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Khirbat Ḥasan: Water Control Systems and Agriculture-Related Activities along Naḥal Har'el

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Introduction

Khirbat Ḥasan is located on a limestone ridge northeast of Kefar Uriyya, in the western part of the lower Judean Shephelah (Fig. 1; map ref. 196187–800/633619–4332). The northern lower edges of the site extend along Naḥal Har'el, only some 15 m from the streambed and along Road 44 from Tel Aviv to Bet Shemesh. The region's topography is characterized by hills (350–400 m asl) dissected by deep valleys. The excavated areas are located in a wide valley (165–180 m asl) on the Naḥal Har'el floodplain, where a mass of colluvial soil had

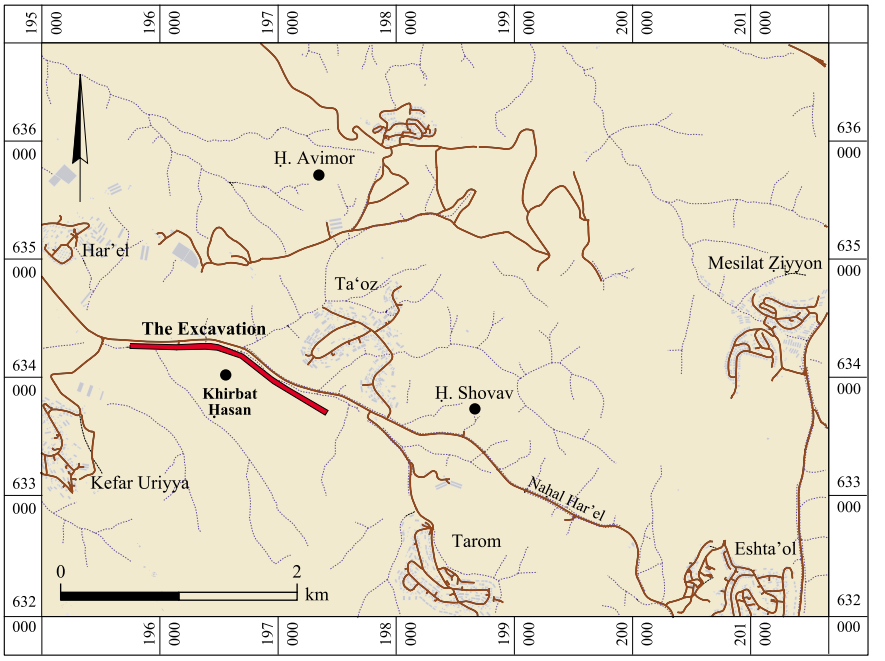


Fig. 1. Location map.

eroded from the hills and accumulated. There is evidence that in antiquity, the inhabitants of the region had attempted to regulate the erosion that threatened agricultural activities.

The hilly terrain north and south of Khirbat Ḥasan was densely settled throughout antiquity; noteworthy are sites like Ḥorbat Avimor and Ḥorbat Shovav from the biblical and classical periods. Most settlements in this region, including Khirbat Ḥasan, were situated on hills, spurs and ridges, and not along streams.

The soil in the area of Khirbat Ḥasan is dark brown, changing in texture according to its distance from the stream. Sometimes, the soil is mixed with chalk fragments and is somewhat lighter, probably alluvial soil that was directly connected with the streamflow; in other cases, it is completely sterile, with no stone fragments, and seems to have originated in colluvial eroded soil.

In 2010, the Mekorot Water Company laid a fifth water pipe to Jerusalem, between Kefar Uriyya and Moshav Tarom, along the northern margins of Khirbat Ḥasan. During these works, the heavy machinery stumbled upon archaeological remains—stone walls and surfaces spreading discontinuously along c. 1.5 km (map ref. 195700–6650/634200–285; Fig. 2)—seemingly comprising separate clusters. In September–November 2011, a salvage excavation was conducted at the site,[1] and eight areas were opened, described below from west to east (Fig. 2):[2] in Area A, water control systems dating from the Intermediate Bronze Age and the Roman–Byzantine periods were discovered; Area G yielded Hellenistic-period pottery, a Roman–Byzantine rural road and agricultural terrace walls; in Area C, Chalcolithic-period pottery and an Iron Age water control system were unearthed; in Area N, Intermediate Bronze Age occupation remains and agricultural activities were documented; Area B yielded Chalcolithic-period pottery, Intermediate Bronze Age working surfaces and a Roman–Byzantine rural road; in Area R, Roman–Byzantine dams were exposed; in Area Y, an Early Bronze Age III occupation and a Roman–Byzantine structure and rock-cut installations were observed; and in Area T, a Roman–Byzantine bath was found.

[1] The area was prepared for excavation by Ron Be'eri, Roei Greenvald, Natalia German, Pablo Betzer and Zohar Turjeman. The excavation (Permit Nos. A-6305, A-6306, A-2011), on behalf of the Israel Antiquties Authority, was directed by Yitzhak Paz, with the participation of Amir Golani, Barak Monnickendam-Giveon, Nathan Ben Ari, Natalia German, Rina Avner, Yehuda Rapuano, Orly Moschevitz (area supervisors), Nissan Nehama and Ra'ed Abu-Halef (administration), Oren Ackermann (geomorphology), Avi Hajian, Mark Kunin, Mendel Kahn and Rivka Mishayev (surveying), Yael Yulowitz (photography), Irena Lidski-Reznikov (pottery drawing), Elena Ilana Delerzon (location map) and Natalia Zak and Einav Drimer (plans). Material processing was by Lena Kuperschmidt (metal laboratory), Donald T. Ariel (numismatics), Ofer Marder and Omri Barzilai (flint scientific advisory), Anat Cohen-Weinberger (petrograpghy) and Barak Monnickendam-Giveon (Hellenistic–Medieval pottery).

[2] The areas are 20–600 m apart. Each area comprises several squares, some are clustered together and others are isolated.

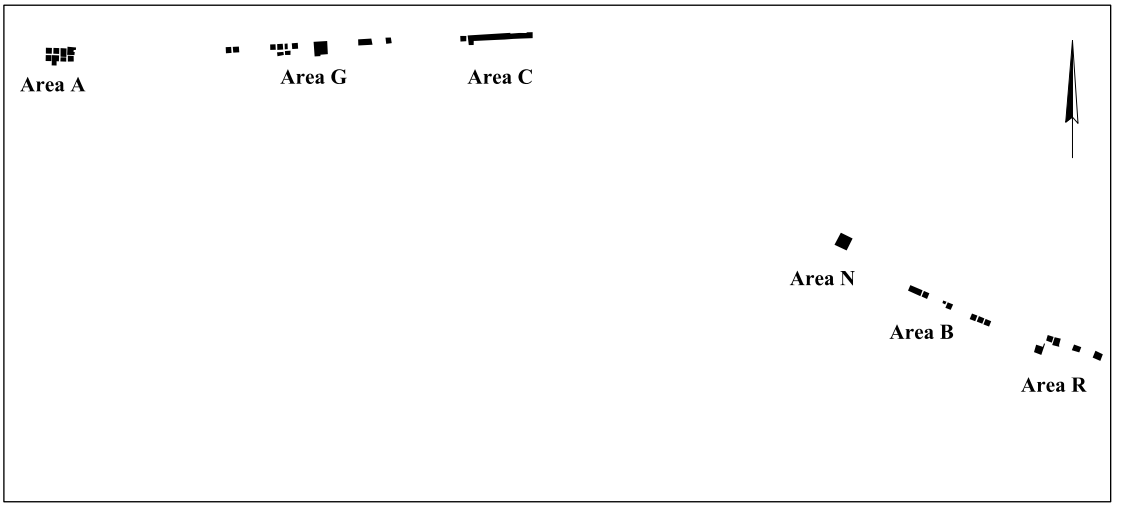


Fig. 2. Location of the excavated areas.

Environmental Conditions

Geologically, the site's environs are primarily characterized by alluvial sediments composed of horizons with fine material alternating with coarse gravel. The alluvial floodplains are bordered on the north and south by hills of Senonian white chalk of the Ghareb Formation, Paleocene chalk, and marl of the Taqiye Formation. Eocene white chalk of the 'Adulam Formation occurs on the upper part of the hills (Sneh et al. 1998; Rosensaft and Sneh 2010). The chalk formation is primarily covered by thick *nari*, a calcrete crust (Buchbinder 1969).

Pedologically, the floodplains are composed of clayey grumusol soils (vertisols). On the hills north and south of the site brown rendzina is found on the *nari* crust and pale rendzina soils on the chalk bedrock (Dan et al. 1975; Dan, Fine and Lavee 2007; Singer 2007).

The area has a sub-humid Mediterranean climate, characterized by hot dry summers and cool rainy winters, with a mean annual temperature of 16°–18°C. The mean temperature in January, the coldest wet month, is 12°–14°C, while in August, the warmest dry month, it reaches 26°–28°C (Shahar 2007). The rainy season generally lasts from October to May, with a 500–600 mm annual rainfall (*Israel Meteorological Service* 2000).

Botanically, the site is characterized by Mediterranean vegetation, though the current vegetation in the floodplain is dominated by cultivated plants and their associated flora. The hills are covered with planted pine (*Pinus*) and carob (*Ceratonia siliqua*) trees (*Ministry of Environmental Protection* 2011).

The Excavations

The following discussion is arranged in chronological order, presenting the relevant remains from each area, excluding Area T. The Roman–Byzantine-period bath excavated in Area T and the rock-cut installations found in Area Y will be published separately (Avner, forthcoming).

The Chalcolithic Period

A score of body sherds from the Chalcolithic period were found in Areas B and C. The only diagnostic sherd was a fragment of a triangular handle (Fig. 3:1) made of crude white clay, perhaps part of a small churn. It was found in a fill in Area B (L260; Plan 4: Sq 7), at the deepest level reached below the Intermediate Bronze Age stone surfaces (see below). Parallels may be sought at Shoham (North) (Commenge 2005: Fig. 6.30:6, 7).

Early Bronze Age II–III

Early Bronze Age pottery sherds were detected in Areas C, B and Y. In Area C, the sherds were found among pebbles that had accumulated in the Iron Age water control system (L734 and L739; Plan 5: Sqs H, J). As they were water-worn, they seem to have washed away from a nearby site. The pottery from Area B came from fills (L243 and L248; Plan 4: Sqs 7, 8) excavated beneath the Intermediate Bronze Age stone surfaces (see below), and thus, may reflect some unclear earlier activity. The pottery from Area Y seems to be the only assemblage reflecting a genuine *in situ* occupation. Mostly not water-worn, it included c. 20 Khirbet Kerak Ware (henceforth, KKW) sherds found in one spot, attesting to a specific ad-hoc activity (see below).

Areas B and C: Pottery

Fifty-six diagnostic sherds were collected in Areas B and C, 18 of them are presented in Fig. 3. Most of the sherds—fragments of flat bases—were not drawn. Based on their typological characteristics, the sherds should be mostly dated to EB III, with some dating to EB II.

Deep In-Turned Rim Bowls (Fig. 3:2–5).— Straight walled, deep in-turned rim bowls were found in Area C. One of them, coarsely made, shows traces of red wash. They are common in EB III contexts, e.g., at Tel Yarmut (Miroschedji 1988: Pl. 42:5, 7).

Platters (Fig. 3:6–8).— Three different types of platters were found in the assemblage. The platter in Fig. 3:6, with a plain upright sharpened rim, is common in both EB II and EB III contexts. Based on its coarse firing and brown clay, it may be dated to EB III, with parallels from sites like Tel Yarmut (Miroschedji 1988: Pl. 37:11). Figure 3:7, with a wide concavity

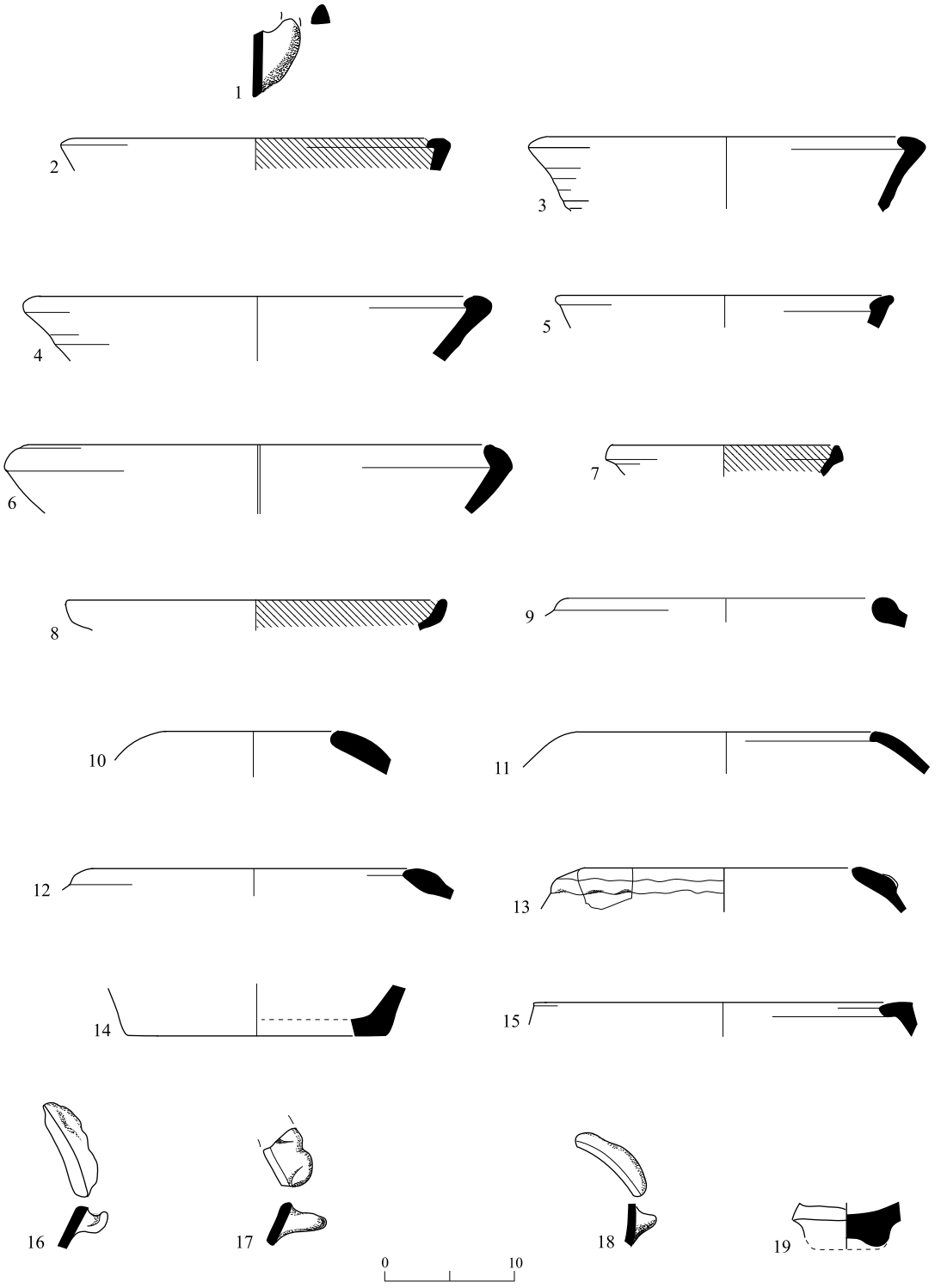


Fig. 3. Areas B and C, Chalcolithic (1) and EB II–III (2–19) pottery.

