

THE 1996 EXCAVATIONS ALONG THE NORTHERN HILL AT TEL MIKHAL (TEL MICHAL)

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INTRODUCTION

From March to June 1996 a salvage excavation was conducted on behalf of the Israel Antiquities Authority along the northern hill of Tel Mikhal (map ref. NIG 18090–125/67430–60; OIG 13090–125/17430–60) prior to construction at the nearby Herzliyya marina (Gorzalczany and Rand 1999).¹ The site was first surveyed by Ory in 1922 (unpublished). Avigad conducted limited excavations on the northeastern slope between 1958 and 1960 (Avigad 1960; 1961; 1993). Six years later, Kochavi and Gophna

resurveyed the site (Gophna and Kochavi 1966). During 1977–1980, the most extensive excavations at Tel Mikhal were conducted by Tel Aviv University (Herzog, Rapp and Negbi 1989). Two years later, an Iron Age winepress was exposed by mechanical equipment on the northern hill (Herzog 1989a). In 1993, Herzog and Levy directed excavations along the lower northern hill, exposing part of a Persian-period cemetery (Levy 1996; Herzog and Levy 1999). The 1996 IAA excavations were conducted north and west of the Tel Aviv University excavations (Fig. 1).

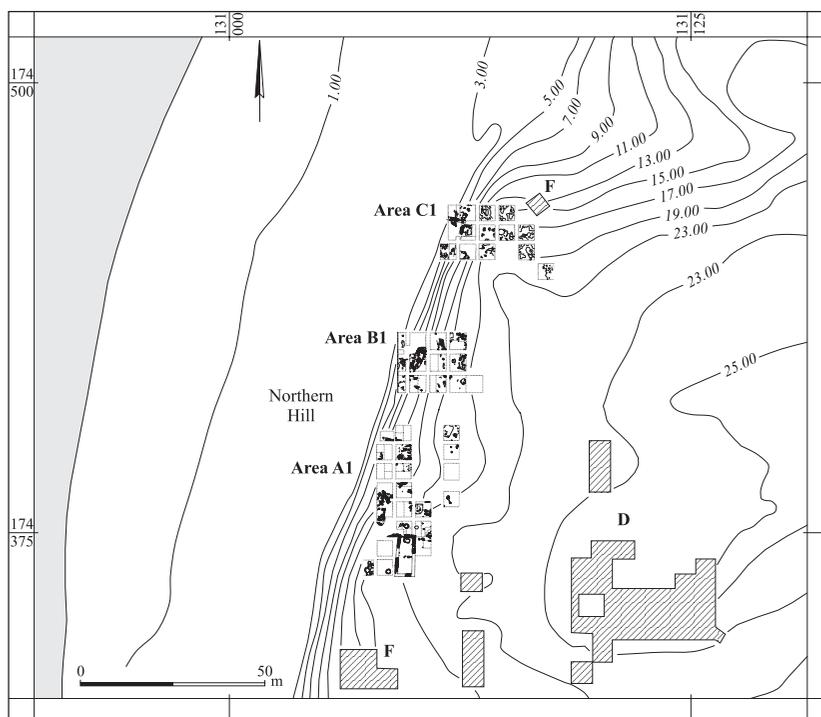


Fig. 1. The excavation areas (A1, B1, C1); the hatched areas were excavated by Tel Aviv University (after Herzog, Rapp and Muhly 1989: Fig. 1.2).

The northern hill is part of an extensive habitation, which includes a high mound and a number of secondary sites scattered over five hills. The first evidence of settlement observed in the region are flint tools attributed to the Middle Paleolithic Age, which were found outside of any archaeological context in the southern part of the northern hill (Area A1). Several Iron Age sherds, in no specific archaeological context, scattered across the surface level of the site, do not conclusively indicate an occupation level. Although the northern hill extends over four hectares and is larger than the tell, it was occupied for a relatively short duration limited primarily to the Persian period.

Geologically, the area consists of *kurkar* bedrock with pockets of *hamra* soil deposited as sediment during the Holocene and Pleistocene epochs in the later part of the Quaternary Period (Bakler 1989:198–202; see Barzilay, this volume). In the Persian period archaeological remains were partially covered by sand dunes known as the Rishon Le-Ziyyon formation (Bakler 1989:202).²

A 25 × 100 m north–south strip of land (c. 2.5 dunams) was divided into three areas

(A1, B1 and C1) to avoid confusion with the nomenclature from previous excavations. Owing to financial constraints, we excavated less than half of this strip. The archaeological remains throughout the entire area were very poorly preserved due to modern quarrying of sand and recent construction. Finds from the three separate areas of excavation over the hill indicate that the settlement covered the whole area.

AREA A1

Area A1 is the southern area in the excavation (Fig. 2; Plan 1), in which 475 sq m (19 squares) were excavated. Most of the archaeological remains, although fragmented and damaged, were discovered in the southern section of the area. Here, we uncovered a long structure (Building 270; 5.0 × 10.5 m). Four walls (W121, W122, W125, W127 and W126; each c. 0.4 m wide) were preserved one course high, built from small, unhewn *kurkar* stones. In the building's northern wall (W121) an 0.8 m wide opening was discerned, in which a threshold was set of slightly larger *kurkar* stones. Wall



Fig. 2. Area A1, looking northwest. In the background is the Herzliyya marina.

121 continues westward (W123) beyond the corner formed with W122 for an additional two meters.

An oval-shaped installation (1.0 × 1.5 m; diam. 1.1 m) lined with small *kurkar* stones (L118) was set in the *ḥamra* soil near the entrance. A Hellenistic lamp (see Kapitakin, this volume: Fig 11:11) was recovered from within the installation and a Rhodian amphora handle (third century BCE; see Ariel, this volume [b]: C1) was also found nearby. Two coins dating from the reign of Antiochus III (223–187 BCE; see Ariel, this volume [a]: A13, A14) were found in probes near W125. These are the only Hellenistic coins found in Area A1 (see Ariel, this volume [a]).

Research on similar installations dating to the Persian period at Tel Be'er Sheva' suggests that they could have been used in the preparation of compost for fertilizing agricultural soil (Goffer, Molcho and Beit-Arieh 1983). Yet, considering its dimensions, this installation appears more likely to belong to a type of oval silo used for storing foodstuffs, similar to silos from contemporary strata at Tell el-Ḥesi (Stager 1971).

