once rough steps) rises to a room (c) bounded by thick walls, a boulder, and a retaining wall. It is now mostly buried in rock fall. West of the house core and a level lower down lie two interconnected rooms (d–e). Room d is partly filled with tumble from the overhanging east walls, and room e is partly washed out.

Buildings 176, 177, 179, and 181 sit on top of the Hillock. In addition to their rather special location, their dumps yielded a large number of dipinti, stamped plates, and other decorated sherds.

Building 176 (fig. 21b, pls. 35a, 39a, 39b, 40a): four-room agglomerated building on the Hillock. This solidly built structure is one of two on the Hillock, and it has a very striking position at the south end thereof, the prow, as it were. The northwestern two rooms (a–b) are built against a granite outcrop, which shelters the door in the north wall. An exterior door in the west wall was deliberately blocked. The closet-sized space in an angle of bedrock has no apparent door or explanation, but there is a slab (68 × 29 cm, 12 cm max. thickness) with quarry marks in this space, as well as one dimpled crushing stone. Judging from the way the south wall abuts, the two southeast rooms (c–d) were added on, though not necessarily much later. A door that could have connected the two house units was deliberately blocked. The southeast unit is entered from the north, and the first, L-shaped room (c) apparently utilized a knob of bedrock as a bench. The south corner was walled off as a separate room (d), and the mass of tumble in the gap on its west just might mask the wall of another, small room. Unfortunately, wall fall from the thick walls of Building 176 is so heavy that no further details are visible. A sherd sample was collected from the interior of Building 176 in an attempt to get at least one sample from a house rather than a sherd dump (*Chapter 6*).

Building 177 (fig. 21b, pls. 35a, 40b): four-room house. Building 177 is the other house on top of the Hillock, and it was likewise very solidly built. It was excavated in 1999. The entrance room (d) has a line of stones forming a partition in the south corner and a niche in the south wall. Room c has a niche that utilizes a hollow in the boulder that forms part of the north wall. Room b opens onto room d, and it, too, has a niche in its north wall. The door to the back room (a) was deliberately blocked off. Tumble at the south wall of room a was thought to cover a mastaba, but excavation revealed no such feature. A remarkable number of crushing and grinding stones were found in and around Building 177: a dimpled crushing stone and the lower half of a rotary quern in room a, three dimpled crushing stones in rooms d and c, a concave grinding stone in room b, and a cluster of concave grinding stones just east of the building. A systematic sherd sample was collected from the dump downslope (west) from Building 177. Among other sherds, the sample included one dipinto (RN 97/35; *Chapter 7*, fig. 52d), one fine painted jar fragment, a hard-fired painted plate (RN 97/50; *Chapter 7,* fig. 51a), and a plate with stamped and incised decoration (*Chapter 6*, no. 145).

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Building 178 (fig. 21b, pls. 35a, 37b, 41a): one-room house(?). On the map it looks as if Building 178 is part of Building 181, but in fact it is several meters lower down. A shoulder of the Hillock shelters Building 178 and forms its south wall. The room contains a bench (80 cm wide) in one corner, which suggests that it may have been a small dwelling instead of an outbuilding.

Building 179 (fig. 21b, pl. 41b): one-room outbuilding. Close to the highest point of the Hillock, Building 179 is just two short walls enclosing a small (ca. 1.4 × 1.1 m) space. One small dipinto was recovered here (RN 97/9; *Chapter 7*, not illustrated).

Building 180 (fig. 21b, pl. 37b, 38a): two-room house. This building lies at the head of the gully east of the Hillock. The western room (a) has an exterior door and the remnants of a now-looted mastaba. The granite face of the Hillock forms the south wall. A door opens onto an east room (b), which has a feature that might have been a small bench. The south wall here is a thick retaining wall.

Building 181 (fig. 21b, pl. 42a): one-room outbuilding. It is actually a utilized space under some large boulders. Two huge boulders with a gap between them and smaller stones on top open eastward. The mouth of the space is almost closed by another boulder, so it took only a short, rough wall on the north to close off a small space. Two fragments of grinding stones were built into the wall; three concave grinding stones, pieces of both upper and lower rotary grinding stones, and a shallow looters' hole were noted outside the entrance to Building 181. Three dipinti (RN 97/29 and RN 97/30) were recovered. Building 181 was excavated in 1999 as an example of a one-room outbuilding.

The main approach to the houses lining the gully east of the Hillock comes in from the south, but a steep and inconvenient path continues at the head of the gully and over the saddle between the peak of the Hillock and a high knob of granite to the north, before the cliffs rise on the east. Buildings 182, 183, and 184 can be reached by this rough path. Further, the four levels of Buildings 183 and 184 and a retaining wall wrap around the high granite knob in a manner that makes them even more difficult to access.

Building 182 (fig. 21b, pls. 42b, 43a): one-room house(?). It lies on the north side of the Hillock and can be reached by the steep, inconvenient path at the head of the gully. It has a looters' hole and a rim of stones that might have been a partition, bench, or some other feature. The south wall is partly bedrock, but it has a damaged niche as well. There is a piece of a retaining wall northeast of Building 182 that runs to the granite knob that shelters Buildings 183 and 184.

Building 183 (fig. 22b, pl. 43a): one-room outbuilding. It was built against the high granite knob north of the Hillock; its northeast and southeast walls are just large boulders. The front wall survives only one or two courses high. Building 183 can be reached only from the steep path at the north end of the Hillock. A retaining wall on a higher level than Building 183 wraps around the granite knob and connects to the bottom of Building 184.

Building 184 (fig. 22b, pl. 38a, 43a): two-room house. It can be reached only by a branch off the steep path north of the Hillock. The lower, larger room (a) opens south, and it may have had a bench and a niche. The second room (b), on the highest level of the Building 183–184 complex, is very damaged by wash. It opens to the east, and its north wall was built over large stones at the cliff face.

Buildings 162, 185, 186, 188, 189, and 190 in the open, sandy area northwest of the Hillock are much damaged by wadi wash, and many rooms are now deeply sanded in.

Building 185 (fig. 22b, pl. 30b): four-room house. This structure is mostly filled with sand. The retaining wall that forms the back (north) wall at the western end of Building 185 continues west to Building 186. There is a little closet-sized "room" (b) (130 × 60 cm) built into the slope above and between the two western rooms of the house. The middle, large room (c) has a line of stones that might have been a partition wall. Behind these three rooms, upslope, there is a thick accumulation of wash and sherds. The easternmost room (d) abuts bedrock at its east corner; its north wall is now completely washed out. At the door or gap in the south wall of room c, fragments of a large ceramic item, possibly a potstand, were noted, and in the sandy open area to the south, pieces of a steatite bowl (RN 97/45; *Chapter 7*, fig. 48k).

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Building 186 (fig. 22b, pls. 30b, 43b): agglomerated building with at least three rooms but probably more. It is so damaged by wadi wash and sand fill that it is hard to pick out three rooms, much less the connections between them. The north room (a), upslope, is the only well-preserved one. Its back (northeast) wall runs partly over a boulder and partly consists of a retaining wall. The only other clearly definable feature is the retaining wall shared by Buildings 185 and 186.

Building 187 (fig. 22b, pl. 44a): one-room outbuilding. The east and west walls are fragmentary and tumbled; the north wall is right up against the granite of the cliff. The door appears to have been in the southeast corner, but the west side, where it approaches the cliff, is also possible. The interior of the room is filled with rock fall and sand.

Building 188 (fig. 22b, pls. 30b, 44a): two-room house. It has been damaged by wadi wash and is now sanded up. Since most of the southwest walls and much of the northwest wall are missing, the outside doors could have been in any of these places.

Building 189 (fig. 22b, pls. 30b, 46a): agglomerated building, seven to nine or more rooms. This wadi-side building is quite damaged by wash, and most rooms are filled with sand. Whatever existed in the middle of the building — the amount of debris gives it the appearance of a platform — has been clawed out by unusually vicious looters. The three rooms (a–c) next to the wadi "street" are the best defined. The southwest room (a) opened south, but if it connected to any other rooms, the doors are now lost in tumble. The middle room (b) in this range opened north and may have functioned with the northwest room (c); they do not interconnect, but their doors are side by side. The large "room" (d) in the middle of Building 189 is big enough to have been a courtyard, assuming there were no more walls here. One room (e) clearly opened off room d and probably a second one (f) as well — if the looters' hole represents the location of a room — and perhaps even a third room. Finally, the two rooms (g–h) at the east end of Building 189 are fairly clear, though the north walls of the small lozenge-shaped room h are now little more than a rim of stones, and there could have been another door at the ruined east corner. Apart from ash in the looters' hole, the only find associated with Building 189 is a large dipinto (RN 97/11; *Chapter 7*, fig. 51f).

Building 190 (fig. 22b, pl. 44b): two-room house. This building is now sanded up, but it is possible that both rooms had doors onto the wadi "street" and also an interconnecting door. There is a dimpled crushing stone outside the northwest wall, and a retaining wall and a sherd pocket between Building 190 and the cliff.

Building 191 (fig. 22b, 45a): one-room outbuilding(?). It is now mostly filled with sand; the northwest wall is only one course of stone high. The door was probably at the north corner. There is a sherd dump behind it, from which a dipinto (RN 97/38; *Chapter 7*, fig. 52f) and a post-firing incised sherd (fig. 41:204) were recovered. Farther upslope, an opencast mine follows a quartz vein.

Building 192 and the next series of structures mapped lie on the west side of the wadi "street."

Building 192 (fig. 22a, 45b, 46a): one-room house(?). It lies on a slope immediately north of Building 130; its west wall incorporates at least one large boulder. The south wall, probably partly built into the slope, is now almost completely lost in wall fall. Two granite concave grinding stones lie in the middle of Building 192, and a dimpled crushing stone was built into its east wall. Measuring roughly 21 sq. m, Building 192 was probably large enough for a small dwelling.

Building 193 (fig. 22a, pl. 46b): one-room outbuilding(?). It is now little more than a retaining wall upslope from Building 193, but angles at the corners suggest that it might once have been somewhat more substantial.

Building 194 (fig. 22a, pls. 45b, 46a, 47a): three-room house. The two eastern rooms (a–b) wrap around the corner of Building 192. The only entrance seems to be in the southeast wall of room a, where a flat stone may be a threshold or a fallen jamb. The two east rooms are connected to the western one (c) by a wall, but the gap in between does not seem to have been closed off. Room c is built partly around a boulder. There is a broken niche in the west wall and another possible niche in the north wall. Although Buildings 192 and 194 are very close to each other, the rubble-filled passageway that separates them does not look like the interior of a building, and nothing indicates a connecting wall.

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Building 195 (fig. 22a, pls. 45b, 46a): fourteen-room agglomerated building. The room at the northeast corner (a) opens east onto the open space between Buildings 195 and 199, and also into room b. If room d was actually a courtyard, then rooms a and b could be considered a two-room house unit. Room c probably had an external door on the east; certainly it interconnects with none of the other rooms. Rooms e and f opening off room d (perhaps) and an L-shaped entryway, respectively, seem to form a second, small house unit. If ever there was a door between rooms f and g, it is now lost in tumble. Northwest of room/courtyard d, rooms i, j, and k may make up a three-room unit, but the doors are mostly lost in sand fill. The wall between rooms d and i has sherds in the chinking. Room l is probably a single room with a door opening southwest, but it just might have connected to room i. Rooms h and g seem to be another small house unit. Room g has an upper grinding stone ("mano"). Rooms m and n form a fifth unit within Building 195.

Building 195a (fig. 22a, pls. 45b, 46a): two-room house unit. It should have been numbered separately, but the L-shaped entryway and the little bit of wall or a step at the corner of room f gave the appearance, on the ground, of contiguity with Building 195. The back (southwest) wall is built into the slope of the cliff and is now badly tumbled.

Building 196 (fig. 22a, pl. 47b): one-room outbuilding. It is a small rectangular room built into a corner in a boulder. The retaining wall downslope runs up to the corner of Building 197.

Building 197 (fig. 22a, pl. 47b): four-room house. The two middle rooms (a–b) interconnect; the outer room (a) had a mastaba, and the inner room (b) may have had one, though it would be under the rock tumble. A grinding-stone fragment is built into one wall, and a dimpled crushing stone lies outside the exterior door. Both rooms back up to the cliff. The two other rooms, one at each end of the building, open east, and the southern one (c) probably contained a bench. All doors were most likely approached by steps, given the fact that the building perches atop boulders. The retaining wall at the southeast corner runs below Building 196 as well. Three dipinti (RN 97/32, 97/33, 97/39; *Chapter 7*, fig. 52b, c, g) and a fragment of a sandstone "incense burner" with incised lines (RN 97/60; *Chapter 7*, fig. 48j) were discovered in the sherd dump upslope.

Building 198 (fig. 22a, pl. 48a) two-room house. The walls are about half washed away. There is one distinguishable exterior door in the west room, but whether there were any other doors cannot now be determined.

Building 199 (fig. 22a, pls. 45b, 46a): six-room house. Most of the rooms are sanded in. The south and east walls of the room at the far south end of the building have been lost to wadi wash. That aside, the southern four rooms (a–d) clearly constitute one unit. The southernmost room (a), despite wall damage, has a remnant of what may have been a mastaba. The room interconnects with the one on its north (b), but the third room to the north (c) has a separate entrance. It also has a looted bench, and outside the exterior door there is a ring of stones around a looters' hole. The door to room d is lost in tumble, but it most likely opened to the east, so it would have functioned with the southern two rooms. The remaining two rooms at the north end of Building 199 (e–f) are linked to the south four by an angled wall, but it is not certain whether the space it helped enclose was roofed. The two north rooms seem to be independent elements; one opens south and one southwest, and both are fairly large (ca. 2.9 × 4.7 m and ca. 3.6 × 3.2 m) and full of sand.

Building 200 (fig. 22a, pls. 46a, 48b): three-room house. It appears to have been built in segments from south to north. Outside the external (west) door of the middle room (a) lies a low rim of stones and datum point 107, and to the north of Building 200, a sherd dump, where a dipinto (RN 97/36; *Chapter 7*, fig. 52e) was found.

Building 201 (fig. 22a, pl. 49a–b): six-room compound with two(?) courtyards. Building 201 looks like no other structure at Bir Umm Fawakhir. The center is a polygonal courtyard (a) circa 13.0 × 11.6 m (max. dimensions). There is a room in each of two corners; the one on the northwest (b) has a light-trap kind of doorway that would have made the room pitch black unless there was a window. The sole door into the courtyard from outside, on the north, is so narrow (66 cm) that it could not easily have accommodated large animals such as donkeys. The space at the extreme southwest end of Building 201 looks like another irregular courtyard (d). Wadi wash destroyed so much of the southwest corner and east wall that it cannot be determined where the entrance was. The curved retaining wall between Buildings 200 and 198 seems to have afforded little protection from wash, and the rim of stones downslope is unexplained. The rest of Building 201 is a complex of four rooms that may or may not have

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had access to the central courtyard. On the east end, a fairly well-preserved room (e) had a door facing south, perhaps two opening west, and a possible bench. A single wall links this room to three more on the west (f–h), but since there is no trace of a south wall, the space does not look like an enclosed room. The rim of stones forming a corner just south of this space may be the remains of a rectangular feature (hearth?) like the one in the middle of the "Plaza" mapped in 1993. As for rooms f, g, and h, all are sufficiently damaged that doorways can only be guessed. There are two sherd dumps at the east end of Building 201, on the edge of the wadi "street."

Building 202 (fig. 22a, 49b): one-room house(?). The east wall has been almost completely destroyed by wadi wash and a looters' hole, but in spite of this, the location of the doorway may still be marked by a jamb stone. Building 202, roughly 5.0 × 3.6 m, is large enough to have been a modest dwelling. The angle of stones at the north corner may have been another rectangular feature (hearth?) like the one near Building 201.

Building 203 (fig. 22a, pl. 50a): one-room outbuilding. This is little more than a remnant of a curved wall running from the cliff to a boulder. The door might have been the gap between two boulders. There is a thick sherd scatter around Building 203.

Building 204 (fig. 22a, pl. 49b): three-room house. It is built close to but not right against the cliff. Wadi wash has taken out most of the south room.

Building 205 (fig. 22a, pl. 49b): one-room outbuilding. This roughly oval building is quite close to but not abutting Building 204, so it has been treated separately.

Building 206 (fig. 22a, pl. 49b): three-room house. The rooms are now filled with sand. The most noteworthy feature of Building 206 is the sherd dump to the northwest.

Building 207 (fig. 22a, pl. 50b): one-room outbuilding. The west wall, constructed of a single thickness of very large stones, is backed into the cliff face. Outside the doorway on the northwest, a line of stones may define an open-air working area. A dimpled crushing stone was noted there, and one dipinto (RN 97/26; *Chapter 7*, fig. 51k) was recovered between Buildings 207 and 209.

Building 208 (fig. 22a) two-room house. An exceptionally clear example of a basic two-room house. The northwest room (b) has a couple of low, smooth boulders conveniently located for a bench, and there is a niche remnant over it. The lower half of a granite rotary grinding stone rests near the east corner of the building, and a pecked stone between the west wall and the cliff.

Building 209 (fig. 22a, pl. 51a): one-room house(?). The walls are now very low, and the room is sand filled. A stub of a wall on the north might once have connected to Building 210, but since this cannot be proven, Buildings 209 and 210 were numbered separately.

Building 210 (figs. 22a and 23a, pl. 51a): one-room house(?). The walls are now mostly buried in sand, so if there ever was a connection to Building 209, it is no longer clear. A rim of stones inside Building 210 might or might not have been a partition wall. One dipinto (RN 97/28; *Chapter 7*, fig. 51l) was recovered with the sherds from the vicinity of Building 210.

Building 211 (fig. 23a, pl. 51a): four-room house. The north wall has been washed out, and the others are now very low and sand filled.

Building 212 (fig. 23a, pls. 51a, 54a:) one-room outbuilding. The walls are tumbled and the room is sand filled, so an offset in the north corner may be more apparent than real. Datum point 108 lies immediately to the east. The very large dump between Buildings 212 and 220 has several looters' holes and an unusual border of stones on its northwest perimeter.

Building 213 (fig. 23a, pls. 51a, 54a): two-room house or outbuilding. But for a wall fragment and a lot of tumble, Building 213 would have been counted as two separate structures. The walls have mostly fallen down and the rooms are filled with sand, so doorways are uncertain, but they appear to have opened northwest and northeast, respectively, well away from each other. The west room (b) seems to have had a narrow (35 cm wide) partition wall.

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Building 214 (fig. 23a, pl. 51b): one-room outbuilding. It now consists of two short walls perpendicular to the cliff face.

Building 215 (fig. 23a, pl. 52a): two-room house. The path between Buildings 215 and 216 leads over a dip between two granite hills to make a shortcut to Outlier 1, itself encroached upon by the modern buildings near the asphalt road. The walls of Building 215 are now tumbled, but the doors can still be seen side by side facing east; the south room (b) is now about half a meter higher than the other room (a). The rim of stones west of Building 215 is too scattered to be called a structure, if it ever was one.

Building 216 (fig. 23a, pl. 52b): five- or six-room house. This building is the most orthogonal one in the main settlement. Unfortunately it has suffered from sand infilling to the extent that many details of the plan are obscured. In places only a few courses of stone rise above the sand, and in others, the sand covers the walls entirely. The entrance(s) to the house may have been near the north corner and/or the south one, where an offset wall has the appearance of an entryway into room d. The best-preserved entrance, however, is in the west room (a), and it opens onto the gap between Building 216 and the hillside rather than the wadi and other houses. The two rooms at the west and south corners (a and d) bracket a space that looks like a porch. The details of the inner four rooms (b–c, e–f) are now lost in sand. While it is possible that Building 216 had a different date or function from the others in the main settlement, this can only be confirmed by excavation.

Building 217 (fig. 23a, pl. 53a): two-room house. Although mostly filled in by wall fall and sand, the general layout of two rooms is clear. Both probably opened to the south. Fragments of a wall and more tumble at the east corner suggest that there might once have been more here.

Building 218 (fig. 23a): one-room outbuilding. It consists of two short walls and a tumbled third one enclosing a small space in a cleft in the hillside above Buildings 217 and 220.

Building 219 (fig. 23a, pl. 53b): one-room outbuilding. It now consists of a fragment of a wall and some tumble enclosing a small space upslope from Building 220.

Building 220 (fig. 23a, pl. 54a): five-room agglomerated(?) building. Buildings 220 and 221 are now so buried in sand that it is hard to know where one stops and the other begins, much less their internal details. The two southwestern rooms (a–b) of Building 220 appear to interconnect and to open onto the sandy gap between Buildings 220 and 221. The south room (a) incorporates a stone with quarry marks, presumably from the nearby Quarry 3. The easternmost room (e) has a pocket of sherds, and outside, southwest of the structure, lies a dimpled crushing stone.

Building 221 (fig. 23a, pl. 54a): three-room house. It is now almost completely filled with sand. No doors or other features are visible.

Building 222 (fig. 23a, pl. 54b): one-room outbuilding. The walls are quite tumbled, but the doorway at least is clear. The space in front of the door, bounded on the west by a retaining wall running toward Building 223 and on the east by a boulder, may be a small terrace. A concave grinding stone lies upslope from the retaining wall. A stub of a wall and a rim of stones at the southwest corner suggest that there might once have been a little more here.

Building 223 (fig. 23a): three-room house. The rear two rooms (a–b) are fairly well defined, but the wadi-side room (c) is little more than tumble over former wall lines. A gap at the southeast corner might mark the doorway. The building steps down to the wadi in three levels. A lower rotary grinding stone lies in the wadi outside Building 223.

Building 224 (fig. 23b, pl. 55a): two-room(?) house(?). The lines of stones here pertain to some sort of structure, but the layout is now lost.

Building 225 (fig. 23b, pl. 55a): one-room(?) outbuilding(?). The only parts of Building 225 now visible are one or two badly preserved bits of walls and a roughly rectangular rim of sand and gravel; it is little more than a house mound.

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Quarry 3 (fig. 23b, pls. 55a, 55b): smaller than Quarries 1 and 2, Quarry 3 is so small that it was not remarked until we completed detailed mapping of the severely ruined structures at the northwest end of the main settlement. Four stones, two of which are large, squarish boulders, have quarry slots.

Buildings 226 through 235 lie on the east side of the wadi "street," lining the cliffs from a spur of rock behind Building 191 north to the mouth of the wadi and the end of the main settlement.

Building 226 (fig. 22b, pl. 56a): two- or three-room house. Building 226 is next to Building 191, just around a spur of cliff. The two main rooms of Building 226, on the cliff slope, are sanded up but fairly clear, and they do interconnect. Some bits of walls downslope suggest a third room. A short piece of a retaining wall survives on the east, and there is a sherd scatter between Buildings 226 and 191.

Building 227 (fig. 22b, pl. 56b): one-room outbuilding. The front walls look thin, but this may be due to the fact that they are nearly buried in sand. The entrance appears to be at the rear, on the south, and down a step or two, but this may only be tumble. There is a sherd scatter between Building 227 and the cliff behind it.

Building 228 (fig. 22b, pl. 57a): six-room agglomerated building. A deep gully cuts down the cliff immediately to the south of Building 228, which itself lies under a steep cliff. The building as a whole is very sanded in, but parts of it are fairly clear. On the north end, there is a "hooked-on" room (a) that does not interconnect with the rest of the structure. Its east wall is a retaining wall against the cliff. The gap south of its door may have been a ramp leading up to two enclosed spaces (b, c). Both are very irregular, and the rear one (c) runs up to the cliff face. The next two rooms south (d, e) are better preserved. The northern one of the pair (d) has a door on the wadi side and what may have been a couple of steps up into the room on its south. Whether the latter had a door onto the wadi is less than certain. Finally, there is a sprawling, very irregular space between these rooms and the cliff, plus a large walled-in extension to the south (f), right up to the edge of the gully. The extension appears to be at a higher level, but it may just have a thicker sand fill.

Building 229 (fig. 23b, pl. 57b): ten-room house. There might have been more rooms; the south end of Building 229 is partly washed away, and the cliff-side rooms are mostly sanded up. Room a at the south end of Building 229 is reasonably well defined, though its doors have been lost to erosion and sand fill. The bits of walls to the south probably indicate more rooms, but their layout is lost. Room b might have been a courtyard; it is fairly large, and it is difficult to see how it could have been roofed. Room c probably opened off b, and room e might have as well. Room e seems also to have had an unusual passageway for an entrance at its west corner, and the room's east wall was partly a revetment against the cliff face. Room f was reached from room c, and room d probably was also. Room f leads to g and perhaps h, though the latter might have had an exterior door onto the wadi. The doors of rooms i and j are uncertain, but j did not interconnect with any other rooms. There is a sherd dump between rooms f, g, and j and the cliff face.

Building 230 (fig. 23b, pl. 58a): one-room outbuilding. Only one course of large stones now rises above the sand fill. There is, however, a sherd dump to the north.

Building 231 (fig. 23b, pl. 58a): one-room outbuilding. The rear (east) wall is built up against the cliff slope; the other walls are now mostly buried in tumble and sand. A possible jamb stone may indicate a door in the north wall. There is a sherd dump between Buildings 231 and 232.

Building 232 (fig. 23b, pl. 58a): three-room house. It is built at the corner of a rock outcrop. The two eastern rooms (a–b) are backed up to a retaining wall on the southeast, and the northeast wall is thicker than usual. The walls are now mostly buried in tumble and sand, especially the interior dividing wall. The west corner is also obscured by tumble, but it seems the only place for a door. The slightly lower, non-interconnecting west room (c) is rounded and its east wall built partly over a boulder. It appears to have had external doors on the north and south, but here, too, the walls are mostly buried. Lines of stones and some retaining walls upslope channel runoff around the north corner of Building 232.

Building 233 (fig. 23b, pl. 58a): one-room outbuilding. Only one corner of fairly large stones now rises above the sand. So far as can now be determined, the door opened north.

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Building 234 (fig. 23b): the remnants of walls looked, on the ground, like a possible building of some sort, especially the best-preserved angled wall, but when they were plotted, the relationships looked more doubtful. "Building 234" is probably just a series of now-tumbled and sanded-up retaining walls.

Building 235 (fig. 23b): two-room(?) house(?). Nothing is now visible of this structure except a zigzag of walls, mostly buried in sand and further obscured by debris from a modern hut just north. Buildings 235, 224, and 225 are the last structures at the north end of the main settlement, right at the entrance to the wadi "street," but whether any of them had a gatehouse function is unknown.

Building 236 (fig. 23a, pl. 58b): one-room outbuilding. It looks like a square guardpost on the cliff above Quarry 3. The walls are made of a single thickness of very large stones, and there is a piece of a retaining wall downslope.

Building 237 (fig. 21b): one-room outbuilding. It was discovered behind Building 154 while making some final topography shots at the end of the season. Two very rough walls enclose a small space in the angle of some boulders. There is a heavy sherd wash in and around the structure, from which two diagnostic glass sherds were recovered. One is a body sherd with a blue blob (probably a lamp; *Chapter 7*, fig. 48g) and the other is a bit of a crimped-band bowl (fig. 49f).

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CHAPTER 4

OUTLIERS

Carol Meyer
with contributions by Lisa Heidorn, Alexandra A. O'Brien, and Clemens Reichel

Over the course of four survey seasons, in 1992, 1993, 1996, and 1997, the Bir Umm Fawakhir Project explored the immediate vicinity of the main settlement and found guardposts, cemeteries, paths, and fourteen outlying clusters of ruins of the same fifth- to sixth-century A.D. date (fig. 3). Outliers 1 and 2 were known from the beginning. Outlier 1 lies behind the modern settlement; a shortcut leads from it over a smooth saddle of granite and into the northwest corner of the main settlement. Outlier 2 is extensive, well preserved, and adjacent to the Roman road and the largest of the granite quarries. In 1993, investigation of the Roman road led to the discovery of Outlier 3, about forty one- or two-room buildings in a bay (Meyer et al. 2000: 20). A stroll between the camp in the Wadi el-Sid and the modern settlement one Friday during the 1993 season led to the discovery of Outliers 4, 5, 6, and 7. Outlier 4 has only four huts, but Outlier 5 has at least thirty-two buildings, mostly one- or two-room structures but also some other remains. Outlier 6, in the next wadi south of the main settlement, is the most extensive; it is more or less contiguous with Outlier 7, which lies along the modern road (Meyer et al. 2000: 20–21). Outlier 8 was first noted in 1996 when exploring the New Kingdom guardposts opposite the modern Wadi el-Sid mill (Meyer 1996: 36). Outliers 9, 10, 11, 12, and 13 were discovered during a Friday trek during the 1997 season. Outlier 9 stretches northeast of the wells, into a deep bay and then into a side wadi with the ruins of the early twentieth-century mining engineers' houses. Outliers 10 through 13 lie outside the natural "gate" in the mountains where the road bends west. All four are relatively small clusters of mostly one- or two-room buildings. Finally, Outlier 14 was discovered in a deep, remote wadi southwest of the modern settlement and road. It is not distant as the crow flies, but it can only be reached by a very circuitous route (Meyer 1998b: 33).

Outlier 1 is much damaged and now partly covered by rubbish from the modern settlement. We wished, however, to preserve some record of it before it was further degraded, so in 1999 the photographer, Henry Cowherd, took a comprehensive series of photographs of the outlier, if not each building in detail. Outlier 2, however, is very well preserved and includes features found nowhere else at Bir Umm Fawakhir. Therefore we wanted to document as much of it as possible in the same way as the main settlement, with detailed maps, descriptions, and at least some photographs. Outliers 6 and 7, which appear to be significant residential areas and not just miners' day shelters, were sketched and described in detail, but not mapped. In particular, Outlier 6 has a unique thick-walled structure now labeled "Complex 26"; it was hoped that closer study might help elucidate its function. Outliers 12 and 13 were likewise described in detail because it was thought that they might have some evidence of smelting operations, though that proved not to be the case. The other outliers were either published in the 1993 final report (Meyer et al. 2000: 20) or were only briefly noted and photographed. The following sections are arranged in order of interest, the outliers that seem most likely to contribute to an understanding of Bir Umm Fawakhir as a whole: Outlier 2 first, then Outliers 6 and 7, Outliers 12 and 13, Outlier 1, and then a few notes on Outliers 8, 9, 10, 11, and 14.

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OUTLIER 2

Outlier 2, on the north side of the Roman road, was described and mapped in detail like the main settlement insofar as time permitted (figs. 25–29, pl. 59). Out of at least sixty-eight buildings, fifty-four were described and plotted, and eight more were sketched. At the very beginning of the 1999 season, the last six structures were sketched and described. Outlier 2 was selected for special attention because it is in some respects better preserved than the main settlement and includes features such as grain silos not found there. Note, however, that because of its proximity to the Roman road, still a Bedouin route, parts of it seem to have been reused in very recent times, mainly for trash dumps, hearths, and animal shelters.

The Outlier 2 buildings are similar to those in the main settlement, usually two- or three-room houses or one-room outbuildings, but there are also some large agglomerated buildings. The dry-stone masonry construction of most of the houses, the built-in features such as benches and niches, and the pottery are the same as the main settlement. The two are considered contemporary, though judging from the thinner sherd scatter, Outlier 2 may not have been occupied as long as the main settlement. Outlier 2, like Outliers 1, 6, and probably 7, appears to be residential and not merely a cluster of day shelters for workmen at more remote mines.

The structures of Outlier 2 are described below in detail because here, too, we have little hope for long-term preservation. This impression was strengthened by a visit to the site in 2001, when we found that one of the best-preserved grain silos had been mostly destroyed by a Bedouin wall built across the end of the room and through the silo in order to make an enclosure for goats (see Building 27 below).

Quarry 1 (figs. 25–26, pl. 59b): at the far southeast end of Outlier 2, Quarry 1 is the largest granite quarry at Bir Umm Fawakhir, but it is nowhere nearly as extensive an operation as the Mons Claudianus or Mons Porphyrites workings. Quarry 1 is believed to be Roman in date, based largely on the basis of the quarry marks, which are paralleled at Mons Claudianus. Heidorn noted remains of stone working and quarrying up on top of the hill over Quarry 1, and also a thick sherd of an imported amphora, type undetermined.

Building 1 (fig. 27): two- or three-room house.[8] This well-preserved building is backed up against bedrock on the north, and its walls still stand as much as 125 cm high. The exterior door is in the west side of the east room (or courtyard?). Its back (north) side is boulders; a hollow in one looks like a natural niche but is at least partly carved out. It is 70 cm wide, but since the top of the niche is the bottom of a boulder that slumps, the left side is 95 cm high, but the right, only 60 cm. Even more unusual is a feature just to the left of the niche that looks like a table built of stones (40 × 40 × 40 cm). Outside the east wall of the entrance room, a boulder, a short wall, and a rim of rocks delimit a small space opening to the southwest. The room west of the entrance room has a blocked door in its south wall, a boulder/bench right outside the exterior door, and outside the blocked door, a rim of stones (max. width 180 cm) shaped like an inverted "U" opening south. The second room leads to the third, northwest, room. Its north and east walls are built into an angle of the bedrock. There is a well-preserved but very low-lying niche in the north wall. It is 37 cm wide × 36 cm high, but the bottom is below the present surface; its top is a full 83 cm down from the surviving top of the wall. In the west corner, there are a semicircular feature and a stub of wall between it and the niche. Upslope from the northeast corner of this room and outside Building 1, there is another natural niche in the boulders that might have been utilized.

The rest of the buildings back in this little bay near Quarry 1 are just one-room structures, many of them poorly preserved, and mostly constructed of a single thickness of large rocks rather than the usual two faces of cobbles with filling.

Building 2 (fig. 27): one-room outbuilding. It sits toward the center of the bay. Both corners of the west wall are missing so the location of a door is uncertain. The thick ash deposit covering the west interior quadrant of Building 2 and part of the walls and spreading outside is probably modern.

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[8] All structures are numbered from 1 to 68; if there is any chance of confusion with the numbering in the main settlement, a building will be specified as, say, "main settlement, Building 50" versus "Outlier 2, Building 50."

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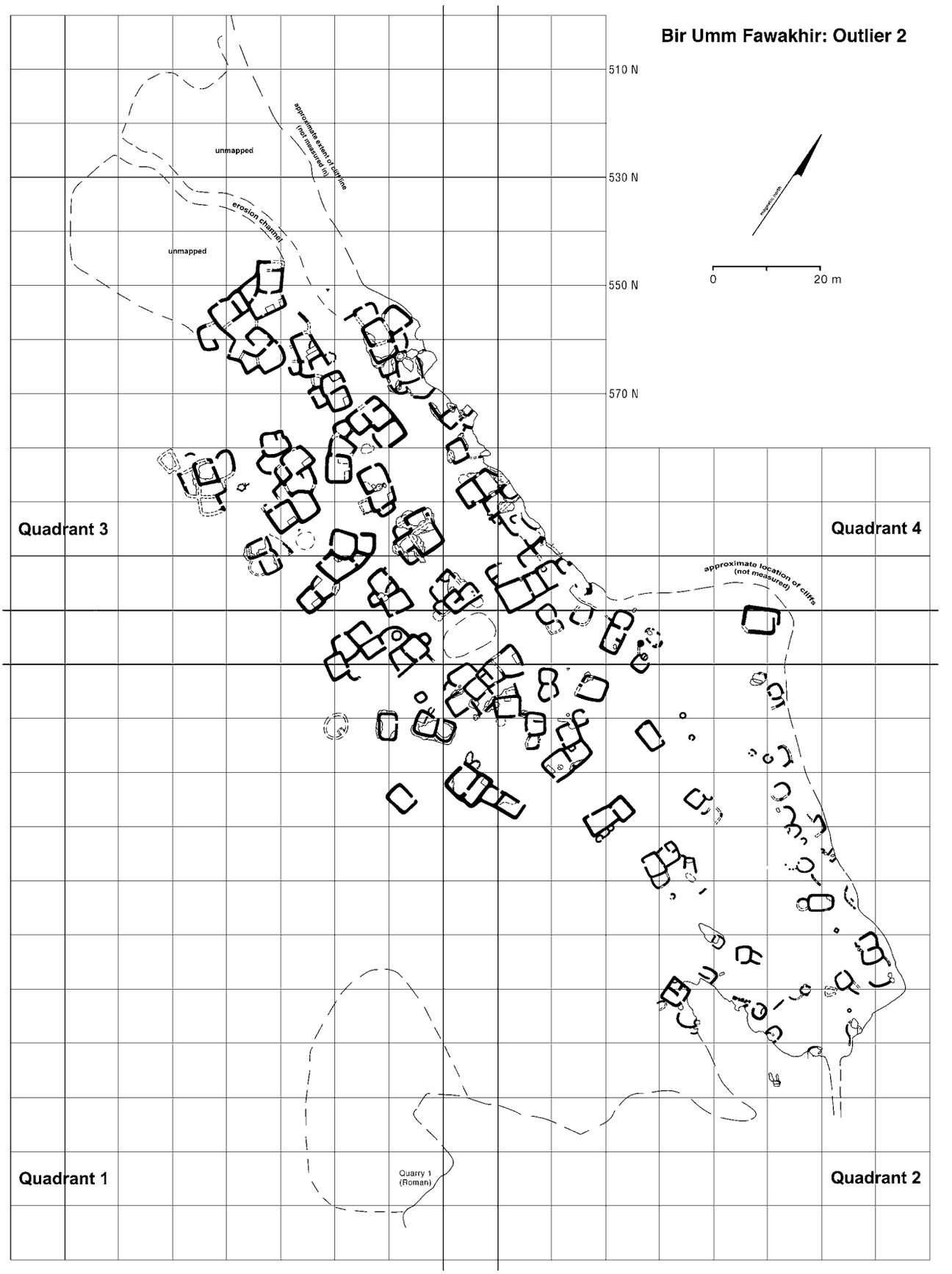


Figure 25. Bir Umm Fawakhir, Outlier 2 (mapped November–December 1997)

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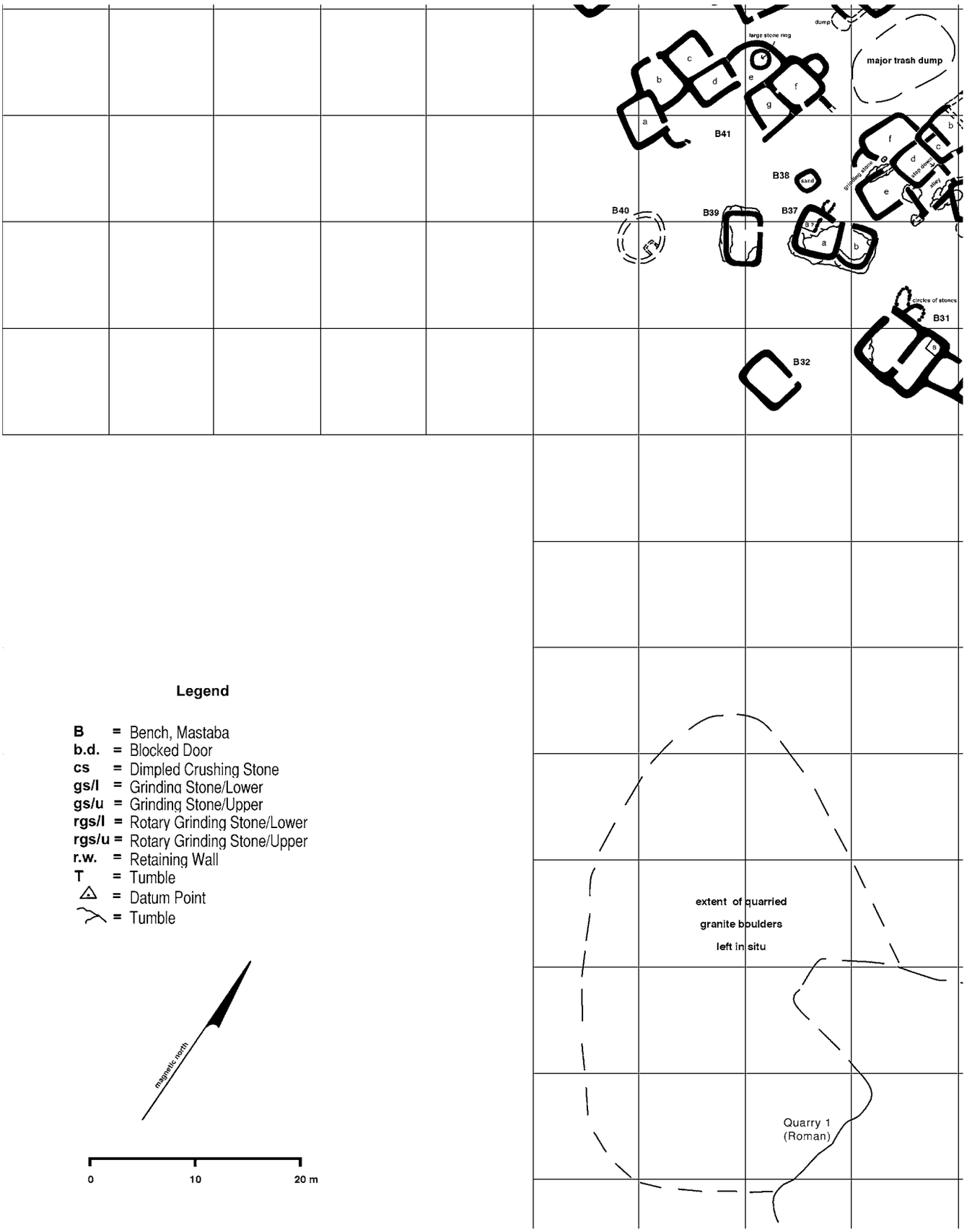


Figure 26. Outlier 2, quadrant 1. Buildings 32, 37–41

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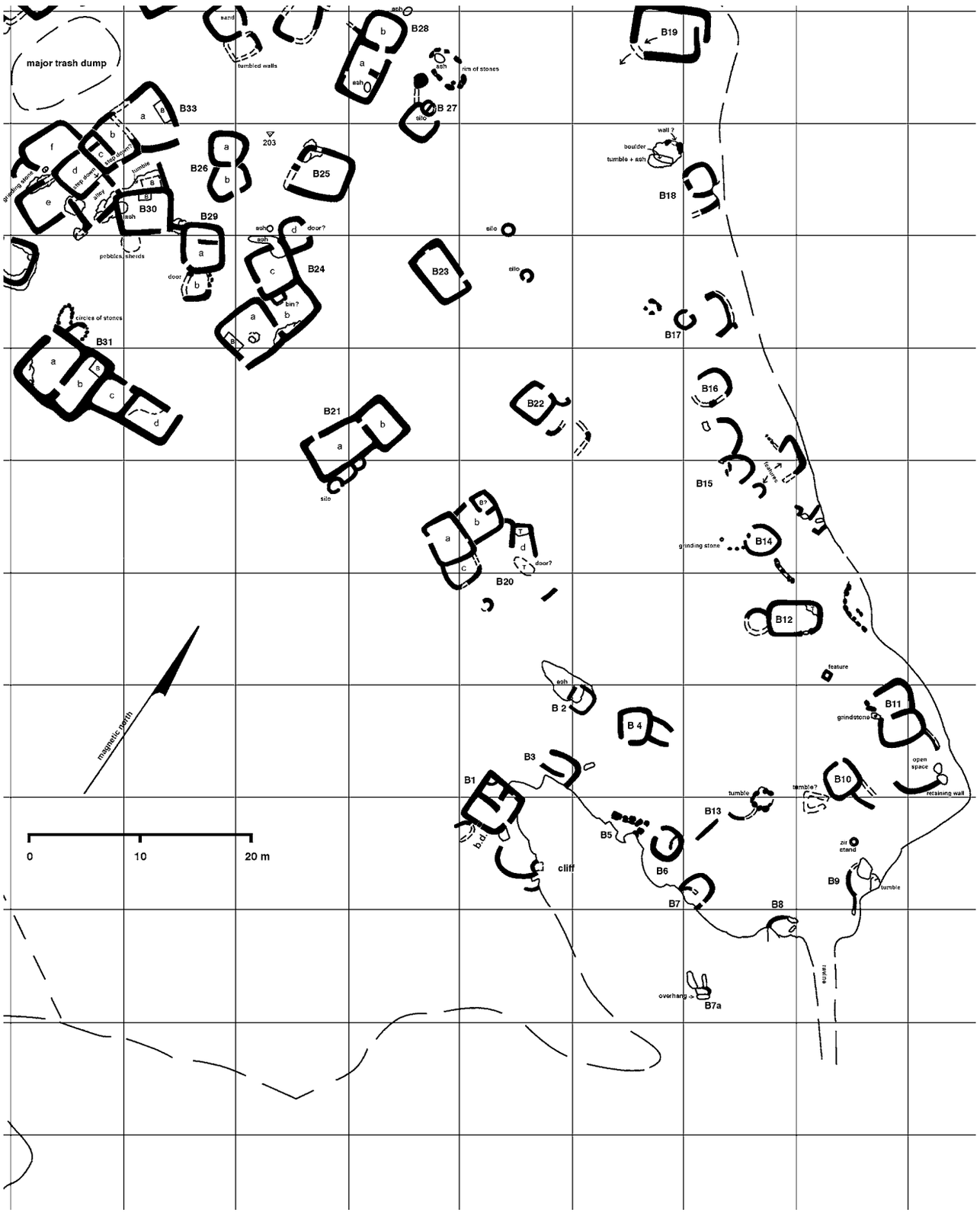


Figure 27. Outlier 2, quadrant 2. Buildings 1–32, 33

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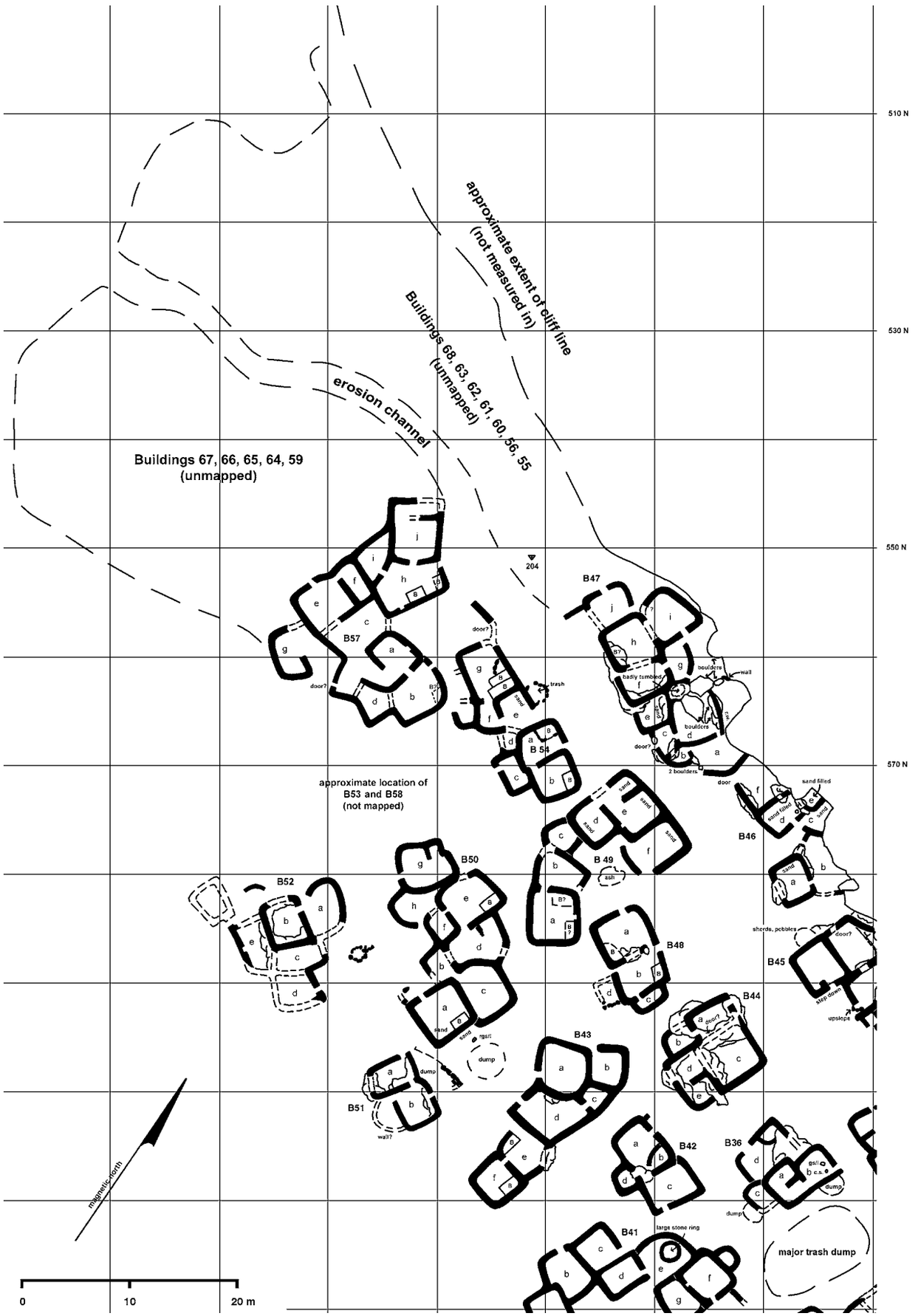


Figure 28. Outlier 2, quadrant 3. Buildings 36, 41–52, 54, 57

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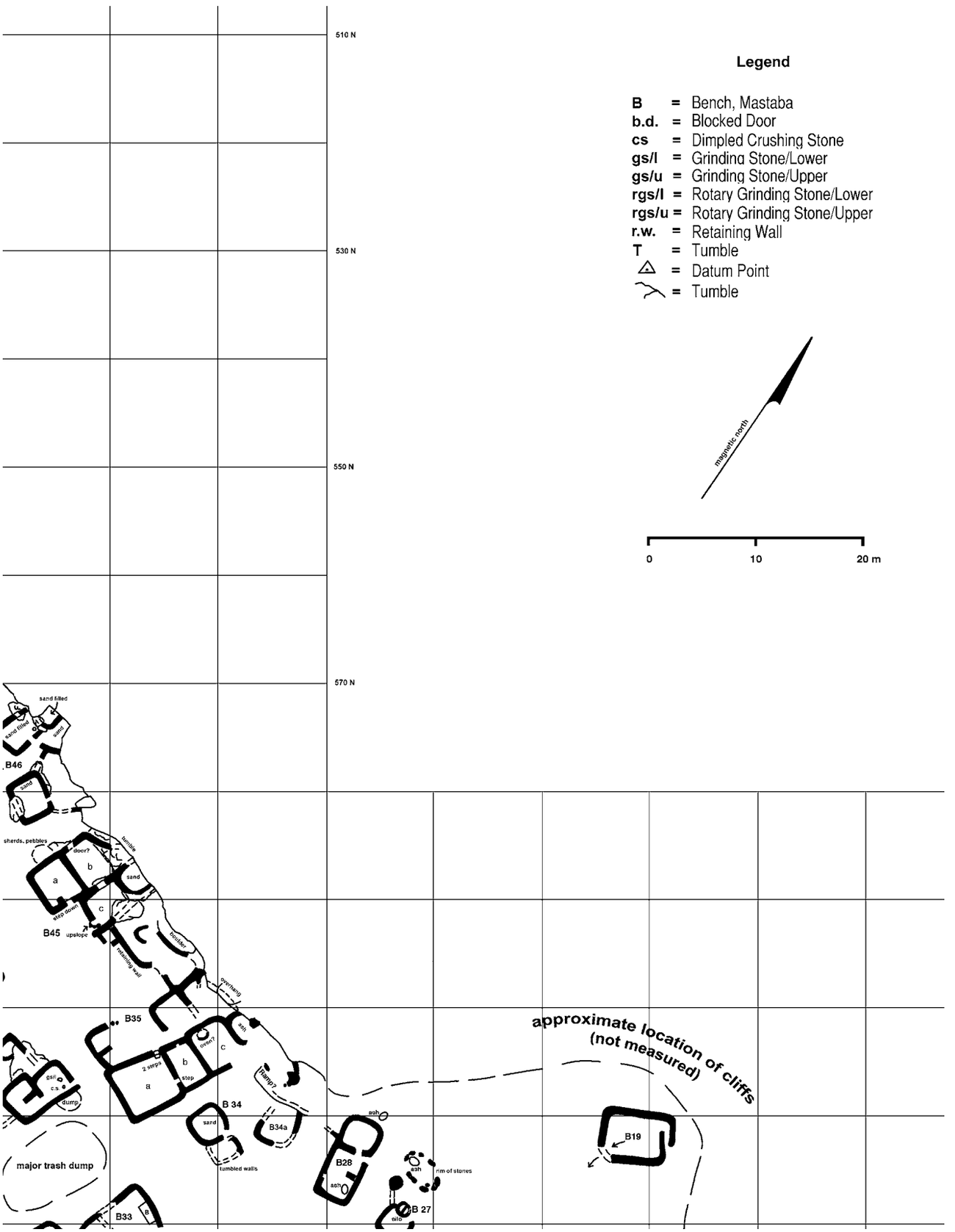


Figure 29. Outlier 2, quadrant 4. Buildings 19, 28, 34–35, 45

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Building 3 (fig. 27): one-room outbuilding. It is built up against the rocks at the southern edge of the bay. The north and east walls are a single thickness of large stones; the south wall is backed up to the cliff but seems to have been recently disturbed. The west side seems always to have been open, leaving an entrance 110 cm wide. A fragment of blue glass was recovered between Buildings 3 and 5.

Building 4 (fig. 27): one- or two-room building. It lies in the sandy bed of the bay, and like Buildings 2 and 3, the main room utilizes large boulders for walls. A door (90 cm wide) at the south end of the southeast wall is well preserved. At the north corner and the middle of the northeast wall, two thinner walls curve out and back in to enclose another space with a door or gap at the east side 95 cm wide.

Building 5 (fig. 27): one-room outbuilding. This is little more than some large rocks enclosing a small space against the bedrock on the south. Gaps in the east and west walls might be the door(s).

Building 6 (fig. 27): one-room outbuilding. This rounded room is somewhat more elaborate than Building 5. It has a door on the west opening onto the wadi bed and a pocket in the north wall that might be a crude niche; a rough alignment of large stones inside might once have been a bench.

Building 7 (fig. 27): one-room outbuilding. This relatively well-preserved structure has bedrock for its south wall and large stones for the others. The door is in the east wall. A path upslope from and behind (south) Building 7 leads to Building 7a.

Building 7a (fig. 27): one-room outbuilding. It consists of a crevice between bedrock and boulders that was completed with some rough walls on the northeast and southwest. There is a possible niche in the northeast wall between two boulders. The niche is 70 cm wide, but the top, flat stone is slumped and the bottom rocks partly tumbled down.

Building 8 (fig. 27): one-room outbuilding. The south side consists of bedrock and a projecting, oblong boulder; the north and west walls are very large rocks now surviving only one layer above the surface. The door may have been at the northeast corner.

Building 9 (fig. 27): one-room outbuilding. The cliff forms the east wall. The north wall is mostly lost in a thick tumble of stones, and the west wall curves around to a gap at the south that might have been the door. A line of stones running south from this possible door looks as if it lines an entrance path. Northwest of Building 9, there is a circle of stones 82 cm in diameter and 35 cm high that looks like a *zir* stand.

Building 10 (fig. 27): one-room outbuilding. It is a rounded rectangular room with a door at the north end of the west wall. A line of stones outside the northeast corner and another curved wall segment starting closer to the middle of the east wall might be low retaining walls. A rough rectangle of stones south of Building 10 might have been some sort of feature.

Building 11 (fig. 27): two-room house. This building lies very close to the cliff on its north. The western room has walls of boulders on the west and south, and the door is a gap between them at the southwest corner. The north wall is the rock of the cliff. The east room has walls constructed with a single thickness of large rocks. The door is at the south end of the west wall, the partition wall between the two rooms. East of Building 11, an open space appears to be delimited on the north by a line of stones running east from the corner of Building 11, on the east by a rough (retaining?) wall, on the south by Building 10 and the low retaining wall(s) running from its east side, and on the west by Building 11. The approach to the open space was a passageway between Buildings 10 and 11. On the other side, at the southwest corner of Building 11, there is a small (75 cm on a side) rectangular, stone-rimmed feature.

Building 12 (fig. 27): one- or two-room house. The main room is well preserved. The door near the eastern corner is clear; even the threshold stone is still visible. A smaller room seems to have been "hooked on" to the southwest side; presumably the door was in the now-destroyed east side.

Building 13 (fig. 27): fragments of two walls. This structure, such as it is, lies in the middle of the far end of the bay and is mostly destroyed by erosion. South of a bed of wadi wash, there is a tumble of rocks, and southwest

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of that, a short, curved wall segment. South of that and separated by more water erosion is another bit of wall. Both wall remnants are made of a single thickness of medium to large rocks.

Building 14 (fig. 27): one-room outbuilding. This structure was built of a single thickness of large stones; the door must have been in the now-tumbled west wall. A grinding stone was noted southwest of Building 14, and to its north, backed against the rock of the cliff, one short wall and perhaps a second delimit a small feature.

Building 15 (fig. 27): two-room house(?). Building 15 is now only the remnant of two side-by-side, rounded rooms and two external features. The two largest rooms are built of a single thickness of large stones, for the most part only one row above the surface sand. The doors were probably in the destroyed south walls, facing the wadi track. To the east, there is a smaller, round feature, and to the north, backed against the cliff, there are remnants of a small, roughly rectangular feature.

Building 16 (fig. 27): one-room outbuilding. This is little more than the remains of a small circular hut built of large stones close to the cliff on the north.

Building 17 (fig. 27): one-room outbuilding. It lies between a track in the sandy wadi bottom and the rocky slope of the cliff to the northeast. The clearly defined, if very small, room has walls built of a single thickness of large rocks and a door at the north corner. North of that, a rectangular space, presumably open, is partly defined by a wall built into the cliff and two stubs of walls running toward Building 17 proper. There is no sign of a connection between the open(?) space and the main room of Building 17.

Building 18 (fig. 27): one-room outbuilding. Building 18 lies immediately east of a small ravine and the bed of wadi wash running out of it, but the structure's layout is still fairly clear. The north wall appears to have been built into the slope at the foot of a spur of rock; there are some large boulders at the northeast corner. The west, south, and east walls are constructed of a single thickness of large stones; the south wall appears to have not one but two doors, both 48 cm wide. Upslope, to the east and built against one of the boulders, a wall stub partly encloses a small space. Outside the southwest corner of Building 18 there is a thick, probably modern, deposit of burnt remains and ash in and around some large rocks and small boulders. One molded glass fragment was retrieved from the area in front of Building 18.

Building 19 (figs. 27, 29): one-room outbuilding. A small ravine cuts into the slope right behind Building 19; its northwest and northeast walls act as retaining walls and probably always have. The walls (60–90 cm thick) are made of single or double thicknesses of very large stones, but even so, the track of water erosion runs across the floor and out the door at the south corner.

Going up the mountainside from this part of Outlier 2, toward the ravine above Building 19, one encounters two or three badly preserved huts built on the north side of the ridge. They were not mapped.

Building 20 (fig. 27): four-room house. Parts of this house are exceptionally well preserved, though other parts have been washed out. The wall construction is like that in the main settlement, that is, inner and outer wall facings made of cobbles and a filling of smaller stones. The southwest room (a) has walls standing as much as 155 cm high and a doorway near the southwest corner. While no threshold or step is now visible, the present floor of the room is lower than the ground outside. The north wall has a well-preserved niche (80 cm high × 35 cm wide) that seems to have been deliberately filled with stones at some point. Judging from the way the walls abut, the room on the north (b) was added later. It has an exterior doorway in the west wall, and what may be the remnants of a bench in the northwest corner. An angle of wall running northeast and then southeast partially encloses a space east of Building 20 that could have been a working area or courtyard. To the south the "courtyard" is bounded by the remains of a rectangular room (c). Its walls seem to be relatively thin, only one thickness of stones, but they are tumbled by wadi wash so it is hard to be sure. A gap near the north corner may mark a door giving onto the "courtyard." To the east, outside the "courtyard" area, there is a circular feature 125 cm in diameter and 30 cm high, which might be a silo. The fourth reasonably well-defined room lies at the northeast end of the "courtyard." It is irregular, but the walls on the northwest, southwest, and northeast are fairly well preserved. The southeast wall, however, is an uncertain array of large rocks. A gap at the east corner is probably

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the door; the one at the south corner is probably illusory. A piece of another wall lies to the east, but thanks to wadi scour, its connection, if any, with the rest of Building 20 is not clear.

Building 21 (fig. 27): two-room house. This very well-preserved house has an exterior door near the south end of the west wall. The entrance room (a) opens onto the back (north) room (b). The most remarkable feature of Building 21 is the well-preserved grain silo at the southeast corner that survives to a height of 44 cm. An arc of a lower wall (20 cm high) runs from it to the east wall of the main room, and a still smaller arc runs from the first.

Building 22 (fig. 27): one-room house(?). Apart from the damaged northeast corner, this structure is fairly well preserved, though the 105 cm gap in the north wall is larger than the usual doorway. Some scattered bits of wall to the east are incoherent.

Building 23 (fig. 27): one-room house(?). This very well-preserved structure may be standing to its original height. The tops of all the walls are at the same level, about 120 cm up from the present surface. This is low for a roof, but there may have been a step down into the room like Buildings 33 and 45 and probably Buildings 20 and 35; Building 23 is partly filled with sand, so this cannot be determined for sure. The door (65 cm wide) is on the north wall, and there is a good niche (46 cm wide × 47 cm high) in the west wall. The exterior of the wall has a distinct bulge outside the niche. Another remarkable feature of Building 23 is the two grain silos on its north. The west one has an external diameter of 95 cm and survives to 40 cm high; its wall is circa 27 cm thick. The eastern silo is 105 cm in external diameter and 40 cm high; it is only circa 20 cm thick, however, and the south quadrant is broken down.

Building 24 (fig. 27): four-room house. The two rooms on the east constitute one house unit (a–b). The southernmost room (a) has an exterior door at the east end of the south wall, a mastaba (ca. 125 × 88 cm), a possible feature in the middle of the room, and a door leading into the inner room (b). The walls of room b are obscured by wall fall, but it seems to have the remnants of a bench or bin against its west wall. The room immediately to the west (c) does not interconnect, and its south corner abuts the north corner of room a. Room c is even more damaged by wall fall and ashy fill, but its door near the east end of the south wall is clear. The fourth room (d), attached to the north end of the building, appears to have had a door in its northeast wall, facing away from the other rooms. A stub of wall at its east corner seems to go nowhere.

Building 25 (fig. 27): one-room outbuilding. The walls of this building are very tumbled, and wadi wash has cut through the south corner, but the plan is still clear, and a jamb stone in the middle of the west wall marks the location of the door.

Building 26 (fig. 27, pl. 59b): two-room house. The walls of this odd little house are preserved as much as 142 cm up from the present surface. The northern room (a), a rounded rectangle, appears to have been built first. Its east wall has some mud and straw plastering on its inner face, an unusual feature at Bir Umm Fawakhir, but it may be due to recent reuse of the room. A doorway 57 cm wide leads into the southern room (b), also a rounded rectangle. Its walls abut the north room, and it has a rather wide (84 cm) exterior door in the east wall.

Building 27 (fig. 27, pls. 60–61): one-room outbuilding with silo. Building 27 is one of the reasons for mapping Outlier 2 in detail. It is a rounded hut with a doorway on the north side. The special feature is the cylindrical grain silo built into the north wall, west of the door. It is built of fist-sized rocks in a thick mud mortar. The wall is circa 12 cm thick; the external dimensions are 112 × 130 cm, and the internal measurements are 90 × 112 cm, so it is actually ovoid. There is a gap at the northeast quadrant. The silo is split in half by a vertical partition wall some 10 cm thick and now 35 cm high (pl. 60b). At the bottom of the silo, there is a little hole (20 cm wide × 18 cm high, 4 cm up from the present surface) for withdrawing grain (pl. 61a). The hole opens into the interior of the hut. A short wall runs from the northwest corner of the hut, up to a boulder to the northwest. Between Building 27 and the cliff on the north, there are a couple of ash heaps that might be modern.

The Building 27 silo is the best-preserved example at Bir Umm Fawakhir, or was. Sometime between March 1999 and January 2001, Bedouin apparently piled rock across the north side of Building 27, filling in the door and partly demolishing the silo in order to close off the room for an animal pen (pl. 61b).

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Building 28 (figs. 27, 29): two-room house. This exceptionally well-preserved house has walls standing as high as 136 cm. The exterior door is in the south room (a), at the north end of its east wall. The southeast corner of the room is partly partitioned off by a short wall, and there is a good niche (30 cm wide × 14 cm high × 39 cm deep, 52 cm up from the present surface) in the west wall. A door in the middle of the room's north wall leads to the second room (b). On the exterior west wall, where the two rooms join, there is an unexplained wall projection, and on the north, between Building 28 and the cliff slope, there is an ash heap.

Building 29 (fig. 27, pl. 59b): two-room house. The main part of Building 29 is very well preserved; some of the walls stand 110–12 cm high. Originally, it seems to have been one large room (a) with a door at the southwest corner. A partition wall now cuts off the north end of the room; the doorway is wider than usual (75 cm). A smaller room (b) was added on the southeast. Since its door is side by side with the door to the main unit, both rooms could have functioned together easily. A short (75 cm long) piece of wall runs west from the west corner of Building 29 toward Building 30.

Building 30 (fig. 27, pls. 59b, 62a): one-room building. This structure, tucked between Buildings 26, 29, and 33, might be large enough to have been a dwelling. It has one mastaba inside and a second one outside at the north corner. The external bench is partly obscured by tumble from the northwest wall of Building 30 and from a wall stub (210 cm long) running northwest from the north corner. Another unexplained, tumbled wall curves south and then east from the west corner. The door into the room lies at the east corner. A patch of burnt debris inside Building 30 may be modern, but the small "mound of pebbles, sherds, and stone" outside the southeast corner may be an ancient trash dump.

Building 31 (figs. 26–27, pl. 59b): four-room house. The main unit seems to be the two interconnecting western rooms (a–b); due to wall fall, doors were hard to determine. The inner room (b) had a bench, and the outer room (a), two circles of stones near the external door. Two side-by-side rooms (c–d) were built on the east, both of which had doors to the outside opening north.

Building 32 (fig. 26, pl. 59b): one-room outbuilding or small house. The walls of this structure are severely tumbled by wadi wash, and the interior is filled with sand, but it does have a definite doorway at the east end of the north wall.

Building 33 (fig. 27, pl. 59b): six-room house. The five rooms in line from north to south (a–e) seem to have been added outwards from the central room c, and then a sixth room (f) attached on the west. The core room seems to be room c in the middle. The south wall (140 cm high), the east wall (75 cm high) as far as the doorway, and half the west wall seem to constitute one construction episode. The north half of the west wall (114 cm high) and the north wall (97 cm high) seem to be later additions, or more likely, reconstructions. The doorway is sufficiently clear of debris that a step down into room c can be seen. Finally, there is a low (50 cm) wall partitioning off the back (west) end of the room. Room b to the north is entered by the same exterior door; turning left at the foot of the step down leads to room c, and turning right leads to room b. The west wall of room b butts up against the west wall of room c so that from the exterior they look like one wall built in segments. The east and north walls of room b look like one construction episode, and since the west end of the north wall abuts the west wall, the north and east walls must have come later. Room a at the very north end must have come later still, judging from the way its east wall abuts the northeast corner of room b. The door to room a is in its north wall, but unfortunately the west wall is damaged enough that the building sequence with room b cannot be confirmed. Room a contains a mastaba (135 × 70 cm). South of room c, room d was added on. Its west wall abuts the southwest corner of room c, and where the east wall would reach the southeast corner of room c, there is a door. This one also has a step down. There are traces of mud mortar in the west, south, and east walls. A short wall running east of the southeast corner of room c seems to shelter the entrance to room d. At some point room e was attached to room d in a similar manner. The door is, again, at the north end of the east wall where it approaches the southeast corner of room d, and a somewhat longer piece of wall running first east and then turning south shelters the doorway. Finally, room f was attached to the west side of the building. The east end of its north wall abuts the west wall of room c where its two segments meet. The various stages of construction of rooms c, d, and e make the east wall of room f somewhat irregular, but west and south walls, though damaged by wall fall, seem to be of a piece with the north wall. The door was at the east end of the south wall, more or

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less at the angle where room e meets room d. A grinding stone now rests in the doorway, and short bit of wall just outside seems to have sheltered it a little.

Buildings 33, 30, and perhaps even 29 might have been considered one large agglomerated structure, except for the fact that the wall that seems to join Buildings 29 and 30 is tumbled and unclear, and the space between Buildings 30 and 33 is described in the field notes as an alley. The little walls close to the doors of rooms d, e, and f of Building 33 might have been intended to protect the entrances from sand drifts, as may be seen on some modern houses in the Western Desert. Also, judging from a can and some other bits of metal, Building 33 may have been reused recently.

Building 34 (fig. 29, pl. 59b): one-room outbuilding. This well-preserved unit has a door at its eastern corner, sandy fill, and an ash pocket. Outside on the east, there is a mound of sand and fragments of tumbled walls.

Building 34a (fig. 29): one-room outbuilding. A wall on the northeast and a corner on the southwest mostly define a rectangular space, but the location of the door cannot be determined. Northwest there are several segments of a fairly long retaining wall and a slope up to a pocket between a boulder and the cliff. Rock fall between them might be the remnants of a rough wall that closed off the pocket on the third side.

Building 35 (fig. 29, pls. 59b, 62a): three- or four-room house. Two exceptionally well-preserved rooms are now the core of this house (a–b). The large south room (a) has a well-preserved doorway with two steps leading down into the room (pl. 62b). On the exterior, starting at the west corner, some remnant walls might once have marked one or two rooms; if so, the north part is entirely missing now. The door connecting the two core rooms also has a well-preserved threshold stone that makes one step down into the interior room (b) (pl. 63a). The walls of both rooms stand 140 to 150 cm above the present ground level, and the tops of the walls are nearly level, so this may be close to the original height of the walls, especially if one allows for some sandy fill inside. There is a niche (18 cm wide × 32 cm high) near the west corner of room b. Room c, north of the two core rooms, is now much ruined; it contains the remains of a curved mud wall and two pockets of ash, probably modern. On the outside of the north wall, a stub of wall connects with the cliff face and helps enclose a small space, which has more ash, also probably modern. To the northwest of Building 35, a fairly clear north–south wall and some bits of east–west walls might once have delimited one or two rooms and a sheltered space up against the cliff, but the connection if any to the rest of Building 35 is now lost.

Building 36 (fig. 28, pl. 62a): four-room house. The central room (a) is the core of this house. The long wall that starts at the northeast exterior door forms the east side of both the north and central rooms and then curls around to form the south, west, and north walls of the central room. It stops just short of completing the loop in order to leave a doorway. A short wall immediately west of the doorway makes the central room more private. The north room (b) was completed by adding west and north walls and leaving the northeast corner as a door. At some point a small room (c) was "hooked on" at the south. It is quite tumbled but probably had a door opening east. Finally, a fourth room (d) was added on the west. It, too, is very ruined, but the door near the southwest corner is still discernible.

Building 37 (fig. 26, pl. 59b): two-room house. The west room (a) has a probable mastaba (125 cm wide) inside and a small bench or feature (ca. 94 × 94 cm) outside, beside the door in the north wall. The east room (b) appears to have been added on, though the walls are tumbled enough to partly obscure the juncture of the south wall. Room b has a door at the west end of its north wall, right beside the door to room a.

Building 38 (fig. 26): grain silo(?). This more or less circular feature stands as much as 60 cm above the present surface, but the wall is only circa 38 cm thick. The structure is now filled with sand, and no door is evident.

Building 39 (fig. 26): one-room outbuilding. Although the walls are partly tumbled and the interior is sanded in, the door (ca. 60 cm wide) is visible in the northeast wall.

Building 40 (fig. 26): one-room outbuilding. This is now little more than a few remnant walls (max. surviving height 20 cm) and tumble of a circular or rounded structure.

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Building 41 (figs. 26, 28): seven-room agglomerated building. Since only rooms d and e interconnect, it is hard to determine how many house units there are. Some of the walls are tumbled, but the layout is generally well preserved; some walls survive as much as 120 cm high. The amount of sand drifted up on the outside means that wall heights inside are taller. The core seems to be rooms a–d that form the southwest side of the building. Room a at the south end, close to the wadi bed, is sand filled, but its door at the east corner is clear. A slightly curving wall running east from the door partly encloses a sanded-in space, but whether there was a room or courtyard here or whether it was intended to shelter the door from sand can no longer be determined. Room b is quite irregular; it has a door at the north end of the west wall. Room c has a very tumbled north wall, but the door at its east end is still preserved. Rooms d and e interconnect, the only two rooms in the building to do so. Room d seems to have been built first; its door opens to the north. The west, north, and half the east walls of room e appear to have been built later. Room e at that point would have had a broad opening looking southeast. "Room e" might have been an unroofed courtyard. It contains a circular feature circa 150 cm in diameter with a wall circa 40 cm thick. Room f at the northeast corner of Building 41 was apparently built at the same time as the north walls of room e, but its door looks away, to the east. There is a niche (50 cm wide × 33 cm wide but top missing) in the south wall, here 120 cm high. A short wall running out from the east corner may have sheltered the door and/or partly enclosed a working space. A semicircular feature was stuck to the outside of the north wall of room f. Finally, room g was added to the southwest of room f. Its west wall finished closing off room e, leaving a door of normal width (60 cm). Room g has a door at its south corner.

Building 42 (fig. 28): four-room house. This well-preserved building has two large and two very small rooms. The walls stand as much as 130 cm high. The large west room (a) has an exterior door in the middle of its north wall. Just to the west of the door, outside, there is a wall stub and rim of stones that might have been a feature. Inside, a short, slightly curved wall partitions off the northeast corner in a closet-sized room (b) with a narrow (32 cm wide) door opening to the south. The southeast corner of the room opens both into the large room (c) on the east and south onto another very small room (d). The east room has an exterior door looking east. The northwest corner appears to abut the west room. A good deal of sand has piled up on the south side of Building 42.

Building 43 (fig. 28): six-room agglomerated building. This well-preserved structure consists of two two-room house units (c–d, e–f) and two non-interconnecting rooms (a, b). Room a at the northwest corner is roughly D-shaped with corners pointing roughly north and west; the door is at the south end of the west wall. Room b at the north end of Building 43 is more nearly rectangular but has the same corners-to-the-compass orientation as room a. The exterior door to room b is at its west corner. Rooms c and d interconnect to form one small house unit. They look as if they wrap around room a. Room d is therefore quite irregular in shape and oriented differently from rooms a and b, and room c is little more than a closet filling in the space between rooms d and b. Room d is rather sanded in and has an exterior door in the west wall, and another in the north wall leading to room c. The southernmost two rooms are one unit. Room e has an exterior door at the north end of its west wall and a mastaba just inside. A door in the south wall leads to room f, which likewise has a bench (175 × 80 cm).

Building 44 (fig. 28): four- or five-room house. This building is now very tumbled and partly sanded up. The northwest room (a) probably had an exterior door at its north corner, and a jamb stone in the south wall marks a doorway to the southwest room (b). The large northeast room (c) has no exterior doors, but it might have been entered from room a, or perhaps from one of the two southeast rooms. These two rooms (d, e) clearly interconnected, but where the exterior door(s) were is uncertain, perhaps in the east wall of room e or the south wall of room d.

Building 45 (figs. 28–29): three- or four-room house. Building 45 is close to the cliff and apparently utilized the space between the house walls and the rocky slope. The southwest room (a) is well preserved; the walls stand as much as 142 cm high, and the step down into the room is visible at the exterior door. The northwest room (b) is more tumbled, but it does not interconnect with room a and probably not with the east room (c); damage to the west wall probably obscures its exterior door. The north wall is very tumbled; logically it should run more or less from the northwest corner to the northeast corner, but the wall stubs instead seem to aim for the cliff. There is a wall fragment upslope, but any connections to Building 45 are now lost, though there is a "nice platform area in the cliff rock" right behind it (Heidorn 1997 field notes). Room c is well preserved, apart from its northeastern corner, and has a good exterior door at its southeast corner. The east wall continues toward the cliff slope and

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helps enclose a sandy space between Building 45 and the cliff slope. Whether the space was utilized and how it was accessed are not clear. A retaining wall(?) runs east from room c and may or may not have reached Building 35. The present surface between the (retaining?) wall and the cliff slope is about 40 cm higher than the surface on the wadi side. The upper surface preserves about half of a circular structure (ca. 100 cm radius, 20 cm up, wall ca. 20 cm thick) that looks like a ruined silo. Downslope, in the angle between the retaining wall and room c, two short, thin (40 cm wide) walls enclose a closetlike space with a door looking east.

Building 46 (fig. 28): six-room house. Buildings 46 and 47 are backed up against the cliff and probably should have been treated as one rambling structure. The easternmost room (a) of Building 46 is a room that might once have been an independent unit. The northeast wall stands as much as 72 cm, but the southwest wall is only one stone high. The room is sand filled, but the door in the northeast wall is still clear. Splaying outward from the north and east corners, two walls connect with the cliff face and with another short wall to enclose an irregular room or perhaps a courtyard (b). A door in the west wall of the room or court measures 70 cm wide, and there might have been another door in the southeast wall. The third room (c) has the cliff on the east and north, a short wall on the south (northwest wall of the room/court) with a door in it. The west wall is formed by the walls of the next two rooms on the west (d–e). There seems to be a small passage between the east and west halves of Building 46. The main room in the west half (d) has a door in the middle of its east wall, and in the north wall, another door, now buried in rock fall, probably gave access to a small closetlike room (e) (130 × 110 cm) tucked into an angle of the cliff. The sixth room (f), the last in line on the west, might once have connected with room d, but if so the door is now buried in tumble. The back (north) of the room is the cliff face. An exterior door is preserved at the west end of the south wall, where Building 46 almost reaches Building 47. There are several boulders in the room as well. Most of the rooms are at least partly sanded up.

Building 47 (fig. 28): ten- or eleven-room agglomerated building. Like Building 46, Building 47 is backed up against the cliff face. If the front wall of room f in Building 46 had not been so tumbled, the two structures would probably have been numbered as one. Building 47 is filled with sand but is generally well preserved; it seems to consist of two four-room house units (rooms a–d and f–i) and two or three non-interconnecting rooms. The easternmost room (a) is very irregular. The west wall has a door at its north end, and the back or north wall is the cliff face; the east wall bends to the southwest, meets two boulders, and continues as a short wall stub. A door at this point leads into a tiny, triangular room (b) on the south. The narrow room (c) to its west looks like an entrance room. The south wall, partly built over a boulder, is quite tumbled, but it does have an exterior door on the south, opening on to the wadi track. Its north wall has a door into room d, which in turn opens onto room a via the doorway at the north end of the dividing wall. The back of room d is a retaining wall built over a boulder. Whether the space between the retaining wall and the cliff was utilized is unknown; there seems to have been no easy access to it. There is a very large boulder in room d and another boulder immediately west. Room e looks like an addition to fill in the angle between rooms d and f; its walls are tumbled, but it does have an exterior door at the southwest corner. It also has a lot of potsherds in the debris near the door. Room f immediately to the west has not only a door in the same position, but also one in its west wall leading to room h and one in the north wall leading to room g. Room h may have the remnants of a mastaba under the wall fall, and perhaps another door into room i. Room g has three doors, two of which lead into the very irregular space between it and the cliff face. Room i also has a door opening onto the open space, which thus was accessible and presumably used for something. A rough wall filling the gap between a boulder at the east end of this space and the cliff separates this space from the one behind room d. The pocket bounded by a large boulder on the north and rooms d, e, and g is too full of rock fall to determine whether it was utilized space. Finally, room j on the west does not interconnect with room f and the rest of the house but instead opens to the west. An unexplained wall projects south from the southwest corner, and a possible door in the north wall might give onto a small space delimited by room i and boulders. A stone with quarry marks was noted between Buildings 47 and 55 (not plotted).