◂ **Fig. 3**

No.	Vessel	Area	Locus	Basket	Description
1	Handle	B	260	2088/1	Coarse buff clay
2	Bowl	C	706	7032/1	Brown clay, gray core, traces of red slip
3	Bowl	C	720	7035/1	Brown clay, gray core, traces of red slip
4	Bowl	C	739	7092/1	Buff clay, gray core
5	Bowl	B	260	2088/2	Pink clay
6	Platter	B	260	2088/3	Pink clay, brown core
7	Platter	C	734	7089/1	Buff clay, traces of red slip
8	Platter	C	722	7068/1	Orange clay, traces of red slip
9	Holemouth	C	722	7068/2	Brown clay, gray core, large grits, soot remains
10	Holemouth	B	248	2077/1	Gray clay
11	Holemouth	B	243	2078/1	Buff clay, gray core
12	Holemouth	C	754	7107/1	Orange clay, gray core, plastic decoration
13	Holemouth	B	229	2036/1	Orange clay, gray core, plastic decoration
14	Storage jar	C	715	7046/1	Buff clay
15	Vat	C	739	7092/2	Orange clay, gray core
16	Handle	C	750	7100/1	Orange clay, gray core
17	Handle	C	734	7064/1	Orange clay, gray core
18	Handle	B	260	2088/4	Orange clay
19	Chalice	B	225	2038/1	Orange clay, black core, poorly fired

below its rim, may have parallels at Tel Yarmut (Miroschedji 1988: Pl. 38:1). Figure 3:8, with an out-turned rim, a red slip and possible traces of pattern burnishing, clearly dates to EB III. Parallels for this vessel were found at nearby Ḥorbat Shovav (Gophna and Paz 2008: Pl. 1:5–7) and Tel Yarmut (Miroschedji 1988: Pls. 41:4; 45:11).

Holemouth Vessels (Fig. 3:9–13).— These five specimens can be roughly divided into two types. Vessel Nos. 9–11, with plain or rounded thickened rims, were made of pink or brown clay and had light inclusions. They can be found in either EB II or EB III contexts at sites such as Tel Yarmut (Miroschedji 1988: Pl. 27:11–17). Vessel No. 10 was very coarsely made; its shiny calcite inclusions and soot marks possibly attest to its use as a cooking pot in EB III (Miroschedji 1988: Pl. 39:12). The vessels in Fig. 3:12, 13, in contrast, were made of orange clay, and have a distinct ‘shark nose rim’, an applied plastic rope decoration, and were probably washed with white lime material. Their manufacture technique, similar to that of storage jars, suggests that these holemouths were most plausibly used for storage. They can be securely dated to EB II, with parallels found at nearby Ḥorbat Shovav (Gophna and Paz 2008: Pl. 2:2, 3), Tel Yarmut (Miroschedji 1988: Pl. 20:11, 12) and Tel Dalit (Gophna 1996: Fig. 51:7).

Jar Base (Fig. 3:14).— This is a typical EB II–III jar base.

Basin (Fig. 3:15).— A small fragment of a large, coarsely made basin was found in Area C. It was dated to EB III, with parallels at Ḥorbat Shovav, Tel Yarmut and Lakhish (Gophna and Paz 2008:58, Pl. 1:9–11).

Handles (Fig. 3:16–18).— These specimens belong to ledge handles, most common in Early Bronze Age sites, mainly in Southern Canaan. Parallels were found at Ḥorbat Shovav (Gophna and Paz 2008: Pl. 2:10, 11).

Chalice (Fig. 3:19).— A fragment of what seems to have been a chalice was found in Area B. It was made of brown clay and was poorly fired. This type is generally dated to the Early Bronze Age, as, for example, the chalices from Bet Yeraḥ (Paz 2006: Fig. 7.28:6).

Area Y: Occupation Phase

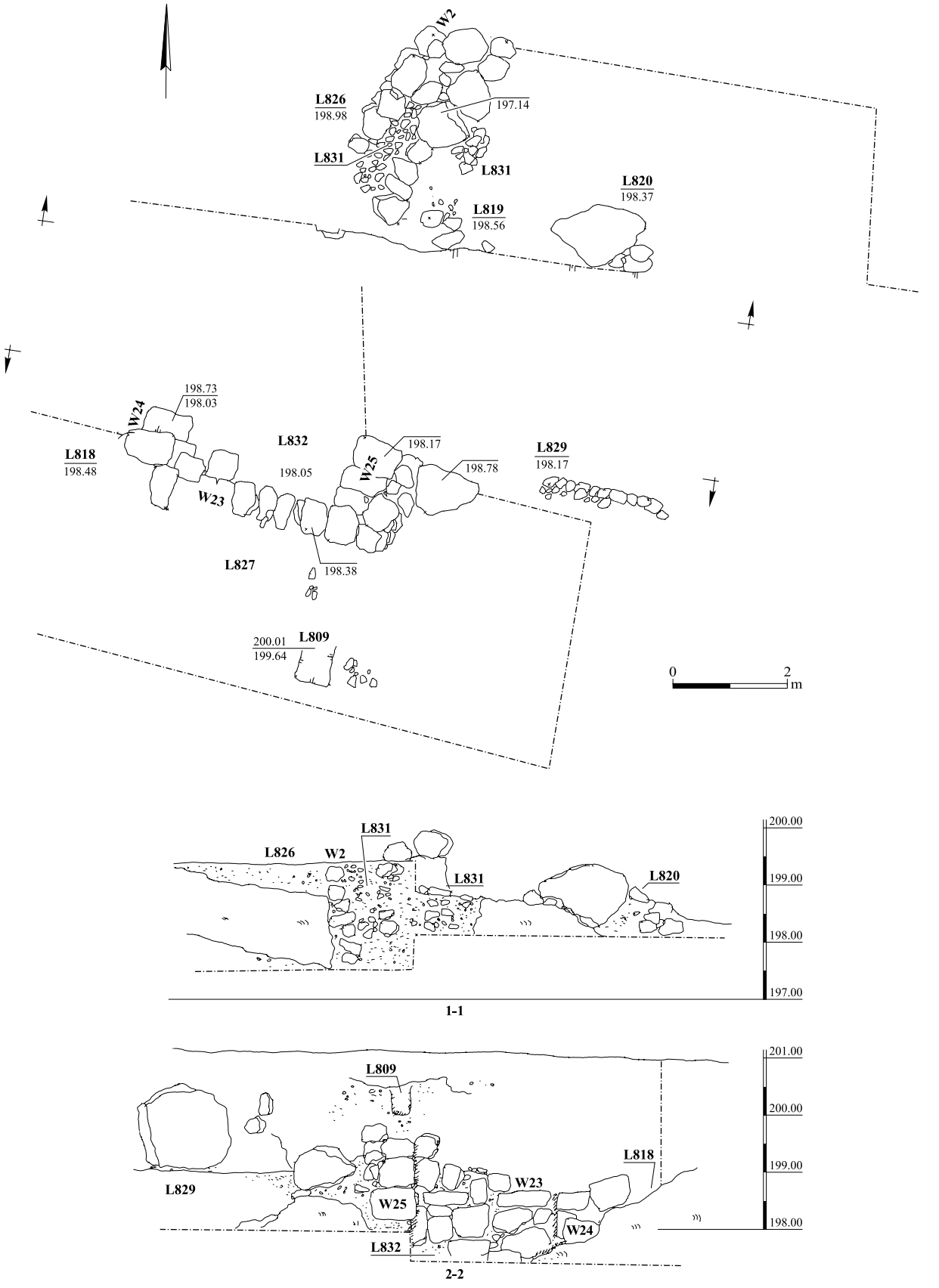
This area yielded important occupation remains securely dated to EB III, comprising stone pebbles arranged on bedrock, a stone fill and scattered pottery. The pottery finds are typical EB III types, including an impressive concentration of 33 KKW sherds. Since these remains were badly disturbed by a wide trench excavated by a bulldozer, the study of this EB III episode is based on the finds from L814 and L818 (Plan 1) that were excavated south of this trench.[3] Unlike the water-worn pottery from Areas B and C, the sherds from Area Y were mostly not so, and seem to have remained *in situ*. South of the trench, a fill (L829) of small stones, mixed with EB III potsherds, was located in what seemed to be a depression in the bedrock.

Khirbet Kerak Ware

The abundance of KKW sherds (n = 33) at the site is striking compared to other EB III sites in Southern Canaan. The excavated sites in the Judean Shephelah have yielded only a meager amount of KKW sherds (see, e.g., Getzov, Paz and Gophna 2001:36). This is best illustrated at Tel Yarmut, the most important urban center in Southern Canaan, where less than a dozen KKW sherds were found, with the only vessel from a secure context being a sinuous sided bowl (Miroschedji 2000:328, Fig. 18.5:5). At other sites, like Tel Ḥalif, Lakhish and mountainous ʻAi, numerous EB III sherds were found, but the only diagnostic KKW sherds were related to small bowls (e.g., at ʻAi—Callaway 1980:161, 193).

The enigmatic site of Har Ḥemar, in the Dead Sea region, provides another location where large amounts of KKW, including bowls, kraters and cooking vessels, were found, pointing, perhaps, to a physical presence of 'KK people,' identified by Yekutieli (2006) as possible mercenaries. While the latter site is an exception in any respect, the small scatter of KKW from Area Y seems to reflect some type of occupation (see below).

[3] Note that the walls on Plan 1 are Byzantine and therefore, are not discussed here (see Avner, forthcoming).



Plan 1. Area Y, plan and sections.

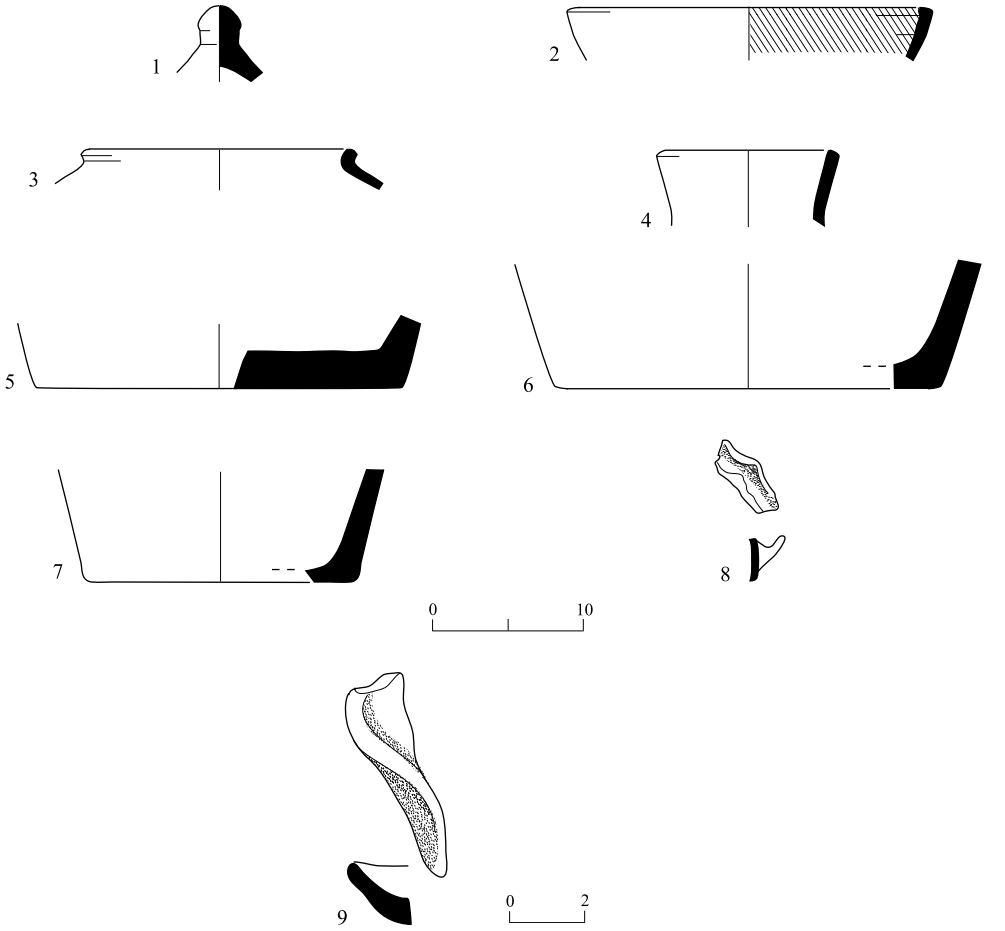


Fig. 4. Area Y, Early Bronze Age III pottery.

No.	Vessel	Locus	Basket	Description
1	Lid	814	8102/2	KKW; brownish clay, gray core, large grits, poorly fired, burnished
2	Bowl	814	8102/1	Buff clay, gray core, red slip
3	Cooking pot	818	8128/1	Buff-pinkish clay
4	Storage jar	818	8128/2	Pink clay, gray core
5	Pithos	818	8128/3	Buff-orange clay, gray core, large grits, poorly fired
6	Pithos	819	8117/1	Orange clay, gray core, large grits, poorly fired
7	Pithos	818	8128/4	Buff clay, gray core, grog grits, poorly fired
8	Handle	819	8117/2	Brownish clay, red slip
9	Handle	814	8102/1	Buff clay

An outstanding find within the Area Y KKW assemblage is a pointed lid fragment (Fig. 4:1), made of crudely fired clay with large inclusions. It was burnished, but not slipped. A close parallel was found at Tell esh-Shunah North (Leonard Jr. 1992: Pl. 19:13). Lids were rare outside the hardcore sites of the 'KK people' (i.e., Bet Yeraḥ, Bet She'an, Tell esh-

Shunah North, ʻAfula and possibly, Tel Yaqush). One lid was found at Tell Umeiri in central Jordan (Harrison 2000: Fig. 19.2:22). Based on the notion that, in most cases, Southern Canaanite KKW was only found in large urban centers, Khirbat Ḥasan stands out as a small rural occupation, albeit connected to the nearby fortified Ḥorbat Shovav (Gophna and Paz 2008; see *Summary and Discussion*, below).