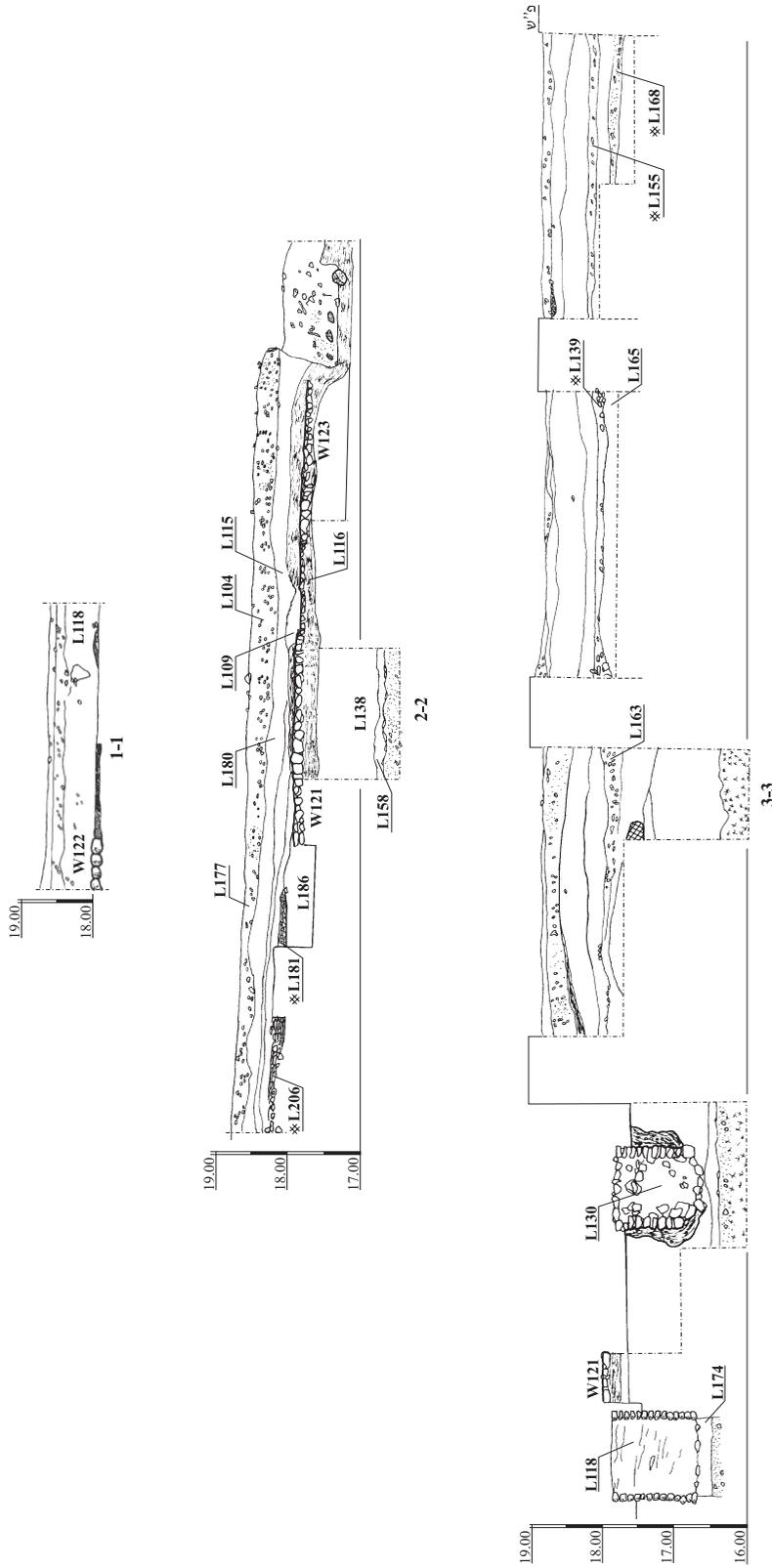
A round silo was exposed 1.5 m north of Building 270 (L130). This silo (diam. 1.2 m),

like Silo 118, was dug 1.1 m into the *ḥamra*. It was lined with small *kurkar* stones. Another pit (L140) was uncovered west of the building. Apparently it was used for refuse since it was not lined with stones or plastered. Unlike silos, refuse pits were characterized by irregular shapes. Large quantities of Persian-period pottery were recovered from the immediate surroundings.

Northwest of Building 270, one wall built from small *kurkar* stones was exposed (W124). Due to its proximity to the slope, most of the building has fallen into the sea, and its plan could not be reconstructed. Remains of a stone floor made from small *kurkar* stones and beaten earth are attached to this wall (L166; Fig. 3). Embedded in the floor were sherds of a complete jar (Kapitakin, this volume: Fig. 7:20). North of this floor, another stone floor (L169) was discerned with various stone installations upon it. Jars and mortaria dated to the Persian period were found on these floors, indicating that the buildings were used for storage and processing agricultural produce. No building remains were uncovered in the northern section of Area A1. Excavations revealed a stratification of layers of brown *ḥamra*, ceramics, and organic material including numerous animal bones. Since it was



Fig. 3. Area A1, Floor 166, looking east.



Plan 1. Area A1, sections.

possible to restore vessels, whose sherds were recovered from different layers, there can be no chronological significance to the stratification of the *hamra* and organic material.

A north–south section and an east–west section from Building 270 to the northern part of Area A1 indicate that living surfaces existed there. These open-air work surfaces had numerous, small installations (typically *tabuns*, e.g., L173) situated adjacent to nearby buildings.

A copious amount of finds was recovered from these habitation levels besides ceramics, such as various metal objects, including arrowheads (see Shalev and Sari, this volume: Fig. 1), nails (see Shalev and Sari, this volume: Fig. 3:1), fish hooks (see Shalev and Sari, this volume: Fig. 3:4) and fishing weights (see Shalev and Sari, this volume: Fig. 3:5, 6), dozens of fibulae (see Shalev and Sari, this volume: Fig. 10), makeup implements and jewelry (see Shalev and Sari, this volume: Fig. 8:1–3). One especially interesting object is a bronze figurine representing the Phoenician goddess *Tanit* (see Shalev and Sari, this volume: Fig. 13). This goddess, also known as *Tanit Pene Ba'al* (Tanit the face of Baal), was considered a sky deity in Phoenicia and its colony Carthage, and a mother and guardian, who rules the sun, moon and stars. This androgynous moon and fertility goddess created all life by giving birth to herself (Ann 1993:350; Farrar 1987:277). Similar figurines have been found in Ashqelon, both carved in bone or cast in bronze, and further north in Phoenician contexts dated to the fifth and fourth centuries BCE. A bronze figurine from Ashqelon is identical to the figurine from Tel Mikhal (Stager 1993:109).