Building 48 (fig. 28): four-room house. The building is sanded up, but the walls are preserved as much as 106 cm high, and the layout, including doors, is quite clear. The west room (a) has an exterior door toward the north end of the west wall, remnants of a possible mastaba obscured by tumble along the south wall, and a door at the north end of the east wall opening into a large room (b) on the east. The latter has two exterior doorways at the west end of the north and south walls, respectively. There is a large, trapezoidal bench (135 cm long × 98

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cm wide at the narrow end × 70 cm high) in the northeast corner. A wide (70 cm) door in the east wall leads to the small, easternmost room (c) of the building. Attached to the south side of the large east room, just east of the door, is a small rectangular room (d). Its west and south walls are relatively thin (35–45 cm), and the east wall is tumbled down.

Building 49 (fig. 28): six-room agglomerated building. Although some of the walls are preserved as high as 120 cm in places, others are lost in tumble or sanded up. The southern three rooms (a–c) seem to be one house unit. The southernmost room (a) has a bench in its north corner, a possible bench in the east corner, and a damaged niche in the northeast wall (left slab 35 cm high, right slab fallen in, top missing, 104 cm up from present surface). A door in the northwest wall leads into the second room (b). The south part of its east wall is missing, but the exterior door must have been here. The northwest corner is also quite damaged, but there must have been a door into the little pentagonal room (c) on the north. Judging from the way the walls of this room abut those on the north, the southern three rooms were added on. The northwest two rooms (d–e) formed another unit. The west wall is very damaged, but an exterior door probably existed in the west wall of the northernmost room, and a 98 cm tumbled gap in its south wall probably led to room d. The entrance room e was partly partitioned by a north–south wall, and there was a damaged niche in the south wall (left slab 22 cm high, right side and top missing, 88 cm up from present surface). Room f, on the east, probably did not interconnect with room e; it did have an exterior door at its south corner, and perhaps another at the west corner. Outside, on the south, there is a large ash heap.

Building 50 (fig. 28): eight-room agglomerated building. Most of the rooms are sanded in, and some of the walls are tumbled, but most of the layout of this very irregular building is clear. Room a at the south end may have started out as a separate unit, judging from the way the wall of room c abuts. Room a has a small bench at its back (east) wall and a door near the west corner. A fragment of a wall outside suggests that there might once have been more here. Room b is problematic; its south wall is almost all missing, and there is only a line of stones to suggest a continuation up to the outer wall of room a. If the space was unroofed, then room b could have been a small courtyard or partly sheltered entrance. A narrow (38 cm) gap at the east corner of room b leads into room c, and there might have been a doorway between rooms b and d as well. A thin northwest–southeast wall partitions off the north corner of room d, and a door in its west wall gives on to room e. The latter has a bench (184 cm long) in the east corner, a door in the southwest wall to room f, and perhaps an exterior door in the northwest wall. Wherever the outside door(s) may have been, rooms d, e, and f functioned together. Room g is an irregular unit at the far west end of Building 50. On the plan its north corner looks pinched in, perhaps to accommodate somehow a thin partition wall partly closing off the north corner, like the partition in room d. Room g opens to the southwest, toward the wadi bed. Room h is still more irregular. It seems to have been created by closing off the already awkward angle between rooms e, f, and g. The exterior door of room h lay in its east corner; the tumbled wall between rooms h and f does not seem to obscure a door. Outside room a on the east, there is a large piece of a lower rotary grinding stone (63 cm max. width, central depression 52 cm dm).

Building 51 (fig. 28): two-room house. The building is sanded up and the walls tumbled, but the layout of two rooms is clear. The west room (a) has an exterior door at the north corner and an interior door at the east corner leading to the east room (b). This has a door at the west end of the southwest wall; traces of curving wall(s) outside might once have enclosed a space or spaces. A second door, in the north wall of the east room, may have existed. To the north of Building 51, a rim of stones partly encircles a dump.

Building 52 (fig. 28): five-room house. The walls of this structure are very tumbled; it might once have had more rooms. The two rooms on the north constitute one unit (a–b). The northernmost room (a) is somewhat irregular, with a bowed-out north wall. The exterior door probably lay at the south end of the west wall. A second door, in the southwest wall, led to the next room in the unit (b), which has well-preserved northeast, southeast, and southwest walls but a tumbled northwest wall. It is partly filled with a dump. The room to the east of these two (c) has only a northwest wall and an east corner; the rest is unclear. The fourth room (d), a small one at the east end of Building 52, now has only a definite northeast wall with an exterior door; the rest is damaged. The fifth room (e), on the southwest, has parts of its northeast and southwest walls, a niche in the latter (45 cm wide × 20 cm deep), but no definite end walls, much less doorways. Remnant walls at the west corner might have enclosed

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two more rooms, but a curved bit of wall nearby is now unconnected to anything. Outside and south of Building 52, there is a circle of stones and a small dump.

Building 53 (sketched in 1997, not plotted): one-room outbuilding. This is a simple rectangular room with rounded corners and a door at the east end of the south wall. It lies between Buildings 50 and 57.

Building 54 (fig. 28): eight-room agglomerated building. Rooms a and b on the east constitute one house unit. Room a has an exterior door at its east corner and a mastaba (105 cm wide) in the north corner. A worn grinding stone seems to have been incorporated into the mastaba. A door near the south corner of the room leads to room b at the very east end of Building 54. There is a mastaba (175 cm long) in the east corner; sand is piled noticeably higher outside the room than in. The small room c on the southwest does not interconnect with either room a or b; its doorway may have been in the south wall. Room d, in the angle of rooms a, c, and e, can be partly traced, but most of the north and west walls are gone. Rooms e, f, and g make up a special unit thanks to their relatively orthogonal layout and the two-tier bench in room g. The entrance to the unit, at the east end of room e, is partly sheltered by the west wall of room a. A rough circle of stones outside the door rims a small trash heap. Room e is a sort of vestibule; the entrance passage sweeps straight through its south side and into room f, where it turns right and passes through a wide doorway into room g. The east corner of the last is occupied by a two-tiered bench with a quarter circle of stones (max. dimension 105 cm) in front of it. The top of the wall behind the double bench stands 1 m high, the top of the top tier is 88 cm up from the present surface, and the top of the lower tier is 50 cm up (pls. 63b, 64a). The north corner of room g is damaged; outside it and to the west, there is a 250 cm stretch of unconnected wall. A room to the west of room f is missing its west corner; traces of another wall to its west suggest that there might have been yet another room west of room g, though the space between Buildings 57 and 54 is quite narrow.

Buildings 55, 56, 60, 61, 62, 63, and 68 lie in the area marked "unmapped" west of Building 47, north of the "erosion channel" or path, and immediately south of the cliffs (fig. 28).

Building 55 (sketched in 1997, not plotted): one-room outbuilding. This structure is not very well preserved; it lies west of Building 47 and backs up against the cliffs on the north. The north part of the east wall consists of some large boulders; the damaged south part presumably ran far enough south to turn a corner to meet the door in the south wall. The western part of the south wall is tumbled, but at least one exterior doorjamb and the southwest corner survive. The west wall is tumbled, and the north wall, instead of running east back to the large boulders, curls north to the cliff. There is a door in the north wall before it starts to curl, which means that the pocket between it and the cliff looks like a sheltered entryway to the north door of Building 55. A possible east–west wall, possibly with a door in the middle, might have divided Building 55 in two, and another possible east–west wall might have closed off the northeast corner, where the north wall started to curl. Remnant north–south lines of stones might once have marked other spaces or features within the building.

Building 56 (sketched in 1997, not plotted): one-room outbuilding. It lies west of Building 47 and likewise backs up against the cliff face on the north. The northwest corner is a huge boulder, and the damaged west wall runs south of it. A wall curving southeast from the boulder and another curving northeast complete the closure of a D-shaped room with an exterior door on the east.

Building 57 (fig. 28): nine-room agglomerated building. The rooms on the north are preserved a meter or more in height, but those on the south side are much more damaged by wadi wash. The building seems to consist of three house units (a–b, d; e–f; h–j), a courtyard (c), and a non-interconnecting room (g) on the south. Room a in the middle of the building has well-preserved walls, but the eastern half of the south wall gaps south and wide of the western half, like a paper clip partly bent open, leaving a broad entrance to room c, which is probably a courtyard. The north wall of room a has a niche (50 cm wide × 30 cm deep, 30 cm up from present surface), a modern floor level much lower than the rest of the building, and a door to room b in the east wall. Room b is sand filled and very irregular; it appears to have been added to the east side of room a. There is a well-preserved exterior doorway (55 cm wide) in the north wall, but the surviving bit of southwest wall is too damaged to determine whether it had a door. The northeast corner has remains of what might have been a mastaba. The south wall of room c is a continuation of the wall zigzagging around the east and south sides of rooms b and d. The

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room or courtyard c was probably entered through the gap between rooms a and h, but there might have been doors into rooms e and/or d. There is a dump where room c pinches in at the west corner of room a. Rooms e and f formed another unit. Room e has an exterior door looking northwest, an interior door to room f, and perhaps a door to room/courtyard c. Room g was created by adding a wall that runs southwest from room e and then curls around like the letter "G," leaving a fairly broad entranceway outside the south wall of room c. Rooms h, i, and j at the northwest corner of Building 57 form the third unit. Room h is a large, pentagonal room with an exterior door in its northeast wall, a very damaged mastaba in the east corner and another (90 × 135 cm) in the middle of the southeast wall, a niche (45 cm wide × 30 cm deep) near the south corner, and a door in the southwest wall leading to the triangular room i. Room j is sand filled and tumbled. It seems to have been partitioned by a short cross wall, but whether it was entered from room h or through a door in its damaged north corner is unknown.

Building 58 (sketched in 1997, not plotted): four- or five-room house between Buildings 52 and 57. Although several walls are tumbled and/or sanded up, the building clearly consists of two two-room units. It is the connection between them that is uncertain. The two east rooms are joined by an interior doorway circa 70 cm wide. The exterior door(s) might have existed in the now-tumbled segments of the east and south walls. The northeast room has a jog in its north wall but no other special features. The western two rooms might have interconnected, but the wall that separates them is too damaged to tell. The southwest room has a good door at the east end of the south wall. The northwest room has a probable bench in the southeast corner and a very wide (110 cm) door at the north end of the east wall. The door is so wide in fact that the space just east looks like an extension of the room. At this point the stubs and traces of walls become hard to follow.

Building 59 (sketched in 1997, not plotted): eleven-room agglomerated building west of Building 57, facing the wadi track. This structure lies near the wadi track and thus is very damaged by wash and filled with sand. It appears to consist of three ranges of rooms running northwest–southeast, but most of the interconnections are lost. The two rooms at the southeast corner are perhaps the clearest. The easternmost room must have had an exterior door looking south. It clearly has a mastaba in the northeast corner and an interior door at the north end of the west wall. The next room west has a jog in its north wall and probably opened onto the room on its west; judging from the condition of the walls, this is the only place for a door. The fourth room west has damaged north and south walls; a possible jamb stone suggests a door toward the west end of the north wall. The fifth room west has a 110 cm wide gap at its northwest corner, perhaps an entrance; the west wall is very damaged and the south wall now consists of only a short stub, plus a very definite corner bending south, that is, not completing the south wall. A concave grinding stone (lower) was noted on the surface. Wall stubs projecting south from this range of five rooms and one stub angling west suggest that there were once more rooms here. North of the rank of five rooms, there are enough corners and wall remnants to indicate that three rooms existed here, but no details. North of that, there are remains of two or three more rooms, including what looks like a reasonable doorway into the northwestern-most room. There is a small trash heap east of Building 59.

Building 60 (1999, unmapped): six- or seven-room agglomerated house. Building 60 is north of D-shaped Building 56 and close to the cliffs but not backed up against them. The walls are now quite tumbled and hard to follow, but there seem to be five or six rooms in a row from northwest to southeast and one or two more rooms behind them. Some walls have pottery chinking. The room at the far northwest is the clearest; it is roughly rectangular and probably had a door in the southeast wall. There is space for another room to the southeast; the southwest wall is reasonably clear, as is a probable door in it; the southeast wall runs up to a boulder, but no northeast wall survives. The next two rooms are very irregular. Parts of the north walls are boulders with short wall stubs running southeast, but the wall line is hardly complete. The fifth room in line has a good southwest wall with a probable door at its south corner, part of a northwest wall, part of a northeast wall, and most of a southeast wall, which is to say, the northwest wall of the sixth room. This is a fairly well-preserved, nearly rectangular room; the south corner survives 92 cm high, and the door at the east end of the southeast wall is 52 cm wide. At least one room (7) is reasonably clear (northeast of room 5), though its walls bend where they run over or meet boulders. Remnants of walls extending from its north and south corners might once have helped enclose other rooms.

Building 61 (1999, unmapped): three-room house. It lies north of Building 60, up against the cliff. In the narrow alley that separates Buildings 60 and 61, a number of painted pottery sherds were found. The northwest room of Building 61 is fairly well preserved; some walls stand as much as 65 cm high, and the northeast wall appears

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to have a niche. A gap at the west corner may be a door; a gap at the east corner is less certainly another door. The middle room is not so clear; it has a northwest and most of the southwest and southeast walls, but no back. The third room in the row is reasonably clear. It has a southwest wall, most of the northwest and southeast walls, an east corner, and some of the northeast wall, which may have been protected by a rim of stones outside. All rooms are sanded up.

Building 62 (1999, unmapped): one-room building. Building 62 lies north of Building 63 and northwest of Building 61 and is likewise backed up against the cliff. The damaged northwest wall of Building 62 appears to run out from the cliff face and then curl back, something like an angular "6." The door was probably in the gap between the cliff face and the incurving northeast wall. The area west of Building 62 up to the cliff has a heavy sherd scatter.

Building 63 (1999, unmapped): ten-room agglomerated building. It lies west of Buildings 60 and 61 at the far west end of Outlier 2. The structure is so tumbled and sanded up that the rooms, much less their interconnections, are not clear. There are, however, two large rooms on the southeast end of Building 63. A gap, marked by large stones, at the south corner of the southernmost room is probably a door. The second large room still has north and east corners, a southeast wall, and about half of the southwest wall (northeast wall of room 1). Pieces of walls, corners, and doorjambs sketch out four or five rooms in the middle of the building. Finally, three small rooms run along the west end of Building 63. The westernmost room (8) is long and seems to have a wide door onto the erosion channel or track between Buildings 63 and 64. A short wall curving in from the door seems to mark off the south corner of the room. The middle room (9) has a northwest wall, most of a southwest wall, and at least part of the northeast and southeast walls. From its north corner, some bits of walls running northeast and southeast might have once enclosed a small, tenth room.

Buildings 64, 65, 66, and 67 lie in the area marked "unmapped" just west of Building 57 and south of the "erosion channel" or track (fig. 28).

Building 64 (1999, unmapped): eleven-room agglomerated building. This deeply sanded, very irregular structure lies west of Building 57 and south of the track separating the two unmapped blocks. A unit of three rooms is well defined in quadrant 3. The westernmost room has a partition wall part way out from the northeast wall and probably a door near the middle of the southwest wall. The next, rectangular room southeast may have had a door toward the west corner of the southwest wall. If so, it would have opened into an odd little triangular room jutting south. The third room in the row of three has a good door at the south end of its southeast wall. It gives onto what may have been a very irregular courtyard with a zigzag north wall; see Building 57 for something similar. The northwest "zig" helps enclose a triangular space divided from the larger courtyard by a low wall. The southeast corner of the larger courtyard is separated by another low wall from a squarish room (6) to the south, at the east end of the building. The squarish room opens to the exterior by a door at the south corner. Another door at the west end of the southwest wall leads to the next room (7) west (south of the large, irregular courtyard) by a door at the west end of the southwest wall. Room 7 has some rather distorted walls, but the bench in the south corner is fairly well preserved. Continuing west again, there is another large room (8) south of the room 3 (of the original unit of three rooms). Tumble obscures what may have been a mastaba, but a door near the south corner is visible. It opens into not one but two rooms (9 and 10) wrapping around the south side of Building 64. The easternmost of the two rooms (9) is irregular and probably opened south to the exterior. The other room (10) is trapezoidal and may have opened onto the last room (11) on the southwest. There is also a square, stone-rimmed feature outside and south of room 11.

Building 65 (sketched in 1997, not plotted): three-room house. It lies at the far west end of Outlier 2, west of Buildings 64 and 67, and across the "erosion channel" or track from Building 63. Building 65 consists of two rectangular rooms side by side and a third "hooked-on" room on the southwest wall of the south room. The structure is too full of sand to detect any doors.

Building 66 (1999, unmapped): one-room building. It sits at the far west corner of Outlier 2, west of Building 67 and south of Building 65. The west half of the room is quite damaged by wadi wash, but a door can be detected at the north end of the northeast wall, and tumble outside the southwest wall might have been an exterior mastaba.

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Building 67 (1999, unmapped): three- or four-room house. This very irregular structure is located between Building 64 on the east, Building 66 on the west, and Building 65 on the north. There is a fairly large, nearly rectangular room on the north, corners roughly oriented to the points of the compass. The exterior door is at the south end of the southeast wall. A possible door in the middle of the southwest wall might have led to a small, rounded room on the southwest. Also attached to the southwest wall of the main room is a small U-shaped "closet" next to the exterior door. Another wall running south, then east, then north again might have encircled a courtyard or even a fourth room.

Building 68 (sketched in 1997, not plotted): one-room outbuilding. It is west of Building 62, up against the cliff, and separated from Building 63 to the south by a sandy space. The northwest and southeast walls of Building 68 run up to the cliff face. A gap at the west end of the southwest wall forms a door, and a bit of parallel wall outside might have sheltered the entrance.

OUTLIERS 6 AND 7 OVERVIEW

Due to lack of time and manpower, Outliers 6 and 7 were not systematically mapped like the main settlement and Outlier 2, but Heidorn did record the details of each building there, with sketches as needed, and Cowherd photographed all but the worst-preserved structures. Outlier 6 was selected for careful documentation because it has some special features and because it appears to be a sizeable residential area, versus nonresidential or temporary shelters near a work area. The outlier lies at the north-northwest end of a long, fairly wide wadi that opens onto the modern Quft–Quseir road. The wadi parallels the main settlement, and paths link the two over the intervening ridge (figs. 2 and 3). Heidorn did not systematically hunt for buildings upslope from the wadi settlement, but since Cowherd shot most photographs from high on the wadi sides, it is not likely that they missed many structures. The most unusual feature of Outlier 6 is a puzzling structure with massive walls (now labeled Complex 26), and it was hoped that further investigation could help elucidate its function. Outlier 7 is a continuation of Outlier 6. There is a gap in the series of huts where the Outlier 6 wadi meets the larger Wadi el-Sid, but it is not much of a gap, and Outlier 7 more or less continues the habitation zone along the Wadi el-Sid, toward the main settlement.

In general, Outliers 6 and 7 have the same kind of house units as the main settlement, though most are only one, two, or three rooms. The largest house described has perhaps five rooms; there are no agglomerated buildings of ten or more rooms. Otherwise the dry-masonry construction techniques are the same as those employed in the main settlement, the same range of built-in features such as benches and niches occurs, and the pottery and other artifacts are the same, if sparser. Heidorn labeled a number of small rooms that appear to have been added to the main structure "pantries." Whatever the function, they are like the "hooked-on" rooms in the main settlement. Compared to the enormous numbers of sherds littering the Bir Umm Fawakhir main settlement, there are comparatively few sherds on the ground in Outliers 6 and 7, nor is there much evidence for use of the slopes above the wadi buildings. Thick trash heaps between buildings or upslope from them are not found either, only a few thinner sherd scatters.

OUTLIER 6

The survey of Outlier 6 started at the far southeast end of the habitation zone and worked northwest toward the modern asphalt road in the Wadi el-Sid. The southeast end of the string of Outlier 6 structures peters out in a couple of huts and wall remnants, though the wadi continues at least a kilometer farther southeast. A walking survey found it devoid of remains.

Building 1 (pl. 64b): outbuilding or feature. The first structure is a very ruinous feature. It is roughly circular with interior dimensions of 120 × 120 cm and a possible door to the west or southwest.

Building 2 (pl. 65a): two-room house. This fairly well-preserved building lies north of the first feature. It is roughly square (270 × 245 interior dimensions) with a long, narrow "pantry" (210 × 50 cm) to the south. The door may have been on the upslope (east) side, but there are no well-defined jambs. At least two walls incorporated large boulders.

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Building 3 (pls. 65b, 66a): three-room house. The structure has an entrance opening toward the wadi on the west. This leads to a square room, and then to a long, rectangular room to the south. There is a circular "pantry" at the southeast side of the structure. Room 1 measures 268 × 285 cm, room 2 is 350 × 190 cm, and the "pantry," 138 × 132 cm.

Building 4 (pls. 65b, 66b): two- or three-room house. It lies to the east of Building 3. Its door opens west. The mastaba (200 × 85 cm) in the southeast corner of the inner room occupies almost the entire southern wall. Room 1 measures 275 × 208 cm, room 2 is 295 × 210 cm (minus the mastaba), and the "pantry," 125 × 90 cm, though this is not clearly a separate room.

Building 5 (pls. 65b, 67a): four-room house. The entrance was probably on the northwest of the building, opening onto a small room (140 × 110 cm). This leads into another small cubicle or "pantry" (132 × 105 cm) to the north, and, through a door on the east side, into a larger inner room, which is approximately square (278 × 260 cm). It is possible that the main entrance into this room was at its southwest corner, but the tumbled rocks here show no real evidence for it. The fourth room is quite large (305 × 185 cm).

Building 6 (pls. 65b, 67b): two- or three-room house. It is now very ruinous, thanks to wadi wash. This structure is roughly north of Buildings 5 and 3. The surviving core of the building is a rectangular room (197 × ca. 330 cm), and to its north, along the west side, there is another low wall with one surviving corner. To the east of the main room, there are some more wall fragments, including a south wall with a probable doorjamb.

Building 7 (pls. 65b, 67b): two-room house. It is rectangular with a door on the north side. There is a mastaba (170 × 110 cm) in the northwest corner. At the northeast corner, there is a circular "pantry" that probably had a door on the north. The main room measures 310 × 245 cm, and the "pantry," 140 × 145 cm.

Building 8 (pls. 65b, 67b): two-room house. It has a badly preserved door on the east. The main room measures 254 × 184 cm; a second, smaller room (167 × 153 cm) is entered through the first.

Building 9 (pl. 68a): two-room house. Although there were probably two rooms originally, only one room is well preserved. The building is located along the wadi, and its walls have suffered from wash. The doorway was on the north, away from the wadi, and the main room measures 174 × 173 (interior dimensions). The wall remnants on the west are quite tumbled and sand filled, but the room width was about 212 cm; there seems to have been no interconnecting door.

Building 10 (pls. 68, 69a): four-room house. It lies on the main wadi. A door on the north side leads into a large room, which was divided by interior walls into two rooms and an entrance hallway. The partition wall between the hall and room 1 is thin and badly tumbled. (Room 1 measures 225 × 222 cm, doorway 86 cm wide; room 2 measures 167 × 293 cm, entrance hall, 222 × 86–90 cm.) The hall also leads back to room 3 (335 × 240 cm) at the back of the house, and thence to a "pantry" (115 × 115 cm).

Building 11 (pl. 68a): one-room outbuilding. It lies north of Building 10 and has an entrance at the east side. The interior dimensions are 310 × 220 cm. To its east-northeast are two piles of small rocks with no identifiable walls. Beyond that, to the northeast, there is a stony trash heap at the base of a finger of the cliff projecting into the wadi.

Building 12 (pls. 68a–b, 69a): one-room outbuilding(?). It now consists of ruined wall fragments in the main wadi. The north wall of the structure is preserved for 340 cm; the east wall is almost nonexistent, but the line of tumble runs circa 320–30 cm.

Building 13 (pls. 68a–b, 69a): three-room house. It lies east of Building 12 and northwest of Building 10. The first room has a door on the north side and a mastaba in the northeast corner; the room measures 308 × 310 cm, minus the mastaba area of 200 × 132 cm. There is a narrow (32 cm wide) connecting door to a second room (305 × 200 cm) on the west. The doorjambs are well-preserved stacks of fairly long stones still rising 112 cm high. A small "pantry" (192 × 130 cm) is attached to the south of room 1.

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Building 14 (pls. 68b, 69a): two-room house. It is east of Building 13; the rooms do not interconnect, but both have doors on the north side. Room 1 (292 × 208 cm) is sanded up along the west interior wall and might have had a mastaba there, but there is too much sand to be sure. Room 2 (215 × 125 cm interior space) abuts room 1.

Building 15 (pls. 68b, 69a): two-room house. It lies east of Building 14, at the base of the slope, and northeast of two or three rocky mounds. There is a little evidence of a vestibule or wall sheltering the entrance. Room 2 (405 × 220 cm) seems to be the core of the building; room 1 (280 × 270 cm) was added on. The entrance hall/sheltering wall measures circa 66 × 70 cm. Outside, at the northwest corner of Building 15, a fragment of red granite rotary grinding stone was noted.

Building 16 (pls. 68b, 69a–b, 70b): two-room house. The building is on the main wadi, north of Building 12. The entrances to the rooms are widely separated. Room 1 (270 × 282 cm) might have had two entrances, one looking south toward Building 12 and one in the northeast corner. Room 2 (330 × 215 cm) might have had a mastaba in the northwest corner, but it is very sanded up there.

Building 17 (pls. 68b, 69a–b, 70a): two-room house. It is directly east of Building 16. Room 2 (335 × 250 cm) has an entrance on the west. Room 1 is a "pantry" measuring 130 × 103 cm; it opens north. Building 17 appears to have a courtyard(?) at the entrance, which is to say, a partly enclosed space (206 × 150 cm) with no north wall.

Building 18 (pls. 68b, 69a, 69b, 70a): three-room house(?). It is northwest of Building 14 and east of Building 17, toward Complex 26 back in its bay. (See Complex 26 below.) The walls of Building 18 are very poorly preserved, tumbled, and obscured, but it seems to have had three rooms. Room 1 (320 × 310 cm) may have had a mastaba in the northwest corner. Room 2 (ca. 200 × 90 cm) is a "pantry." Both rooms seem to have had doors on their north sides, as indicated by long, thin, displaced jamb stones. Some wall fragments (ca. 330 cm long) parallel to and north-northeast of rooms 1 and 2 may once have formed another room in Building 18. It does seem to incorporate a mastaba (180 × ca. 75–80 cm) on its south "interior" side.

Building 19 (pls. 69, 70a): one- or two-room house. North-northwest of Building 18, it is now only a few tumbled walls described in the field notes as a "wadi wash nightmare." One room (225 × 223 cm) is visible; its entrance is questionable but probably lay on the north side. At the northeast corner, there are remains of a second room (estimated at 205 × 370 cm), but only the southern wall remains in situ.

Building 20 (pls. 70a, 70b): one- or two-room house. West-southwest of Building 16, it lies along the main wadi and so is filled with sand. Room 1 (262 × ca. 170 cm) has well-preserved east, north, and south walls, but nothing on the west. About 120 cm to the west, there is a northeast–southwest wall fragment approximately 250 cm long that may have enclosed a second room.

Building 21 (pl. 69b, 70a): three-room house. It is north-northwest of Building 17. A door on the east side opened into long, narrow room 1 (370 × 195 cm). The tumbled north wall probably covers a very ruined mastaba (ca. 125 cm wide) that would have filled the width of that end of the room. A door near the middle of the west wall of room 1 leads to room 2 (268 × 193 cm), which is very sanded up on its west side; a small grinding-stone fragment is incorporated into its east wall. A narrow entrance at the south end of room 1 gives onto to a "pantry" at the southeast. Room 3, the "pantry," abuts room 1.

Building 22 (pl. 70b): two-room house. North-northwest of Building 20 and west of Building 21, it consists of a main room, a "pantry" attached to its north wall, and an enclosed space with no south wall, which may have been a courtyard on the east. Both rooms are entered from the "courtyard." Room 1 (345 × 270 cm) is sanded up and has a door at its northeast corner. Room 2 (220 × 118 cm), the "pantry," has a door on the east. The "courtyard" measures approximately 358 × 210 cm, but its east wall is fragmentary, and the north wall is little more than a line of rocks.

Building 23 (pl. 70a): three-room house. North of Building 21, Building 23 consists of two rooms and an entranceway. Room 1 measures 180 × 200 cm and has a door in its northwest corner that leads to an entranceway or protective wall. The entranceway encloses a long, narrow space (95 × 210 cm) and opens east onto a "courtyard." Room 2 (207 × 208 cm) abuts the west side of room 1; it has a door at its northeast corner and a mastaba

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(90 × 165 cm) outside the entrance. The "courtyard" (200 × 220 cm) is defined by the east side of Building 23, a wall on the south linking Buildings 23 and 27, and the west side of Building 27; there is no north wall. (Building 23 was originally considered to have three rooms, an entranceway, and a courtyard, but the room east of the courtyard was renumbered as Building 27; see below.)

Building 24 (pl. 70b): two-room house. West of Building 22, it sits along the main wadi. The north and west walls are mostly destroyed, but it appears to have been a two-room house. Room 1 (ca. 288 × 238 cm) is quite sanded in. Remnants of a possible second room or "pantry" (estimated at 140 × 112 cm) may have been attached to the southwest corner of room 1. A sherd of the "Aswan" bowl type, white slipped with brown painted stripes on the exterior near the rim, was collected from the wall chinking.

Building 25 (pl. 71a): one-room outbuilding. It is upslope from Complex 26. Although Heidorn and Cowherd did not systematically seek out structures on the heights, Cowherd photographed as many buildings as possible from the cliffs and thus found Building 25 while shooting the wadi buildings. It is a small, rounded watch-hut type of building (140 × 125 cm) built into the boulders of the slope. The entrance is to the southeast; on the north and east is bedrock of the cliff.

Building 25a: one-room outbuilding. Downslope and west of Building 25, it is rounded (100 × 80 cm) and open on the west.

Building 25b: one-room outbuilding. It, too, is downslope and west of Building 25a. It is not well preserved but is estimated to have been 140 × 125 cm. The slopes around Building 25b are lightly scattered with pottery before dipping down to Complex 26.

Complex 26 (pls. 69, 71, 72a, 73b). This structure is unique within Bir Umm Fawakhir; part of the reason for documenting Outlier 6 in some detail was the hope of elucidating its function. It is not at all like the usual houses, much less the agglomerated buildings of the main settlement, and it might have had some sort of public function. There is no hint of any religious usage, pagan or Christian, and the orientation is wrong for a Christian church. Nonetheless, it is tempting to see it as a small shrine with an enclosed court. At Berenice two shrines, one possibly dedicated to Isis, survived into the late fourth–early fifth century A.D. (Sidebotham 2004: 235–36). Complex 26 closes off a compound at the east end of a small bay. The north side is a sheer cliff. Two thick (70 cm) walls A and B run southward from the cliff face. Wall A, the western boundary, is almost exactly north–south. Wall B, farther up the bay where it narrows, is roughly north-northwest–south-southeast (pl. 71b, foreground). It is only 8.15 m long, and the triangular space east of it, where the cliffs rise steeply, seems never to have been used for anything. Certainly there is no gate in wall B. Wall A is much longer, 25.35 m long; its south end is tumbled and partly washed away where it approaches a granite knob. (The north end of wall A, however, is well preserved as much as 1.85 m high.) The south boundary of the compound is partly the granite knob, partly two walls running east and west from it, and partly a high spur of the cliff at the south side of the bay. Thus, the compound is roughly trapezoidal, circa 25 m on the west, 8.15 m on the east, and 30.0 to 30.5 m east–west. Unfortunately, there is a large looters' hole in the middle of the granite knob. Thanks to the looters' hole, it can no longer be determined whether the east–west wall simply continued across the knob to the spur of the cliff or whether some more substantial structure, such as a gateman's hut, stood there. (Judging from some bits of bone, the knob may also have been used for a burial at some point.) South of the granite knob are some more tumbled pieces that might once have been walls, and another large looters' hole with sherds around it. It does seem likely that the gate to the compound lay at the south end of wall A, close to the granite knob. There is no other good location for it, and the wash that now cuts through here may have taken advantage of an existing gap, the gateway. A gateman's post on the knob would have commanded a position above the gateway with a clear view up and down the wadi. There are no remains of other guardposts on the cliff immediately above wall A, but there are several natural ledges that could have been utilized. (Buildings 25, 25a, and 25b are high on the slope.) There are no sherd scatters on this sheer scarp. Within the compound there is one, massive, unusual structure, Building 26. Two thick (65 cm) walls run south from the cliff face, and there is a partial wall along the cliff face as if to give the back room a more regular facing (pl. 72a, wall over boulder). Judging from a probable doorjamb in the east wall, there was probably a door in this northernmost room, but if so, it was deliberately blocked off. Across the approximate middle of the space enclosed by the massive north–south walls, a thinner partition was constructed

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(pl. 72a, low tumble). Presumably there was a door from the south "room" (or porch?) into the north one, but the partition wall is too tumbled to determine its location. The long, parallel, north–south walls were built first and the partition wall added later. The back (north) room measures 2.65 m wide × 3.35 m long. The south "room" has no south wall, just two thick side walls and a partition between it and the north room, but it encloses a space 2.85 m wide × 5.85 m long. On the west side, a sturdily constructed rectangular room was added; its walls are not bonded to the main structure. The doorway into this third room must have been on the west, but it is obscured by wall fall. Thus we have a carefully enclosed, massive building with three well-constructed rooms, one of which has no front. Apart from sherds and bone scattered around the looters' holes, finds are very sparse within Complex 26. A pottery sample was collected from the area and huts surrounding it (*Chapter 6*, fig. 42).

Building 27 (pl. 70a): one-room building. It was originally counted as part of Building 23. As now defined, it consists of one room (175 × 230 cm) with a door at the northwest corner. A wall from its southwest corner runs to room 1 of Building 23 and marks the southern boundary of the "courtyard" between the two structures.

Building 28 (pls. 71b, 72b): three-room house. It lies north-northeast of Building 23/27, directly west of Complex 26, up against the cliffs opening out of the bay enclosing Complex 26. Room 1 (235 × 330 cm) had an entrance in its northeast corner and, judging by the looters' hole, a mastaba in the southwest corner. Rooms 2 and 3 are directly north of room 1, and their walls are not bonded to it. Both room 2 (207 × 130 cm) and room 3 (235 × 155 cm) open south. All doors in Building 28 are about 50 cm wide, which is normal.

Building 28a: one-room house. This rectangular structure north of Building 28 and right at the cliff's edge measures approximately 142 × 300 cm and has no preserved entrance, though presumably the door would not have faced the cliff.

Building 29 (pl. 70b): two-room house. It is sited on the cliff slope west-southwest of Building 28. Room 1 (210 × 170 cm) has a door at the southeast corner. Room 2 (225 × 140 cm) on the north interconnects. The doors in this building are 80 to 82 cm wide, unusually broad.

Building 30: one-room outbuilding. It is next to Building 29 and sits right on the slope of the cliff. A retaining wall connects the northwest corner of Building 29 to the northeast corner of Building 30. The latter is now filled with slope debris and is much more ruinous than the buildings surrounding it. The most distinct parts of Building 30 are the south and west walls and the southwest corner. It is unclear how a wall fragment at the northeast corner relates to the two clear walls or what another bit angling out of the northwest corner pertained to.

Building 31 (pl. 70b): three-room house. It lies east-southeast of Building 32, across the wadi "street" from Buildings 29 and 30. Room 1 (340 × 265 cm, possibly a courtyard) is entered by a door in its southeast corner, opening to the east. The north wall is tumbled. Room 2 (320 × 215 cm) was reached through room 1, but the door is not clear due to wall fall. Room 3, a "pantry" (158 × 125 cm), was attached to the south of room 1 and entered by a connecting door. Its southern wall was not bonded to the southeast corner of room 2.

Building 32 (pl. 70b): three-room house. It is west of Building 31 and southwest of Building 30; a small track passes between Buildings 32 and 30. The entrance into room 1 (360 × 200 cm) must have been on the east side, though the wall is not well preserved here. A door in the southwest corner of room 1 led to room 2 (ca. 350 × 185 cm), which is very sanded up. Room 3 (185 × 135 cm), a "pantry," was added on to the north side of Building 32. It is ruinous, but the entrance on the east, from the wadi track, is visible. A fragment of a black concave grinding stone was noted in room 1.

Building 32a (pl. 70b): one- or two-room house. This is a fairly ruined structure west of Building 32. A small wadi track runs east–west just north of Building 32a. The easternmost section of Building 32a seems to have run right up to the western exterior of Building 32, but the plan is hard to discern. At least one room, measuring approximately 225 × 295 cm, is fairly clear. It has walls on north, west, and south, but not the east. No door is visible, so it probably lay in the (missing) east wall. A wall fragment to the southeast may represent another room or courtyard, but it seems to be joined to the exterior of Building 32.

Building 33 (pls. 70b, 73b): two- or three-room structure. It sits south of the main wadi, south of Building 32, and northwest of Building 24. The walls of one room are very low and ruined; no south wall survives. The enclosed

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space was approximately 350 × 260 cm. The east wall has a doorjamb stone toward its south end. Southwest of the main room is a smaller, pantry-like tumble of rocks estimated at 170 × 155 cm. It has so little of a north wall that the door might have been here. There are the remnants of a corner of another possible room to the west.

There are remains of five of six more houses (Buildings 34–38 and 81) on the opposite (southwest) side of the Outlier 6 wadi.

Building 34 (pls. 73a, 73b): four-room house. It lies at the eastern end of this string of houses. Room 1 (ca. 150 × 170 cm), possibly a "pantry," consists of an east–west wall with the rock of the cliff as the southern boundary. There is no east wall, but room 1 may have interconnected with room 2 to the west; the wall in between is now tumbled. Room 2 (375 × 320 cm) might have been a courtyard. There is a retaining wall on the north. There might have been an entrance in the north wall, but again, this is not clear. The cliff rocks set the southern limits. There is no west wall, and no significant rock tumble. Running along the cliff, the "courtyard" is accessible through the south door of the main room 3, and this door is preserved 80 cm wide. Room 3 is a rounded rectangle measuring 255 × 180 cm. Continuing along the cliff west-southwest of room 3, there is another poorly preserved room 4 (ca. 190 × 175 cm). The doorway of this room is uncertain, and the north wall is not bonded to the exterior northwest corner of room 3. East of Building 34, there are remains of two more or less circular walls perched atop the higher sand along the side of the wadi and also some remains later numbered as Building 81.

Building 81: one-room outbuilding. It is now little more than a line of rocks at the far southeast end of Outlier 6. The south wall is the cliff, and the east and west walls, if any, are now gone. The north wall survives in the terracing of the debris from the wadi sands down to a lower level. The north wall is about 230 cm away from the cliff face and was probably limited on its east and west sides by the slope of the ground and by boulders. The enclosed space is estimated at 230 × 200–50 cm.

Building 35 (pls. 73a, 73b): two-room house. It lies below and to the northwest of Building 34, at a small distance from the cliff face and slope. Room 1 (280 × 200 cm) is the better preserved of two. It is a "square oval" with a door probably somewhere in the tumble of the east wall and an interior now filled with sand. Room 2 (ca. 260 × 210 cm) on the east is badly preserved. The south wall is discernible, but only rock tumble on the north and west sides marks the original walls. No doorway is visible.

Building 36 (pl. 73b): two- or three-room house. It is at some distance west along the south side of the wadi. The entrance to the southern room 1 was probably in the southeast corner. The room measures 250 × 165 cm but is now very sanded up. Room 2 (250 × 150 cm) was entered by a door 78 cm wide at its southeast corner, giving onto room 1. The northeast wall of room 2 is not well preserved. To the east there are remains of a possible third room or courtyard, as indicated by wall tumble running 420–30 cm.

Building 37 (pl. 73b): two-room house. It now consists of the sanded-up corners of two rooms. Room 1 on the east consists of north and west walls joined at the northwest corner; the west wall is now 220 cm long. Room 2 likewise now has only remnants of its north and west walls, the latter now measuring 350 cm. The west wall is only about 225 cm away from the exterior west wall of Building 36. Like Buildings 35 and 36, Building 37 is set away from the cliff slope. A small scour of wadi wash runs between these buildings and the huts along the main Outlier 6 wadi.

Building 38 (pl. 73b): one-room outbuilding. It is situated in a location similar to Building 37 and consists only of fragments of north, south, and west walls and tumble on the east enclosing roughly 280 × 280 cm. Wall tumble may suggest another room or feature to the south.

Beyond (northwest of) the area of Complex 26 and its bay, the wadi narrows at a natural gateway in a felsite dyke (pl. 73b), the same dyke that cuts across the granite ridges and marks the southeast limit of the main settlement. In Outlier 6, there are more structures west of the natural gate, on the north side of the wadi running toward the mouth of the wadi and the modern asphalt road.

Building 39 (pl. 74a): two-room house. It is built up against the felsite dyke, on the north side of the Outlier 6 wadi. It is a two-room house with an entrance at the northwest corner. Room 1 measures 218 × 150 cm. The door

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to room 2 (202 × 150 cm) is at the east end of the east–west partition wall, which is not bonded to the west wall of Building 39. Natural rock forms the east wall of the structure.

Building 40 (pl. 74a): three-room house. It is part of a complex, which may include as many as three houses. At least Building 40a is separate (see below). Building 40 seems to have been entered from the east side, from the main wadi. The east and north walls of room 1 (350 × 185 cm) are built into the cliff slope, and there is a door in the southeast corner. The south, wadi-side, wall is not well preserved. Pieces of two grinding stones were noted in room 1; one is black and was probably a lower rotary grinding stone; the other seems to have been a dimpled crushing stone. Room 2 (265 × 170 cm) lies west of room 1 and interconnects through a doorway in the southeast corner of room 2. Again, the south, wadi-side, wall is not well preserved. Room 3 (290 × 185 cm) is west of room 2 and interconnects by a door in the east wall of room 3. Its north wall is very tumbled; there might have been another door there. The walls of rooms 1, 2, and 3 are bonded. Between Buildings 40 and 40a, there is a retaining wall 770 cm long that stands as high as 80 cm above the present surface.

Building 40a (pl. 74a): one-room outbuilding. It is a large, rounded structure, northwest of room 3 of Building 40. It measures 210 cm in diameter internally and has a door on the south side.

Building 41 (pls. 74a, 74b): two-room house. It is the next in line northwest along the wadi slopes. It is a two-room, square house with a door at the southwest corner. Room 1 measures 285 × 215 cm. Room 2 is entered from room 1 by a door at the eastern end of the partition wall, which is bonded into the west wall of the building. There may have been a courtyard to the west, beside Building 42.

The remains of a retaining wall connect the northwest corner of Building 41 to the northeast corner of Building 42. At the west end, upslope, there is a piece of a black, concave grinding stone. A line of stones along the wadi and butted up against Building 42 most likely delimited a use area connected with Building 41.

Building 42 (pls. 74a, 74b, 75a): three-room house. It is a large, thick-walled structure west of Building 41. It is much more substantial than usual. Building 42 juts out a bit, where the wadi bed turns southwest, and commands a good view of the natural gateway in the felsite dyke. The southwest, wadi-side, wall of Building 42 is tumbled at the south end, but there is a clear doorway in the northwest wall close to the northwest corner of room 1, which measures an impressive 500 × 345 cm. The wall construction technique is clearly visible in the southeast wall of room 1. Two lines of larger rocks make two wall facings filled by smaller rocks in the middle. The back two rooms run the length of the long northeast wall of room 1. Room 2 on the north measures 255 × 290 cm, and a door in its southwest wall opens into room 1, though there is a lot of wall fall here. Room 3 at the east corner of Building 42 is almost the same size as room 2 at 242 × 285 cm. Its door (62 cm wide) is in its southwest wall, leading into room 1. Pieces of a lower rotary grinding stone were found in rooms 1 and 2 as well as several fragments of grinding stones of unspecified type outside the exterior door into room 1. A sherd of a jar including rim, neck, and handle was collected from room 2. A bit of wall curving out from the southeast wall of room 1 does appear to help enclose a working area bounded on the other three sides by Buildings 42 and 41 and the retaining wall described above.

Building 43 (pls. 74a, 74b): three-room house. It is located west of Building 42 along the base of the cliff slope. There are at least three rooms, but the walls are all damaged, especially on the south side by the wadi. Doors are nowhere evident. An east and a south wall of one room are preserved and also some of the west wall, but nothing on the north. Room 1 is approximately 190 × 180 cm. Room 2 (350 × 230 cm) is north and west of room 1; its south wall survives, the west wall is tumbled, the east wall is damaged, and the north wall is the cliff. There is a north–south partition wall in the middle. A piece of a black, slightly concave grinding stone and a light-blue faience body sherd were found in room 2. South of room 2, there are traces of at least one more room (estimated at 200 × 180 cm), and there might have been a fourth south of room 1 (estimated at 255 × 180 cm), but neither has any remnant of south walls.

The next group of huts (Buildings 44–49) is on the south side of the wadi opposite Buildings 39–43.

Building 44 (pl. 74b): one-room outbuilding. It is the easternmost building in this group. It now consists of part of the southeast wall, a tumbled, destroyed wall at the north, and the wall shared with Building 45 to the northwest. Room 1 is irregular in shape; its extent is estimated at 265 × 180 cm with an entrance path(?) extending east

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about 130 × 70 cm. A large, complete rotary grinding stone; a black, dimpled crushing stone; and a large piece of a silt jar with neck, shoulder, and handle scar were found in Building 44.

Building 45 (pl. 74b): one-room outbuilding. This rectangular structure sits north-northwest of Building 44. It has a doorway facing north onto the wadi "street." There seems to be no connecting door between Buildings 44 and 45, so they were numbered separately. Building 45 measures 382 × 155 cm but is now filled with sand and rocky debris. A piece of a gray-black, concave grinding stone was noted outside the door.

Building 46 (pl. 74b): one-room outbuilding. It lies northwest of Building 45 along the cliffs. This irregular, one-room, sand-filled structure (ca. 235 × 230 cm) has boulders for south and southeast walls. The west-southwest and north-northeast walls are quite tumbled, but the entrance on the east is still detectable. Outside the door there is a little evidence for a retaining wall that could have supported an entrance path up from the wadi.

Building 47 (pl. 74b): one-room outbuilding. Opposite Building 42 is a very destroyed construction numbered 47. Only its south wall (360 cm long) is preserved, plus corners leading to now-lost east and west walls. Sand is piled high against the south wall. There is no north wall at all, but this is where the wadi bed curves from east–west to run more northwest. There is no evidence for the use of the slopes above these huts.

Building 48: one-room outbuilding. It is directly west of the Building 47 remnants, on the south side of the wadi. It is located where the natural, wide gateway in the felsite dyke turns east toward the bay that shelters Buildings 39–47. The walls of Building 48 are tumbled and low, and the structure is filled with sand and rocky debris. The south-southwest wall runs up against the cliff slope; it is a retaining wall for part of its length. The west and south walls are very low and the east one quite tumbled. The entrance was through a north door, facing the wadi. Two jamb stones remain standing here. The room measures 420 × 290 cm and might have had a mastaba in the southeast corner. Building 48 stands pretty much alone. At this point it looks as if the wash scour hit the north (opposite) side of the wadi before turning west. If there ever were any buildings here, they have been washed away.

Building 49: one-room outbuilding(?). It is located west of Building 48. Its west wall (ca. 440 cm long) and parts of the north wall (230 cm long) are preserved, but nothing on the east or south. There is no discernible entrance.

The sandy wadi bed runs between Buildings 50 and 75 on the north side and Buildings 76 to 80 at the south side of the wadi. At this point the Outlier 6 wadi starts to open toward the modern asphalt road in the Wadi el-Sid. Buildings 50 through 59 are more widely spaced than the ones at the southeast end of the Outlier 6 wadi (Buildings 1–38). From Building 60 on, they are more widely spaced still, staggered along the wadi's north-northwest edge.

Building 50: two-room house. It sits on the north side of the wadi, west of a large rock that rests free of the cliff and juts into the wadi to form a gateway of sorts. Another boulder stands in the wadi south-southwest of Building 50. Room 1 (220 × 235 cm) has no clear doorway, though one might have existed in the tumbled sections of the east or south walls. If in the east wall, then the small protected space against the boulders could easily have been utilized. Outside, at the northeast corner, there are remnants of a possible retaining wall against upslope debris. A sherd of a silt, red-slipped jar with black painted bands and decoration was found in the wall tumble. Room 2 (235 × 208 cm) was entered by a door in its east wall leading to room 1.

Building 50a: one-room outbuilding. It was discovered later, on a cliff ledge above Building 50. It seems to be a small, rounded guardpost, roughly 60–70 × 50 cm. Its door faced east and had a good view of the wadi in that direction. A silt amphora toe was noted on the slope below, but no other sherds.

Building 51: one-room outbuilding or house. It now consists of one room west of Building 50, but runoff down the gully north of the latter has destroyed whatever additional walls might have existed there. The surviving room measures 240 × 195 cm. Tumbled sections of the south wall might indicate former doorways, but none is visible now. Judging from the amount of tumble, there might also have been more to Building 51 on the east. Halfway along the north exterior wall, there is a retaining wall (ca. 240 cm long) running to the rocks of the cliff face, presumably to help protect the east end of Building 51. Four or five large boulders, some in the wadi bed, sit between Buildings 51 and 52, which therefore are not very close to each other.

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Building 52: one-room outbuilding. West of Building 51, Building 52 lies along the slopes of the north cliff of the wadi. It is a fairly large one-room structure (410 × 310 cm). The door is marked by one standing jamb stone.

Building 53: two-room house or two one-room structures. It is west of Building 52 and stands a little out from the cliff. The door into room 1 (370 × 325 cm) must have been on the wadi side, but it is not preserved. The room is now sand filled, and the southeast, northeast, and northwest corners are tumbled. A scatter of small dark pebbles and rock chips in the northwest corner might indicate that a mastaba once existed here. On the outside of the northeast corner of the building, an unbonded wall fragment runs circa 85 cm east before it is lost in tumble. Room 2 (250 × 170 cm max. dimensions) was built up against the cliff rocks on the east. The north and west walls can be traced, but the south wall is tumbled. There is some indication of an entranceway in the west wall.

Building 54 (pl. 75b): two-room building. Lying west of Building 53, Building 54 has two rooms that touch only at their northeast and southwest corners, respectively. Both rooms are sand filled. Room 1 (325 × 255 cm) most likely had a door toward the west end of the north wall. Room 2 (290 × 235 cm) probably had a door at the south end of its west wall, so although the rooms did not interconnect, they could have opened almost side by side. North from the northwest corner of room 2, a bit of wall ran up to the cliff but does not seem to have enclosed a room space. The area between room 2 and the cliff has a sherd scatter that included a painted silt jar sherd, a Late Roman Amphora 1 handle, and two bowl bottoms with slight ring bases (*Chapter 6*, no. 227).

Building 55 (pl. 75b): one-room outbuilding. It is a one-room, roughly circular structure about 250 × 230 cm west-northwest of Building 54. The eastern and southern sides are preserved, if low, but the western side is just tumbled rocks. The southwest corner incorporates a large boulder. The north side of Building 55 is gone. To the west, the area between Buildings 55 and 58 has boulders and stones, but mostly sand. One small boulder has a circular depression (2.5 cm deep, 5.0 cm diameter) in its center as if to hold something.

Building 56 (pl. 75b): one-room outbuilding. It lies southwest of Building 55 and west of Building 54, along the wadi and so is filled with sand. It measures 335 × 260 cm and probably had a door in the south wall or at the northeast corner.

Building 57 (pl. 75b): three-room house. It sits directly west of Building 56. Room 1 (ca. 260–65 × 280 cm) no longer has a south wall, but a door at the east end of the north wall leads to room 2 (280 × 280 cm), which now has only low, very tumbled walls. Room 3, perhaps a "pantry," was built on the west side of room 2 but is now reduced to a tumble of rocks. It is estimated to have measured 180 × 125 cm.

Building 58 (pl. 75b): one-room outbuilding. It lies northeast of Building 57 but is separated from it by an area of large, tumbled rocks. Building 58 is more or less circular (ca. 190 × 190 cm). The northeast wall utilizes a large boulder and the space beneath it. The door was probably on the west side where the wall is tumbled.

Building 59 (pl. 75b): one-room outbuilding. North-northwest of Building 57 and southwest of Building 58, Building 59 is a one-room structure measuring 250 × 245 cm. The door was at the north end of the east wall, and there might have been a mastaba or other feature in the southwest corner, but the room is sanded in. A sherd from the wall-chinking was collected here (*Chapter 6*, no. 219).

Building 59a: one-room outbuilding. It is a circular structure on the cliff slope, north of Building 59. Only parts of the west and south walls remain; the dimensions are approximately 160 × 125 cm.

Building 60 (pl. 75b): one-room outbuilding. West of Building 59, it lies along the wadi and thus is sanded in. It measures 270 × 295 cm and possesses a door in the west wall.

Building 61 (pl. 75b): two-room house. It lies northeast of Building 60. Room 1, on the east, measures circa 190 × 170 cm but lacks a north wall. A piece of a red to gray grinding stone with a striated depression on top was used in the construction of the east wall. Room 2 (230 × 210 cm) on the west has a sherd scatter, possibly from the wall chinking. The south walls of both rooms are now very low but continuous, so the entrances to both rooms were probably on the north; they do not interconnect. Running north from the north wall of room 2, a tumble of stones may represent a former boundary wall of a working space between Building 61 and the cliff slope.

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Building 62 (pl. 76a): one-room outbuilding. It lies west of Building 61 and measures 270 × 390 cm with a door at the northwest corner, looking toward the cliff.

Between Buildings 62 and 64 to the north-northwest, a finger of the cliff juts into the wadi. Just above and east of Building 64, there is a natural cave in the cliff, now used by snakes and animals. No pottery was noted inside, but there are a lot of big sherds, mostly storage jars, in the general area, in Building 64, and to its northwest. Above the cliffs in this area, there are remains of four little huts that were not measured but are described as "big enough to sit in with feet out door" (Heidorn 1997 field notes). Beyond them, in the pass leading north-northwest, there is a looted grave with potsherds scattered downslope, and there might be more graves here. One diagnostic sherd of a marl bowl or cooking pan was collected and, between Buildings 62 and 64, a rim sherd of a white-slipped Aswan bowl with brown painted lines on the exterior.

Building 63 (pl. 76a): one- or two-room house. It lies west of Building 62. The main room measures 215 × 185 cm, but it is quite tumbled. A "pantry" may have been attached to the west wall; there are remains of a wall 65 cm out from the main room. No doors are now visible.

Building 64 (pl. 76a): one-room outbuilding. Northwest of Building 62 and north of Building 63, Building 64 has one, large, irregular room (ca. 400 × 350–400 cm). The west and south walls abut the boulders of the cliff. The walls are tumbled, and the room is sand filled, so the doorway is uncertain, but it might have been at the north end of the west wall where it approached the cliff. A second, more lightly constructed room might have existed at the southeast end of the building. Sherds were noted in the interior of the building and over the rocky area at the base of the cliff and the ravine to the north-northeast (see *Chapter 6*, nos. 249, 254).

Building 65 (pls. 76a, 76b): one-room outbuilding. It lies west-southwest of Building 64, set away from the cliff and the ravine with the looted grave. The building is roughly circular (295 × 280 cm) and mostly sand filled; the door might have lain on the northeast side.

Building 66 (pl. 76b): one-room outbuilding. West of Building 65, it seems to have been a one-room structure. The north wall survives for 285 cm and the east wall, 145 cm, but the south and west walls are lost, and the area is completely sand filled. Potsherds were noted in the wall chinking, including a very worn Late Roman Amphora 1 handle.

Building 66a: small rounded feature. It is north-northeast of Building 66 and is built against a boulder at the base of the cliff. The feature (ca. 90 × 120–80 cm) is poorly preserved, but a few potsherds were noted.

Building 67 (pl. 76b): one-room outbuilding. Northwest of Building 66 and directly west of Building 66a, it is a rounded room (240 × 233 cm) built very close to the rocky slope of the cliff. The door may have been at the northeast side.

Building 67a: one-room building. It lies north-northwest of Building 67 but much higher upslope. It is a one-room structure (270 × 250 cm) built up against the cliff and now filled with rocky debris. The cliff is the north wall, and the door was probably at the north end of the east wall, where it approaches the cliff.

Building 68 (pls. 76a, 76b): three-room house. South of Buildings 66 and 65, along the wadi opening, it is now mostly filled with rocky tumble and sand. Room 1 (392 × 260 cm) on the northwest has no exterior doors. A door in the southeast wall gives onto room 2, however. The southeast and southwest walls of room 2 are now lost in tumble, but the room is estimated at 380 × 380 cm. A possible jamb stone in the northeast wall suggests the location of an exterior door. Room 3, a "pantry," measuring about 220–30 × 192 cm, was built west of room 2 and perhaps entered by a door (ca. 65 cm wide) in the latter's southwest wall. The southeast wall of room 3 is now little more than a line of stones.

Building 69 (pl. 76b): one-room outbuilding(?). It now consists of a circular line of walls west of Building 68 and south of Building 70. The wall remnants are most visible on the north, east, and west, but most of the walls have been washed away; no doors are now visible. The east–west dimension is 295 cm.

Building 70 (pl. 76b): one-room outbuilding. It lies north-northeast of Building 69, across and southwest of Building 67, and south of Building 67a. It now consists of the scattered, tumbled, and sand-filled remains of

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a one-room structure approximately 275 × 245 cm. The door might have been in the north wall where several tumbled but jamblike stones remain.

Building 71 (pl. 76b): one-room outbuilding. Directly west of Building 70 and standing away from the cliff, it measures approximately 308 × 235 cm. The walls are quite tumbled, and no doorway is now visible.

Building 72: one-room structure. It lies around a slight corner where the Outlier 6 wadi joins the track of the modern road. It is now only a curved, tumbled line of a wall curving from north to northwest, but it is too long (ca. 210 cm) to be part of a small, circular feature or outbuilding. Several large boulders nearby may once have been part of the building, but there are no wall remnants to prove it.

Building 73: one-room outbuilding. West-northwest of Building 72 and past the boulders, it is close to but not backed up against the cliff. East, north, and west walls can be traced, but the south wall is lost in tumble. It appears to have measured about 290 × 175 cm; no doors are preserved.

Building 74: one-room outbuilding. Northwest of Building 73, it was built against the cliff. It seems to have been an unusually large one-room structure (525 × 362 cm), but it is very tumbled. The north, south, and west walls are tumbled, and the east wall is the cliff; no doors are discernible.

Building 75 (pl. 77a): three-room house. It sits directly north of Building 74. The north wall of room 1 (500 × 350 cm) is the cliff. All walls are visible, but the door into room 1 is not clear. The south wall is unusually thick (80 cm average). Room 2 is a large space directly west of room 1 and the small room 3; rooms 1 and 3 are on a higher level than room 2. The north wall of room 2 is now 530 cm long, the surviving south wall is 360 cm, the west wall is destroyed, and the north–south dimension is 320 cm. There is a mastaba in the northeast corner; presumably the door was in the missing west wall. Room 3 (205 × 200 cm) is entered from room 1 by a door (80+ cm wide).

A number of fragments of grinding stones are scattered over the floors of rooms 1 and 2. Pieces of a reconstructable black concave grinding stone are scattered in both rooms 1 and 2. A fragment of a concave, lower grinding stone was lying in the mastaba tumble, and a fragment of an upper (manolike) grinding stone, 2.5 cm thick with smooth flat surfaces on both sides, was found in room 1. Both are made of red-gray-black or red-gray granite.

At this point the survey returned to the natural "gate" to the Outlier 6 settlement and documented the southern part of the wadi mouth.

Building 76: two-room house. It lies southwest of Building 49 and, like it, up against the cliff face. It is opposite Buildings 50 and 51 across the wadi to the north. Room 1 (ca. 305 × 205 cm) is the most clearly defined. The south wall runs up to the boulders of the cliff; the door was probably in the north wall. Room 2 on the north has no north or west walls and only a 2 m fragment of the east wall.

Building 76a: two-room house. It seems to be separate from Building 76, though they may be connected by a retaining wall. Room 1 (145 × 135 cm) is a small rounded room whose door is now lost. A jumble of rocks to the west represents room 2. No good measurements are possible, but it is estimated at 150 × 130 cm.

Building 77 (pl. 75b): one-room outbuilding. West of Buildings 76 and 76a, it is built up against the cliff. The south wall is only pieces of stone perched on top of boulders, the east wall is tumbled, and the north and west walls are almost totally missing. The room measured approximately 280 × 190 cm; the doorway is unlocatable.

Building 78 (pl. 75b, 77b): one-room outbuilding. It is a rounded structure at some distance from Building 77. It measures 200 × 185 cm and has a well-preserved door on the east.

Building 79 (pl. 75b): one- or two-room house(?). West of Building 78, Building 79 is now only the southwest corner and bits of the south and west walls. The rest is tumble. The main room is estimated to have been 200 × 180 cm, and judging from the amount and distribution of the wall fall, there probably was a second room as well.

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Building 79a (pl. 75b): one-room outbuilding. It is a feature built up against the cliff, southwest of Building 79. Only the south wall and bits of the east and west walls attached to it at the corners survive. The room is estimated to have measured 270 × circa 198 cm.

Building 80 (pl. 75b): one-room outbuilding. It lies west of Building 79 and is the last in the southern string of huts. It is a large one-room structure (ca. 450 × 365 cm) with a door at the south end of the east wall. The south wall is unusually thick (70–75 cm); the house is filled with sand.

At a short distance south-southwest of Building 80 where the wadi mouth swings south to join the Wadi el-Sid and the modern road, there seems to have been a small granite quarry. The area is littered with small stone chips, but there is very little pottery to help with dating the workings.

Building 81: one-room structure. See Building 34 above.

OUTLIER 7

The survey made the gap between Buildings 75 and 82 the division between Outliers 6 and 7, but this was mainly a matter of convenience. Structures along this part of the wadi are indeed more widespread and for the most part very damaged, but the division was so slight that the numbering of structures simply continued from Outlier 6, around the corner, and into Outlier 7. In fact, Outliers 5, 6, and 7 (see fig. 3) are probably all part of the same expansion that ran south from the main settlement to line the Wadi el-Sid and then ran far into one large side wadi (Outlier 6).

At this point the survey returned to the area just north of Building 75, along the cliff where it angles away from the Wadi el-Sid road and into the shallow bay that shelters Outlier 7 (pl. 78a). A narrow track upward from the back of this bay leads up over granite boulders to a path across a sandy saddle (pl. 3a) and then down to the main settlement, behind Buildings 109–15. The latter were mapped in 1996 and are discussed in *Chapter 3*. There are looted graves all along the ridge between Outlier 7 and the main settlement; they are discussed in *Chapter 5*.

Building 82 (pl. 78b): one-room outbuilding. It is built against the rock of the cliff on the east. The north, west, and part of the south walls are preserved but no good door. It measures 280 × 270 cm. A sherd of a Late Roman Amphora 1 was collected between Buildings 82 and 83.

Building 83 (pl. 79a): two-room house. It was constructed near the cliff. Room 1 is roughly circular (350 × 325 cm); it is tumbled and sand filled, but the door in the east wall near the southeast corner is marked by a jamb stone. Outside, at the northeast corner, there is an unexplained line of large stones set upright. Pantry-like room 2 measures about 230 × 215 cm, though the south wall is missing. A bottle rim and neck sherd was collected from the wall chinking (*Chapter 6*, no. 224). The slope between Building 83 and 84 has a sherd scatter, as does the area east of Building 84.

Building 84 (pls. 78a, 79b): two-room house. It lies north of Building 83 and has a ground plan something like a capital "G" turned upside down. Room 1 (252 × 175 cm) on the south has an exterior door in the west wall, and room 2 (250 × 150 cm, the inner part of the "G") is reached through room 1. A number of other features surround this two-room house. A stub of a wall projects from the southwest corner, outside the exterior door. Behind the house, toward the cliff slope on the east, a short wall from the southeast corner, a retaining wall from the northeast corner, and a partial wall on the east define a space that may have been a courtyard or working area measuring 420 × 350 cm. There seems to be a door or gap (68 cm wide) in the south wall that permitted access to the "courtyard." Within this area, at its northeast corner, there is a circular feature about 140 cm across. Outside and southeast of Building 84, there is another smaller circular feature approximately 75 × 60 cm across that might have been a zir stand.[9] Finally, the retaining wall seems to continue from the north corner of the "courtyard" toward Building 85. A sherd of a shallow cooking pot like one from "grave atop ridge east of

[9] Judging from the results of the excavation of Building 93 in the main settlement in 1999, the "courtyard" and circular features could be a kitchen area.

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Building 90, Outlier 7" (Heidorn 1997 field notes) was collected from the slope above Building 84 and drawn (see also *Chapter 6,* jar no. 223 and base no. 226).

Building 85: two-room house. It sits north-northeast of Building 84. Room 1 (252 × 175 cm) on the west has south and east walls and part of the west wall, but very little of the north wall survives. A door between rooms 1 and 2 is indicated by a jamb stone in the dividing wall. Room 2 (425 × 363 cm) is backed up against cliff boulders on the north and east and has some sherds on its "floor." Upslope and east of Building 85, there is a small, poorly preserved, circular hut or feature approximately 70 cm across.

Building 86: one-room outbuilding(?). It lies in the sandy area leading to Outlier 7 and thus is very ruinous. The east wall line (230 cm) of one room is preserved, the northeast corner and north wall, and the southeast corner and at least part of the south wall.

Building 87 (pl. 80a): two-room house. It utilizes the same rock ridge that forms the north wall of Building 85. Room 1 (260 × 235 cm) has the rock ridge for a south wall and other walls formed of boulders set on end. They are not close together, and there is no longer any evidence of filling the gaps, so room 1 might have been an open space. Room 2, on the west, is entered by a door (55 cm wide) in the west wall of room 1; one jamb is a boulder. A large fragment of a lower rotary quern was noted in room 2. There are also two circular lines of stones east of Building 87, at the base of the cliff. The western one is about 120 × 175 cm (max. dimensions); the eastern circle is about 125 × 105 cm, and both have "doors" on the west side. They may be modern.

Building 88 (pl. 80b): two-room house. Room 2 (310 × 210 cm) lies west of room 1. No exterior door is apparent, so presumably it was entered from room 1. The most likely location for a door is the tumbled north end of the wall separating rooms 1 and 2. The south half of room 1 (375 × 375 cm max. dimensions) seems to have been rebuilt. The south wall of room 2 extends a short way into room 1, though not far enough to divide it into two distinct rooms. The southern half of room 1, south of the bit of wall, is narrower than the north half, so the room is shaped like a stubby, inverted "L." The short west wall running to the southwest corner of room 1 abuts at both ends and thus seems to have been a reconstruction. Room 1 might have had a door in this angle of the building, or perhaps in the tumbled part of the east wall; the north wall is relatively well preserved. The southernmost wall in room 1 (not the south wall of rooms 1 and 2) is unusually thick (75 cm) and incorporates some large rocks as foundations, but the walls above are the usual double-faced, rubble-filled construction. Some large boulders at the southwest corner of Building 88, roughly in line with the foundation stones, have no apparent orientation but might have enclosed a work space.

Building 89: one-room outbuilding. It lies north of Building 88, toward the middle of the bay, so it is mostly washed out. It now consists of an east wall, northeast and southeast corners, bits of north and south walls, and a pile of stones that might mark the location of a former west wall. The dimensions are estimated at 420 × 320 cm.

Building 90 (pl. 81a): one- or two-room house. It is directly southeast of Building 89, east of Building 88, and close to the cliff slope. It is mostly destroyed by wadi wash and now consists of pieces of north, east, and west walls only; its size is estimated at 300 × 358 cm. A curving line of rocks just south of the west-wall remnant might have been a rounded "pantry" type of room. East of Building 90, toward the cliff, there are pieces of several more walls or possible walls that preserve no coherent plan at all.

Building 91 (pl. 81b): one-room outbuilding. It lies at some distance northeast of Building 90, in the middle of the sandy bay. It preserves most of one room (ca. 240 × 240 cm). The north and west walls and part of the east are definable, and a line of stones probably marks the south wall.

Building 92 (pl. 82a): one-room outbuilding. It is east of Building 91, at the far end of the Outlier 7 bay. The north, east, and west walls are preserved, but no south wall. It measures about 300 × 270 cm; no doors are visible.

Building 93 (pl. 82b): one-room outbuilding. North of Building 92 and likewise built at the far end of the Outlier 7 bay, it is set into the cliff rocks and thus largely destroyed by runoff. The north, east, and west walls survive, but no south wall; the dimensions are approximately 235 × 220 cm.

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Building 94 (pl. 83a): one-room outbuilding. It was also constructed at the far end of the Outlier 7 bay, into the rocks of the cliff. It is a rectangular unit (295 × 245 cm) with a door in the southeast wall.

Building 95 (pl. 83b): three-room house(?). It is located at the north edge of the Outlier 7 cliff, at some distance west of Building 94. Building 95 consists of three destroyed rooms. The north-northeastern room a (310 × 285 cm) is built at the base of the cliff; no door is preserved. The connection between it and room b is not clear. Perhaps it is lost in rock tumble; the gap is only 45–50 cm wide. Room b seems to have an east wall that runs to a boulder on the north, and then a tumble of rocks may represent the north and west walls, but they follow no definite wall line. The room is now sand filled and measured approximately 290 × 290 cm; no door is preserved. Room c (255 × 375 cm) is to the south, along the Outlier 7 wash stream. Part of the north wall is preserved, as are the lines of the east, west, and south walls, but no doors are discernible. Whether rooms b and c were interconnected is unknown. A sherd collected north of Building 95 may be Egyptian Red Slip A (*Chapter 6*, no. 216).

Building 96 (pl. 84a): one-room outbuilding. West of Building 95, it seems to be a one-room building plus some extra walls. The main room (318 × 265 cm) has parts of north, south, and west walls, and a line of rock fall at the east wall, but no doorway. Upslope and about 225 cm northeast of the main room are two wall stubs built against cliff boulders. The east wall is about 180 cm long, and the north one, 120 cm.

A ring of fairly large stones in the middle of the Outlier 7 bay south of Building 96 may be modern. It has a gap or door facing south.

Building 97: two-room house(?). It is a disheartening jumble of stones made worse by small erosion channels. It appears to have been a two-room house at the base of the northern cliffs. Room 1 is estimated at 235 × 200 cm, and room 2 at 290 × 190 cm. Between Buildings 96 and 97, there is a piece of a north–south wall, but what it pertains to is uncertain.

Building 98 (pl. 84b): one-room outbuilding. West of Building 97, it is a one-room structure utilizing the rock of the cliff as its north wall. It is approximately 275 × 290 cm with the door probably at the north end of the east or west wall, where it approached the cliff face. A tumble of rocks between Buildings 97 and 98 might have been another structure, but if so it is too thoroughly destroyed to be certain. Another jumble of rocks southwest of Building 98 was tentatively labeled "98a," but it has no structural features left.

A ring of large rocks south of Building 98 may be another modern emplacement; a gap in the stones may be a "door" looking south.

Building 99: one- or two-room outbuilding. It is a small structure at the southwest edge of Building 98. It seems to be a rectangular room too poorly, preserved to take any measurements plus a separate, rounded hut (ca. 150 × 125 cm) at the northwest corner. Rocks west of Building 99 might once have been another structure.

Building 100: one-room outbuilding. West of Building 99 at the base of the cliff, this rounded feature has been looted, so little can be said about it. It measures approximately 150 × 125 cm, and the entrance might have been on the south, under the looters' debris.

Building 101: one-room outbuilding(?). It is a jumble of rocks and boulders. The clearest part seems to be the remains of a circular structure at the base of a cliff overhang. The feature measures approximately 220 × 160 cm but has been looted. There are bone slivers around the looters' hole and sherds in the general area of Building 101.

Buildings 102 through 105 are stones in the wadi. Some of them might represent remains of Coptic/Byzantine structures but are probably reused stones from more recent activities here, close to the modern asphalt road.

Building 106 is a circle of large rocks in the wadi south of Building 97. It could be modern.

West of Building 101 and following the line of the cliffs where the Outlier 7 bay opens out to join the Wadi el-Sid, there is a small quarry. There are chips of stone, squared boulders and slabs of rock, and one rock with wedge slots. Another slab and several boulders have working marks (modern?) consisting of short squiggly lines.

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OUTLIERS 12 AND 13 OVERVIEW

Alexandra A. O'Brien

Outliers 12 and 13 lie to the west of the main site, along the modern road heading toward the Nile Valley (fig. 3). Walking from the main site beyond the teahouse and past the wells, south of the road one encounters two narrow wadis with a small bay between. Small structures survive along the sides of the wadi entrances and the slopes along the road as well as in the bay. Now, denuded of mud and plaster fill, they appear as round, dry-stone huts blending in with the large-stone wash along the wadi floor (Meyer 1998: 33). Similar structures were noted in bays (Outliers 10 and 11) along the other (north) side of the road, opposite Outliers 12 and 13, but there were far fewer surviving here, and time constraints prevented their close study.

The geology of this area is noticeably different from that of the main site. The wadis are cut into splintery, very ancient Precambrian metamorphic rock, the Atalla serpentinite, instead of the Fawakhir granite of the main site (Harrell and Brown 1992: 94; Meyer 1995: 45), and the wadi wash is made up of large blocks rather than pebbles and sand. This is probably the reason for the poor survival of the structures. Just enough remains on the wadi floors to suggest that buildings had been present here before the destruction wrought by floods.

As with the main site, the survey procedure consisted of O'Brien sketching a building or a group of buildings in a notebook. In the field notes, comments were written on features such as looters' holes, niches, or small finds while noting measurements of wall and door widths and heights where possible. The survey was carried out over a period of two days, which limited the amount of detail that could be recorded, and these Outliers were not surveyed with the TIS (Total Instrument Station). The following is an overview of the outliers; descriptions of individual buildings are presented in *Appendix C*.

OUTLIER 12

Outlier 12 is composed of some twenty-five structures, twenty-three of which survive along the slopes of a wide wadi mouth, and two on the wadi floor. Fewer than a handful are preserved to any degree, with only the outlines surviving, particularly at the wadi entrance. The wall material is less weathered in these outliers than at the main site due to the difference in geology. Ceramic finds were much sparser than at the main site.

From Building 2 (the largest surviving structure) there was only one painted sherd and one dipinto fragment. Most of the pottery fragments found were parts of large jars, as found at the main site.

Most of the surviving buildings are on the west side of the wadi. As they are very tumbled and hugging the slope, it is at times hard to discern revetted terraces from tumbled walls. Building 2 (largest) is built against the slope, above the wadi floor, and consists of two rooms, the northernmost 240 cm (north–south) × 230 cm, the other, 220 × 280 cm. The walls varied in thickness from 40 cm to 80 cm, and there seems to have been a ramp or steps leading up to a door.

Building 1 also appears to have originally been a two-room structure, again upslope from the wadi floor, but only the outer walls survive.[10]

The remains of Buildings 6 through 14 give the appearance of a series of one-room huts along the edge of the slope, while Buildings 24 and 25, to the south of Building 1, are mere one-wall structures abutting the rock of the wadi cliff. (See *Appendix C* for details of each building.)

The nine structures (Buildings 15–23) along the east side of the wadi are more poorly preserved, each consisting of built walls modifying the natural rock shape to form a small structure. Buildings 16 and 20 are both above the wadi floor, on ledges partway up the hill between Outlier 12 and the small bay. Building 16 is above the wadi entrance, and its remains consist of a large rectangular looters' hole(?) (150 × 200 cm) and two semicircular structures (140 × 90 cm and 110 × 110 cm).

[10] On the principle of documenting the best-preserved and most informative structures first, the survey started with Buildings 1 and 2, worked north toward the modern road (Buildings 3 to 14), and then picked up two ruined structures at the back of Outlier 12 (Buildings 24 and 25). Thus, the order in *Appendix C* lists buildings from the wadi mouth and then south to the back of the wadi.

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Small Bay

Building 15 is the last structure within the Outlier 12 wadi. The hill rounds away from the wadi mouth, running parallel with the road for several meters and then forming a small bay. In the hill above the bay are several man-made tunnel-like excavations, and in the bay itself more structures survive. A small hut (Building 26) remains below the tunneling, the only structure remaining on the west side. On the other side of the bay, more huts survive and continue around the line of the hill out of the bay, along the road into Outlier 13 (Buildings 27–32). These are all small structures, and Buildings 27, 30, and 32 each have two rooms. In Building 27 a small round feature remained, possibly a platform for a pot. Building 30 is built right against the rock of the hill, which serves as the back wall. Buildings 28, 29, and 31 consist of one room, and all the structures are very tumbled.

OUTLIER 13

The Outlier 13 wadi is narrower than that of Outlier 12, but extends farther back into the hills. All the surviving structures, however, are in the northern part of the wadi, closer to the road.

Buildings 33 through 38 rim the foot of the hill between the small bay and Outlier 13. They are mostly one-room structures, the size of which is difficult to determine since they are so tumbled. There is more tunneling in the hill above these structures, as far as the slope above Building 44, which is at the entrance to the Outlier 13 wadi.

The next buildings continue into the wadi itself with Buildings 39, 40, 44, 46, 47, 49, 51, 53, and 55 through 57 along the western slope; Buildings 41 through 43 and Building 45 on the floor of the wadi entrance; Buildings 48, 50, 52, and 54 on the main wadi floor; and Buildings 58 through 65 on the east slope. Thus there are six buildings (33–38) between the small bay and Outlier 13, and twenty-seven buildings (44–65) in the outlier itself. The structures in Outlier 13 are better preserved than those in Outlier 12 and appear to be bigger (although that may be due to the preservation). The building material and appearance of the area are similar to that of Outlier 12, again with the larger wadi wash being responsible for poor survival of structures on the wadi floor.