Other EB III Pottery Types

Deep Flat-Rim Bowl (Fig. 4:2).— One sherd of a buff clay bowl was found, poorly fired and with red slip traces on its inside. It is a common vessel in EB III contexts, like at Tel Yarmut (Miroschedji 1988: Pl. 37:9).

Necked Cooking Pot (Fig. 4:3).— One fragment of a short-rimmed cooking pot, made of buff-pinkish clay, was found. Necked cooking pots are rare in the inner regions of Canaan during EB III, whereas they are common in the southern coastal plain, e.g., at Tel Poran (Gophna 1992: Fig. 5:3, 4) and Tell es-Saken (Miroschedji et al. 2001: Fig. 20:8).

Upright Neck Storage Jar (Fig. 4:4).— One fragment of a jar of this type was retrieved, made of pink clay and poorly fired. Close parallels were found at Tel Yarmut (Miroschedji 1988: Pl. 20:7).

Pithoi (Fig. 4:5–7).— Only base fragments of these very large vessels were found. They are very crudely made from orange clay with large grits, and generally poorly fired and undecorated.

Ledge Handles (Fig. 4:8, 9).— These ledge handles are of various shapes. The handle in Fig. 4:8 is finely made and red-slipped, while the one in Fig. 4:9 is crude and almost unnoticeable. Their EB III date can be confirmed by parallels from Tel Yarmut (Miroschedji 1988: Pl. 29:3).

Summary

The EB III occupation in Area Y was probably ad hoc, situated close to the Naḥal Har'el streambed. The rather large amount of KKW and their diversified repertoire are not common in Southern Canaanite sites and call for further interpretation. As discussed below, similar ad hoc agricultural activity was repeatedly practiced at the site in subsequent periods.

The location of this pottery scatter is no coincidence. Towering high above the excavation site is Ḥorbat Shovav, a fortified urban center that flourished during EB III (Gophna and Paz 2008), and the pottery from Khirbat Ḥasan is most likely closely related to it. The lack of KKW in the surveyed Ḥorbat Shovav, as opposed to its abundance at Khirbat Ḥasan is puzzling. However, survey results should be considered with caution, for excavations at Ḥorbat Shovav should presumably also yield KKW finds.

Petrographic Analysis of the Pottery from Area Y

Three KKW sherds retrieved from Area Y, and four other vessels from the same area, representing common types of EB III, were selected for petrographic analysis.

Previous petrographic studies of KKW have aimed at tackling their trade and diffusion patterns in the Southern Levant (e.g., Zuckerman, Ziv and Cohen-Weinberger 2009). Khirbat Ḥasan is located outside the KKW core area of distribution. Heretofore analyses of KKW vessels found outside the core area, including samples from sites in the Shephelah region, showed that they were either made in one of the main production centers in northern Israel and exported to their finding destination, or were locally manufactured, generally resembling the local geological setting of their findspots (Nigro 2009; Zuckerman, Ziv and Cohen-Weinberger 2009). Since only rare and isolated KKW sherds have been found in the Shephelah and southern Israel in general, analyzing sherds that were uncovered in these regions contributes to a better understanding of the production and distribution patterns of this ware.

Method. The KKW was determined and identified petrographically and was compared with the raw material of the common pottery types. An assessment of the geological setting of Khirbat Ḥasan and its surrounding area aimed at identifying the potential provenance of the raw material. The site is situated on alluvial beds of Naḥal Har'el, which drains both the Judean Hills and the Shephelah (Buchbinder 1969). Both the Paleocene Taqiye Formation, characterized by marl, and the Maastrichtian Ghareb Formation, characterized by chalk rocks, are exposed around the site, and a calcareous caliche (*nari*) crust develops on the Shephelah chalky rocks (Buchbinder 1969:1). The area is also characterized by rendzina, grumusols and Mediterranean Brown Forest soils with the presence of lime (Ravikovitch 1970; *Ministry of Agriculture* 1973).

Results. Seven vessels were sampled with the aim of identifying their raw material:
1) KKW black-burnished body sherd (B8110, L818): Calcareous, optically active clay with c. 3% silt-sized quartz grains. The non-plastic components (f:c ratio {0.062 mm}= ~90: 10)[4] are characterized by rounded, poorly sorted *nari* fragments up to 2 mm in size. Elongated voids of vanished straw with post-depositional soil infilling. Calcite and isotropic grog fragments rarely appear. This raw material is identified as soil with aeolian contribution.
2) KKW lid fragment (B8102, L814; Fig. 4:1): Ferruginous, with few foraminifera and silt-sized carbonate. The clay contains ~15% silt-sized quartz grains and some silt-sized heavy minerals. The non-plastic components (f:c ratio {0.062 mm}= ~90:10) comprise rounded *nari* fragments and few phytoliths. This raw material is identified as soil.

[4] The f:c ratio expresses the relative proportions of the fine (f) and coarse (c) components of a fabric. The boundary between these two components in this case is 0.062 mm, which is the boundary between silt and sand size (Kemp 1985:22).

3) KKW body sherd (B8110, L818): Calcareous, optically active clay with ~10% silt-sized quartz grains and some silt-sized heavy minerals. Elongated voids with secondary infilling. The non-plastic components (f:c ratio {0.062 mm}= ~90:10) are characterized by grog and rounded coarse (up to 2 mm in size) *nari* fragments, few calcite, and some mollusk-shell fragments.
4) Bowl, slipped inside (B8102, L814; Fig. 4:2): Calcareous foraminiferous clay with c. 3% silt-sized quartz grains. The non-plastic components (f:c ratio {0.062 mm}= ~95:5) comprise few chalk and grog fragments. This raw material is identified as rendzina soil.
5) Bowl rim (B8128, L818): Clayey matrix with speckled b-fabric. It contains silt to fine sand-sized iron oxides (hematite) particles and silt-sized calcareous particles. The non-plastic components (f:c ratio {0.062 mm}= ~95:5) comprise grog fragments of vessels made of Moẓa clay and Moẓa marl. This raw material is identified as a clay unit of the Cenomanian Moẓa Formation. This group was observed and described in several pottery assemblages of different periods, all scattered around the vicinity of the Judean-Samarian Hills (Goren 1995:300; Goren, Finkelstein and Na'aman 2004:263).
6) Red-slipped ledge handle (B8117, L819): Optically active clay rich in silt-sized quartz grains c. 20%. Other silt-sized heavy minerals are also occasionally present. This raw material is identified as *terra rossa* or grumusol soil.
7) Jar neck (B8128, L818): Calcareous, optically active clay, rich in foraminifera which are often oxidized. The non-plastic components (f:c ratio {0.062 mm}= ~95:5) comprise grog fragments. This raw material is identified as marl. Identification of the foraminifera is required for identifying it with the locally exposed Taqiye Formation.

Discussion and Summary. The three analyzed KKW sherds were made of unidentified soil with aeolian contribution. The occurrence of *nari* fragments supports a local provenance, but *nari* crust occurs on chalky rocks at other provenances as well. The analysis results of the other four vessels show that each exhibited a different raw material: No. 5 was made of Moẓa Formation clay from the Judean Mountains east of the site; No. 1, of rendzina soil, perhaps local; No. 6, of local grumusol or *terra rossa* soil, which is widespread east of the site (at least 9 km to the east); and No. 7, of marl, most probably of the local Taqiye Formation.

The presumed local control group is thus varied, with two samples (Nos. 1, 7) probably local and two others (Nos. 5, 6) made of raw materials exposed at a distance of c. 10 km east of the site.

The raw material of the sampled KKW vessels may be local. Their raw material differs from that of vessels made in main KKW production sites, such as Ḥaẓor, Bet She'an, Bet Yeraḥ and Tel Qishyon (see Zuckeraman, Ziv and Cohen-Weinberger 2009). The KKW vessels from Khirbat Ḥasan were most probably made in the Shephelah area, far from the core area of this ware. These vessels may have been produced either by itinerant craftspersons, whose origin might be sought in the production centers in the north, or, alternatively, by local potters manufacturing these conspicuous shapes and decoration to supply local demand.

The results concur with previous petrographic analysis results of locally produced KKW vessels outside their production core area (Zuckerman, Ziv and Cohen-Weinberger 2009).

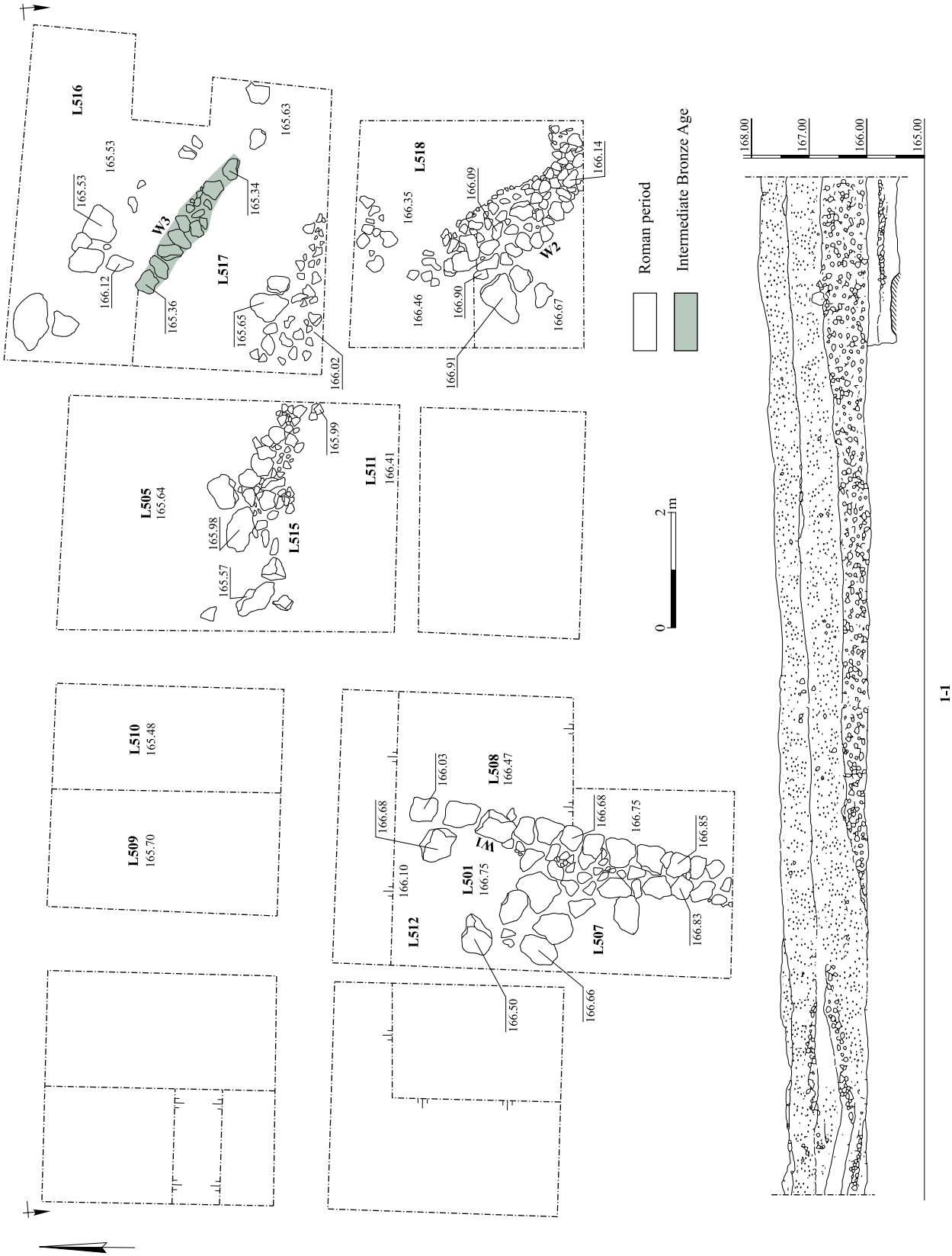
The Intermediate Bronze Age

All eight excavated areas yielded pottery dated to the Intermediate Bronze Age (henceforth, IBA); however, architectural remains and secure loci of this period were detected only in Areas A, N and B. Since the distance between Area A on the west and Area B on the east, with Area N in between (see Fig. 2), was about 1200 m, each area seems to represent a distinct phenomenon. The IBA pottery found in the other excavated areas was not *in situ* and may have resulted from erosion processes.

Area A: Water Control System

The earthmoving activities that preceded the excavation created a ditch (width 5 m, depth 1.2 m), which removed all archaeological remains. Cutting this ditch produced a section (Fig. 5; Plan 2: Section 1–1) where several alternating layers of alluvium and water-borne pebbles and cobbles were identified, clearly indicating that the ancient streambed of Naḥal Har'el was much wider and more active than today. Within this streambed, further mechanical trenching was carried out, under the supervision of IAA representatives, to examine the nature of these layers and to determine their extent. This activity revealed some large stones, several of these seemingly arranged in a line, perhaps representing the remains of a wall. This trenching also revealed IBA pottery, suggesting an occupation phase in this area or in the immediate region. Consequently, eight squares arranged in two adjacent and parallel rows were opened within the path of the projected pipeline. The northern row was positioned within the trench, while the southern row was mostly outside it.

Fig. 5. Area A, geological section of the natural pebble accumulation.



Plan 2. Area A, plan and section.

The northern row of squares was situated at the lowest point of Area A, deep in the trench (Plan 2). The northern portion of all these squares consisted of a thick accumulation of loose gravelly river deposits, with numerous water-worn pebbles and cobbles, and a limited amount of ceramic remains. In the northeastern edge of the excavated area, a rough northwest–southeast one-course line, built of eight boulders, was revealed (W3; Fig. 6). Its maximal exposure length was 2.6 m, and, based on the size of its stones, it measured 0.2–0.4 m wide. Gravelly river deposits were found north of this stone line (L516), while to its south was a fill of brown earth and small stones (L517) overlaid by gravelly river deposits. Rather large amounts of IBA pottery were also found in Loci 509 and 510, on the western edge of the area, but these loci yielded no architectural remains.

Most of the IBA sherds were large and appeared to be less water-worn than those dating from any other period. This suggests the probable existence of an IBA occupation in the very immediate region, with broken pottery discarded, perhaps, into the river.