The large quantity of animal bones found is also noteworthy. About 70% of these bones were from cattle, which is unusual (see Sade, this volume). Clearly, the large quantity of cattle bones is an indication of the wealth and prosperity of the site. It should be noted that the very high proportion of cattle bones on the northern hill is double that exposed in the earlier excavations in the Persian-period strata on the mound, where the percentage of cattle remains do not exceed

37% (Hellwig and Feig 1989:239, Table 22.7). One possible explanation for the exceptionally high proportion of cattle bones might be found in the ethnic composition of the local population and their dietary regime. Another is that since the northern hill functioned as a work and industrial area, there must have been a place that specialized in the slaughtering of cattle.

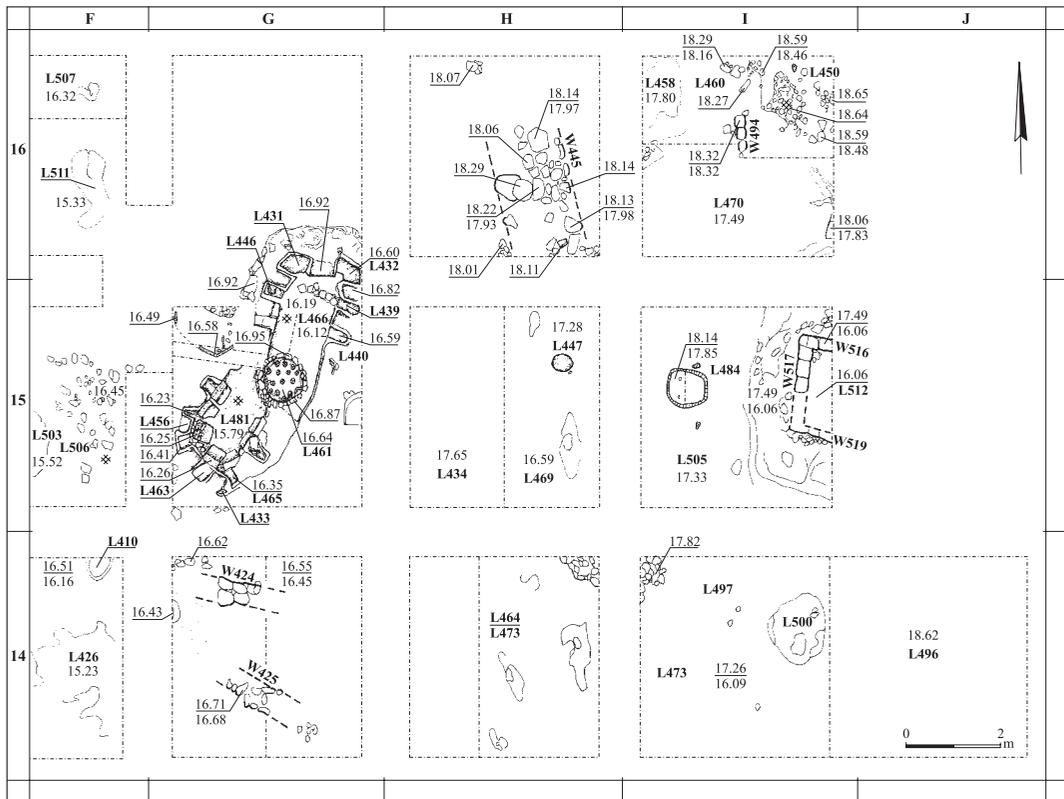
Soundings conducted at the northern end of Area A1 revealed a small number of short wall remnants (W129, W267) similar in character to the structures in the southern part of Area A1. The limitations of the excavation did not permit clarification of their plans.

AREA B1

In the topographic saddle between Areas A1 and C1 (Plan 2), 375 sq m (13 squares) were excavated. This area too suffered from considerable damage caused by mechanical equipment before our excavation began. The architectural finds include short segments of walls (W424, W425) and a room (L512) cut into the *kurkar* and delineated by mud-brick walls (W516, W517 and W519; mud bricks c. 25 × 40 × 25 cm). Although this room could not be fully exposed, MB IIB and MB IIC pottery sherds were recovered on its floor. Along with these were Persian-period finds, such as an alabaster vessel (L512; Fig. 4) and a jug. In



Fig. 4. Alabaster vessel.



Plan 2. Area B1, general plan.

light of the finds, the room should be dated to the Persian period. The presence of the earlier pottery can be explained as a result of its collapse.