It was thought that signs of smelting might be found in Outliers 12 and 13, but no hint of any such activity survives. One concave grinding stone was found within the wall of Building 45, and one "ski slope" type of grinding stone (similar to pl. 97a) was photographed near Outlier 13, but otherwise no crushing or grinding stones were found in either outlier. The small quantity of pottery found was similar to that found in Outlier 12 and included a few painted sherds (*Chapter 6*, no. 229) and two fragmentary dipinti (RN 97/24, 97/25; *Chapter 7*, not illustrated). All the finds, except for the lotus cup (*Chapter 6,* no. 229), were similar to material found at the main site.

OUTLIER 1

Outlier 1 lies immediately behind the modern settlement at Bir Umm Fawakhir, behind the antiquities department's house and the mosque. The outlier has several dozen ruined houses that were probably an extension of the main ancient settlement, which is just over the other side of a low granite ridge. There is a handy path between Outlier 1 and the main settlement that we used almost daily. The outlier is too damaged and too covered with modern trash to present any special features like those in Outliers 2 and 6, so we made no attempt to document it in detail. However, it is threatened by encroachment from the modern settlement, so we did take a systematic series of photographs that include all the ancient structures, at least in overview (pls. 85–86).

OUTLIERS 8, 9, 10, 11, AND 14

Outlier 8 was discovered in 1996 while exploring the ridges south of the New Kingdom remains across from the modern Wadi el-Sid mill. The outlier lies partway up the side of a small wadi across from the south end of the modern mill. The bottom of the wadi is now covered with finely crushed, white quartz residue from the modern mining operations, so if there were ever any houses there, they are buried. Along the side, however, at least twenty-seven buildings like those in the main settlement survive (pl. 87a). The pottery is the same as that in the main settlement, and there are a number of the same kinds of dimpled crushing stones and rotary querns (pl. 87b) and a few concave grinding stones.

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Outlier 9 lies north of the main settlement. A broad wadi opens northeast from the Roman road, just before Outlier 2. In and around this wadi and into a deep bay on its north side, we found the ruins that we labeled Outlier 9 (pl. 88). The remains of an early twentieth-century asphalt road leads to some abandoned mining engineers' houses. Despite them and the trash around, ruins of about thirty-eight ancient houses can still be detected, including fifteen one-room buildings, six two-room houses, four three-room houses, and one too damaged to sketch. A pottery sample was collected, including a possible *qadus* (a bucket for a water wheel) and a small bowl (*Chapter 6*, no. 239) in the wadi wash, and a Roman slotted mill of coarse dark gray vesicular basalt was recovered (*Chapter 2*, fig. 14a; pl. 1b). On top of a hill overlooking the wadi, there is a tumulus with built-up walls, bone, roofing slabs, and perhaps some small cist graves of the usual type around it. In a deep bay toward the western end of Outlier 9, closer to the wells, there were more ruins on the bay floor, and also graves on the northern slope. At this point the rock consists of dark ultramafics rather than the Fawakhir granite. The graves are inserted around big boulders (pl. 89a), and so far as a cursory survey could determine, all are looted. Bone and Coptic/Byzantine-period pottery like that in the main settlement are scattered around the graves, and we also retrieved one of the "incense burners" here (RN 97/59; *Chapter 7*, fig. 48i). It is made of a very soft stone, about as hard as dried clay, and decorated with parallel vertical lines and dots. It appears to have been looted from the grave just below its findspot (pl. 89b).

Close to the wells, the road makes a 90-degree bend west to pass through a natural gate in the high mountains west of Bir Umm Fawakhir. Outliers 10 and 11 lie just beyond the natural gate, on the north side of the road. The former consists of a few huts (five sketched) in a curving side wadi (pl. 90). Most of the pottery is dateable to the Coptic/Byzantine period like that in the main settlement, but a "pot drop" may be Roman. Outlier 11 lies a little farther west; it now consists of a few washed-out huts and a little fifth–sixth-century pottery. A scooped out, striated lower grinding stone was noted by the side of the road between Outliers 10 and 11.

Outlier 14 comprises a few huts in a very remote wadi. Only Mohamed Omar visited it on a wide-ranging foot survey.

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CHAPTER 5

CEMETERIES AND THE QUESTION OF RELIGION

Carol Meyer

The Bir Umm Fawakhir Project never systematically explored the graves and cemeteries around the site, and it never aimed to. The reasons for this were lack of time and the fact that all the graves noted had been looted, some so recently as to leave half a rusty shovel to one side. In retrospect bypassing the graves is unfortunate because they raise some interesting questions. First of all, burials and cemeteries at other Eastern Desert sites have not been closely studied either, so Bir Umm Fawakhir had (and still has) the potential to answer questions about the Eastern Desert style of burials and about the human population. Second, the graves at Bir Umm Fawakhir fit none of the contemporary Nile Valley burial patterns. In this chapter we can only outline the evidence for this statement and ask the question, "why was this so?" Finally, the graves have the potential to provide clues as to the ancient Fawakhiris' beliefs about death and the afterlife, and hence their religion, especially if any unlooted graves could be located.

Although Debono (1951: 24) mentioned several cemeteries on a ridge overlooking the workers' villages, the location(s) are rather vague. The 1992 season of the Bir Umm Fawakhir Project found no graves, largely because the team concentrated on the main settlement. In 1993, however, Cole located a large cemetery area past the felsite dyke at the southeast end of the main settlement, up on the rugged slopes where the wadi narrows to a rocky ravine (fig. 3, pl. 91a). The graves are usually just clefts in the natural joints of the granite. The graves measure roughly one meter long and three-quarters of a meter wide, which suggests a flexed burial; many have flat roof slabs scattered nearby and remains of granite cobble cairns on top (pls. 91b, 92a). The 1993 field notes briefly mention graves on the slopes above Buildings 93 and 97, and two graves, one with splinters of human bone around it, were found in Outlier 5 (Meyer et al. 2000: 19).

More cemetery areas were noted in 1996, but due to the brevity of the season, none could be examined until 1997. (For possible New Kingdom graves, see *Chapter 2*, "Pre-Coptic Remains.") At the far eastern end of the sprawling Outlier 9, on the hilltop northeast of the twentieth-century engineers' houses, Heidorn, O'Brien, and Reichel noted remains of a tumulus burial. It has a good view of the Roman road to the southwest (fig. 3), and it is described as having a well-preserved chamber with built-up walls and roofing slabs. Some Coptic/Byzantine sherds are scattered nearby, and there appear to be some cist graves of the usual type around it. Farther west, another arm of Outlier 9 runs into a narrow, steep-sided bay (*Chapter 4*, pl. 89). A number of burials were inserted between the rocks and boulders at the far end of the bay. There are fragments of Coptic/Byzantine pottery around them, and one of the "incense burners" was found near one grave, apparently tossed aside by looters (RN 97/59; *Chapter 7*, fig. 48i, pl. 89b).

In Outlier 6, there might have been a grave near Complex 26. The central building is enclosed by a very steep bay on two sides and by two thick walls on the west and south. Near the putative gate at the southwest corner, there is a granite knob (*Chapter 4*, pls. 71b, 72a) that might once have supported a guardhouse, and into the guardhouse a grave was sunk, though when this was done is unknown. If this was in fact a grave, then it is the only one found so far on a wadi bottom, among houses. At the northwest end of Outlier 6, where the wadi opens onto the asphalt road in the Wadi el-Sid, there is a spur of granite protruding into the sandy area between Buildings 62 and 63. Uphill from this point, there is a "tumulus" grave with a lot of potsherds on the slope below. There is enough pottery to indicate more than one grave, and at least some of the pottery is Coptic/Byzantine (cf. *Chapter 6*, nos. 249, 254).

By far the largest cemetery area inspected was that on the ridge between Outlier 7 and the main settlement. A very rough, steep track leads up from the northeast corner of Outlier 7 to a relatively broad, flat, sandy saddle, and then down a steep slope to the main settlement behind Buildings 112 and 113. The rocky area around the sandy saddle is pocked with numerous cist-and-cairn graves. In this locale most are small cists sided and roofed with granite slabs (pl. 92b); cairns of granite cobbles are piled on top (pl. 93a). All graves that the team saw

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were looted, with pottery and bits of bone scattered around (pl. 93b). Most of the pottery that was collected, drawn, and described is consistent with the main settlement corpus (*Chapter 6*, nos. 242–48, 250–53, 255), but note the handmade bowl with two handles and knobs (*Chapter 6*, no. 241). A large number of large sherds of the typical Late Roman Amphorae 1 were scattered around the graves, and at least three dipinti were recovered (RN 96/8, 96/10; *Chapter 7*, fig. 50f, h, and one not illustrated).

So far as can be determined, then, the typical Bir Umm Fawakhir grave seems to be a small cist, though at least two larger "tumulus" graves were noted. The cists either utilize natural crevices in the jointed granite or are built up with granite slabs. They do have cairns of rough cobbles piled on top (pls. 92a, 93a), though the cairns generally do not survive as well as the cists. With the possible exception of Outlier 6, Complex 26, all the graves are on rocky ridges above the ancient settlements; if there were any burials on the wadi floor, they would have been buried in sand or swept away long ago. All except perhaps the "tumulus" graves are so small the body must have been flexed, and judging from the fused epiphyses, all the identifiable bones were adult, though infant and child bones are so much more fragile they would have disintegrated even more readily. The graves have little or no room for burial goods apart from personal adornments and a few small items, including perhaps "incense burners." The thoroughness of looting suggests that grave goods may once have been present, but without a single intact grave we cannot know. At the same time, most of the graves have a lot of large sherds scattered around them, especially the Late Roman Amphora 1 wine vessels. Since these are much too large to fit into the graves, they suggest a funeral offering, a funeral or memorial feast, or some combination of the above. The problem is that very little is known about fifth–sixth-century Coptic burials in the Eastern Desert, and the data from the rest of Egypt are scrappy.

The cemeteries around Berenice, Hitan Rayan, and Shenshef on the Red Sea coast south of Quseir al-Qadim are the closest in date to Bir Umm Fawakhir, but judging from the brief published descriptions, they are not identical in form. The ring-cairn cemetery at Hitan Rayan, datable to the fifth–sixth century (Aldsworth and Barnard 1996: 411), consists of ten clusters of ring cairns, with one to ten cairns in each cluster. The cairns are described as ring walls 3 to 4 m in diameter constructed with two faces of large stones with smaller ones packed between faces. The walls are as much as 0.9 m thick and high and seem never to have stood any taller. All the burials had been robbed, but many still had stone-built boxes and covering slabs, fragments of human bone, and potsherds (Aldsworth and Barnard 1996: 437–38). The burials would have been "crouched inhumations in stone boxes or cists" (Aldsworth and Barnard 1996: 437). The cemeteries at Shenshef are not discussed in any detail, but a large number of ring-cairn cemeteries are plotted on the periphery of the site (Aldsworth and Barnard 1998: Shenshef Site Location map). At Berenice itself, over five hundred fifth–sixth-century graves were noted around the site and more along the roads to Hitan Rayan, Hitan Shenshef, and Wadi Kalalat. The construction was like the ring cairns at Hitan Rayan, though the walls seem to have been a little smaller, approximately 75 cm high × 50 cm thick. They, too, contained a stone box that once held a body, and once again all of them had been so thoroughly looted that only a few pieces of bone and pottery were left (Barnard 1998: 397–98). Immediately northwest of Berenice town near the road leading to the Nile lay another cemetery (Sidebotham 2004: 220) with both carefully constructed tombs and simpler cist graves. Of the more elaborate tombs, one contained the remains of a wooden sarcophagus, and another was constructed of coral heads and squared stones. Two of the cist graves contained the remains of a two-year-old child and an adolescent, respectively. Whether the difference in the burial styles is due to status, differential treatment of children versus adults, or ethnic groups is unknown (Sidebotham 2004: 235).

Hobbs (1990: 65–66) gives an account of modern Ma'aza (north of Wadi Hammamat) Bedouin burials. If at all possible the deceased is washed, wrapped in seven layers of cloth, and buried, extended, in a deep (2 m) grave with a side niche for the body. It should not be buried alone but in a cemetery, preferably near water so that people can visit the site often. Hobbs tells of "one Khushaymi who … asked to be buried sixty-two miles (100 km) away at the Umm Anfii'a graveyard. Heeding his wish, his companions laid him to rest at one of the loveliest spots in the Eastern Desert, under the sawtooth peaks of the Umm Araaka range" (Hobbs 1990: 65). The deceased should be buried as quickly as possible, but also commemorated with a small feast and prayers after fifteen days and a large feast after forty days (Hobbs 1990: 65–66).

A fairly extensive first–second-century cemetery at the site of Mons Claudianus has been reported. The graves are said to extend over two and part of a third sloping headland near the main wadi. The graves are rock cut, and most are very simple, having at most a roughly rectangular rubble masonry wall around them. They

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have been thoroughly looted; scattered bone is mentioned, but no pottery or other possible grave goods apart from two crude funerary inscriptions (Maxfield and Peacock 1997: 137).

Nothing is known of the fifth–sixth-century Coptic-period burials at Coptos (Quft), a major terminus — if not the major terminus — of the ancient road to Bir Umm Fawakhir. In the Nile Valley, then, the geographically closest, archaeologically studied graves and cemeteries are those on the west bank of Thebes, from the vicinity of Medinet Habu (ancient Jême) north to Deir al-Bahri. Winlock and Crum (1926: 5) noted a cemetery west of Jême, on the desert edge. It was believed to have been completely plundered by the time of their visit; the surface of the cemetery was scattered with Coptic sherds and red brick fragments, with only a few bits of mudbrick walls left. Some of the tombs were "oblong graves cut in the rock to a depth of a meter; others are pits about two meters deep with small side chambers below, and all seem to be oriented north–south" (Winlock and Crum 1926: 5). This may or may not be the same cemetery described by Hölscher (1954: 42) as lying northwest of Jême, above the remains of the temple of Ay and Horemheb. The burials are mostly late Roman (latter half of the third century), but some are as late as the fifth century. The tombs, sarcophagi, and mummies are nothing like the remains at Bir Umm Fawakhir, though the empty, upside-down amphorae stacked in the entrance shafts and the small mudbrick or stone pedestal altars outside the tombs should be noted. Hölscher suggests that the latter were used to hold lamps or bowls for offerings. The pagan graves seem to be oriented east–west, with the head to the west; the Christian graves, marked by painted crosses, are oriented north–south, with the head to the north (Hölscher 1954: 42–44, pls. 27–28). Several more graves were reported around a small Coptic church, also in the precinct of the Ay and Horemheb temple. A Coptic-period extension was built over some of the east–west pagan(?) graves, but there are also about sixteen north–south graves, some of which are marked as Christian by "crosses scratched or painted on the clay coffins or on the grave walls" (Hölscher 1954: 56–57). All the graves at both locales seem to be extended; none are crouched.

Some small cemeteries were noted around the church at Deir el-Medina and other sites around Deir al-Bahri (Winlock and Crum 1926: 13–14, 21), but the most important cemeteries seem to have been those at the monasteries of Saint Phoibammon and Epiphanius at Deir al-Bahri itself. The monastery of Saint Phoibammon was one of the most important centers of monastic life on the west bank of Thebes from the end of the sixth through the last quarter of the eighth century, and as late as the end of the nineteenth century, the ruins of the monastery, including its three-story tower, were the most prominent remains at Deir al-Bahri (Godlewski 1986: 7). Lepsius excavated a little at Deir al-Bahri and found three Coptic mummies (Godlewski 1986: 15), but Mariette's clearance operations in 1858, 1862, and 1866 were the first to remove large segments of the monastery and reveal parts of the Eighteenth Dynasty temple underneath (Godlewski 1986: 16–17). It was Naville of the Egyptian Exploration Fund, however, who completed the removal of the monastery and the clearance of the temple between 1893 and 1899, with very little documentation, though he did report two groups of Coptic mummies (Godlewski 1986: 17–19). Specifically, there seem to have been two cemeteries, one on the upper terrace of Deir al-Bahri in the vicinity of the royal chapels, and the second on the lower terrace, closer to the monastery itself. In the first cemetery, Naville found some baked brick benchlike structures, probably about 50 cm high, and two or three mummies of monks in each. The bodies were wrapped in plain shrouds, tied by bands, and draped with a leather apron, probably like the ones found at Epiphanius (see below). The graves on the lower terrace were of two types, one very simple and the other elaborated with painted cloths and masks. For the simple burials, the body was wrapped in cloth and tied with bands; a few had labels in Greek or Coptic. In the fancier burials, a plastered and painted cloth covered the bodies, and a modeled and painted plaster mask covered the faces. Both men and women were buried there, and it is suggested that the cemetery served the residents of Jême and other villages close by (Godlewski 1986: 47–49). The fancier mummies may be somewhat earlier, third–fourth-century Greco-Roman, rather than Coptic (Winlock and Crum 1926: 13–14; Godlewski 1986: 19).

The most useful description of the burials at Deir al-Bahri is that of the small cemetery at the monastery of Epiphanius. The sheltering structure consisted of four brick piers supporting a dome on pendentives; there were ten or eleven burials underneath or as close as possible to the side. Five of the burials were at least partly preserved. The bodies were extended, sprinkled with salt and juniper (possibly an unsuccessful attempt at mummification), and wrapped in four or six large, plain, new sheets of linen. The excess material was "pillowed" at the head and feet, and some of the bodies had a final, outer sheet. All were wrapped with crisscross tapes, and then a tape or pair of tapes was laced through the X's on all four sides. Finally, the monk's leather apron and girdle were draped over the bundle and his grass sleeping mat placed on top (Winlock and Crum 1926: 45–50).

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None of this is at all reminiscent of the graves at Bir Umm Fawakhir, nor is there any evidence for monasticism there.

Farther afield, recent work at el-Hibeh (south of Beni Suef) revealed a number of Coptic/Byzantine-period mummies from a part of the site called the North Gate Looter's Pit. At least ten of them have a preliminary date of fourth–fifth century A.D. They are mummified, clothed in their tunics, and wrapped "with linen bands or red/black cords, with two long pieces counterwrapped to produce a diamond patterning over most of the body" (Redmount 2004). Some of the faces were further protected by a very special long oval reed basket or mask (Redmount 2004).

A grave at Sheikh Said near Tel el-Amarna, excavated in 1923–1924, contained many pieces of bronze, faience, shell, and glass jewelry; a lead cross; fragments of embroidered cloth; and enough pottery to date it to the first half of the sixth century A.D. (Jones 1991: 142–43). There is no indication of the structure or dimensions of the grave.

Although there are parallels in the pottery corpus, the graves at Qustul in the Sudan have few resemblances to those at Bir Umm Fawakhir, apart from the often crouched position of the body. The Qustul graves are generally excavated trenches or undercut shafts (boot shaped in cross section), roofed and/or blocked, and large enough to hold an array of grave goods such as personal ornaments, tools, and ceramic bottles and goblets (Williams 1991: 350–83). The shaft-type tombs at Qustul Cemetery R range in date from the late fourth to the late fifth or early sixth century A.D. (Williams 1991: 15). The fourth-, fifth-, and early sixth-century X-Group tombs at Firka and Qasr Ibrim present a similar picture. The Firka burials are described as "mounds" or even "barrows" (Kirwan 1939: xii), but even the smallest are more elaborate than the Eastern Desert graves, and the largest have several chambers, multiple burials, and generous grave goods, and all but one of the reported burials are extended, flat on the back (Kirwan 1939: 17). Cemeteries 192 and 193 at Qasr Ibrim contained a large number of X-Group graves, also covered with stone and rubble mounds ranging in diameter from about 3.5 to 19 meters (Mills 1982: 5ff.) The burials are grouped into six types, the simplest of which is a rectangular pit covered with locally available stone or mudbrick, and the most complicated have ramps, multiple burials, and/or vaulted roofs (Mills 1982: 3). Again, almost all bodies were laid flat on their backs and not crouched, and grave goods are apparently as abundant as the families' means would permit (Mills 1982).

The question of religion at Bir Umm Fawakhir is vexed. Evidence from the main settlement and outliers that might relate to religious practices is sparse. The graves at Bir Umm Fawakhir may someday give some clues about local religion and belief — if any — in the afterlife, but for the purposes of this report, we have only clawed-up surface remains. If the dead were buried in the Christian tradition, then technically no grave goods at all would have been necessary. The manner of burial would have no effect on the soul's fate in the hereafter, though it might matter to the survivors. Memorial services and grave markers would have been for their benefit. If the deceased were to be buried in the ancient pagan tradition, then the family might have tried to send the body back to the Nile Valley. That this was done in the Roman period is indicated by the Coptos Tariff, which can be dated to A.D. 90. It lists "for taking up or bringing back a coffin drachma 1, obols 4" (Bernand 1984: 200–01; Weigall 1909: 61–63). Failing that, the family might at least have tried to lay the body out properly, which is to say, extended and wrapped it in his or her clothes and burial bandages, if not fully mummified. Shreds of cloth or basketry are conspicuously absent from all graves that the Bir Umm Fawakhir Project inspected. Instead the bodies were crouched in stone cists, but without a single bone in situ there is no way to gauge their orientation. The graves are too small to accommodate any grave goods larger than personal items. Only the viciousness of the looting of the graves here and at Berenice suggests that at least a few did have some sort of grave goods. No memorial markers were spotted. The presence of large quantities of amphorae and dish sherds around the graves suggests a funerary and/or memorial feast, but that could be considered pagan as well as Christian.[11]

[11] If the deceased were a member of a nomadic tribe, then we have a situation where few or none of the inhabitants of the large settlement at Bir Umm Fawakhir were buried there, but scores of nomads were. Little is known about the nomads of the period, much less their burial practices, but if they used Nile Valley pottery at graveside they will be more elusive still.

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The reasons for considering the ancient Fawakhiris Christians are the crosses and other symbols stamped on the dishes, the XP dates on the amphorae, and the fact that the Byzantine empire had long been officially Christian. Outside of Alexandria, however, the situation was not so clear, and there were many pagans and pagan survivals into the fifth and sixth centuries. Frankfurter argues for "an Egyptian local religiosity that continued with astounding resilience well into the Byzantine period" (Frankfurter 1998: 13).

The temple of Isis at Menuthis, near the Canopic mouth of the Nile and only 20 km east of Alexandria, was not destroyed until A.D. 484 (Frankfurter 1998: 22), and the last pagan Egyptian temple, that of Isis on Philae, was not closed until A.D. 535. On the occasion of Shenoute's raid on the temple at Plewit in the fifth century, the villagers united against the abbot and tried to use traditional execration rites "according to their books," which implies people who could still read them (Frankfurter 1998: 209). Also dating to the fifth century is an account of one Apa Moses' attempt to drive the "demon" Bes from his temple at Abydos (Frankfurter 1998: 129–30) and the story of a raid by Dioscorus and his monks on a "Kothos" temple during which Kothos' oracle or priest roused the villagers to the defense of the sanctuary (Frankfurter 1998: 209). At Berenice, two pagan shrines, one perhaps dedicated to Isis, continued in use into the late fourth and fifth centuries (Sidebotham 2004: 235–36). As noted in *Chapter 3*, no signs of a church have been found at Bir Umm Fawakhir, though the little Min temple remained standing until the twentieth century, and the puzzling Complex 26 in Outlier 6 has a few shrinelike features.

Aspects of the old religion survived at a local level among the Egyptian peasants and villagers for centuries after the official conversion of the Byzantine state to Christianity. Abbot Shenoute of the fifth century delivered a sermon on native religion in the Panopolis region, which is close to Sohag. He deplored the worship of "Shai" or "fate" of a village or home, and the burning of lamps and incense (Frankfurter 1998: 63). Shenoute also accused people of backsliding in hard times and resorting to enchanters, oracles, and amulets. He even mentioned one case where the magical fox claws bound to the legs of a sufferer were obtained from a monk (Frankfurter 1998: 216). In a raid on the house of a landlord by the name of Gesios, Shenoute found "idols" in an inner room, including an image of Pan-Min, religious books, lampstands, and offerings (Frankfurter 1998: 135). Makarios of Tkow, in Middle Egypt, reported the worship of "Kothos" figurines in niches of houses in the fifth century. Terra-cotta figurines were manufactured through the fourth century and at least mentioned in the fifth century (Frankfurter 1998: 132), but it should be noted that they are very rare at Bir Umm Fawakhir (one fragment of a horse's head, Meyer et al. 2000: 80). A very late survival is a sixth–seventh-century magical spell book from the monastery of Epiphanius at Thebes (Frankfurter 1998: 258). The 1999 excavations at Bir Umm Fawakhir recovered a small bronze Bes amulet (Meyer 1999: 30), though that is a small thing on which to hang the faith of hundreds of ancient Fawakhiris.

We also agree with Frankfurter's conclusions about late Roman religion, namely, that religion was a community affair. He says that "it was not individuals but … entire villages … that embraced or rejected Christianization" and thus that "conversion was by necessity a slow and patchwork process, dependent upon the singular charisma of a motivated bishop or abbot rather than some putative 'pagan decline'" (Frankfurter 1998: 20). Whole villages either were Christianized or clung to paganism. With the demise of the great temples, dispersal of the priesthood, and loss of the temple libraries and knowledge of the ancient hieroglyphic script, the surviving pagan traditions were centered on oracles of various sorts, small shrines, and households (Frankfurter 1998).

The ancient Fawakhiris surely "had a religion" in the sense that they considered themselves devotees of Min or Bes or were baptized into the Christian faith. If nothing else, they followed a traditional or a Christian calendar. Were the weeks seven or ten days long? What were the holy days, feasts, and holidays? Which pattern of work and festival did they follow? A priest and church are not necessary to celebrate Easter, but a calendar is. A great temple and a lavish procession with the god's image are not necessary to celebrate Min's festival, just knowledge of which traditional month and day it falls on.[12]

[12] As anyone who has worked in Egypt will know, it is possible to work with multiple calendars, Western, Islamic, and Coptic.

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Finally, churches, shrines, and other evidence of religious practices may never have been abundant at ancient Bir Umm Fawakhir. Generally speaking, miners are not famous for piety, nor mining towns for large temples or churches, especially if the settlement is short-lived. What might be called formal religion in the sense of elaborate religious structures and a hierarchical priesthood is seldom in evidence. At Dolly's Creek, Australia, for instance, churches were a later development (Lawrence 1998: 42). Nevertheless, given the dangers of the mining profession, miners tend to be attentive to prayers for safety and protection[13] and personal rituals or superstitions that may or may not be sanctioned by the "great tradition."[14] Thus the small Ptolemaic Min temple — and perhaps other small religious installations — at Bir Umm Fawakhir may have been sufficient for the miners and for passing travelers who felt the need of the divine protection.[15]

We can only state the problem and make some suggestions for future research. The cist and cairn graves at Bir Umm Fawakhir, Shenshef, and Berenice do not follow the pattern(s) of contemporary Nile Valley burials, but why this should be so is unknown. Further examination of the graves and cemeteries should have a high priority if research is ever resumed at Bir Umm Fawakhir. It might reveal something about the population; even scrappy infant and child bones would indicate the presence of women, and better-preserved bones could give some information about the life and health of the people. The selection of pottery around the graves might tell us something about burial and/or memorial rites. If any unlooted graves could be located, they would show at least the position and orientation of the body, and if there were any grave goods, they might provide a clue as to the religious expectations for the next life.

[13] Traditional mining and smelting in sub-Saharan Africa were risky occupations hedged around with songs, rites, and rituals (Childs 1998; Herbert 1998).

[14] For instance, the "El Tio" figures Bolivian miners set up next to their work sites probably are not recognized by the Catholic Church. El Tio represents a spirit or divinity, something like a Christian devil, who is believed to own and control underground lodes and riches (Knapp 1998: 12).

[15] Much more impressive temples from earlier periods are certainly known, for example the long-lived pharaonic rock-cut shrines at the Serabit al-Kadim turquoise mines and the Roman-period temples at the Mons Claudianus and Mons Porphyrites quarries.

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CHAPTER 6

POTTERY FROM THE 1996 AND 1997 SURVEYS

Carol Meyer and Lisa Heidorn

All the pottery from the 1996 and 1997 seasons comes from surface collections. The primary purpose of the sherd collections was dating the main settlement and outliers, but we also wanted to see whether any differences could be detected between one part of the site and another. We attempted to continue the systematic collections started in 1992 from different types of loci, specifically houses and trash heaps. (Collecting from the one-room outbuildings proved uninformative.) In 1996 we were so short of time that only one large collection was taken from the trash heap between Buildings 108 and 109, plus a small sample from the chinking of Building 106 and less systematic collection from Building 106 itself. In 1997 Heidorn took samples from outside Building 177 and from inside Building 176, both on the Hillock. The problem with samples from houses turned out to be twofold: first, the houses themselves were relatively clean and the surface was covered with sand; and second, what sherds there were generally seemed to have been washed down from a trash dump or, occasionally, fallen from wall chinking. In other words, sherds found in houses may or may not have had anything to do with their occupation. Building 176 up on the Hillock was the only structure more or less free from these problems. Heidorn also collected sherds from Complex 26 in Outlier 2 and nearby buildings. The samples from the trash heaps near Buildings 108 and 177 were collected with the same "dog-leash" method used in 1992 and 1993, which is to say, a circle with a 2 m diameter was described on the ground, and as many sherds as possible were picked up in five minutes. This was an attempt to get a more nearly representative sample of everything, coarse wares as well as fine, body sherds as well as diagnostics. The samples from Buildings 106 and 176 were restricted to those structures; the sample from Complex 26 came from it and nearby huts. We were interested in the stamped plates because they are some of the most carefully crafted pottery on the site, and they carry Christian symbols such as crosses and palm leaves. Therefore we collected and noted the findspot of all that we encountered. A high percentage of them, thirteen out of twenty, came from the Hillock around Buildings 176 and 177, so they are here treated as another group (fig. 35).[16] All the other potsherds were collected because they were special or interesting in some respect.

Since all the sherds are surface finds, we made no attempt to create a definitive corpus of Eastern Desert Coptic/Byzantine-period pottery, and since they could have been moved around by flash floods, tumbling downhill, or humans, we made no attempt to associate them with a house, much less a room function. The pottery is important because it is our main dating evidence for Bir Umm Fawakhir, but it is dated by comparison to other corpora, not by stratigraphy or other finds from Bir Umm Fawakhir. Because the sherds were collected for specific purposes — dating the main settlement and outliers and attempting to find differences in usage from one end of the site to the other — we present the specific collections separately. This makes five groups in the main settlement (four samples from Buildings 108, 106, 177, and 176, and then all the other sherds) and several smaller groups for the various outliers and cemeteries. When the groups are large enough, however, we attempted to follow more or less the same order by ware type (imported, Aswan pink, silt, marl, handmade, unknown) and then by shape (open forms such as bowls to more closed forms such as jars and amphorae and then detached pieces such as bases and decorated body sherds). Small groups of twelve or fewer sherds are simply arranged by form. The comparanda are not exhaustive; they are only intended to provide a reasonable range of dates. On the one hand, then, we expect the Bir Umm Fawakhir 1996 and 1997 pottery to augment the as-yet sparse corpus of fifth–sixth-century Eastern Desert pottery, but on the other, the sherds excavated in 1999 yielded a better controlled corpus. When the pottery from the 1999 excavations are assembled, tabulated, and studied, then we will be able to present a more formal corpus.

[16] Building 177 was excavated in 1999 partly because of this apparently special concentration of stamped sherds. Preliminary results are reported in Meyer 1999: 25–37; the full study will be published in the final report on the 1999 season.

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The same conventions were used for the main settlement pottery as for the pre-Coptic pottery in *Chapter 2*. We attempted to describe ware type, temper, and color and to draw the sherd outline if it was less than a quarter of the diameter of the vessel, but time was too short to include all the details we would have liked.

POTTERY DESCRIPTIONS

FIGURE 30. POTTERY FROM MAIN SETTLEMENT, SAMPLE FROM DUMP BETWEEN BUILDINGS 108 AND 109

PINK

83. Ring base, probably from small cup or bowl. Light red fabric; 2.5YR 6/6 section; red slip interior and exterior 10R 5/6. Pink fabric; medium amount mica, red bits and chunks; medium limestone bits; abundant black bits. Main settlement, Building 109.

SILT

84. Shallow bowl, remnant of red slip on exterior rim. Buff to pink; section 10YR 6/6; surface 2.5YR 6/6; red band at rim 10R 5/6. Silt; medium amount sand, black bits. Main settlement, Building 109. Similar to a bowl published with the 1993 corpus (Heidorn 2000: 86–87, no. 40). See also vessels from Elephantine dateable to the second quarter of the fifth century to the seventh century but of a different, light red (IA) fabric (Gempeler 1992: 70, fig. 14:5–7). Gempeler (and others) note the similarity to ARS 99, which may have begun in the later fifth and early sixth century A.D.; see Hayes 1977: 283. See M. Jones 1991: 140, fig. 1:4 (ca. A.D. 550–650, according to Ashmunein examples); Spencer, Bailey, and Burnett 1983: 30: E 35; examples in W. Y. Adams 1986: 543, Ware R 4 in form D 74, and fig. 302 (mainly ca. A.D. 550–850); Hayes 1972: 391–92: N and O (Epiphanius bowls probably dated sixth century A.D.); and Jacquet-Gordon 1972: E24 and E26. A similar bowl from Kellia is assumed to be an Aswan product; see Ballet and Picon 1987: 43, fig. 6:3 (resembles Egloff's type 35 of the seventh–eighth centuries A.D.), and Ballet et al. 1991: 142, fig. 22 (from Saint Simeon near Aswan). Ballet notes that north of Edfu the bowls are made of Nile silt clay rather than Aswan clays.
85. Flanged bowl with burnished interior. Red-brown; section 5YR 5/8 (red-yellow with red core); red slip 10R 4/6. Silt; interior burnished; gray, yellow, and white bits. Main settlement, Building 109. There is a sixth- to seventh-century parallel at the Esna hermitages (Jacquet-Gordon 1972: pl. 222:34). If the lower part of the bowl is carinated, then there may be parallels at Elephantine of a different, light red fabric (IA), middle to end of sixth century (Gempeler 1992: 77, fig. 22:1–2); if not carinated, see a longer-lived type of the last quarter of the fourth to the second quarter of the sixth century (Gempeler 1992: 94, fig. 36:1–2).
86. Ledge-rim bowl, grooves on edge and top of rim, diameter uncertain. Light red-brown fabric 2.5YR 5/6 with tan core; red slip exterior and interior 10R 4/6. Silt; some limestone bits and chunks, medium amount mica, a little sand. Main settlement, Building 109. See an example from Shenshef, fifth century and into sixth (Tomber 1998: 174–75 no. 58).
87. Large deep bowl with handles. Red-brown. Silt. Main settlement, Building 109. Two similar vessels from the 1993 season were published (Heidorn 2000: 84–85, no. 7; 90–91, no. 104 [lacking handles]). Similar forms are found in Jacquet-Gordon 1972: pls. 220:C26–27 and 229:W1 (decorated silt vessel); Myśliwiec 1987: 154 nos. 1945, 1947, 1954 (all handleless); and smaller silt examples with red or white slip and painted decoration in Gempeler 1992: 154, K 233 (no handles) (perhaps sixth–seventh century A.D., but close in form and decoration to K 513 of the late fifth–seventh century A.D.).
88. Bowl or basin. Brown fabric 2.5YR 3/4 exterior; 5YR 4/4 section with 10R 4/8 core. Silt; medium amount mica, limestone bits and chunks. Main settlement, Building 109.
89. Amphora shoulder (max. dm 10 cm). Dark red-brown fabric with gray-black core in most of section; 5YR 4/3. Silt; abundant limestone bits and mica. Main settlement, Building 109.
90. Amphora toe. Brown 5YR 4/4. Silt. Main settlement, Building 109. See example with rib on toe from Firka, X-Group (Kirwan 1939: pl. 23).
91. Ring base, possibly from goblet. Pink-brown; 2.5YR 6/6 section; 2.5YR 5/4 exterior. Silt; some sand, black bits, limestone bits, mica. Main settlement, Building 109.
92. Low ring base, faint combed lines on exterior. Red-brown with purplish core; section 2.5YR 5/8; surface 2.5YR 5/4. Silt; medium amount mica, a few limestone bits. Main settlement, Building 109.
93. Ring base. Red-brown; section 2.5YR 4/6; cream slip or deposit on surface. Silt; medium amount white bits, some chaff, few black chunks, little mica. Main settlement, Building 109.

FABRIC UNCERTAIN

94. Ring base. 2.5YR 3/4 interior surface. Uncertain fabric, very coarse; abundant limestone chunks and stones, red to brownish rectangular slivers, medium amount white bits. Main settlement, Building 109.

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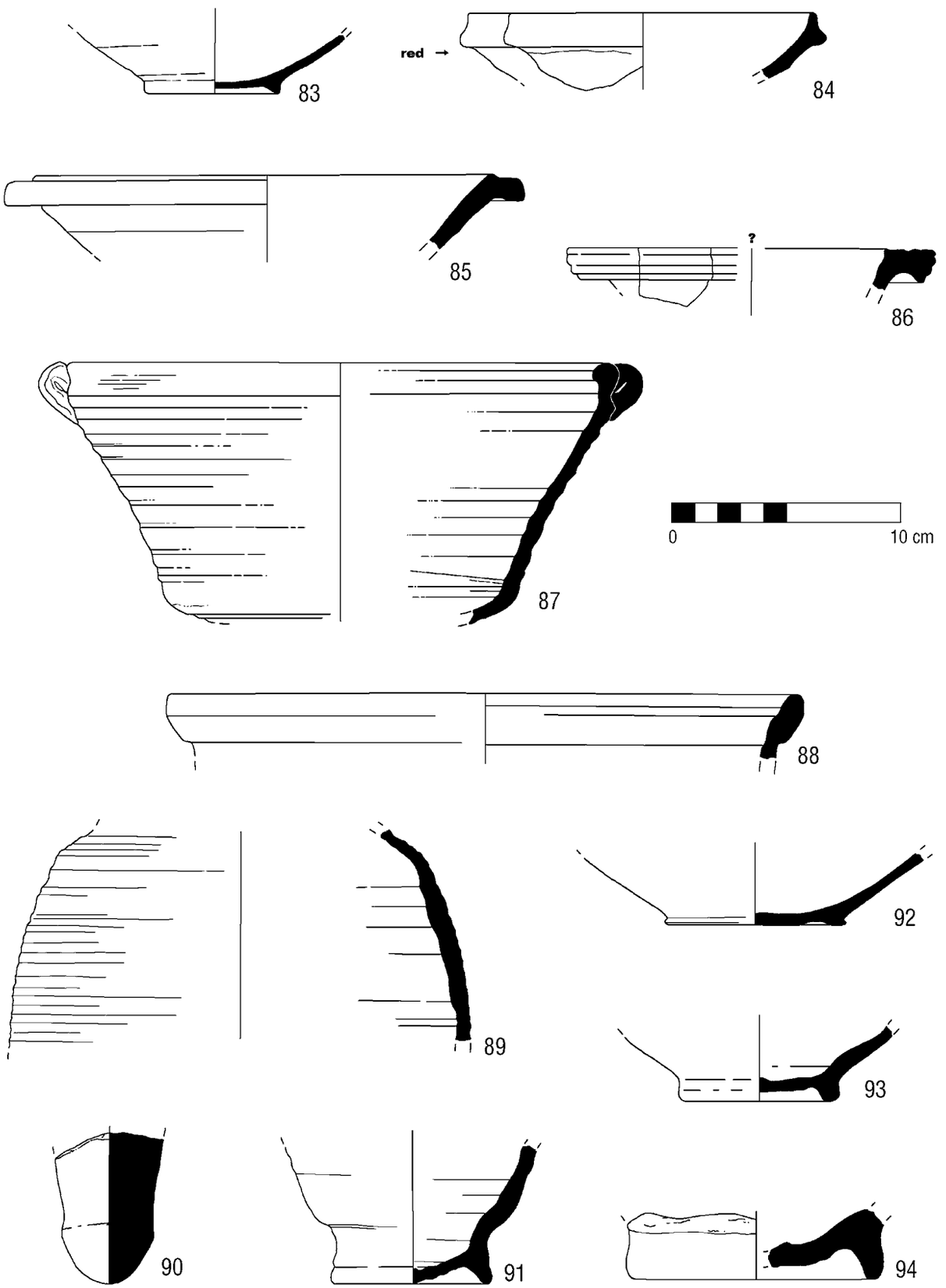


Figure 30. Pottery from main settlement, sample from dump between Buildings 108 and 109 (nos. 83–94)

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FIGURE 31. POTTERY FROM MAIN SETTLEMENT, SAMPLES FROM DUMP BETWEEN BUILDINGS 108 AND 109 (*CONT.*), AND BUILDING 106 AND CHINKING

MAIN SETTLEMENT, SAMPLES FROM BUILDING 108 AND BUILDING 109 DUMP (*CONT.*) (NOS. 95–97)

MARL

95. Bowl or basin (dm 26 cm). Porous marl. Large coarse and small black temper; medium amount large limestone pieces; some red chunks. Main settlement, Building 109.
96. Cooking pot with handles (dm uncertain). 10YR 7/3; 2.5Y 7/4 exterior slip. Marl; medium amount black chunks and bits, medium amount brown chunks, limestone bits, some reddish bits and sand. Main settlement, Building 109. See perhaps a pot from Elephantine, third–fourth century in date, of a different, light red (IA) fabric (Gempeler 1992: 171, fig. 103:12).
97. Combed decoration, jar(?). Hard-fired with smoothed exterior. Pale pinkish beige; 10YR 7/4 exterior; grayish core. Marl; very abundant limestone bits; a few red bits. Main settlement, Building 109. Combed decoration noted in 1992 corpus, but on a "dark-reddish-gray" sherd (Heidorn 1995: 85, fig. 30c). Very little combed decoration noted at Elephantine, but see a late amphora (Gempeler 1992: 200)

MAIN SETTLEMENT, SAMPLE FROM BUILDING 106 AND CHINKING (NOS. 98–104)

PINK

98. Goblet. Pink with reddish rim; 7.5YR 7/4; rim 2.5YR 5/6. Pink fabric; abundant limestone bits; medium and small-size black bits; some small black chunks. Main settlement, Building 106. Parallels from Berenice (Hayes 1995: 34–35) and Shenshef (Tomber 1998: 171, 173 no. 39) are dated to the fifth century and into the sixth.

SILT

99. Shallow bowl, cream paint or spots on rim. 5YR 4/3 surface; 5YR 4/4 section. Silt; medium amount limestone bits and mica, some black bits. Main settlement, Building 106. Many examples of this type at Elephantine have stamped or rouletted decoration; they are characteristically made of a different, light red (IA) fabric and are dateable to the second quarter of the fifth to the last quarter of the sixth century (Gempeler 1992: 69–70, fig. 13:3, 9).
100. Casserole with piecrust rim. Red-brown 2.5YR 4/6 slip or surface; red-brown fabric with thin purplish core. Silt; medium amount sand, some mica, few limestone bits. Main settlement, Building 106. A parallel from Elephantine is a little smaller but has coarser "piecrust" indentations and is made of a different, light red (IA) fabric. The type is probably fourth–fifth century (Gempeler 1992: 148, fig. 83:5).
101. Globular cooking pot. Red-brown; surface 2.5YR 5/4; section 2.5YR 5/8 with thick grayish layer inside. Silt. Main settlement, Building 106. Also found in the 1992 season (Heidorn 1995: 85, fig. 30d). For similar vessels, see Prickett 1979: pl. 85q (Late Roman); Myśliwiec 1987: 145, nos. 1794 and 1804 (A.D. 395–640); Jacquet-Gordon 1972: pl. 225:L6 (A.D. 500–750); and first–fourth century and later pottery from Badia' (Sidebotham, Zitterkopf, and Riley 1991: 607–08, fig. 30:39).
102. Amphora toe. Brown, 7.5YR 5/4. Silt fabric, surface in poor condition, shape crooked. Many limestone chunks and slivers; perhaps mica. Main settlement, Building 106, chinking in northeast rooms. If this is the toe of a Late Roman Amphora 7, then the dates would range from fourth to sixth centuries (Pollard 1998: 156). For an example of an amphora with a pointed toe, sixth–seventh century date, see the Esna hermitages (Jacquet-Gordon 1972: pl. 227:4).
103. Amphora toe. Brown 7.5YR 5/4. Silt, very coarse. Main settlement, Building 106, chinking in northeast rooms. For a thick, stubby amphora toe, see the Esna hermitages, sixth–seventh century (Jacquet-Gordon 1972: pl. 227:3).

MARL

104. Large bowl or basin with black painted line and two mend holes. Light tan fabric, 7.5YR 6/4 section; brown slip surface; black painted band on exterior. Marl? Medium amount mica, some sand and limestone, a few black bits. Main settlement, Building 106.

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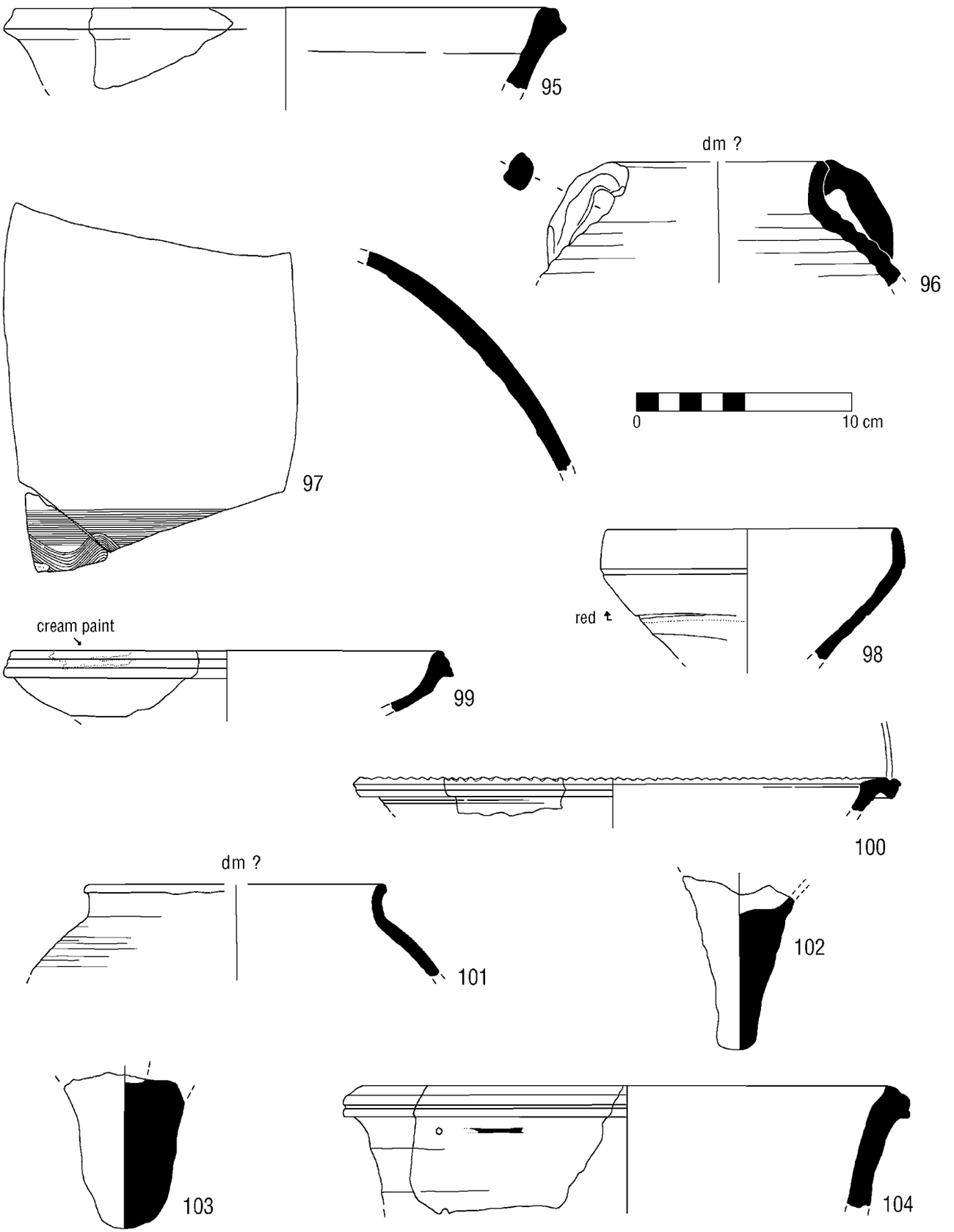


Figure 31. Pottery from main settlement, samples from dump between Buildings 108 and 109 (*cont.*) (nos. 95–97), and Building 106 and chinking (nos. 98–104)

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FIGURE 32. POTTERY FROM MAIN SETTLEMENT, SAMPLES FROM BUILDING 106 AND CHINKING (*CONT.*), AND SAMPLE FROM DUMP NEAR BUILDING 177

MAIN SETTLEMENT, SAMPLES FROM BUILDING 106 AND CHINKING (*CONT.*) (NOS. 105–06)

MARL (cont.)

105. Amphora rim and neck (RN 96/12). Red-yellow surfaces 5YR 6/6; tan section layers 7.5YR 6/4; thick gray core 2.5YR 5/6. Marl; abundant mica, medium to small-size gray-black bits; some limestone chunks, red bits. This came from Building 106, from the wall chinking of the third room from the southeast corner, which is probably the room now labeled "q."

106. Jar(?) shoulder with black painted spirals (max. dm ca. 14 cm). Red slip exterior 10R 6/6 with black paint; tan-pink fabric 2.5YR 6/4. Marl; some sand, black bits, limestone, and red-brown bits. Main settlement, Building 106.

MAIN SETTLEMENT, SAMPLE FROM DUMP NEAR BUILDING 177 (NOS. 107–16)

PINK

107. Bowl with vertical rim. Very worn interior and exterior; no polish remains. Pink buff 10R 6/6; medium brown slip 10R 5/8. Pink fabric; abundant black bits; medium amount sand, red bits, limestone bits; one large angular maroon particle. Main settlement, Building 177 sample. Parallels at Esna hermitages, sixth–seventh centuries (Jacquet-Gordon 1972: pl. 224:7) and Elephantine, similar fabric, dateable to the second half of the fifth to the last quarter of the sixth century (Gempeler 1992: 69–70, fig. 70:3).

108. Bowl with grooved rim. Evidence of polishing under rim. Dark pink (not on Munsell chart); red slip interior and exterior 10R 5/8. Pink fabric; abundant black bits; some limestone bits and mica; a few red chunks. Main settlement, Building 177 sample; slope south-southwest of building. See parallels at Elephantine, similar fabric, dateable to the second half of the fifth to the last quarter of the sixth century (Gempeler 1992: 69–70, fig. 70:4).

109. Bowl with grooved rim. Pink 2.5YR 6/6; red slip interior and exterior 10R 5/8. Pink fabric; abundant dark bits; medium amount small sands and limestone bits; a few small red bits. Main settlement, Building 177 sample; slope south-southwest of building. See no. 108 above, and a similar piece from the 1993 season (Heidorn 2000: 84–85, no. 26). Similar bowls are found in Spencer, Bailey, and Burnett 1983: 30–31 (E 36.15 and E 37.1 of ca. A.D. 550–700+. See also E 38 and E 39.4). Hayes dated forms H and I from Epiphanius to the second half of the fifth century A.D. He believes form K is a later development, from the beginning of the sixth century A.D.; see Hayes 1972: 389, 391–92, and fig. 86. It is similar to ARS 82, dated by Hayes to the mid- to late fifth century A.D.; see Hayes 1977: 283. (It is not clear whether this sherd is of foreign or Egyptian manufacture.) See Rodziewicz 1976: 54–58, types O 28–37 and 59, type O 40 (fifth century A.D. and on). Rouletting appears on examples from Alexandria only in the second quarter of the seventh century A.D. See also Pierrat 1991: 176, fig. 46e (Aswan ware dated after A.D. 650–750+) and p. 193, fig. 65b (North African sigillata of late seventh century A.D.); Jacquet-Gordon 1972: pl. 224:H4 and H7; Egloff 1977: 79–81, types 31–33 (between fifth and beginning of eighth century A.D.). One production center was found at the monastery of Saint Simeon near Aswan; see Ballet et al. 1991: 141–42, fig. 24.

110. Shallow bowl with flanged, slightly ribbed rim (dm 24 cm). Pink 10R 6/6; bright red slip interior and exterior 10R 5/8. Pink fabric; medium hard to hard; abundant black bits and mica(?); medium amount limestone bits; some red chunks; a few sand particles. Main settlement, Building 177 sample. Paralleled at Elephantine, similar fabric, beginning to middle of the fifth century (Gempeler 1992: 68–69, fig. 11:16).

111. Shallow bowl or plate. If the rim bends down and then in again, it might be a small plate with a wide rim. Pinker than 5YR 7/4; thick red slip interior and exterior 10R 5/6. Pink fabric; mica, red chunks, black bits, limestone bits. Main settlement, Building 177 sample; slope south-southwest of building.

112. Small globular jar (dm ca. 9–11 cm). Very worn. Pink fabric 5YR 7/4; red slip 10R 4/8. Abundant black bits, mica, medium amount limestone bits; some small sands. Main settlement, Building 177 sample; slope south-southwest of building.

113. Low ring base (dm 8 cm). Very worn sherd. Pinker than 5YR 7/4; red-orange slip interior and exterior 10R 5/8. Pink fabric; abundant black bits; medium amount limestone bits; some mica; a few red bits. Main settlement, Building 177 sample; slope south-southwest of building. For a large bowl with a base that bulges down below the base ring, see the Esna hermitages, sixth–seventh centuries (Jacquet-Gordon 1972: pl. 221:1).

114. Ring base. Light yellow-brown core 2.5YR 6/6; orange-yellow surface 2.5YR 5/6. Hard pink Aswani ware, but different from usual; abundant largish black bits and small sands; a few limestone bits. Main settlement, Building 177 sample; slope south-southwest of building.

SILT

115. Bowl. Bright yellow-red-brown; red slip interior and exterior. Silt; no chaff. Main settlement, Building 177 sample; slope south-southwest of building.

116. Deep bowl or basin with black painted lines. Red-brown 5YR 5/4 with red layers and purplish core; white slip exterior and into interior. 10YR 8/3; red slip over white 10R 5/8; black painted lines. Silt; much mica and sand; some limestone bits and chaff. Main settlement, Building 177 sample. For a possible parallel, see a vessel from Elephantine, of a different, light red (IA) fabric, dateable to the third–fourth centuries and perhaps into the fifth (Gempeler 1992: 155–56, fig. 89:2).

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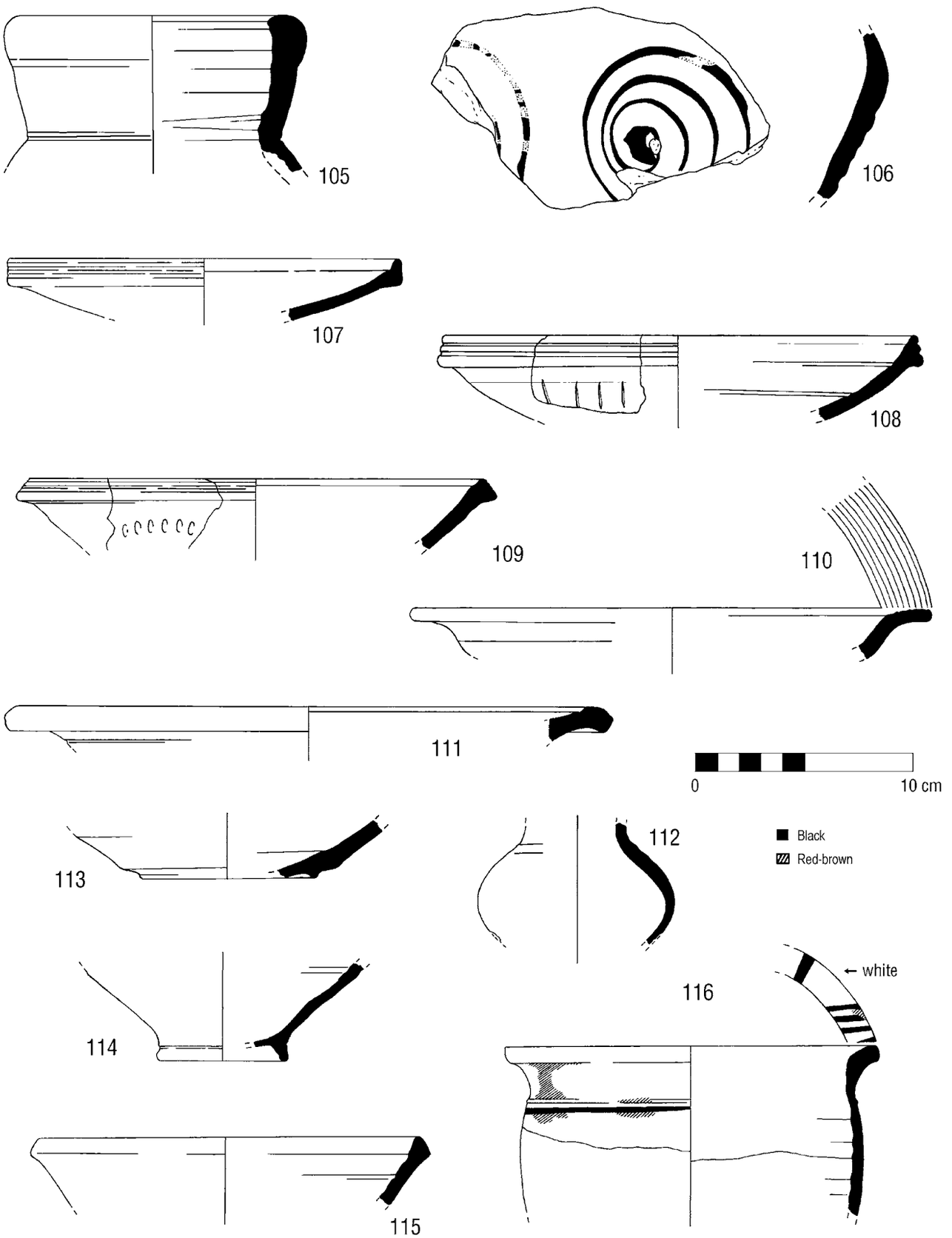


Figure 32. Pottery from main settlement, samples from Building 106 and chinking (*cont.*) (nos. 105–06), and sample from dump near Building 177 (nos. 107–16)

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FIGURE 33. POTTERY FROM MAIN SETTLEMENT, SAMPLE FROM DUMP NEAR BUILDING 177 (*CONT.*)

SILT (cont.)

117. Carinated pan. Bright red-brown silt with medium thick gray core, purple layers on either side. Silt, hard fabric; abundant mica; medium amount limestone bits; some limestone chunks. Main settlement, Building 177 sample. See a bowl without a foot from the Esna hermitages, sixth–seventh century (Jacquet-Gordon 1972: pl. 220:13).
118. Large bowl. Bright orangey fabric 2.5YR 5/6; red slip exterior and interior 10R 4/6. Silt; abundant mica; medium amount sand, limestone bits; some chaff. Main settlement, Building 177 sample. For an example with black paint from the 1992 season, see Heidorn 1995: 81–82, fig. 29c. See also a bowl from Shenshef, fifth century and into sixth (Tomber 1998: 74–75, no. 56).
119. Very large bowl (dm 36 cm). Red-brown silt with purplish core, red layers on either side. Silt; much chunky temper; abundant limestone chunks; sand; some mica and chaff. Main settlement, Building 177 sample; slope south-southwest of building.
120. Very large bowl or basin (dm 47 cm). 10R 5/6 section; red slip exterior. Silt; abundant mica; medium amount limestone chunks and chaff; some sand. Main settlement, Building 177 sample. String decoration.
121. Casserole with piecrust rim. Red-brown clay with red layers either side of brownish core; chocolate brown surface 5YR 4/4. Silt, much mica and sand; some limestone chunks; a few bits of chaff. Main settlement, Building 177 sample; slope south-southwest of building. Similar vessels from the 1992 season (Heidorn 1995: 81, fig. 29a) and Elephantine, fifth century, similar red-brown fabric (Gempeler 1992: 160, fig. 93:1).
122. Casserole. Red-brown 2.5YR 4/6; thin black core; red slip interior and exterior 10R 5/6. Silt; abundant mica; medium amount limestone bits and sand. Main settlement, Building 177 sample; slope south-southwest of building.
123. Casserole. Red-brown silt with gray core; red slip exterior and into interior. “Typical silt,” no chaff. Main settlement, Building 177 sample; slope south-southwest of building. See perhaps example from Elephantine, similar red-brown fabric but with white paint, date uncertain (Gempeler 1992: 175, fig. 108:7).
124. Jar with step rim. Deep notch or groove near rim. Silt with red slip. Silt. Main settlement, Building 177 sample; slope south-southwest of building.

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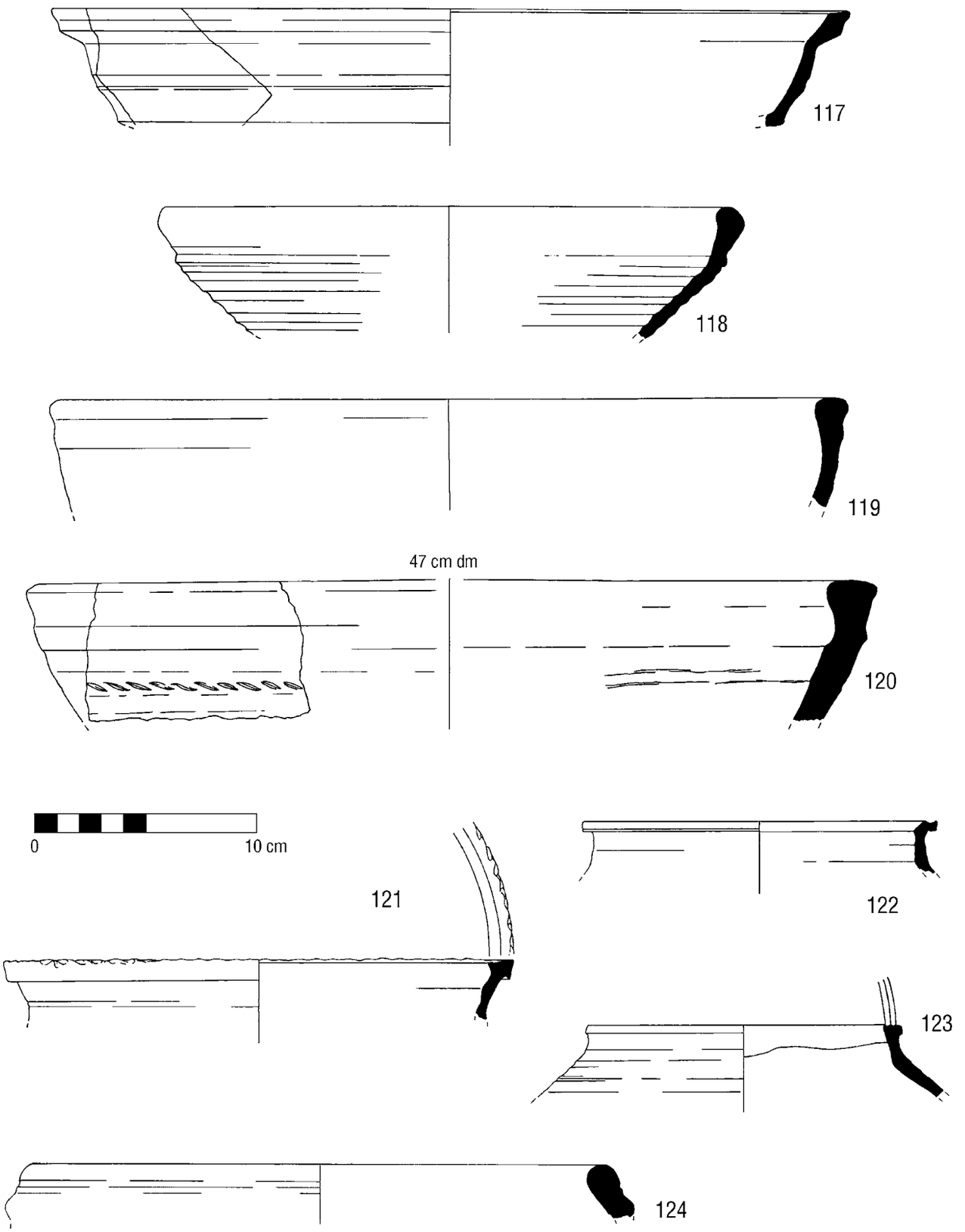


Figure 33. Pottery from main settlement, sample from dump near Building 177 (*cont.*) (nos. 117–24)

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FIGURE 34. POTTERY FROM MAIN SETTLEMENT, SAMPLES FROM DUMP NEAR BUILDING 177 (*CONT.*) AND BUILDING 176

MAIN SETTLEMENT, SAMPLES FROM DUMP NEAR BUILDING 177 (*CONT.*) (NOS. 125–31)

SILT (cont.)

125. Small jar with painted decoration (max. dm 10 cm). Red-brown 2.5YR 5/8 with thick gray core. The exterior is very worn, but it still preserves its cream slip exterior 10YR 8/3, black painted decoration, and a little red. Silt, medium hard; medium amount sand; some limestone chunks; mica. Main settlement, Building 177 sample; slope south-southwest of building. A number of amphoriskoi are published from Elephantine, but they all have handles (Gempeler 1992: fig. 118).
126. Small amphora neck and rim. May be a very small Late Roman Amphora 3 type, but no handles or handle scars are left. Dark red-brown 2.5YR 4/6. Silt, fairly soft; very micaceous; some small voids. Main settlement, Building 177 sample; slope south-southwest of building.
127. Flat base, string cut. Bright red-brown 2.5YR 5/8; red slip on base and exterior 10R 5/6. Silt; abundant limestone bits; a few limestone chunks; some chaff; maybe mica. Main settlement, building 177 sample.
128. Ring base. Red-brown with brown core; red slip interior and exterior. Silt; abundant black bits, sand and mica; many large limestone chunks; a few pinkish-red chunks. Main settlement, Building 177 sample; slope south-southwest of building.
129. Decorated sherd. The fact that it is slipped inside and out suggests a fairly open form. Light red-brown fabric 2.5YR 5/6 with tan core 5YR 6/4; red slip interior and exterior 10R 5/8; white stripe with black painted lines. Silt; many burnt-out voids; abundant limestone bits and chunks; some sand; a few grayish bits and chunks; a few red chunks, perhaps unmixed clay. Main settlement, Building 177 sample.

MARL

130. Cooking pot. 2.5YR 7/2 in section. Marl, porous and gritty; abundant black bits and limestone chunks; medium amount red bits; some chaff. Main settlement, Building 177 sample. See perhaps a pot from Elephantine of a different, red-brown (IIIA) fabric, date uncertain but probably fifth–seventh century (Gempeler 1992: 177, fig. 110:3).
131. Very large jar with step shoulder (dm 40–44 cm). There are fine striations on the exterior. Greenish section 2.5Y 7/2; 5YR 6/6 where surface spalled off in other places. Marl; abundant black bits; medium amount limestone chunks; some reddish bits and sand. Main settlement, Building 177 sample; slope south-southwest of building.

MAIN SETTLEMENT, SAMPLE FROM BUILDING 176 (NOS. 132–34)

132. Bowl with flanged rim and chattering. Polished, but exterior is worn. Pink 2.5YR 6/6; red slip interior and exterior 10R 5/8. Pink fabric; abundant black bits and mica; medium amount limestone chunks; a few red bits. Main settlement, Building 176. See bowl from Elephantine, similar fabric, rim overhanging but different, no rouletting underneath, dateable to the last quarter of the fourth to the second quarter of the sixth century (Gempeler 1992: 94, fig. 36:10 and related bowls).
133. Amphora rim, neck, and handles. 10R 5/8 in section. Silt; abundant very angular limestone bits; sand, maybe mica. Main settlement, Building 176. Late Roman Amphora 1, a type common at Bir Umm Fawakhir; see also the dipinti and a complete amphora in *Chapter 7*, fig. 49. Dates range from about A.D. 400 to the mid-seventh century (Pollard 1998: 154–55).
134. Ring base. Red-brown fabric with thick light gray core. Fabric uncertain; abundant black bits; much mica; medium amount limestone bits. Inside is smoothed, and exterior has two incised lines; fabric is hard, but ware is uncertain. Main settlement, Building 176, exterior northwest corner room 2.

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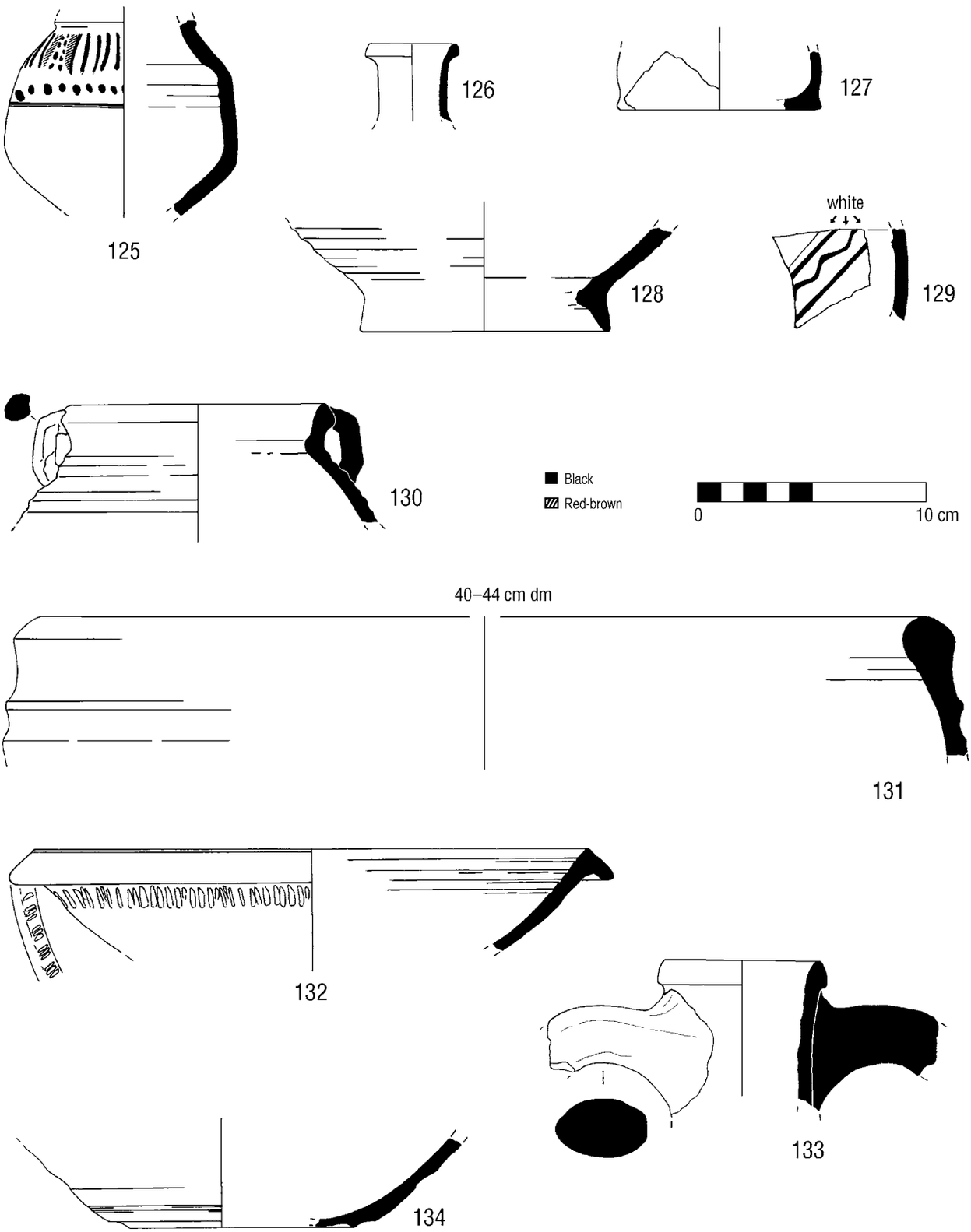


Figure 34. Pottery from main settlement, samples from dump near Building 177 (*cont.*) (nos. 125–31) and Building 176 (nos. 132–34)

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FIGURE 35. POTTERY FROM MAIN SETTLEMENT, STAMPED AND INCISED PLATES, BUILDINGS 176 AND 177 VICINITY

Almost all the stamped plates are made of fine Aswan pink fabric, red slipped inside and out and polished. We did not have time for Munsell color readings and temper descriptions for all the sherds, but most are like sherd no. 136. There is also some less elegant silt-fabric stamped plates, mostly slipped and sometimes polished, though many sherds are worn. Sherd no. 135 is a good example of this type of ware.

SILT

135. Stamped plate with five crosses. Surfaces are worn, and no polish remains. Fabric is silt rather than Aswan pink. Red-brown 5YR 4/4 with red core; red slip interior and exterior 10R 4/6. Silt; abundant mica; medium amount limestone bits. Main settlement, Building 177.

PINK

136. Stamped plate with palm-leaf design, polished but worn. Pink, lighter than 10R 6/6; red slip interior and exterior 10R 5/8. Pink fabric; abundant black bits; medium amount small sand particles; some limestone bits and pinkish chunks. Main settlement, Building 177. For palm-leaf stamps, see examples from the 1993 season (Heidorn 2000: 88–89, no. 57) and from Elephantine. One of the latter is a bowl with a similar fabric, dateable to the last quarter of the third to the middle of the fifth century (Gempeler 1992: 65, fig. 9:2), and another is a shallow bowl with a different, thinner base, dateable to the second half of the fifth to the middle of the sixth century (Gempeler 1992: 67, fig. 11:3).
137. Stamped plate with cross. For color and fabric, see no. 136. Main settlement, Building 177.
138. Stamped plate with cross and sunburst (RN 97/67). For color and fabric, see no. 136. Main settlement, Building 176.
139. Stamped plate. The stamp appears to be part of a complicated cross (RN 97/67). For color and fabric, see no. 136. Main settlement, Building 176.
140. Stamped plate with three circles (cross?) and sunburst. For color and fabric, see no. 136. Main settlement, Building 177. For sunburst stamps, see a plate from the 1993 season (Heidorn 2000: 86–87, no. 28) and a shallow bowl from the Esna hermitages, sixth–seventh centuries (Jacquet-Gordon 1972: pl. 220:3). Sunburst stamps are not uncommon on pottery from Elephantine, such as some shallow bowls, similar fabric, dateable to the second quarter of the fifth to the seventh century (Gempeler 1992: 67, fig. 12:12, 14) and a bowl on a ring base, sixth to perhaps first half of seventh century (Gempeler 1992: 75–76, fig. 20:14).
141. Stamped plate with sunburst (RN 97/68). For color and fabric, see no. 136. Main settlement, Building 177. For stamp design, see no. 140.
142. Stamped plate, design unclear. For color and fabric, see no. 136. Main settlement, Building 176. If a faintly stamped cross or XP, see no. 158.
143. Stamped plate with sunburst (RN 97/68). For color and fabric, see no. 136. Main settlement, Building 177.
144. Stamped plate with crosshatched paddle design (RN 97/68). For color and fabric, see no. 136. Main settlement, Building 177. For paddle stamps, see a shallow dish from Elephantine, probably fifth century (Gempeler 1992: 69, fig. 12:8).
145. Stamped and incised plate (RN 97/68). For color and fabric, see no. 136. Main settlement, Building 177. The surviving bit of stamp is probably one arm of a cross. The five-pointed star was scratched on after firing.
146. Incised plate, postfired-incised hourglass design (RN 97/68). For color and fabric, see no. 136. Main settlement, Building 177.

UNCERTAIN FABRIC

147. Incised plate or bowl (RN 97/68). The fabric was not described in any detail, but it seems to have much chaff and is probably silt like plate no. 135 above. Main settlement, Building 177. The design may be a cross made of a central square and four triangles at the corners.

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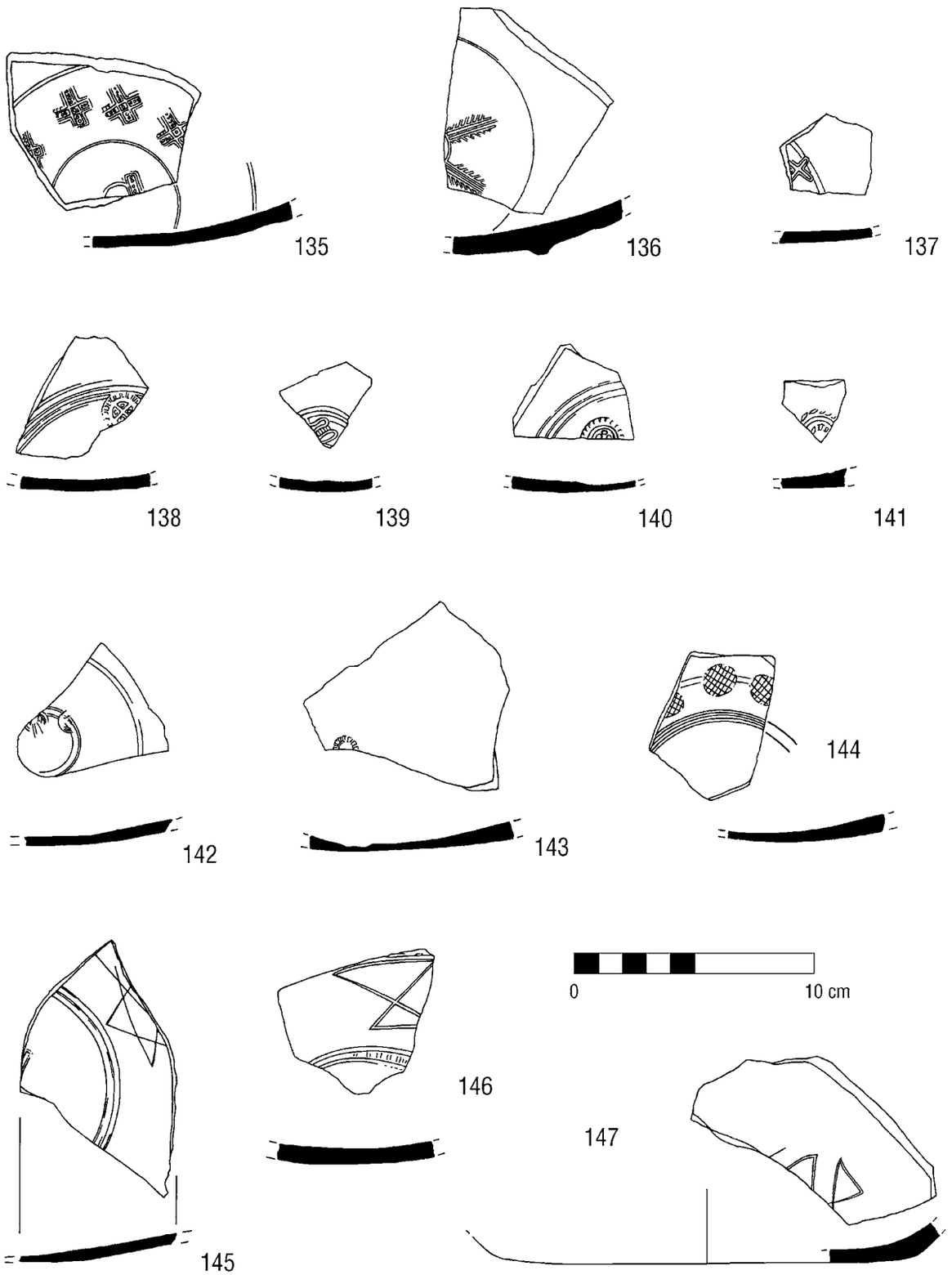


Figure 35. Pottery from main settlement, stamped and incised plates, Buildings 176 and 177 vicinity (nos. 135–47)

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FIGURE 36. POTTERY FROM MAIN SETTLEMENT

IMPORTED

148. Bowl with chattering (dm 32 cm) (RN 96/14). Pink with thick red slip interior and exterior; 10R 5/8 section and surface. North African import (ARS), well made, hard-fired, polished. Main settlement, Building across wadi "street" from Building 124. This would be the Hayes 84 type according to Gempeler (1992: fig. 2:2).
149. Sherd of a bowl(?) with chattering and well-polished surfaces. Bright orange fabric 10R 4/8; surfaces 10R 5/8. North African import (ARS); abundant mica, black bits and small sand particles; some limestone bits. Main settlement, Building 127/124 dump.
150. Bowl with flanged rim with chattering. Faint rills inside, surfaces well polished. Bright orange-red 10R 5/8; surface also 10R 5/8. Imported (ARS?), abundant mica, medium amount chunks and limestone bits; a few darkish bits. Main settlement, Building 227.
151. Plate with stamped decoration (RN 97/46). 5YR 5/6 in break; purplish layers either side of core; red slip interior and exterior. Egyptian Red Slip ware; abundant mica, medium and very small sand particles; medium amount limestone bits and chunks. Main settlement.
152. Rim and neck of small bottle. Exterior red slipped and polished, inside neck light brown and polished. Light red-brown fabric 5YR 6/4 to 5YR 6/6; exterior red 10R 4/6. Imported sherd (ARS?), very fine fabric; abundant mica and very small black bits; some limestone bits. Main settlement, near Quarry 2.