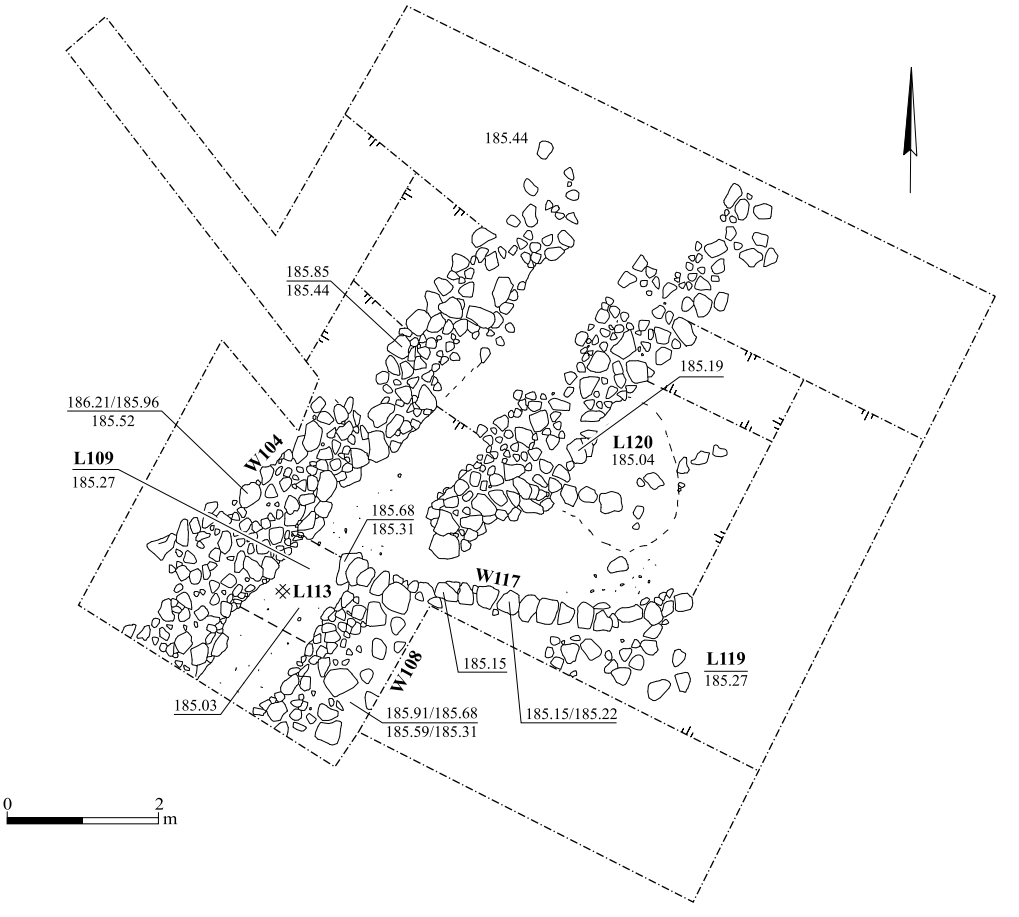
The remains described above were interpreted as roughly built walls on the ancient embankment of Naḥal Har'el. These walls helped control the water flow of the ancient river by redirecting the water into a narrower channel, thus preventing or limiting flooding of the valley and gaining more arable lands adjacent to the streambed.

Fig. 6. Area A, Intermediate Bronze Age architectural remains, looking southeast.

Area N: Agricultural Activities and Occupation Remains

Area N (Plan 3) is defined by a c. 2 m thick layer of dark brown colluvial soil accumulated atop the archaeological remains. This area seems to have been close to water, as reflected in the wet soil that affected the archaeological remains. Thus, the few hundred pottery sherds, mostly tiny body sherds, were extremely water-worn and poorly preserved. Only 60 sherds were diagnostic, but most were fragments of flat bases (see below). It is, however, important to note that all the pottery seems to date solely from the IBA.

A wall fragment (W117) and an attached pebble floor with orange-colored lenses (Loci 113 and 120) on both sides were the only architectural remains that could be securely assigned to the IBA. The wall, discovered below a mass of stones that may have been used as a dam (see below), was preserved to a length of 3.5 m and was built of one course of medium-sized fieldstones (Fig. 7). Although it follows a general east–west orientation, it seems to have been curved. The orange lenses were probably the smeared remains of



Plan 3. Area N, Intermediate Bronze Age architectural remains.

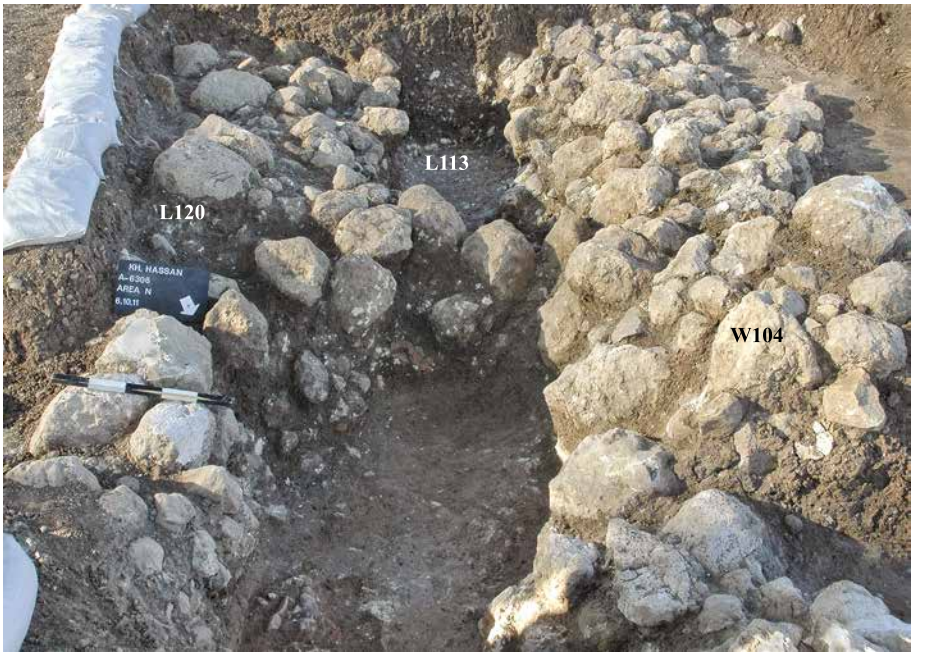


Fig. 7. Area N, Intermediate Bronze Age pebble floors L113 and L120, and agricultural terrace W104, looking south.

pottery that was not preserved. The sherds were found *in situ* on the IBA floor segments. Poorly preserved remnants of a clay installation (an oven?) were found on floor L120.

Despite the poorly preserved state of the wall and the floors, these remains can point to the existence of a settlement. Unfortunately, the structures of this occupation had been completely dismantled and its stones reused in antiquity to build the superimposed agricultural walls (W104, W108). Wall 108 was constructed above W117, reusing some of its stones; the equal size of the stones in W117 and W108 attests that the earlier structure was dismantled to reuse its stones.

Walls 104 and 108, extending over a length of c. 8 and 6 m respectively, were both about 1 m wide and preserved to a height of one to three courses. They followed a northeast–southwest orientation, perpendicular to streambed. Very poorly built of masses of small- to medium-sized stones, they had no clear arrangement of inner and outer faces. The complete absence of related floors or associated occupation levels, together with their orientation, may point to their use as a water control system, perhaps a dam.

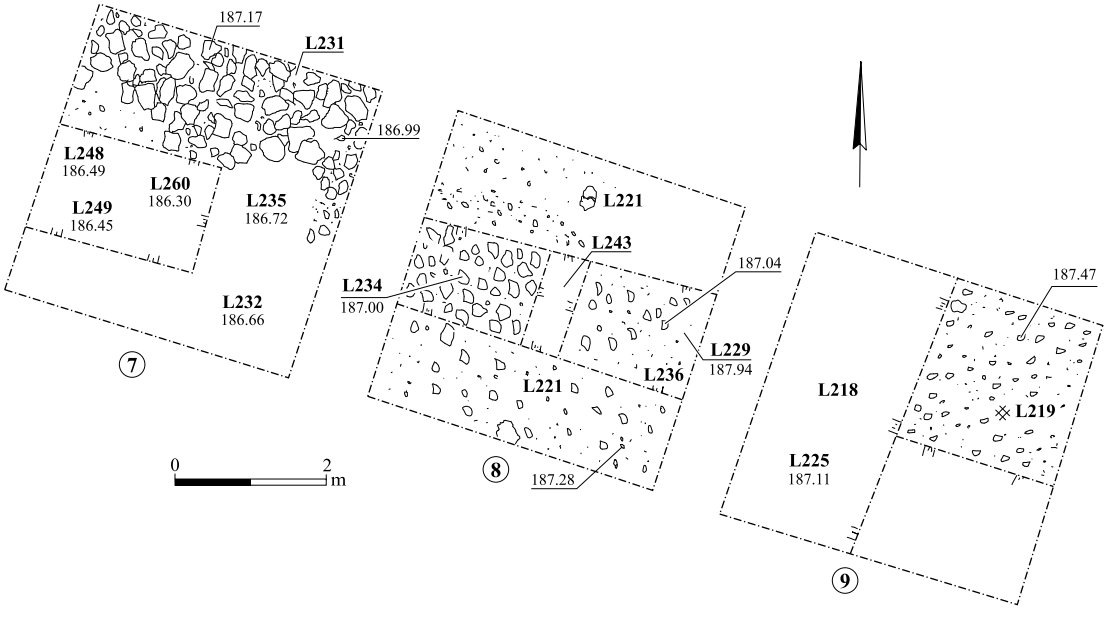
The only datable pottery from Area N belonged to the IBA, and thus, W104 and W108 might be associated with this period. It can be speculated, with extra caution, that the early IBA occupation (W117, L113 and L120) was replaced, due to natural causes—such as a change in the stream's water regime or increased soil erosion—by agricultural walls (W104, W108) that reused most of the earlier stones. It can only be suggested to date both phases to the same period. The only possible settlement remains from this period were located in Area B, c. 150 m east of Area N (see below).

Area B: Working Surfaces (Fig. 2; Plan 4)

The three easternmost squares in Area B, located 20 m away from the other six squares excavated in this area, yielded the only comprehensible yet enigmatic remains of a plausible IBA settlement; perhaps associated with the scanty remnants explored in Area N (see above).

These remains comprised two subsequent stone surfaces, with a fill in-between, detected in a limited 4–12 m exposure atop a fill containing mixed fourth–third millennia pottery (L243). The surfaces were mostly built of small stones, and it would seem that no pebbles were used; instead, rather angular limestone fragments were chosen, brought from the hills south of the site. The reason for this practice is not clear, but it may have had a symbolic meaning rather than a practical one.

Oddly, most of the pottery was not found on the surfaces, but below them, within the fills. The earliest IBA surface (L234/236), detected on a 1–2 m sized area, was constructed of small limestone fragments and small pebbles (0.10 × 0.15 m). The later surface (Loci 231, 221 and 219) was constructed c. 0.5 m above L234/236, and comprised two different parts. The western part (L231) was built of larger stones (diam. 0.2–0.4 m); it is located on the southern side of the square and covered an area of 2–4 m (Fig. 8). Though of no comprehensible shape, it resembles, conceptually, a surface excavated at Khirbat Keila (Be'eri 2012), only c. 3 km southeast of Khirbat Ḥasan. The eastern part of the surface (Loci 221 and 219) was built of a different type of stones, 0.10–0.15 m in size, creating a flat surface.



Plan 4. Area B, Sqs 7–9.

Fig. 8. Area B, Intermediate Bronze Age stone surfaces, looking southeast.

The date of construction of these surfaces cannot be easily established. Based on the pottery sherds contained in the fills between them, dated to the Chalcolithic, EB II–III and IBA periods, it is plausible to ascribe the surfaces to the latter.

It is thus probable that the surfaces were connected with a settlement located to their west. The surfaces possibly functioned as working spaces used by the settlement's inhabitants for daily activities conducted adjacent to the stream. A similar phenomenon was recently explored at the site of Naḥal Rimmonim (Strata IV–V) in northern Israel (Covello-Paran, pers. comm.; Covello-Paran and Tepper 2014), where stone surfaces were interpreted as the foundation for floors and structures that were not preserved. Another parallel from northern Israel was excavated at 'En Ha-More (Covello-Paran 2011). At this site, a surface of basalt and laid stones was found topped with a large quantity of pottery and flints, contrary to Khirbat Ḥasan, where almost no finds were detected atop the surfaces.

The Pottery

The IBA pottery from Khirbat Ḥasan has close parallels in the assemblages of Southern Canaan. The rather small amounts of pottery found at the site represent a limited number of types. No complete or restorable vessels were found.

Most of the vessels were made of light clay, mostly buff and gray-white. Some vessels, mainly the calyciform shapes, were very well-levigated and presented good firing. Storage jars had thin walls, and grogs were commonly used as an inclusion, alongside additional types. Besides plastic decoration, incised designs were almost the only decoration used, applied on a slow wheel as straight lines or as wavy lines on open vessels.

The vast majority of the sherds recovered from Area A were found at the northern edge of the area, within stream pebble layers revealing the flooding activities of the stream. Thus, the pottery cannot reflect an *in situ* deposition, yet it most plausibly represents IBA activities that took place nearby and can be associated with the settlement that existed southeast of Khirbat Ḥasan, in modern Moshav Tarom (Storchen 2012). In all, c. 600 IBA sherds were found in Area A, some 50 of which were diagnostic (c. 8% of the assemblage); 23 of the latter were drawn and are presented in Fig. 9. The statistical analysis is most revealing, as no less than 34 of the diagnostic sherds (making up over 75% of the assemblage) were fragments of storage jars (base fragments were the most common, totaling 19 pieces), with bowls making up c. 18% of the assemblage (8 sherds).

The manufacturing technique of the various types is not uniform: bowls had rather thin or thick walls and were medium to poorly fired, while storage jars were generally made of well-levigated buff clay, had thin walls and seem to have been well-fired.

Area N was one of the few locations where secure loci were detected, containing *in situ* pottery on floors. These sherds were severely affected by the humidity and acidity of the colluvial soils that covered the area. Most sherds were extremely brittle and had broken in antiquity into tiny pieces under the influence of natural elements. Thus, of the over 2000 sherds found in Area N, only 60 (c. 3% of the assemblage) were diagnostic, and only 40 of them, on which the present discussion is based, evolved from secure loci. No less than 32 sherds (making up 80% of the diagnostic sherds) belonged to storage jars, most of them base fragments (17 sherds, c. 53%). Five bowl sherds (8%) and a few belonging to amphoriskoi were also found.