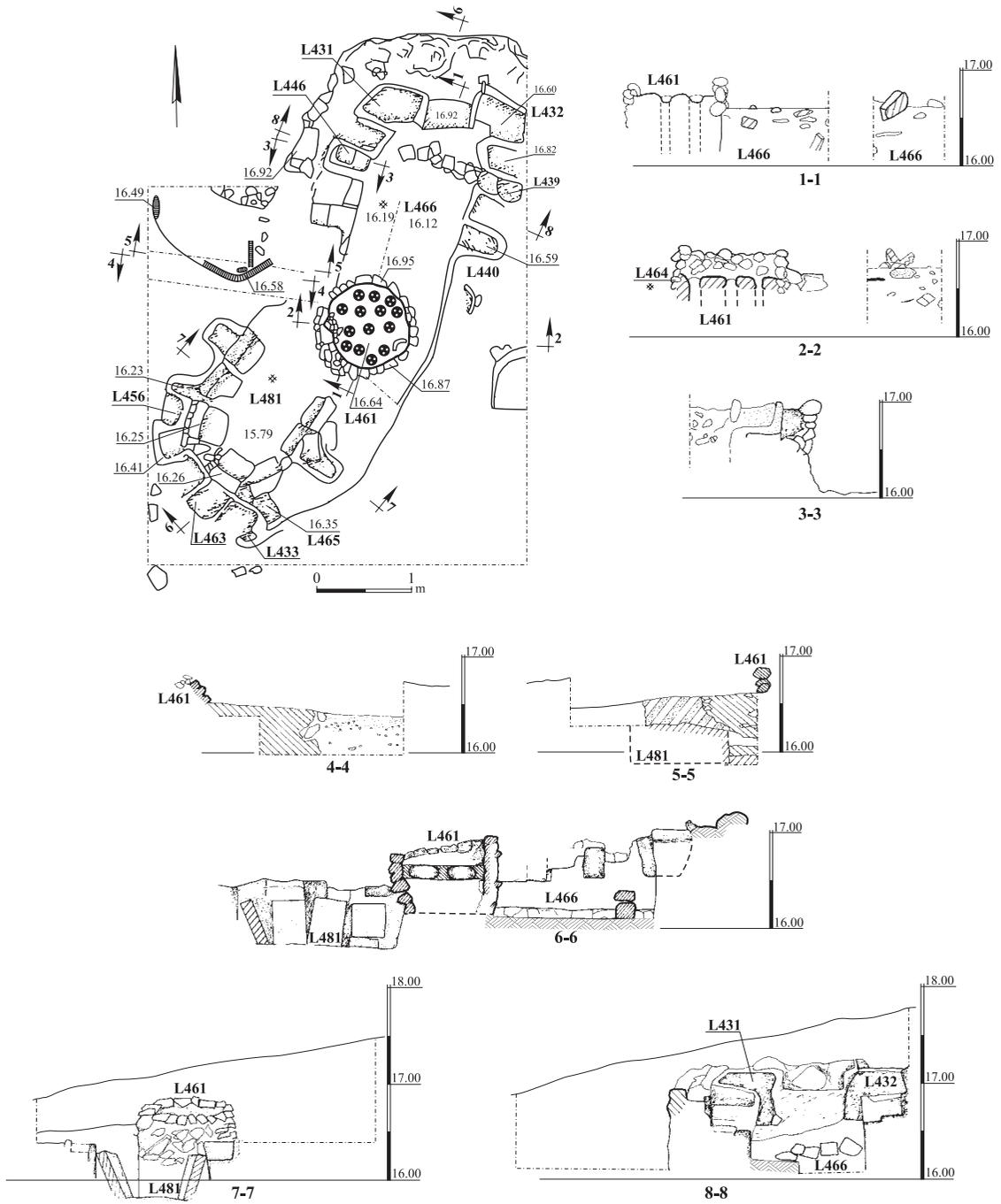
To the west of the room a segment of another wall (1.5 m wide; W445) was exposed. Its width indicates that it belonged to an extremely large building. A triangular-shaped anchor in secondary use (0.15 × 0.40 m; height 0.5 m; see Sharvit, this volume: Fig. 1), fashioned from *kurkar*, was found within the construction of the wall.

In the southeastern part of Area B1 (Sq H14), a stratum of *hamra* (L464), mixed with layers of gray material and organic matter, sealed a lower occupation level (L473) made of beaten earth. In addition to sherds attributed to the Persian period, 17 coins scattered throughout the *hamra* were recovered. These include 11 rare silver Athenian tetradrachmae bearing a likeness of the goddess Athena and an owl (see Ariel, this volume [a]: Fig 2). Although

they were not found together, these rare coins probably constitute a scattered hoard to which four other silver coins, found in the same locus, also belong. The coins are imitations and were not minted in Athens (see Ariel, this volume [a]). The hoard dates to the first half of the fourth century BCE.³

In the western part of the area, a wall segment (W423) lacking any stratigraphic connection to other architectural features was exposed close to the cliff. Atop a pair of similar kilns (L466, L481), a smaller one (L461) was built (Plan 3). Insofar as the relationship between the two lower kilns is concerned, it appears that Kiln 466 is somewhat earlier than Kiln 481, since the construction of the latter destroyed a portion of the southern section of Kiln 466. No significant typological differences were noted between the ceramics found in the two lower kilns.

The upper Kiln 461 was nearly round (0.8 × 1.1 m), constructed from small *kurkar* stones



Plan 3. Area B1, plan and sections of kilns.

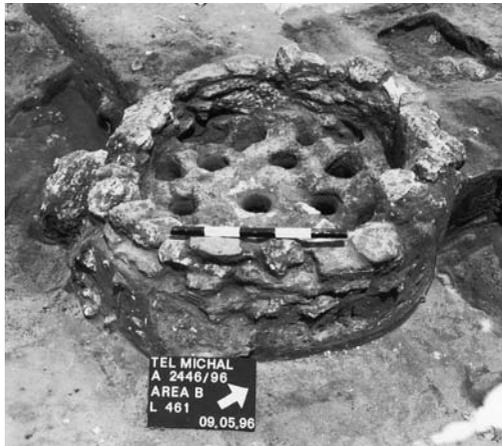


Fig. 5. Area B1, Kiln 461, looking northwest.

(Fig. 5). The combustion chamber and the well-preserved intermediate floor, upon which vessels were to be placed for firing, were exposed. Fourteen round openings (diam. 10–12 cm) for conveying air perforated the intermediate floor. The four central ones were constructed from ceramic pipes. The opening, through which fuel was inserted into the combustion chamber, was uncovered in the southwestern section of the installation. Within a thick burnt layer discerned around the kiln (L406, L407, L429, L438 and L490) were various pottery vessels that can be divided into two principal groups. The first group includes cooking pots (Loci 406, 429; see Kapitaikin, this volume: Fig. 15:2–5) jars (Loci 407, 438; see Kapitaikin, this volume: Fig. 15:7, 8), bowls (L407; see Kapitaikin, this volume: Fig. 15:1), juglets (Loci 407, 429; see Kapitaikin, this volume: Fig. 15:13–15) and an amphoriskos (L429; see Kapitaikin, this volume: Fig. 15:12) characteristic of the Persian period (second half of the fifth and the first half of the fourth century BCE). These vessels are contemporary with Strata VII–VI on the mound (see Kapitaikin, this volume). The second group comprises an assemblage of small vessels, probably votive (L429; see Kapitaikin, this volume: Fig. 15:9, 10, 12), whose forms resemble those in the first group. We have found no parallels for these vessels.

A burnt layer was discerned surrounding Kiln 461 and extending up to the walls of its combustion chamber. This layer sealed the lower kilns, and constitutes the refuse from the later kiln. A small quantity of pottery was found in the area, perhaps owing to the close proximity of the slope. An analysis of the late Persian-period vessels, as well as Attic pottery recovered from its vicinity, indicates that the installation can be dated to 450–300 BCE (Strata IX–VI on the tell; see Kapitaikin, this volume). Other debris was probably thrown down the slope or consolidated onto a part of the hill that eventually collapsed and was washed into the sea. Larger round kilns were exposed nearby in Area D of the Tel Aviv University excavations (Herzog 1989b:102–103).