PINK

153. Shallow bowl with ledge rim. Pink 5YR 7/4; red slip interior and exterior 2.5YR 6/8. Pink (Aswani) fabric; abundant black bits; medium amount small limestone chunks; some red chunks; a little sand; mica. Main settlement, Building 227, outside SW corner.
154. Plate with flanged rim and black paint. The broad rim has two shallow grooves and a wavy black line between them. There seems to be a black drip on the exterior. Pink; red slip interior and exterior 10R 5/8 to more golden color; black paint. Pink fabric; black bits; medium red bits; a few limestone chunks; one large maroon pebble. Main settlement, above Building 33. Good parallel at Elephantine, but with different painting on rim, date uncertain but possibly fourth–fifth century (Gempeler 1992: 61–62, fig. 7:1).
155. Plate with postfiring incised lines (RN 97/8). The sherd is bright red-brown to orange with a polished red slip inside and out. For fabric see no. 136. It might be ARS, but the ware and Munsell colors were not described. Main settlement, Hillock, between Buildings 157 and 159.
156. Plate with stamped design, possibly a palm leaf (RN 97/69). For color and fabric, see no. 136. Main settlement, between Buildings 188 and 189.
157. Shallow bowl or plate with stamped cross (RN 97/47). For color and fabric, see no. 136. Main settlement, Building 154. For design, see no. 158 below.
158. Sherd with stamped cross (RN 97/67). The bulge on the right side of the profile drawing is probably part of a ring base. For color and fabric see no. 136. Main Settlement. For this kind of cross stamp, see a shallow bowl from Elephantine, second quarter of the fifth to early seventh century (Gempeler 1992: 69, fig. 12:11).
159. Sherd with stamped sunburst or flower. For color and fabric see no. 136. Main settlement, Building 222. For sunbursts, see no. 140 above.
160. Sherd with stamped palm leaves and sunburst. For color and fabric see no. 136. Main settlement, Building 230. For parallels for the stamped design, see some bowls from Elephantine, similar fabric, one dateable to the last quarter of the third to the middle of the fifth century (Gempeler 1992: 65, fig. 9:2) and the other, to the second half of the fifth to perhaps the middle of the sixth century (Gempeler 1992: 67, fig. 11:3).

Another flat sherd stamped with four concentric circles is not illustrated.

161. Sherd stamped with cross in rectangle designs (RN 96/13). Pink 2.5YR 6/6; red slip interior and exterior 10R 5/8. Pink fabric; medium amount sand and small bits. Main settlement, Building 140.

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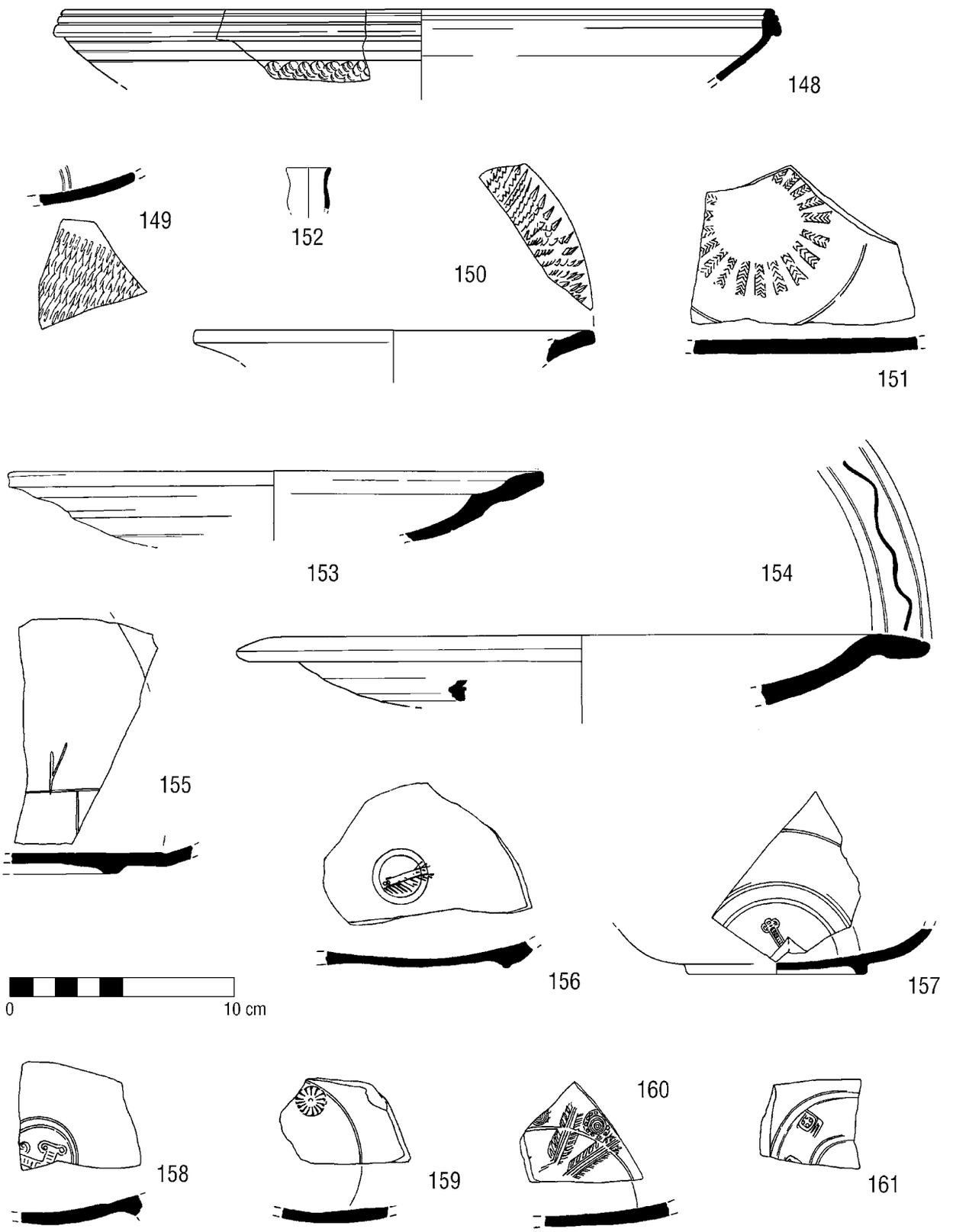


Figure 36. Pottery from main settlement (nos. 148–61)

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FIGURE 37. POTTERY FROM MAIN SETTLEMENT (*CONT.*)

PINK (cont.)

162. Bowl with ledge rim. Swipe marks on exterior near base; very weathered surfaces, perhaps polished originally. Pink with gray core; orangey slip 10R 6/8. Aswan pink fabric; abundant black/gray bits; some mica, limestone chunks and medium red bits. Main settlement, slope between Buildings 165 and 144. For parallels, see a bowl from Shenshef (rim not so thick), fifth century into the sixth (Tomber 1998: 171, 173, no. 37) and perhaps a deeper bowl from Elephantine, probably second half of fourth century or fifth (Gempeler 1992: 92, fig. 35:1).

163. Bowl with elaborate rim. The exterior of the rim is grooved, and the underside of the rim has string marks and a remnant of chattering. Pink lighter than 10R 6/6; red slip interior 10R 4/6 to 2.5YR 5/8. Aswani pink fabric. Main settlement, downslope from Building 179. Parallel at Elephantine, similar fabric, fifth–sixth century (Gempeler 1992: 92–93, fig. 35:9).

164. Small bowl. Medium-hard pinkish fabric 5YR 7/4; rim fired red 2.5YR 5/6. Pink, Aswani(?); abundant black bits; some dark brownish chunks, red bits and mica; small chaff bits. Main settlement, wadi "street" outside Building 106. Parallel at Elephantine, similar fabric, late fifth to early seventh century (Gempeler 1992: 97, fig. 40:13).

165. Globular cup. Exterior polished, faint chattering. Pink, paler than 10R 6/6; red slip exterior 10R 5/8. Aswan pink fabric; abundant black bits; some mica and medium-size pink chunks; some medium limestone chunks. Main settlement, slope above Building 144. See example from the 1993 season (Heidorn 2000: 84–85, no. 5) and high- and low-footed bowls from the Esna hermitages, sixth–seventh century (Jacquet-Gordon 1972: pl. 221:5–6). Also attested at Elephantine, similar fabric, second half of the sixth and seventh century (Gempeler 1992: 128–29, fig. 73:14). Similar forms are shown in Rodziewicz 1976: 54–56, type O 4a–5 (fifth–eighth century A.D.). The closest form, O 4b, is first found at Alexandria in fifth-century A.D. contexts, but Group O was produced in Upper Egypt from the third–fourth century A.D. onward. See also the similar examples dated between the sixth and seventh centuries A.D. in Spencer, Bailey, and Burnett 1983: 38, H 2.4 (A.D. 500–650); Myśliwiec 1987: 104, nos. 1084–87; Winlock and Crum 1926: fig. 37 D. Form D from the monastery of Epiphanius is dated to "around 500?" (Hayes 1972: 389, 391).

166. Small painted bowl. Pink 5YR 7/6; cream slip 10YR 8/3; brown-black painted lines interior. Pink fabric; abundant dark bits; medium amount limestone and red bits; some mica; one yellowish chunk. Main settlement, Building 170. A very characteristic Aswani form from the Coptic/Byzantine period. See examples from the 1993 season (Heidorn 2000: 84–85, no. 11), Berenice, fifth century (Hayes 1995: 34–35), and Shenshef, fifth and into the sixth century (Tomber 1998: 172–73, no. 42). Well attested at Elephantine, mid-fourth to sixth centuries (Gempeler 1992: 92–93, fig. 35:14). Gempeler notes that the form is found sporadically in the late fourth and fifth centuries at Kellia. The earlier bowls may have had red slips. There is a similar example, but with a red slip, from Tôd; see Pierrat 1991: fig. 54i (A.D. 750–900). See also the examples in Spencer, Bailey, and Davies 1984: 21, H 40 (unstratified but dated A.D. 350–700+ by comparative materials). See also Myśliwiec 1987: 114–16, no. 1301; Jacquet-Gordon 1972: pl. 219:A3–A5?. There were small flat-based saucers of this fabric and finish from Nubia; see W. Y. Adams 1986: 538, form C 22 (main period of importation ca. A.D. 400?–500?).

167. Painted goblet. The goblet has a red-brown slip on the exterior extending below the grooves under the rim. Black and yellowish white "degenerate vine leaves" are painted over the slip. Toward the bottom of the vessel are the remains of a red-brown floral(?) motif. Pink 5YR 7/6; red exterior 2.5YR 5/6 to just below ridges; black and yellowish white spots; red-brown floral(?) design. Aswan pink fabric; abundant black bits; medium amount light red bits and limestone chunks; some small sand particles. Main settlement, between Buildings 164 and 169. The form is said to be very characteristic of the fourth and fifth centuries. Note a goblet with the same kind of rib or remnant collar from Shenshef, fifth century into sixth (Tomber 1998: 171, 173, no. 40).

168. Painted goblet with potmark (RN 96/17). Pink-beige; red slip interior and exterior above groove; black-brown and cream spots. The ware of the vessel was not described, but it is similar to the Aswan pink goblet above (no. 167) and has similar "degenerate vine leaf" decoration. The potmark was incised prior to firing. Main settlement, Building 6. For similar vessels with a groove at the widest part, see sherds from the 1993 season (Heidorn 2000: 84–85, no. 17; 88–89, no. 71) and from Elephantine, dated to the middle of the sixth century (Gempeler 1992: 100–01, fig. 42:10). Prototypes of this form are T 600–T 602 (first–fourth century A.D.) (Gempeler 1992: 122–23). Note goblets in B. Williams 1991: 48, 52, fig. 7a, c (late fourth century A.D.); Myśliwiec 1987: 116, nos. 1320–22 (undecorated); Jacquet-Gordon 1972: D1 and D2; Spencer, Bailey, and Burnett 1983: 39, pl. 35:E91 (undecorated; silt example dated ca. A.D. 450–550 according to H3–5.2).

169. Small painted jar. Pink 5YR 7/4; red slip exterior 2.5YR 5/6; black and white painted spots. Aswan pink fabric; medium amount mica, black bits, limestone bits. Main settlement, outside SE corner of Building 206. The "degenerate vine leaf" decoration looks characteristic of the Coptic/Byzantine period, but the shape is somewhat problematic. All the bottles illustrated from Elephantine have flat or ring bases (Gempeler 1992).

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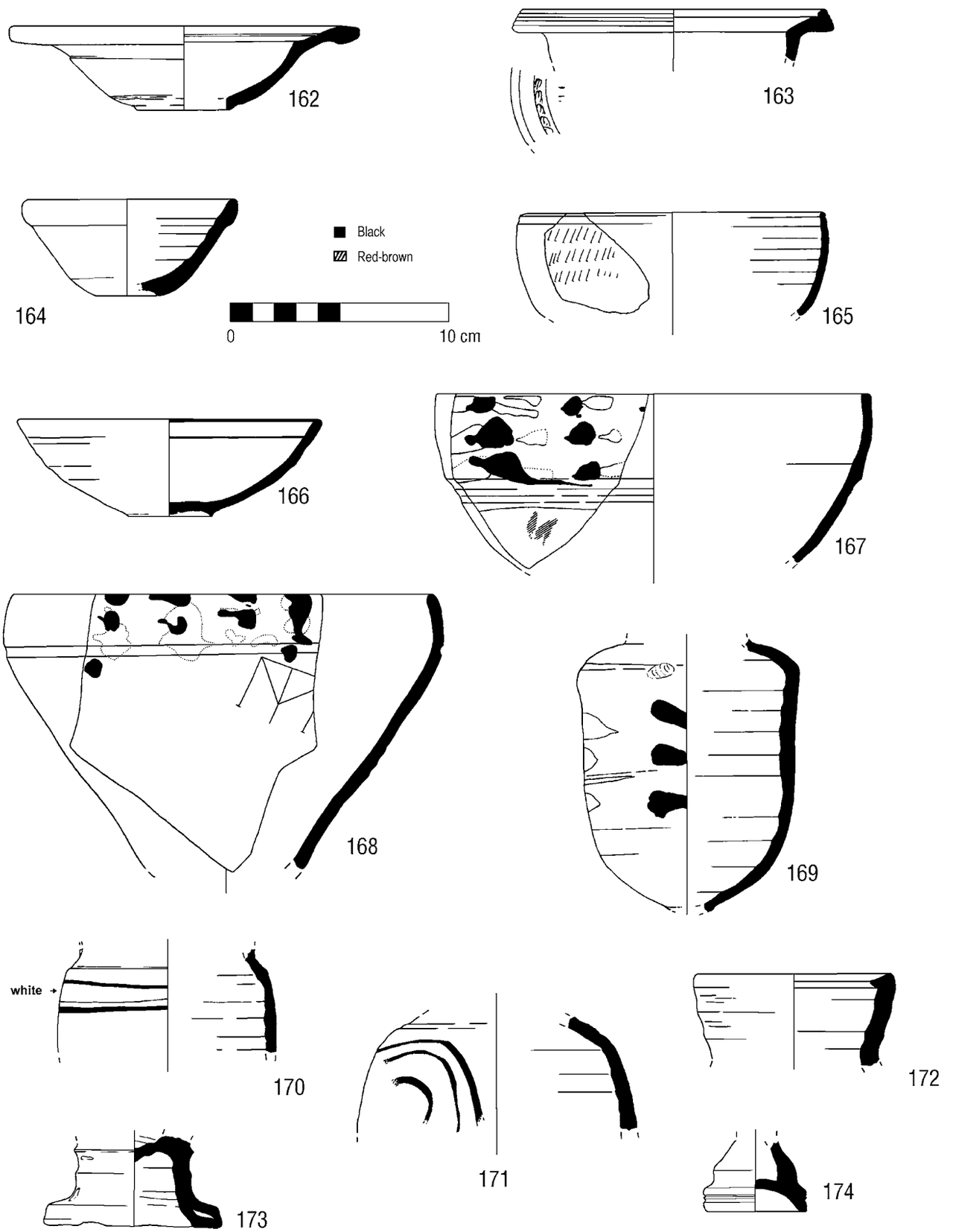


Figure 37. Pottery from main settlement (*cont.*) (nos. 162–74)

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FIGURE 37 (*CONT.*). POTTERY FROM MAIN SETTLEMENT (*CONT.*)

PINK (cont.)

170. Small painted jar (fig. 37). Just below the shoulder are two black painted lines and a white band. Above the shoulder, the remnant of the bottom of a handle. Light red-brown with buff surface 2.5YR 6/6; red slip exterior 10R 5/8. Marl or Aswani fabric(?); abundant black bits; medium amount mica and red bits. Main settlement, Building 232.

171. Jar with spiral decoration (fig. 37). Pink with red slip exterior, black painted spiral. Aswan pink fabric. Main settlement, Building 175. For spiral decoration, see examples from the 1992 season (Heidorn 1995: 84, fig. 29q) and Shenshef, fifth century into sixth (Tomber 1998: 74–75, no. 47).

172. Amphora neck and rim (fig. 37). Pink with red-brown exterior 5YR 4/4 and 2.5YR 5/6 interior. Aswan pink fabric; abundant black bits, medium amount mica; some sand; a few red bits. Main settlement, Building 229. See no. 105 above.

173. High ring base (fig. 37). Creamy exterior and interior surfaces 10YR 8/3; pink in section 10R 6/6. Very porous, gritty fabric; abundant black bits; medium amount mica; some red chunks; a few larger sand particles. Main settlement, base of Hillock, south of Building 169.

174. Small, high ring base (fig. 37). Thick, waxy red slip inside and out. Pink section 2.5YR 6/6; slip 10R 5/8. Pink fabric; abundant limestone bits; some red chunks, large and very small black bits. Main settlement, between Buildings 140 and 144. For a similar shape from the 1992 season, see Heidorn 1995: 87, fig. 30g, and a pitcher in Spencer and Bailey 1985: fig. 32:M5.15, probably circa A.D. 400–550.

FIGURE 38. POTTERY FROM MAIN SETTLEMENT (*CONT.*)

SILT

175. Shallow bowl. Polished interior surface. Bright red-brown to orangey red slip interior and exterior. Silt; much mica, some limestone bits. Main settlement, behind Building 228. Parallel at Elephantine, similar red-brown fabric, fifth–sixth century in date (Gempeler 1992: 148, fig. 83:3).

176. Bowl with piecrust ledge rim and painted decoration. Red-brown; red and black painted decoration. Thick chalky white slip inside and out, but very worn, as is remaining paint. Silt, rather coarse. Main settlement, Building 128. Bowls with this shape but different, light red (IA) fabric occur at Elephantine, fifth–sixth century (Gempeler 1992: 92–93, fig. 35:11), and piecrust rims and painting are common, but this combination of form, rim, and painting is not attested.

177. Conical bowl with painted decoration. The painting on the interior is too faint and worn to determine the original design. 2.5YR 6/4; red slip interior and exterior 10R 5/6; black paint interior. Silt(?); abundant mica, dark bits, limestone chunks and bits, medium amount sand. Main settlement, Hillock surface.

178. Carinated bowl. Bright red-brown 2.5YR 6/8 with brownish core; thick red slip interior and exterior 10R 4/8. Silt, hard-fired; abundant mica, small and large sand particles; medium amount limestone chunks; many irregular voids; some unmixed clay chunks. Main settlement, dump between Buildings 208 and 214. See bowls from the Esna hermitages, sixth–seventh century (Jacquet-Gordon 1972: pl. 220:1) and from Elephantine, made of a different, light red (IA) fabric, dateable to the mid-fifth to mid-sixth century (Gempeler 1992: 93–94, fig. 35:22, 25).

179. Large carinated bowl with white paint. Red-brown 2.5YR 5/4; reddish surface; 10R 4/6 core; white paint. Silt, hard; abundant mica; many limestone chunks and bits; some black chunks; a little sand. Main settlement,, next to Building 149. A parallel at Elephantine, similar red-brown fabric, fourth–fifth century in date, has white spots on the rim instead of on the body (Gempeler 1992: 147, fig. 82:18).

180. Large carinated bowl with black paint. Bright red-brown to orange; red slip exterior and interior; black paint. Uncertain whether finely levigated silt, or a silt-marl mixture; medium amount black sand and limestone bits; some sand and chunks; few bits of chaff; maybe mica. Main settlement, west end of site. See examples from the 1993 season (Heidorn 2000: 86–87, no. 9, unpainted) and from the Esna hermitages, sixth–seventh century (Jacquet-Gordon 1972: pl. 221:11). See perhaps deep bowls at Elephantine with different rim shape and light red (IA) fabric, probably second half of sixth to seventh century (Gempeler 1992: 115, fig. 61:2).

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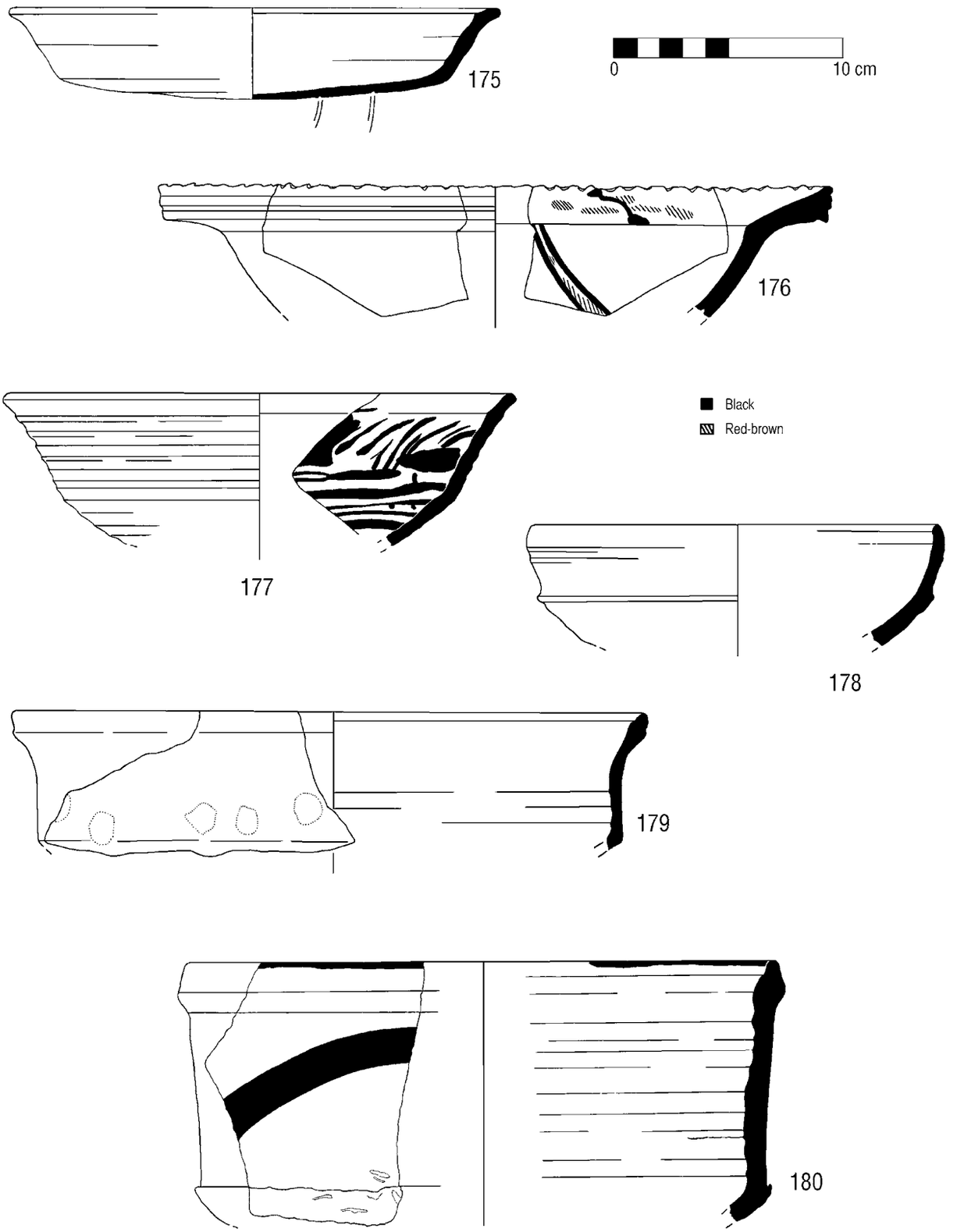


Figure 38. Pottery from main settlement (*cont.*) (nos. 175–80)

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FIGURE 39. POTTERY FROM MAIN SETTLEMENT (*CONT.*)

SILT (cont.)

181. Carinated bowl with black and white paint. Red-brown 2.5YR 5/6; exterior 10R 5/8; black and white paint. Silt; sand, limestone, black bits. Main settlement, Building 139. See examples from the 1993 season (Heidorn 2000: 88–89, no. 81) and from the Esna hermitages, sixth–seventh centuries (Jacquet-Gordon 1972: pl. 220:4, different decoration). The type is also known from Elephantine, different, light red fabric, third quarter of the sixth to seventh/eighth centuries A.D. (Gempeler 1992: 109–10, fig. 56:3, 114–15, fig. 60:10). Gempeler notes that this type is probably an imitation of a Late Roman D vessel whose main period of importation at Alexandria occurred at the end of the sixth through the beginning of seventh century A.D.; see Rodziewicz 1976: 42–47, type D 12 (stamped). Also note type O 25 (Rodziewicz 1976: 58) of the first half of the seventh through beginning of eighth century A.D. Vessels like this were produced at Sheikh Abada or Antinoopolis; see Ballet et al. 1991: 136, fig. 3. See also Egloff 1977: 97, types 98–99 (with rounded base, A.D. 650–730) and similar to p. 152, type 285 (sixth–seventh centuries A.D.); Spencer, Bailey, and Burnett 1983: 37–38, G (carinated tripod bowls of ca. A.D. 400–500) and Spencer, Bailey, and Davies 1984: 21, G 18; Pierrat 1991: 166, fig. 29e (ca. A.D. 750–900) and p. 181, fig. 54a (same date); Myśliwiec 1987: 131, no. 1561 (sixth–seventh centuries A.D.).

182. Carinated bowl with black and white paint. Red-brown 2.5YR 5/8 with reddish core; red slip exterior and interior 10R 5/6; black and white paint. Silt; abundant mica; medium amount sand; some yellowish limestone chunks and chaff bits; a few grayish chunks. Main settlement, Building 170. See in general no. 181 above, and also Elephantine for an example with similar thickened rim but different, light red (IA) fabric, dateable to the second half of the sixth to the seventh or eighth century (Gempeler 1992: 114–15, fig. 60:10).

183. Deep, painted bowl. Light red 2.5YR 6/6; red slip exterior 10R 5/6; yellow 5YR 7/8 and black painted blobs. Silt; some bits of chaff; small and medium-size limestone bits and black bits. Main settlement, Building 149.

184. Casserole with piecrust rim. Red-brown with red layers either side of brownish core; surface 5YR 4/4. Silt; much mica and sand; some limestone chunks; a few chaff bits. Main settlement, Building 229. Parallel at Elephantine has similar red-brown fabric but a little more of a neck; dateable to the fifth century (Gempeler 1992: 160, fig. 93:5).

185. Large bowl with handle(s). Diameter and stance are uncertain. The fabric is soft, and the exterior is quite spalled; the vessel is poorly formed and fired. There seems to be a cream-colored coating or deposit on the surface. A crude handle, and perhaps a second, was applied to the rim. Red-brown 2.5YR 4/6 section; gray-black core; surface 10YR 8/4. Silt; soft fabric; many small to medium-size white and yellowish bits. Recovered near the door of main settlement, Building 115.

186. Lid(?) with three handles. The handles appear to have been added after the piece was fired; they are very crude compared to the fabric of the rest of the sherd. This looks like the base of a jar or amphora, but if so, three loops would make an awkward support, so it may be a lid of some sort. Red-brown 10R 5/6. Silt; abundant limestone and mica; some black chunks. Main settlement, Building 139.

187. Ring base, possibly from a jar. Red-brown surfaces 2.5YR 5/2; thick gray core. Silt; abundant mica; some angular sand chunks; some yellowish limestone bits; some fairly large black particles; many small voids. The vessel was made of a very well-levigated clay fired hard. The breaks are clean with a slick clay appearance. The base was wet smoothed, but a few bits of excess clay are still attached. Main settlement, Building 197.

188. *Qadus*(?) toe. The base does have a knob that could hold a rope, and it is chipped, but the hard fabric and red slip inside and out make it look less like a *qadus* toe. If it was a *qadus*, then it raises the question as to whether there was a water wheel at Bir Umm Fawakhir. Orange 2.5YR 5/8; red exterior and interior slip 10R 5/6. Silt, hard; some limestone bits and chaff; mica. Main settlement, door to Building 207.

189. Painted sherd with fish (RN 96/16). The sherd is actually red-brown with black-brown paint (surface 2.5YR 5/8; red slip 2.5YR 5/6) and very worn, so the design is not as clear as the black-and-white drawing seems to indicate. However, an eye is visible in the middle and what seem to be a back fin and scales behind it. The curve of the sherd suggests that it came from a bottle or perhaps a beaker rather than a bowl or plate. Silt(?); some mica; medium black bits. Main settlement, path to Roman road across from datum point 104.

190. Painted sherd. The sherd is red-brown with a chalky slip and a design of lines and spots in black-brown paint. Silt. Main settlement, west of Building 115.

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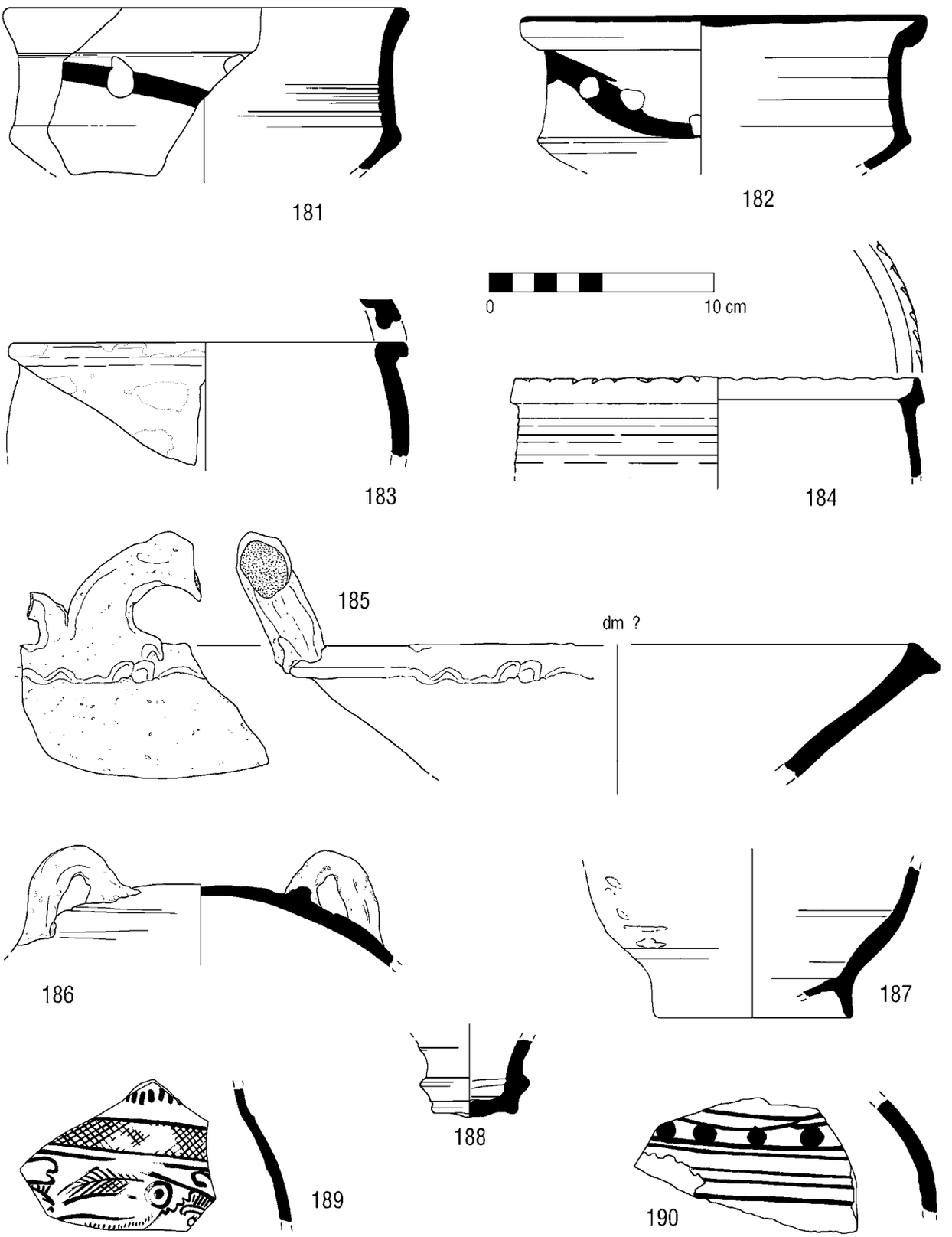


Figure 39. Pottery from main settlement (*cont.*) (nos. 181–90)

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FIGURE 40. POTTERY FROM MAIN SETTLEMENT (*CONT.*)

MARL

191. Cup. Uneven rim, wheel striations inside and out, extra clay left near base. 10YR 7/3. Marl; medium amount red and black bits, limestone; some sand. Main settlement, grave above Building 102. The example from the 1993 season is made of coarse silt rather than marl (Heidorn 2000: 90–91, no. 96).
192. Large, deep bowl with piecrust rim. Red-brown fabric with cream slip. Marl. Main settlement, between Buildings 114 and 115.
193. Bowl(?) with applied decoration. Pinkish, 2.5YR 6/6; tan core; greenish gray exterior 2.5YR 8/2. Marl; abundant mica and black bits; medium amount limestone chunks; some sand; a few red bits. Main settlement, Building 216.
194. Flask(?) rim and neck. 5YR 7/3. Marl. Main settlement, Building 126.
195. Lid or *qadus*(?). 10YR 8/4 surface; 10YR 6/4 in break. Marl, porous and gritty; medium amount black bits and larger chunks; medium amount red bits and limestone chunks; some mica. Main settlement, slope south of Building 169.
196. Jar(?) body. If inverted, it might be a painted bowl, though it is rather thick. Light red-brown 5YR 7/6; red slip exterior 2.5YR 5/6; black paint. Marl; abundant black bits; many limestone bits and small sand particles. Main settlement, slope above middle room of Building 197.
197. Sherd with spiral decoration. Unslipped surface and section 2.5YR 5/6; red slip exterior 5YR 5/4; black-brown paint 7.5YR 6/4. Marl(?). Main settlement, ledge above Building 104. For a sherd with spiral decoration from the 1992 season, see Heidorn 1995: 84, fig. 29q.

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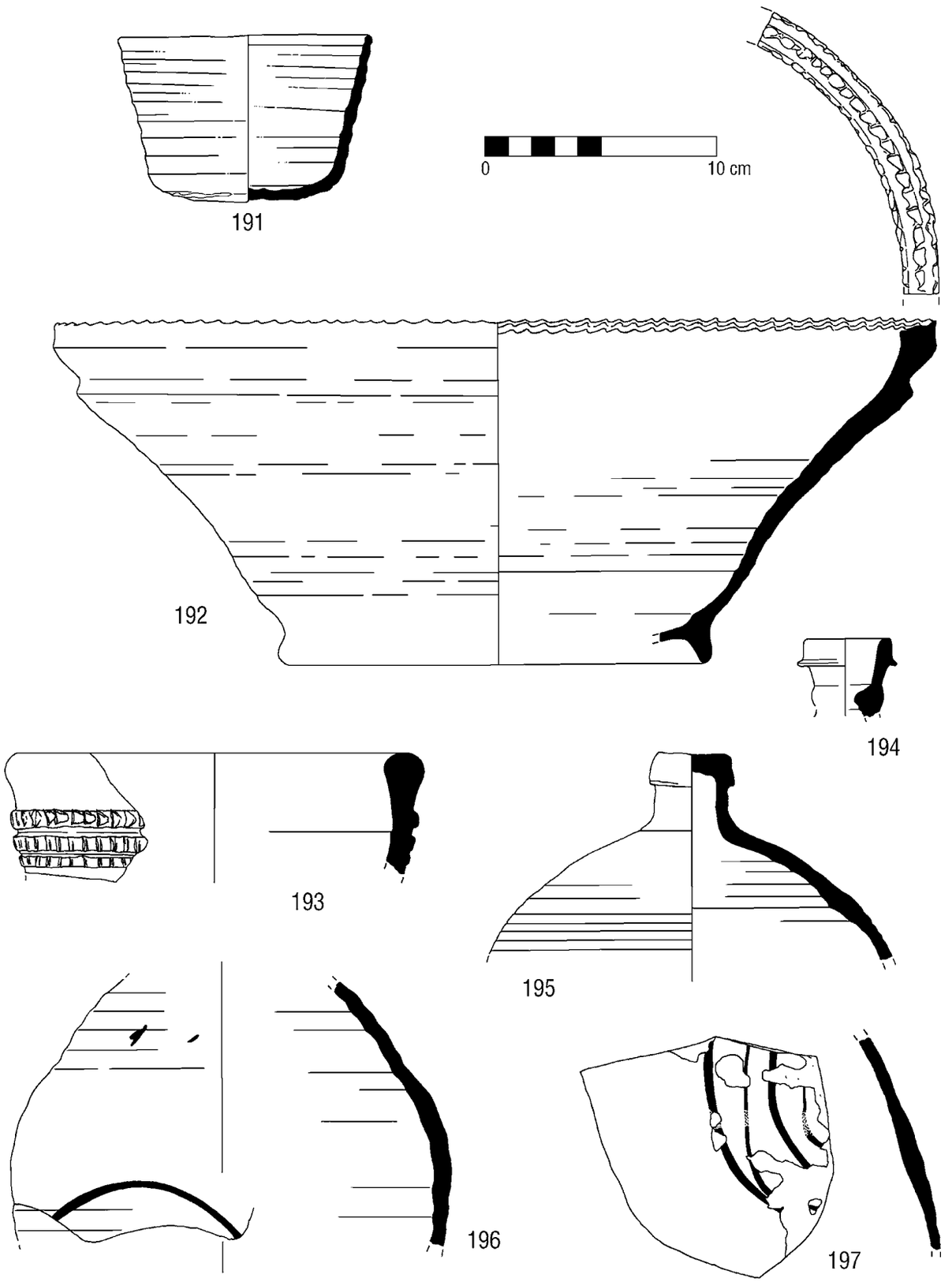


Figure 40. Pottery from main settlement (*cont.*) (nos. 191–97)

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FIGURE 41. POTTERY FROM MAIN SETTLEMENT (*CONT.*)

HANDMADE

198. Large, handmade bowl with incurved mouth and impressed decoration. The fabric is soft and crumbly but has a smoothed surface; it is an example of what is now called Eastern Desert Ware. Handmade fabric, silty; very abundant largish sand particles; abundant mica, a few limestone bits and purple-red chunks. Main settlement, between Buildings 32 and 33. For large, handmade bowls, see Berenice, perhaps fifth century (Hayes 1995: 34–36).
199. Amphora toe. Beige. Main settlement, Building 124.

FABRIC UNCERTAIN

200. Ring base. Brown slip on upper part. Main settlement, bay below Building 167. See also nos. 91 and 128 above.
201. Large bowl with potmark (RN 97/65). Brown. Main settlement, between Buildings 228 and 229.
202. Base of large bowl with potmark inside (RN 97/49). Main settlement, Building 201.
203. Thick sherd with postfiring incised potmark. Main settlement, dump behind Building 129.
204. Sherd with postfiring incised potmark (RN 97/37). Brown. Main settlement, Building 191.
205. Sherd with postfiring incised potmark (RN 97/15). Red-brown. Main settlement, northeast face of Hillock.
206. Sherd with postfiring incised potmark (RN 97/5). Red fabric, cream-white slip. Main settlement, cliff base behind Building 153. For a stamped plate with a similar incised five-pointed star, see no. 145 above.
207. Sherd with postfiring incised potmark (RN 97/14). Red-brown. Main settlement, north slope of Hillock.

Two other sherds with potmarks are not illustrated. One small but thick brown sherd from the ramp between Buildings 167 and 168 has a spidery potmark. The other was found on the slope above Building 160. It is brown and very thick; the surviving bit of potmark now looks like a lambda.

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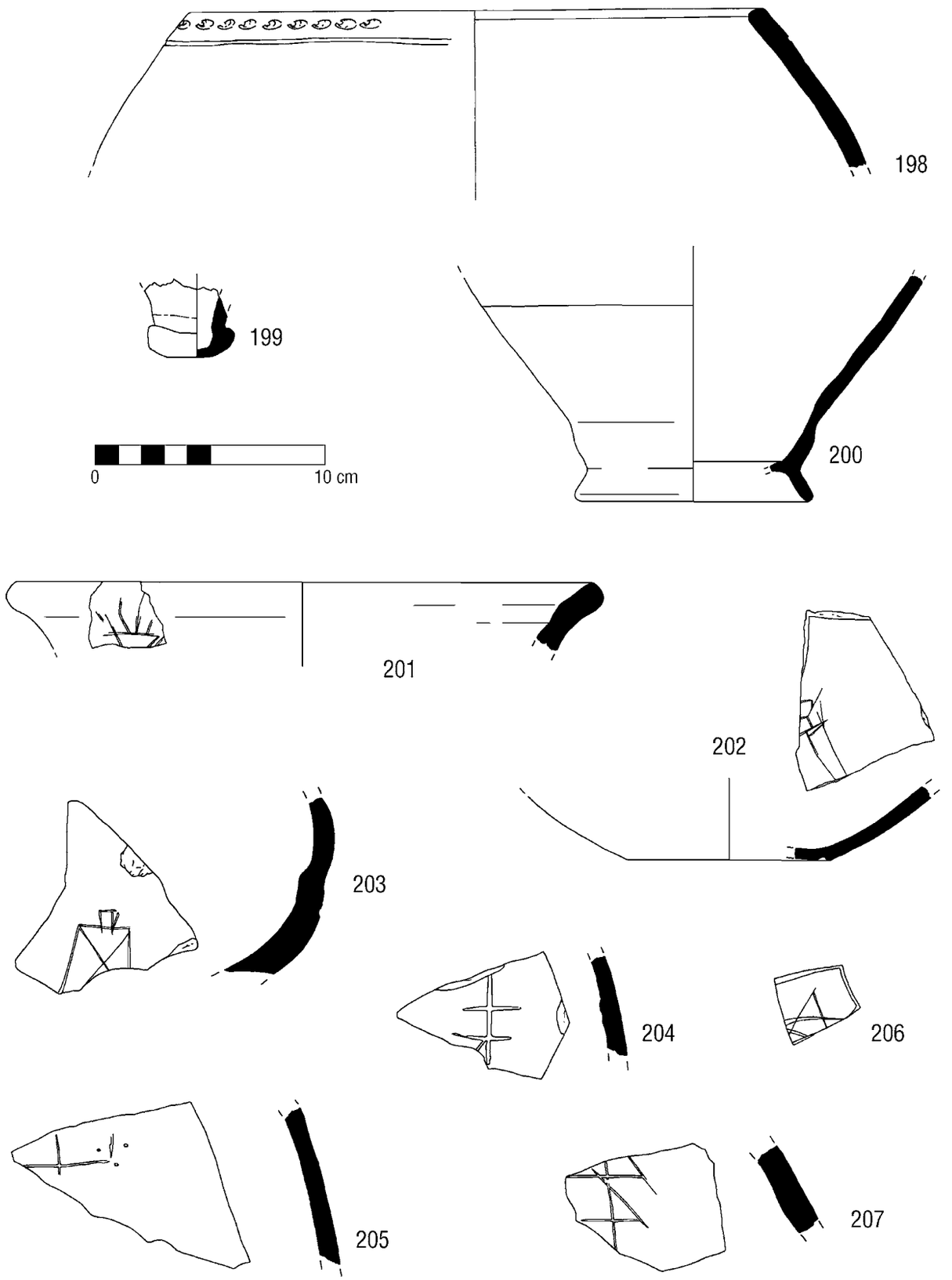


Figure 41. Pottery from main settlement (*cont.*) (nos. 198–207)

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FIGURE 42. POTTERY FROM OUTLIER 6, COMPLEX 26

We made an effort to collect sherds from Complex 26 and its vicinity in hopes of finding some clues as to the function of the structure. The pottery is somewhat more elaborate than most of that from Outliers 6 and 7, but it does not help clarify the nature of Complex 26.

208. Shallow bowl with grooved ledge rim. Well made, medium hard, with thick red slip inside and out. Pink 2.5YR 6/6; slip 10R 5/8. Pink fabric. Outlier 6, area of Complex 26. For an example from the 1993 season, see Heidorn 2000: 88–89, no. 64. Good parallels at Elephantine, similar fabric, dateable to the second half of the fifth to the middle of the sixth century and perhaps later (Gempeler 1992: 68–69, fig. 12:1). See also Spencer, Bailey, and Burnett 1983: 32–33, E 59.3 (perhaps A.D. 400–500/550); Godlewski 1986: 124: fig. 103:35 (beginning seventh–eighth century A.D.); Myśliwiec 1987: 114–15, nos. 1274–85.
209. Painted bowl with ledge rim. Red fabric 2.5YR 5/8 with pale red core 10R 5/6. Red slip 10R 5/8 inside and out, black paint, polished interior. Red fabric; abundant mica; medium amount chaff and small limestone chunks; some sand. Outlier 6, area of Complex 26. The rim has ornamental nicks on the outer edge, a leaf(?) design on top of the rim, and floral(?) designs inside. See comments on no. 176 above.
210. Bowl or basin with piecrust rim. Buff-yellow 10YR 8/3 with pale red core. Fabric uncertain; gritty; abundant mica, sand, limestone bits; medium amount limestone chunks; some pinkish clay chunks (not grog). Outlier 6, area of Complex 26.
211. Carinated base. The shape looks like the base of carinated bowls nos. 181 and 182 above, but the fabric is different. Grayish section; exterior surface creamy gray 10YR 7/3. Marl; very weathered; the fabric is unusually coarse, gritty, porous; abundant sand, mica, limestone chunks; medium amount black bits; some very large limestone chunks and brown-red chunks. Outlier 6, area of Complex 26.
212. Mouth and neck of a small jar. Red-brown 2.5YR 5/6; red slip exterior and interior 10R 5/6. Silt, hard; abundant mica; medium amount black bits and limestone bits; some reddish clay chunks. Outlier 6, area of Complex 26.
213. Mouth and neck of a small, ribbed jar. Fabric and color not described, but see no. 212 preceding. Outlier 6, area of Complex 26.
214. Large jar or basin rim. 2.5YR 5/8 section with pale red-purple core; 10R 5/6 slip exterior, darker interior. Silt; abundant mica; some limestone chunks and chaff bits; a few black bits and sand. Outlier 6, area of Complex 26.
215. Filter jar with handles. One of very few filter jars recovered at Bir Umm Fawakhir. Three filter holes remain, but there is a large break in the center. Pink-tan; creamy surface 10YR 7/4. Marl, coarse and porous; abundant black bits; medium amount sand, red chunks, and limestone bits. Outlier 6, area of Complex 26. For a silt example from the 1993 season, see Heidorn 2000: 86–87, no. 39. See perhaps an “amphoriskos” type from Elephantine, different, light red (IA) fabric, dateable to the fourth–fifth century (Gempeler 1992: 185, fig. 118:2). See Egloff 1977: 115–16, type 177 (with shorter neck, A.D. 390 to mid-sixth century); Jacquet-Gordon 1972: P2; Pierrat 1991: 152, fig. 4b (after A.D. 650–750); Winlock and Crum 1926: 79, fig. 32; Godlewski 1986: 127, fig. 114:43 (seventh–eighth centuries A.D.).

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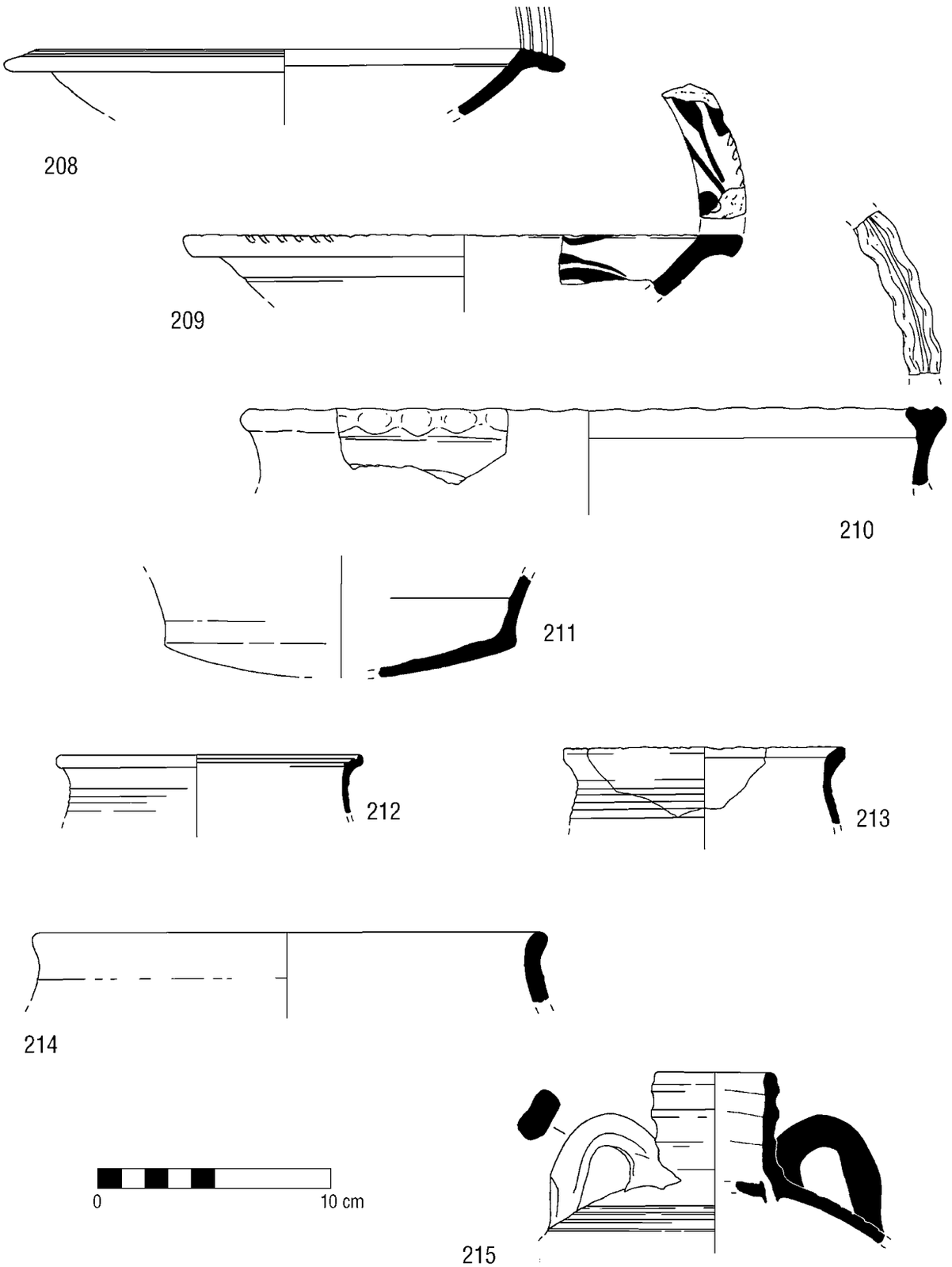


Figure 42. Pottery from Outlier 6, Complex 26 (nos. 208–15)

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FIGURE 43. POTTERY FROM OUTLIERS 6 AND 7, APART FROM COMPLEX 26

The pottery scatter in Outliers 6 and 7 was much thinner than in the main settlement, and with the exception of Complex 26 we did not attempt to sample it systematically. As may be seen from figures 43 and 44, however, it is like the pottery from the main settlement. The Outlier 6–7 sherds are so few that they are presented by shape (open bowls to closed amphorae) rather than by fabric.

216. Bowl with flanged rim (RN 97/16). Orangeish 10R 5/8; thick red slip interior and exterior 10R 5/8. The fabric is dense and hard and the surface slipped and well polished; the piece is either imported African Red Slip or Egyptian Red Slip A. Finely levigated; abundant mica and black bits; some medium-size limestone bits; a few red chunks. Outlier 7, near Building 95. This seems to be the Hayes 91A type (Gempeler 1992: fig. 2:8). For a similar shape, see the Esna hermitages, sixth–seventh centuries (Jacquet-Gordon 1972: pl. 222:32).

217. Bowl. Bright red-brown 10R 5/8; thick blackish core; red slip exterior 10R 5/6. Silt; medium amount limestone bits; some chaff; maybe mica. Outlier 7, slope south of Building 88. See perhaps a bowl from Elephantine of a different, light red (IA) fabric, probably second half of sixth to ninth century in date (Gempeler 1992: 110, fig. 56:7).

218. Conical bowl. It has some very slight finishing rills. Cream-buff 10YR 8/3 exterior; 10YR 7/4 in break. Marl, hard; abundant black bits and angular gray bits; medium amount orangey-yellow chunks; much sand; some mica. Outlier 7, slope south of Building 88.

219. Deep bowl. 10YR 7/4 exterior; 5YR 6/4 in break. Marl; abundant black bits; medium amount small chaff bits, sand, limestone bits; a few red bits. Outlier 6, Building 59.

220. Very large basin or platter with incised lines on the inside. It may be smaller than the estimated 60 cm diameter; the surviving sherd is small. Cream exterior 10YR 8/2; buff core 10YR 6/3. Fabric uncertain; abundant black bits and sand; medium amount limestone chunks; some mica. Outlier 7, slope south of Building 88.

221. Casserole with piecrust rim. The sherd is very chipped and weathered so the stance and diameter are somewhat uncertain. Red-brown 5YR 5/4 with red layers and gray core; traces red slip. Silt, medium soft; abundant mica; medium amount chaff; some limestone chunks and bits. Outlier 6, inside Building 28. Parallel at the Esna hermitages, sixth–seventh century (Jacquet-Gordon 1972: pl. 227).

222. Large jar. Swipe marks on the exterior. Surface 10YR 8/3; section 10YR 7/3. Marl, porous; abundant back bits and limestone chunks; medium amount mica; some sand; a few small red bits. Outlier 6, north of Building 72. See perhaps large closed jar from Elephantine, of a different, porous red-brown fabric, dateable to the fifth or sixth century (Gempeler 1992: 173–74). Similar types are illustrated from Quseir-al Qadim, Late Roman (W. R. Johnson 1979: pl. 85r). Note a vessel similar to a *qadus* but lacking a knob base at Epiphanius, circa late fifth–sixth century A.D. (Winlock 1926: 84, fig. 36). See also Egloff 1977: pl. 73:13 (A.D. 650–730) and pl. 74:7 (end of fourth to beginning of fifth century); Myśliwiec 1987: 165, no. 2029; 166, no. 2041 (A.D. 395–640); Spencer, Bailey, and Burnett 1983: fig. 64 (*saqiya* pots of about A.D. 550–700); Spencer, Bailey, and Davies 1984: fig. 30:3 (cooking pot ca. A.D. 400–550); and Jacquet-Gordon 1972: pls. 225:L3 and 228:R2 (A.D. 500–750).

223. Jar. Weathered. Red-brown 5YR 5/6, red layers, thin purplish core; red slip exterior 10R 4/4. Silt; much mica and limestone bits; some large black limestone chunks; a few small chaff bits. Outlier 7, above Building 84. See a small pot from Shenshef, fifth century into sixth (Tomber 1998: 176–77, no. 66).

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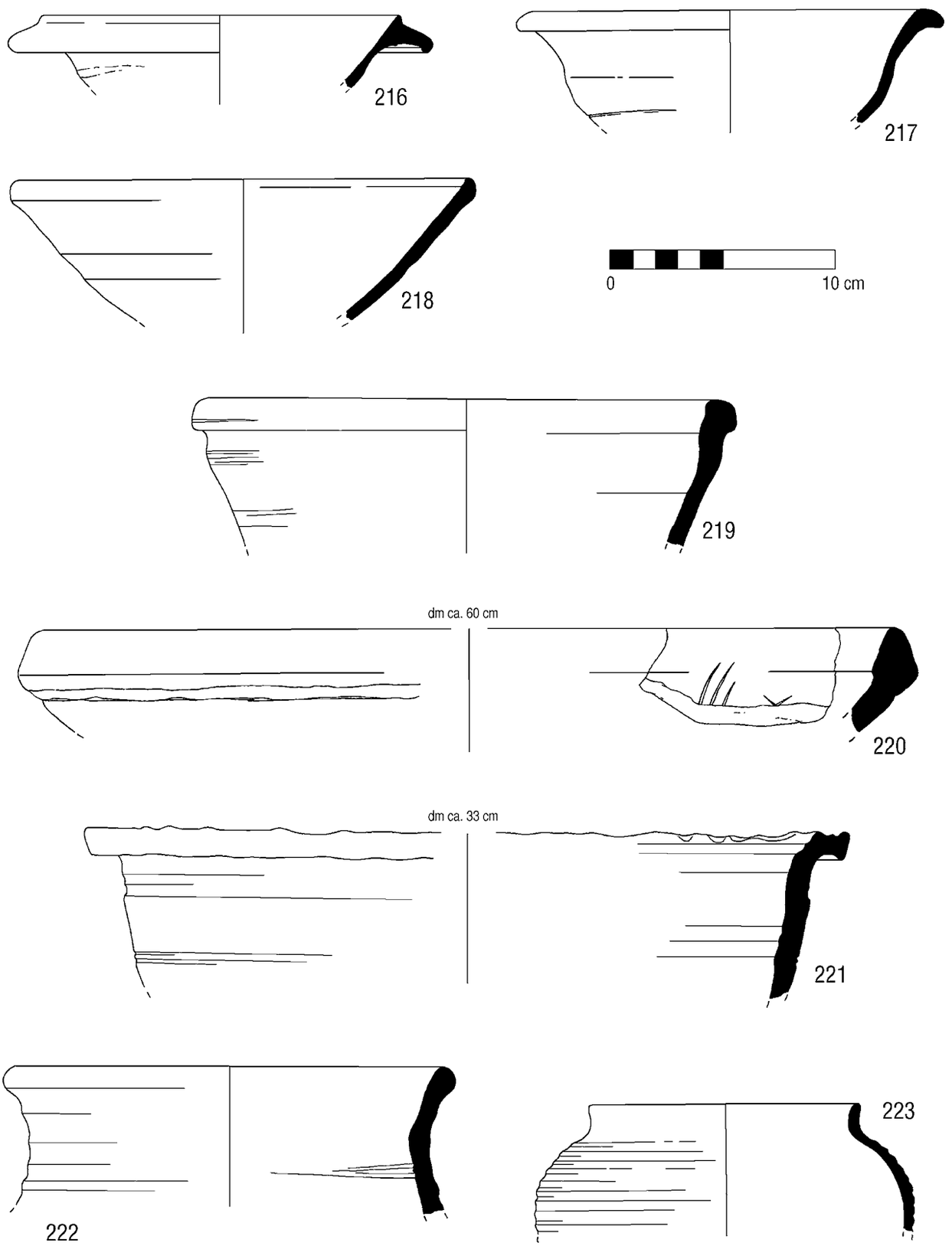


Figure 43. Pottery from Outliers 6 and 7, apart from Complex 26 (nos. 216–23)

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FIGURE 44. POTTERY FROM OUTLIERS 6 AND 7, APART FROM COMPLEX 26 (*CONT.*), AND OUTLIERS 3, 12, 13, 8, AND 9

OUTLIERS 6 AND 7, APART FROM COMPLEX 26 (NOS. 224–27)

224. Bottle rim and neck. Note also scar of top of handle. Creamy surface 10YR 8/3; pinker than 5YR 6/4 in section. Late Roman Amphora 1 fabric; abundant white and gray sand particles; many shiny black bits; some clear bits. Outlier 7, chinking in wall of Building 83.
225. Amphora rim, neck, handles. Fingerprints pressed on inside, opposite handle. Light red-brown section 5YR 6/4; red slip exterior and into interior 10R 5/6. Silt; medium amount sand, mica, limestone chunks and bits; a few red chunks; medium to abundant amount large chaffs. Outlier 7, Building 99 room 2. Late Roman Amphora 1; see no. 133 above.
226. Base. Pink, paler than 10R 6/6; 10R 5/6 slip. Aswan pink fabric; very abundant black bits; much mica; medium amount limestone chunks; a few red bits. Outlier 7, above Building 84.
227. Ring base with grooves on bottom. Pink, lighter than 10R 6/6; red slip exterior and interior 10R 5/8. Aswan pink fabric; lots of black bits and small sand particles; medium amount limestone bits; some red bits. Outlier 6, outside Building 54 room 2.

OUTLIERS 3, 12, 13, 8, AND 9 (NOS. 228–33)

The remaining sherds from the outliers are listed in the order in which the outliers themselves are discussed in *Chapter 5*. Sherd scatter at some of the outliers was very skimpy, and in any case we never made any systematic attempt to sample them. The sherds presented here are intended to help date the outliers.

228. Ring base. Pink 5YR 6/6 in break; red band at top of sherd fired to 2.5YR 4/6. Aswan pink fabric; many black bits; some limestone bits; a few sand particles and red bits. Outlier 12A, Building 26.
229. Cup or bowl with painted lotus decoration. White slip exterior and red over black paint. Fabric uncertain. The sherd is very worn. Date is unknown. Outlier 13.
230. Platter. Polished inside and out. Bright yellow to red-brown fabric with thick red core; red slip interior and exterior. Fabric uncertain. Outlier 13, Building 53.
231. Neckless jar. Light brown. Fabric uncertain; much mica, medium amount limestone bits. Huts opposite Outlier 3.
232. Large bowl. Pink(?); red rim band and over into interior. Aswan pink fabric(?); small black bits; small to medium-size red chips; few limestone bits and mica. Outlier 8. For a bowl of similar shape and fabric but white rather than red slip, seventh to ninth or tenth century, see Gempeler 1992: 111, fig. 57:1.
233. Bowl with painted decoration. Tan interior and exterior surfaces; black, red-brown, and brown paint. Aswan pink fabric(?); limestone bits; small red bits; some mica; black bits; burnt-out voids. Outlier 8. For simple bowls with painted decoration, dateable to the first half of the seventh century or earlier, see Gempeler 1992: 109, fig. 55:7.

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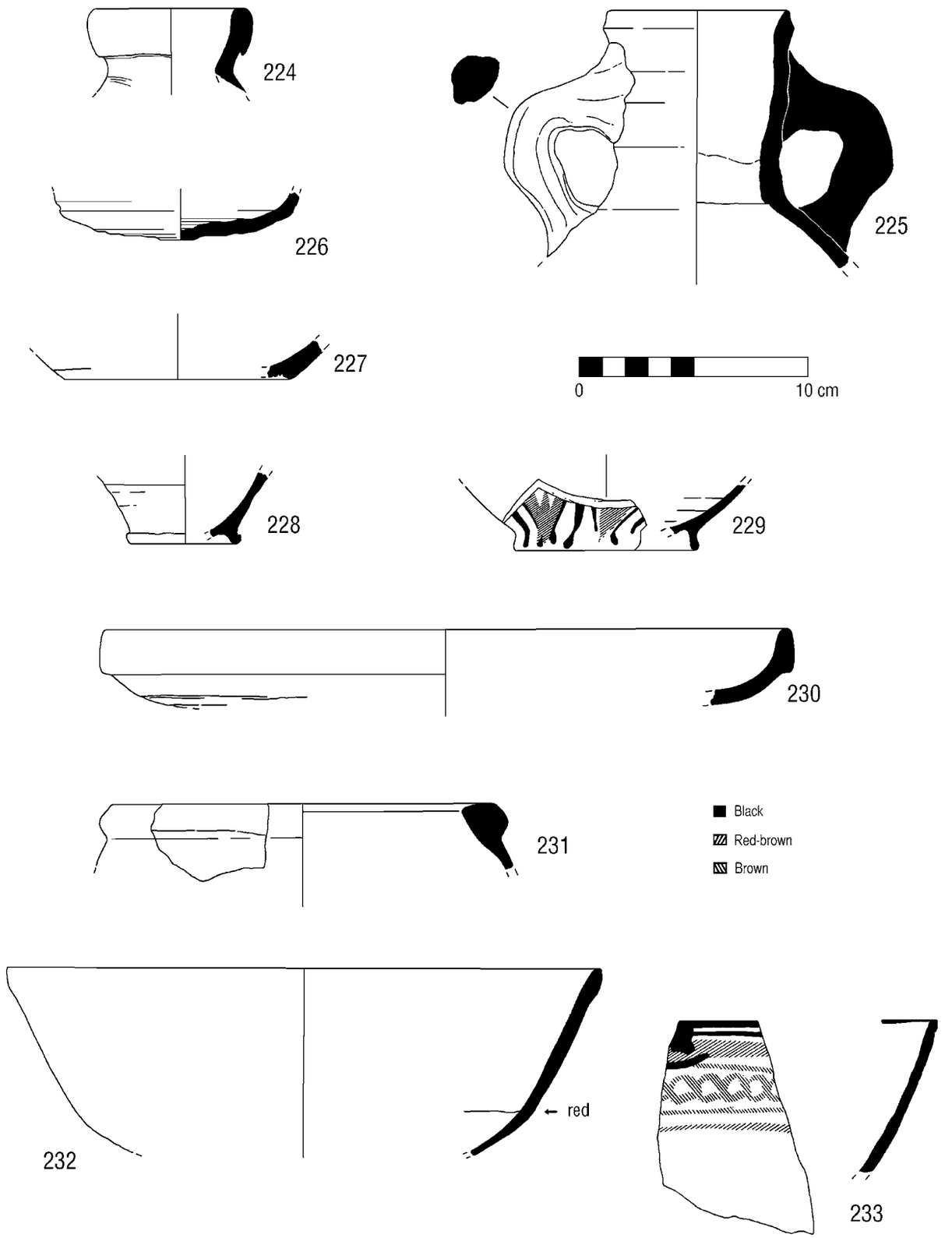


Figure 44. Pottery from Outliers 6 and 7, apart from Complex 26 (*cont.*) (nos. 224–27), and Outliers 3, 12, 13, 8, and 9 (nos. 228–33)

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FIGURE 45. POTTERY FROM OUTLIERS 3, 12, 13, 8, AND 9 (*CONT.*), AND FROM GRAVES AND VICINITY

OUTLIERS 3, 12, 13, 8, AND 9 (NOS. 234–40)

234. Jar. Wet smoothed, sloppy exterior surface. Red-brown. Silt(?); mica; white bits, some are squarish slivers; medium-size reddish chunks. Outlier 8.
235. Jar or *qadus*. Red-brown with gray core. Silt; white and yellow bits; mica. Outlier 8. If this is a *qadus*, see example from Elephantine, porous red-brown fabric, fifth–seventh century in date (Gempeler 1992: 208, fig. 133:6). If it was a *qadus*, then it raises the question of what it was doing in the desert, especially at Outlier 8, which is at least 4 km from the wells.
236. Jar with painted rim. Tan to light brown; white below rim, red atop rim. Fabric uncertain; some mica and limestone bits; some medium-size black bits. Outlier 8.
237. Bottle(?). Bright red-brown; red-brown to brown surface. Fabric uncertain; much mica; medium to small black bits. Outlier 8.
238. Amphora. Slightly warped in manufacture. Red-brown with dark brown exterior; black core in handle. Silt; abundant small white bits; black bits, sand, mica. Outlier 8. Late Roman Amphora 1; see no. 133 above.
239. Small, thick, shallow bowl. Base shows wipe marks from grasses. Red-brown 10R 5/6. Silt; very chunky fabric; abundant limestone chunks; medium amount mica; some sand; a few large red and angular chunks. Outlier 9A.
240. Jar or bottle. Exterior 7.5YR 5/2; break 2.5YR 6/6. It appears to be Oasis ware; abundant black bits; medium to lots of red chunks; medium amount red bits (grog) and long white (limestone) particles; many pinkish chunks (unmixed clay), some sand. Near Mine 2 (west of Outlier 9).

Also found in Outlier 9B was a small bowl (RN 97/17) like no. 166 above. The Outlier 9B sherd is likewise made of an orange-brown fabric with a white slip and a brown painted line below the rim, inside. It has three postfiring scratched lines that now look like the letter "N."

GRAVES AND VICINITY (NOS. 241–244)

As noted in *Chapter 5*, the cemeteries and graves were never explored systematically. We did observe, however, that there was a good deal of pottery around the graves, including wine jars with dipinti, and that much of the cemetery pottery consisted of large sherds. We gathered them to provide more nearly complete shapes of fragmentary vessels from the main settlement and to date the graves at least roughly. Some of the sherds shown in figures 45 and 46 come from the path that leads from the main settlement to Outlier 7. There is a large cemetery on top of the intervening ridge. Whether all the pottery listed as coming from the path from Quarry 2 in the main settlement to Outlier 7 pertained to the graves cannot be ascertained, but it does at least come from the vicinity of the graves.

HANDMADE

241. Deep, handmade bowl with handles. One of the very few handmade vessels recovered, it has applied knobs around the rim. It is probably another example of Eastern Desert Ware. Brown 2.5YR 5/4 with 2.5YR 6/4 exterior surface; burnt, grayish patch on exterior. Fabric has abundant limestone chunks; medium amount sand and shiny slivers; dark brown chunks. Path from Quarry 2 to Outlier 7.

PINK

242. Bowl with ledge rim. 2.5YR 6/6 section; thick red slip interior and exterior 2.5YR 5/8. Pink fabric; medium amount black bits and limestone bits; some small and large chunks reddish bits (not grog); a little sand. Path from Quarry 2 to Outlier 7. For similar cups, see nos. 110, 162, and 208 above. Parallel at Shenshef, fifth and into sixth century (Tomber 1998: 171, 173, no. 37).

SILT

243. Small, deep, ridged cup. Bright red-brown with red slip interior and exterior, all 10R 5/6. Silt; very abundant mica; abundant limestone bits; medium amount small chaffs; a few dark bits. Outlier 7, grave atop ridge east of Building 90.
244. Jar with painted decoration. Red-brown with brown core; red slip interior and exterior; white paint with black blobs. Silt, fine, metallic; mica, limestone bits, larger limestone chunks, no chaff. Grave between Outlier 2 and main settlement.

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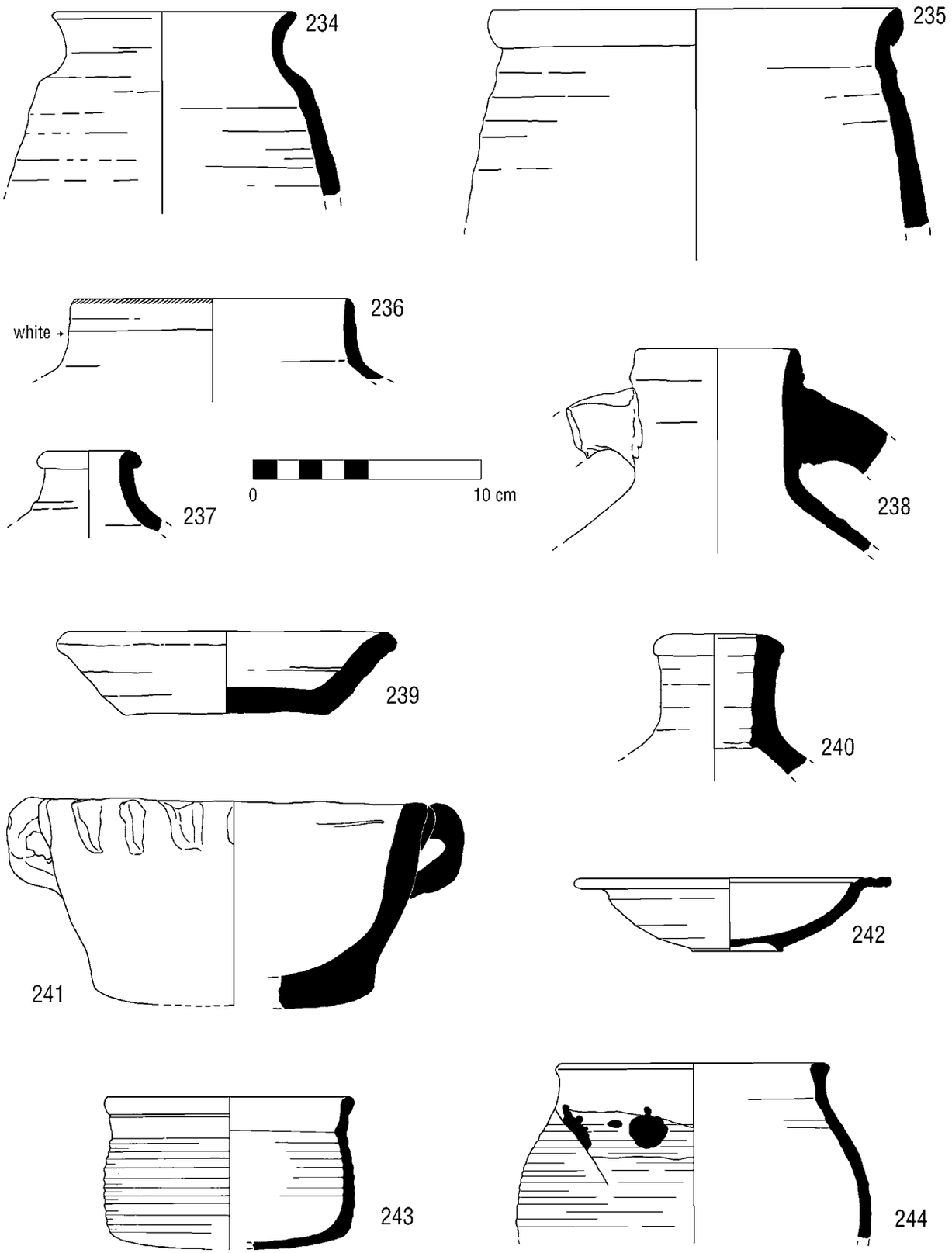


Figure 45. Pottery from Outliers 3, 12, 13, 8, and 9 (*cont.*) (nos. 234–40), and from graves and vicinity (nos. 241–44)

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FIGURE 46. POTTERY FROM GRAVES AND VICINITY (*CONT.*)

SILT (cont.)

245. Small globular jar with painted decoration. The piece is very weathered, though the outside may once have been polished, and the stance is uncertain. 2.5YR 5/8; red slip exterior; black paint. Silt; abundant mica; medium amount limestone; a few chaff and black bits; some small sand particles. Path from Quarry 2 to Outlier 7. See perhaps an open jar from Elephantine, similar fabric, red slip with white and black paint but different rim, probably fifth century in date (Gempeler 1992: 159–60, fig. 92:12).

246. Jar or *qadus*. Bright red-brown 5YR 6/6; red-brown slip exterior and onto interior rim 2.5YR 5/6. Silt; medium amount limestone chunks and sand particles; perhaps mica. Path from Quarry 2 to Outlier 7. Parallel at Elephantine, similar red-brown fabric, date uncertain (Gempeler 1992: 174, fig. 106:8).

247. Egyptian amphora. Exterior 5YR 5/4; red-brown section 5YR 5/6. Egyptian amphora; medium amount sand and mica; some limestone bits. Path from Quarry 2 to Outlier 7.

248. Ring base of jar(?). Red-brown; 2.5YR 5/8 section; 2.5YR 4/4 exterior. Silt, hard-fired; abundant limestone bits; medium amount mica; some black bits. Path from Quarry 2 to Outlier 7.

MARL

249. Carinated bowl. Creamy-buff; 10YR 8/4; 10YR 7/4 in break. Marl, gritty, medium-hard; very spongy looking in break; very abundant black bits and sand; abundant limestone chunks; medium amount mica; a few red bits. Outlier 6, near grave up ravine above Building 64. For vertical-collared, carinated bowls, see no. 6 above, New Kingdom.

250. Large basin with string decoration (dm ca. 44 cm). Exterior surface 7.5YR 7/4; 2.5YR 8/2 in break. Marl, gritty; very abundant sand; medium amount limestone chunks; a few pink clay chunks; one shiny red particle; one large bit of quartz "almost pebble." Graves on ridge between Outliers 6 and 7. For string decoration, see no. 11 above, New Kingdom.