It should be noted that storage vessels were, in general, dominant in contemporary assemblages of the Negev sites, but among them, storage jars of the ‘southern family’ made up just 22.3% of the assemblage, while at Khirbat Ḥasan, storage jars made up no less than 75%–80%(!) of the assemblage. A word of caution is, however, needed: the extremely scarce secure loci in Khirbat Ḥasan and the limited exposure of the finds do not allow for any clear-cut definitions and one should not rely on statistics to define ceramic traditions at a site. The following discussion (Figs. 9–11), combines the pottery from Areas A, B and N, arranged typologically.

Straight-Sided Bowl.— One rare specimen with thin straight walls was found in Area N (Fig. 10:1). Possible parallels were found in a burial cave at Shoham (North) (Brink and Gophna 2005: Fig. 8.1:1) and at the site of Har Yeruḥam (Cohen 1999: Fig. 69:4).

In-Turned Rim Bowls.— A small sherd of a possible carinated bowl with a flat triangular in-turned rim was found in Area A (Fig. 9:4). Parallels may be sought at Jebel Qa‘aqir (Gitin 1975: Fig. 3:4) and ‘En Ziq (Cohen 1999: Fig. 146:19). Four sherds were found in Area N (Fig. 10:6, 7, 13, 14), the first two with straight walls, and the other two, probably rounded. Two bowls were decorated with a plastic rope application on their uppermost outer portion;

parallels may be sought at Jebel Qa'aqir (Gitin 1975: Fig. 3:2) and 'En Ziq (Cohen 1999: Fig. 102:11).

Everted-Rim Bowl.— A fragment of a bowl with an everted rim and a depression between the rim and the body was found in Area A (Fig. 9:3). While not so common at IBA sites, parallels can be found at Negev sites such as Ḥorbat Avnun and Har Yeruḥam (Cohen 1999: Fig. 65:8; 69:9).

Carinated Bowls.— These vessels, found in Areas N and B, had grog inclusions clearly visible in their fabric (Figs. 10:2, 12; 11:1). Figure 10:2 has a high carination and Fig. 10:12 has a ledge rim. Parallels for carinated bowls of this type were found at 'En Ziq (Cohen 1999: Fig. 56:10, 11).

Kraters.— A few sherds seem to belong to kraters with profiled rims (Fig. 9:5, 6), one being also splayed (No. 5). Such vessels are common in sites such as Ḥorbat Avnun and 'En Ziq (Cohen 1999: Figs. 65:21, 22; 110:3).

Goblet.— The retrieved small fragments of the calyciform goblets bear the typical incised decoration (Fig. 9:1, 2). The straight-walled goblet is one of the most common hallmarks of the IBA, with parallels found throughout the Land of Israel, from the Negev (Har Ẓayyad and Har Yeruḥam, Cohen 1999: Figs. 56:6; 69:3) through the Judean Hills (Jebel Qa'aqir, Gitin 1975: Fig. 4:1–8), the Ayyalon Valley (Sha'alabim [East], Milevski et al. 2012: Fig. 17:1–8) and the Ḥula Valley (Tel Na'ama, Greenberg et al. 1998: Fig. 21:2).

Thickened-Rim Holemouth.— Only one sherd of this type (Fig. 11:2) was found among the hundreds of sherds collected in Areas A, N and B. It was characterized by many white grits, perhaps shell fragments. Possible parallels can be found at Naḥal Boqer (Cohen 1999: Fig. 82:12).

Storage Jars (Figs. 9:7–20; 10:3–5, 8–10, 15–18; 11:3–6).— As mentioned above, storage jars comprise the vast majority of the IBA ceramic assemblage in Area A. They were usually made of buff clay, giving them a yellowish, pale greenish color. Grog inclusions were common along with small light inclusions of other origins. In general, the clay was well-levigated and well-fired. Some vessels were decorated with incised parallel, straight or wavy lines, a decoration probably created by using a comb on the leather-hard clay (e.g., Fig. 10:4). Three subtypes can be discerned, based on rim shapes:
Plain Everted Rims (Figs. 9:11; 10:5): These jars had long curving necks, ending in a plain sharpened or slightly rounded rim. Parallels can be found at Har Ẓayyad and Har Yeruḥam (Cohen 1999: Figs. 57:1; 69: 22).

Everted Rims with an Inner 'Gutter' (Figs. 9:12–16; 10:16, 17; 11:6): This jar type may be a remnant of Early Bronze Age traditions, where storage vessels often had inner guttered or channeled rims (e.g., Paz 2006: Figs. 7.20:10; 7.32:10, 11; 7.38:12). Of special note is the jar in Fig. 9:16, with an irregular rectangular-shaped rim, whose parallel may be found at 'En Ziq (Cohen 1999: Fig. 150:7). In general, channeled or guttered rim jars were common during the IBA, and have been found in clear IBA contexts throughout the Land of Israel (Shoham [North], Brink and Gophna 2005: Figs. 8.2:1; 8.3:5–7; Sha'alabim [East], Milevski et al. 2012: Fig. 20: 5; Har Ẓayyad and Mash'abbe Sade, Cohen 1999: Figs. 57:5; 78:11–15).

Everted, Profiled Rims (Figs. 9:17–20; 10:10, 18): Most rims of this type belonged to jars with short everted rims. The rim shape was generally triangular or square. The jar in Fig. 10:10 has a short-splayed rim. Many profiled-rim jars are common in IBA mortuary and settlement contexts (Shoham [North], Brink and Gophna 2005: Fig. 8.1:3; Be'er Resissim, 'En Ziq and Mash'abbe Sade, Cohen 1999: Figs. 137:9; 109:1; 150:4).

Fig. 9 ▸

No.	Vessel	Locus	Basket	Description
1	Goblet	509	5125/1	Buff clay, incisions
2	Goblet	509	5113/1	Pink clay, well levigated, tiny grog grits, incisions
3	Bowl	509	5113/2	Pink clay, gray core
4	Bowl	509	5125/2	Buff clay
5	krater	502	5101/1	Buff clay
6	krater	509	5125/3	Gray clay
7	Storage jar	509	5113/3	Pink clay, gray core
8	Storage jar	509	5125/4	Pink clay, gray core, grog inclusions
9	Storage jar	509	5113/4	Pink clay, gray core
10	Storage jar	509	5125/5	Pink clay, gray core
11	Storage jar	507	5127/1	Buff-white clay
12	Storage jar	501	5100/1	Buff clay
13	Storage jar	509	5113/5	White clay
14	Storage jar	509	5113/6	White-gray clay
15	Storage jar	502	5109/1	Buff clay
16	Storage jar	507	5143/1	Pink clay
17	Storage jar	502	5101/2	Buff clay
18	Storage jar	501	5100/1	Buff clay
19	Storage jar	509	5125/6	Buff clay
20	Storage jar	507	5120/1	Pink clay, gray core
21	Amphoriskos	501	5100/2	Brownish clay, incised decoration
22	Spout	509	5113/7	Pink clay
23	Spout	509	5125/7	Orange clay

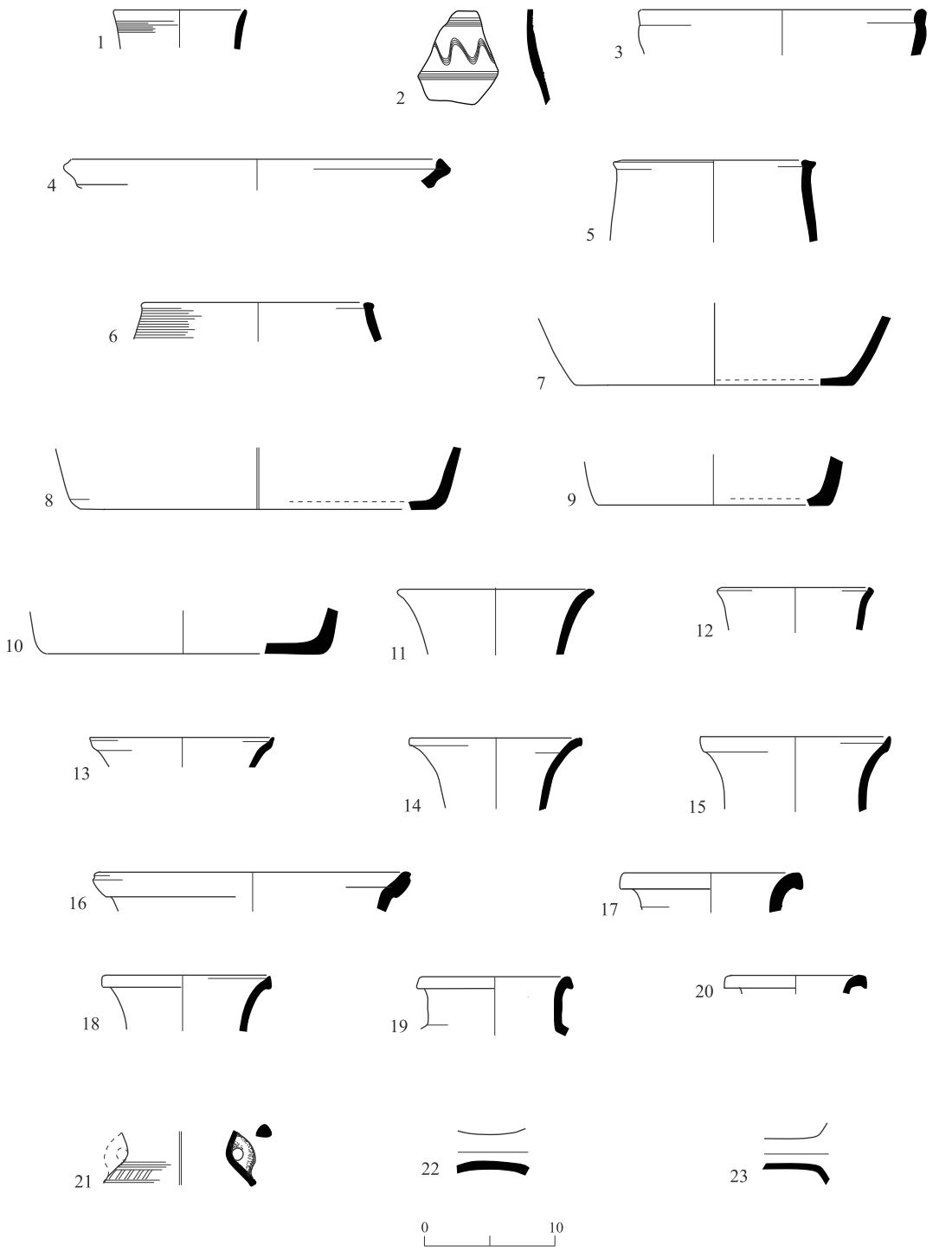


Fig. 9. Area A, Intermediate Bronze Age pottery.

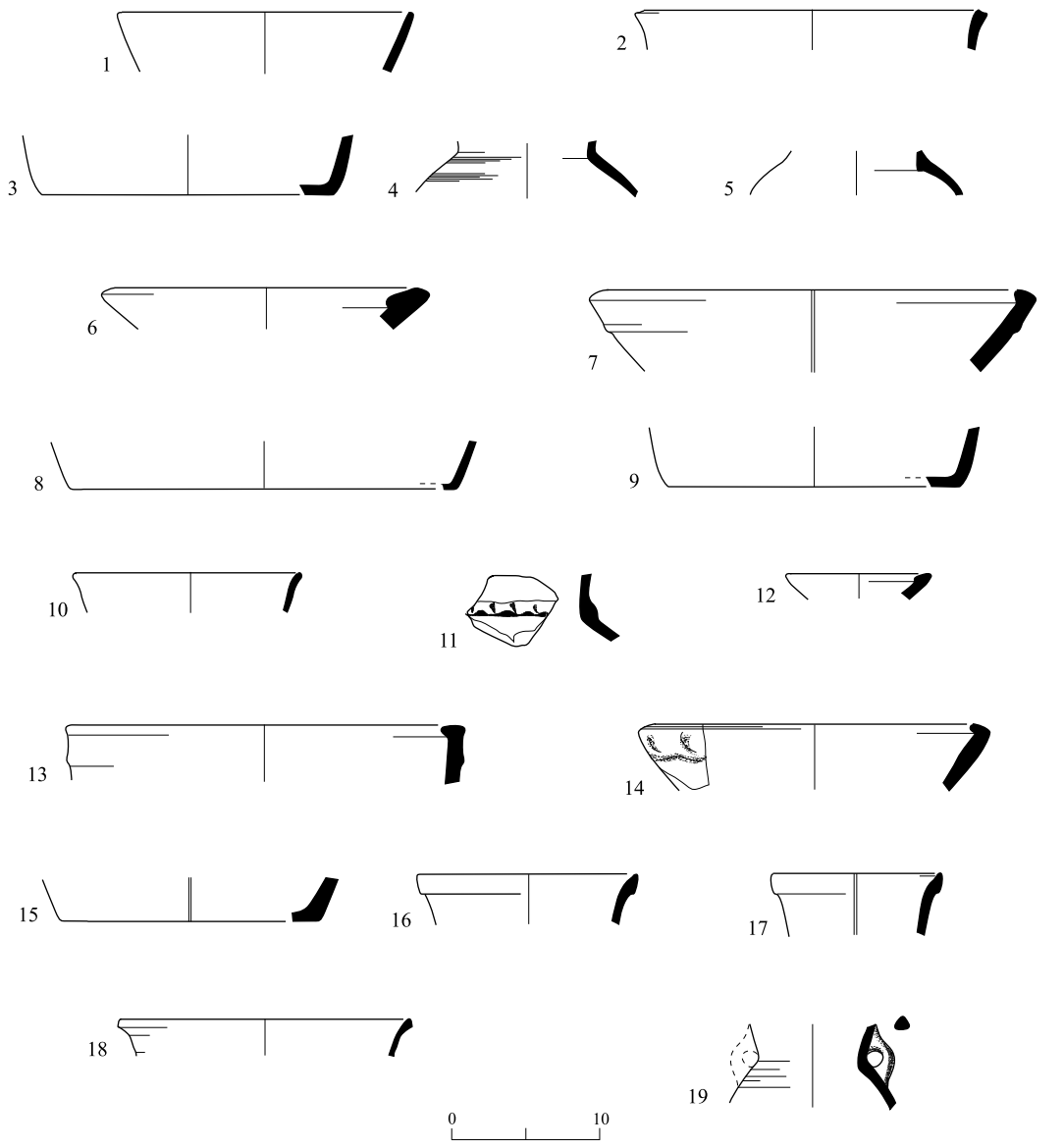


Fig. 10. Area N, Intermediate Bronze Age pottery.