In the lower, oval-shaped northern kiln (L466; 1.1 × 2.5 m; diam. 1 m), the combustion chamber was hewn into the *kurkar* bedrock and lined with clay. The walls of the chamber were preserved one meter high. Trapezoidal *tubuli* (chimneys; 35 × 40 cm) with curved angles were used for conveying hot air from the kiln's northern wall outside. 'Tongue' and U-shaped chimneys (20 × 50 cm), differing in shape from the *tubuli*, were also exposed in the preserved eastern and western walls. These chimneys for conveying the hot air from the lower combustion chamber to the upper chamber were constructed by building short pilasters against the walls. The intermediate floor used for supporting the vessels collapsed. Its remains were found in the debris within the chamber. In the northern end of the chamber a fallen arch built from bricks was discerned. The arch, together with the pillars, probably functioned as one of the supports for the suspended floor (Figs. 6, 7). Furthermore, the effects of the firing were noticeable throughout the entire chamber. A wide spectrum of colors on the clay of the walls ranges from a dazzling red in the lower inner layers to dark brown and gray on the outer layers. It is quite possible that the opening for fuel in Kiln 466 was located in the southern part of the installation and may have been destroyed during the construction of the southern kiln.



Fig. 6. Area B1, Kiln 466, looking north; in foreground—Kiln 461.



Fig. 7. Area B1, Kiln 466, looking east; note the collapsed arch. L491 is beneath the kiln floor.

Finally, the southern Kiln 481, which partially destroyed the northern Kiln 466, was built in a similar manner and is identical in its dimensions. Large, fired mud bricks ($12 \times 50 \times 40$ cm) were neatly arranged, leaning along the entire circumference of the wall of the chamber. Clearly, the bricks are not part of the collapse and were placed there intentionally, perhaps

to be removed at a later date or to reduce the volume of the chamber. No opening was found for inserting fuel into either of the lower kilns' combustion chambers. The opening of the southern kiln may have been situated on the northern side of the installation and could have been destroyed when Kiln 461 was built. From a typological standpoint, several oval kilns with U-shaped chimneys similar to those found at Tel Mikhal are known. At Tel Afeq (Kochavi and Beck 1985:5–6) three kilns attributed to MB IIB were exposed, in which the openings to the combustion chambers were built in opposite directions. These installations are much better preserved than those at Tel Mikhal. An example of kilns facing each other was found at Afeq (Kochavi, pers. comm.). *In situ* whole vessels dating to MB IIB were found within, as well as clay plugs for temperature control in the firing chamber by regulating airflow in the upper section of the chimneys. In another kiln at Tel Afeq, fourteen of these plugs were found loose nearby.⁴

Four nearby sites have similar kilns dated to MB II. One was discovered in the vicinity of Tell Qasile (Ayalon 1986:13), and another at Tell Gerisa. This latter kiln was described as having “extraordinarily curved walls” (Herzog 1993:480). At Ramat Aviv, Kletter recently excavated an installation that he attributes to MB II (Kletter and Gorzalczany 2001:97–99). This installation also has curved walls and U-shaped chimneys along its entire circumference. Rectangular slabs made from fired mud were found within the kiln that are absolutely identical in nature and size to those that encircled the firing chamber in Kiln 481 at Tel Mikhal. In Tel Aviv, Sari excavated another similar installation on Yehoshua Ben Nun Street that also dates to MB II (Kletter and Gorzalczany 2001:99–100). Similar kilns were found at Jaffa and briefly mentioned by Kaplan (1972:76).⁵

Regarding the dating of the lower kilns, why was such a scant amount of kiln waste found? It is unreasonable to assume that the area was cleaned and the debris removed; hence, it seems logical to assume that the potters exploited the

slope's proximity for disposing the debris. Only small quantities of distorted greenish-gray kiln debris, indicating intense heat, were found within the oval kilns' combustion chambers (Kapitaikin, this volume: Fig. 16:2, 5).

The ash layers of the upper kiln sealed the lower kilns. The vessels were mostly found at the bottom of the combustion chambers and in the chimneys. No Persian-period sherds were found in the lower kilns. The finds date to the seventeenth century BCE (Kapitaikin, this volume: Fig. 16), that is, the transitional phases from MB IIB to MB IIC.

A typological comparison of the kilns' plans and dimensions with well-dated kilns nearby supports this dating. It is interesting to note that in recent years similar installations have been found within a relatively limited geographical area. This may suggest a regional aspect of the technology of making ceramics at the end of the MB II (Kletter and Gorzalczany 2001).

During the Persian period, the potters return to the exact location where the Middle Bronze Age kilns were built, following such a long settlement hiatus. This indicates that the location of the ceramic workshops was carefully chosen in terms of production, convenience, winds and ecology. Topographically, this location appears to be remote from the tell. The workshops certainly constituted a nuisance, and therefore were distanced from the settlement.

AREA C1

This northern area (Plan 4) borders a single square excavated by the Tel Aviv expedition (their Area F; see Fig. 1). Unfortunately, the preservation of remains in this area was poor, since the sand layer covering the northern ridge is shallow and the underlying *kurkar* was partially exposed to the elements.