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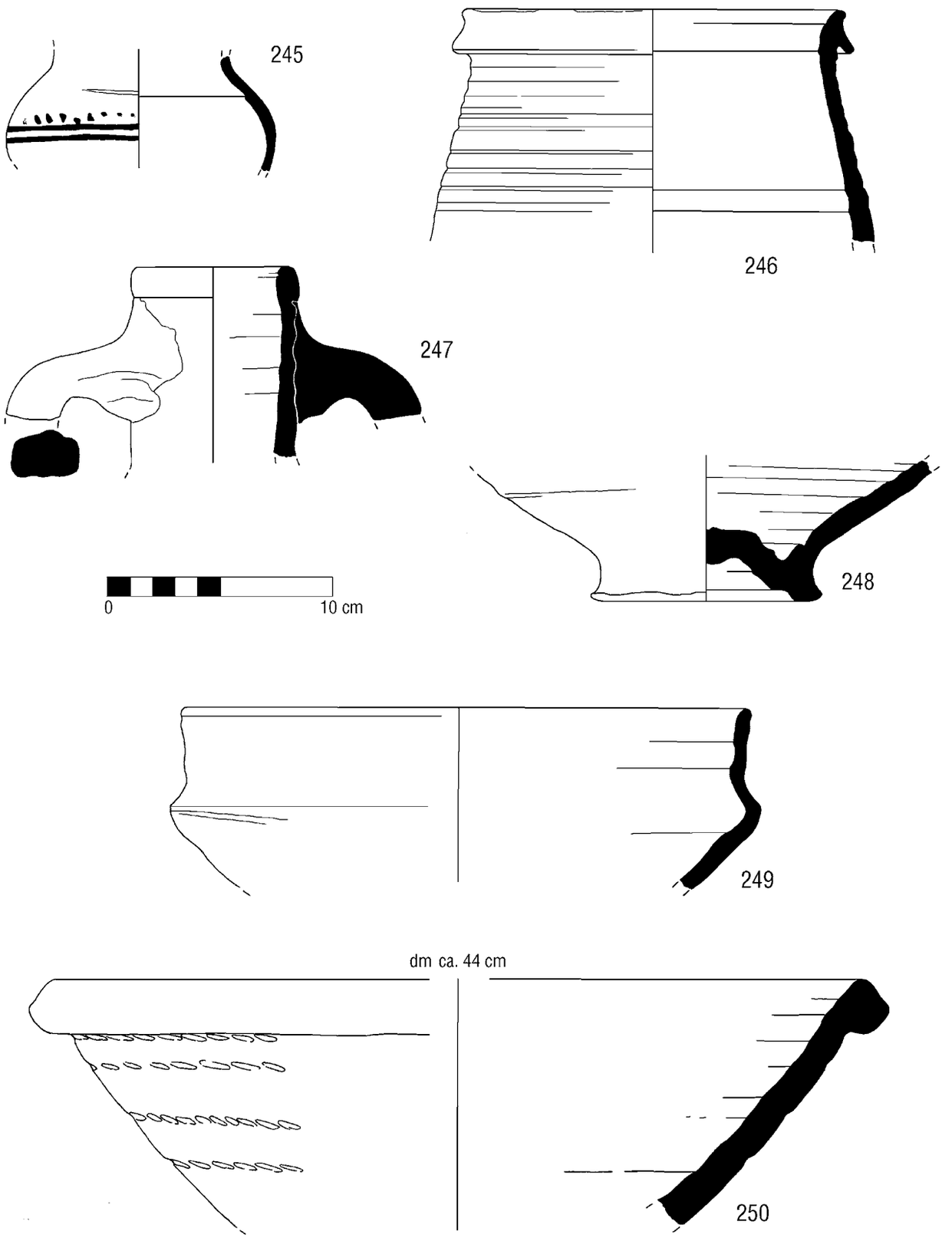


Figure 46. Pottery from graves and vicinity (*cont.*) (nos. 245–50)

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FIGURE 47. POTTERY FROM GRAVES AND VICINITY (*CONT.*)

MARL (cont.)

251. Basin with painted decoration. Light tan fabric 2.5YR 6/4; thick gray core 5YR 6/2; red slip exterior and interior; black paint over white. Marl(?); abundant black and gray bits; abundant limestone chunks; some sand; a few red chunks. Path from Quarry 2 to Outlier 7. A sherd published from the 1992 season has a fancier crosshatched decoration (Heidorn 1995: 85, fig. 30a), and a 1993 sherd is silt and also has a fancier design (Heidorn 2000: 86–87, no. 29). For a possible parallel, see an open jar from Elephantine with a neater rim and neck and cursive floral decoration, of a fairly coarse light red fabric, third or fourth century in date (Gempeler 1992: 155, fig. 89:2). See M. Jones 1991: 141, fig. 4.1 (A.D. 400–600 according to examples from Ashmunein); Godlewski 1986: 129, fig. 119:46 (seventh–eighth centuries A.D.); Myśliwiec 1987: 126–29, nos. 1531, 1533–39 (sixth–seventh centuries A.D.), and no. 1584. See similar vat forms in Spencer, Bailey, and Burnett 1983: figs. 50:F18 and 74:O6 (A.D. 400–500). See also Jacquet-Gordon 1972: pls. 223:G15 (undecorated) and 225:L9 and M21, 228:S3 (A.D. 500–750); Winlock 1926: fig. 41J (ca. late fifth–sixth centuries A.D.); and Tydesley and Snape 1988: fig. 3.27:5 (unpainted, ca. A.D. 350–650).

252. Cooking pot with combed decoration. The vessel is porous marl with a rough surface. Path between main settlement and Outlier 7, south side. A sherd from the 1992 season preserves less of the body and no handle, but the rim and combing are the same (Heidorn 1995: 85, fig. 30b). For a few similar cooking vessels, see Winlock and Crum 1926: 92, fig. 47 (ca. late fifth–sixth century); Jacquet-Gordon 1972: pls. 224:K1–2 and 225:L6 (A.D. 500–750).

253. Jar or *qadus*. Exterior surface 2.5YR 8/4; 5YR 7/3 in break. Marl; lots of dark mineral bits; medium amount darkish brown chunks and limestone chunks; some sand; mica. Path from Quarry 2 to Outlier 7.

254. Amphora rim and neck. May be Late Roman Amphora 3 type. Grayish, but perhaps burnt to this color. 10R 5/1 gray section. Marl; very abundant limestone bits and chunks; some mica; a few sand particles. Outlier 6, in ravine north of Building 64, below “tumulus” grave.

FABRIC UNCERTAIN

255. Jar waster. The sherd drawn is the less warped of two, one of which is burnt dark. This is the only waster noted at Bir Umm Fawakhir. Exterior 10YR 7/3; gray core. Uncertain fabric, warped and burnt; very abundant sand; abundant dark bits; medium size and large orangey-pink (limestone?) chunks. Graves atop ridge north of Outlier 7.

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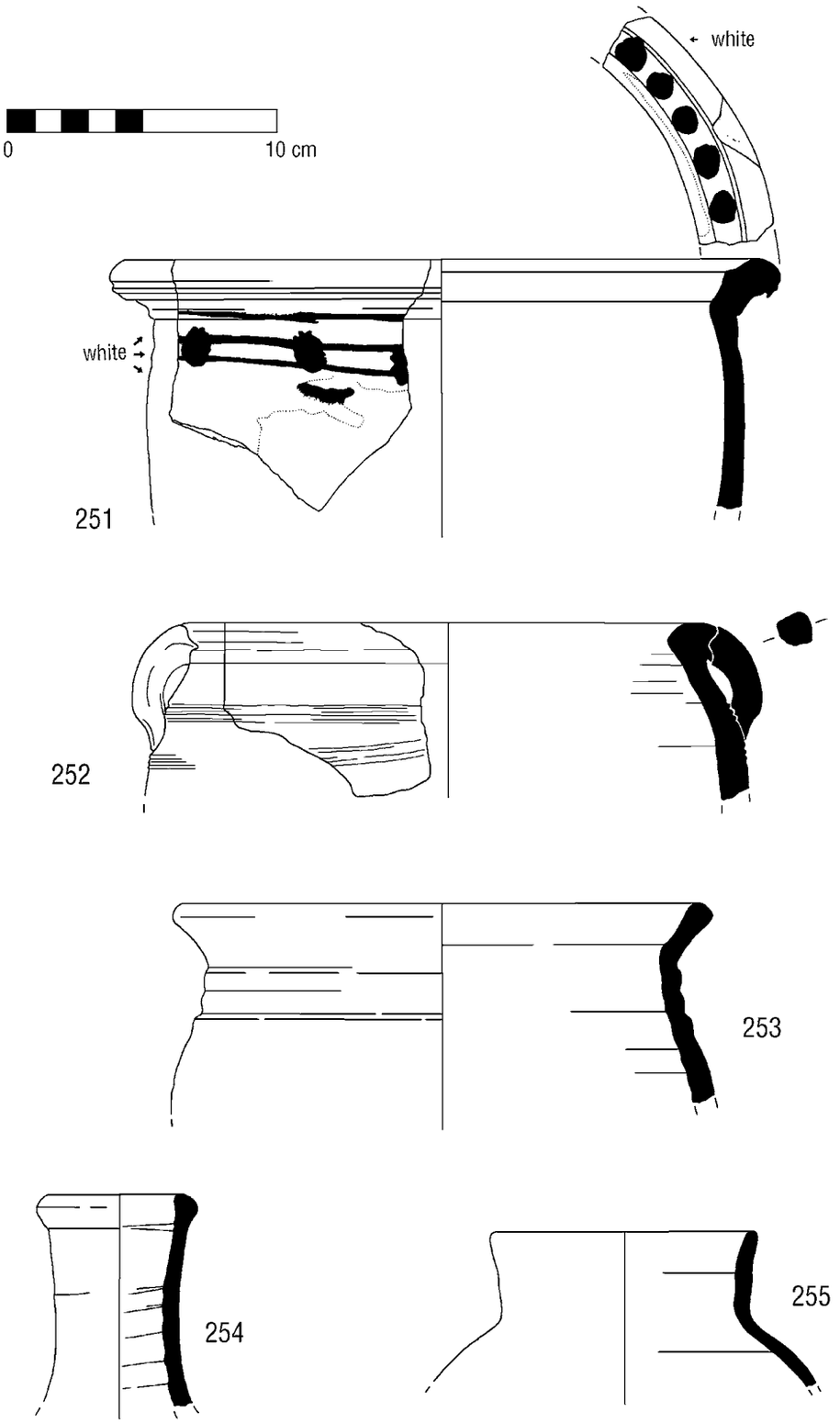


Figure 47. Pottery from graves and vicinity (*cont.*) (nos. 251–55)

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CHAPTER 7

SMALL FINDS AND DIPINTI

Carol Meyer

CRUSHING AND GRINDING STONES

As in the 1992 and 1993 seasons, the most abundant surface finds after potsherds were crushing and grinding stones. One example of a lower crushing stone was found in situ beside Mine 4; it is a large, flat granite slab with a slight depression pecked on top (pl. 94a). It is believed to have been used in the initial stage of ore-picking right at the mine itself. For crushing the selected chunks of ore to pea-size bits, two other kinds of stones were used. The upper crushing stones are usually blocks about 20 cm across and as much high (pl. 96a). They are made of granite, basalt, or a kind of porphyry found in a vein near the wells. One face is ground smooth and has a dimple pecked into it, the result of repeatedly pounding the crushing stone down on chunks of quartz resting on a lower block of granite and grinding it around. When the dimple becomes too deep, it is no longer possible to crunch the quartz to the desired size, and the crushing stone is usually discarded, though occasionally it is turned and a second face pounded down (pl. 94b). The lower crushing stones are less common; they are large, slightly dished slabs about 40 to 50 cm long (pl. 95a). In addition, a few small, flat, upper grinding stones like manos (pl. 95b) and a number of fist-sized, pounded-down pieces of quartz were noted. Rotary mills were used for the next step, grinding the ore to powder. The lower part of such a mill is about 70 cm across and has a circular depression ground into it (pl. 96a). There is a knob in the center for the upper stone to revolve around. The upper, disklike part of a rotary mill has a central hole and another off center for a wooden stick handle (pl. 96b). Two small hammerstones or pounders (one quartz, ca. 4.5 × 5.0 cm; one basalt, est. 6.6 cm dm) were noted near Building 106. Others were reported during the 1992 and 1993 seasons (Meyer 1994: 57; Meyer et al. 2000: 23), but they were not common. None of the abundant ore-crushing and grinding stones in the main settlement appears to be in primary context, though a number of stones have been reused in walls or steps up to a house (cf. Building 117, pl. 10a).

In addition, walking surveys spotted some less common types of crushing and grinding stones around the main settlement. One deeply dished “ski slope” stone was noted in Outlier 2 (pl. 97a), and another in Outlier 13. A variety of grinding stones may be spotted in the clawed-up area around the wells; two types otherwise uncommon at Bir Umm Fawakhir are ground, convex stones (pl. 97b) and a large, dished but not deeply striated stone (pl. 98a). A number of grinding stones were built into the walls of the modern well house itself (pl. 98b), including a two-handled, plug-shaped stone (pl. 99a) that is considered to be Ptolemaic (Klemm, Klemm, and Murr 2002: 218–19, pl. 125; for old photos, see Lethbridge 1946: 221). What looks like half a mortar of a dark, dense stone (basalt?) (pl. 99b) was noted in the very disturbed area behind the modern teahouses. Finally, some crushing or grinding stones were spotted by the side of the road leading to the mining camp at Wadi el-Sid. One very thick, oblong stone measured roughly 45 × 30 × 30 cm and had a smooth top with a slight, pecked depression in the middle. Another very large stone had a shallow grinding area on top (pl. 100a). One unusual stone with two or three pecked depressions (pl. 100b) looks like a Ptolemaic ore concentrator (Klemm, Klemm, and Murr 2002, pl. 126).

GLASS

Glass surface finds were very fragmentary, as may be seen in figure 48, and remarkably rare, given how abundant glass sherds are at sites such as Quseir al-Qadim. Nonetheless, there are some useful diagnostic pieces. The shallow bowl (fig. 48a, RN 96/5), is made of transparent glass, now a smoky gray, and has a row of circles and a thin groove scratched below the rim. The beveled rim looks like the knocked-off rims characteristic of Byzantine glass (Jennings 2006, figs. 5.1–16), but the inward curve of the mouth, the colorlessness and thickness of the glass, and the decoration look more like late second- or third-century Late Roman glass (cf. Mezad

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Tamar in Erdmann 1977: 106, 128, pl. 5:436). Figure 48b, transparent grayish bubbly glass, is probably the rim of a deep bowl or jar. The small, rolled-in rim (fig. 48c, RN 97/13) of a small bottle or vial from the dump behind Building 160 is remarkable mainly for its amber color. Figure 48d, from Building 170, is probably the rim of a light blue-green beaker.

Figure 48e, a base made of blue-green bubbly glass with tooling or "straw marks" on its base, probably came from a small bowl or goblet. It was recovered from Building 140. There are parallels at Karanis (no. 235, third–fifth century; Harden 1936: 96, 107–08, pl. 14), Esna (Hermitage 9, olive-green bowl base, crisscrossed straw marks, sixth–seventh century; Jacquet-Gordon 1972: 94, pl. 233). Straw-marked goblet bases are even more common than bowls.

The fragment in figure 48f, from Building 237, is a piece of a crimped-band bowl. Tiny as it is, it is still possible to see the loop of the rim and the thicker, applied and tooled rim decoration; it is impossible to tell whether the decoration made two handles or ran all the way around the rim. The body of the vessel was a light blue-green and the ruffle dark blue. Parallels are known from Carthage (greenish colorless, said to be second century; Tatton-Brown 1984: 195, fig. 65), Armant (three examples, pale yellow or greenish with dark-blue decoration, second–third century; Harden 1940: 117, 121, pl. 85), Jerash (one light blue-green, one yellow-green, Late Byzantine loci; Meyer 1987: 185–86); Amman (Dussart 1998: 59, 243), Pella (area VI, tomb 54 dromos, first century; Smith and McNicoll 1992: 127, pl. 87), Nahal David (ca. A.D. 100–130; Avigad 1962: 178), Meiron IV (ca. A.D. 250–365; Meyers, Strange, and Meyers 1981: pl. 9.13), Cave of Letters, En-gedi (bluish green, late first to early second century A.D.; Barag 1963: 30, 104–05), Beirut (green or yellow-green tint, three examples, two of which are probably fourth century; Jennings 2006: fig. 4.5), Cyprus (colorless to green tint, most glass ca. A.D. 140–240; Vessberg 1952: 114, 116, pls. 1–2), and Sardis (six examples listed, greenish or aqua, most Sardis glass first–fourth centuries A.D.; von Saldern 1980: 21, pls. 4, 21).

The sherd in figure 48g, also from Building 237, is made of yellow-green glass with dark-blue blobs and probably came from a beaker or a conical lamp. The blue blobs are usually arranged in a row or triangles; more elaborate examples have blue diamonds or loops. Parallels are known from Karanis (no. 460, fourth century or later; Harden 1936: 156, 163, pls. 5, 16), Pelusium (Fontaine 1952: 78, pl. 2), el-Lejjun (Late Roman–Early Byzantine, ca. A.D. 284–400; Jones 1987: 626, 647), Jerash (Late Byzantine; Meyer 1987: 196, 198), Ain ez-Zara (Dussart 1998: 79, 253), Mezad Tamar (late third–early seventh century; Erdmann 1977: 109, 142, pl. 8), Beirut (thirteen examples, mid-fourth to early fifth century; Jennings 2006: fig. 5.17), Cyprus (probably fourth century; Harden 1987: 113), Samothrace (Dusenbury 1967: 40), and Corinth (fourth century; Davidson 1952: 97–98).

The small fragment of clear, mold-blown or indented glass in figure 48h (RN 97/61) came from the top of the Hillock beside Building 181, but it is too small to determine what sort of vessel it came from. Mold-blown glass was fairly common from the first century A.D. onward. Another fragment of very dark blue glass was found with it.

The datable glass finds are meager, but they do center on the first through sixth centuries, the Roman through Coptic/Byzantine periods.

"INCENSE BURNERS"

By far the most interesting small finds, if puzzling, are the two "incense burners." All the examples recovered are made of very soft stone, little more than hardened clay in one case, but most are decorated. All have a shallow depression on top but no sign of burning whatsoever, hence the quotation marks around "incense burner." We have no idea what they were used for, and parallels are few and uncertain.

The larger "incense burner" in figure 48i (RN 97/59) is made of a stone not much harder than dried clay. It was recovered near a looted grave in the slopes above Outlier 9B (cf. pls. 89a, 89b). One corner was broken away but could be rejoined. The decoration consists of scratched-in vertical lines with a row of dots between them.

The "incense burner" in figure 48j (RN 97/60) is made of soft sandstone, which is not local to Bir Umm Fawakhir, and was found upslope from Building 197. Only one corner survives, but it does preserve part of the depression on the top and the scratched linear decoration on the sides. Whether it ever had feet is unknown, though two "incense burners" retrieved in 1999 did. Macalister (1912: 357–58) describes an "incense-box(?)" from Byzantine-period tomb 147 at Gezer. The "incense box" is fairly large, about 6 inches square, and has a rectangular depression on top, scratched designs and one little arch on the sides, and four stubby feet; there is

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no mention of burn marks. An incense burner from Hammat Gader does have charcoal marks (Hirschfeld 1997: 453–54). It is made of chalk and resembles the Bir Umm Fawakhir find in that it is a small rectangular box with four feet, but it has a handle, and the drilled circle decoration is different.

OTHER SMALL FINDS

The small steatite bowl (fig. 48k, RN 97/45) was found in the wadi "street" in front of Building 185. The interior is pecked out, and there are five drill holes under the surviving piece of rim. The exterior has been scraped as if with a knife, but the rim has been smoothed. Steatite (soapstone or talc) is present in workable quantities in the cave behind the modern teahouses and in other metamorphic zones near Bir Umm Fawakhir.

The steatite button in figure 48l, found in Building 227, may in fact be modern.

A number of sherd disks were found, but only one (RN 97/62) is illustrated here (fig. 48m).

A stone scraper tool (RN 97/7, not illustrated) was found behind Building 160; the scraper is now broken to a roughly triangular shape whose long side measures 9.9 cm and is thinned like an adze.

TEXTUAL REMAINS

No ostraca were recovered by the Bir Umm Fawakhir Project. The ones published by Guéraud (1942) were recovered by twentieth-century mining operations and have no precise findspot. A recent restudy indicates that most of them date to the time of Hadrian and Trajan, when Bir Umm Fawakhir/Persou functioned with the *praesidia* along the Wadi Hammamat route to the Red Sea (Brun 2003: 99).

The dearth of ostraca at Bir Umm Fawakhir may be due to several factors. One of the reasons for the enormous number of ostraca at first- and second-century places such as Mons Claudianus, Maximianon, or Krokodilo may be due to the nature of the ancient sites. Walls with only one gate enclosed and fortified all of the above, and the forts' main trash dumps lay just outside the gates. Thus, when the inhabitants cleared out their houses or archives, all the material tended to be heaped in one place. Unfortified Bir Umm Fawakhir, in contrast, has trash heaps outside each house or cluster of houses rather than a central depot. The literate inhabitants would probably have discarded their outdated documents in trash heaps near their residences. Only two dumps were excavated in 1999, and the chance of those two pertaining to literate households is slim. Nor did the project locate the administrative center of the site, much less its documents. Likewise, the extensive excavations at Berenice, which was occupied from the Ptolemaic period up to the middle of the fifth century A.D. (Sidebotham 2004: 217), failed to recover many texts. Perhaps by the Coptic/Byzantine period the residents of the Eastern Desert simply were not ostracon writers like their Roman predecessors, or perhaps by this time, a more perishable writing material such as papyrus or parchment was generally used.[17]

Thus all but one of the textual remains presented here are dipinti, labels scribbled on wine amphorae. The exception is an inscription written in black ink on the base of a flat, hard-fired plate (RN 97/50; fig. 51a). The dipinti themselves are basically of two types: a large inscription of two lines painted on the shoulder of the vessel, and a smaller inscription of two or three lines written in a different hand with a smaller brush under one of the handles. The best example is the amphora (RN 96/7) in figure 49, which was recovered from the Wadi el-Sid mining camp guards and thus has no exact provenance. It does, however, show the placement of the inscriptions on the amphorae. All the inscriptions are very cursive, the ink is a fugitive red or red-brown, and most of the dipinti are highly fragmentary, so most are illegible (figs. 50–52).[18] Judging from studies of comparable dipinti from other sites, however, it seems that most of the small inscriptions are probably personal names, numbers, or shipping information.

Appendix A lists the 1996 and 1997 dipinti by registration number and gives their findspot, fabric, and comments about the inscription.

[17] At Jême on the west bank of Thebes, however, a very large corpus of seventh–ninth-century A.D. Coptic ostraca was recovered (Wilfong 2002: xi, pl. 4).

[18] At the monastery of Epiphanius on the west bank of Thebes, the excavators found a number of dockets written in ink on the shoulders of amphorae and other types of pottery vessels. The dockets sometimes say something about the contents, but most are the proper name of men, and also one woman. They are written in Coptic and not Greek, however, and the amphora forms are not like the Late Roman 1 amphorae of Bir Umm Fawakhir (Winlock and Crum 1926: 81–82).

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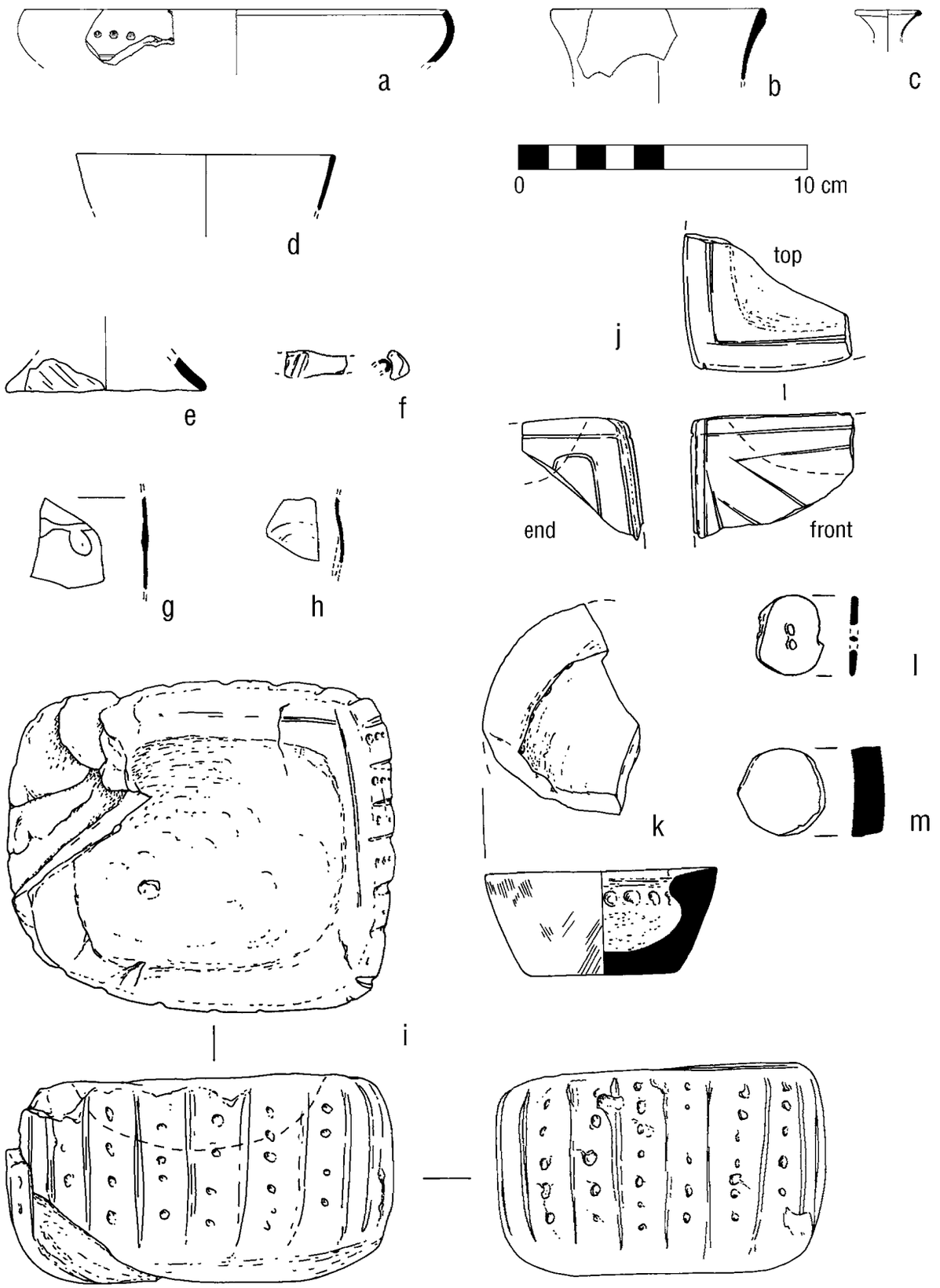


Figure 48. Glass and small finds

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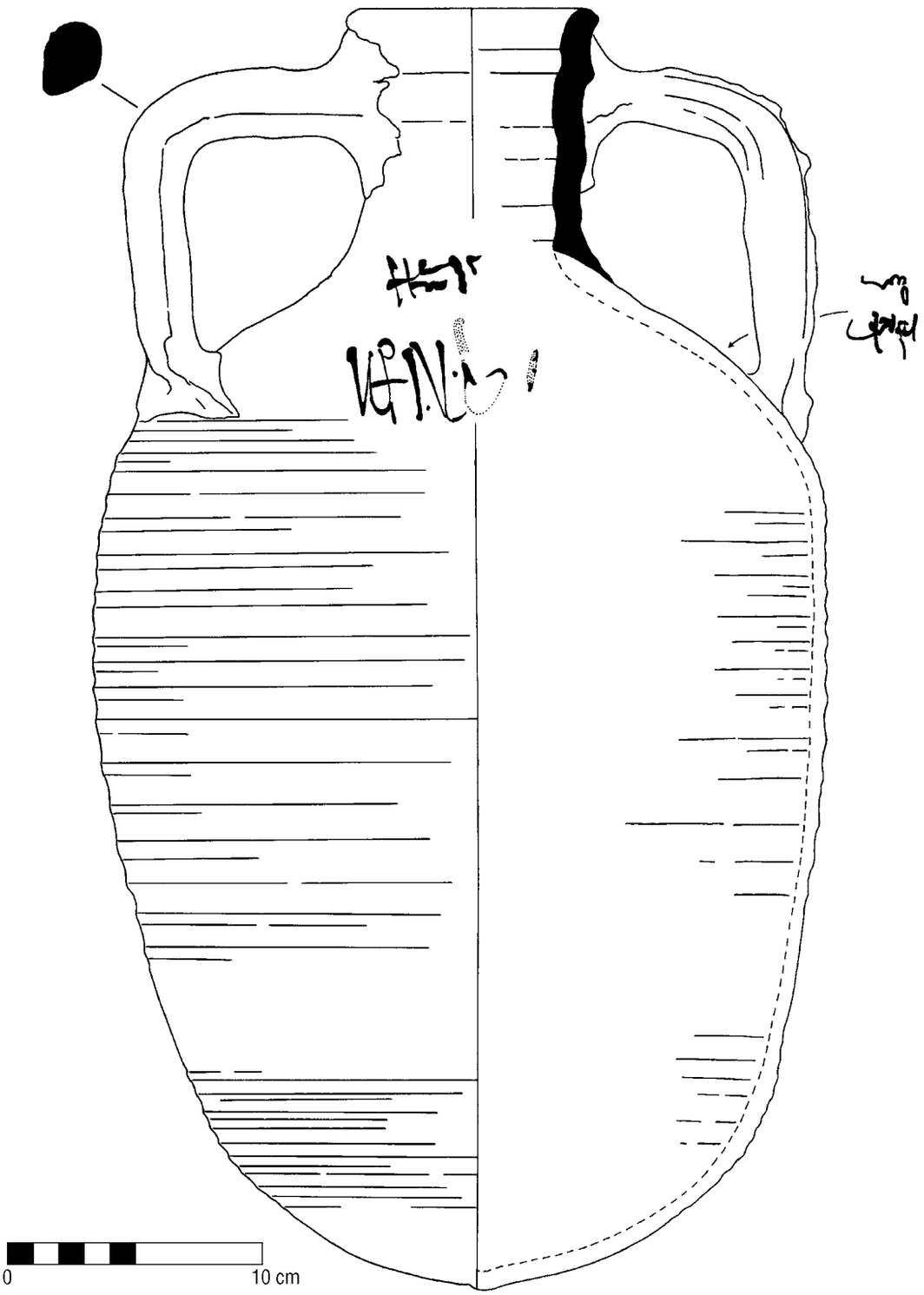


Figure 49. Late Roman Amphora 1 with dipinti

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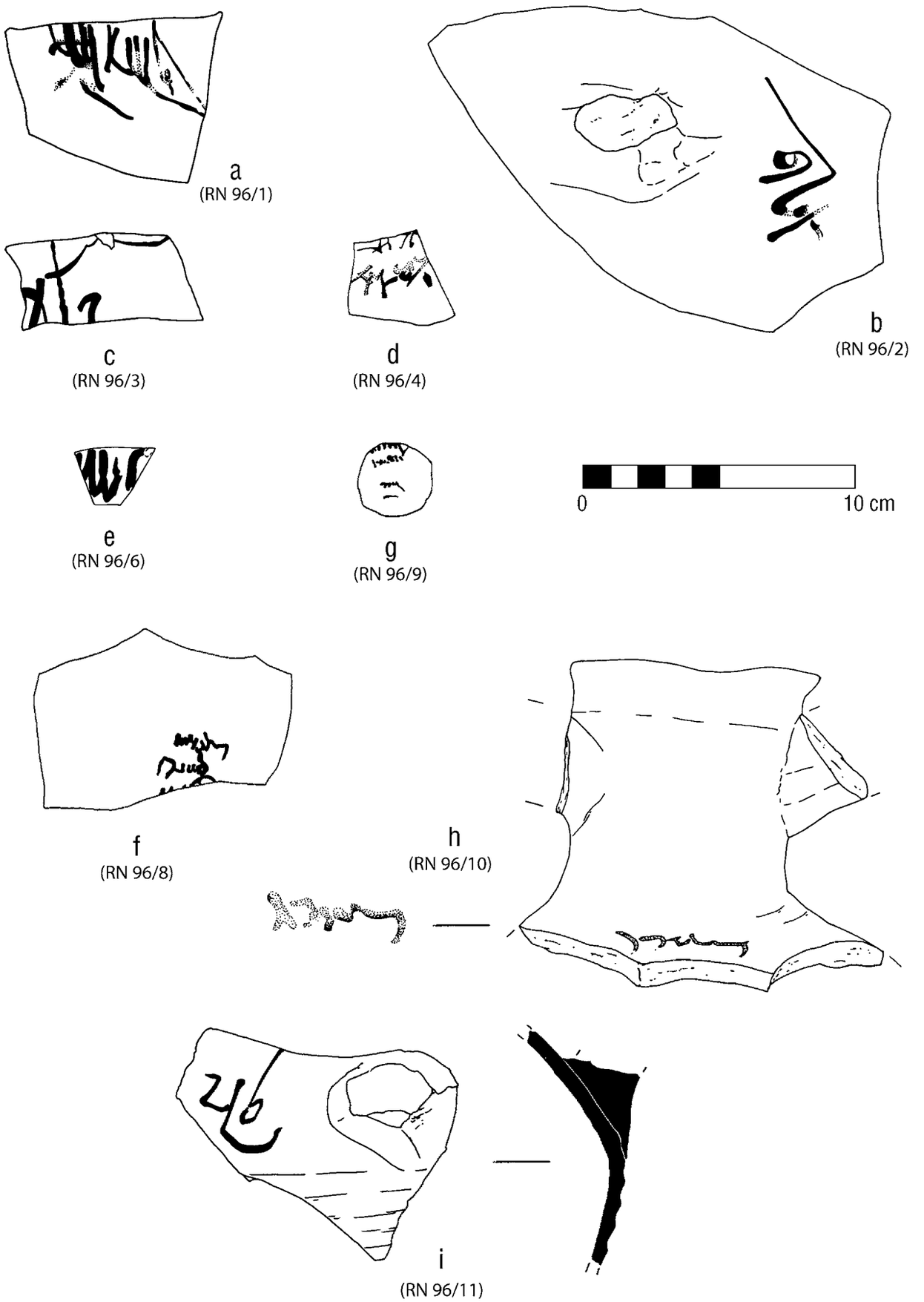


Figure 50. 1996 dipinti

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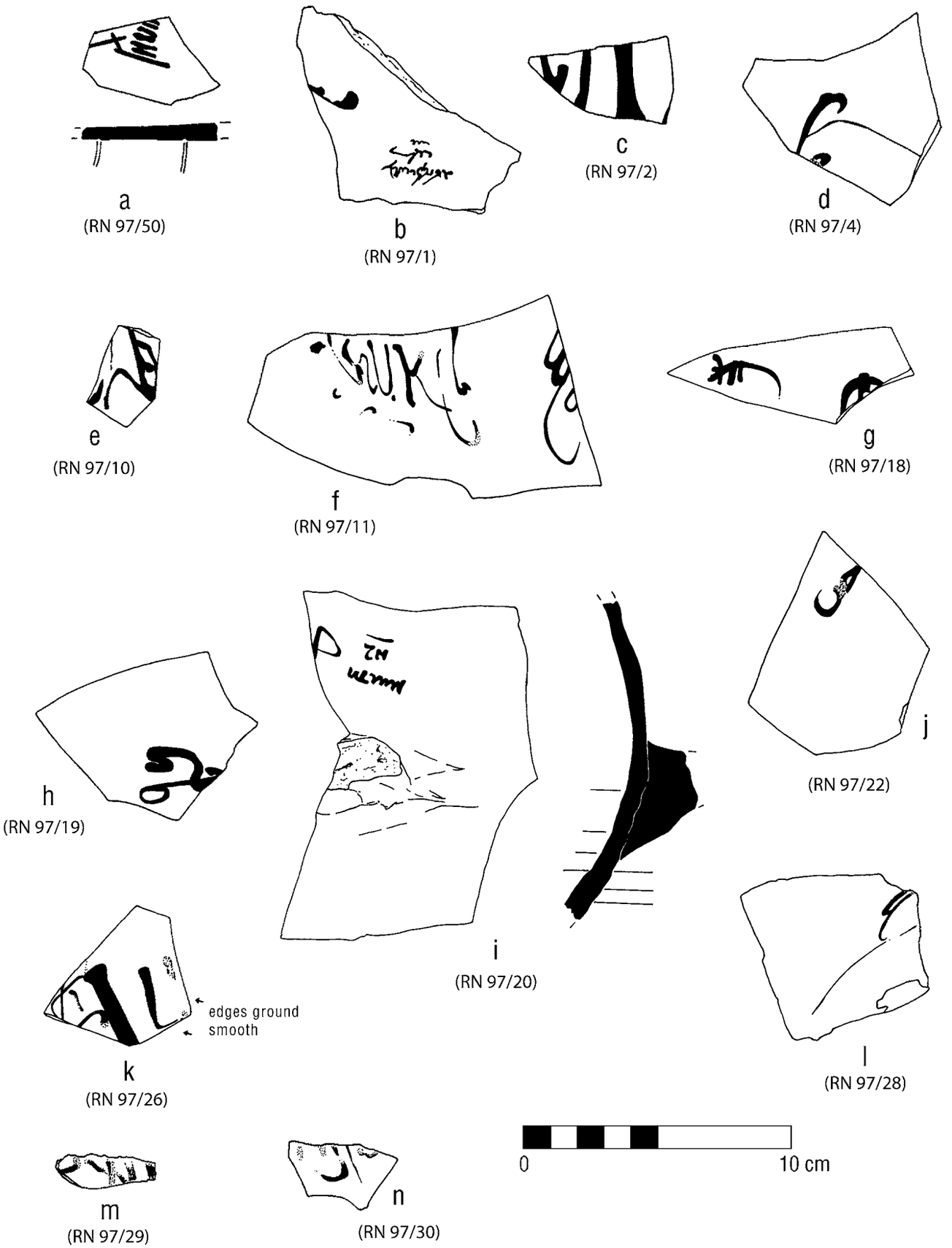


Figure 51. 1997 dipinti

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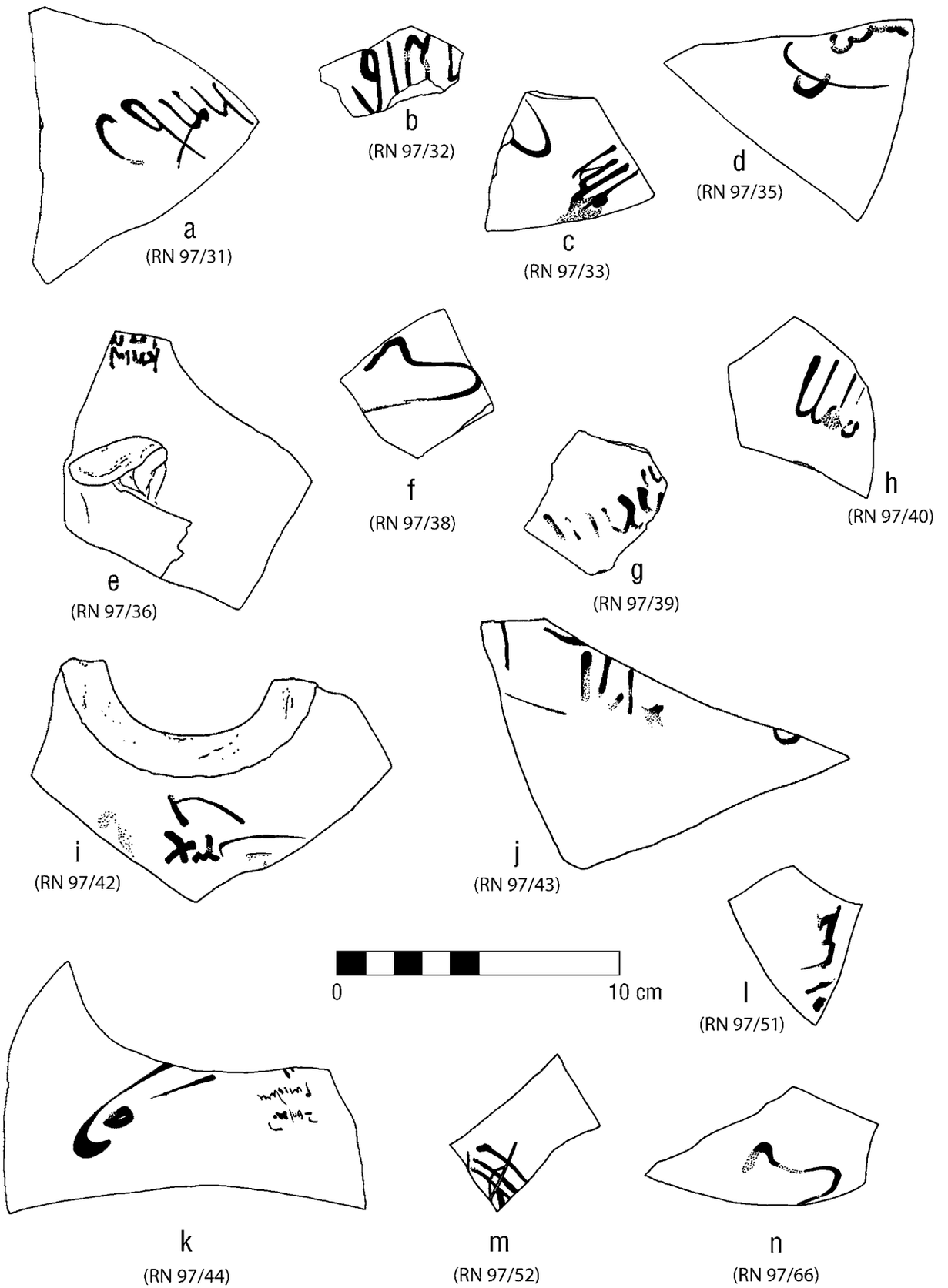


Figure 52. 1997 dipinti (*cont.*)

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CHAPTER 8

ANCIENT GOLD MINING, MINERS, AND ORE REDUCTION

Carol Meyer

One of the most important results of the Bir Umm Fawakhir Project came from its investigation of the ancient mines and ore-reduction techniques attested at and around the site. By 1997 it was clear that the term "gold mining" did not fully explain the activity at Bir Umm Fawakhir. Virtually all discussions of ancient Egyptian gold sources refer to alluvial gold, primarily from Nubia or the south of Egypt. Alluvial or placer gold occurs as flakes in the beds of watercourses; it is loose and can be panned or washed out. A small, temporary, unskilled labor force can do it, for example, a forty-niner and his mule during the California gold rush. At Bir Umm Fawakhir, however, the gold occurs in quartz veins in granite — hard rock mining. This requires a large labor force; skilled engineers to determine where to mine; an efficient organization to assemble and support the miners, especially in so remote a region; and a significant investment of capital, not to mention a complicated smelting operation. The work force at Bir Umm Fawakhir seems to have consisted of career miners, well supplied and probably reasonably well paid. They may have made a decent living, but unlike a forty-niner or freelance gold panner, they could never have struck it rich (Meyer 1998a: 258–75). Profits, if any, would have flowed out to the organization providing the capital support, in this case almost certainly the Byzantine government, which would have been using real wealth in the form of labor, grain, and supplies to obtain gold for special purposes such as coinage, wars, ransoming hostages, and the like (Kaegi in Meyer et al. 2000: 3–4).

It is also important to note that our study deals with mining, ore reduction, and smelting, and only in passing with gold refining and not at all with metalworking. For gold refining, see the thorough treatment in Ramage and Craddock's study of the industry at Sardis (Ramage and Craddock 2000).

GEOLOGY AND MINERALOGY

The area around Bir Umm Fawakhir is a moderately rugged mountainous terrain. It consists of the pink Precambrian Fawakhir granite (roughly 590 Ma), which intrudes into the older Precambrian mafic-ultramafic country rock.[19] The Fawakhir granite is for the most part a coarse to very coarse crystalline rock, mottled gray to pink in color, comprising crystals of quartz, feldspar (plagioclase), pink feldspar (orthoclase), and small bits of black biotite and hematite. The rock is jointed and exfoliated, which means that it splits into blocks easily and that the weathered surfaces may be very friable. Still younger dykes of pink felsite, pegmatite, and numerous quartz stringers and veins are intruded into the granite.

The occurrence of gold is restricted to the quartz veins, which are made up of a series of lenticular bodies strung out in zones rarely longer than 200 m. Although the veins may reach as much as half a meter in width, they are typically narrow and are always associated with parallel veinlets and stringers (pl. 101a). Mineralogically the gold-bearing veins are composed of milky-white quartz. It is the metallic minerals in the quartz, or more generally, at the contact between the quartz and the granite, that carry gold and silver. The metaliferous ores look like rusty stains on the white quartz, or sometimes shiny crystals such as pyrites (fool's gold) or chalcopyrites. The precious metals are intimately intergrown with other minerals, notably pyrite, chalcopyrite, pyrrhotite, sphalerite, and galena. In hand specimens, limonite, arsenopyrite, and possibly stibnite[20] were noted as well, but

[19] "Mafic" refers to rocks composed dominantly of the magnesian rock-forming silicates. In general, it is synonymous with "dark minerals" as commonly used. "Country rock" is the rock that constitutes the bulk of the surrounding terrain.

[20] Pyrite (iron pyrite, fool's gold, FeS_2), chalcopyrite (copper pyrite, $CuFeS_2$), pyrrhotite (magnetic pyrite, $Fe_{1-x}S$), sphalerite (zinc sulfide, ZnS), galena (lead sulfide, PbS), limonite (a field term for a group of brown, amorphous, naturally occurring hydrous ferric oxides, $2Fe_2O_3.3H_2O$), arsenopyrite (FeAsS), stibnite (antimony trisulfide, Sb_2S_3).

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no obvious gold. Although copper, lead, and other metals are present, or rather predominant, in the Bir Umm Fawakhir minerals, they are in low concentration and would not constitute a reasonable source of such metals. The important thing to note about these glittering minerals is that all of them except limonite are sulfides, which are far more difficult to smelt than oxides.[21]

THE MINING STUDY

The mountainsides around Bir Umm Fawakhir are riddled and trenched with ancient workings. There are basically two kinds, opencast trenches or stopes that excavate the quartz vein from the surface (pl. 101b) and deeper excavations that cut down underground (pl. 102a). Bryan Earl, a retired mining engineer, and Mohamed Badr el-Din Omar, of the Egyptian Geological Survey, carried out the 1997 mining study. They spent four days, November 22–25, 1997, investigating and plotting the opencast mines (stopes) and excavated mines (drives) around Bir Umm Fawakhir (fig. 3).[22] They concentrated on five of the largest "mines," but there are many more workings. They picked out pieces of vein quartz from the modern Mine 3 and from the tailings (waste material) of the modern Wadi el-Sid mine, crushed them to about the size of rock salt with a heavy iron pounding tool, ground that to powder on a magnesium steel bucking plate, washed the powder on a vanning shovel, and inspected the resulting dark, heavy, sparkly concentrate for gold flakes.

Four of the quarrying operations, or "mines," are tunnels or levels driven in from the wadi floors, through country rock, to intersect lodes in the rock mass. These lodes are reported to be gold bearing, and they frequently show evidence of ancient workings. The tunnels appear to be recent, probably undertaken early in the twentieth century or in the 1950s; they were probably exploratory drives, designed to reach the lodes exposed in the surface of the hill above and enable valuations to be made of them. In some cases the tunnels broke into the old workings.

Two levels (tunnels) are sited between Outlier 9 and the wells. We called them Mines 1 and 2 (fig. 3). They were driven to intersect a lode that can now be seen in the hill surface above as excavated, opencast trenches or stopes (pl. 102b). Other workings are quite deep. A wall, possibly of Roman/Byzantine date, was constructed around one deep opening to prevent tailings and dump material from falling into the workings (pl. 102a). The dry-stone masonry certainly looks ancient, as do the remains of huts beside some of the trenches (pl. 103a). The lode at Mines 1 and 2 appears to be on the same strike as the worked-out lode on the crest of the hill on the opposite side of the wadi, Mine 5 above Outlier 9. Mine 5, like Mines 1 and 2, has been opened up and worked to some extent by a tunnel cut into the hillside from the wadi floor in recent times. The stoping in the crest of the hill, in contrast, has a considerable scatter of sherds, mostly Roman or Coptic/Byzantine. There are remains of a human hilltop burial adjacent to the mined-out trench (see *Chapter 5*).

Traveling away from these workings, two further "mines" have been identified: Mines 3 and 4 in an otherwise barren wadi running southeast from the Roman road. Again, it appears that the modern miners had driven in from the wadi floor at a lower level to intersect lodes that had been worked down into from the hillside above. Plates 103b and 104a show how the lode and ancient opencast trench sliced diagonally through the hillside; the light-colored material downslope is discarded quartz. Ancient sherds and evidence of hand picking of orestuff with a crushing stone was noted at Mine 4 (*Chapter 7*, pl. 94a). Mine 6 on lodes between Mine 5 and the felsite dyke at the southeast end of the main settlement and Mine 7 between Quarry 1 and the main settlement were located too late for further investigation, and there are almost certainly more mining operations in the area.

In all the examples seen, the gunnises (empty space left by removing the lode from a mine) or excavations have been more or less filled by rock debris, almost certainly from windblown sand and silt and from long weathering that caused material either to fracture from the hanging wall or to fall in from the rocks above. It is therefore unknown how deep the original excavations ran. It also means that with centuries or millennia of infilling, many of the mines no longer look like much. This is typical of many ancient mines and quarries.

At the nearby Wadi el-Sid mine, the lode exposed in the recent (1950s), very deep, underground working from the main incline shaft, as well as all the ancient workings the hills at the side of the wadi leading to the el-

[21] For further details, see the geological studies by Omar in Meyer 1995 and Meyer et al. 2005.

[22] The following section is based on Earl's report.

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Sid shaft, look very similar in character and mineral suite to the lode exposures at Mines 1, 2, 3, 4, and 5. There are differences in width and some small variations in strike, but fundamentally all the workings are on lodes with the same make-up of minerals, ranging from circa 10 cm to 2 m wide, and in some areas reduced to much less.

Mining at Bir Umm Fawakhir appears to have developed in three phases. The first was the discovery of gold in the orestuff that was mined by a series of pits along the quartz veins, most notably above Mines 1 and 2. This type of mining is characteristic of the most ancient workings (pl. 101b); it is possible that it could be earlier than 2000 B.C. The mining later evolved into widespread excavation down into the ore body (pl. 102). Such working could be Roman or somewhat later, or both. The third stage is modern, twentieth century.

Orestuff from Mine 3 was selected (pl. 104b) for analysis because it was comparatively remote from human disturbance and appeared entirely typical of the whole set of ore bodies. The hand specimens were crushed by stamping (pl. 105a) and then powdered on a bucking plate at the mill of el-Sid (pl. 105b). The finely powdered ore was then vanned on a Cornish vanning shovel (pl. 106a). The heavy head was collected, after a re-grind to ensure that the maximum amount of occluded heavy mineral, such as gold, had been set free. Because of the large number of characteristic ore grinding stones found in the area and also the finely crushed tailings at the modern el-Sid mine, it was anticipated that any gold present would be in very fine particles and that the orestuff would have to be well powdered. Examination of the washed concentrate with a hand lens did not reveal any obvious gold, but this is often the case with ores holding finely disseminated gold.

Grains of the vanned head were examined by A. S. Ball at Camborne School of Mines in Cornwall using energy-dispersive x-ray spectroscopy techniques with a scanning electron microscope (SEM-EDS). The object was to determine the nature of the minerals and, if gold was present, its form and association. Ball reported that the investigation was made difficult by the presence of much dense material, particularly galena (lead sulfide). However, two gold particles, or rather electrum, the gold/silver alloy that is the most common form of lode gold, were studied. In both cases these were small, ranging from 1.0 μm to 1.5 μm in gauge. The associated gangue (waste material) was a calcium-iron-silicate material. While this is an isolated sample of orestuff, the small size of the gold found by scanning electron microscopy (SEM) and the widespread distribution of crushing stones in the area point to the need for thorough crushing. The fine dump material at the modern el-Sid mine confirmed this. The modern operations, which used the cyanide process, milled the ore to circa —100 mesh to expose the gold.

The overall view is that from ancient times the area was engaged in gold mining of low-grade ore on a considerable scale.

ESTIMATES OF GOLD MINED

It is difficult to determine the scale of gold production at the Bir Umm Fawakhir and Wadi el-Sid mines in the twentieth century, much less in antiquity. Evaluating mines is a specialty unto itself, but in this case even how much gold the modern mines actually produced is not easily reckoned. For one thing, reports from a producing gold mine are generally intended for company use, not scholarly publication, and they may not be easily accessible. The main problem in this case, however, is that the reports seldom say how the assays were made. Tests made from opposite ends of the same hand sample, for instance, could yield different estimates of gold content. The ancients with their simple tools followed the veins as closely as possible, whereas modern miners excavate passages large enough for entire mining machines or even scoop out whole mountainsides; estimates of yield per ton will obviously be grossly different in the three cases. A summary of old geological and mining reports is collected on table 1 for the sake of what can be gleaned from them.

In short, then, if it is not known whether the modern Wadi el-Sid mine yielded 3,110 or 2,650 kg of gold (see Kochin and Hall references in table 1), it is virtually impossible to determine how much was extracted in antiquity. The ancient miners surely concentrated on the richest and most easily accessible ores; what they left was what they did not want or could not reach. Almost all the modern estimates of gold yields from the ancient mines and tailings are so high — by modern standards — that if two grams per ton is considered viable, it is surprising that all the gold companies are not currently operating in the Eastern Desert. What is clear is that the estimates are far higher than the actual yields. One problem is that there is no indication of how the assays were made — with hand samples, beneficiated ore, crushed and concentrated samples, fire assays, SEM, or some other method — so it is hard to know what they actually represent. Regarding Bir Umm Fawakhir and the Wadi el-Sid mines, then, probably the safest statement is that the latter mines were many times richer than those at

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Bir Umm Fawakhir. The Fawakhir mines were not worked until relatively late, the Coptic/Byzantine period, when the older el-Sid mines had been exhausted by ancient techniques and the demand for gold was sufficiently urgent that the low-yield Fawakhir mines became worthwhile.

Table 1. Estimates of gold content of Bir Umm Fawakhir and Wadi el-Sid ores

Date	*Site*	*Gold Yield*	*Comments*	*Reference*
1897–98	Fawakhir	17 assays cited, average 6.22 g/ton	"Many stone huts," temple, quarrying noted	Barron and Hume 1902: 261
1901	Fawakhir(?)	few pennyweight to 10 ounces/ton	Quartz discards in ancient tailings [311 g/ton is suspect]	Alford 1901: 24
1929	Fawakhir	28 g/ton	Citing Greaves	Sommerlatte 1994: 138
1937	Fawakhir	None cited	Stone huts, temple, good water supply	Hume 1937: 712–13
	Atalla	Few pennyweight to 14–15 g/ton (2,240 pounds)	Gold:silver ratio 1:3.2 to 1:3.8 (electrum)	Hume 1937: 730
1940–41	Fawakhir	"Little profit"	See *Chapter 2* for description of antiquities recovered	Guéraud 1942: 19
1944	Fawakhir	4.665 g/ton but only half recovered	See *Chapter 2* for description of modern workings and antiquities	Lethbridge 1946: 222–25
	Atalla	15.55 g/ton	Only from amalgamation	—
1962	6 ancient mines	None cited	Gold varies from 76% to 86% (18.2 to 20.6 carats) assuming silver only impurity	Lucas and Harris 1962: 228–29
1968	Fawakhir, old tailings	3.63 g/ton	No indication how values obtained	Kochin 1968
	1944–48 tailings	9.1 g/ton	—	—
	el-Sid, all	**3,110 kg total**	**Total quantity of gold produced**	—
	el-Sid main vein	Avg. 27.9 to 13 g/ton	"The UAR's largest and richest gold deposit," notes ancient workings	—
	Second vein	"High gold content"	No indication of how tests made	—
	South and southeast of main vein	18 g/ton	Ancient workings noted	—
1988	Fawakhir	—	120 samples, no indication how test made	Hall 1988
	"Dump 1"	1.97 g/ton	—	—
	"Dump 2"	2.05 g/ton	—	—
	"Dump 3"	1.73 g/ton	—	—
	el-Sid, all	**2,653.6 kg total**	**Total quantity of gold produced**	—
	el-Sid south (Shemamiya?)	Ancient workings noted; 153 samples but no indication of how tests made	—	—
	North dump	17.8 and 40 g/ton	—	—
	Central	4+ g/ton	—	—
1994	All ancient mines	15–20 g/ton	"A miner can work about 25 kg of lode ore per day by hand"	Sommerlatte 1994: 138

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MASS SENSITIVITY EXPERIMENT

Partly to verify the existence of traces of gold in the exhausted mines and partly to obtain one assay with a known input and technology, several chunks of ore were collected from the modern Mine 3 and from tailings at the modern Wadi el-Sid mine. At the mining plant, some pieces of ore were crushed, powdered, washed, and visually inspected for gold flakes. The SEM analysis has been reported above. In addition, a 5 g capsule of the powdered, concentrated ore from the tailings at the modern el-Sid mine was submitted to the Advanced Photon Source at Argonne National Laboratory in August 1998 to try to determine whether any gold was present and, if so, make an estimate of how much per ton (of concentrate).[23]

The very high intensity of the x-ray beams available at the Advanced Photon Source, a large synchrotron facility at Argonne National Laboratory, combined with a special experimental beamline facility, allows one to measure trace amounts of elements in a sample at the submicrogram level, in small samples. Measurements at the 10^{-7} to 10^{-9} g level are common.

Samples at two positions in the quartz tube container were measured to check the uniformity of the concentration of gold in the ore. The gold signals in both positions were quite strong, so the experiment needed only about half an hour to obtain good results. The other very strong signal that came through in the data was from lead, so the lead concentration was measured as well. In position 1 the ratios of weight of gold (Au) and lead (Pb) to weight of sample were as follows:

$$\text{Au} = (1.95 \pm 0.14) \times 10^{-4}$$

$$\text{Pb} = (1.98 \pm 0.14) \times 10^{-4}$$

In the second position the ratios of weight of gold and lead to sample weight were as follows:

$$\text{Au} = (9.57 \pm 0.67) \times 10^{-4}$$

$$\text{Pb} = (15.69 \pm 1.10) \times 10^{-4}$$

The concentration of gold varied by a factor of 5 in the two positions, but the ratio of gold to lead remained very similar. This is to be expected. The concentration of gold in the samples is quite high for hard rock mining, but as the experiment was run on partly processed, concentrated ore, the raw ore would show a smaller gold content.

Since Argonne ran the experiment on the ore concentrate, the value of the gold in the concentrate would be *about* 100 times its ore valuation. The vanning assay as carried out on site gave about 1 percent concentrate from the crushed sample. This would make the mine ore *about* 2 g per ton, which is very close to the estimate in the mining study (above). The lead content is actually quite good for processing the ore. If the original ore was lead poor, lead or lead ore had to be added to help collect the gold and silver.

PREVIOUS ACCOUNTS OF ANCIENT MINING AT AND AROUND BIR UMM FAWAKHIR

Since the beginning of the twentieth century, a number of geologists and mining engineers working in and around Bir Umm Fawakhir have published brief accounts of ancient ruins, artifacts, and mines, many of which are now lost or destroyed. Simpson (1906) says nothing about Fawakhir but does describe what may be evidence of ancient mining, apparently at Wadi Atalla, which is about three hours by foot from Bir Umm Fawakhir. He mentions evidence of fire setting, such as hanging walls and footwalls blackened from smoke and brushwood fires, and much charcoal. He notes mine supports consisting of two upright stone slabs with a "cap" or "headtree" and two well-preserved iron picks and numerous stone hammers. Unfortunately, it cannot be determined from this description whether the old workings were medieval, Roman, or earlier.

Hume says little about Bir Umm Fawakhir apart from noting the "stone huts," the little temple, and the good water supply, but he has more to say about Wadi Atalla. The mines there were reopened in 1914–18 and are "… probably the only instance where a profit has been made in working an Egyptian gold mine during the last twenty years" (Hume 1937: 730). He cites Simpson's description of the old workings and adds the comment that

[23] For a complete description of the experiment and calculations, see Meyer et al. 2005. We would like to thank Dean Haeffner, Sarvjit Shastri, and Anton Stamp for running the experiment, and Robert Smither for setting it up and calculating the results.

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they appear to have been hastily abandoned. This he derives from the piles of rich quartz and the mine faces left untouched after fire setting. In addition he mentions a stone tool like a hand ax, acacia wood roof props, stone (retaining?) walls, and a "vertical shaft that cut the vein on the hanging-wall below the 'run.'" (Hume 1937: 730–32). Again, there is no suggestion as to the date of the "ancient" workings.

Lethbridge (1946: 222–25) may be referring at least in part to the Wadi Atalla mines when he says that the material from the reopened veins was carried to a simple plant at the Bir Umm Fawakhir well. The rubble in the old mines was cleared to a depth of 300′, which is very deep for an ancient mine, and the vein is said to have been strong below the old workings, down to about 450′. The old workings were followed 600′–800′ along strike in one mine, 300′–400′ in the second. They strictly followed the veins and thus varied from fairly wide to very narrow stopes (trenches). Lethbridge reported marks of gads, fire setting, and scraps of baskets but no washing basins or crucibles, though he did look for them.

ANCIENT MINING AND ORE REDUCTION AT BIR UMM FAWAKHIR

Winning gold from quartz veins in granite is a laborious, multistage process. The ore has to be detected somehow, hacked out of the rock, crushed and ground, washed, and smelted. As mentioned earlier, this paper is not concerned with the subsequent steps of refining or metalworking. The techniques used in prospecting for metals and valuable stones in antiquity also makes for a potentially fascinating study and a topic about which virtually nothing is known.[24] Unfortunately, the Bir Umm Fawakhir data contribute nothing to the question. We therefore start at the point at which the gold ores had already been detected by one means or another and note only that ancient Egyptian exploitation of the Eastern Desert resources, and especially those of the Wadi Hammamat, reached far back into prehistory.[25] Despite the expressed dichotomy between the desert and the sown land, Red Land and Black, the deserts were in fact traversed and exploited for millennia.

As for hacking quartz out of granite, there were no sophisticated techniques involved. The ancient Egyptians had long possessed the methods and skills for much more precise stone quarrying and masonry. We therefore concentrate mainly on the questions of reducing the ore and extracting metal from it. The historical discussion begins with the usual suspects, Agatharchides and Pliny the Elder, and then moves on to the archaeological evidence from Bir Umm Fawakhir and other sites.

The one ancient textual source that is cited almost without fail as the one definitive description of ancient Egyptian gold mining from earliest pharaonic times through the Roman period — at least 3,000 years in which ancient technologies are presumed to have changed not at all — is Diodorus Siculus. He wrote his account in the middle of the first century B.C. and based it on the work of Agatharchides of the preceding century. It is by no means clear that either author ever saw an operating gold mine, and in fact Diodorus' account of Egyptian mining is closely paralleled in his account of Spanish mining. Agatharchides' work survives only in scattered quoted fragments, primarily in Diodorus and in Photius of the ninth century A.D., which have been assembled by Burstein (1989). Burstein observes that Agatharchides did not rely on personal travel, experiences, or observations but on assembling documents available to him in Alexandria.

Agatharchides, and hence Diodorus Siculus and Photius, all dwell on the extreme misery of the miners, whereas at Bir Umm Fawakhir there is virtually no archaeological evidence for deprivation or physical constraint. There are no town walls to keep people in or out, and only a couple of guardposts high on hills overlooking the site. If anyone wanted to walk out, it is about a two and a half day journey to the Nile, and wells occur about a half day's march apart. There is no sign of a fort or military establishment, and within the main settlement, there is no apparent differentiation in layout, size, or special features between houses at one end of the town or the other. Indeed, the straggling layout of the main settlement and the outliers have nothing planned or regimented about them, but seem rather to have been laid out to take advantage of the wadi scarps, party walls, or shared open spaces. The silos in Outlier 2 look more like household granaries than rations doled out to captives. The enormous quantity of pottery at the main settlement indicates a lavish supply of crockery over a long period of time, and some of it is fine polished or imported ware. The numerous amphorae probably held wine or other

[24] But see Klemm and Klemm 1994; Klemm, Klemm, and Murr 2002.

[25] Klemm, Klemm, and Murr 2002.

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provisions only once, but they seem to have been in good supply (Meyer 1998a: 269). Meat certainly was available, judging from the results of the 1999 excavations and Ikram's analysis of the bones (Ikram 2001: 20–23), and milk was processed into cheese in kitchens areas (Meyer 1999: 29). One of the two excavated houses yielded half a copper-gold bracelet, a cut oval carnelian gemstone, several small coins, and raw emeralds (Meyer 1999: 27). This picture agrees with the results from the somewhat earlier first–second-century A.D. quarry at Mons Claudianus. There, most workmen received a monthly salary of forty-seven drachmae plus wheat and sometimes wine. Since there was and is very little to purchase in the desert, the workmen routinely sent money and/or instructions to family members or representatives in the Nile Valley to buy special foods or other goods, pay debts, or take care of other business (Cuvigny 1996: 139–40; Cuvigny 1997: 112). Note that none of the ancient writers calls the miners slaves, whom they would readily have identified. In short, the Bir Umm Fawakhir workers were probably career miners making a decent living, if in a harsh locale, rather than prisoners of war or criminals.

The current assumption is that the labor force at Bir Umm Fawakhir was recruited from the Nile Valley villages. The reasons for saying this are data from other Eastern Desert sites, the size of the population, and the pottery. Speaking of much earlier periods, the Old and Middle Kingdoms, Shaw says that the miners were generally seasonal, unspecialized, and dependent on military or naval organization (Shaw 1998: 246). They were "temporarily desert-based" but "the core of the workforce was made up of … young men taken from agricultural communities" (Shaw 1998: 255). As noted above, the Roman-period quarrymen at Mons Claudianus maintained ties to the Nile Valley. Given the estimated size of the population of the main settlement alone, a little over a thousand people, it is hard to see where they could have come from if not the Nile Valley. There are not and probably were not that many able-bodied nomadic[26] men in this part of the desert. Large groups of nomads may assemble for special purposes such as a raid, but their families, tribes, and animals are normally dispersed over a wide territory, and to lose any of them is to lose a livelihood. It is possible that some nomads worked as miners, or more likely in ancillary roles such as supplying milk or meat, but it seems unlikely they were numerous. This is supported to an extent by the pottery. The surface of the main settlement is dense with potsherds of the types reviewed in *Chapter 6*. At the same time, the project collected all the handmade pottery, now called "Eastern Desert Ware," that it spotted, or four sherds in four seasons (*Chapter 6*, nos. 198 and 241; Meyer 1995: 83, 86). Pots are not people, but four sherds versus the basket loads processed is a major discrepancy.

Another aspect of mining towns is that they tend to be heavily weighted to young, able-bodied men, especially in the first months or years of the settlement and especially if the site is remote and the subsistence base is poor or poorly developed. For example, the 1861 census of the Australian gold-rush camp at Dolly's Creek in Australia revealed that 80 percent of the population, including small children, was under forty, and there were 122 women fifteen or older for 286 men (Lawrence 1999: 134).[27] Although the data are not quantified, and the sites are military posts rather than mines or quarries, the second-century A.D. *praesidia* at Krokodilo and Maximianon on the Wadi Hammamat road seem to have had fewer women than men (all occupations, Cuvigny 2003a: pp. 295–395; prostitutes, pp. 374–89; other women, pp. 389–94). In addition, the strenuous work and inherent risks in mining often lead to early death (Knapp 1998: 9), though the Bir Umm Fawakhir gold mines were probably less dangerous than, say, the Cornish tin mines (Rule 1998).

Since the ancient descriptions of the recruitment and extreme miseries of the miners are not supported by available evidence from the Eastern Desert, we move on to a critical examination of Agatharchides' technical information about gold mining and ore reduction. Agtharchides' work survives in three sets of excerpts, Strabo, Diodorus, and Photius. The most extensive — and less known — fragments are included in Photius' work:

> At this point, near the aforementioned [Erythrean or Red] Sea, there are found some of the so-called "noble" rocks, which contain abundant mineral deposits. In colour they are jet black but they contain such great outcrops of quartz that everything else pales by comparison to them for brilliance …. They [the miners] pursue their tasks in the mountains where the gold is found. They light wood fires on the stone outcrops, which are jagged and extremely hard, and crumble them with the heat. They break the fractured rock into little pieces with iron sledges. A technician, who sorts the ore, is in charge of the other workers. Whenever

[26] The investigation of the nomadic population of the Eastern Desert is currently a very active topic, but as of writing, we cannot put a name to the nomads in the vicinity of Bir Umm Fawakhir in the fifth to sixth centuries A.D.

[27] Percentages and counts taken from the table rather than the text.

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> he points out veins to the miners, the whole task is then carried out by the miners … in accordance with the following division of labour. Those who are strongest and young smash the quartzbearing rock with iron hammers, striking their blows not with skill but brute force. They also cut many galleries through the rock, not on a straight line, but in some places rising above the gold-bearing ore and sometimes falling below, and again, turning to the left and sometimes twisting back and intersecting like the roots of trees. They excavate wearing lamps fastened to their foreheads, following a sort of white vein. They often force their bodies to conform (to the shape of the gallery) as they throw on the ground the pieces of rock, not according to their own decision and ability but under the supervision of an overseer (Burstein 1989: 59–62).

Diodorus Siculus' account, minus the agonies of the miners, is a little more abbreviated (Burstein 1989: 59–62).

Several aspects of this description remain puzzling, such as why the native rock is described as jet black and why the quartz would gleam any more brightly than normal quartz. No other ancient writer mentions lamps bound to the miners' heads, and it is difficult to see how this could have been achieved if they were also contorting themselves to fit narrow excavations.

As noted, the mines at Bir Umm Fawakhir are of two kinds, opencast workings following a vein down from the surface to no great depth (pls. 101b, 104a), and deeper, irregular cuttings into the mountainside (pl. 102). Few if any of these seem to have been excavated deeper than the twilight zone, where at least a little daylight could be perceived. The mines at Wadi Atalla about 15 km away may have been deeper. The suggestions of fire setting there are also interesting, but since there is no real dating of the old workings, they could be medieval as easily as Roman. At Bir Umm Fawakhir there are no signs of fire setting, but the account preserved in Photius' work seems to indicate that it was used for surface mines. If that were the case, the ashes have long since blown away. Further, the granite at Bir Umm Fawakhir is generally rotten and crumbly at the surface and deeply jointed throughout, so fire setting would have been both costly in terms of fuel and in most places unnecessary. There are traces of what could be pick or tool marks in the mines, but the indications are not very clear. The ancient accounts mention iron "sledges" and pestles, but metal tools are rare at ancient mining and quarrying sites. The major quarries at Mons Claudianus, investigated in six seasons of work, yielded impressive remains of smithies but only two possible working tools, both old surface finds, and a couple of iron plates (Maxfield and Peacock 1997: 190). The iron wedge excavated from Bir Umm Fawakhir Building 93 in 1999 is an all-purpose item, but it could have been used for wedging out pieces of rock (pl. 106b).[28] The actual process of hacking out quartz ore may well have been as unsophisticated as Agatharchides said it was.

Of the next step, crushing and grinding the ore, Photius' account says this:

> Young boys, who go down into the galleries excavated by these men and gather up laboriously the piles of rock thrown down on the floor, carry it outside the entrance. From them the older men and many of the sick take the rock. These men bring it to men called "pounders." They are men less than thirty years old and more vigorous in appearance. After receiving the fragments of rock, they pound them vigorously with iron pestles; and having worked the stone until it is no larger than a vetch seed, they distribute them immediately to other workers. The next task, however, is that of women …. For several mills stand one after the other in a line and into these they cast the crushed rock. Three women, standing opposite one another at each handle … do the grinding; and they grind until the portion of rock given them has been reduced to the consistency of flour (Burstein 1989: 62–63).

Diodorus is again briefer, though he gives the task of pounding the ore to men over thirty years (Burstein 1989: 62–63).

The step that seems to have been ignored here is an initial hand picking of ore at the mine entrance. This seems to be well documented at Mine 4. Here the ancient workings are visible as a gash up the hillside (pl. 103b); the light-colored material around the gash is chunks of white quartz pitched down the slope. Right at the edge of the mine, we found a crushing stone completely surrounded by chunks of discarded quartz (pl. 94a) except for a clear space where presumably the workman squatted. Hand picking ore mined in dimness or darkness right at

[28] Ostracon no. 58 published by Guéraud is very damaged, but it seems to mention an anvil, a stamp (as used for coins), and perhaps a wedge. The ostracon is probably second century A.D. in date and is said to have been retrieved during modern mining activity at Bir Umm Fawakhir (Guéraud 1942: 1965).

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the mine entrance makes sense as it would allow the workers to select only the most promising chunks for the very labor-intensive grinding stages.

The ancient description of ore reduction taking place in two steps, crushing and fine grinding, is supported both by our experiments and by archaeological evidence from Bir Umm Fawakhir. While many different kinds of crushing and grinding stones occur at and around the site, two kinds are by far the most common: dimple stones and rotary querns (pls. 94b, 96).

The dimple stones are blocks roughly 20 cm across and 20 cm high. They generally have one smooth face with a pecked dimple in the center. They were inverted over chunks of mined quartz placed on a broad flat stone such as that shown on plate 95a, pounded down and ground around repeatedly until the quartz ore was reduced to small pieces. A demonstration with one of the dimple stones on a balustrade at camp nearly destroyed the cement. When the dimple becomes too deep, the stone can no longer crush ore to the desired fineness, and it is discarded or, if it has more than one flat face, rotated and the new face used (pl. 94b). Used dimple stones occur by the scores at the main settlement, generally in secondary contexts. Sometimes people built them into walls, and in one case a dozen or so seem to have been assembled into steps to a room on a higher level (Building 117, pl. 10a).

The translations of both Photius and Diodorus refer to "mortars" and iron pestles, but the only mortar found at Bir Umm Fawakhir was a tapering cylindrical vessel 48 cm high with a hole pounded through the bottom. This mortar is made of nummulitic limestone, which is far too soft for crushing quartz. The association and date of the half of a mortar of black (basalt?) stone (pl. 99b) are even more uncertain.

The second stage of ore reduction required the rotary querns. The lower stones (pls. 9a, 96a) are generally about 70 cm across and the upper, flatter ones about 40–45 cm in diameter (pl. 96b). They would have been turned with a stick projecting from a hole near the edge. The ancient description of older men (over thirty, according to Diodorus) pounding the stone and the women grinding it does seem plausible. Certainly our recent experiments demonstrated that the ore has to be ground to a fine powder to detect any metal at all. This also agrees with Craddock's observation that all gold ores have to be ground very fine, as do some tin ores (Craddock 1995: 161).

As noted above, men may have outnumbered women at ancient Bir Umm Fawakhir. We have no direct evidence of women at the site such as skeletons or bones of infants or small children. What evidence we have to date is suggestive rather than conclusive, mainly the beads and half a copper-gold alloy bracelet excavated in 1999 (Meyer 1999). However, women are attested in various roles in the Eastern Desert over the centuries. Women were present at the second-century A.D. *praesidia* on the Wadi Hammamat road, both as residents engaged in pursuits such as spinning, weaving, and drawing water and as prostitutes (Cuvigny 2003b: 374–94). Judging from the ostraca, the latter did not stay in one place but circulated from one *praesidium* to the next (Cuvigny 2003b: 384).[29] By the medieval Islamic period, the thirteenth to fourteenth centuries A.D., women are very well attested at Quseir al-Qadim on the Red Sea coast. Excavations there discovered, among other things, a veil (Whitcomb and Johnson 1982: 34), a child's tunic (Eastwood 1982: 292–93), and a toilet box with a comb, beads, jewelry, an amulet, and a wad of henna (Johnson 1982: 331–32). For the modern-day Bedouin women, of course, the desert is their life.

Both Photius and Diodorus Siculus incorporate Agatharchides' description of gold washing; Photius says,

> From those women men called *Selangei* receive the crushed ore. These men are technicians capable of completing the king's business. Their work is as follows. They throw the crushed quartz onto a flat board which has been polished smooth but is not level, having instead a slight incline. Then, while pouring on water, they rub the ore with their hands, at first gently, then more vigorously, whence, I think, the earthy part is dissolved and flows away in accordance with the slope of the table, but the heavy and solid part remains unmoved on the wood. After having repeatedly washed the rock with water, the *Selangeus* picks it up with light and very porous sponges. Applying these lightly to the quartz and working it briefly, the light and loose pieces become entangled in the interstices of the sponge. He takes these up and throws them away; but he

[29] If this were true at Bir Umm Fawakhir three or four centuries later, then we would expect to find no structures serving purely as brothels.

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> leaves behind on the board the heavy, glittering pieces he has separated out, since, because of the heaviness of their nature, they are difficult to move (Burstein 1989: 64–65).

Diodorus Siculus' excerpt is again shorter, but his process likewise ends with "pure particles of gold" from washing, that is, visible gold (Burstein 1989: 64).

Gold washing presumably occurred at Bir Umm Fawakhir, and the obvious place for that would have been near the wells, an area now thoroughly disturbed by flash floods, modern mining, and settlement. A stone with three pecked depressions (pl. 100b) looks like what Klemm, Klemm, and Murr (2002: pl. 126) identified as an ore concentrator, but they date such concentrators earlier, to the Ptolemaic period, and this example was found near the Wadi el-Sid mines, not the wells. The ancient description of repeated washing on an inclined wooden board is not unreasonable, providing there was some roughness or depression to catch the gold flecks. The most valuable study of gold washing remains Vercoutter's 1959 article, which is concerned mainly with Nubian gold. He included all seven known washing tables (Vercoutter 1959: 125–26) and dates them to the Napatan (ca. 751–538 B.C.) or Meroitic (538 B.C.–A.D. 350) periods largely on historical grounds (Vercoutter 1959: 151–52). He observes that all Nubian washing tables are sited by the river, mostly in rocky places (Vercoutter 1959: 125), and he considers that washing and smelting mostly likely took place away from the mines. Whereas most mines have crushing stones, washing would have taken place where water was abundant (Vercoutter 1959: 139). The southern Egyptian and Nubian gold fields apparently yielded visible gold after washing, whereas the low-yield ores of Bir Umm Fawakhir probably needed much more processing.

As the evidence now stands, we think that the ore from Bir Umm Fawakhir was washed to a heavy, dark concentrate, or "head," which was then sent to the valley for smelting. That such a division of labor does occur in traditional gold mining gains a little support from modern panners in India. There, women working at the edges of the Kolar gold field dig small holes in "promising silt." If there are any larger lumps in the silt, they are crushed on a handy stone. The women pan the silt and crushed rock to win a residue with pyrite, magnetite, and gold. They sell the concentrate to a middleman, who sells in turn to a local jeweler, who retrieves the gold with *aqua regia*, a mixture of nitric and hydrochloric acids that dissolves the gold or platinum contained in the concentrate (Craddock 1991: 129–30).