Pithos.— One sherd of a vessel with plastic rope application in the joint between the neck and the shoulder was found in Area N (Fig. 10:11). This could belong to a pithos, common in IBA contexts (Har Yeruḥam; Cohen 1999: Fig. 69:23).

Amphoriskoi.— Three amphoriskos sherds were found in Areas A, B and N (Figs. 9:21; 10:19; 11:7). The specimen from Area A (Fig. 9:21) was decorated with a herringbone incised design adjacent to the surviving lug handle. Amphoriskoi with lug handles between

◂ **Fig. 10**

No.	Vessel	Locus	Basket	Description
1	Bowl	120	1058/1	Buff clay
2	Bowl	120	1058/2	Orange clay
3	Storage jar	120	1055/1	Buff clay, grog inclusions
4	Storage jar	120	1051/1	Yellow-buff clay, incised decoration
5	Storage jar	120	1046/1	Buff clay
6	Bowl	113	1066/1	Pink clay
7	Bowl	113	1066/2	Orange clay, gray core, plastic decoration
8	Storage jar	113	1066/3	Buff clay
9	Storage jar	113	1057/1	Buff clay
10	Storage jar	113	1042/1	Buff clay
11	Pithos	113	1066/3	Buff clay, plastic decoration
12	Bowl	109	1022/1	Orange clay
13	Bowl	W108	1052/1	Orange clay, gray core
14	Bowl	119	1036/1	Pink clay, gray core, plastic decoration
15	Storage jar	112	1059/1	Buff clay, gray core
16	Storage jar	119	1039/1	Buff-yellow clay
17	Storage jar	112	1059/2	Buff-yellow clay
18	Storage jar	112	1059/3	Buff clay
19	Amphoriskos	109	1022/2	Pink clay

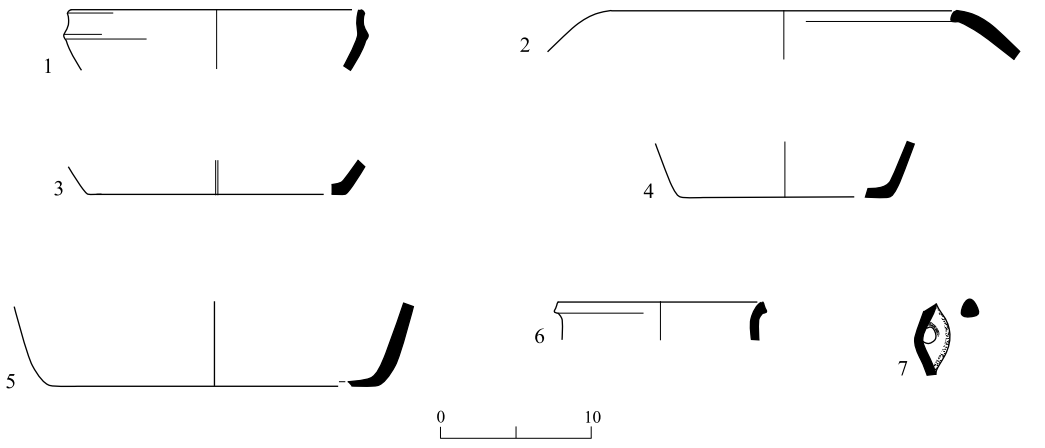


Fig. 11. Area B, Intermediate Bronze Age pottery.

No.	Vessel	Locus	Basket	Description
1	Bowl	248	2077/1	Buff clay
2	Holemouth	249	2048/1	Gray clay, many white grits
3	Storage jar	249	2048/2	Buff clay
4	Storage jar	249	2036/2	Buff clay
5	Storage jar	260	2088/1	Buff clay
6	Storage jar	235	2099/1	Buff clay
7	Amphoriskos	248	2077/2	Buff clay

the neck and the shoulder were very common in the IBA and parallels are abundant in settlements and mortuary contexts throughout the Land of Israel (Shoham [North], Brink and Gophna 2005: Fig. 8.1:4; Sha'alabim [East], Milevski et al. 2012: Fig. 23:2–5; Jebel Qa'aqir, Gitin 1975: Fig. 1:13; Har Ẓayyad, Cohen 1999: Fig. 56:14–19).

Spouts.— Two poorly preserved spouts of possible 'teapots' were found in Area A (Fig. 9:22, 23). Parallels can be found at sites such as Sede Boqer and Har Ẓayyad (Cohen 1999: Fig. 147:13, 14).

Discussion

The uncovered fragmentary IBA remains do not allow a full reconstruction and understanding of the nature of the human occupation at the site. It is, however, clear that the remains in Areas A, B and N reflect three different activities that may have occurred on the fringes of a possible nearby settlement. The walls found in Area A, constructed in the streambed, reflect some sort of channeling activity. The single wall and related floor in Area N may represent a seasonal or ad hoc occupation, also adjacent to the water channel. It was plausibly replaced by two dam-like walls that terminated the occupation level in favor of a water control system, perhaps reflecting a deterioration in the natural conditions along the stream. East of this point, in Area B, a series of stone surfaces may reflect certain activities conducted near the stream. The surfaces were built of stones brought to the stream's shore and were constructed there. Similar IBA stone surfaces were found in northern Israel in sites such as 'En Ha-More and Naḥal Rimmonim.

The Khirbat Ḥasan channeling system probably reflects activities employed by residents of a rural settlement to protect agricultural crops from erosion and flooding. The exact location of that settlement remains unknown. A recent excavation conducted at nearby Moshav Tarom revealed a massive IBA structure comprising at least three rooms, which may have been part of a larger settlement (Storchan 2012). Other IBA settlements were found in the same region, the largest ones being Eshta'ol (Golani and Storchan 2009), constructed on elevated ground that protected it from flooding, and Sha'alabim [East] (Milevski et al. 2012), located very close to a stream, alike Khirbat Ḥasan.

As discussed by Covello-Paran (2009), various IBA surfaces, probably used as working areas for processing agricultural products, were located on the fringes of settlements, often on the stream banks, reflecting the existence of small settlements established down the slopes of hills that surround a fertile valley, annexed to a stream. While Covello-Paran's interpretation refers to the IBA settlement pattern within the Jezreel Valley, it can also explain the settlement remains found at Khirbat Ḥasan. It is most plausible that IBA settlers benefited from the Har'el stream and its adjacent fertile soils, investing efforts to create better land and water productivity.

Another striking similarity between Khirbat Ḥasan and northern sites like 'Ein Ḥilu (Covello-Paran 2009) is the spatial distribution of the architectural remains. At 'Ein Ḥilu,

the dwelling units were built at the center of the site, while the open spaces dedicated to various activities were located to their east and west. Covello-Paran interprets these open spaces as loci of communal/public activities linked to the settlement's economy, such as the processing of agricultural produce (Covello-Paran 2009:11–13). The resemblance of this spatial arrangement with that of Khirbat Ḥasan (considering W117 and its connected floors in Area N as a dwelling unit) is most revealing. Unfortunately, and unlike the situation at 'Ein Ḥilu, the remains from Khirbat Ḥasan were too meager to allow for any clear-cut definition of the various structures.

The two subsequent architectural phases in Area N cannot be precisely correlated chronologically, either with the three subsequent phases of the surface construction in Area B or the 'channel' wall in Area A. However, such a correlation seems unnecessary, since the remains in all three areas reflect continuous human efforts to cope with the natural conditions and allow for agricultural activities.

It should also be noted that stone surfaces situated on alluvial/colluvial soil, serving as working places for agriculture or industry, are not confined to the IBA, but were a common means for coping with the swampy landscape and unstable watercourses from the Neolithic (e.g., Be'er Sheva', Milevski and Peterson-Solimany 2000) through the Byzantine (e.g., Tel Shevaḥ, Yannai 2000) periods.

The Iron Age

Area C: A Water Control System

Pre-excavation soundings in this area detected the remains of stone walls connected to stone surfaces and Early Bronze Age pottery. In light of these finds, ten excavation squares were opened (Plan 5). Surprisingly, the built remains appeared to be a system of parallel walls situated parallel to the stream's route. The well-preserved wall (W732, in Sq B, through W767, in Sq I), constructed of boulders (c. 0.35 × 0.40–0.90 × 1.00 m) placed in one line, continued uninterruptedly for a total length of 38.5 m. The wall was constructed atop of what appeared to be ancient natural pebbles and stones. Following the topographical conditions and stability concerns, the western segment of the wall was the deepest, comprising three courses, whereas further east, only one course was laid.

The eastern side of this system was more elaborate than the western one. Two walls were built parallel to the long wall (Fig. 12): the northern wall (W726/W768; Sqs H–I) was constructed of medium-sized stones (averaging 0.3 × 0.3 m, 5.25 m long), and the southern wall (W727/W751; Sqs H, J) was built of large boulders, but was very fragmentarily preserved. Pebble and gravel fills were discerned between the walls. Geomorphological observations showed that these fills resulted from both artificial filling activities, and more so, from natural accumulations caused by water (from west to east: Loci 700, 714, 709, 716, 752, 758, 722, 740, 753, 742, 717, 718, 711, 712, 736, 754, 755, 744, 719, 750, 756, 743, 766, 761, 759, 757, 708). This is attested by a thick layer of pebbles reaching the wall

Plan 5. Area C, Iron Age water control system.

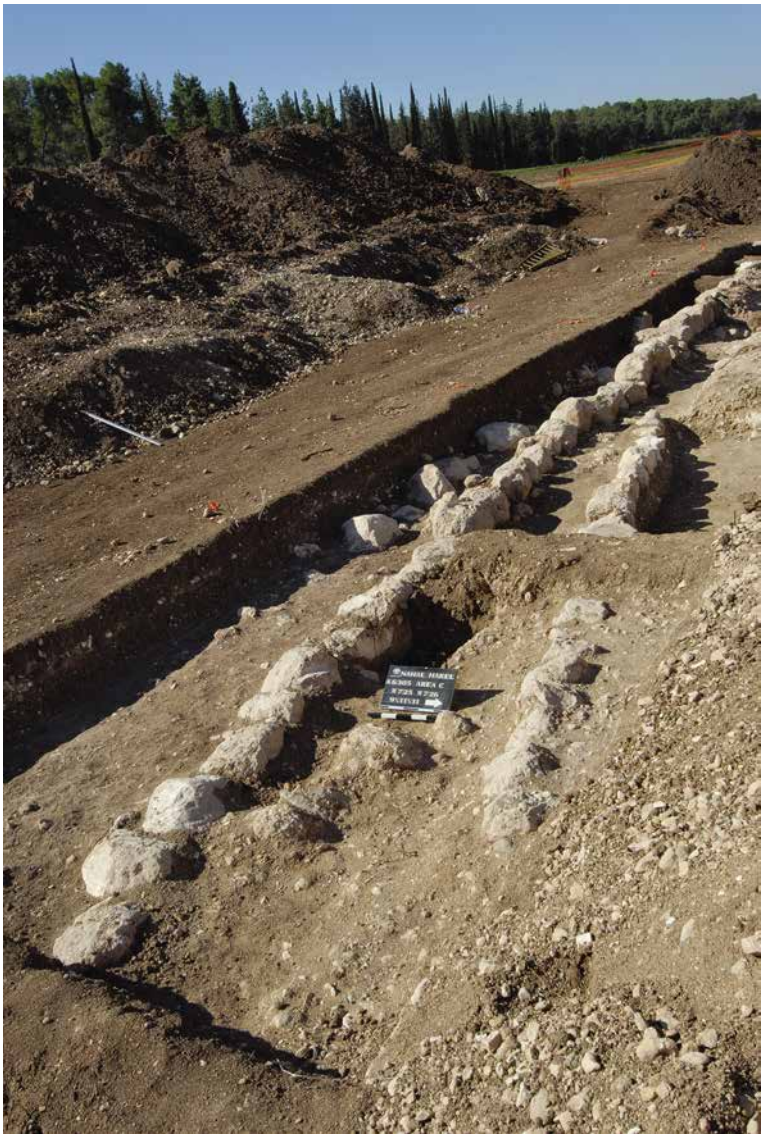


Fig. 12. Area C, the water control system, looking west.

at some places along its length, and in some cases superimposing it in a manner reflecting the outcome of natural water flooding. The overall complex of walls along the stream's route and their manner of construction seem to attest to a system designed to control the streamflow.

Iron Age sherds were found within the pebble fills between the walls. However, their context is problematic, as they did not originate in loci related to the system's wall but were found within the system's matrix. Furthermore, in some cases, the Iron Age sherds and Early Bronze Age sherds were found mixed; intriguingly, the former were less water-worn

and better preserved than the latter, perhaps due to the time span between the two periods. It can also be speculated that the Iron Age sherds had been brought from elsewhere, the closest possible origin being an Iron Age II settlement (not explored before) situated on a limestone hill less than 50 m south of Area C, where heavy stone masonry is visible on the surface. It can be assumed that natural erosion brought Iron Age pottery from that site to the streambed where it was mixed with pebbles and other remains.

While there is no decisive evidence enabling the precise dating of the water control system, its location—adjacent to an Iron Age settlement—and the large amounts of Iron Age pottery retrieved from it point to this period as a preferable date and not the Early Bronze Age.

The Pottery

The pottery presented here and depicted in Fig. 13 reflects an assemblage that can be securely dated to Iron IIB (eighth century BCE), with parallels at Tel Lakhish.

Triangular Rim Bowls.— This bowl type is characterized by a thickened triangular rim, a concavity below the rim and a carination (Fig. 13:1–5). The bowl in Fig. 13:5 is red-slipped and burnished. These bowls were very common in Iron II contexts (Lakhish—Zimhoni 1997: Figs. 3.13:4; 3.16:1–6; 5.4:17–19; Tel ʻEṭon—Zimhoni 1997: Figs. 4.4:5; 4.5:7; 4.7:5). Another variant of this type had a slight depression on the rim and has a close parallel in Lakhish Stratum III (Zimhoni 2004a: Fig. 26.3:21).

Flat-Rim Carinated Bowls.— This bowl type (Fig. 13:6, 7) was less common and has a parallel in Lakhish Stratum III (Zimhoni 2004a: Fig. 26.18:6).

Hammer-Rim Bowls.— Bowls of this type have straight or curving walls and a pronounced ledge or ‘hammer’ rim (Fig. 13:8–10). Parallels were found in Lakhish Strata V–III (Zimhoni 2004b: Figs. 25.19:22; 25.32:17). The bowl in Fig. 13:10, well-fired, red-slipped and with a ridge just below the rim, seems at home in Lakhish Strata V–IV (Zimhoni 2004b: Figs. 25.19:22; 25.26:4).