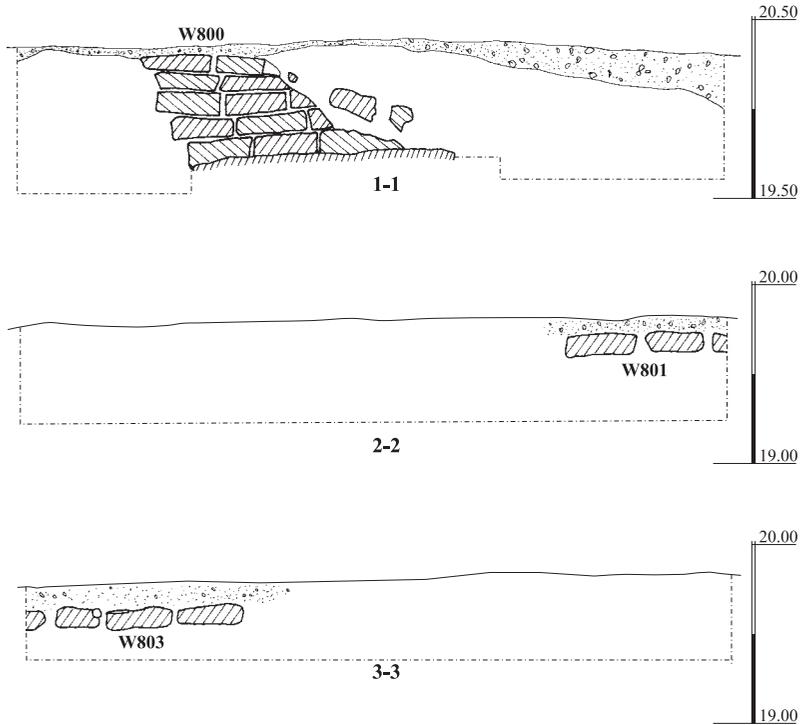
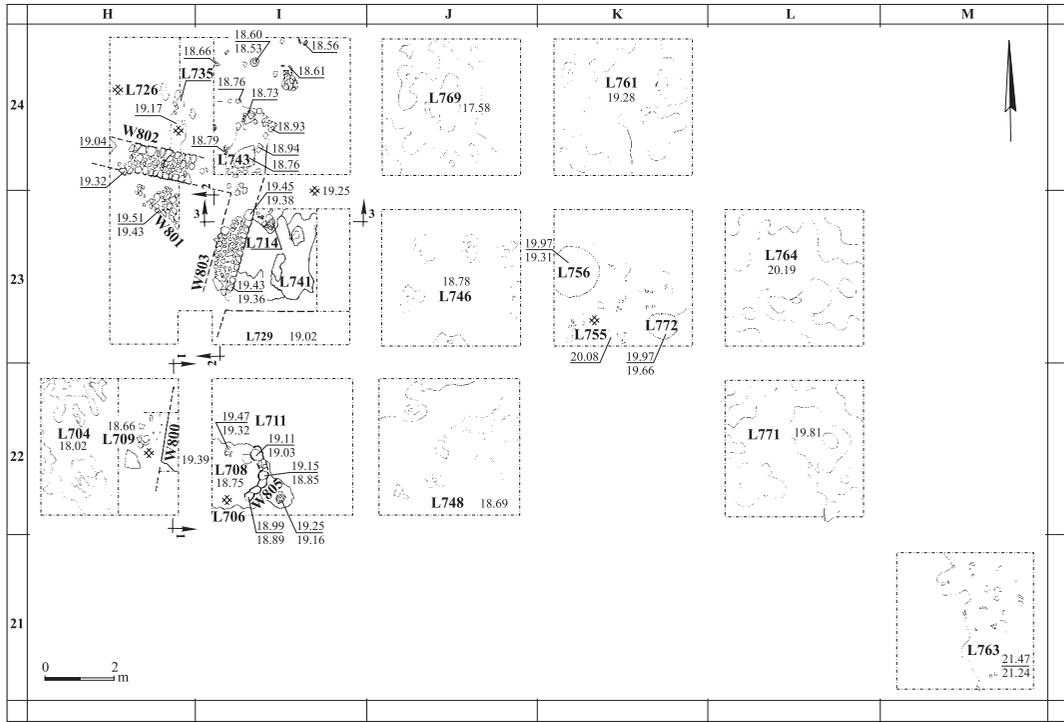
The corner of a building (formed by W802 and W803) was the principal architectural feature uncovered here. Foundation walls (0.85 m wide) were built from rough *kurkar* stones of various sizes. The general alignment of the building was on a north-south axis, with

a slight inclination toward the east. A large amount of brick material was found in the area surrounding the building, apparently remains of upper walls built on the stone foundations. Thick layers of *hamra* mixed with ash and large amounts of ceramics were also found.

Six courses of another mud-brick wall (W800) were exposed south of W803; it seems to be the continuation of W803. Only a short segment of this wall was preserved and the plan of the building could not be reconstructed.

Several floors were revealed that stretch up to the walls described above. Floor 735 extends southward of W802. This wall also cuts through Floor 726. A fragment from an Attic lekythos (see Kapitaikin, this volume: Fig. 14:39) was found on Floor 726 north of W802. The vessel dates to the last quarter of the fifth century BCE and is likely to provide a satisfactory date for the locus. A number of other floors were revealed east of W803, including Floor 714 that extends up to the wall and Floors 733 and 741, which are cut by W803. Coin 7024, dating from the reign of Alexander of Macedon or perhaps after his death, was found in L703, which sealed the floor in L714 and provides a *terminus ante quem* for that locus (see Ariel, this volume: A12). The corner formed by W802 and W803 was disturbed by a later pit (L743) containing a large amount of jar fragments that could not be restored.

A floor made from plaster and tiny stones (L709) was exposed to the west of the southern part of W800. A bronze bracelet was found there, but no datable finds were recovered from its surface. Another plaster floor (L708) was exposed east of W800. A round installation made from stones and pebbles (W805) was atop the floor. Two of the stones in the construction of the installation at one time were used as ballast in boats. A petrographic analysis of these stones indicates they apparently originated from the area of Cyprus (see Gorzalczany, this volume [b]). It was common practice to collect stones and use them for stabilizing boats at sea. Finding these stones at Tel Mikhal indicates shipping relations and commerce and perhaps



Plan 4. Area C1, plan and sections.

even the existence of an anchorage (although not necessarily a harbor) during the Persian period. Following the routes of merchant ships through petrographic analysis of the ballast stones can shed light on commercial trends in the ancient Near East. However, in this instance one should be doubly cautious since the ballast stones were not found on the ship, but rather were incorporated in secondary use into a built installation. The stones may have been off-loaded from another ship in a different port before being brought to Tel Mikhal. Hence, there are serious difficulties in attempting to reconstruct sailing routes by means of these finds.

Another important find from Area C1 is a lead pendant used as an amulet. It depicts Nefertem, an Egyptian deity worshipped in Memphis as part of the Memphis trinity that included Ptah, his mate Sekhmet and their son Nefertem (see Gorzalczany, this volume [a]: Fig. 1). The pendant was found in L706, which consists of a fill extending to the stone installation, on top of the floor in L708. Until now twelve examples of this amulet have been found in Israel, beginning from Iron IIA. Only two examples are from the Persian period. They are usually made of faience or glazed materials. This is the first example of this kind of object made from lead (see Shalev and Sari, this volume). Since Nefertem is thought to be a non-syncretic deity that does not merge with local gods, the ballast stones and the amulet might indicate an Egyptian presence at the site, probably through sailors or merchants of Egyptian origin.