Due to the difficulty of the smelting operation and hence the need for skilled operators, plus the need for huge amounts of fuel, we suspect that the washed, dark, sparkly concentrate was shipped to the Nile Valley for smelting and, if desired, for refining. Also, sending only the concentrate or "head" would reduce the chances of theft both at the mining town and en route across the desert. Certainly there is as yet no evidence of smelting at Bir Umm Fawakhir or Wadi el-Sid; there is no litharge, slag, crucibles, tuyeres, lead-impregnated vessels, or the like, though the project sought such items. Smelting operations, however, would not have required much space, and so poisonous an activity should not have been undertaken in the town itself.

Although smelting probably was not carried out at Bir Umm Fawakhir, the complex polymetallic ore mined here could not have been used without a multistage smelting operation, so it is useful to present enough information about the process to demonstrate the difficulties.[30] While the data from Bir Umm Fawakhir do support some of Agatharchides' descriptions, his account of smelting, as preserved in Photius, is less than clear:

> After, thus, completely separating out the gold nuggets, the *Selangeus* turns them over to the smelters. These take up the ore by set amount and weight and place it in a pottery vessel. Then, after adding in accordance with a fixed proportion a lump of lead, grains of salt and a little tin and barley bran, they put on a close fitting lid, seal it all around and smelt it continuously in a kiln for five days and an equal number of nights. On the next day, after cooling the smelted ore slightly, they pour it out into a vessel and find that of what was put in with the gold nothing remains, but of the gold there is a solid mass, albeit slightly reduced in size because of the dust (Burstein 1989: 65–66).

Diodorus Siculus' account is nearly the same, though he says only that "gold" and not "gold nuggets" was turned over to the technicians (Burstein 1989: 65–66).

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[30] For a more complete account, see Meyer et al. 2005.

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Interpretations of Agatharchides' description of gold smelting are nearly as numerous as interpreters, and most of them conclude that his account is garbled at least on some points (see, e.g., Notton 1974: 50–56; Burstein 1989; Ramage and Craddock 2000: 34–35, 235). In general, however, the process described seems to be cupellation with lead. To win visible, metallic gold or silver from a polymetallic ore such as that from Bir Umm Fawakhir takes several steps. Lead is the critical ingredient, so it is interesting that the Wadi el-Sid ores contain so much lead. The first essential step is melting the ore with lead or with an ore containing lead, such as galena. This results in a cake of lead on the bottom and a slag or matte on the top containing iron, silica, and other unwanted material. The lead cake is then placed on a bed or bowl called a "cupel" made of a porous material such as bone ash, brick dust, or even sand. The cupel and lead are roasted in the presence of air until all the lead oxidizes to liquid litharge that soaks into the porous material and leaves drops of silver, gold, or a mixture of the two.

If further purification of the metal is wanted, a refining technique such as the cementation or parting described in Ramage and Craddock could have been employed.[31] Notton (1974: 50–56) actually experimented with Diodorus' technique, though he used it to purify gold, not to smelt it. Both Notton's experiment and Ramage and Craddock's (2000: 178) discussion of it assume that the ancient workers started with washed, visible metal and that the main impurity was silver, and both agree that Diodorus' description may be a conflation of two steps, smelting the ore with lead (cupellation) and then refining the metal with salt (cementation).

Some further information about ancient gold production may be gleaned from the first-century A.D. account of Spanish mines written by Pliny the Elder, which is a little closer to Bir Umm Fawakhir in time, if more remote in geography and hence geology. Pliny describes three methods of gold mining: the "detritus of rivers" or washing out alluvial gold, sinking shafts, and collapsing mountains. The last-named technique involved tunneling and hydraulic mining or "hushing" on a huge scale, major engineering, rivers of water, and certainly could not have been employed in a hyper-arid desert. Pliny's account of purifying silver and gold is a fairly detailed description of crushing, washing, firing, and, in the case of gold, regrinding the slag (Pliny, *Natural History* 33.69). His comments on processing silver ores are also useful; they explicitly state that lead or galena is essential and that as a result of cupellation, "the silver floats on the surface, like oil on water" (33.95). His only other specific reference to gold says that it is purified with lead and that the fuel must be chaff, as charcoal will not work (33.60).

Unlike the situation in Egypt, there are numerous studies of ancient European mines and mining, including many discussions of Pliny's description. One of the most useful is Bachmann's (1993: 153–60; 1995: 8) attempt to interpret the process in modern terminology. Figure 53 is based on his study.

Not all these stages need be incorporated in smelting, and refining is optional unless coins or other standard purity are required. Indeed, Craddock (2000: 31) argues that in antiquity refining gold was generally not desirable because it reduced the weight of the metal, and not until standard gold coins were issued did the purity of gold become critical. If stage 3, a preliminary roasting, were included, it would have served to drive off or convert sulfides, chlorides, and carbonates to oxides, which would reduce the amount of fuel and heating needed for the actual smelting, and the sulfur itself is combustible (Marechal 1985: 30). Depending on the heating (below 600° or up to 850° C) and the nature of the raw ores, a variety of chemical reactions could occur, and a range of roasted ores, slags, mattes, or speiss could result (Marechal 1985: 30–31). Stage 4, recrushing the roasted ore, is not critical either, but it would have exposed more surface of the ore material and hence made heating more efficient (Craddock 1995: 167–68). The temperature required for cupellation comes from Tylecote (1992: 45), and that for cementation, from Notton's experiments (Notton 1974: 50–56). Evidence from Sardis indicates a somewhat lower cementation temperature of roughly 650° to 800° at maximum; salt melts at 804° C.[32] Early smelting furnaces are generally small, about 15 to 40 cm interior diameter, which is the largest area that a manually operated bellows can reach. Either manual or more sophisticated mechanical bellows would have been needed to raise furnace temperatures to 1,100°–1,200° C, the minimum temperature for smelting gold, and the maximum manual bellows can achieve (Craddock 1995: 170–71). Stages 8 and 9 do not concern gold smelting;

[31] Pliny the Elder mentions mercury for refining gold, but there is no evidence for this in Egypt (Pliny, *Natural History* 33.99; Ramage and Craddock 2000).

[32] Ramage and Craddock 2000: 205. Halls cementation experiments were on silver. He attempted to determine the active agent in the cementation process, salt (HCl) or chlorine. He took sheets with 30 percent silver, added equal parts of salt, brick dust, and kaolin, and heated the mixture at 850° C. The result was 99 percent pure silver after six days. Since HCl reacts slowly with silver, the experiments point to the chlorine itself. This suggests further that water of crystallization or from wood fires was necessary to release the chlorine (Ramage and Craddock 2000: 179–80).

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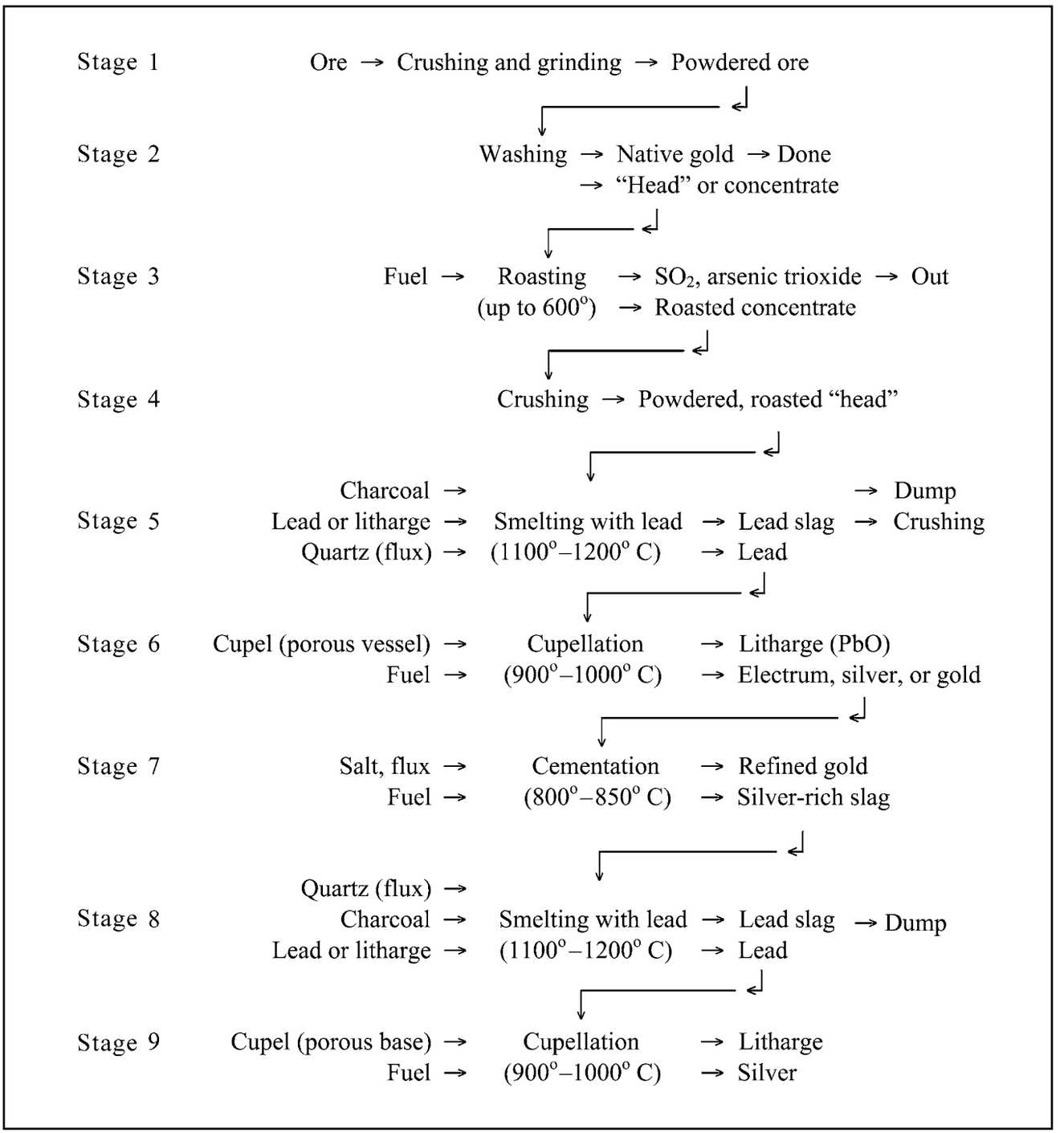


Figure 53. Steps in the smelting process

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they are optional steps to recover the silver if desired. Note also that the litharge produced in stages 6 and 9 could be recycled in stages 5 or 8. Furthermore, the processing stages used and additional materials required will have to be adjusted to account for the peculiarities of the ore in hand. For example, if stibnite, which has been identified at Fawakhir, is present in significant proportion in the ore, it is possible that a fining of the electrum could take place during the smelting.[33]

NEW KINGDOM MINING

While the majority of the efforts of the Bir Umm Fawakhir Project concentrated on the fifth–sixth-century main settlement and its outliers, it also examined the Wadi el-Sid mines and vicinity (*Chapter 2*). The tailings around the modern plant yielded a handful of sherds that are New Kingdom, Roman, and Coptic/Byzantine.

Most surprisingly, however, it is the late New Kingdom remains that are the best preserved. Klemm and Klemm (1988) noted pharaonic remains in the heavily mined Shemamiya locale behind (to the west of) the modern mill. In 1996 we located a couple of rough constructions that look like guardposts commanding a fine view of the narrow Wadi el-Sid and the modern mines across the road (*Chapter 2*, fig. 3), about a half dozen shallow graves, possibly New Kingdom, and a large sherd dump with characteristic blue painted and burnished pottery (*Chapter 2*, figs. 5–9). Later we located the ancient mines themselves, surviving just past the topmost hilltop overlooking the modern plant. The mines are no longer very obvious as they are simply opencast trenches now nearly filled with millennia of silt (pl. 107), but they are marked as ancient by remnants of huts, by crushing stones next to most of them, and by a few pot smashes of burnished vessels. All the information to date comes from surface collections,[34] but they are reasonably consistent, and they are bolstered to an extent by textual evidence.

First and foremost of these is the Turin Goldmining Papyrus, which can reasonably be read as a map of the route to the *bekhen*-stone quarries in the Wadi Hammamat (Harrell and Brown 1992). What is less frequently noted, however, is that the road continues beyond the Wadi Hammamat to a place with three roads leading to the sea, a stela of Amenhotep I, "the houses of the village of gold workers" (Vercoutter 1959: 143), a well, a temple, and a "mountain of gold and silver." This fits with the Fawakhir/el-Sid area. The Turin Papyrus is dated to the time of Ramesses IV and seems to have originated from the royal workmen's village at Deir el-Medina, the home of the workmen who excavated and adorned the tombs in the Valley of the Kings. The "mountain of gold and silver" suggests electrum, which indeed is more common than silver or gold ores alone, and which is attested in the SEM analysis reported above.

Shaw's study of ancient Egyptian miners focused mainly on the Old and Middle Kingdom periods, but it makes the valuable point that mining does not seem to have been a full-time profession (Shaw 1998: 246). Rather, it was carried out seasonally, usually under trading or military officials, often with soldiers. In the Middle Kingdom a thousand or more people might participate in a mining or quarrying expedition, but only for as long as it took to acquire the stones or metals desired (Shaw 1998: 247).

The Wadi Hammamat was above all the *bekhen*-stone quarry whose fine-grained black stone (a graywacke) was valued in pharaonic times, but there are also a few references to gold working in graffiti, as noted in Vercoutter (1959: 146), and published in Couyat and Montet 1912. Inscriptions #35 and #114, the latter dated to the eighth year of Mentuhotep III of the Eleventh Dynasty, refer to an "overseer of gold" among many other titles (Couyat and Montet 1912: 46, 81–82), but this does not necessarily have anything to do with gold mining. The "gold workers" mentioned in inscriptions #123 and #87, dating to years 16 and 38 of Senusert I, likewise have no necessary connection to gold mining.

Hume noted mines at Umm Esh, a waterhole that fills after rains, and an inscription of Ramesses III over an Old Kingdom one (Hume 1937: 731–32).[35] He mentioned "many miners' huts and pestles" as well as shallow pits, but no clear workings. While a pottery date would be useful, the "shallow pits" seem to fit with the earliest, simplest kind of opencast mining.

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[33] Silver preferentially combines with the sulfur in the stibnite on heating, the antimony collecting with lead and "burning" off during the cupellation stage. The silver collects in the matte and so is removed from the gold (Ercker 1951: 195–96; Percy 1880: 367–68).

[34] It was planned to make some test excavations in the New Kingdom loci during the 1999 season, but a shortage of staff prevented the undertaking.

[35] Gebel Umm Esh is roughly 40 km east of Bir Umm Fawakhir.

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Vercoutter's important study of ancient Egyptian gold sources groups them from south to north as the "Gold of Kush," sources along the Nile between about Wadi Halfa and Kerma; the "Gold of Wawat," referring to sources along the Wadi Allaqi and Gabgaba; and the "Gold of the Desert of Coptos," reached by the Wadi Hammamat and Wadi Abad (Vercoutter 1959: 128). Wadi el-Sid would have been connected with the "Gold of the Desert of Coptos." Vercoutter suggests further that a couple of Ramesses II inscriptions in Luxor Temple might refer to Coptos gold. The first names "the Holy Mountain which brings gold by millions," and he considers this a reference to the Wadi Hammamat, as indicated by the (Ramesses IV) Turin Goldmining Papyrus and the rock inscriptions in the Wadi Hammamat (Vercoutter 1959: 131–33; see also Goyon 1957: 4–5). The second inscription reads simply "the Mountain of Coptos" and what may be a broken hieroglyph for gold (Vercoutter 1959: 131–33). While these are interesting references, they are no strong proof of mining in the Wadi el-Sid. In general, New Kingdom Egypt seems to have acquired a lot of gold from Wawat and elsewhere during the Eighteenth Dynasty; production declined in the Nineteenth and Twentieth Dynasties, but revived in the time of Taharqa and in Meroitic times (Vercoutter 1959: 135–38).

Recently several groups of rock inscriptions from the gold-mining regions of Barramiya and Dungash have been published. Since these sites lie close to the Wadi Abad route from Edfu to the Red Sea, they count as the southern end of the "Gold of the Desert of Coptos." A dozen or so of the inscriptions mention gold, goldworkers, or scribes of gold reckoning or goldworkers, and most of them are New Kingdom (Rothe, Rapp, and Miller 1996: 92–93, 95, 103; Klemm 1998: 252).

Lucas and Harris list textual references for Egyptian gold sources from the south: the Twelfth Dynasty has texts noting Coptos and Nubia; the Eighteenth Dynasty, the "Highlands," Karoy, Coptos, Kush, and "South Countries"; and the Twentieth Dynasty, Edfu, Emu, Coptos, Kush, "Malachite Country" [copper], "Negro Lands," and Ombos (Lucas and Harris 1962: 227).

Much of the archaeological evidence for early gold mining in the Eastern Desert comes from a broad survey of over 250 mining sites from the north of Egypt and into Sudan. Klemm and Klemm state that the earliest mines in the Eastern Desert in the Predynastic and Early Dynastic periods concentrated on enriched quartz veins in granodioritic rock (Klemm and Klemm 1995: 7; Klemm and Klemm 1996/97: 149–66; Klemm, Klemm, and Murr 2002: 215–16). The very earliest mines are simply pounded out of the rock with heavy, 6–10 kg, two-handed pounding stones. The ore seems to have been powdered in place and then presumably washed. All or most of these mines are associated with producing copper mines (Klemm and Klemm 1994: 194; Klemm, Klemm, and Murr 2002: 216).[36] Somewhat later, Old and Middle Kingdom prospecting exploited the same sources but apparently also looked for gold in copper-bearing zones, such as the distinctive green malachites (Klemm and Klemm 1996/97: 157). During this period, smaller, one-handed pounding stones with a handle and stone axes or hammers with a medial groove came into use. Since the mines were still pounded out, the maximum depth of the open trenches seems to have been about 25 m. In the Middle Kingdom, stone mortars for crushing the ore were added to the tool kit (Klemm and Klemm 1994: 197; Klemm, Klemm, and Murr 2002: 216).

In the New Kingdom and Late Period, new areas were exploited in an "enlarged geological framework" (Klemm and Klemm 1995: 7) and with improved techniques and tools (Klemm and Klemm 1996/97: 158).[37] Significantly, new kinds of ores were sought, quartz in veins near dark mafic and ultramafic rocks, like the ores at Bir Umm Fawakhir, rather than the green-stained copper ores (Klemm and Klemm 1994: 200). In addition to the opencast mines, the New Kingdom miners seem to have used the simple technique of "wadi working." This basically means scraping up chunks of quartz that have washed down into a wadi bed and crushing those (Klemm, Klemm, and Murr 2002: 217–18). Where the workers did excavate mines, they could now use bronze chisels, with which they could follow the course of the ore more closely. Support pillars were left, but without ventilation the mines could not go more than about 30 m deep (Klemm, Klemm, and Murr 2002: 217). A new kind of ore crusher, a stone anvil with a pestle, and a new kind of mill stone, a large oval stone with an upper handstone, something like a simple mano and metate, also came into use. A few examples of washing tables are preserved as well. They are long, narrow tables slanting down to a collecting basin for the silt, plus a channel to

[36] The Archaic and Old Kingdom copper mines at Wadi Dara in the northern Eastern Desert were reworked for iron in Roman times and at least explored for gold in Byzantine and Arab times (Grimal 1994: 423).

[37] For distribution maps of New Kingdom mines, see Klemm and Klemm 1994: 203, and Klemm, Klemm, and Murr 2002: 224.

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lead the water back to the head of the table. The gold might have been collected on a sheepskin or rough board or grid (Klemm, Klemm, and Murr 2002: 216–17), though none of these has survived.

In New Kingdom times, then, the archaeological evidence and texts provide a few hints that gold might have been obtained from the "Mountain of Coptos" and the Wadi Hammamat area. If the ancient workers were mining there, then it had to be hard rock mining. Hacking the quartz from an opencast mine would not have been a problem, and the innovation of metal tools would have helped. (Iron tools are not attested until the Ptolemaic period and could not have been used before the end of the New Kingdom, at the very earliest.) Grinding quartz ore to powder would have been laborious but not complicated, and washing it not very difficult. In addition to the dimple stones and rotary querns at Bir Umm Fawakhir itself, there are other kinds of grinding and crushing stones scattered around the wells, built into the walls of the modern well house, and along the road to the modern plant at Wadi el-Sid (*Chapter 7*, pls. 97a–b, 98a–b, 99a, 100a). Some of the latter stones are the large (ca. 1 m sq.), slightly scooped grinding stones believed to be pre-Roman.[38]

It is possible that the original Wadi el-Sid ore was so high in grade that the ancient workmen won visible gold simply by grinding and washing it. If so, the rich ore is long gone, and it will be difficult to prove one way or the other. If not, then the real problem facing the New Kingdom miners would have been smelting. Given a pyritic ore, this means a two-step operation to produce lead and then to burn it off by cupellation to leave only the precious metal.[39]

Is cupellation attested as far back as New Kingdom times? Here we have to turn to silver production, as there is virtually no literature on gold, and to regions outside Egypt. One of the most important studies comes from the Cyclades, where smelting sites have yielded evidence of cupellation for silver perhaps as early as the middle of the fourth millennium B.C. One of the ores in question seems to have been galena, which can be smelted at the relatively low temperature of 800° C; even an open hearth piled with wood, charcoal, and galena would work (Gale and Stos-Gale 1981a: 178). A complex silver-lead-antimony ore on Siphnos in particular was worked for silver and lead at an early date. Thermoluminescence and radiocarbon dates point to the first half of the third millennium B.C., but metal production went back even further, to at least Early Cycladic times, as indicated by litharge from cupellation associated with obsidian tools and sherds (Gale and Stos-Gale 1981a: 202).

Another question is the kind of ore processed. In general, galena, as attested on the Cyclades, is more easily smelted and more likely to yield silver with a little gold. Pyrites and chalcopyrites, as found at Bir Umm Fawakhir and the Wadi el-Sid, are harder to smelt but can contain more gold than silver. Some of the earliest evidence for pyrite reduction comes from the extensive archaeological work at the Spanish mines in the Huelva region. The most intensive ancient mining occurred in the Roman period; in one place the slags are 8 m thick (Rothenberg and Blanco-Freijeiro 1981: 198–206). Gold, silver, copper, and iron were extracted over the millennia, exploiting various orestuffs and employing different technologies. At the huge Huelva mines in western Spain, silver was the main product in the Late Bronze Age, twelfth to ninth centuries B.C., or the time of early Phoenician contact. Silver extraction implies a knowledge of smelting, including fluxing with silica, adding lead to collect the silver, and then cupellation (Rothenberg and Blanco-Freijeiro 1981: 171). The primary ores in Spain are jarosites[40] (Craddock et al. 1985: 199), and the Iberian Pyrite Belt of southern Portugal and southwestern Spain includes massive sulfide deposits.

Were the New Kingdom workers actually mining auriferous quartz ore and smelting it in a complex operation? The evidence from the Turin Goldmining Papyrus and other texts, the silted-in mines, pre-Roman grinding stones, and the pottery are not extensive, but they are at least consistent. Certainly the opencast trenches following quartz veins in granite point to hard rock mining. The ores at Wadi el-Sid are complex, polymetallic sulfides. It is possible that the first ores mined were so rich that only fine grinding and washing were needed to produce visible gold. Still, all the technological skills do seem to have existed — if documented so far only outside Egypt — for roasting, smelting with lead, and then cupelling to remove the lead and win the silver or

[38] Klemm, Klemm, and Murr 2002: 216 and pl. 118. The stone in the photograph is smaller, however, measuring about 55 × 35 sq. cm.

[39] Lead does not receive a great deal of attention in the study of ancient Egyptian metallurgy, but Gale and Stos-Gale (1981b: 115) do note a lead hawk model from Nagada as early as Nagada II times.

[40] Jarosite is a basic hydrated sulfate of iron and potassuim, capable of substitution by other metals such as lead or silver (argento-jarosite).

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gold. Certainly it is all too true that compared to places such as England, Germany, Spain, Greece, and Turkey, ancient precious-metal production in Egypt is not at all well studied.

CONCLUSIONS

Ancient Egyptian textual sources are nearly mute on the subject of mining for precious ores, though gold and silver as gifts or tribute are well attested. Thus it has long been assumed that much or all of the gold in Egypt came from the south and was produced largely if not entirely by the simple process of panning. Hard rock mining is an entirely different enterprise, however, requiring recruitment, organization, and administration of a large labor force, massive capitalization to support it, and a sophisticated technology to win gold or silver from igneous rock. Individual steps may be simple, for example, hacking out an opencast trench, but some may be quite difficult, such as estimating the furnace temperatures, proportion of lead or lead ore and/or fluxes, and the duration of a smelt. At Bir Umm Fawakhir, the most complete evidence for complicated, multistage gold mining, ore reduction, and smelting comes from the large fifth- to sixth-century A.D. Coptic/Byzantine settlement and related mines, but there is some evidence for earlier workings at the nearby mines in the Wadi el-Sid in Roman times, and, surprisingly, as early as the late New Kingdom.

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CHAPTER 9

CONCLUSIONS

Carol Meyer

Before the Bir Umm Fawakhir Project started, the site was virtually always called a Roman caravan station.[41] However, it looked nothing like the fortified posts elsewhere on the Wadi Hammamat route, and in fact the posts are now known to be military *praesidia* and not watering stations for passing caravans (Cuvigny 2003a: 321–33). Nor did the Bir Umm Fawakhir pottery look like the Roman material from Quseir al-Qadim on the Red Sea coast only 90 km away. One of the first conclusions of the 1992 season was that Bir Umm Fawakhir was in fact a gold-mining town of the fifth and sixth centuries, the Coptic/Byzantine period. This in itself raised new questions because the Byzantine government had long been considered too weak to control the desert and had abandoned it to the nomads (Maspero 1912: 11). This conclusion was based mainly on the near total lack of documentation for the deserts in those centuries rather than on archaeological exploration. In addition to Bir Umm Fawakhir, however, recent work at sites such as Mons Porphyrites (Maxfield and Peacock 2001), Abu Sha'ar (Sidebotham 1993, 1994; Sidebotham et al. 1989), Bir Nakheil (Prickett 1979: 297–303), Berenice, nearby sites such as Shenshef and Mons Smaragdus, and the ancient road to Berenice (Sidebotham and Wendrich 1995, 1996, 1998, 1999, 2000), and a range of quarrying (Klemm and Klemm 1993) and mining sites (Klemm and Klemm 1994: 212) all show that the Eastern Desert was indeed exploited in the Coptic/Byzantine period (fig. 1), if less intensively than in the Roman period.

Another misconception about ancient Egyptian mining operations was that the laborers were slaves, criminals, or prisoners of war, an idea that is based solely on Agatharchides' account of the second century B.C. Whatever the case may have been in Agatharchides' day, the work force at the first- to second-century A.D. granodiorite quarries at Mons Claudianus and the fifth- to sixth-century gold mines at Bir Umm Fawakhir seems to have consisted of career miners. We know from the rich corpus of ostraca from Mons Claudianus that the quarrymen there generally received forty-seven drachmae per month, grain, and sometimes a wine ration (Cuvigny 1996; 1997). There are no such texts at Bir Umm Fawakhir, but the sprawling layout of the main settlement and outliers has nothing at all regimented about it. There are no fortified walls to keep anyone in or out, just the wadi's steep sides, which are crisscrossed with paths. The houses look like family dwellings, sometimes clustered around a central plaza or open space. They have small built-in comforts such as benches and wall niches for storage; ceramic dishes, cooking pots, and storage vessels were abundant. The silos in Outlier 2 look more like a household's private grain supply than rations doled out to prisoners day by day. The very large number of amphorae indicates a good supply of wine and other provisions. Judging from the 1999 excavations, meat, including beef, which is something of a luxury in the desert, was also in good supply (Ikram 2001: 20–23). The 1999 excavations were limited, but they nonetheless yielded items such as half a copper-gold bracelet, raw emeralds, a few small coins, and carnelian (Meyer 1999: 27), none of which look like the possessions of prisoners.

As of 2004 it was still possible to stroll for a half a kilometer or so down the main "street" of Bir Umm Fawakhir and pick out doors, niches, and other features of the individual houses. Since it is basically a one-period site, the remains have never been reworked, demolished, built over, or scraped into trenches or fill. The site is subject to looting, but at least until now it has been remarkably well preserved. With the completion of the detailed survey of the main settlement in 1997, we have a map of an entire fifth- to sixth-century town, this without excavation. The only other archaeologically studied and planned town of this date in Egypt is Jême at Medinet Habu, and most of it was removed to reach the mortuary temple of Ramesses III. In general, complete plans of ancient villages of one period are not very common archaeologically. In addition to the plan of the main settlement, we surveyed the vicinity of Bir Umm Fawakhir. We documented fourteen outliers of the same date, at least four of

[41] Sidebotham and Zitterkopf (1989: 166) made the first identification of the pottery as Byzantine in date.

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which (Outliers 1, 2, 6, and 7) seem to have been residential rather than day shelters for workmen. Judging from the sparser pottery scatter, they would have been occupied much more briefly than the main settlement; they may have sheltered an overflow of workers only at periods of most intensive mine exploitation. Except for Outliers 12 and 13, we investigated none of the other outliers with any thoroughness, but they might repay further work. The wells and Roman road were well known before the Bir Umm Fawakhir Project started, but we also found paths and guardposts, cemeteries, and above all mines, all of which add to the completeness of the site.

We have now investigated all 237 structures in the main settlement, 68 in Outlier 2, and a hundred-odd in Outliers 6 and 7, and all of them seem to be domestic, with the possible exception of Complex 26 in Outlier 6 and Building 201 in the main settlement. Our estimate is that a little over a thousand people lived in the main settlement alone (Meyer et al. 2000: 15–17), which means that ancient Bir Umm Fawakhir was far larger than any modern settlement on the Wadi Hammamat road (barring the sudden growth of Laqeita in the last fifteen years). The assumption is that most of the houses (some with party walls) were occupied by workmen, sometimes accompanied by family or kin, who added rooms or storerooms as needed and cooperated (or not) with other households. The rooms were fairly small, probably because they were roofed with palm logs, twigs, mats, and mud. There is virtually no evidence of windows, so the inner rooms must have been poorly illuminated. The lack of lamps at Bir Umm Fawakhir is noteworthy in this regard. Judging from the very well-preserved houses in Outlier 2, the walls were only about 2 m tall, though some of the houses had steps down into them, and the inhabitants probably were not very tall. A number of vertical doorjambs and a few flat threshold stones are visible. In at least one case, used crushing stones were set into the slope to make steps up to the house (Building 117). The doors presumably were wooden, but since wood is so precious in the desert, doors and roof beams would have been some of the first items stripped out. Many houses still preserve niches built into the walls for storage and benches or mastabas inside and/or outside. We identified very few courtyards, which is unusual as they are such an important feature of Middle Eastern domestic architecture in general. However, in many cases a number of houses seem to be clustered around open spaces or small "plazas." The houses look onto the open space and away from the main "street" or other clusters, which would have given this group of houses or that some privacy, or to state it differently, enhanced cooperation with the other houses on the "plaza." The functions of the outbuildings are not known, whether storage, workrooms, smithies, animal shelters, or latrines, though the limited excavations in 1999 suggest that they are not kitchens. At least in the house excavated (Building 93), cooking was carried out in the open air (Meyer 1999: 28–30). If the wells were as productive in antiquity as they are now, water would not have been a major problem. A couple of hundred years earlier, in the Roman period, there are even references to gardens at Persou supplying fresh greens to other stations on the Roman road (Brun 2003: 98). At the same time, fuel for hundreds of household hearths, much less smelters, would have been a major problem. In general, mining towns, especially in their first years, tend to have more men than women, so it is possible that a number of the ancient Bir Umm Fawakhir houses had only male residents. Still, it does seem reasonable to see some families, including women and children, living at ancient Bir Umm Fawakhir, hauling water from the wells, cooking, spinning, grinding ore, and perhaps even working in the mines. Further attention to the scraps of bone in the cemeteries might help answer this question; infant or child bones would be especially indicative. As for the origin of the miners, our best evidence suggests that they came from Nile villages. Almost all of the masses of pottery at the site consists of wares and forms well attested at Thebes, Aswan, and elsewhere in the Nile Valley, with a little Oasis ware, imported African Red Slip, and a few pieces of the handmade Eastern Desert Ware. Pots are not people, but in this case the numbers are so overwhelming that it is hard to think of the miners as nomads rather than originating from the Nile Valley.

As yet we do not know whether work at the mines was seasonal or year round. On the one hand, the desert gets cold and windy in the winter and flaming hot in the summer, but on the other hand, there is no requirement to work the mines from 9:00 AM to 5:00 PM. For most operations, namely hacking out quartz, hauling, crushing, and grinding it, good light is not a requirement, and in the deeper mines, impossible. In the hot season, work would best be carried out early in the morning and late in the afternoon with a long siesta in the blazing noon, the kind of schedule the camel caravans followed. In the winter, the middle of the day is quite warm enough for physical activity. The deepest mines are also insulated. Since they hold the average temperature, they feel cool in the summer and warm in the winter. What we do suspect — and will investigate further in the volume on the 1999 excavations — is that work at Bir Umm Fawakhir was not continuous for 150 years or so, but that the min-

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ing camp was occupied and abandoned several times when and as the need for gold compelled the government to subsidize the work.

In the pharaonic period, when the mines in the Wadi el-Sid appear to have been worked, mining and quarrying were generally carried out by special expeditions that stayed only as long as needed to obtain the metal, metal ores, or stone required. The scrappy late New Kingdom remains in the Wadi el-Sid can neither support nor contradict this picture, though further work on these remains is desirable.

What was disappointing was the dearth of ostraca or any other written material at Bir Umm Fawakhir. For all the attention we paid to the dipinti on the amphorae, they tell us practically nothing about the internal workings of the settlement.

Nor do we know what religion the miners followed, though miners cross-culturally are not very religiously observant. Technically, by the fifth century they should be Christian, and there are a number of Christian motifs stamped on the fine polished orange plates and bowls. The XP monograms on the amphorae pertain to wherever the wine jars were filled, not to Bir Umm Fawakhir. No Christian church was located, though the pagan Ptolemy III temple to Min still existed and indeed survived until the beginning of the twentieth century. The old pagan faith did hold out in remote parts of Egypt far longer than in, say, Alexandria. The temple of Isis on Philae was not closed until A.D. 535, and a couple of pagan shrines at Berenice survived until the late fourth and fifth centuries (Sidebotham 2004: 235–36). The 1999 excavations at Bir Umm Fawakhir recovered what seems to be a small bronze Bes amulet (Meyer 1999: 27). The cemeteries are anomalous and puzzling, though further investigation of the graves and other remains might help clarify the question of religion.

It is likewise disappointing that we know so little of the organization and administration of ancient Bir Umm Fawakhir. Unless the Roman name of Persou persisted, we do not even know its original name. Coptic/Byzantine-period texts pertaining to the Eastern Desert are lacking in the Thebaid, in the rest of the Eastern Desert, and at Bir Umm Fawakhir itself. We do not know who, presumably at Thebes (Luxor), was responsible for the mines and quarries in the Eastern Desert, whether the *comes sacrarum largitiones* or another official (Kaegi 2000: 4). We do not even know for sure where the gold went, though the court of Constantinople seems the most likely destination. We can only infer that there must have been a huge and mostly reliable transport system to supply a thousand or so people in the middle of the desert; we know nothing of the caravaneers, their animals, or where they originated, though they must have used the old Roman road from at least Laqeita on. We know nothing about the engineers and gold washers, whom Agatharchides says were the only skilled workers, or the mine administrators and accountants. The administrative center may have been situated closer to the wells than the workmen's village in the main settlement, and if so, any structures and texts have long been obliterated by flash floods and twentieth-century mining.

What the recent work did reveal, however, was how labor intensive and complicated the ancient gold mining ore-reduction processes were. At the beginning of the project, almost everyone, the author included, assumed that most Egyptian gold came from Nubia and all of that was simply washed out, either from alluvial deposits or from ground ore as Agatharchides describes. At Bir Umm Fawakhir, which is so far the only intensively studied ancient gold-mining site in Egypt, the process was much more difficult. The implications of hard rock mining — quartz veins in granite in this case — are far reaching. Such an operation requires a large, organized, and well-supplied labor force. It requires heavy capitalization, and the profits if any go to the capitalists or government, not to the workers. They will make a living and may even be well paid, but they can never strike it rich. The ancient Egyptians had long solved the problems of organizing large labor forces, but nonetheless the difficulties must have been exacerbated by the remoteness of the Fawakhir mines. Identifying the veins to attack and picking over ore chunks worth the considerable effort of further reduction were skilled tasks, though hacking out the quartz and pounding and grinding it were more laborious than skilled. Gold washing was also skilled work, and smelting certainly was, though the latter operation was probably carried out in the Nile Valley, where fuel is more plentiful. Given the complex nature of the polymetallic, sulfidic ores at Bir Umm Fawakhir and the Wadi el-Sid, smelting must have been at least a two-stage operation: smelting to obtain a lead cake and then resmelting to reduce the lead to litharge and obtain the beads of gold, silver, or electrum. The high lead content of the Wadi el-Sid ore sample is noteworthy in this respect. Refining requires one or two more operations.

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Perhaps the most surprising result is the antiquity of gold mining at Wadi el-Sid, only about 4 km from Bir Umm Fawakhir.[42] The remains are meager, only a sherd dump, a few very crude guardposts, a couple of huts, some mostly filled-in mines, and probably some of the grinding stones along the asphalt road. These vestiges are so scrappy that they would not make much sense without the study of the more extensive, later remains at Bir Umm Fawakhir. That said, the lodes in the Wadi el-Sid appear to have the same nature as those at Fawakhir, which means that the pharaonic workers were engaged in hard rock mining. Whether the original ores were so rich they could obtain visible gold simply by fine grinding and washing cannot be known; those ores are long mined out. If, however, they were washing out only the heavy, dark, sparkly concentrate, then they required a two-step smelting operation or cupellation to obtain gold. Cupellation is documented millennia earlier in the Aegean, but not in Egypt, though compared to other countries such as Turkey or Spain, ancient mining and smelting are not at all well studied in Egypt.

[42] First recognized by Rosemarie and Dietrich Klemm during a wide-ranging survey of the Eastern Desert (Klemm and Klemm 1988; 1994: 203, 220).

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APPENDIX A

1996 AND 1997 REGISTERED OBJECTS

Registration No.	*Provenance*	*Description*	*Material*	*Registration Date*	*Remarks*	*Illustration*
			1996 DIPINTI			
96/1	MS, B121, surface	Dipinto	Ceramic	I-15-96	Large inscription	Figure 50a
96/2	MS, cliffs over B104 and B106	Dipinto	Ceramic	I-15-96	Large inscription near handle	Figure 50b
96/3	MS, dump between B118 and Q2	Dipinto	Ceramic	I-15-96	Piece of large inscription	Figure 50c
96/4	MS, dump between B118 and Q2	Dipinto	Ceramic	I-15-96	Piece of small inscription	Figure 50d
96/5	MS, dump between B118 and Q2	Bowl with scratched decoration	Glass	I-15-96	—	Figure 48a
96/6	MS, cliff above B104	Dipinto	Ceramic	I-15-96	Small piece of large inscription	Figure 50e
96/7	Wadi el-Sid camp, findspot unknown	Late Roman Amphora 1 with dipinti	Ceramic	I-15-96	Intact Late Roman Amphora 1, large inscription with "XP," small inscription with "γλ . κ . ." (?)	Figure 49
96/8	MS, path between O7 and MS	Dipinto, small inscription, upside down	Ceramic	I-15-96	Ink 10R 4/8; interior 5YR 6/6, exterior 7.5YR 7/4; abundant gray bits and white bits, some chunks, some reddish bits; somewhat smoothed exterior surface	Figure 50f
96/9	MS, B128, surface	Sherd disk with dipinto	Ceramic	I-15-96	Small inscription. Ink 10R 5/8; 10YR 7/4	Figure 50g
96/10	MS, path between O7 and MS	Dipinto, very faded	Ceramic	I-15-96	Late Roman Amphora 1 neck and shoulder. Coarse surface; exterior 7.5YR 8/4; section 5YR 6/6; much grayish sand, pebbles, limestone bits and chunks	Figure 50h
96/11	MS, dump between B140 and B143	Dipinto	Ceramic	I-17-96	Large inscription near handle	Figure 50i
96/12	MS, B106 chinking	Late Roman 4(?) rim	Ceramic, marl	I-17-96	Jar neck fragment	Figure 32 no. 105
96/13	MS, B140, surface	Stamped sherd	Ceramic, pink ware	I-17-96	Cross in rectangle	Figure 36 no. 161
96/14	MS, building across wadi from B124	Sherd of bowl with chattering	Ceramic	I-17-96	North African import (ARS)	Figure 36 no. 148
96/15	MS, path between O7 and MS	Amphora with dipinti	Ceramic	I-17-96	Rim, neck, shoulder, and one handle of Late Roman Amphora 1; little inscription left	—
96/16	MS, across from datum point 104	Sherd with painted fish decoration	Ceramic	I-17-96	Bottle or beaker? Very worn. Red-brown with black-brown paint	Figure 39 no. 189
96/17	MS, B6	Painted sherd with potmark	Ceramic	I-17-96	Prefiring incised potmark	Figure 37 no. 168
96/18	Wadi el-Sid camp	Roman amphora	Ceramic	I-17-96	Complete amphora	Plate 2a

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Registration No.	*Provenance*	*Description*	*Material*	*Registration Date*	*Remarks*	*Illustration*
96/19	Wadi el-Sid camp	Oil juglet	Ceramic	I-17-96	Light red-brown fabric, 2.5YR 6/4, with a red slip, 10R 4/4	Figure 14b
96/20	Wadi el-Sid camp	Juglet or miniature jar	Ceramic	I-17-96	Miniature jar, crude. Roman period. Red-brown silt fabric, 2.5YR 5/4. String-cut base	Figure 14c
96/21	Wadi el-Sid camp	Miniature cooking pot	Ceramic	I-17-96	Marly fabric, 2.5Y 7/4. String-cut base. Roman?	Figure 14d
96/22	Wadi el-Sid camp	Lamp with two crouching figures	Ceramic	I-17-96	Mold made, top half. Light brown fabric, 10YR 7/3	Figure 14e, Plate 2b center
96/23	Wadi el-Sid camp	Lamp with rosette	Ceramic	I-17-96	Half top and whole bottom	Plate 2b left
96/24	Wadi el-Sid camp	Lamp	Ceramic	I-17-96	Top broken, decoration worn and damaged	Plate 2b right
1996 (not registered)	MS, dump north of B143	Dipinto	Ceramic	—	Piece of large inscription	—
			1997 DIPINTI			
97/1	MS, dump north of "Plaza"	Dipinto, three lines small, one bit large inscription	Ceramic	XI-16-97	Red fabric, pinkish white slip, red ink. Small inscription, upside down, with "λ . . Φυω. γ" (?)	Figure 51b
97/2	MS, Hillock, dump behind B157	Dipinto, four strokes of large inscription	Ceramic	XI-18-97	Pale pink fabric and slip, brown-red ink	Figure 51c
97/3	MS, wadi wash in middle of "Plaza"	Dipinto, one brush stroke	Ceramic	XI-18-97	Pale beige fabric, white slip, red ink	—
97/4	MS, dump near B161	Dipinto, large inscription, faint	Ceramic	XI-18-97	Red fabric, white to cream slip, red ink	Figure 51d
97/5	MS, cliff behind B153	Sherd with potmark	Ceramic, fabric uncertain	XI-18-97	Postfiring incised 5-pointed star	Figure 41 no. 206
97/6	MS, dump behind B154	Dipinto, loop and bit of large inscription	Ceramic	XI-19-97	Loop like right half of infinity sign plus bit of large inscription. Pale pink fabric, cream slip, brown-red ink	—
97/7	MS, Hillock behind B160	Stone scraper	Black stone	XI-19-97	Black stone, basalt?	—
97/8	MS, between B157 and B158	Plate with incised lines	Ceramic, pink ware	XI-19-97	Postfiring incised, ARS?	Figure 36 no. 155
97/9	MS, B179	Dipinto, large inscription	Ceramic	XI-20-97	One large loop. Cream to beige fabric, cream to white slip, brown-red ink	—
97/10	MS, northeast face of Hillock	Dipinto, large inscription	Ceramic	XI-20-97	Small sherd. Beige fabric, creamy pink slip, brown-red ink	Figure 51e
97/11	MS, B189	Dipinto, large inscription, faint	Ceramic	XI-20-97	Two fragments, joining. Pink buff fabric	Figure 51f
97/12	MS, ramp between B167 and B168	Potmark	Ceramic	XI-20-97	—	—
97/13	MS, dump behind B160	Glass rim	Glass	XI-20-97	Amber, bottle rim	Figure 48c
97/14	MS, north slope of Hillock	Sherd with potmark	Ceramic, fabric uncertain	XI-20-97	Postfiring incised	Figure 41 no. 207
97/15	MS, northeast face of Hillock	Sherd with potmark	Ceramic, fabric uncertain	XI-20-97	Postfiring incised	Figure 41 no. 205

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Registration No.	Provenance	Description	Material	Registration Date	Remarks	Illustration
97/16	O6	Flanged bowl rim	Ceramic	XI-97	Imported African Red Slip or Egyptian Red Slip A	Figure 43 no. 216
97/17	O9, below graves	Incised sherd	Ceramic	XI-22-97	Aswan cup with incised "X"	—
97/18	MS, downslope from B179	Dipinto, large inscription	Ceramic	XI-22-97	Cream to beige fabric, cream slip, brown-red ink	Figure 51g
97/19	MS, slope between B144 and B165	Dipinto, large inscription	Ceramic	XI-23-97	Buff fabric, red-brown paint	Figure 51h
97/20	Outside M1	Dipinto, amphora shoulder and handle	Ceramic	XI-22-97	Pink fabric, cream slip, brown-red ink. Looped bit of large inscription. Small inscription with "μ . . τη" and "HZ"	Figure 51i
97/21	In huts above M1	Faience bowl rim fragment	Faience	XI-23-97	Roman	Figure 14f
97/22	O12, slope below B16	Dipinto, large inscription, faint	Ceramic	XI-24-97	Pink buff fabric, cream slip, red-brown ink	Figure 51j
97/23	O12, B2 chinking?	Dipinto	Ceramic	XI-24-97	Bits of large inscription. Pink buff fabric, cream slip, red-brown ink	—
97/24	O13, wadi entrance	Dipinto	Ceramic	XI-26-97	Hooked end of large scrawl. Buff fabric, cream slip, brown ink	—
97/25	O13, wadi entrance	Dipinto	Ceramic	XI-26-97	One stroke only, bottom of hook. Pink buff fabric, cream slip, red-brown ink	—
97/26	MS, wadi between B207 and B209	Dipinto, large inscription	Ceramic	XI-26-97	Odd, thick strokes; edges (at arrows) ground smooth	Figure 51k
97/27	MS, wadi wash outside B190	Dipinto	Ceramic	XI-26-97	"V" of large, faint inscription near handle scar. Pink buff fabric, cream slip, red-brown ink	—
97/28	MS, between B209 and B210	Dipinto, bit of large inscription and drip	Ceramic	XI-26-97	Faint, sprawly. Pink buff fabric, cream slip, red-brown ink	Figure 51l
97/29	MS, B181	Dipinto	Ceramic	XI-26-97	Small piece of large inscription. Buff fabric, cream slip, brown ink	Figure 51m
97/30	MS, B181	Dipinto	Ceramic	XI-26-97	Very faint, tiny bit of large inscription. Buff fabric, red-brown paint	Figure 51n
97/31	MS, B129	Dipinto	Ceramic	XI-26-97	Large sherd wit large but faint inscription with "XP." Buff fabric, red-brown paint	Figure 52a
97/32	MS, upslope from B197	Dipinto	Ceramic	XI-30-97	Piece of large inscription with "XP"(?). Buff fabric, red-brown paint	Figure 52b
97/33	MS, upslope from B197	Dipinto	Ceramic	XI-30-97	Piece of large inscription. Buff fabric, red-brown paint	Figure 52c
97/34	MS, upslope, between B176 and B181	Dipinto	Ceramic	XI-30-97	Two or three strokes and drip line. Buff fabric, red-brown paint	—
97/35	MS, downslope from B177	Dipinto	Ceramic	XI-30-97	Large fragment, large inscription. Buff fabric, red-brown paint	Figure 52d
97/36	MS, dump south of B200	Dipinto	Ceramic	XI-30-97	Amphora shoulder and handle, small inscription upside down, "κηω …" Orange buff fabric	Figure 52e
97/37	MS, B191	Sherd with potmark	Ceramic	XI-30-97	Postfiring incised	Figure 41 no. 204

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Registration No.	*Provenance*	*Description*	*Material*	*Registration Date*	*Remarks*	*Illustration*
97/38	MS, dump behind B191	Dipinto	Ceramic	XII-1-97	Large inscription, mitten-shaped. Cream fabric, brown-red paint	Figure 52f
97/39	MS, upslope from B197	Dipinto	Ceramic	XII-1-97	Large but faint	Figure 52g
97/40	MS, between B221 and B232, middle of wadi "street"	Dipinto	Ceramic	XII-1-97	Large sprawly inscription. Pink buff fabric, brown-red paint	Figure 52h
97/41	MS, B184	Dipinto	Ceramic	XII-1-97	One line of large, sprawly, blobby inscription over handle scar. Cream fabric, red-brown paint	—
97/42	MS, B232	Dipinto	Ceramic	XII-2-97	Large, faint, sprawly inscription under amphora neck. Red-brown paint	Figure 52i
97/43	MS, B232	Dipinto	Ceramic	XII-2-97	Large fragment of large inscription, badly preserved. Pink buff fabric, red-brown paint	Figure 52j
97/44	Top of gebel east of O2	Dipinto	Ceramic	XII-2-97	Shoulder and handle, part of very large inscription. Clear small inscription with "ζυη …" and "ρ …." Cream buff fabric, brown-red paint	Figure 52k
97/45	MS, wadi in front of B185	Steatite vessel	Steatite	XI-27-97	Pecked interior, scraped exterior, five holes drilled under interior rim	Figure 48k
97/46	MS, west end of wadi	Stamped plate	Ceramic	XI-97	Egyptian Red Slip ware. Circle of fronds	Figure 36 no. 151
97/47	MS, B154	Stamped plate or shallow bowl	Ceramic, pink ware	XI-97	Large cross	Figure 36 no. 157
97/48	MS, B191	Stamped plate	Ceramic	XI-97	Large floral design	—
97/49	MS, B201	Large bowl with potmark	Ceramic, fabric uncertain	XI-97	Postfiring incised	Figure 41 no. 202
97/50	MS, B177 sample	Base of flat plate with black painted inscription	Ceramic, Aswani ware	XI-97	Slip 10R 5/6; fabric 5YR 7/4. Abundant black bits and mica, medium limestone bits, some red bits	Figure 51a
97/51	O2, north of B31	Dipinto	Ceramic	XII-1-97	Fragment of large inscription. Cream fabric, red-brown paint	Figure 52l
97/52	O2, north of B43	Dipinto	Ceramic	XII-7-97	Large inscription, very faint, with scratches (postfiring mark?) on top. Cream fabric, red-brown paint	Figure 52m
97/53	MS, between B157 and B159	Potmark	Ceramic	XII-8-97	Postfiring incised plate	—
97/54	MS, B217	Imported redware	Ceramic	XII-8-97	Import, overhung rim bowl	—
97/55	Opposite Wadi el-Sid mines	Six blue-painted sherds	Ceramic	XII-8-97	New Kingdom sherds	Figure 8 nos. 30, 31
97/56	Opposite Wadi el-Sid mines	New Kingdom "pilgrim flask"	Ceramic	XII-8-97	New Kingdom	Figure 8 no. 33
97/57	Opposite Wadi el-Sid mines	New Kingdom potstand	Ceramic, marl	XII-8-97	New Kingdom	Figure 9 no. 36
97/58	Opposite Wadi el-Sid mines	New Kingdom flask	Ceramic	XII-8-97	Tall, slender flask neck, handle scar	Figure 8 no. 32
97/59	O9B graves	"Incense burner"	Soft stone	XI-21-97	Incised vertical lines and dots	Figure 48i

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Registration No.	*Provenance*	*Description*	*Material*	*Registration Date*	*Remarks*	*Illustration*
97/60	MS, upslope of B197	"Incense burner" fragment	Sandstone	XI-27-97	Thin incised lines	Figure 48j
97/61	MS, beside B181 on Hillock	Two glass sherds	Glass	XI-97	One very dark blue; one clear; mold blown	fig. 48h and not ill.
97/62	MS, B227	Sherd disk	Ceramic	XII-97	Worked sherd	Figure 48m
97/63	Mines south of Wadi el-Sid	Sherd	Ceramic	XII-8-97	New Kingdom? Postfiring incised	—
97/64	O9, far end	Roman-period slotted grain mill, upper	Vesicular basalt	XII-97	Rectangular, slotted, two handle holes, "AP" inscription	Figure 14a, Plate 1b
97/65	MS, between B228 and B229	Large bowl with potmark	Ceramic	XII-9-97	Postfiring incised	Figure 41 no. 201
97/66	O2, B56	Dipinto, large inscription	Ceramic	XII-9-97	Mitten-shaped scrawl. Cream buff fabric, cream slip, red-brown paint	Figure 52n
97/67	MS, B176	Three stamped plates	Ceramic, pink ware	XI-97	—	Figure 35 nos. 138, 139; Figure 36 no. 158
97/68	MS, B177	Nine decorated plates	Ceramic	XI-97	Two incised, six stamped, one stamped and incised. Pink ware (nos. 141, 143–46), rest fabric uncertain	Figure 35 nos. 141, 143–47, and not ill.
97/69	MS, between B188 and B189	Stamped plate	Ceramic, pink ware	XII-97	Palm frond?	Figure 36 no. 156

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APPENDIX B

MAIN SETTLEMENT ROOM SIZES

Bldg. No.	*Description*	*Min. Units*	*Max. Units*	*No. Rooms*	*Bldg. Int. (sq. m)*	*Room No.*	*Room Max. Length*	*Room Max. Width*	*Room Int. (sq. m)*	*Comments*	*Niche(s) (cm)*	*Bench(es) (cm)*
1992 SEASON												
1	Out-building	—	—	1	—	—	1.45	0.80	1.24	—	—	—
2	Out-building	—	—	1	—	—	3.20	1.50	4.80	—	—	—
3	Agglom-erated	2	2	7	147	a	5.00	3.80	18.00	—	—	1
						b	3.60	3.40	13.12	—	—	—
						c	4.10	3.20	12.28	—	—	—
						d	4.40	3.20	13.16	—	—	1
						e	5.20	4.00	17.12	—	—	—
						f	6.40	4.20	27.04	—	—	1
						g	6.30	4.60	21.56	—	—	1?
4	House	1	1	2	25	a	4.60	3.20	13.28	—	2	—
						b	3.00	2.40	6.60	—	—	1?
5	Agglom-erated	2	3	8	134	a	6.10	3.30	20.32	—	—	—
						b	2.90	2.20	5.60	—	—	—
						c	5.00	3.90	17.48	—	—	1
						d	1.90	1.50	2.66	—	1	—
						e	4.50	2.40	10.92	—	—	1
						f	6.10	3.30	19.70	—	—	1
						g	4.10	3.60	14.40	—	—	1
						h	4.60	3.70	16.78	—	1	1
6	Agglom-erated	4	4	13	226	a	6.40	4.00	23.52	—	—	—
						b	6.40	4.00	21.24	—	—	—
						c	4.50	3.60	16.08	—	1	—
						d	6.40	3.20	19.48	—	1	—
						e	3.20	2.50	7.40	—	—	—
						f	4.30	3.60	15.36	—	—	—
						g	4.00	4.00	14.32	—	1	—
						h	4.00	3.00	10.60	—	—	—
						i	4.10	3.80	12.74	—	2	—
						j	4.40	3.60	11.00	—	—	—
						k	5.20	4.00	17.44	—	—	1?
						l	2.60	1.40	3.60	—	—	—
						m	3.90	3.00	10.36	—	—	—
7	House	1	1	3	52	a	5.00	4.90	22.24	—	—	—
						b	3.60	1.30	4.70	—	—	—
						c	4.10	3.40	13.86	—	5	—

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Bldg. No.	*Description*	*Min. Units*	*Max. Units*	*No. Rooms*	*Bldg. Int. (sq. m)*	*Room No.*	*Room Max. Length*	*Room Max. Width*	*Room Int. (sq. m)*	*Comments*	*Niche(s) (cm)*	*Bench(es) (cm)*
8	Out-building	—	—	1	—	—	1.40	1.20	1.28	—	—	—
9	Out-building	—	—	1	—	—	3.40	ca. 2.00	6.04+	—	—	—
10	Out-building?	—	—	1	—	—	3.10	2.60	8.06	—	2	—
11	House	1	1	3–4	82	a	5.90	4.50	21.44	—	4	1
						b	5.50	4.40	23.56	—	4	1 ext.
						c	8.70	2.80	21.16	—	—	—
12	Agglom-erated	2	2	9	108	a	3.50	3.00	9.56	—	—	1
						b	3.80	2.20	6.12	—	—	—
						c	5.60	3.80	18.60	—	—	—
						d	3.90	3.00	10.00	—	—	1
						e	2.10	1.60	2.44	—	—	—
						f	5.70	2.40	11.86	Hearth?	—	—
						g	3.40	3.10	10.56	—	—	1
						h	4.60	2.70	12.48	—	2	1?
						i	1.60	1.60	2.20	—	—	—
13	Out-building	—	—	1	—	—	3.20	2.60	7.00	—	—	1
14	House	1	1	2–3	48	a	4.30	3.70	14.60	Trough?	—	—
						b	4.20	2.80	10.20	—	1	1
						c	3.80	3.50	12.16	—	1	1 ext.
15	Out-building	—	—	1	—	—	1.20	1.20	1.36	—	—	—
16	Out-building	—	—	1	—	—	1.40	1.40	1.74	—	—	—
17	House?	1	1	8	101	a	3.10	2.90	8.48	—	—	—
						b	1.90	1.90	3.60	—	—	—
						c	3.50	2.70	9.44	—	—	1?
						d	3.80	1.20	4.56	—	—	—
						e	5.40	4.80	23.86	—	—	—
						f	3.50	2.80	9.52	—	—	1
						g	3.50	1.80	6.12	—	—	—
						h	4.50	3.30	14.74	—	—	1
18	Out-building	—	—	1	—	—	4.20	3.50	12.52	—	—	—
19	House	1	1	2	27	a	3.60	3.40	11.60	—	—	1
						b	3.00	2.90	7.92	—	1	—
20	Out-building	—	—	1	—	—	2.60	2.00	4.60	—	—	—
21	Out-building	—	—	1	—	—	4.80	ca. 3.3	ca. 14.56	—	—	1
22	Out-building	—	—	1	—	—	2.00	1.60	2.40	—	—	—
23	Out-building	—	—	1	—	—	2.00	1.60	2.86	—	—	—

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Bldg. No.	*Description*	*Min. Units*	*Max. Units*	*No. Rooms*	*Bldg. Int. (sq. m)*	*Room No.*	*Room Max. Length*	*Room Max. Width*	*Room Int. (sq. m)*	*Comments*	*Niche(s) (cm)*	*Bench(es) (cm)*
24	House	1	1	3	20	a	2.10	2.00	4.08	—	—	1 ext.
						b	3.30	2.00	6.08	—	1	1 ext.
						c	2.00	1.60	2.60	—	1 int., 1 ext.	—
25	Out-building	—	—	1	—	—	4.00	1.80	6.04	—	—	—
26	Out-building	—	—	1	—	—	0.80	0.50	0.40	—	—	—
27	Agglom-erated	3	4	8	153	a	3.40	3.20	10.86	—	—	—
						b	2.80	2.10	5.24	—	—	—
						c	5.20	4.10	21.32	Courtyard?	—	—
						d	6.00	3.80	17.60	—	—	—
						e	6.20	3.90	21.70	Window?	1	—
						f	4.80	3.30	12.00	—	—	—
						g	4.20	3.80	15.44	—	—	1
						h	4.20	3.60	13.40	—	—	—
28	House?	1	1	2	20+	a	2.60+	2.40+	5.00+	—	1	—
						b	3.20+	2.00+	5.00+	—	—	—
29	House	1	1	4	60	a	5.30	2.90	13.56	—	—	1? ext.
						b	4.70	3.20	14.24	—	—	—
						c	3.60	2.10	7.24	—	1	—
						d	4.70	3.10	11.82	Courtyard?	—	—
30	Out-building	—	—	1	—	—	3.40	3.40	11.48	—	—	—
31	Out-building	—	—	1	—	—	2.80	2.50	7.00	—	—	1? int. 1 ext.
32	Out-building	—	—	1	—	—	3.00	ca. 1.00	ca. 3.00	—	—	—
33	Out-building	—	—	1	—	—	2.00	1.40	ca. 2.00	—	—	—
34	House	1	1	2	30	a	4.40	3.70	16.28	—	—	1
						b	3.00	2.50	7.36	—	—	—
35	Out-building	—	—	1	—	—	4.30	3.90	14.62	—	—	—
36	Out-building	—	—	1	—	—	3.80	3.00	11.40	—	—	—
37	Agglom-erated	2	2	8	131	a	3.30	2.40	7.60	—	—	—
						b	3.40	2.30	5.36	—	—	—
						c	6.50	4.60	25.74	Courtyard?	—	—
						d	4.10	3.90	15.64	—	—	1
						e	3.40	2.60	7.36	—	1	—
						f	4.80	4.00	18.78	—	2	—
						g	4.00	3.50	14.04	—	—	2
						h	3.70	2.20	7.36	—	—	—
38	House	1	1	2	21	a	3.00	3.00	9.04	—	—	1
						b	3.50	2.50	5.20	—	—	Boulder

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Bldg. No.	*Description*	*Min. Units*	*Max. Units*	*No. Rooms*	*Bldg. Int. (sq. m)*	*Room No.*	*Room Max. Length*	*Room Max. Width*	*Room Int. (sq. m)*	*Comments*	*Niche(s) (cm)*	*Bench(es) (cm)*
39	Agglom-erated?	2 ?	2	4	47	a	5.40	3.60	17.78	—	—	—
						b	3.30	2.70	7.52	—	3	—
						c	2.90	2.10	5.32	—	—	—
						d	2.00	2.00	4.00	—	—	—
40	Out-building	—	—	1	—	—	2.90	0.70	1.04	—	—	—
41	Agglom-erated	3	4	9–10	150	a	4.70	3.70	15.64	—	—	—
						b	2.80	2.60	6.96	—	—	—
						c	4.80	3.60	15.86	—	—	1
						d	1.60	1.10	1.52	—	—	—
						e	ca. 4.60	3.70	14.48	—	—	—
						f	4.60	2.10	9.48	—	—	—
						g	3.90	1.40	4.48	—	—	—
						h	4.40	3.20	12.36	—	—	—
						i	8.00	5.30	40.96	Courtyard?	—	—
						j	2.20	1.00	2.28	—	—	—
42	House	1	1	2	32	a	4.00	3.40	12.64	—	2	—
						b	4.20	3.50	11.60	—	6–8	—
43	House	1	1	2	28	a	4.10	3.90	14.78	—	1	2
						b	4.20	1.60	6.36	—	1+	—
44	House	1	1	3	40	a	4.50	4.00	16.74	—	4	—
						b	4.00	2.90	10.36	—	2	1
						c	2.30	1.00	2.20	—	—	—
45	House	1	1	2	26	a	4.00	3.50	9.78	—	1?	—
						b	3.70	2.50	7.78	—	1?	—
46	House	1	1	2	ca. 19	a	3.50	3.10	10.40	—	—	1
						b	ca. 2.50	ca. 2.10	ca. 4.36	—	—	—
47	House	1	1	3	21	a	3.00	2.80	8.08	—	—	—
						b	2.40	2.20	4.36	—	—	—
						c	2.00	1.50	2.78	—	—	1? ext.
48	House	1	1	1	25	—	6.80	3.30	20.00	—	2–3	1?
49	House	1	1	3–4	53	a	5.10	2.10	8.96	—	—	—
						b	5.10	4.10	19.60	—	—	—
						c	3.80	3.70	12.92	—	1?	1
50	Agglom-erated	3	4	20	303	a	6.30	3.60	21.20	—	—	1
						b	4.80	2.40	10.96	—	—	—
						c	4.50	4.50	15.70	—	—	1
						d	3.60	3.60	7.96	—	—	—
						e	2.50	2.00	4.40	—	—	—
						f	6.20	3.90	24.20	Courtyard?	—	—
						g	7.40	4.20	28.52	—	1	—
						h	6.60	4.00	24.16	—	1	—
						i	3.40	2.40	7.60	—	—	—
						j	3.90	3.70	11.44	—	—	—

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Bldg. No.	*Description*	*Min. Units*	*Max. Units*	*No. Rooms*	*Bldg. Int. (sq. m)*	*Room No.*	*Room Max. Length*	*Room Max. Width*	*Room Int. (sq. m)*	*Comments*	*Niche(s) (cm)*	*Bench(es) (cm)*
						k	3.40	2.90	9.16	—	—	—
						l	2.80	2.60	6.92	—	—	—
						m	2.80	2.20	5.44	—	—	—
						n	4.70	3.50	15.08	Hearth?	—	1
						o	2.70	2.20	5.04	—	—	—
						p	2.60	2.60	6.00	—	—	1?
						q	5.30	2.90	14.04	—	—	1
						r	3.50	3.40	11.28	—	—	1
						s	4.90	4.20	15.64	—	—	1
						t	3.00	2.80	7.24	—	—	—
51	Agglom-erated	3?	3	6	79	a	3.60	3.50	11.82	—	2	—
						b	3.90	2.60	9.12	—	—	1
						c	2.60	2.40	5.04	—	—	—
						d	3.40	2.20	6.48	—	—	1 int. 1 ext.
						e	4.10	3.30	12.12	—	—	—
						f	4.00	4.00	13.56	—	1?	1
52	Out-building	—	—	1	—	—	5.20	2.60	12.48	—	—	—
53	House	1	1	3	48	a	3.00	2.10	5.92	—	2	—
						b	4.80	3.80	16.36	—	1	—
						c	3.80	2.80	10.64	—	—	1
54	House	1	1	3	46	a	4.60	3.60	15.52	—	—	1
						b	4.00	3.80	15.20	—	—	1?
						c	3.60	2.00	5.56	—	—	1?
55	Out-building	—	—	1	—	—	2.00	1.80	3.60	—	—	1?
						1993 SEASON						
56	House	1	1	3	49	a	6.20	3.80	20.78	—	—	1 + 1?
						b	3.20	2.60	7.40	—	—	—
						c	3.30	2.70	8.12	—	—	1
57	House	1	1	3	41	a	3.80	3.40	11.48	—	—	—
						b	4.80	3.60	13.20	—	—	—
						c	4.00	1.80	5.60	—	—	—
58	House	1	1	2–3	23	a	2.70	2.70	6.36	—	1	—
						b	1.80	1.20	2.24	—	—	—
						c	1.20	1.10	ca. 1.20	—	—	—
59	Out-building?	—	—	1	—	—	1.80	1.60	ca. 2.60	—	—	—
60	Out-building?	—	—	1	—	—	2.60	2.00	ca. 4.82	—	—	—
61	Agglom-erated	3	3	9	170	a	6.90	5.70	35.64	—	—	—
						b	5.70	5.10	26.28	—	—	—
						c	5.50	3.40	14.52	—	—	—
						d	6.50	3.30	20.08	—	—	—
						e	4.20	3.40	12.16	—	—	—

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Bldg. No.	*Description*	*Min. Units*	*Max. Units*	*No. Rooms*	*Bldg. Int. (sq. m)*	*Room No.*	*Room Max. Length*	*Room Max. Width*	*Room Int. (sq. m)*	*Comments*	*Niche(s) (cm)*	*Bench(es) (cm)*
						f	4.00	3.10	10.66	—	1	—
						g	3.90	3.00	11.16	—	—	—
						h	2.20	2.20	4.74	—	—	—
61a	Out-building	—	—	1	—	—	1.10	0.70	0.70	—	—	—
62	House	1	1	3–4	41	a	5.00	3.70	16.04	—	—	—
						b	2.40	2.40	5.66	—	—	—
						c	2.20	1.50	3.12	—	—	—
						d	3.00	1.70	5.04	—	—	—
63	Agglom-erated	3	3	13	167	a	2.00	1.80	2.24	—	—	—
						b	4.00	2.00	7.48	—	—	—
						c	2.70	2.00	4.56	—	—	—
						d	5.20	3.40	17.12	—	2	1
						e	5.00	3.20	15.60	—	1	—
						f	2.40	2.20	5.00	—	—	—
						g	6.30	3.80	22.52	—	—	—
						h	3.50	2.50	8.00	—	1	—
						i	4.00	2.80	10.52	—	—	—
						j	3.80	3.30	12.56	—	1	1 + 1?
						k	4.40	2.40	10.74	—	—	—
						l	3.40	2.30	7.40	—	—	—
						m	3.60	3.30	10.32	—	1	—
64	Agglom-erated	2	3	10–11	141	a	3.60	3.10	11.04	—	—	—
						b	4.00	3.10	ca. 11.56	Hearth?	—	2?
						c	2.70	2.40	ca. 5.70	—	1	—
						d	5.90	3.20	18.88	—	—	—
						e	4.60	2.20	9.04	—	1?	—
						f	4.20	3.00	11.40	—	—	—
						g	6.10	2.50	15.78	—	—	—
						h	5.40	3.30	13.96	—	—	1
						i	1.30	1.20	1.56	—	—	—
						j	1.20	1.00	1.20	—	—	—
65	Agglom-erated	5	5	13–15	237	a	5.40	2.70	14.12	—	—	1
						b	3.70	2.90	10.60	—	—	—
						c	2.60	1.60	4.16	—	—	1
						d	6.00	4.00	16.74	—	—	—
						e	4.10	4.00	16.24	—	1	1
						f	4.10	3.10	12.70	—	—	—
						g	2.60	2.20	4.96	—	—	—
						h	4.50	3.90	ca. 13.00	Plus “closet”	—	—
						i	5.10	2.50	12.08	—	—	1
						j	4.90	3.30	12.48	—	—	—
						k	2.50	1.40	3.20	—	—	—
						l	4.40	2.60	ca. 10.60	—	—	1

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Bldg. No.	*Description*	*Min. Units*	*Max. Units*	*No. Rooms*	*Bldg. Int. (sq. m)*	*Room No.*	*Room Max. Length*	*Room Max. Width*	*Room Int. (sq. m)*	*Comments*	*Niche(s) (cm)*	*Bench(es) (cm)*
						m	5.70	4.20	22.24	—	1	—
						n	4.20	3.40	13.78	—	1	—
66	Agglom-erated	3	3	11	156	a	3.70	2.70	9.82	—	3	—
						b	3.00	2.30	4.66	—	—	—
						c	5.40	2.90	12.60	—	1	—
						d	3.90	3.20	11.52	—	—	1
						e	4.70	3.60	11.12	—	—	—
						f	4.30	1.80	6.04	—	—	—
						g	4.40	3.80	14.52	—	—	—
						h	5.10	2.40	11.28	—	1	—
						i	5.40	3.10	15.24	Circle of ash and sherds	—	—
						j	4.40	3.60	13.60	—	2	—
						k	2.80	2.70	5.82	—	—	—
67	House?	1	1	3–4	53	a	3.40	2.80	9.52	—	—	1
						b	1.20	1.10	1.32	—	—	—
						c	6.00	4.00	18.20	—	2	—
						d	3.80	3.00	11.60	—	2	—
68	Out-building	—	—	1	—	—	1.30	0.60	0.56	—	—	—
69	Out-building	—	—	1	—	—	1.20	1.00	1.24	—	—	—
70	Agglom-erated	2	2	4	61	a	5.50	3.40	18.70	—	1	—
						b	3.30	1.50	4.48	—	—	—
						c	4.30	ca. 3.30	13.52	—	1	—
						d	5.00	2.20	8.52	—	—	—
71	Agglom-erated	3	3	10	138	a	6.40	3.50	21.82	—	1	—
						b	5.80	4.10	23.32	—	—	—
						c	3.40	2.60	7.56	—	—	—
						d	3.80	2.60	7.12	—	—	—
						e	5.10	3.20	16.32	—	1	—
						f	3.40	1.60	5.44	—	—	—
						g	3.00	2.10	6.28	—	—	—
						h	3.20	3.00	7.24	—	—	—
						i	ca. 4.00	1.70	6.00	—	—	—
						j	4.30	3.10	12.64	—	2	1?
72	Out-building	—	—	1	—	—	0.90	0.70	0.52	—	—	—
73	House	1	1	3	40	a	3.10	3.00	8.20	—	—	—
						b	3.90	3.40	13.24	—	—	—
						c	4.00	3.10	9.56	—	—	1
74	Agglom-erated	4	4	13–14	174	a	5.00	3.30	16.48	—	—	—
						b	4.70	1.80	7.96	—	—	—
						c	2.60	1.90	4.20	—	—	—

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Bldg. No.	*Description*	*Min. Units*	*Max. Units*	*No. Rooms*	*Bldg. Int. (sq. m)*	*Room No.*	*Room Max. Length*	*Room Max. Width*	*Room Int. (sq. m)*	*Comments*	*Niche(s) (cm)*	*Bench(es) (cm)*
						d	2.80	2.60	7.28	—	—	—
						e	3.20	ca. 1.50	ca. 4.56	—	—	—
						f	ca. 3.30	2.30	ca. 6.96	—	—	—
						g	ca. 4.20	4.00	ca. 13.64	—	—	1?
						h	3.60	3.20	10.56	—	—	—
						i	4.10	2.60	8.66	—	—	—
						j	3.70	3.20	10.28	—	—	—
						k	2.80	2.60	6.00	—	—	—
						l	ca. 5.90	3.20	ca. 14.74	Includes partition wall	—	—
						m	3.50	3.30	11.56	—	—	1
75	Out-building	—	—	1	—	—	ca. 2.80	ca. 1.60	ca. 1.64	Guardpost	—	—
76	Out-building	—	—	1	—	—	0.80	0.60	0.44	—	—	—
77	Agglom-erated	3	3	8	176	a	7.60	4.10	31.16	Hearth?	—	1
						b	5.00	3.00	14.92	—	2	—
						c	3.80	3.00	10.64	—	1	1
						d	7.30	4.00	25.40	—	2 + 1?	—
						e	3.60	3.30	11.28	—	—	—
						f	3.90	3.20	12.48	—	—	—
						g	6.30	3.10	19.12	—	—	—
						h	4.60	2.40	10.08	—	—	—
78	House	1	1	4	43	a	4.10	2.10	8.32	—	—	—
						b	3.00	2.60	7.92	—	—	—
						c	ca. 3.10	3.00	ca. 9.30	—	—	—
						d	2.80	2.00	4.56	—	—	—
79	Agglom-erated	4	4	6	81	a	ca. 5.10	ca. 3.2	ca. 16.32	—	—	—
						b	5.50	3.00	16.00	—	—	—
						c	ca. 4.50	ca. 2.10	ca. 9.45	—	—	—
						d	ca. 2.00	ca. 2.00	ca. 3.74	—	—	1?
						e	4.10	3.20	12.56	—	1?	1
						f	0.30	0.80	1.44	—	—	—
80	Out-building	—	—	1	—	—	1.60	1.40	2.24	—	—	—
81	House	1	1	5	53	a	ca. 4.10	3.00	ca. 11.48	—	—	—
						b	3.20	2.00	6.12	—	—	—
						c	ca. 2.70	2.20	ca. 5.16	—	1	—
						d	ca. 3.00	2.30	ca. 5.20	—	—	—
						e	3.30	2.50	7.52	—	—	—
82	Out-building	—	—	1	—	—	3.00	2.60	7.28	—	—	—
83	House	1	1	3	34	a	2.60	1.80	4.68	—	1	—
						b	4.50	3.20	11.36	Includes one double niche?	2	—
						c	3.50	2.00	6.36	—	—	—

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Bldg. No.	*Description*	*Min. Units*	*Max. Units*	*No. Rooms*	*Bldg. Int. (sq. m)*	*Room No.*	*Room Max. Length*	*Room Max. Width*	*Room Int. (sq. m)*	*Comments*	*Niche(s) (cm)*	*Bench(es) (cm)*
84	Agglom-erated	3	4	8–9	150	a	3.00	2.70	7.96	—	—	—
						b	2.20	1.30	2.86	—	—	—
						c	ca. 3.80	ca. 2.10	ca. 7.98	—	—	—
						d	2.10+	1.30	2.73+	—	—	—
						e	6.70	6.40	35.44+	—	1+	—
						f	4.50	2.80	11.12	—	—	1
						g	5.10	4.00	ca. 15.44	—	1?	—
						h	4.00	2.40	8.04	—	1	—
						i	4.90	4.70	21.64	—	—	1 ext.
85	House	1	1	2	29	a	5.40	3.50	18.36	—	—	2
						b	3.10	2.10	6.66	—	—	—
86	Out-building	—	—	1	—	—	1.60	1.30	2.08	—	—	—
87	Out-building	—	—	1	—	—	1.20	1.20	1.04	—	—	—
88	House	1	—	1	2	a	3.80	3.60	13.68	—	—	—
						b	3.10	2.60	8.06	—	—	—
89	Agglom-erated	4	4	10–11	119	a	3.00	1.80	5.36	—	—	—
						b	2.10	0.90	1.48	—	—	—
						c	3.90	2.90	9.64	—	—	—
						d	3.00	1.90	5.40	—	—	—
						e	5.90	3.20	ca. 15.66	—	—	1
						f	2.50	1.50	3.52	—	—	1
						g	4.20	3.50	13.74	Includes partition wall	—	—
						h	3.10	2.00	6.28	Includes boulder	—	—
						i	5.20	3.60	ca. 17.52	—	—	—
						j	ca. 2.70	ca. 2.10	ca. 5.70	—	—	—
90	House	1	1	2	28	a	4.10	3.30	13.44	Hearth?	—	—
						b	3.20	3.00	9.52	Hearth?	—	—
91	House	1	1	2	37	a	4.30	3.40	13.56	—	—	—
						b	4.40	3.60	13.74	—	—	—
92	Agglom-erated?	3?	4	5	112	a	5.20	4.20	21.56	Includes circle	—	1
						b	5.00	4.30	19.56	—	—	—
						c	3.80	3.50	13.32	—	—	—
						d	ca. 4.30	3.10	ca. 13.32	—	—	1
						e	4.20	3.60	14.36	—	—	1
93	Agglom-erated	2	3	6	158	a	5.00	1.40	7.00	—	—	—
						b	2.90	2.50	7.25	—	3	—
						c	5.30	3.50	18.55	—	—	—
						d	4.80	3.60	17.28	—	—	1?
						e	3.80	3.64	12.94	—	—	—
						f	3.60	ca. 2.70	ca. 9.00	—	—	1
						g	4.20	3.20	12.12	—	—	—