Kraters.— The kraters (Fig. 13:11–19) can be divided into three subtypes based on their rims: kraters with an in-turned thickened rim (Fig. 13:11, 12, 15–17), the most common in the assemblage and generally made of buff clay; kraters with a triangular rim (Fig. 13:13, 14); and kraters with a bulbous rim (Fig. 13:18, 19). Close parallels of the first type can be found in Lakhish Stratum III (Zimhoni 2004a: Figs. 26.20:9, 10; 26.29:21–23). Parallels for the second and third types can be found in Lakhish Strata V–III (Zimhoni 2004a: Figs. 25.18:17; 26.5:9–12; 26.29:20).

Cooking Pots.— These are the typical prevailing cooking pots (Fig. 13:20–22) of the eighth-century BCE Judean Shephelah, with parallels in Lakhish Stratum III (Zimhoni 2004a:

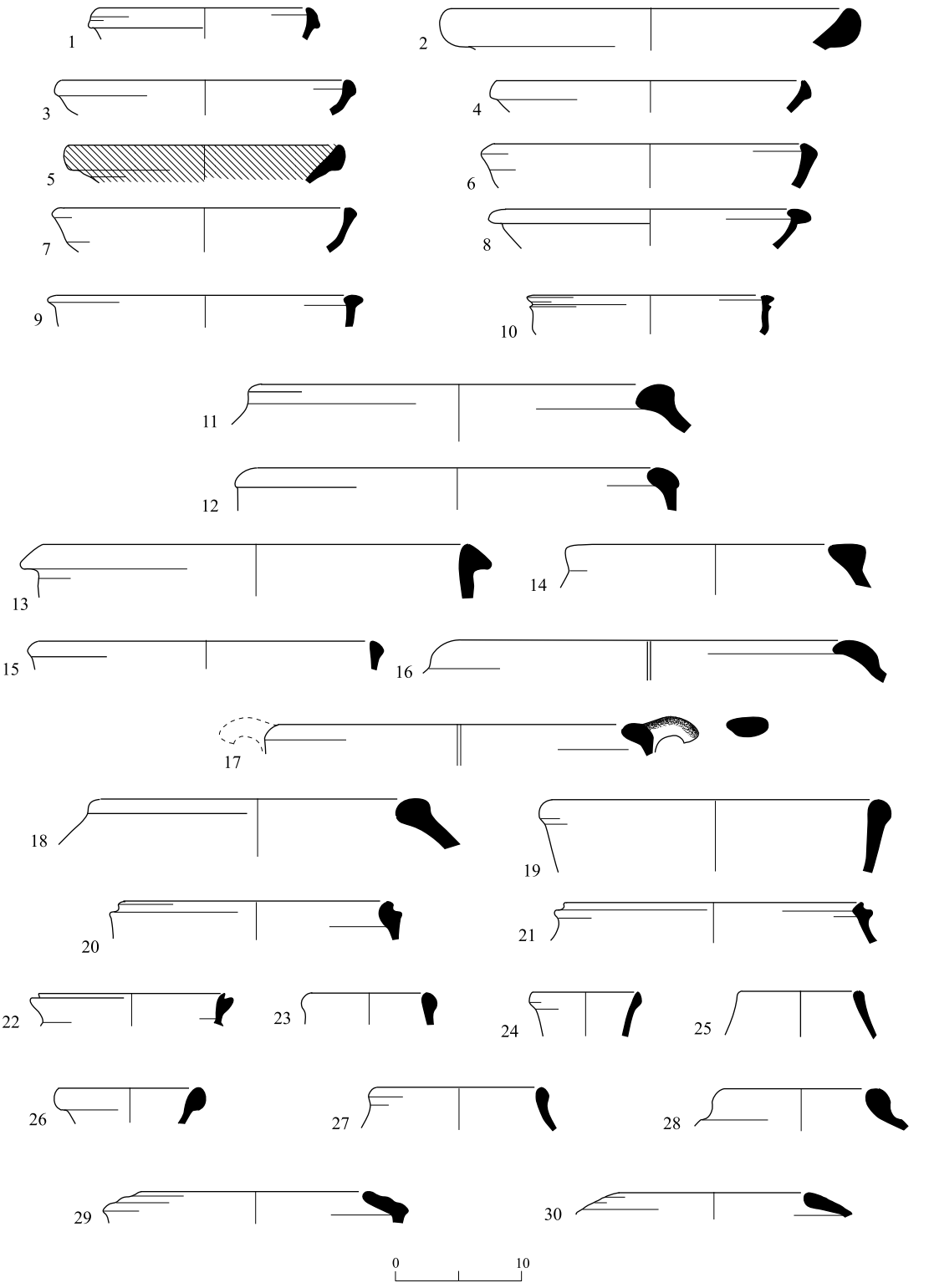


Fig. 13. Area C, Iron Age II pottery.

◂ **Fig. 13**

No.	Vessel	Locus	Basket	Description
1	Bowl	750	7111/1	Brown clay, gray core
2	Bowl	715	7046/2	Orange clay, gray core
3	Bowl	708	7036/1	Orange clay
4	Bowl	745	7081/1	Orange clay
5	Bowl	708	7036/1	Orange clay, gray core, red wash, burnished
6	Bowl	712	7079/1	Orange clay
7	Bowl	738	7066/1	Brown-orange clay
8	Bowl	734	7074/1	Brown clay, gray core
9	Bowl	739	7092/1	Orange clay
10	Bowl	716	7023/1	Orange clay, red slip
11	Krater	750	7100/1	Buff clay
12	Krater	734	7074/2	Orange clay, crude
13	Krater	712	7079/2	Light brown, gray core
14	Krater	718	7042/1	Brown clay, gray core, white grits
15	Krater	715	7046/3	Buff clay, gray core
16	Krater		7072/1	Brown clay, gray core, white grits
17	Krater	714	7074/3	Orange clay, gray core, white grits
18	Krater	712	7044/1	Orange clay, crude
19	Krater	708	7008/1	Brown clay, brown core, white grits
20	Cooking pot	708	7036/2	Brown clay, white grits
21	Cooking pot	734	7064/2	Brown clay, white grits
22	Cooking pot	745	7101/2	Brown clay, white grits
23	Cooking jug	712	7085/1	Brown clay, gray core, white grits
24	Cooking jug	745	7081/2	Brown clay, soot remains
25	Cooking jug	745	7082/1	Brown clay, white grits
26	Storage jar	750	7111/2	Buff clay
27	Storage jar	712	7085/2	Buff clay
28	Storage jar	750	7090/1	Buff clay
29	Holemouth	708	7038/1	Orange clay, yellow core, black grits
30	Holemouth	746	7102/1	Gray clay, air bubbles

Figs. 26.18:10; 26.21:8–10). Parallels for the vessel in Fig. 13:22, with a forked rim, are also found in Lakhish Stratum III (Zimhoni 2004a: Fig. 26.39:9).

Cooking Jugs.— This vessel type (Fig. 13:23–25) was made of brown clay. It is common in Lakhish Stratum III (Zimhoni 2004a: Fig. 26.18:13, 14).

Storage Jars.— The specimens presented here (Fig. 13:26–28) represent medium-sized jars with two rim variants: a plain thickened rim, with parallels in Lakhish Stratum III (Zimhoni

2004a: Figs. 26.13:6; 26.27:13), and a ridged thickened rim, also with parallels in Lakhish Stratum III (Zimhoni 2004a: Figs. 26.11:9; 26.27:14).

Holemouth Jars.— The two vessels presented here (Fig. 13:29, 30) were made of orange and gray clays, and were rather poorly fired. The air bubble in the jar in Fig. 13:30 seems to be evidence of this. The vessels exhibit two rim variants: a plain thickened rim, known from Lakhish Stratum III (Zimhoni 2004a: Fig. 26.29:20), and a ridged rim, also common in Lakhish Stratum III (Zimhoni 2004a: Fig. 26.19:4).

The Hellenistic, Roman and Byzantine Periods

Area A: A Dam

A clear north–south wall (W1; width 0.7–1.0 m; Plan 2; Fig. 14) was revealed on the southwestern side of the excavated area. It was built of two parallel rows of large boulders (average size 0.4 × 0.4–0.3 × 0.5 m) and preserved to a height of one course. Part of this wall was removed by mechanical means prior to the excavation, leaving a 5.7 m long segment. No occupation levels were associated with this wall on either side (Loci 501, 507 and 508), and the limited ceramic material retrieved adjacent to it was mixed, dating from the Intermediate Bronze Age through the Roman–Byzantine periods. This wall was founded upon what appears to have been a fill of small stones and earth (L512), which was laid atop a deposit of flood-related gravel. The wall appears to represent some kind of low dam, perhaps intended to slow the floodwaters, or to direct their flow. The wall may have once spanned the entire width of the excavated area and continued further north. At a certain point in the northern section of the area, and in a direct line with W1 (Plan 2; Fig 5), pebbles carried by the stream were halted by possible artificial means. This may be an extension of W1, albeit not seen in the section. The pottery related to W1 was dated to the Roman period.

At the southeastern edge of the excavated area, another wall, orientated roughly north–south, was built of an uneven line of boulders (W2; width 0.5–1.0 m; c. 3 m exposed length; Plan 3). The northwestern edge of this wall ended in a concentration of gravelly river deposits (L505) and its southern side was composed of a fill of earth and small stones (L511 and L515). Its southeastern part was preserved up to 1 m higher than its northern end. The better-built northern side of W2 faced the stream yet diagonally to its flow. The location of the wall and its orientation may suggest that it served as a dam that controlled the streamflow.

Both the gravelly river deposits and the earth, as well as the stone fill behind the lines of stones, contained limited amounts of pottery dating to the Intermediate Bronze Age, MB II, Iron II and the Roman–Byzantine periods, indicating that the flooding occurred throughout these periods. Thus, based on the relation (level, provenance) of W2 to W1, it should also plausibly be dated to the Roman period.

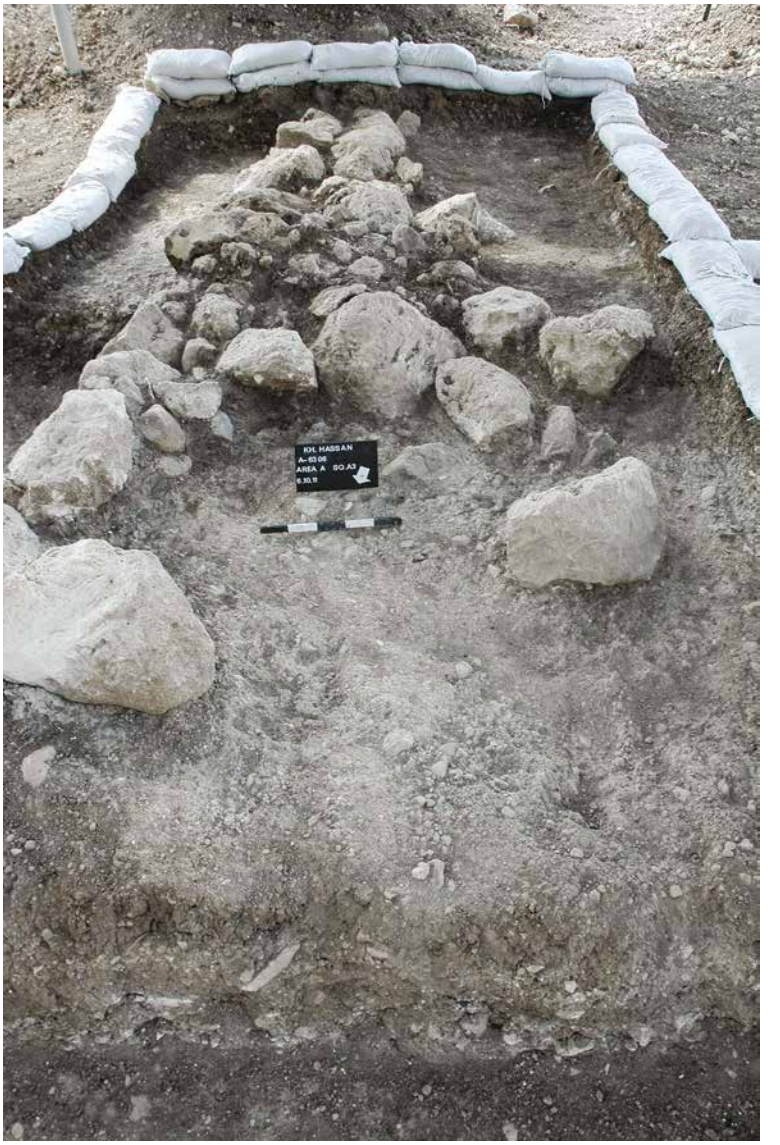


Fig. 14. Area A, a Roman–Byzantine dam (W1), looking north.

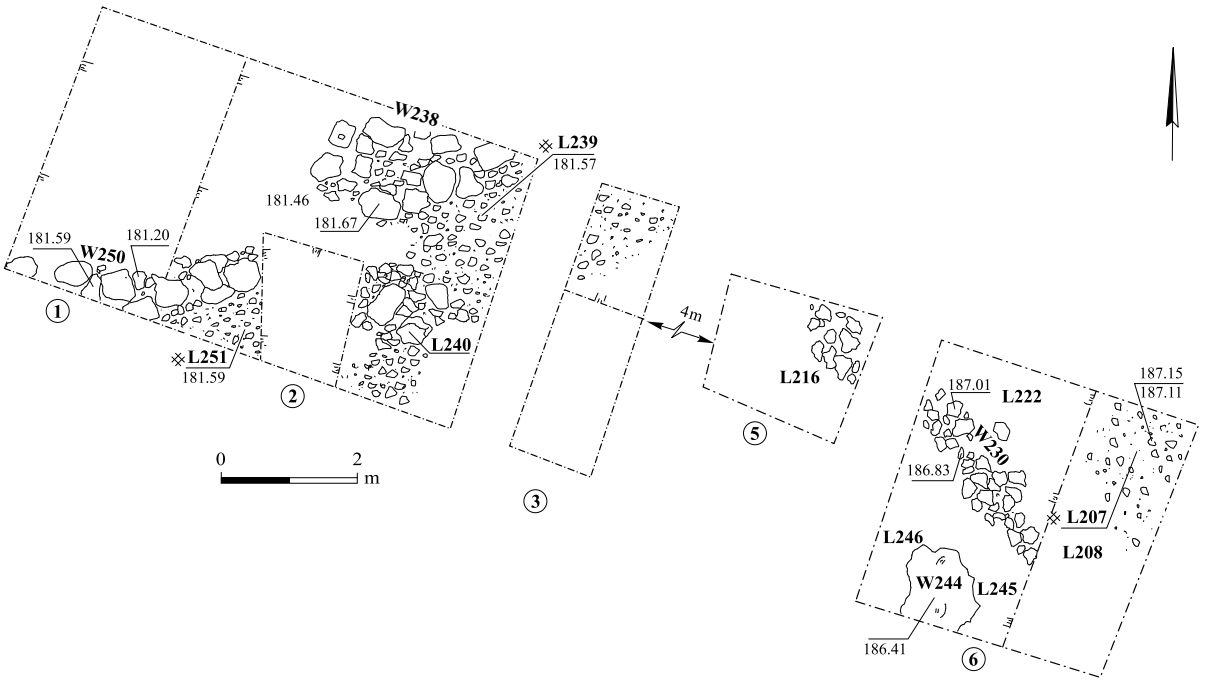
Areas B and G: A Rural Road

One of the most important remains that connected the various landscape features at Khirbat Ḥasan was a rural road that was very fragmentarily preserved. This road, at least 800 m long, but apparently stretching much more, probably served a small settlement or a farmhouse to which the fields belonged. It is most plausible that the bath excavated at the easternmost point of the site formed part of the same agricultural milieu. The road segments were rather poorly preserved due to natural conditions, such as the stream water regime and unsteady soils, as well as modern activities, such as plowing and road construction.