CONCLUSIONS

Analysis of the finds from the northern hill reveals a similar phenomenon to that observed in the Tel Aviv University excavations, the stark contrast between the rich and copious finds at the site and the poorly preserved and scant architectural remains (Herzog 1989b:112). Heavy damage was caused to the site by natural sources and man's activities, such as sand quarrying and modern building.

The earliest settlement on the northern hill occurred in prehistoric times and continued during the Middle Bronze Age, when an industrial area was established there. In the Iron Age there was sporadic settlement activity comprising mainly winepresses. Toward the end of the Persian period (Strata VI–VII on the tell) the northern hill reached its greatest population. By then, it functioned as an industrial area where an extensive range of activities, including pottery workshops and metal production, took place, as well as an area for commerce and storage. The majority of these activities were conducted outdoors on open-air work surfaces. Several buildings were possibly constructed for storage, probably for administrative purposes.

The kilns dating to MB IIB indicate that the area was also developed in this early period. The occupation level is represented here by a ceramic industry distanced from the tell (Strata XVII on the tell). No evidence was found of residential dwellings in Area B1. This area was used for industrial purposes and was detached from the tell, certainly for health and ecological reasons like smoke and unpleasant smells.

The picture regarding the finds from the Persian period is quite different. In contrast to the claim by the Tel Aviv excavators that the Persian-period settlement on the northern hill was limited primarily to the southern part of the hill (Herzog, Rapp and Muhly 1989:5), our excavations show that habitation existed over the entire length of the northern *kurkar* ridge. Whereas in the early part of the Persian period, the northern hill served as a cemetery (Herzog and Levy 1999:13–32; Davies, Kostamo and Jyring 1989:153), in the later stages of the period this area also functioned as an industrial, storage and commercial zone. Furthermore, the general orientation of the scant remains of walls in Area C1 matches that of Building 270 in Area A1. This fact may indicate an overall architectural planning along an axis parallel with the line of the ridge.

Building 270 and its silos on the northern hill also show that the area was used for industry and storage in Hellenistic times. The Rhodian

handles and stamps, a Hellenistic lamp and the numismatic evidence, namely early second century coins, show that the buildings in Area A1 apparently continued in use at this period. Since no signs of intentional damage or destruction were discerned, it appears that the area was abandoned toward the end of the second century BCE.

The silos were probably used for storing produce brought to the site via boat or overland from the Sharon. Undoubtedly, the site's proximity to the sea greatly influenced its economic ties, as the large number of fishing-related finds, such as fishhooks and weights for nets makes apparent. Other finds used in shipping include the ballast stones discovered in Area C1, from Cyprus or the Aegean Sea, and a stone anchor in secondary use as part of the construction of an installation.

Although the sandy soil in its vicinity was not particularly fertile, the site's economy was primarily agriculture-based, as shown by the winepresses exposed in all of the excavations in the area.

The wealth and prosperity of the inhabitants of the site is clear from the large quantity of expensive metal objects, most of which are made of bronze, indicating the possible existence of a metal industry (see Shalev and Sari, this volume). This fact was already observed in earlier excavations at the site (Muhly and Muhly 1989:267–295; Lupu 1989:296–313). The numismatic finds too include extremely valuable, Athenian-style silver tetradrachmae. There was also a very large quantity of imported Attic and Eastern Greek pottery and an unusually high proportion of cattle remains. Since cattle are expensive animals to raise, the large amount of cattle remains indeed indicate wealth.

The international ties to the site are apparent from the imported ceramics, coins, and other finds related to maritime transport. The question regarding the existence of a built-up port at Tel Mikhal during the Persian period cannot be answered unequivocally. However, it is quite possible that an anchorage offshore existed for

transferring goods by rowboats, or perhaps, an anchorage existed at the mouth of one of the area's rivers such as Nahal Gelilot. Two recent studies have shown that extensive maritime activity existed in the vicinity of Tel Mikhal and along the entire coastal strip beginning from the Middle Bronze Age until the Late Middle Ages (Galili, Dahari and Sharvit 1993:61–77; Galili and Sharvit 1994:269–296).

A seal found in Avigad's excavations is epigraphically similar to Samaritan seals (Cross 1966:209, n. 2) and may support Sade's (this volume) theory that the nutritional regime based on cattle is an indicator for the Samaritan kosher diet. Nevertheless, other explanations are possible. The reason for the large amount of cattle bones could also be explained as a site specializing in slaughtering this kind of animal. The marshes formed by the flooding of the rivers in the swale between the *kurkar* ridges (especially that to the north of the site) were particularly suitable for raising cattle both because of the availability of drinking water, as well as vegetation for grazing along the periphery.

A comparison with the results of the excavations at Samaritan Tel Hefer, located in the heart of the Sharon region, shows that cattle bones at that site do not exceed one-third of the total number of animal remains recovered (Yannai, forthcoming). This fact perhaps contradicts the attempt to ethnically associate the site at Tel Mikhal with the Samaritans based solely on the amount of recovered cattle remains. The anomalous quantity of cattle bones in the faunal finds also stands in contrast to the proportion of cattle bones from contemporaneous strata on the tell. Ethnic association cannot be determined by these archaeozoological finds alone.

Concerning the ethnicity of the site's residents, the finds on the northern hill are exceptionally cosmopolitan as befitting a commercial center. The most outstanding objects of these finds are from the group of Phoenician artifacts, including a metal pendant that represents the Phoenician deity *Tanit*. In addition, the Egyptian

amulet of the god Nefertem seems to indicate the presence of sailors of Egyptian origin since that deity is neither syncretic nor does, as far as we know, merge with local deities.

Besides the production of regular storage vessels, during the Persian period small (votive?) vessels were manufactured, nearly identical to the known contemporary ceramic assemblage. It is quite possible that these vessels were made for cultic activities conducted in the neighboring site at Makmish.

The quantity of coins minted in Sidon that were recovered from all the excavations (during the years 1977–1980 and 1996) is much greater than those minted at Tyre. This fact is in stark contrast to the finds from other contemporary sites in Israel. Furthermore, it supports Kindler's suggestion that Tel Mikhal constituted a quasi-Sidonian enclave along the coast (Kindler 1989:320).