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Bldg. No.	*Description*	*Min. Units*	*Max. Units*	*No. Rooms*	*Bldg. Int. (sq. m)*	*Room No.*	*Room Max. Length*	*Room Max. Width*	*Room Int. (sq. m)*	*Comments*	*Niche(s) (cm)*	*Bench(es) (cm)*
94	House	1	1	2	19	a	4.00	2.30	8.78	—	—	—
						b	2.60	1.30	3.12	—	—	—
95	Agglom-erated?	2?	2	7	119	a	3.50	2.50	8.70	—	—	—
						b	4.40	1.40	6.12	—	—	—
						c	4.00	3.30	13.12	—	—	—
						d	3.00	1.10	3.28	—	—	—
						e	3.30	2.60	8.36	—	—	—
						f	2.80	1.60	4.36	—	—	—
						g	4.00	2.30	9.12	—	—	—
96	Out-building	—	—	2	—	a	1.40	1.30	1.60	—	—	—
						b	1.40	0.90	1.12	—	—	—
97	House	1	1	2	34	a	4.30	4.10	16.44	—	—	1?
						b	3.30	2.30	7.28	—	1	—
98	Retaining walls	—	—	—	—	—	—	—	—	—	—	—
99	Out-building	—	—	1	—	—	2.10	1.80	3.60	—	—	—
100	House	1	1	3	49	a	4.00	2.60	9.78	—	—	—
						b	5.20	3.30	15.60	—	—	1
						c	4.70	2.00	8.70	—	—	—
101	Agglom-erated	2	2	6	74	a	3.70	2.80	10.36	—	—	1
						b	2.60	2.10	5.60	—	1?	1
						c	4.80	3.70	16.32	—	—	—
						d	4.10	3.50	13.20	—	1	—
						e	2.00	1.40	2.92	—	—	—
						f	2.40	1.70	3.78	—	—	—
102	House	1	1	5	31	a	2.90	2.20	6.32	—	—	—
						b	2.80	1.60	3.52	—	—	—
						c	2.70	1.60	4.32	—	—	—
						d	4.20+	3.60	ca. 8.24	Very irregular	—	1
						e	ca. 2.60	ca. 2.30	ca. 5.12	—	—	—
103	Out-building	—	—	1	—	—	1.30	1.10	1.28	—	—	—
104	Agglom-erated	3	3	10	132	a	4.70	1.40	5.66	—	—	—
						b	4.90	2.80	12.28	—	—	1
						c	2.60	2.10	4.24	Minus boulder	—	—
						d	2.80	1.70	4.56	—	—	—
						e	3.70	3.50	12.60	—	—	—
						f	ca. 3.60	3.30	ca. 11.24	—	—	—
						g	2.90	2.10	ca. 4.92	—	—	—
						h	4.10	3.60	12.20	—	1?	1
						i	4.80	3.70	15.86	—	—	—
						j	2.80	2.10	5.82	—	—	—

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Bldg. No.	*Description*	*Min. Units*	*Max. Units*	*No. Rooms*	*Bldg. Int. (sq. m)*	*Room No.*	*Room Max. Length*	*Room Max. Width*	*Room Int. (sq. m)*	*Comments*	*Niche(s) (cm)*	*Bench(es) (cm)*
105	Agglom-erated	3	3	7–8	121	a	4.00	3.40	13.40	—	—	1
						b	ca. 2.60	ca. 1.80	ca. 4.66	—	—	1
						c	5.50	5.10	22.92	—	—	1 ext.
						d	2.80	2.40	6.48	—	—	—
						e	2.50	2.00	4.92	—	—	—
						f	4.30	4.00	15.32	—	—	—
						g	2.50	2.40	5.56	—	—	—
						h	4.10	3.10	12.70	—	—	1
						1996 SEASON						
106	Agglom-erated	6	6	22	271	a	4.20	3.50	14.08	—	—	1
						b	2.70	2.30	6.04	—	—	—
						c	3.40	2.60	8.08	—	1 (33 flat stone)	1
						d	4.00	3.00	11.00	—	—	—
						e	4.00	3.40	10.44	—	—	—
						f	2.90	2.80	7.66	—	—	—
						g	5.40	3.10	18.24	—	—	—
						h	5.10	2.40	11.66	—	—	—
						i	3.70	3.20	7.24	—	—	—
						j	4.10	2.10	8.56	—	—	—
						k	4.40	3.80	12.16	—	—	—
						l	3.60	2.10	6.92	—	—	—
						m	5.40	3.90	17.70	—	—	—
						n	4.00	3.80	14.12	—	remnant	1
						o	4.10	3.80	14.66	—	—	—
						p	2.60	2.40	5.52	—	—	—
						q	3.30	3.20	9.60	—	—	—
						r	4.50	3.10	13.78	—	—	1
						s	3.00	2.30	6.82	—	—	—
						t	4.10	2.60	6.12	—	—	—
						u	4.40	3.00	13.08	—	1 (38 × 38, no top)	—
						v	4.10	3.60	14.56	—	—	—
107	House?	1	1	1	11	—	3.40	3.40	11.52	—	—	—
108	Out-building	—	—	1	—	—	3.10	3.00	9.32	—	—	1?
109	Agglom-erated	2	2	6	35	a	2.10	2.10	4.44	—	—	—
						b	2.20	1.20	2.70	—	—	—
						c	2.10	2.00	3.96	—	—	—
						d	4.10	3.70	12.52	—	—	—
						e	3.20	1.70	4.44	—	—	—
						f	3.00	1.90	4.92	—	—	1 (ca. 120 × 100)

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Bldg. No.	*Description*	*Min. Units*	*Max. Units*	*No. Rooms*	*Bldg. Int. (sq. m)*	*Room No.*	*Room Max. Length*	*Room Max. Width*	*Room Int. (sq. m)*	*Comments*	*Niche(s) (cm)*	*Bench(es) (cm)*
110	House	1	1	4	32	a	6.60	3.90	21.24	—	—	—
						b	2.20	2.00	3.74	—	—	—
						c	2.70	2.60	5.52	—	—	—
						d	ca. 1.80	1.20	ca. 2.00	—	—	—
111	Out-building	—	—	1	—	—	ca. 3.10	2.10	ca. 5.24	—	—	—
112	Out-building	—	—	2	—	a	ca. 2.90	ca. 2.40	ca. 6.82	—	—	—
						b	2.40	2.30	4.40	—	—	—
113	House	1	1	3	18+	a	3.20+	2.60+	6.52+	—	—	—
						b	4.00	2.60	8.82	Including wall stub	—	—
						c	2.50	ca. 1.30	ca. 2.78	—	—	—
114	Out-building	—	—	1	—	—	1.90	1.80	3.12	—	—	—
115	House?	1	1	1+	14	—	5.00	3.40	14.16	—	—	—
116	House	1	1	2	20	—	3.60	3.30	9.92	—	—	—
							4.00	2.60	8.12	Including lower boulder	—	—
117	Out-building	—	—	1	—	—	2.20	2.10	4.60	—	—	—
118	House	1	1	5–6	85	a	4.60	2.90	13.24	—	—	—
						b	5.50	5.00	21.70	Courtyard?	—	—
						c	5.70	3.60	16.66	—	—	—
						d	4.20	3.60	12.60	—	—	1?
						e	5.20	3.90	ca. 14.66	Including partition wall	—	—
119	Out-building?	—	—	1	—	—	3.10+	2.80+	4.32+	—	—	—
120	Out-building	—	—	1	—	—	3.50	3.40	10.16	—	—	—
121	Agglom-erated	3	4	7–8	126	a	6.80	2.70	17.78	—	—	—
						b	5.90	2.20	11.52	—	—	—
						c	4.30	2.60	ca. 10.20	—	—	—
						d	3.90	2.50	9.36	—	—	—
						e	8.10	6.10	37.24	Courtyard?	—	—
						f	3.40	2.40	8.52	—	—	—
						g	5.50	4.00	18.04	—	—	—
122	House	1	1	2	22	a	3.80	3.50	11.44	—	—	—
						b	3.00	2.50	7.48	—	—	—
123	Out-building	—	—	1	—	—	2.60	0.80	1.28	—	—	—
124	Agglom-erated	3	5	12	187	a	6.50	3.80	22.40	—	—	2?
						b	5.00	2.00	9.74	—	—	—
						c	4.50	4.20	18.04	—	—	1
						d	5.10	3.00	14.52	—	—	—

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Bldg. No.	*Description*	*Min. Units*	*Max. Units*	*No. Rooms*	*Bldg. Int. (sq. m)*	*Room No.*	*Room Max. Length*	*Room Max. Width*	*Room Int. (sq. m)*	*Comments*	*Niche(s) (cm)*	*Bench(es) (cm)*
						e	ca. 3.80	2.70	ca. 9.32	—	—	—
						f	4.80	3.20	13.20	—	—	—
						g	3.20	2.50	8.04	—	—	—
						h	3.40	1.90	5.96	—	—	—
						i	4.50	3.90	15.96	—	—	1
						j	5.60	4.00	17.36	—	—	—
						k	4.20	2.50	10.48	—	—	1?
						l	4.90	3.00	13.16	—	—	—
125	Out-building	—	—	1	—	—	2.90	1.40	3.40	—	—	—
126	Agglom-erated	3	3	9	134	a	3.60	3.20	10.70	—	—	1
						b	3.00	2.50	7.28	—	—	—
						c	5.70	4.20	18.60	—	—	1? ext.
						d	4.60	4.60	20.66	Including possible cross wall	—	—
						e	7.60	3.10	20.82	Courtyard?	—	—
						f	4.50	3.00	11.70	—	—	—
						g	4.30	2.20	9.44	—	—	—
						h	4.10	ca. 3.6	ca. 13.92	—	—	—
						i	3.70	3.10	9.52	—	—	—
127	Agglom-erated?	2	2	2–3	32	a	4.30	4.10	16.04	—	—	1 int. 1 ext.
						b	5.10	3.60	14.40	—	—	1
						c	1.40	1.00	1.36	—	—	—
128	Agglom-erated	2	2	6	71	a	5.40	3.80	16.74	—	—	—
						b	3.30	2.60	11.20	—	—	1
						c	2.70	2.00	4.64	—	—	—
						d	5.40	3.30	16.32	—	—	—
						e	3.10	2.20	6.08	—	—	—
						f	4.30	3.90	15.04	—	—	1 (ca. 110 × 90)
129	House	1	1	3–4	50	a	4.30	3.60	13.64	—	—	—
						b	5.10	ca. 1.60	ca. 6.70	—	—	—
						c	ca. 4.40	3.50	ca. 14.12	—	—	—
						d	ca. 2.80	2.70	ca. 6.44	—	—	1
130	House	1	1	4	45–58	a	4.50	3.30	13.40	—	—	—
						b	4.70	3.30	14.20	—	—	—
						c	5.30	2.80	14.36	—	—	—
						d	3.50	3.30	10.44	—	—	—
131	Out-building	—	—	1	—	—	1.10	1.00	0.80	—	—	—
132	Out-building	—	—	1	—	—	1.50	0.90	1.28	—	—	—
133	House	1	1	3	16	a	4.10	2.80	11.04	—	1	1
						b	1.60	1.20	1.92	—	1	—
						c	1.20	1.10	1.32	—	—	—

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Bldg. No.	*Description*	*Min. Units*	*Max. Units*	*No. Rooms*	*Bldg. Int. (sq. m)*	*Room No.*	*Room Max. Length*	*Room Max. Width*	*Room Int. (sq. m)*	*Comments*	*Niche(s) (cm)*	*Bench(es) (cm)*
134	Agglom-erated	2	2	5	68	a	4.80	4.00	18.48	—	—	1
						b	3.50	2.30	7.82	—	—	—
						c	5.50	2.70	ca. 13.16	—	—	1 int. 1 ext.
						d	2.70	ca. 1.60	ca. 4.00	—	—	—
						e	4.40	4.10	ca. 16.40	—	—	—
135	House	1	1	2	32	a	4.40	3.50	14.86	—	—	1
						b	3.90	3.50	12.08	—	—	—
136	Out-building	—	—	1	—	—	1.70	1.70	2.52	—	—	—
137	Out-building	—	—	1	—	—	ca. 2.00	ca. 1.40	ca. 1.92	—	—	—
138	House	1	1	3	23+	a	4.50	3.50	13.52	—	—	—
						b	2.40	2.00	4.48	—	—	—
						c	1.10	ca. 1.00	1.08+	—	—	—
139	House	1	1	2–3	23+	a	3.40	3.40	10.78	—	—	—
						b	4.00	3.20	12.36	—	—	1
140	Agglom-erated	3+	3	13	ca. 213	a	3.30	1.70	5.26	—	—	—
						b	4.20	3.20	12.36	—	—	—
						c	4.90	4.30	19.64	—	—	—
						d	2.90	2.50	7.24	—	—	—
						e	ca. 4.10	ca. 2.90	ca. 11.86	—	—	—
						—	ca. 4.20	ca. 3.50	ca. 12.00	—	—	—
						g	ca. 4.10	ca. 3.80	ca. 14.82	—	—	—
						h	5.50	3.70	ca. 17.82	—	—	—
						i	6.30	3.30	19.24	—	—	—
						j	ca. 4.70	ca. 3.60	ca. 15.64	—	—	—
						k	5.70	3.00	17.08	—	—	—
						l	4.50	3.40	14.60	—	—	—
						m	3.70	2.10	7.66	—	—	1? ext.
141	Agglom-erated	2?	2	5	61	a	4.00	3.20	12.36	—	—	—
						b	5.60	3.20	17.32	—	1 (30+ w; left slab 40 h; bottom 35 up from surface)	—
						c	3.60	3.50	12.16	—	—	1 (190 × 80)
						d	4.20	2.40	9.40	—	—	1 (122 × 80)
						e	2.10	1.50	3.12	—	—	—
142	House	1	1	3	41	a	3.80	3.10	11.44	—	—	—
						b	3.80	3.60	13.44	—	—	1
						c	4.20	3.80	14.70	—	—	1?
143	House	1	1	2	—	a	4.40	2.70	11.60	—	—	1 (ca. 180 × 80)
						b	2.60	1.90	4.92	—	—	—

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Bldg. No.	*Description*	*Min. Units*	*Max. Units*	*No. Rooms*	*Bldg. Int. (sq. m)*	*Room No.*	*Room Max. Length*	*Room Max. Width*	*Room Int. (sq. m)*	*Comments*	*Niche(s) (cm)*	*Bench(es) (cm)*
144	Agglom-erated	4	4	11	ca. 143	a	4.30	4.20	ca. 15.20	—	1 (29 w; 18+ h; bottom in sand)	—
						b	ca. 2.60	2.40	ca. 6.24	—	—	—
						c	4.00	ca. 3.40	ca. 11.56	—	—	—
						d	4.70	3.60	14.00	—	—	—
						e	ca. 4.00	2.60	ca. 9.12	—	—	—
						f	4.20	3.40	ca. 13.00	—	1 (33 w; 39 d; 20 h; top lost, bottom in sand)	—
						g	3.80	3.80	12.52	To boulders	—	—
						h	3.50	3.20	ca. 9.96	To rim of stones	—	—
						i	4.40	3.40	ca. 13.92	To retaining wall	—	—
						j	2.50	1.80	ca. 3.82	—	1 (28 h; 26 w; filled with stones)	—
						k	3.00	3.00	8.92	One niche damaged	1 (23 w; ca. 19 d; 31+ h; bottom buried) 2 (ca. 33 w; 20 d)	—
145	House	1	1	2	15	a	4.00	2.20	8.96	—	—	—
						b	3.00	1.40	3.92	—	—	—
146	Out-building	—	—	2	—	a	1.60	1.10	ca. 1.48	—	—	—
						b	1.50	1.40	ca. 2.04	To bedrock wall	—	—
147	House	1	1	2	—	a	ca. 5.20	3.10	ca. 14.86	—	—	—
						b	ca. 3.00	2.60	ca. 7.78	—	—	—
148	Out-building?	—	—	1	—	—	2.20	2.00	4.04	—	—	—
149	House	1	1	4–5	ca. 62	a	4.20	3.00	9.20	—	—	—
						b	4.00	3.30	ca. 13.52	Including “closet”	—	—
						c	2.80	1.90	5.20	—	—	—
						d	6.60	5.00	18.52	2 rooms? court?	—	—
149a	Out-building	—	—	1	—	—	1.50	1.10	ca. 1.40	—	—	—
150	Agglom-erated	2	2	4–5	54+	a	ca. 6.20	ca. 3.40	ca. 16.60	—	—	—
						b	4.00	3.10	12.60	—	—	—
						c	3.60	2.90	9.74	—	—	—
						d	ca. 4.10	ca. 3.90	ca. 15.66	—	1 (ca. 30 w; 20+ h; 45 up from surface)	—

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Bldg. No.	*Description*	*Min. Units*	*Max. Units*	*No. Rooms*	*Bldg. Int. (sq. m)*	*Room No.*	*Room Max. Length*	*Room Max. Width*	*Room Int. (sq. m)*	*Comments*	*Niche(s) (cm)*	*Bench(es) (cm)*
151	House	1	1	4–5	26+	a	3.70	3.20	10.70	—	1	—
						b	ca. 2.50	ca. .80	ca. 1.78	—	—	—
						c	ca. 4.00	ca. 2.50	ca. 8.48	—	—	—
						d	3.70	2.00+	7.40+	—	1	—
152	Out-building	—	—	1	—	—	2.20+	1.50	3.78+	—	—	—
153	House	1	1	2	31	—	5.00	3.40	15.52	—	—	—
							3.80	3.60	12.82	—	1 (30 w; 20 h; 30 d; 62 up from surface) 2 (30+ h, top missing; 57 up from sand)	—
							1997 SEASON					
154	House	1	1	3	50	a	ca. 3.60	ca. 2.30	ca. 7.96	—	—	—
						b	5.00	4.60	16.40	—	—	—
						c	5.70	4.00	22.24	Including low walls	1	—
155	Out-building	—	—	1	—	—	ca. 4.20	ca. 3.20	ca. 12.16	—	—	—
156	Agglom-erated	3	3	10	134	a	ca. 3.30	2.60	7.20	—	—	—
						b	ca. 6.00	ca. 2.80	13.96	—	—	—
						c	3.50	3.20	10.82	—	—	—
						d	4.30	3.50	13.92	—	1 (40 w)	—
						e	3.00	3.00	8.40	—	—	—
						f	4.70	3.40	15.36	—	—	—
						g	3.60	3.30	10.70	Including wall stub	2	—
						h	5.60	3.40	16.44	—	—	—
						i	3.60	2.60	8.20	—	—	—
						j	5.00	3.00	13.16	Not including boulders	—	—
157	House	1	1	2–3	38	a	4.80	3.10	ca. 13.48	—	—	—
						b	4.10	3.00	11.56	—	—	1? ext.
158	Agglom-erated	2	2	5	83	a	6.60	4.00	22.66	—	Courtyard?	—
						b	5.40	3.80	17.60	—	—	1?
						c	ca. 3.00	2.40	ca. 6.52	—	—	—
						d	4.70	3.40	ca. 15.48	—	—	—
						e	ca. 4.00	3.00	ca. 11.52	—	—	—
159	Out-building	—	—	1	—	—	4.20	3.90	23.48	Minus boulders	—	—
160	House	1	1	4	60	a	4.50	ca. 3.3	ca. 14.44	—	—	—
						b	ca. 5.00	2.80	ca. 11.48	—	—	—
						c	4.40	3.20	13.86	—	—	—
						d	4.00	3.20	12.78	—	—	—

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Bldg. No.	*Description*	*Min. Units*	*Max. Units*	*No. Rooms*	*Bldg. Int. (sq. m)*	*Room No.*	*Room Max. Length*	*Room Max. Width*	*Room Int. (sq. m)*	*Comments*	*Niche(s) (cm)*	*Bench(es) (cm)*
161	Agglom-erated	3	3	7	115	a	5.20	ca. 3.70	ca. 14.20	—	—	—
						b	4.00	3.20	12.36	—	—	—
						c	6.60	3.80	21.60	Feature (ca. 125 × 135 cm)	—	—
						d	3.90	3.20	12.00	—	—	—
						e	5.00	4.10	15.70	—	—	—
						f	5.00	3.20	14.04	—	1?	—
						g	4.00	ca. 3.20	ca. 10.08	—	—	—
162	Agglom-erated	5	5	16	267	a	4.50	2.90	12.24	—	—	—
						b	4.30	3.80	14.82	—	—	—
						c	ca. 4.20	3.60	ca. 14.28	—	—	—
						d	ca. 4.20	2.60	ca. 9.48	—	—	1?
						e	4.20	4.00	15.78	—	—	—
						f	8.60	4.10+	33.04+	Courtyard?	—	—
						g	ca. 6.00	3.50	17.36	—	—	—
						h	ca. 4.00	ca. 2.00	ca. 7.96	—	—	—
						i	4.10	2.00	8.20	—	—	—
						j	4.00	3.10	11.44	—	—	—
						k	6.20	4.00	ca. 16.56	—	—	—
						l	4.80	3.10	ca. 13.66	—	—	—
						m	3.70	3.50	12.86	—	—	—
						n	ca. 4.50	3.40	ca. 12.74	—	—	—
						o	4.30	3.90	16.32	—	—	1?
						p	4.10	2.30	9.32	—	—	—
163	Agglom-erated	3	3	6	83	a	3.00	2.60	7.12	—	—	—
						b	3.70	2.70	9.44	—	—	—
						c	3.90	3.60	ca. 13.00	—	—	—
						d	2.20	2.20	4.74	—	—	—
						e	6.70	5.60	31.64	—	—	1?
						f	4.10	2.50	10.04	—	—	—
164	Agglom-erated	—	—	7	103	a	ca. 5.20	3.70	ca. 16.48	—	—	—
						b	3.40	2.00	6.74	—	—	—
						c	4.70	ca. 3.40	ca. 15.66	—	—	—
						d	4.00	2.00	7.24	—	—	—
						e	4.10	ca. 2.6	ca. 10.56	—	—	—
						f	4.10	1.90	6.96	—	—	—
						g	9.10	3.80	29.64	Courtyard?	—	—
165	House	1	1	2	ca. 39	a	ca. 4.80	ca. 4.00	ca. 16.24	—	—	—
						b	ca. 5.20	ca. 3.70	ca. 18.04	Including boulder bench	—	1

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Bldg. No.	*Description*	*Min. Units*	*Max. Units*	*No. Rooms*	*Bldg. Int. (sq. m)*	*Room No.*	*Room Max. Length*	*Room Max. Width*	*Room Int. (sq. m)*	*Comments*	*Niche(s) (cm)*	*Bench(es) (cm)*
166	Out-building	—	—	1	—	—	1.90	ca. 1.70	ca. 2.20	—	—	—
167	House	1	1	3–4	29	a	4.20	2.60	9.20	—	1 (40 w × 45 h × 40 d; 45 up from surface)	—
						b	2.20	2.00	4.36	Not including passage	1	—
						c	3.80	2.50	8.82	Including "closet"	1 natural (45 w × 40 h × 140 d)	—
168	House	1	1	2	24	a	3.60	3.40	12.08	Including wall stub	—	1
						b	3.70	2.70	9.82	—	—	—
169	House	1	1	5	42	a	ca. 4.10	ca. 3.80	ca. 11.36	—	—	—
						b	3.80	3.00	9.32	—	1 (30 w; 27 h; bottom in sand)	—
						c	3.00	1.70	4.92	—	1 (40 w)	—
						d	2.20	1.40	2.92	Exterior feature	—	—
						e	ca. 3.00	2.20	6.24	—	—	—
170	House	1	1	3	14	a	2.00	1.80	3.00	—	—	—
						b	3.00	2.20	5.24	—	—	—
						c	2.40	2.30	4.78	Upper level	—	—
171	Out-building	—	—	1	—	—	1.30	1.20	1.24	—	—	—
172	House	1	1	4	25	a	2.70	2.20	5.00	—	—	—
						b	5.60	3.00	9.44	Y-shaped room	—	—
						c	1.90	1.70	3.04	—	—	—
						d	3.70	2.40	6.66	—	—	—
173	Out-building	—	—	1	—	—	3.70	ca. 3.50	ca. 10.44	—	—	—
174	Agglom-erated	3	3	6–7	ca. 90	a	ca. 4.60	ca. 3.80	ca. 15.44	—	—	1 (ca. 200 × 130)
						b	4.40	ca. 3.00	ca. 11.24	—	—	—
						c	6.00	5.50	ca. 25.86	—	—	1 (210 × 120)
						d	6.30	4.70	ca. 19.04	Including small room and feature or bench	1 (30 w; 60 d, bottom lost)	remnant?
						e	3.40	1.60	4.66	—	—	—
						f	3.10	2.10	5.74	—	—	—

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Bldg. No.	*Description*	*Min. Units*	*Max. Units*	*No. Rooms*	*Bldg. Int. (sq. m)*	*Room No.*	*Room Max. Length*	*Room Max. Width*	*Room Int. (sq. m)*	*Comments*	*Niche(s) (cm)*	*Bench(es) (cm)*
175	Agglom-erated	2	2	5	61	a	ca. 3.80	3.00	ca. 11.20	—	Natural niche in granite	1?
						b	4.60	4.20	11.56	—	5, clockwise from door: 1. damaged 2. 30 w; ca. 22 d; 34 h; 75 up 3. 34 w; ca. 23 d; 39 h; 68 up 4. 39 w; 30+ h; top gone 5. 42 w; 36 d; 26 h; 125 up	2
						c	ca. 2.90	2.00	ca. 5.40	—	—	—
						d	3.90	ca. 2.90	ca. 10.60	—	—	—
						e	5.00	3.80	ca. 14.78	—	—	—
176	Agglom-erated	2	2	4	28	a	4.10	1.30	4.56	—	—	—
						b	3.20	2.20	5.44	—	—	—
						c	3.90	3.70	9.24	—	—	Boulder bench (68 × 29)
						d	2.60	2.00	4.56	—	—	—
177	House	1	1	4	32	a	4.20	2.35	9.64	—	—	—
						b	2.60	2.90	7.00	—	1 (ca. 30 w; 30 d)	—
						c	2.20	1.80	3.66	—	Natural niche in granite	—
						d	4.60	2.20	9.64	—	1 (40 w)	—
178	House?	1	—	1	1	—	4.60	2.70	7.08	—	—	1 (80 w)
179	Out-building	—	—	1	—	—	1.40	1.10	1.28	—	—	—
180	House	1	1	2	ca. 30	a	ca. 4.70	4.50	ca. 16.86	—	—	1
						b	3.60	ca. 3.50	ca. 12.28	—	—	1? (85 × 90)
181	Out-building	—	—	1	—	—	ca. 1.4+	1.10	1.28+	Not including space under boulders	—	—
182	House?	1	—	1	1	—	3.80	ca. 2.80	ca. 9.48	—	1	1? (19 w; 27 h)
183	Out-building	—	—	1	—	—	2.60	2.00	2.36	Not including boulders	—	—
184	House	1	1	2	27	a	4.80	4.00	15.78	Lower room	1?	1?
						b	3.60	2.90	9.16	—	—	—
185	House	1	1	4	49	a	4.10	ca. 3.30	ca. 13.08	—	—	—
						b	1.30	0.60	0.78	—	—	—
						c	ca. 5.20	ca. 4.20	ca. 20.92	—	—	—
						d	4.20	ca. 3.20	ca. 11.96	—	—	—

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Bldg. No.	*Description*	*Min. Units*	*Max. Units*	*No. Rooms*	*Bldg. Int. (sq. m)*	*Room No.*	*Room Max. Length*	*Room Max. Width*	*Room Int. (sq. m)*	*Comments*	*Niche(s) (cm)*	*Bench(es) (cm)*
186	Agglom-erated?	1	3	3+	ca. 37+	a	4.20	2.80	11.44	No coherent plan	—	—
						b	ca. 5.00	ca. 3.00	ca. 15.00	—	—	—
						c	ca. 3.40	ca. 2.40	ca. 8.24	—	—	—
187	Out-building	—	—	1	—	—	ca. 3.80	2.20	ca. 6.96	—	—	—
188	House	1	1	2	—	a	3.70	ca. 3.20	ca. 11.12	—	—	—
						b	ca. 4.00	3.60	ca. 13.48	—	—	—
189	Agglom-erated	2+	2	7–9+	106	a	3.50	3.00	9.74	—	—	—
						b	4.00	3.80	ca. 12.82	—	—	—
						c	4.00	2.10	7.92	—	—	—
						d	8.00	ca. 4.40	ca. 31.40	Courtyard? Including looters' hole/room	—	—
						e	ca. 2.90	1.50	ca. 4.24	—	—	—
						f	ca. 3.30	ca. 2.40	ca. 7.16	—	—	—
						g	5.40	ca. 3.60	ca. 12.12	—	—	—
						h	2.60	2.10	3.04	—	—	—
190	House	1	1	2	26	a	ca. 4.20	3.00	ca. 10.70	—	—	—
						b	ca. 4.30	4.00	ca. 14.24	—	—	—
191	Out-building?	—	—	1	—	—	3.70	3.30	12.08	Largish	—	—
192	House?	1	1	1	—	—	ca. 4.80	ca. 4.60	ca. 20.92	—	—	—
193	Out-building?	—	—	1	—	—	4.00	2.80+	6.16+	—	—	—
194	House	1	1	3	33	a	4.40	3.00	10.32	—	—	—
						b	4.10	3.10	12.32	—	—	—
						c	3.70	ca. 2.70	ca. 9.32	—	1 (ca. 40 w; 45 d; 30 up from surface) 2 (broken)	—
195	Agglom-erated	5	5	14	189	a	5.70	3.70	18.96	—	—	—
						b	4.30	2.20	8.44	—	—	—
						c	ca. 3.30	2.80	ca. 8.86	—	—	—
						d	6.50	ca. 3.90	ca. 20.32	Courtyard?	—	—
						e	2.20	1.40	3.08	—	—	—
						f	ca. 3.70	2.40	ca. 8.78	—	—	—
						g	3.50	2.20	7.24	—	—	—
						h	ca. 3.80	ca. 3.10	ca. 9.00	—	—	—
						i	ca. 3.50	ca. 3.20	ca. 9.96	—	—	—
						j	4.00	2.50	9.36	—	—	—
						k	2.80	2.30	ca. 5.60	—	—	—
						l	ca. 3.80	2.40	ca. 8.64	—	—	—
						m	3.30	3.20	10.52	—	—	—
						n	4.30	3.90	16.74	—	—	—

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Bldg. No.	*Description*	*Min. Units*	*Max. Units*	*No. Rooms*	*Bldg. Int. (sq. m)*	*Room No.*	*Room Max. Length*	*Room Max. Width*	*Room Int. (sq. m)*	*Comments*	*Niche(s) (cm)*	*Bench(es) (cm)*
195a	House	1	1	2	27	a	3.60	3.30	11.66	—	—	—
						b	4.10	ca. 3.60	ca. 14.04	—	—	—
196	Out-building	—	—	1	—	—	1.50	1.40	1.92	—	—	—
197	House	1	1	4	52	a	4.00	3.90	13.60	—	—	1
						b	4.40	3.10	ca. 12.00	—	—	1?
						c	4.40	4.00	12.40	Not including boulder	—	1
						d	ca. 3.00	2.60	7.44	—	—	—
198	House	1	1	2	ca. 20	a	ca. 3.60	ca. 3.40	ca. 6.82	—	—	—
						b	ca. 3.20	ca. 2.80	ca. 7.24	—	—	—
199	House	1	1	6	76	a	3.60	3.60	11.60	—	—	1?
						b	4.80	3.50	14.04	—	—	—
						c	4.00	3.70	13.52	—	—	1
						d	2.20	2.00	3.70	—	—	—
						e	4.70	2.90	11.52	—	—	—
						f	3.60	3.20	10.20	—	—	—
200	House	1	1	3	37	a	ca. 4.00	3.20	12.78	—	—	—
						b	4.00	2.80	10.86	—	—	—
						c	3.60	2.80	10.04	—	—	—
201	Compound	3	5	8	199	a	13.00	11.60	85.20	Courtyard	—	—
						b	4.30	4.20	15.36	Including “light trap”	—	—
						c	4.00	2.20	8.52	—	—	—
						d	6.00	5.40	ca. 24.08	Courtyard	—	—
						e	4.70	3.20	14.24	—	—	1?
						f	ca. 4.20	ca. 2.00	ca. 7.78	—	—	—
						g	3.80	3.40	11.82	—	—	—
						h	4.70	3.00	13.36	—	—	—
202	House?	1	1	1	—	—	ca. 5.00	ca. 3.60	17.36	—	—	—
203	Out-building	—	—	1	—	—	1.40	0.90	0.86	—	—	—
204	House	1	1	3	ca. 30	a	4.30	3.60	15.12	—	—	—
						b	ca. 2.80	ca. 2.50	ca. 6.44	—	—	—
						c	ca. 3.60	ca. 2.50	ca. 7.64	—	—	—
205	Out-building	—	—	1	—	—	4.00	2.70	8.92	—	—	—
206	House	1	1	3	32	a	3.00	ca. 2.60	ca. 6.70	—	—	—
						b	4.20	3.10	12.28	—	—	—
						c	3.60	3.00	10.52	—	—	—
207	Out-building	—	—	1	—	—	3.10	3.00	8.32	—	—	—
208	House	1	1	2	27	a	3.40	2.80	8.64	—	—	—
						b	5.40	ca. 4.40	ca. 17.96	—	1	Boulder bench
209	House?	1	1	1	—	—	4.80	2.90	13.16	—	—	—
210	House?	1	1	1	—	—	4.10	3.40	12.78	—	—	—

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Bldg. No.	*Description*	*Min. Units*	*Max. Units*	*No. Rooms*	*Bldg. Int. (sq. m)*	*Room No.*	*Room Max. Length*	*Room Max. Width*	*Room Int. (sq. m)*	*Comments*	*Niche(s) (cm)*	*Bench(es) (cm)*
211	House	1	1	4	ca. 50	a	ca. 6.60	ca. 3.80	ca. 22.56	—	—	—
						b	4.20	2.90	ca. 9.86	—	—	—
						c	1.40	1.40	1.78	—	—	—
						d	ca. 5.10	ca. 2.50	ca. 9.70	—	—	—
212	Out-building	—	—	1	—	—	4.20	2.30	ca. 9.12	—	—	—
213	House?	1	1	2	ca. 40	a	5.30	3.40	ca. 17.4	—	—	—
						b	5.40	3.80	20.32	Including cross wall	—	—
214	Out-building	—	—	1	—	—	2.60	2.10	ca. 4.64	—	—	—
215	House	1	1	2	18	a	3.60	3.50	11.20	—	—	—
						b	2.50	2.10	4.96	—	—	—
216	House	1	1	5–6	61	a	2.10	2.00	4.08	—	—	—
						b	3.10	ca. 2.60	ca. 7.24	—	—	—
						c	ca. 3.60	3.10	ca. 10.48	—	—	—
						d	ca. 3.10	2.60	ca. 7.48	—	—	—
						e	ca. 3.70	ca. 3.20	ca. 11.12	—	—	—
						f	ca. 3.20	2.90	ca. 8.96	—	—	—
217	House	1	1	2	25	a	ca. 4.00	3.40	ca. 12.16	—	—	—
						b	ca. 4.00	2.40	ca. 9.08	—	—	—
218	Out-building	—	—	1	—	—	2.10	2.10	3.64	—	—	—
219	Out-building	—	—	1	—	—	ca. 1.40	ca. 1.30	ca. 1.74	—	—	—
220	Agglom-erated?	2 ?	2	5?	ca. 101	a	4.50	4.50	19.86	—	—	—
						b	6.50	4.60	ca. 26.52	—	—	—
						c	ca. 5.60	4.30	ca. 22.00	—	—	—
						d	ca. 2.90	2.60	ca. 7.48	—	—	—
						e	ca. 4.90	ca. 2.90	ca. 13.92	—	—	—
221	House	1	1	3	ca. 29	a	ca. 3.60	ca. 2.50	ca. 8.12	—	—	—
						b	ca. 3.00	ca. 2.00	ca. 5.32	—	—	—
						c	ca. 3.30	ca. 3.10	ca. 9.64	—	—	—
222	Out-building	—	—	1	—	—	2.80	2.60	6.70	—	—	—
223	House	1	1	3	ca. 39	a	ca. 2.70	2.00	ca. 5.20	—	—	—
						b	ca. 4.00	ca. 1.70	ca. 6.32	—	—	—
						c	ca. 6.30	ca. 4.20	ca. 22.70	—	—	—
224	House?	1	1	2?	est. 26+	a	ca. 2.40	ca. 1.80	est. 4.32	—	—	—
						b	ca. 4.70	ca. 4.70	est. 21.60	—	—	—
225	Out-building?	—	—	1?	—	—	ca. 2.90	ca. 2.30	est. 6.66	House mound	—	—

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Bldg. No.	*Description*	*Min. Units*	*Max. Units*	*No. Rooms*	*Bldg. Int. (sq. m)*	*Room No.*	*Room Max. Length*	*Room Max. Width*	*Room Int. (sq. m)*	*Comments*	*Niche(s) (cm)*	*Bench(es) (cm)*
226	House	1	1	2–3	ca. 24+	a	4.40+	2.60	ca. 10.40	—	—	—
						b	ca. 4.00	3.20	ca. 11.66	—	—	—
227	Out-building	—	—	1	—	—	2.40	2.10	4.36	—	—	—
228	Agglom-erated	2?	2	6	96	a	2.20	1.60	3.24	—	—	—
						b	3.40	3.30	9.32	—	—	—
						c	4.20	3.10	ca. 10.40	—	—	—
						d	3.90	2.20	7.96	—	—	—
						e	3.10	2.00	6.00	—	—	—
						f	14.00	6.10	ca. 49.70	Sprawling	—	—
229	House	1	1	10	136	a	3.70	2.90	ca. 9.20	—	—	—
						b	6.10	5.50	ca. 28.12	Courtyard?	—	—
						c	2.50	1.80	ca. 4.08	—	—	—
						d	2.20	1.90	4.20	—	—	—
						e	4.50	1.70	ca. 7.12	—	—	—
						f	3.80	3.00	ca. 9.32	—	—	—
						g	4.40	4.00	16.32	—	—	—
						h	4.00	2.20	8.52	—	—	—
						i	3.60	3.20	ca. 11.16	—	—	—
						j	4.00	3.40	ca. 12.66	—	—	—
230	Out-building	—	—	1	—	—	1.40	1.20	1.52	—	—	—
231	Out-building	—	—	1	—	—	4.30	4.00	16.96	Not including boulders	—	—
232	House	1	1	3	40	a	4.70	ca. 3.10	ca. 14.36	—	—	—
						b	4.10	2.70	9.16	—	—	—
						c	3.70	3.40	9.64	Lower level	—	—
233	Out-building	—	—	—	1	—	2.70	2.30	5.16	—	—	—
234	Retaining walls	—	—	—	—	—	—	—	—	—	—	—
235	House?	1	1	2?	est. 26	a	ca. 5.00	ca. 4.00	ca. 20.00	—	—	—
						b	ca. 2.60	ca. 2.20	est. 5.72	—	—	—
236	Out-building	—	—	1	—	—	2.00	1.70	2.70	Guardpost	—	—
237	Out-building	—	—	1	—	—	2.00	ca. 1.90	ca. 3.56	—	—	—
—	—	252	267	—	—	—	—	—	—	—	—	—

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APPENDIX C

OUTLIERS 12 AND 13 BUILDINGS

Building No.	*No. of Rooms*	*Dimensions of Rooms (cm)*	*Width × Height of Walls (cm)*	*Finds*	*Comments*
OUTLIER 12 WEST SIDE, NORTH TO SOUTH					
14	1 + ?	Main room 240 × 190	—	Baked brick pieces near door to main room	Rectangular room with S-shaped wall extending south from door of main room; very tumbled, vague outline only
13	1	200 × 230	—	—	Square structure, part of wall lost (or entrance?)
12	1?	Room 190 × 270; wall segment 210 cm upslope; 65 cm long	—	—	Possibly squarish structure, large part of wall lost; small segment of wall upslope part of building?
11	0	240 × 230+; door(?) 55 cm	55 × 20–50	—	Wall built up to slope; small room
11A	0	80 w × 85 h × 240 d	—	—	Man-made chamber/cave in rock in slope above B11
10	0	2 walls and corner; max. width 180; hypotenuse 120	—	—	Very tumbled, only triangle left
9	1	ca. 270 × ca. 270; door ca. 70 w	max. 20 h	—	Squarish structure at foot of slope, extending out onto wadi floor; very tumbled, outline discernible
8	1	230 × 290	—	—	Roundish structure, adjacent to (possibly part of?) B7
7	1 + ?	1. 250 × 220 2. (tumbled wall) indeterminate length	50 w 45 w	—	On edge of slope, one squarish room with attached wall, similar to B1, with room at higher level
6	1?	330 × 290	40 w	Sherds on slope above	Structure entirely on slope, tumbled walls with unclear height and thickness, possibly squarish shape but continuation of wall unclear in one corner
5	0	1st wall part (corner) 2nd wall part (wall segment)	50 × 25 40 × 65	—	Two small tumbled sections of wall; 165 cm gap between parts
4	0	150 cm max.	—	—	Section of curved wall on wadi floor, very tumbled
3	0	2 sections of wall on either side of rock; south segment 150 cm; rock; north segment 40 cm to corner, 60 cm to break	40 w		—
3A	0	70 × 75	—	—	Small, three-sided structure in slope next to B3
1	2?	1. 220 × 280 2. (tumbled wall) 280	45 × 55 45 w	—	Wall partly within slope, room 1 at higher level than 2
2	2	1. 230 × 240, ent.(?) 220 w 2. 280 × 220, ramp entrance from wadi 55 w, ramp to revetted terrace on slope to rear 80 w	50 × 80 40 × 60–70	Dipinto to rear of B2, on slope/ revetted terrace; more fragments of same jar nearby on terrace and below on wadi floor	Best-preserved structure in Outlier 12; two rooms against slope, room 2 built into slope more so than room 1 and at higher level, with possibly revetted terrace behind room 2
24	?	140 w (out from slope)	50 × 55	—	Corner and short wall built up to rock at base of slope; possible continuation wall from corner parallel to rock

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Building No.	*No. of Rooms*	*Dimensions of Rooms (cm)*	*Width × Height of Walls (cm)*	*Finds*	*Comments*
25	?	270 × 150	—	—	Possible structure, built in rocks at base of slope
OUTLIER 12 EAST SIDE, NORTH TO SOUTH					
15	1 + ?	1. 270 × 170 max.; two walls, two corners, wall stub running toward room 2 2. 140 w; wall, two corners	—	—	Close to slope at wadi entrance; very tumbled; remains of two rooms and perhaps linking wall
16	0	looters' hole(?) 150 × 200; semicircle of stones 140 × 90; semicircle of stones 110 × 110	—	Sherds on slope below B15, above B16	Two semicircular features one stone high; large looters' hole(?); line of stones at corner of hole
17	0	One wall parallel bedrock, 110 from rock, ca. 250 long; 50 cm; gap = door?	—	—	—
18	0	—	—	—	Curved wall segment against slope, length unclear, possibly part of B19
19	1	Wall 310 long; in front of three hollows in rock at base of slope: Hollow 1, 70 cm h Hollow 2, 100 cm h; max. width to wall 140 cm Hollow 3, 90 cm h (door?) on south 50 cm w	max. 70 h	—	—
20	0	105 × 110	50 w	—	Small rounded outbuilding on rock in slope above B19, possible looters' hole inside
21	2?	1. 270 × 100 max. surviving 2. 310 × 120 max. surviving	—	—	Parts of three walls built against bedrock (one piece continuing over boulder), into wadi floor; most lost; appear to be part of same unit
22	1?	290 × 270	—	—	Built into rock at base of slope; south wall survives 270 cm l, north wall ca. 100 cm, then 140 cm gap between wall corner and rock; after corner wall continues 150 cm parallel with rock
23	?	Wall 240 out from slope rock, corner, rest lost Looters' hole(?) 170 × 80 Niche/ledge 70 cm upslope from wadi floor, 110 w 30 d	60 w	—	Area within wall filled with wash from slope and looters' hole(?)
HILLSIDES AND BAY BETWEEN OUTLIERS 12 AND 13, WEST TO EAST					
26	0	260 × 300	—	—	Semicircular feature; looters' hole(?) inside; mining/tunneling hill above
27	2?	1. 210 × 180 2. 260 × 270; wall of large stones Pot holder/hearth? 70 × 70 Feature 70 cm dm	—	—	Two roundish rooms at foot of slope, filled with wash, inner outline of wall visible, outer very tumbled. Potstand or hearth?
28	1	ca. 250 × 190	—	—	Very tumbled
29	1	160 × 130	—	—	Roundish, very tumbled
30	2?	1. 250 × 200 2. 160 × 200	—	—	Two-part(?) structure adjacent to rock at foot of slope, very tumbled, only vaguely discernible
31	1?	130 × 110	—	—	Possible roundish structure, very tumbled

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Building No.	*No. of Rooms*	*Dimensions of Rooms (cm)*	*Width × Height of Walls (cm)*	*Finds*	*Comments*
32	2?	1. 205 × 250 2. 250 × 190	—	—	Tumbled and wash filled; back wall of room 1 is boulder; possible mastaba against boulder? Max. 170 × cm w 160 cm d. Wall stub between rooms 1 and 2 100 cm out from boulder, 60 cm h × 60 cm w; is it end of mastaba? Room 2 tumbled and wash filled; back wall is boulder; build-up behind wall stub gives appearance of revetment
33	1	230 × 220	—	Small sherds in wadi wash	Rounded structure at foot of slope immediately north of B32
34	0	Small ovoid installation, with small round feature adjacent	—	Baked brick	Very tumbled, only vague outline preserved; more hollows in hill above, next to B35
35	0	Small rounded feature	—	—	Between B36 and B34
36	0	115 × 120	—	—	Small rounded installation, next to B35
37	1	200 × 190	—	—	One-room rounded structure hugging base of slope
38	3	1. 100 × 170 2. 210 × 185 3. 150 × 140	50 × 30	—	Three-room structure hugging slope
OUTLIER 13 WEST SIDE, NORTH TO SOUTH					
39	0	Wall stub 110 cm long	—	—	Section of wall in slope above B38
40	4	1. 230 × 170, rounded 2. 135 × 160, rounded 3. 145 × 200, rounded 4. 280 × 210, irregular	—	—	Four-room structure hugging base of slope
41	1	245 × 210	50 w	Baked brick piece, between B41 and B42	Rounded structure in wadi mouth, south side very tumbled; adjacent to two small features B42 and B43
42	0	90 × 80	—	—	Small feature between B41 and B43; potstand or hearth? No soot
43	0	40 × 50	—	—	Small round feature with amphora base, adjacent to B42
44	2+	1. 260 × 210 2. 190 × 190 3. Section of wall, length unclear	—	—	At least two rounded rooms; curved wall close by probably associated; all filled with wadi wash, outline partially obscured
45	3 + 1	1. 130 × 90 2. 240 × 190 3. 110 × 120 4. 260 at door/widest and 180 at rear/narrowest × 250 “deep”	—	Concave grinding stone in northeast wall	Odd-shaped structure in middle of wadi mouth, one large room with small semicircular room on northeast and southwest sides; fourth (rectangular) room is separate Room 1, small semicircular room on southwest side Room 2, large room shaped rather like quarter circle (with rooms 1 and 2 at ends of arc) Room 3, small semicircular room at northeast side Separate outbuilding; rectangular; stands out from other structures in wadi; walls on three sides, wider at front than at rear of building
46	1?	140 × 120	—	—	Small, rounded one-room(?) structure on slope
47	3	1. 210 × 190 2. 120 × 130 3. 230 × 250	50 w	—	Three rooms in cloverleaf; center of structure unclear, possibly openings between rooms
48	3	1. 250 × 170 2. 260 × 230 (middle room) 3. 130 × 110	40 × 70–80 40 × 50	—	Partly tumbled three-room structure in middle of wadi floor; outline relatively well preserved Room 3 much smaller than other two; storage?; possibly opens to outside and not room 2
49	1	250 × 210 (parallelogram)	—	—	Very tumbled one-room structure hugging rock at base of slope

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Building No.	*No. of Rooms*	*Dimensions of Rooms (cm)*	*Width × Height of Walls (cm)*	*Finds*	*Comments*
50	2	1. 270 × 240 at widest, 160 at narrowest 2. 255 × 200	40–45 × 35–80 45 × 35	—	Two-room structure in middle of wadi floor Room 1 irregular, triangular shape; very tumbled but outline visible Room 2 irregular, squarish, very tumbled
51	2 + ?	1. 290 × 250 2. unclear 3. 120 l	50 × 70 40 × 40 45 × 75	—	Room 1 squarish, on slope Room 2 rounded, attached to northeast corner of room 1, dimensions and shape unclear south wall of room 1 extends east a little, possibly enclosing another room or space
52	2?	1. Rounded part of room(?) 215 × 140 w; "tail" wall 160 long, connecting to room 2 2. 90 × 110 max. surviving	40 × 45	—	A question mark-shaped wall ending another curved wall
53	2	1. 210 × 240 2. 330 × 310	100 h at rear 60 w 90 h at rear	—	Two-room rectangular building on slope, with wall surviving to relatively great height to rear, against slope; rooms squarish; side facing wadi floor very tumbled, much tumble within rooms also
54	1+	1. 330 × 275 External feature 150 × 130	50 × 40 40 × 50	—	One room, squarish building in middle of wadi floor; rounded feature attached to exterior southwest corner Rounded feature much tumbled
55	2+	1. 410 × 360 (squarish) 2. 290 × 280 3. Ext. wall max. 80 cm l	55 × 45 45–50 w 50–60 h	—	Two-room building at base of slope, back of rooms 1 and 3(?) are bedrock; outer walls also partly use shape of rock outcrops at base of slope; tumble in rooms Room 2 shaped like quarter circle Distinct doorway between rooms 1 and 2, 50 cm w "Room 3" is walled-off pocket between room 2 and cliff slope
56	1	270 × 190	40–45 × 55–75	—	Squarish building immediately to south of B55
57	?	130 × 140	35 × 40	—	Corner of larger structure? Very tumbled and unclear
		OUTLIER 13 EAST SIDE, SOUTH TO NORTH			
58	?	section of wall 150 l	40 h	—	Section of wall built out from slope, rest of structure lost
59	1	Room: 290 × 210 Steps: 60 w × 90	45 × 60	—	Squarish one-room structure built against rock at base of slope; stepped entrance inside north wall; tumbled on south side (no door noted)
60	3?	1. 280 × 260 2. 160 × 140 3. 270 × 210	85 h	—	Three-room structure built into slope, near base Room 2 smaller rectangular room Possible doorway between rooms 1 and 2; 55 cm w, jamb 15 cm h on slope side Room 3 very tumbled; outline on wadi side unclear
61	3 + ?	1. 210 × 150 2. ca. 150 × ca. 210 3. 210 × 135	40 × 45	—	Three rooms, probably more originally. Wall stubs south of room 1 suggest another room here
62	2?	1. 220 × 170	—	—	Built on slope; most of outline of room 1 survives; rear wall revetted, wash build-up behind; partial remains of second room downslope
63	?	170 max. surviving width	—	—	Semicircular section of wall at base of slope
64	?	Two walls (170 and 80 long) and a corner, on west side facing wadi	30 h	—	Possibly a bit of a third wall on slope side, quite tumbled
65	1?	220 × 230	40 h	Baked brick fragment inside room	One-room structure at base of slope, partly cut into slope

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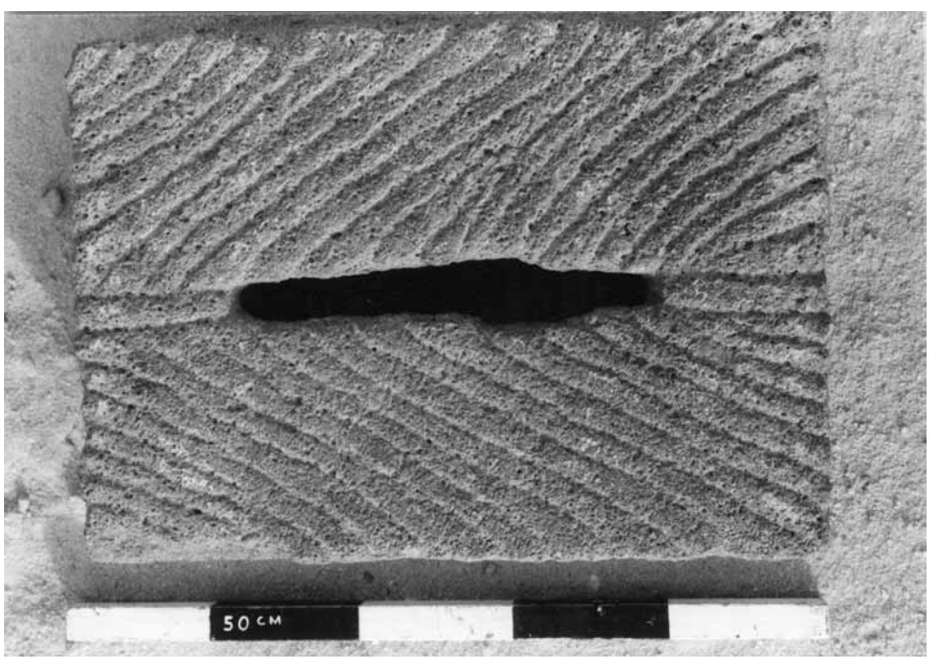
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a



b

(*a*) Bir Umm Fawakhir vicinity, looking southeast. Outlier 2 and the Roman Road are at center left, the main settlement at center right. The modern road is out of view to the right. (*b*) Slotted grain mill (RN 97/64), bottom

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Plate 2



a



b

(*a*) Amphora (RN 96/18) and (*b*) three lamps (RN 96/23, 96/22, 96/24), all dating to the Roman period

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a

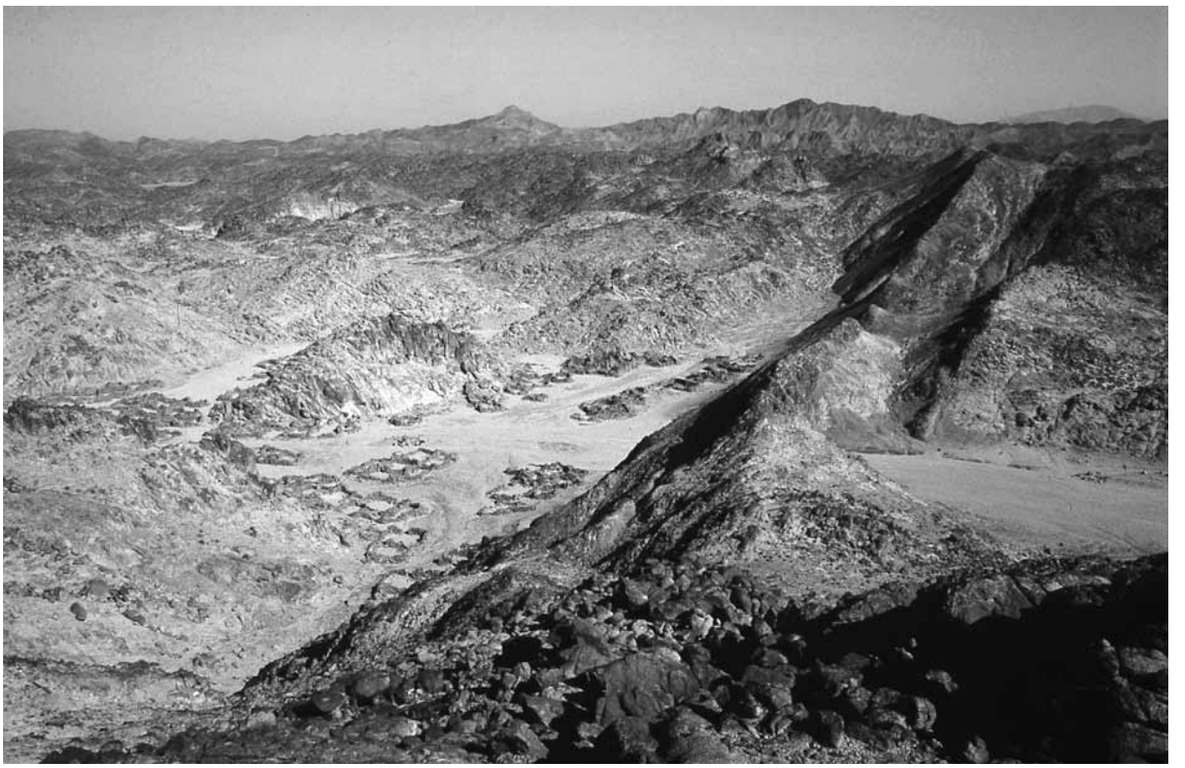


b

(*a*) View of the Hillock (center), east bay (lower left), west bay (across wadi "street"), and path across saddle to Outlier 7 (view toward west); and (*b*) view of northwest end of site, area mapped in 1997 (view toward southeast)

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Plate 4



a



b

(*a*) View of southeast end of main settlement, felsite dyke on right; and
(*b*) Buildings 106 and 107, most of 105 (at upper right) (view toward northeast)

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a



b

(*a*) Buildings 107 and 108 (view toward northwest) and (*b*) Buildings 110 and 109 (view toward northwest)

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Plate 6



a



b

(*a*) Building 111 and (*b*) basin fragment between Buildings 110 and 111

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a



b

(*a*) Building 112 and (*b*) Building 113

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Plate 8



a



b

(*a*) Building 114 and (*b*) Building 115

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a



b

(*a*) Crushing and grinding stones near Building 115 and (*b*) Building 116

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Plate 10



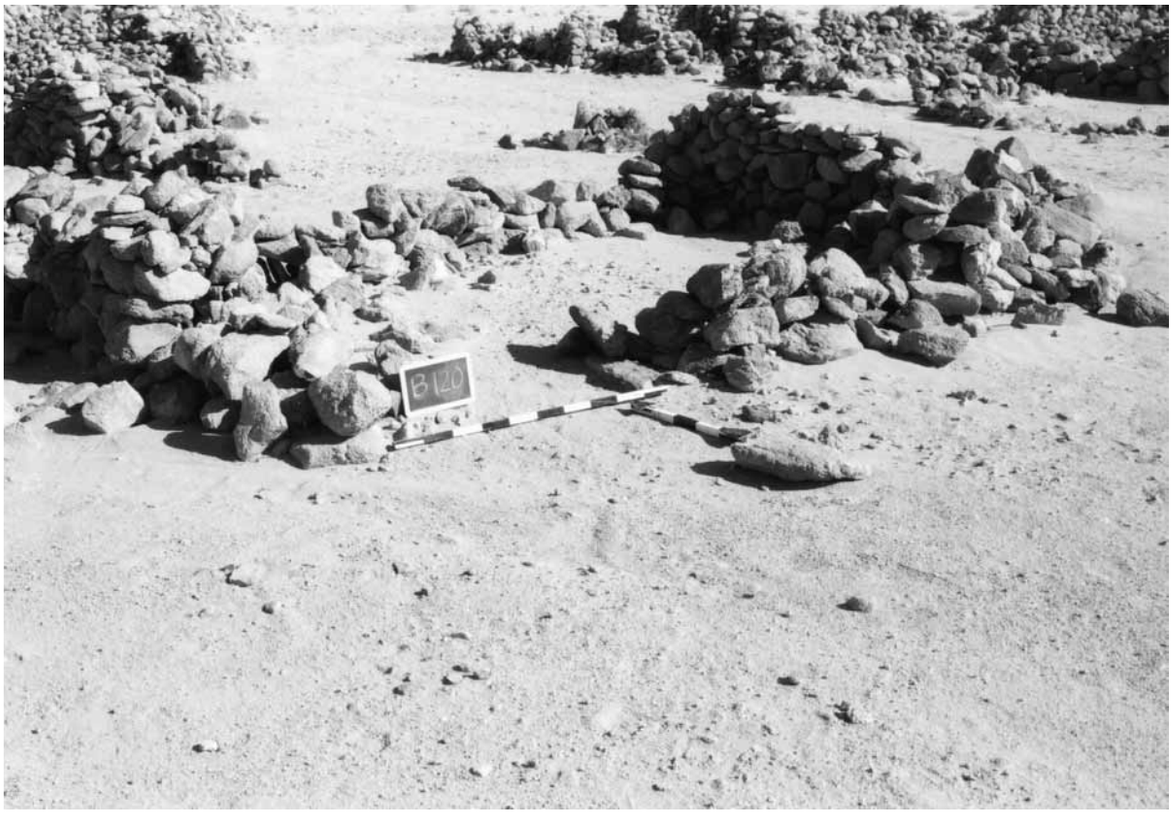
a



b

(*a*) Building 117 with crushing stones reused as steps and (*b*) Buildings 118 and 119 (view toward southeast)

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a



b

(*a*) Building 120 and (*b*) Building 121 (foreground) and part of Buildings 106 and 105 (view toward east)

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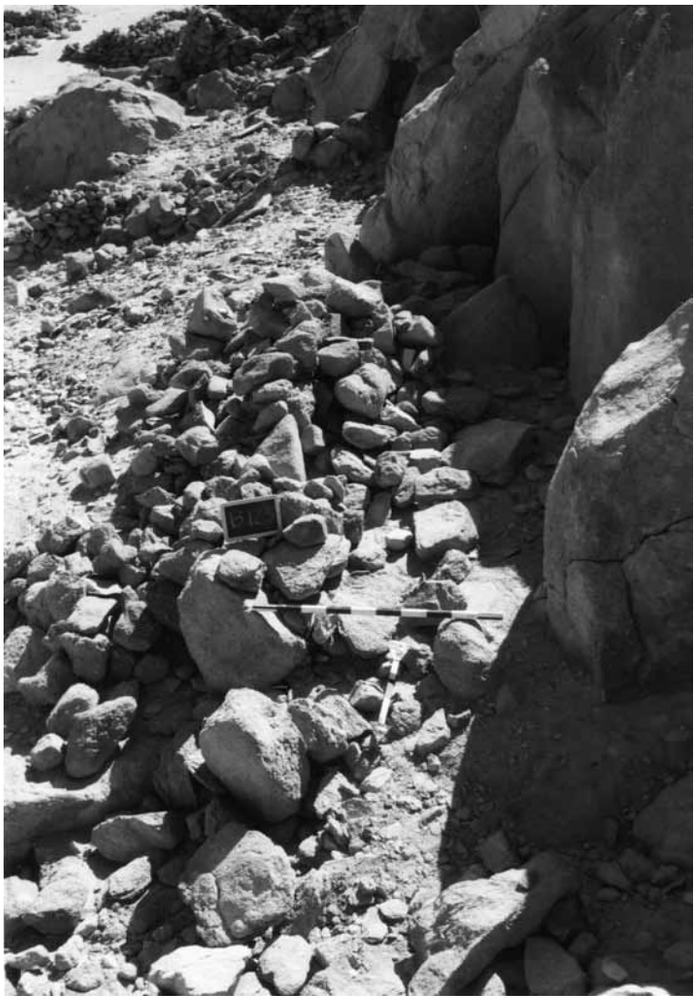
a



b

(*a)* Building 122 and datum point 104 and (*b*) Building 126 with quarry block

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a

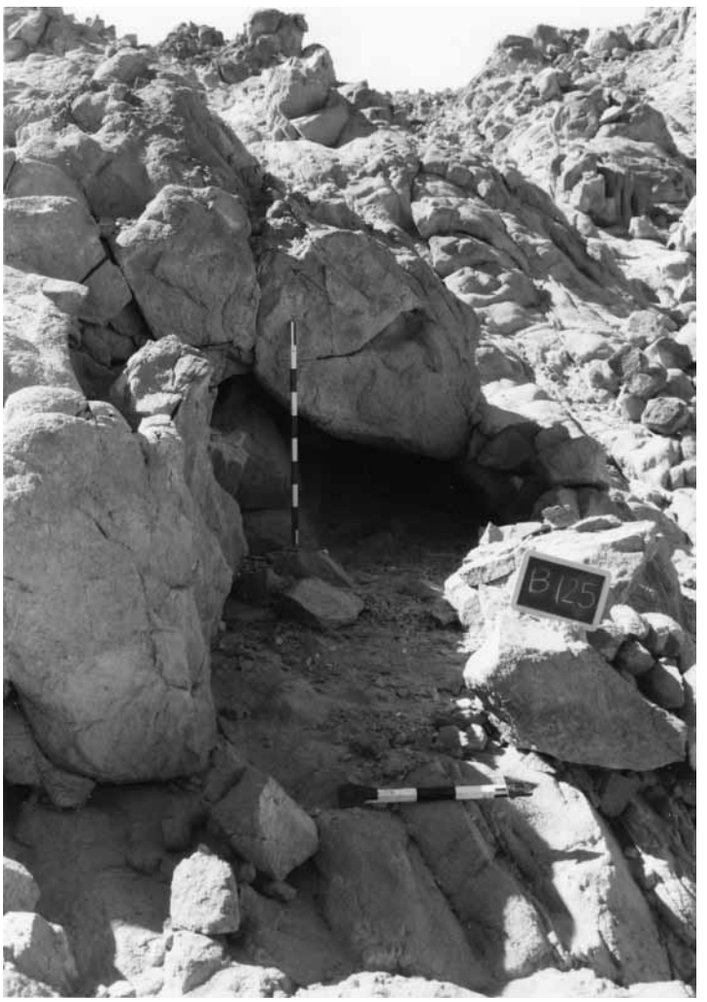


b

(*a*) Building 123 and (*b*) Building 124 (foreground), wadi "street," and Buildings 156, 143, 140, 141, and 142 (background) (view toward east)

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Plate 14



a



b

(*a*) Building 125 and (*b*) Buildings 126 and 127 (view toward east)

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a



b

(*a*) Building 128 (foreground), wadi "street," and Buildings 161 and 158 (background, left to right) (view toward northeast); and (*b*) Building 130 (left of boulder) and Building 129 (right of boulder) (view toward northeast)

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Plate 16



a



b

(*a*) Building 131 and (*b*) Building 132

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a



b

(*a*) Overview of east bay, mapped in 1996 (view toward west), and
(*b*) Building 133, part of Buildings 101 (top center) and 134 (top right) (view toward northwest)

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a



b

(*a*) Building 133, niche and grinding stones, and (*b*) Buildings 138 (foreground), and (clockwise from center left) 134, 142, 141, 139, and 138 (view toward northwest)

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a



b

(*a*) Building 134 bench and (*b*) Building 134 door, wall construction

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Plate 20



a



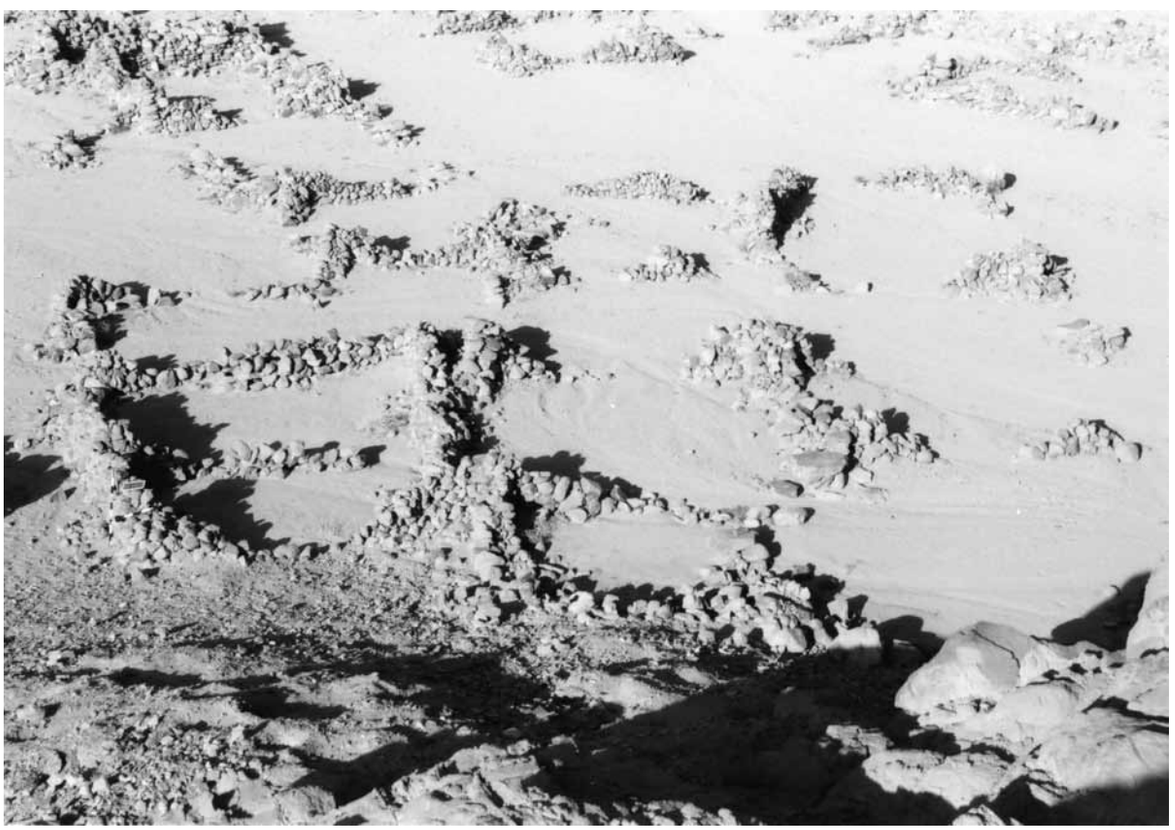
b

(*a*) Building 135 and (*b*) Building 136

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a



b

(*a*) Building 137 and (*b*) Building 140 (looking northwest)

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a



b

(*a*) Building 143 (center), part of Building 156 (foreground) (view toward south), and (*b*) part of Buildings 167 and 168 (foreground), Buildings 144 and 150 (near midground), 140, 141, and 142 (far midground), and wadi "street" (view toward southwest)

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a



b

(*a*) Building 145 and (*b*) Building 146

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Plate 24



a



b

(*a*) Building 147 and (*b*) Building 148

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a



b

(*a*) Building 149 and
(*b*) Building 150 (center) and most of Building 140 (upper left) (view toward southwest)

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Plate 26



a



b

(*a*) Building 151, part of Building 164 (upper right) (view toward west), and (*b*) Building 153

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a



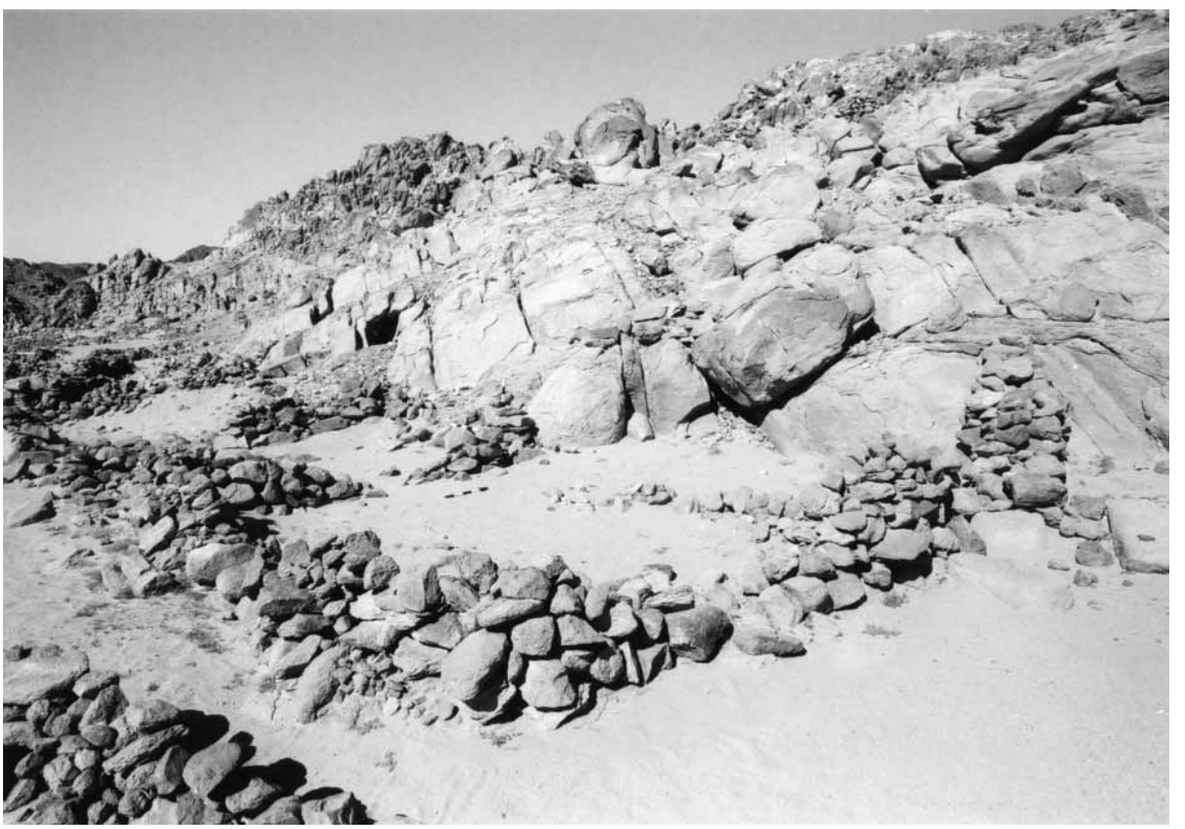
b

(*a*) Building 154 (view toward west) and (*b*) Building 155 and part of Building 154 (view toward east)

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a



b

(*a*) Building 156, part of Building 157 (right) (view toward south, from Hillock), and (*b*) Building 157 (view toward northwest, from wadi)

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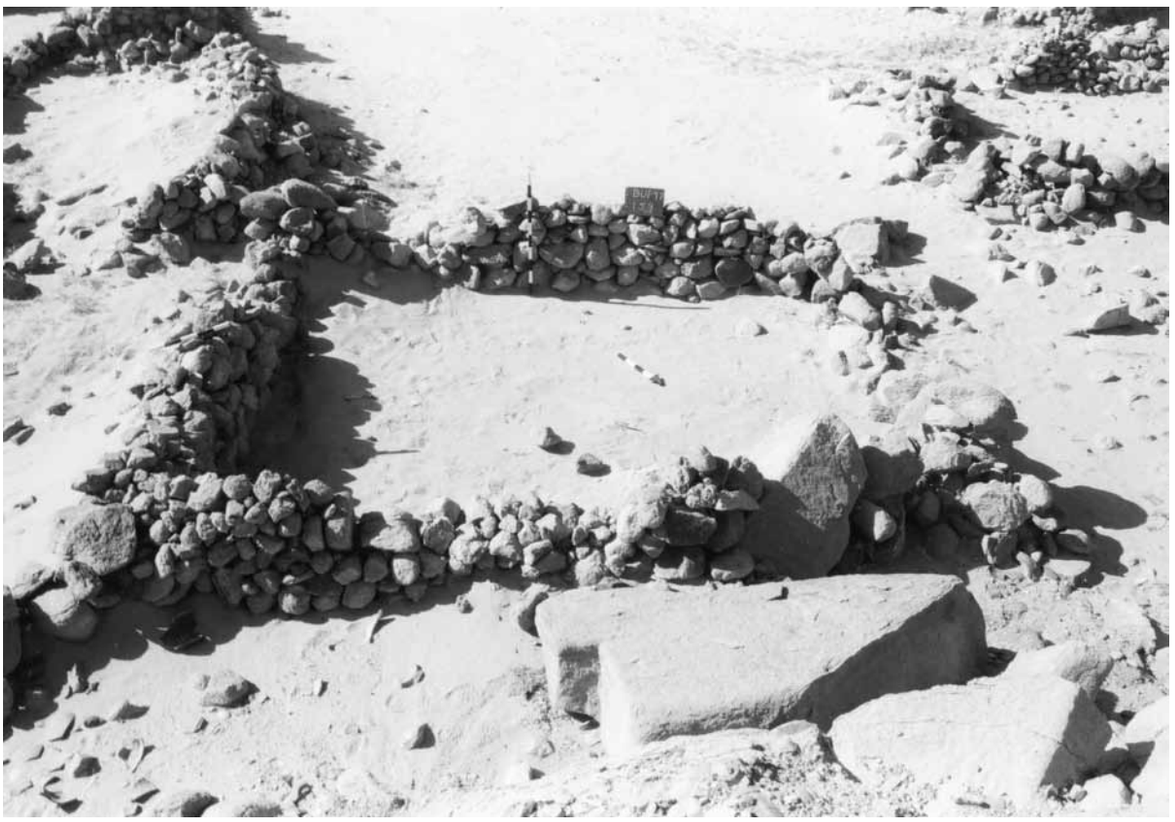
a



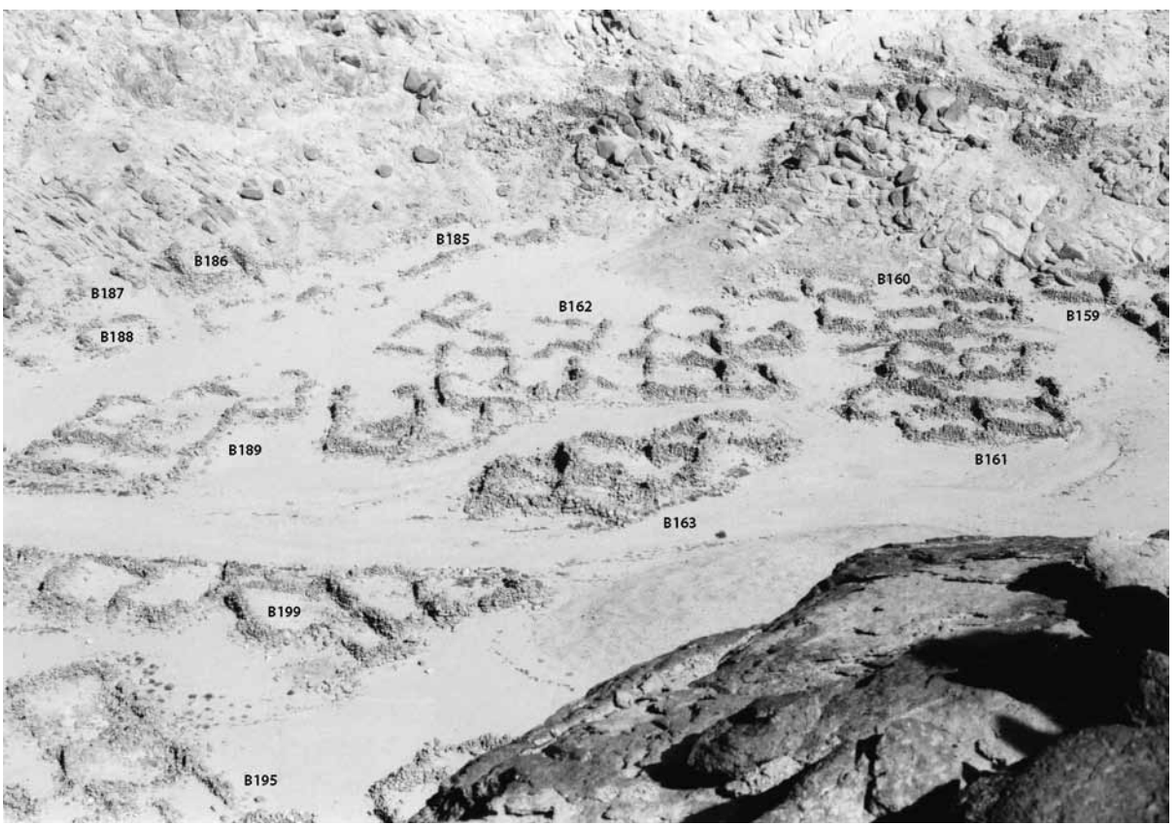
b

(*a*) Buildings 159, 158, and 157 (left to right; view toward northeast), and (*b*) Building 158 (view toward southwest, from Hillock)