Upon which events occurring in the fourth century BCE can we base a chronological framework for the abandonment of Tel Mikhal? Was it the lack of stability, which was certainly caused by the attempts of the Persian rulers to conquer Egypt in 351/350 BCE? Or should the abandonment of the site be attributed to the situation created during or as a result of the revolt by Tennes, king of Sidon? The outcome of this revolt, which had failed, was detrimental to the cities of Israel (Barag 1966:11–12) and

many sites were harmed (Tal 1999:211). The geopolitical situation in the second half of the fourth century BCE too was characterized by unrest and instability in the southwestern part of the Persian Empire (Barag 1966:6). Extensive military activity during the period of the Diadochi and invasions occurred in 320, 311 and 302 BCE (Bar Kochva 1996:76–77). Herzog contends that Tel Mikhal was not conquered by Alexander the Great, but rather continued to exist until the end of the fourth century like other sites along the coast of Israel (Herzog 1989a:113; Stern 1982:255; Elgavish 1968:47).

The numismatic evidence (see Ariel, this volume) and the dating of the hoard, as well as the ceramic material (see Kapitaikin, this volume [a]), suggest the settlement on the northern hill at Tel Mikhal in this period is contemporary with Stratum VI (400–350 BCE) on the tell.

By the end of the Persian period, a gradual decline began in the importance of Tel Mikhal, which was surpassed by Apollonia–Arsuf as the leading commercial and industrial city in the southern Sharon (Roll 1999:6; Gophna and Ayalon 1989). The decline of Persian and Hellenistic sites is generalized in the region, including Tel Kudadi (Avigad 1993), Tel Poleg (Gophna 1973:111) and Ramat Aviv (Gorzalczany 1998:54; 1999a:53–54; 2000:7).

APPENDIX: LOCUS LIST

Beginning Locus	Final Locus	Description	Related Finds
<i>Area A1</i>			
118	118	Silo in room 270	
130	130	Silo north of room 270	
140	140	Refuse pit	Burnt animal bones
142	142	Fill	
169	159	Floor	
159	169	Floor	
166	166	Floor	
173	173	<i>Tabun</i> in L139, L223	Bronze figurine of <i>Tanit Pene Baal</i>
181	181	Living surface	
202	202	Surface	
203	203	Surface	

APPENDIX: LOCUS LIST (cont.)

Beginning Locus	Final Locus	Description	Related Finds
212	212	Fill	
247	247	Fill	Cattle bones
223	250	Fill	Cattle bones
139	250	Living surface	Animal bones, metal
206	250	Living surface	Cattle bones
250	250	Living surface	Cattle bones, pottery
185	250	Living surface—burnt layer	Cattle bones
255	255	Living surface	Cattle bones
260	260	Living surface	
263	263	Fill	
264	264	Fill	
266	266	Living surface	
270	266	Room	Pit 118
166	Room 166	Floor	Jar B1198
170	Room 166	Floor	Jar B1198
<i>Area B1</i>			
406	406	Surface	
407	407	Burnt layer	<i>Ṭabun</i>
410	410	<i>Ṭabun</i>	
426	426	Fill	Animal bones
429	429	Burnt layer	
438	438	Burnt layer	
447	447	Living surface	
450	450	Living surface	
451	451	Burnt layer	Votive vessels
458	458	Fill	
461	461	Small kiln intermediate floor	
464	464	Fill—living surface	Hoard, fibulae, nails
495	466	Kiln	
466	466	Kiln firing chamber	Collapsed arch
431	466	Kiln chimney	
432	466	Kiln chimney	
439	466	Kiln chimney	
440	466	Kiln chimney	
446	466	Kiln chimney	
469	469	Fill	
485	473	Fill	Hoard
473	473	Fill—living surface	Hoard
481	481	Kiln firing chamber	Burnt mud bricks
433	481	Kiln chimney	
456	481	Kiln chimney	
463	481	Kiln chimney	
465	481	Kiln chimney	

APPENDIX: LOCUS LIST (cont.)

Beginning Locus	Final Locus	Description	Related Finds
483	483	<i>Ṭabun</i>	
484	484	<i>Ṭabun</i>	
485	485	Burnt layer	
489	489	Burnt layer	
490	490	Burnt layer	
491	491	Sounding trench	
497	497	Fill	
500	500	Fill	
503	503	Fill	Fibula
506	506	Fill	
507	507	Fill	
511	511	Fill	
512	512	Room	Alabaster jug
<i>Area C1</i>			
703	703	Floor	
704	704	Fill	Oil lamp
706	706	Fill	Attic lekytos, Egyptian amulet
708	708	Floor	
709	709	Floor	Bronze bracelet
714	714	Floor	Juglet
719	719	Refuse pit	
726	726	Living surface	Fibulae
728	728	Fill	
732	732	Fill	Juglet, fishing weights, nails
733	733	Living surface	Juglet, fibula
735	735	Floor	
741	741	Floor	
743	743	Refuse pit	Jar, seeds, animal bones
746	746	Fill	
755	755	Living surface	
756	756	Refuse pit	Animal bones, Iron A pottery?
765	765	Fill	Eastern Greek bowl
769	769	Fill	
772	772	Refuse pit	
774	774	Refuse pit	Iron A pottery
805	805	Installation	Ballast stones in secondary use

NOTES

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² For a summary of the geological findings of the area surrounding Tel Mikhal and the paleogeography of the Sharon Plain see: Bakler 1989; Gifford and Rapp 1989; Gifford, Rapp and Hill 1989.

³ For an extensive and thorough discussion on the dating of the hoard, see Ariel, this volume (a).

⁴ After the kilns at Afeq went out of use, tombs situated atop the kilns were found to contain ceramic vessels and scarabs that also date to MB IIB (Kochavi, pers. comm.). Although the excavation at Tel Afeq has not yet been published, the author was kindly permitted to inspect the plans, drawings and photographs of the kilns found there, which are typologically identical to the installations at Tel Mikhal. My thanks are due to Moshe Kochavi for his helpful advice.

⁵ The kilns at Jaffa are as yet unpublished. However, the author had the chance to examine drawings and records of Kaplan's Jaffa excavations, currently in the IAA archives. It seems that one of the kilns there is of the same type as the kilns at Tel Mikhal.

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