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a



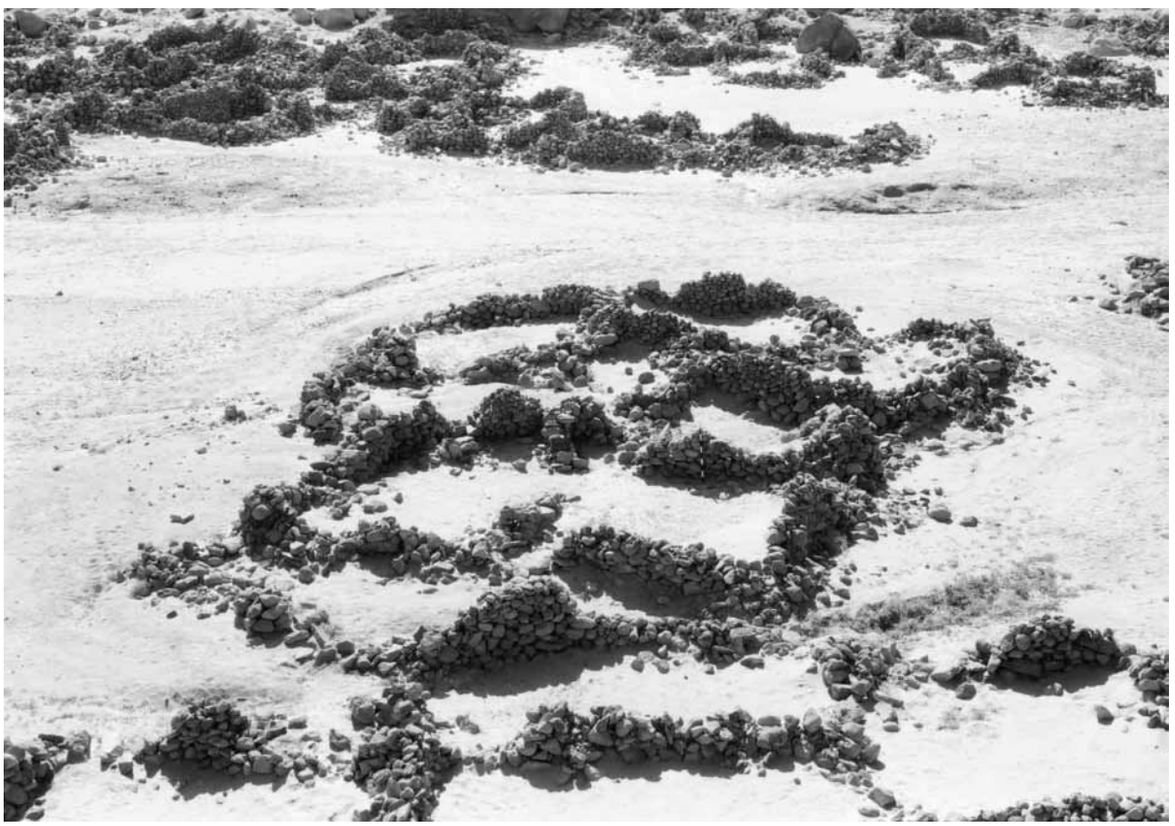
b

(*a*) Building 159 and (*b*) part of Buildings 195 and 199 (foreground), wadi "street," most of Building 189, Buildings 162, 163, 161, 160, 159 (middle, left to right), Buildings 188, 187, 186, and 185 (against cliff, upper left) (view toward east)

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a



b

(*a*) Buildings 160 and 161 (center), Building 158 (left), part of Building 162 (right) (view toward south-southwest); and (*b*) Building 161 (view toward southwest)

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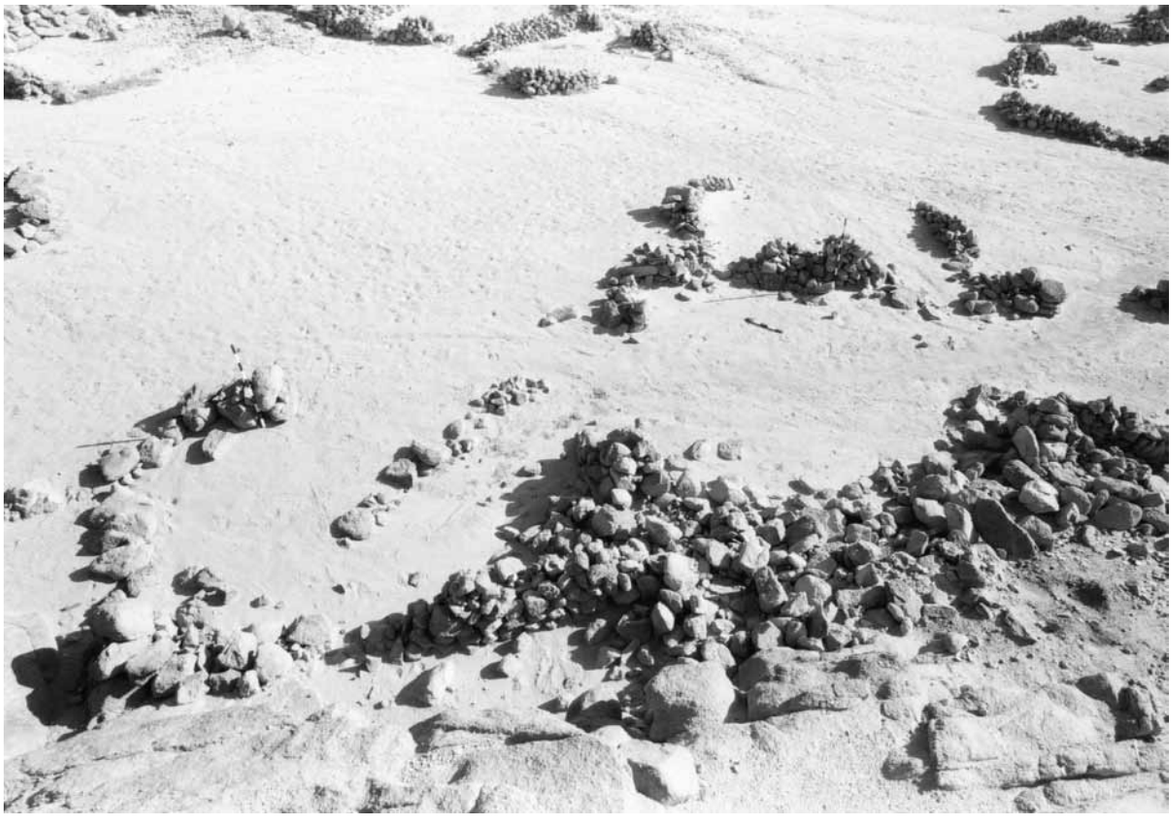
a



b

(*a*) Building 162, south end, and part of Building 163 (in foreground) (view toward northeast); and (*b*) Building 162, north end (view toward northeast)

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a



b

(*a*) Building 164, northeast end (view toward east, from Hillock); and
(*b*) Building 164, middle section (view toward southeast, from Hillock)

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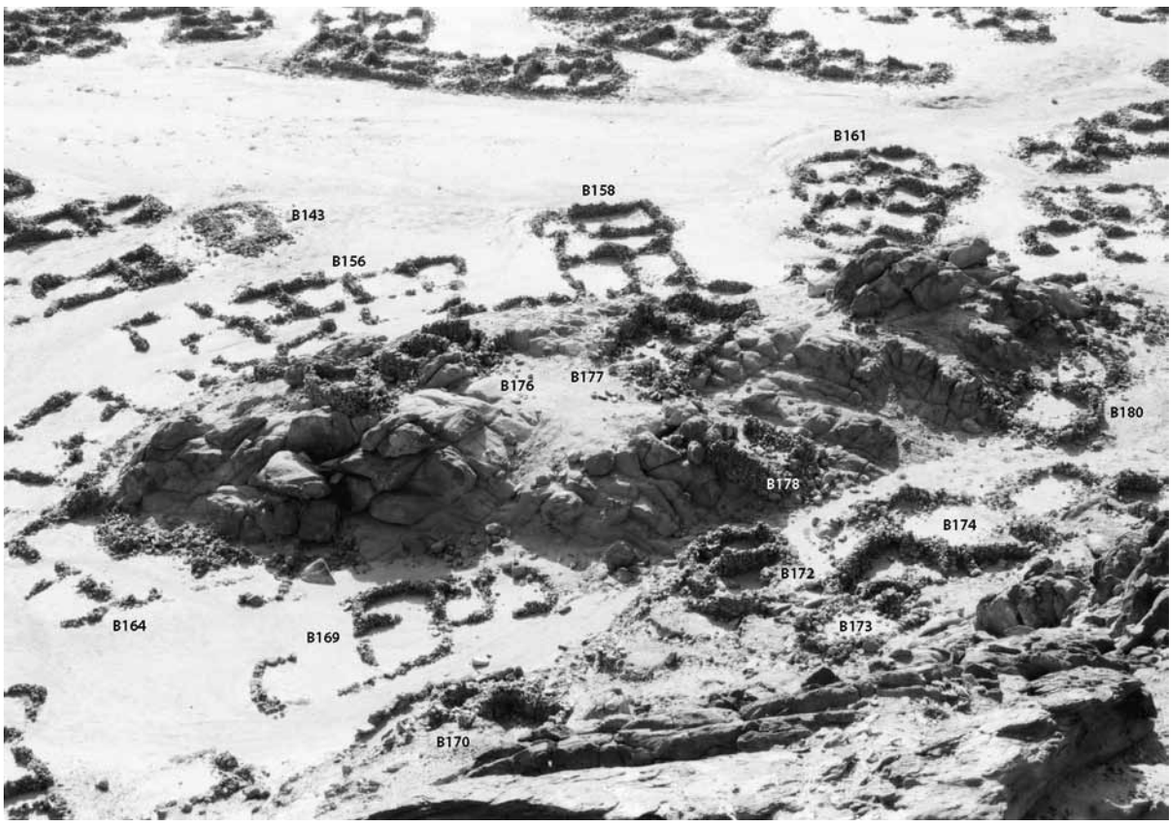
a



b

(*a*) Building 164, west end (view toward south, from Hillock), and
(*b*) Building 169 (view toward northeast, from Hillock)

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a



b

(*a*) Hillock and surroundings: Buildings 176 and 177 (on Hillock), part of Building 164 (at tip of Hillock, left), Buildings 169, 170, 172, 173, 174, 178, 180 (foreground), 143, 156, 158, and 161 (far side of Hillock) (view toward southwest); and (*b*) Building 170 (foreground), part of Building 169 (background) (view toward south)

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a



b

(*a*) Building 170 (room c behind meter stick) and (*b*) Building 171

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a



b

(*a*) Building 173 (with meter stick), Building 172 (center background), part of Building 174 (right) (view toward south); and (*b*) (left to right) part of Building 172, Buildings 178, 174, 177, and 180 (looking southwest)

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a



b

(*a*) Building 175 (left foreground), part of Building 184 (right foreground), Buildings 180 (center, against outcrop), 160, and 161 (on wadi bed, upper right) (view toward southwest); and (*b*) three niches in Building 175

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a



b

(*a*) Buildings 176 (on Hillock) and 156 (in background) (view toward southwest) and (*b*) Building 176, west half

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Plate 40



a



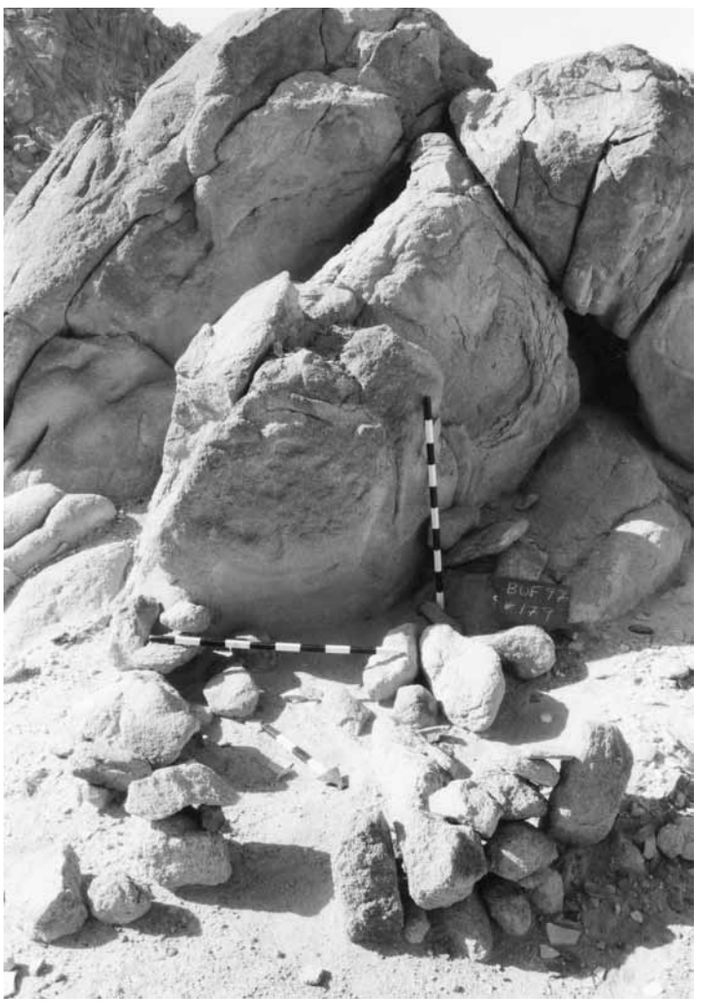
b

(*a*) Building 176 interior door and (*b*) Building 177 and part of Building 158 (view toward southwest)

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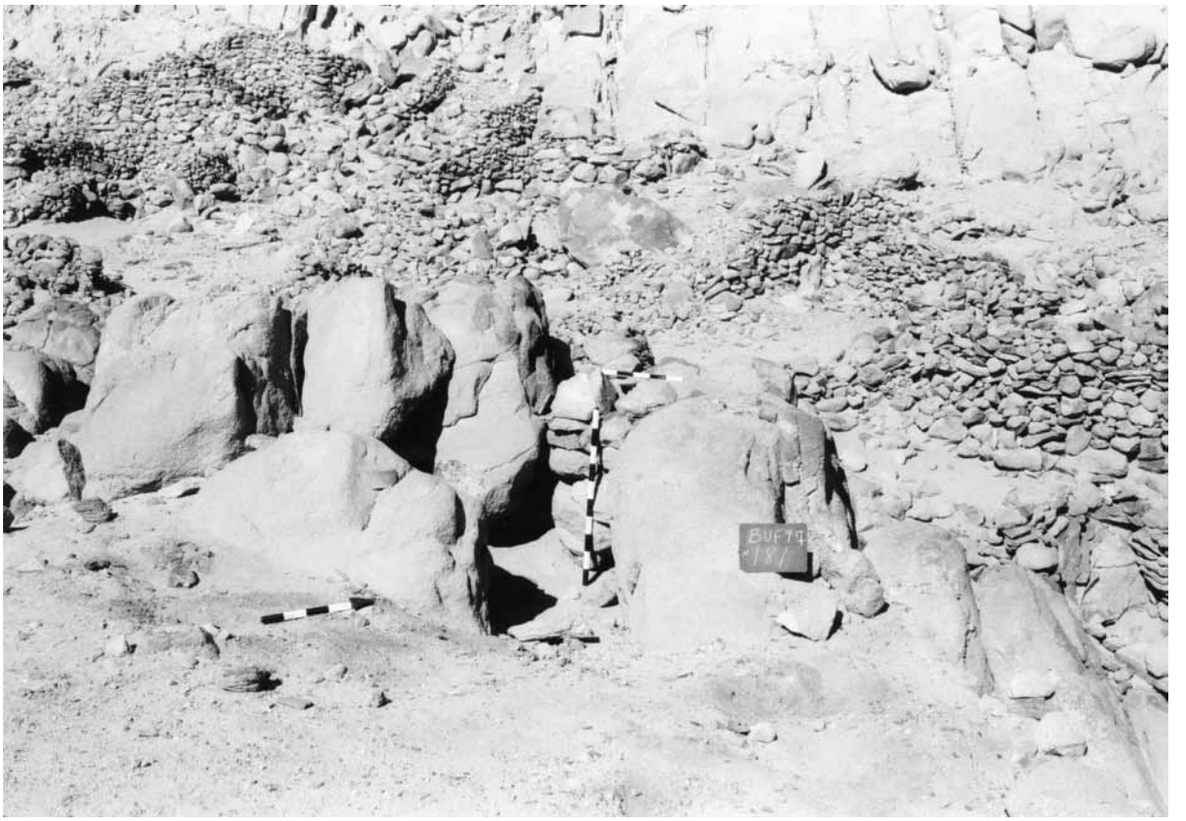
a



b

(*a*) Buildings 178 (center) and 181 (built into boulders above) and (*b*) Building 179

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a



b

(*a*) Building 181 and (*b*) Building 182

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a



b

(*a*) Buildings 184 (with meter stick) and 183, and Buildings 158, 160, 161, and part of 162 (on wadi bed, center right); and (*b*) Building 186

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a



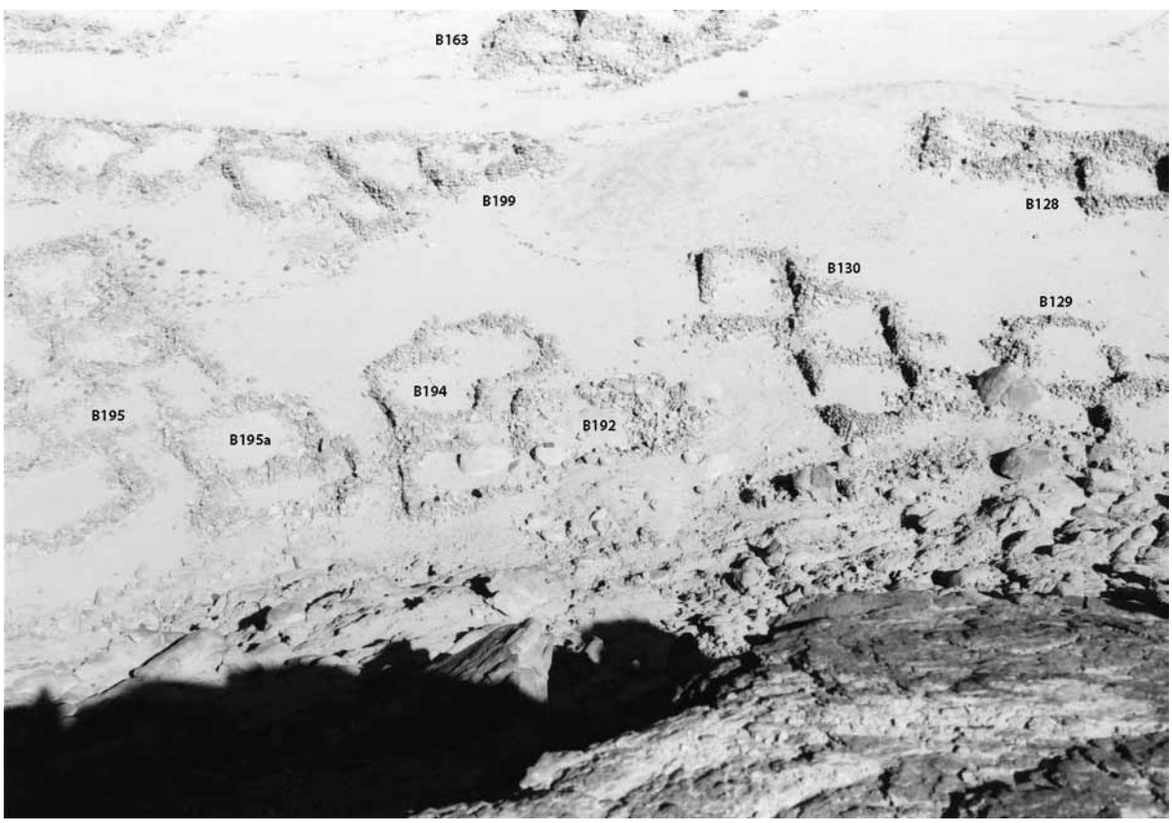
b

(*a*) Buildings 188 and 187, part of Building 186 (view toward northeast), and
(*b*) Building 190 (view toward south)

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a



b

(*a*) Building 191 and opencast mine (stope) (view toward east) and (*b*) part of Building 195, Buildings 195a, 194, 192, 130, and part of 129, Building 199 (upper left), part of Building 163 (top center), part of Building 128 (upper right) (view toward northeast)

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a



b

(*a*) Buildings 195, 195a, 194, 192, part of 130 (foreground), Buildings 200 and 199 (center), wadi "street," Buildings 190, 189, 188, 186, most of 162, part of 163 (top, left to right); and (*b*) Building 193 (at meter stick)

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a



b

(*a*) Building 194 and (*b*) Buildings 196 and 197 (with meter stick)

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a



b

(*a*) Buildings 198 (with meter sticks) and 195 (center) (view toward southeast) and (*b*) Building 200

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a



b

(*a*) Part of Building 206 (center left), Buildings 201 (center), 190, 188, 187, 186, 189, 162, 163, 200, 199, 195 (view toward northeast); and (*b*) Buildings 205, 204, 202, part of Building 201 (front), and Building 206 (center) (view toward northeast)

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Plate 50



a



b

(*a*) Building 203 (with meter sticks) and (*b*) Building 207

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a



b

(*a*) Buildings 212, 213 (front of central cluster), 211 (middle), 210, and 209 (far end of cluster) (view toward east); and (*b*) Building 214

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a



b

(*a*) Building 215 and (*b*) Building 216

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a



b

(*a*) Building 217 and (*b*) Building 219

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a



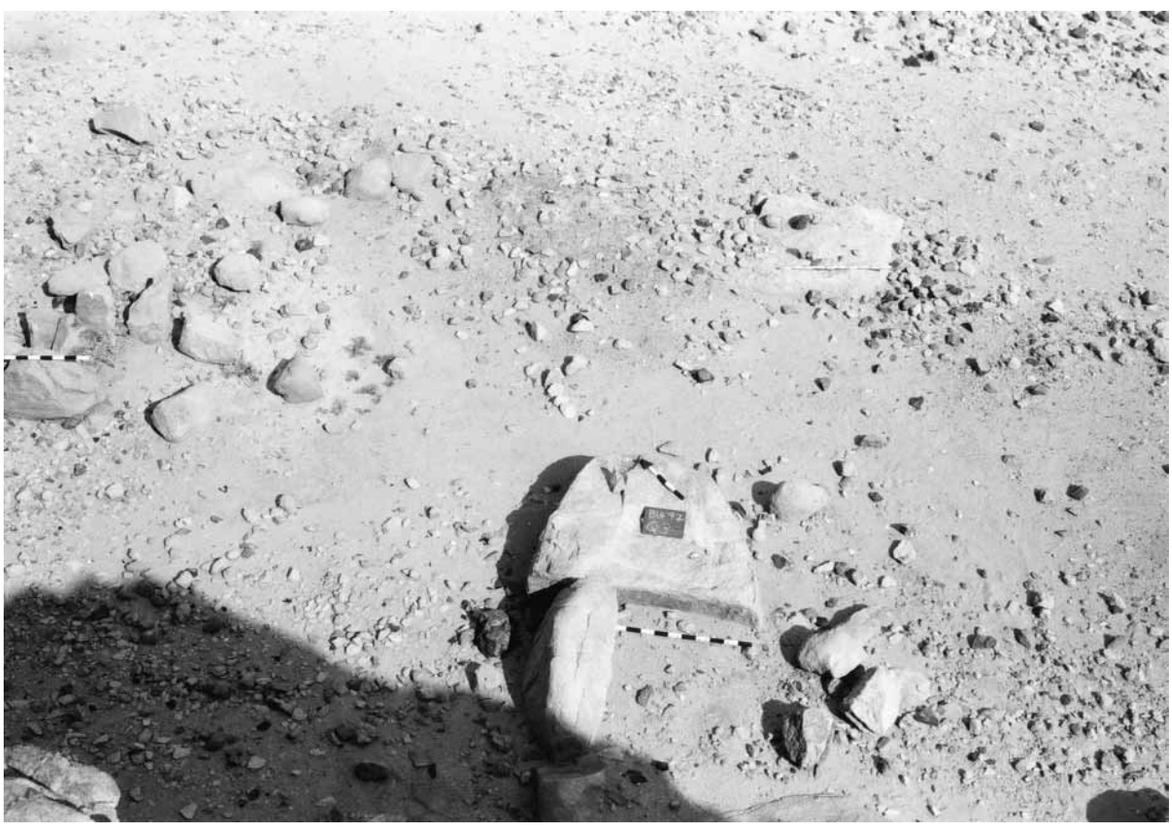
b

(*a*) Buildings 220 and 221 (foreground), view southeast down wadi "street," and
(*b*) Building 222 (center), part of Building 223 (left)

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a



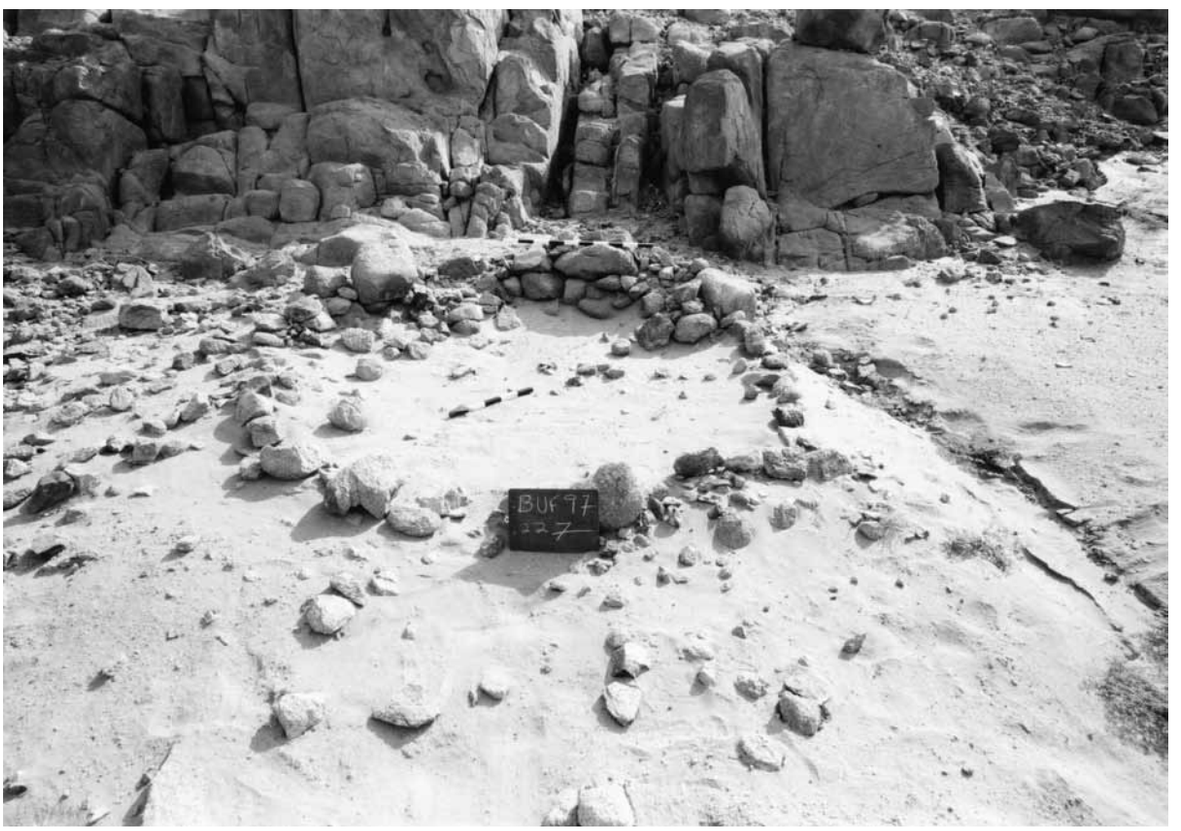
b

(*a*) Buildings 225 (center, with meter stick) and 224 (to right), part of Building 223 tumble (lower right), part of Quarry 3 (lower left) (view toward northeast); and (*b*) Quarry 3

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a



b

(*a*) Building 226 (view toward northwest) and (*b*) Building 227

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a



b

(*a*) Buildings 228 (center), 227, 226, and 191 (top) (view toward south); and
(*b*) Buildings 229 (foreground), 226, and 191 (center left) and wadi "street" (view toward southwest)

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a



b

(*a*) Buildings 233, 232, 231, 230 (view toward east), and (*b*) Building 236

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a



b

(*a*) View from Roman tower showing Outlier 2 (center left), Quarry 1 (outcrop behind), and Roman road (running through center) (view toward east); and (*b*) Outlier 2, Buildings 34 and 35 (foreground), Buildings 26, 29, 30, 33, and 37 (center), Buildings 31 and 32 (by wadi), and Quarry 1 (upper left) (view toward south)

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Plate 60



a



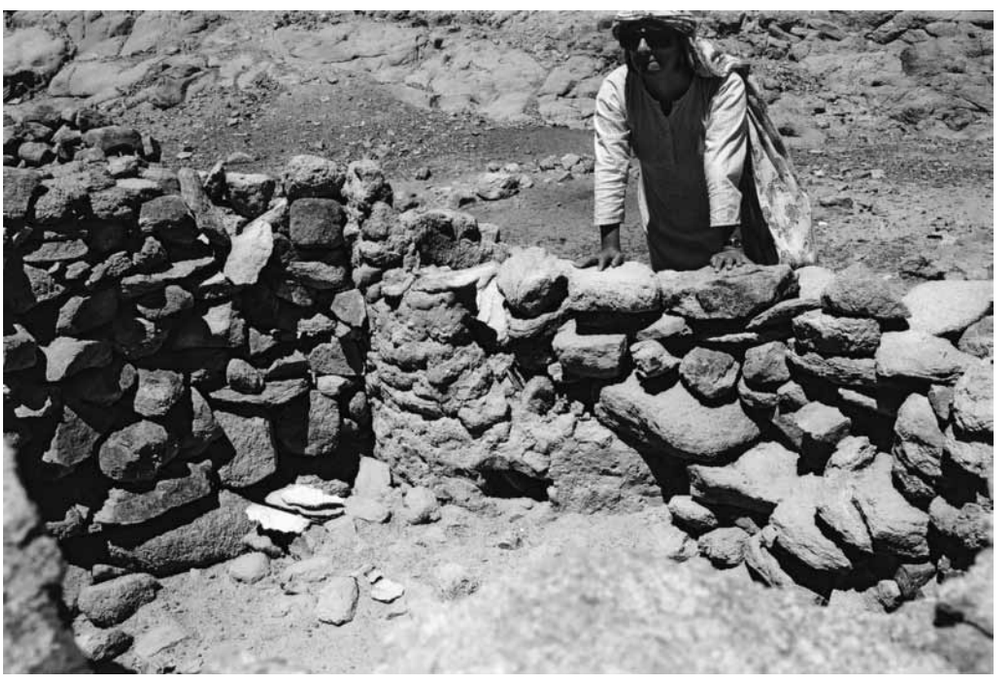
b

(*a*) Outlier 2: Building 27 and silo and (*b*) Building 27 silo interior

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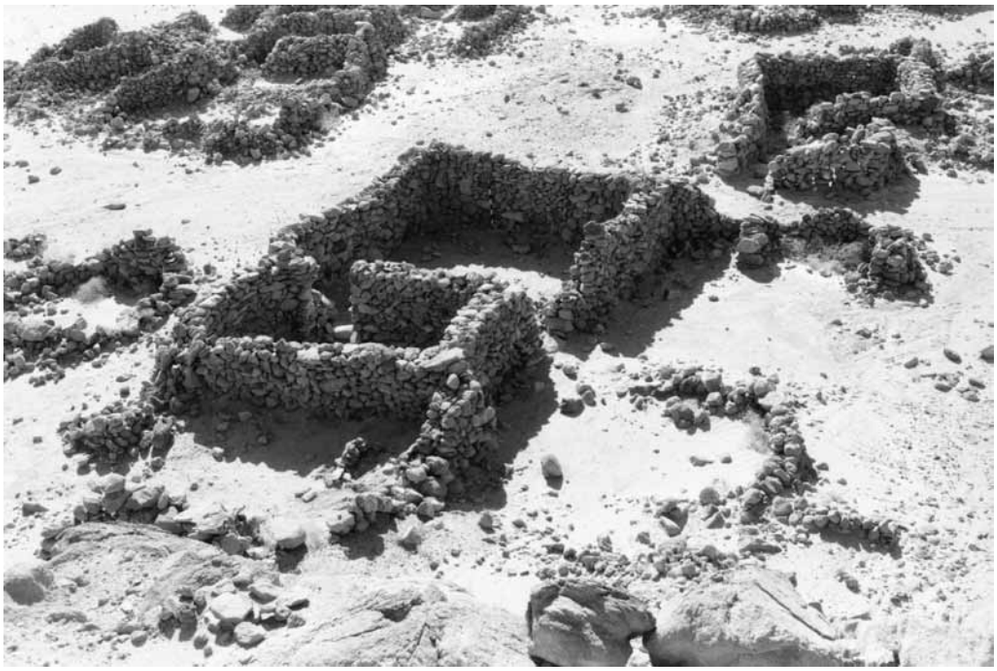
a



b

(*a*) Outlier 2: Building 27, silo interior partition and extraction hole, and (*b*) Building 27 silo in 2001

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a



b

(*a*) Outlier 2: part of Building 34 and Building 35 (foreground), Building 30 and part of Building 33 (upper left), part of Building 36 (upper right) (view toward south), and (*b*) Building 35 front room steps, looking out

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a



b

(*a*) Outlier 2: Building 35 interior room, threshold to front room, and (*b*) Building 54 double bench

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Plate 64



a



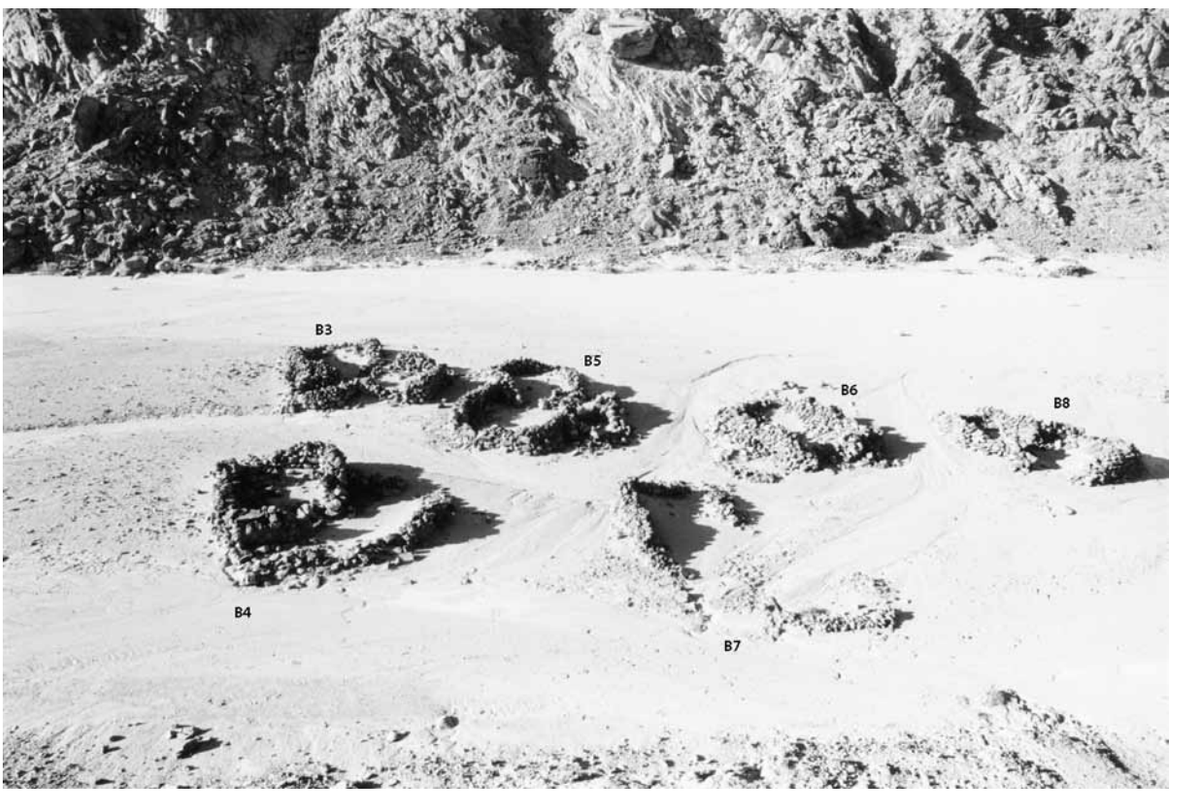
b

(*a*) Outlier 2: Building 54 double bench, and (*b*) Outlier 6: Building 1

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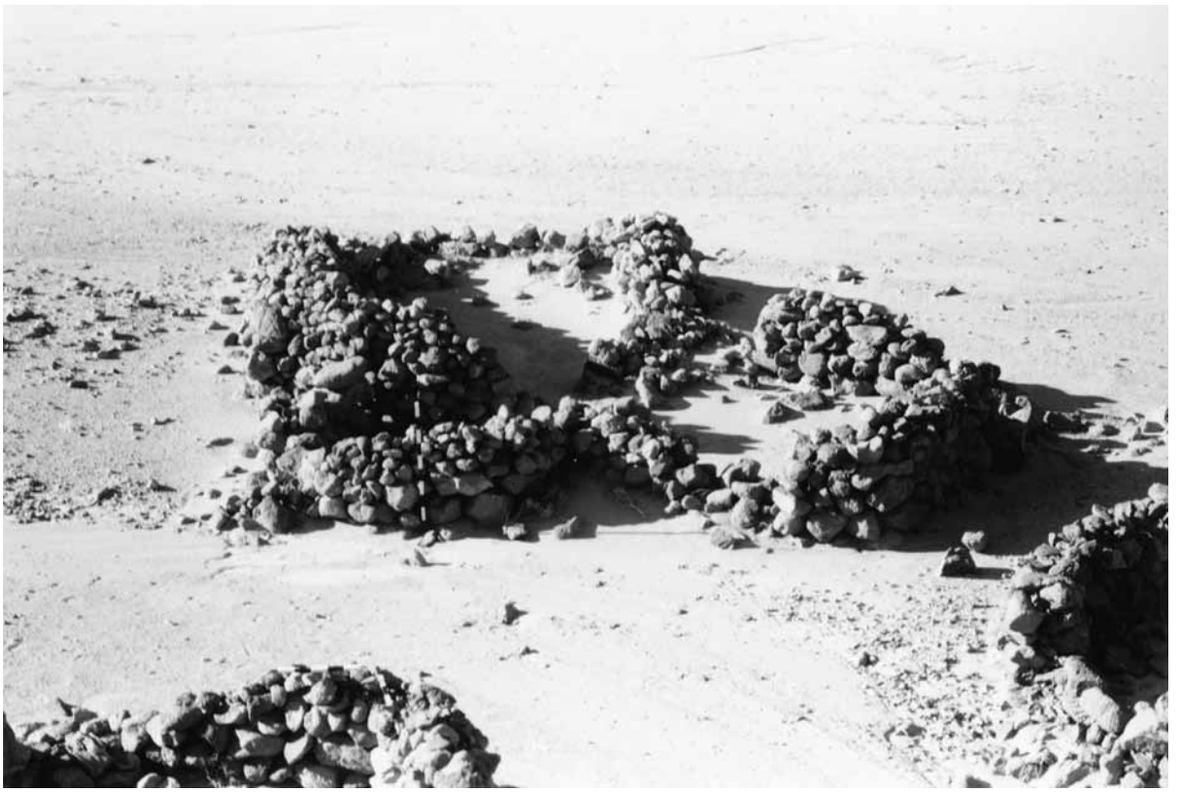
a



b

(*a*) Outlier 6: Building 2 and (*b*) Buildings 3, 4, 5, 6, 7, and 8

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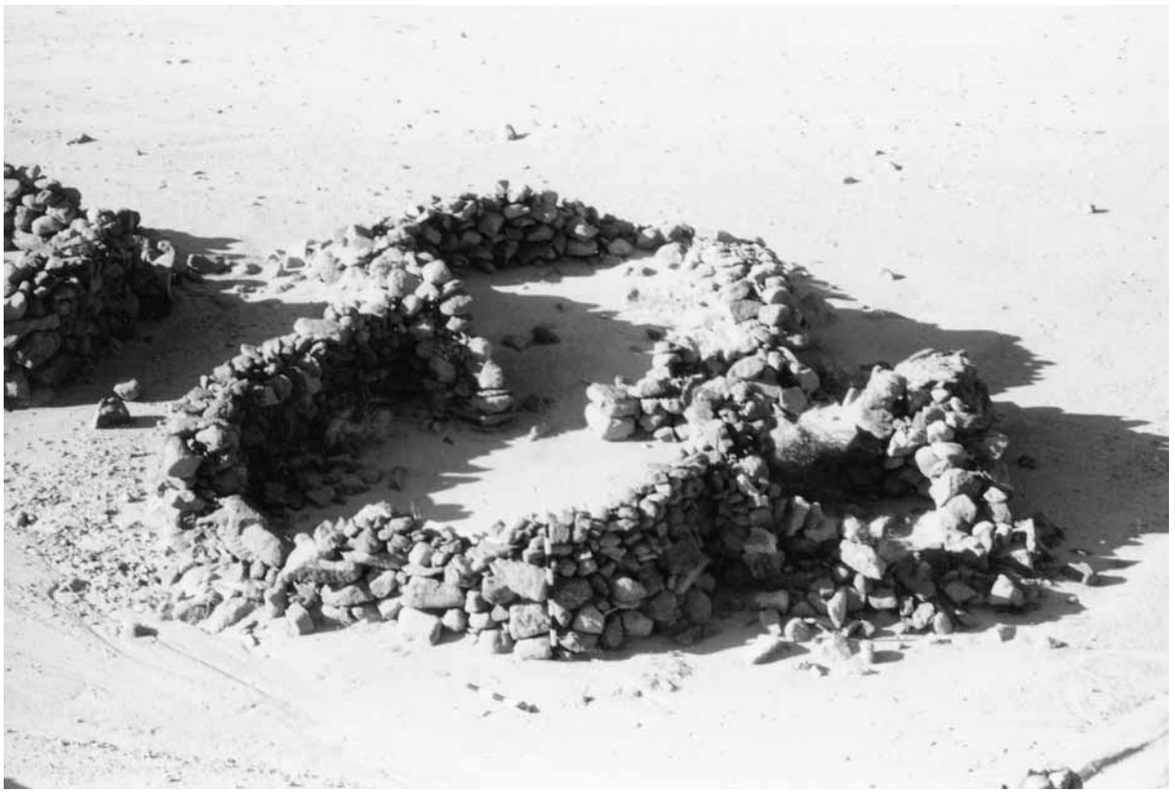
a



b

(*a*) Outlier 6: Building 3 and (*b*) Building 4

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a



b

(*a*) Outlier 6: Building 5 and (*b*) Buildings 6, 7, and 8

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a



b

(*a*) Outlier 6: Buildings 9, 10, 11, 12, and 13, and (*b*) Buildings 10, 12, 13, 14, 15, 16, 17, 18, and 20

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a



b

(*a*) Outlier 6: part of Building 10, Buildings 12, 13, 14, 15, 16, 17, 18, and wall of Complex 26 (in row center right), part of Building 19, and (*b*) Buildings 16, 17, 18, 19, 21, and 22, wall of Complex 26 (in row center right)

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a



b

(*a*) Outlier 6: part of Building 28 (foreground), Buildings 27, 23, 21, 17, 18, 19, 12, 16, part of Building 20, and (*b*) Buildings 29, 30, 31, 32, 32a, 16, 20, 22, 24, and 33

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a



b

(*a*) Outlier 6: Building 25 (with meter stick), looking down to Complex 26 Wall, and (*b*) overview of Complex 26 and houses in vicinity

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a



b

(*a*) Outlier 6: Complex 26, granite knob (left), walls, and Building 26 (right), and (*b*) Building 28

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a



b

(*a*) Outlier 6: Buildings 34 (room 3 in foreground) and 35, and (*b*) Buildings 38, 37, 36, 35, 34 (foreground), wadi, Buildings 33 to 38, Complex 26 (in bay at center right), and felsite dyke at crest of hill (center)

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a



b

(*a*) Outlier 6: Buildings 43, 42, 41, 40a, 40, and 39, and
(*b*) Buildings 41, 42, 43 (foreground), wadi, and Buildings 44–48

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a



b

(*a*) Outlier 6: Building 42, and (*b*) Buildings 54–61, wadi, and Buildings 79–80

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a



b

(*a*) Outlier 6: Buildings 62–65 and Building 68
and (*b*) Buildings 65–71 looking across modern road to Outlier 5

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a



b

(*a*) Outlier 6: Building 75 and (*b*) Building 78

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Plate 78



a



b

(*a*) Overview of Outlier 7 bay, and (*b*) Outlier 7: Building 82

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a



b

(*a*) Outlier 7: Building 83 and (*b*) Building 84

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Plate 80



a



b

(*a*) Outlier 7: Building 87 and (*b*) Building 88

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a



b

(*a*) Outlier 7: Buildings 90 (foreground) and 84 (upper right) and (*b*) Building 91

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a



b

(*a*) Outlier 7: Building 92 and (*b*) Building 93

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a



b

(*a*) Outlier 7: Building 94 and (*b*) Building 95

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a



b

(*a*) Outlier 7: Building 96 and circle of stones and (*b*) Building 98 and circle of stones

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a



b

(*a*) View over modern settlement, looking east (Outlier 1 lies behind walled compound), and (*b*) Outlier 1 from south

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a



b

(*a*) Outlier 1 from east, southwest half, and (*b*) Outlier 1 from east, northwest half

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a



b

(*a*) Outlier 8 overview, toward modern mill in Wadi el-Sid, and
(*b*) Outlier 8 houses, grinding and crushing stones

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Plate 88



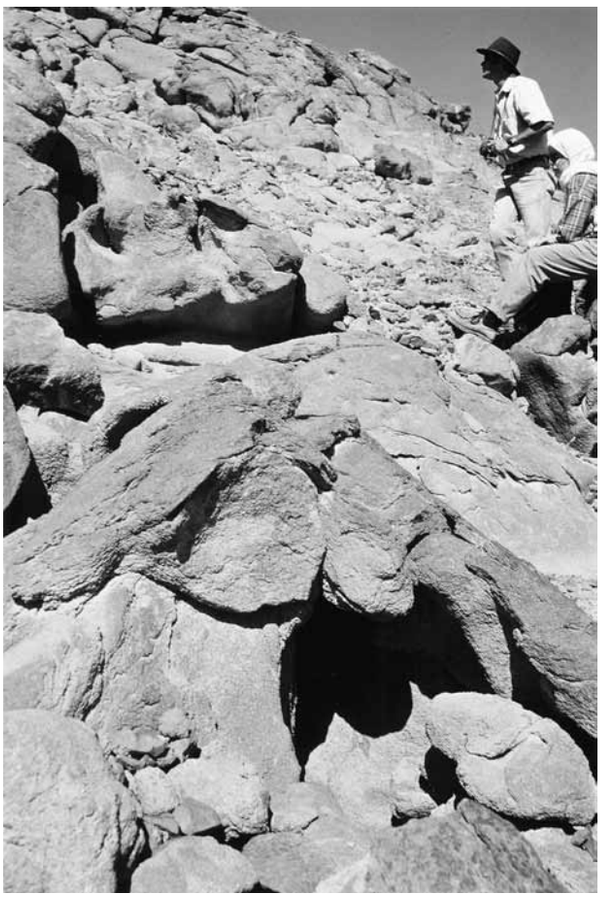
a



b

(*a*) Outlier 9: Ancient houses and modern engineers' houses, and (*b*) Outlier 9, ancient houses

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a



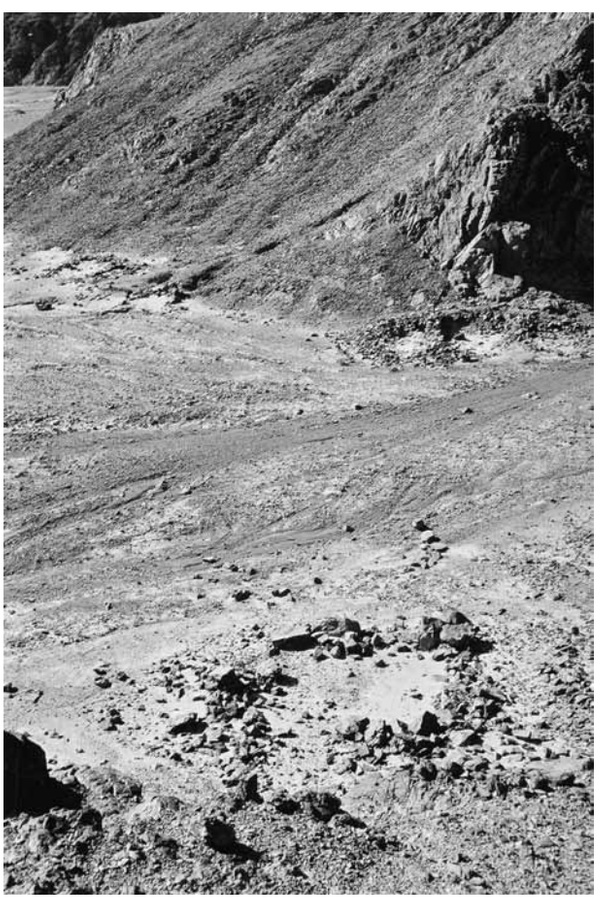
b

(*a*) Outlier 9: Grave and (*b*) “incense burner” just below grave

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a



b

(*a*) Outlier 10: Looking up wadi, remains of huts to right, and
(*b*) looking toward modern road, remains of huts in foreground

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a

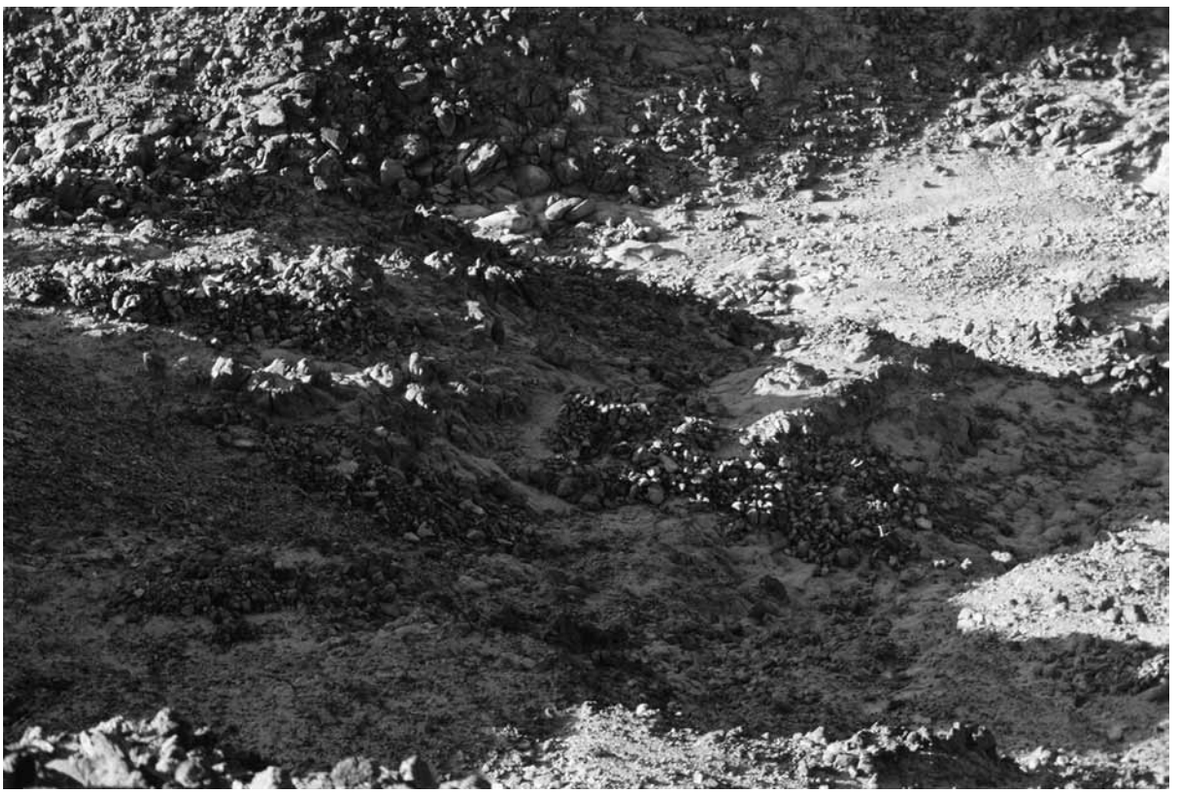


b

(*a*) Southeast cemetery cairns, looking northwest to main settlement, and (*b*) overview of southeast cemetery cairns, looking southwest

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Plate 92



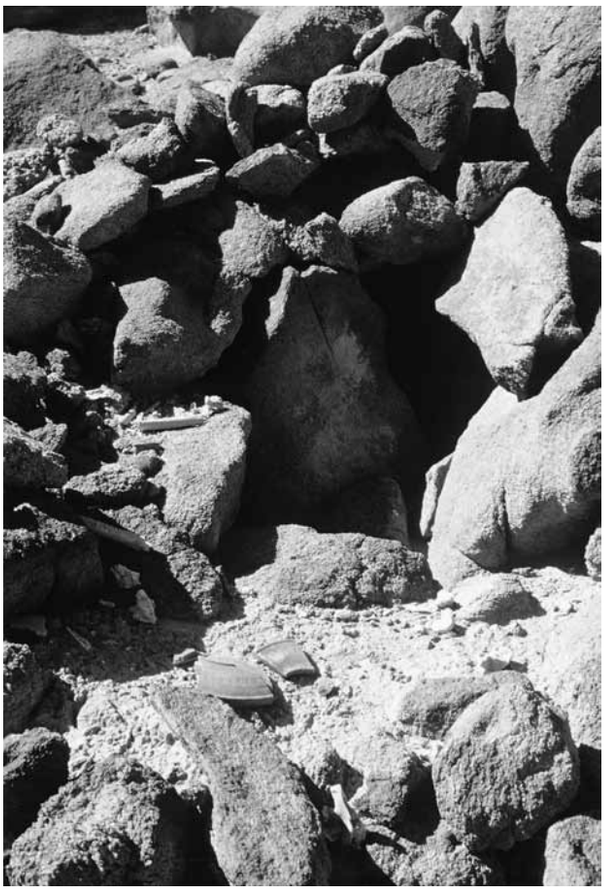
a



b

(*a*) Southeast cemetery cairns and (*b*) cist grave in saddle between Outlier 7 and main settlement

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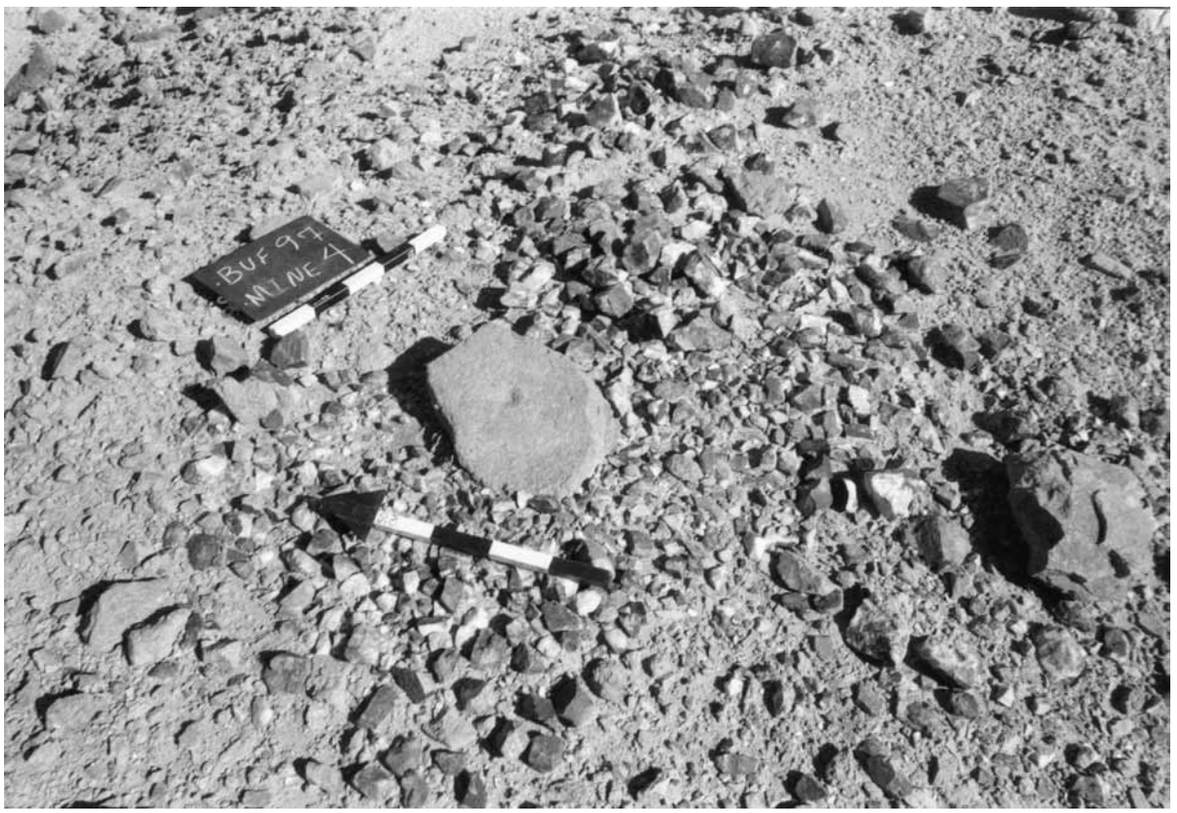
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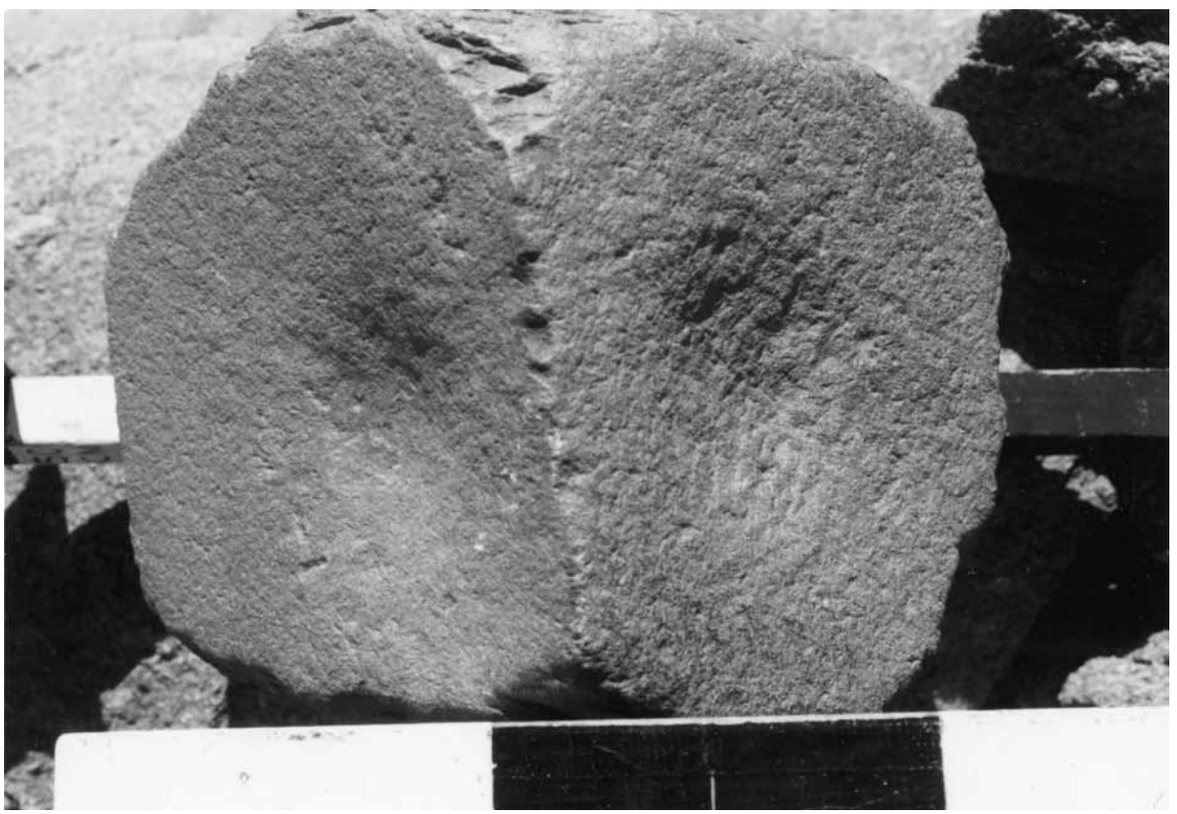
b

(*a*) Looted grave and cairn in saddle between Outlier 7 and main settlement and (*b*) looted grave with bone, in saddle between Outlier 7 and main settlement

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a



b

(*a*) Crushing stone surrounded by chunks of discarded quartz beside Mine 4 and (*b*) two-faced dimpled crushing stone (from Building 169)

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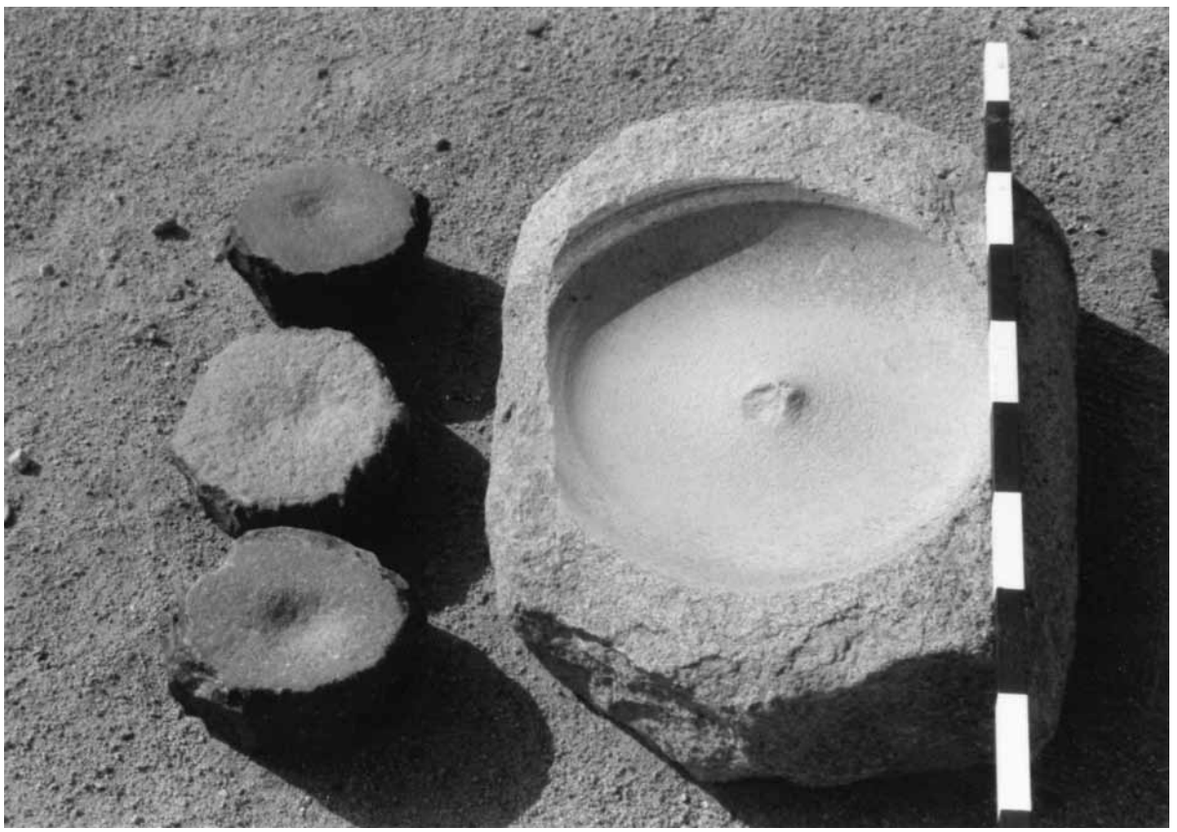
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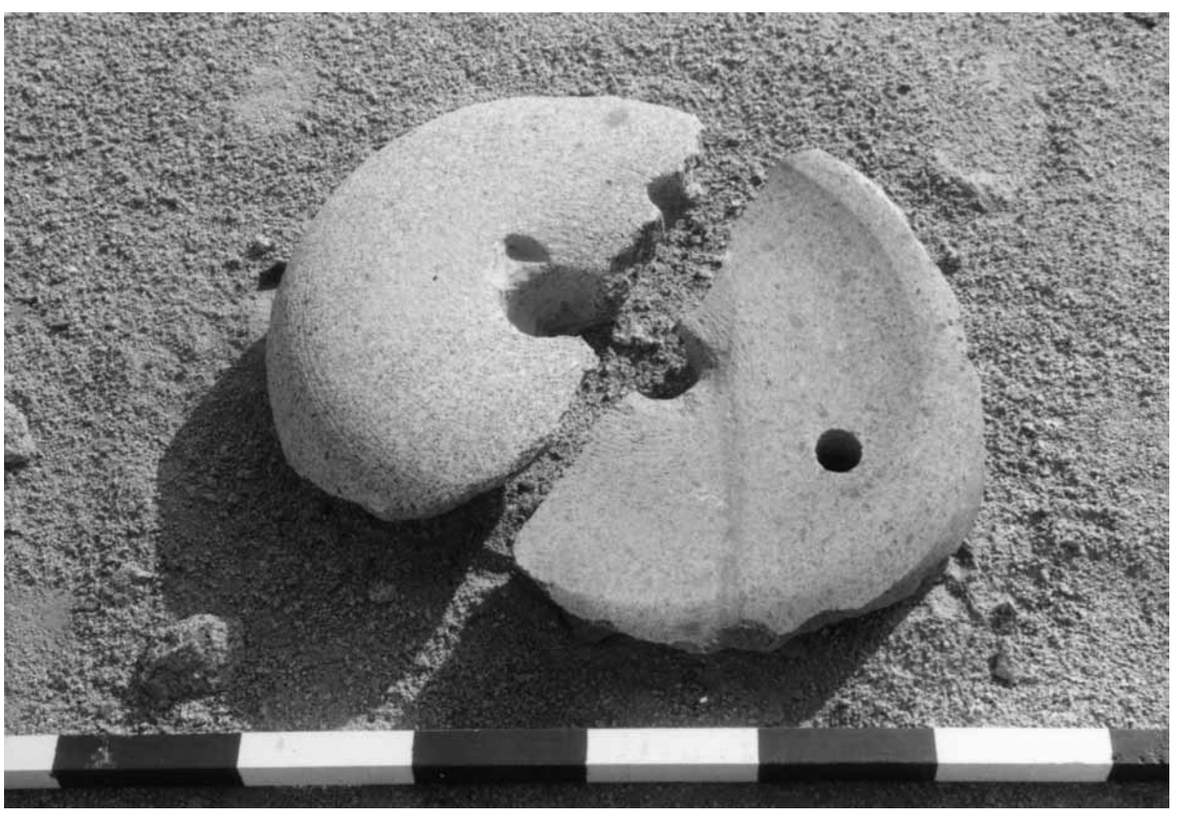
b

(*a*) Lower grinding stones and (*b*) upper grinding stones, "manos" (from the vicinity of Building 118 and Quarry 2)

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a



b

(*a*) Three dimpled crushing stones and lower rotary grinding stone and
(*b*) pieces of two upper rotary grinding stones

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a



b

(a) Deep “ski slope” lower grinding stone from Outlier 2 and (b) convex grinding stones near modern wells

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Plate 98



a



b

(*a*) Large, dished grinding stone near modern wells and
(*b*) wall of modern well house with reused grinding stones

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a



b

(*a*) Ptolemaic(?) two-handled grinding stone (from modern well house) and (*b*) mortar (found behind modern teahouse)

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Plate 100



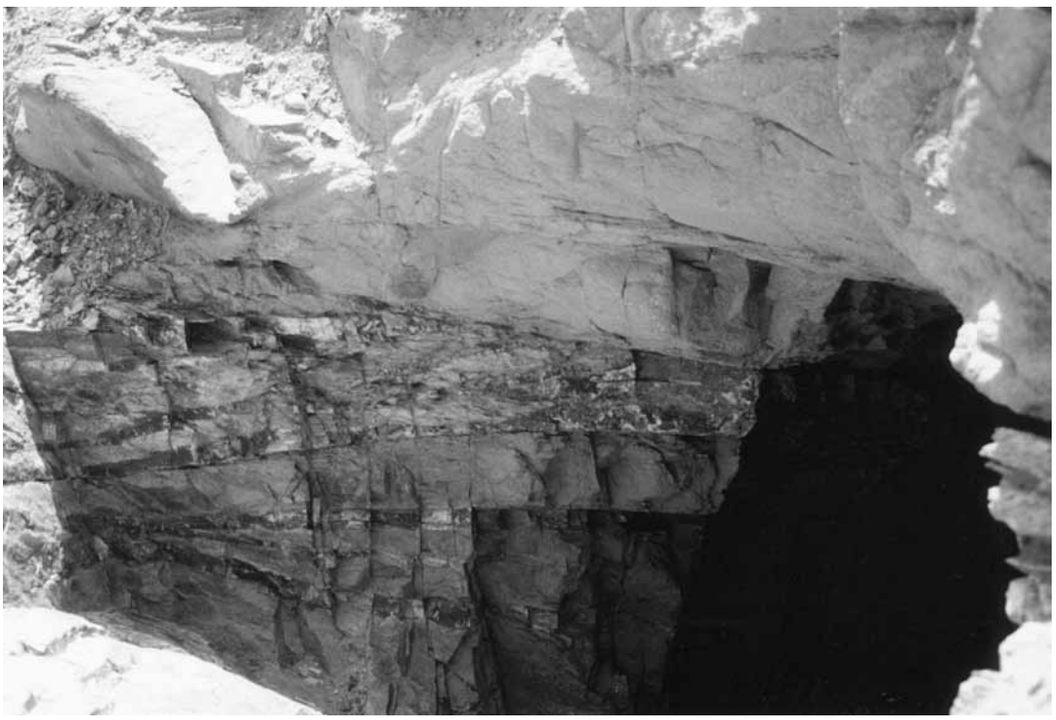
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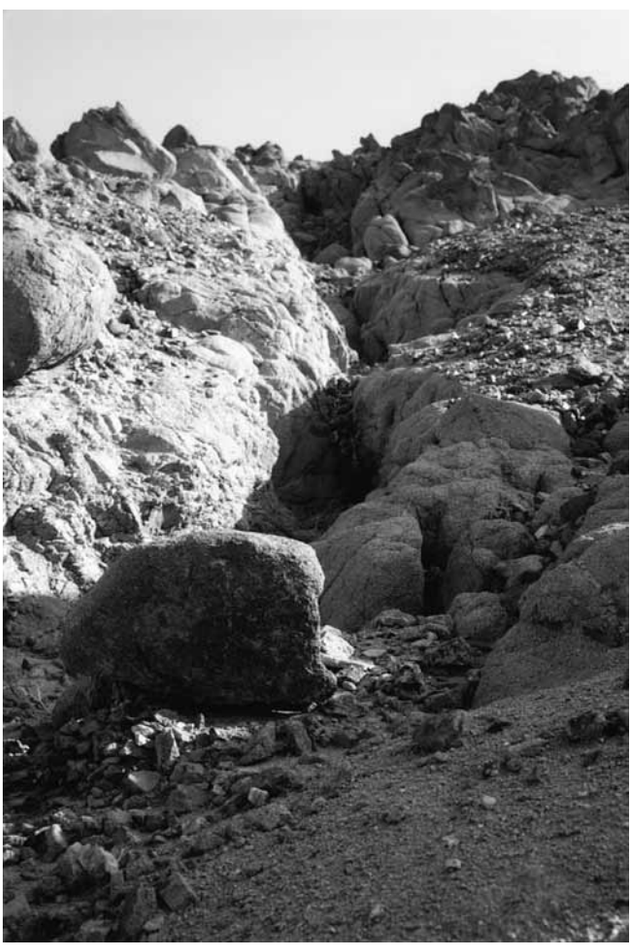
b

(*a*) Large, shallow grinding stones and (*b*) pecked ore concentrating stone, all from Wadi el-Sid

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a



b

(*a*) Quartz stringers and (*b*) opencast mine (stope)

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Plate 102



a



b

(*a*) Deep mine with revetments, Outlier 2 and Roman road (upper left), and entrance to main settlement (upper right); and (*b*) opencast and deep cuttings above Mine 2, platform at entrance to deep mine

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a



b

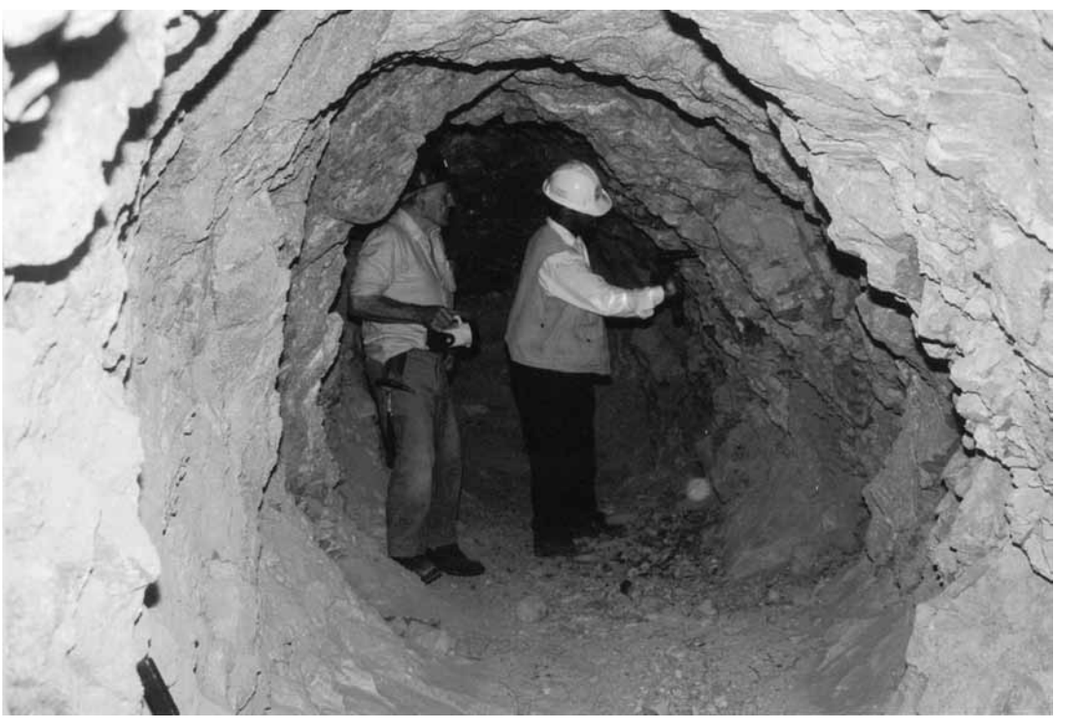
(*a*) Hut and opencast trench above Mine 1 and
(*b*) Mine 4 with opencast mine slicing diagonally across slope, light-colored quartz discarded downslope

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Plate 104



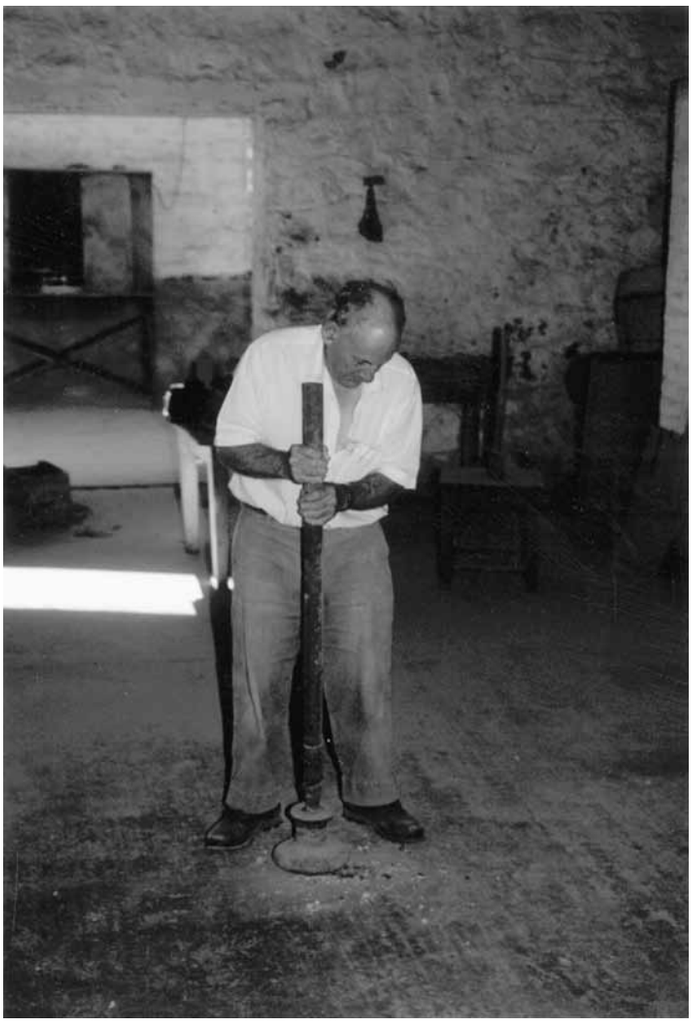
a



b

(*a*) Deep opencast mine at Mine 4 and (*b*) collecting ore sample from modern Mine 3

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a



b

(*a*) Stamping ore sample at modern mill and *(b*) grinding ore on bucking plate

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a



b

(*a*) Vanning crushed ore and (*b*) iron wedge (from Building 93)

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New Kingdom opencast mine