The main segment found in Area B (W250/W238; Sqs 1–3; Plan 6) comprised a wall built of fieldstones (c. 0.2 × 0.4 m), probably representing the northern contour of the road. A pebble surface reaching the wall from the south (L239, L251) was the road's pavement.

One of the segments excavated in Area G, found on the southern edge of Sqs 9–10, comprised the northern contour wall of the road and its related pebble pavement (W632/W650, L653, L654; Plan 7:a).[5] The best-preserved segment of the road (W618, W628, L629; c. 9.5 m long; Sqs 11–12, Plan 7:b; Fig. 15), found further east, attests to the road's construction method.

Fig. 15. Area G, a Roman–Byzantine rural road, looking north.



Plan 6. Area B, Sqs 1–3, 5, 6.

[5] Note that Area G comprises three clusters of squares that are 10–20 m distant from each other.

The road had two parallel walls (W618, W628/W663; Plan 7:b), each built of one line of large boulders (0.7 × 0.7 m, average length 0.4 m), producing the width of the walls. The spaces between the boulders were filled with smaller stones. The walls were set exactly 2.3 m apart, and a fill of rather massive pebbles and gravel (at least 0.4 m thick; L629, L638, L664) was placed in between. The trial section (L670) clearly shows this was undoubtedly necessary in view of the unsteady nature of the local colluvial soil. Moreover, it is apparent that the pebble course was laid over a larger area to create a steady surface upon which the walls would be constructed, with the fill between the latter being added last. The loci northwest and southeast of the road (L630, L664) contained brown soil, almost devoid of finds.

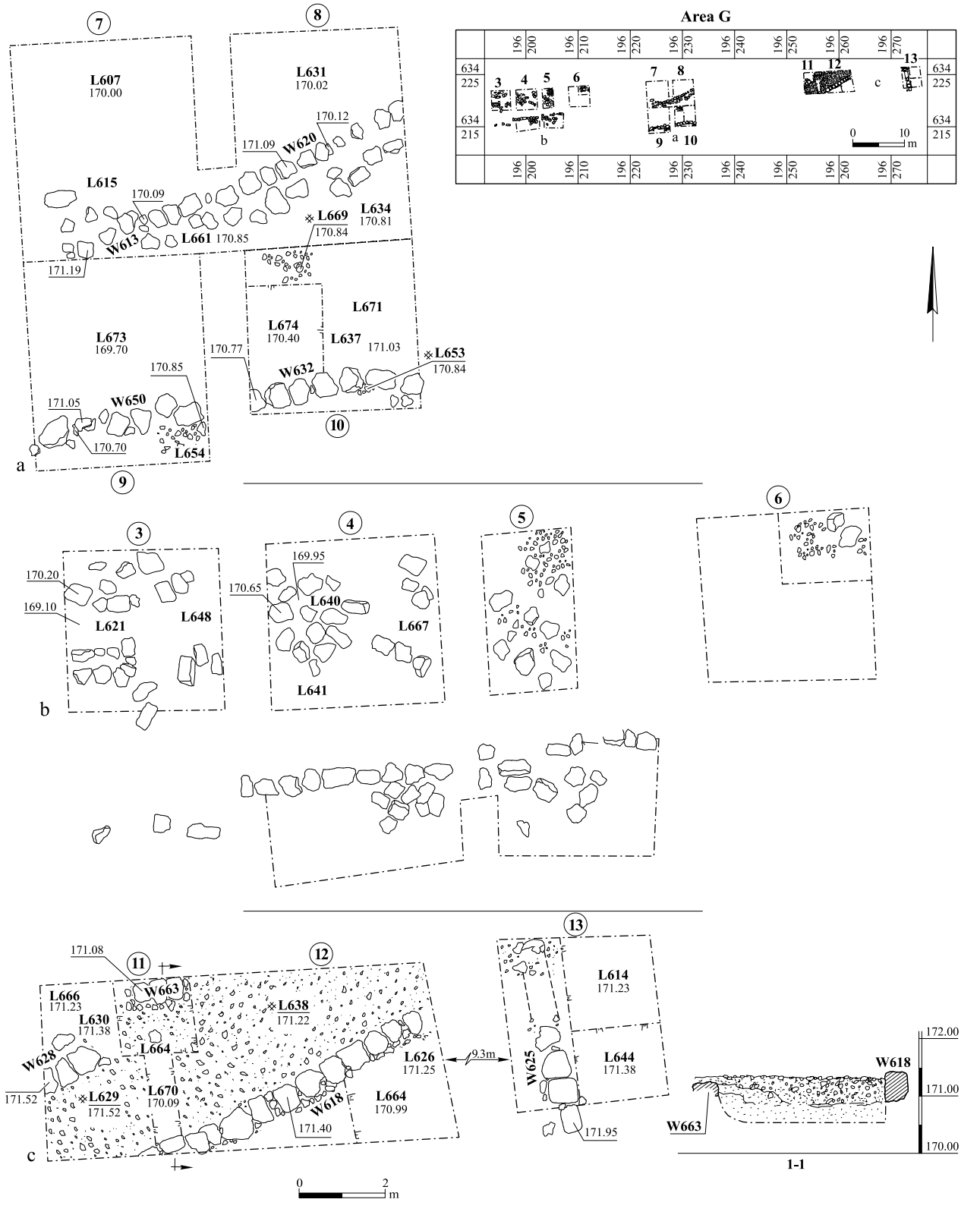
As the road was constructed on a very unsteady alluvial soil, which was subject to erosion and water flooding from the stream, several measures were taken to protect it. First, parallel walls were constructed adjacent to the road to serve as barriers to hold back water and erosion. Wall 613/620, discovered in Area G about 4 m south of the road (Plan 7:a), was built of large boulders, some reaching 0.5 × 0.6 m in size. It was preserved to a height of three courses and was exposed to a length of 9 m. The associated loci (Loci 607, 631, 615, 634, 661, 673, 674, 671, 669; Plan 7:a) contained hard, dark brown soil with very little pottery sherds.

At a later stage, perpendicular walls were built in several spots along the road (e.g., W625; Sq 13; Plan 7:b). While the joining points between these walls and the road were not located, it is suggested that they actually reached the road and served as barriers for the eroded soil that may have threatened it.[6] These walls might have, at the same time, contained soil that could be cultivated and easily accessed from the road. Loci 614 and 644, east of W625 (Sq 13; Plan 7:b), contained brown soil with almost no finds.

Stone debris found in the western Sqs 3–4 of Area G (Loci 621, 648, 640, 641 and 667; Plan 7:c) may reflect remains of structures that were originally built in conjunction with the road's protection. It is also possible that W230, and the associated loci in Area B (Sq 6; Plan 6) found west of the road segment, reflect the same situation.

It should be emphasized that not one occupation level or floor reflecting residential activity was detected in relation to the walls. Moreover, most of the scanty pottery finds collected in Area G were water-worn and included sherds dating from various periods. The road was dated to the Late Roman–Byzantine periods (fourth–fifth centuries CE; see below) based on pottery dating from these periods, which was retrieved from within its fill. Pottery from the same periods was also found in other locations in Area G, in the immediate surroundings of the segment excavated in Area B and in Area T (Avner, forthcoming).

[6] This suggestion was made by Yotam Tepper.



Plan 7. Area G, Roman–Byzantine rural road.

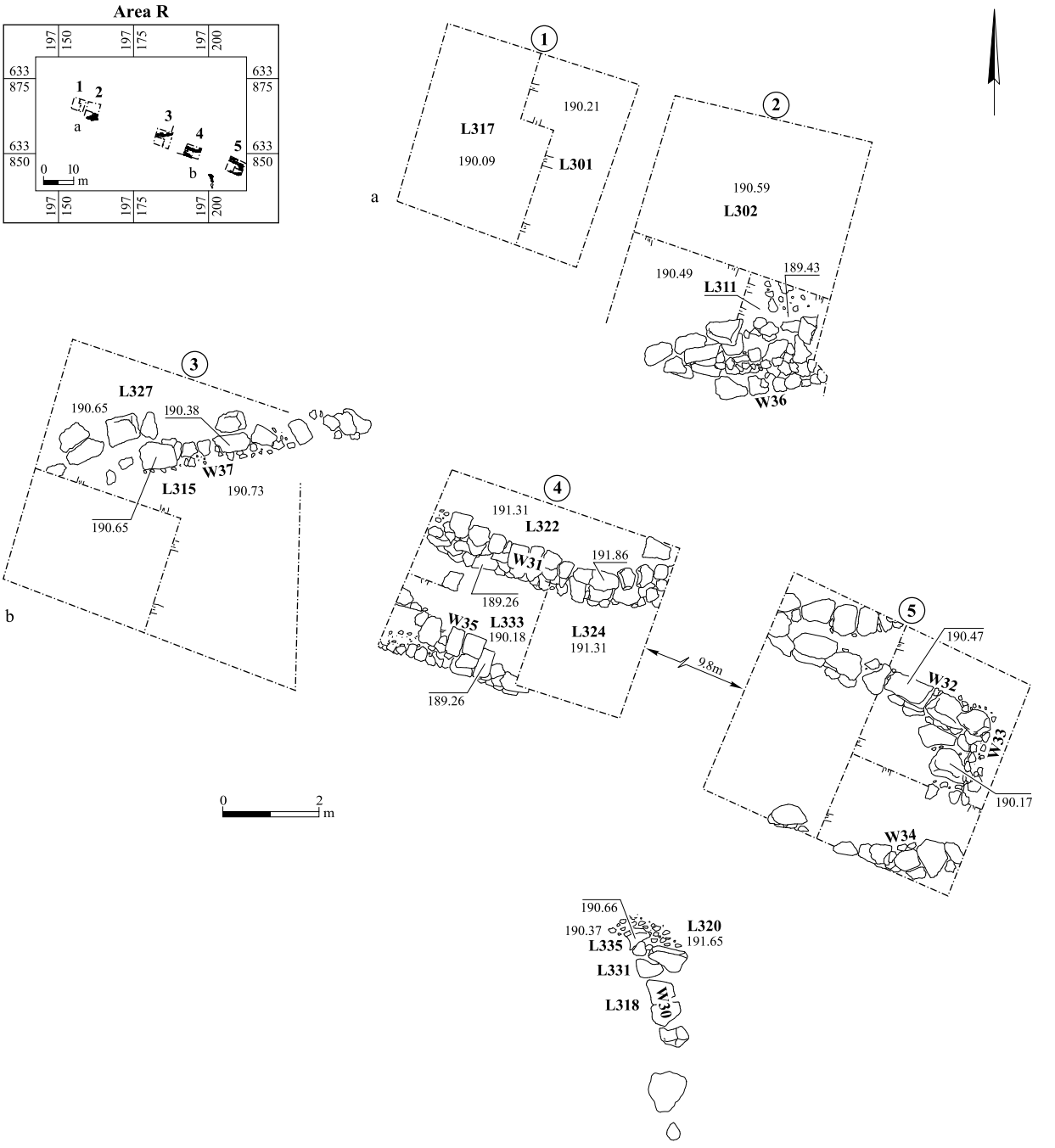
Area R: Dam Systems

The eastern part of Khirbat Ḥasan is located adjacent to the stream's course, which runs on its northern side. To its south is a wide valley sharply descending northward, located between the eastern and western spurs of the limestone hills of the Tarom ridge. A three-meter-thick accumulation of dark brown colluvial soil excavated in Area R illustrates this situation.

A deep trench cut by heavy machinery prior to the excavation destroyed walls built in a general northeast–southwest orientation. The section created by this trench revealed walls with small stone surfaces abutting them from the west. Identified as occupation levels prior to the excavation, these surfaces turned out to be natural pebbles and eroded gravel carried by the stream and stopped by the walls.

Eight walls were detected and excavated (W30–37; Plan 8). Two walls (W30, W33; Fig. 16) were oriented northwest–southeast, and one (W36), northeast–southwest. All three

Fig. 16. Area R, Surface 320 attached to W30, looking south.



Plan 8. Area R, Roman–Byzantine dam.

walls, perpendicular to the assumed route of the stream, may have functioned as dams. The dam's walls were constructed of very large stones, combining some hewn stones and large field boulders (0.30–0.75 m wide). These walls, albeit built of large stones, reflect poor masonry techniques; founded directly on the unsteady brown colluvial soil, they collapsed and twisted.

Two parallel walls (W31, W35; 0.5–0.6 m wide), set c. 2 m apart, were similarly constructed of large boulders and were preserved to a height of three courses. These walls seem to have formed a system parallel to the stream and may have functioned as terrace walls or a barrier against erosion from the north of the stream.

No occupation level was found in the various points where the walls and surfaces were detected. The thick dark brown soil, mixed with gravel and washed pebbles and limestone fragments, accumulated for at least 3 m from bedrock to surface with no change in provenance and soil texture. The pottery collected represented a mixture of sherds dating from the Iron Age through the Islamic period (Loci 327, 315, 301, 317, 302, 311, 322, 324, 335, 331, 318, 320). However, most of the diagnostic sherds were securely dated to the Early Roman and Byzantine periods. Moreover, only the Roman-period pottery was not water-worn and thus seems to be directly related to the construction of the dam walls.

The Finds

The excavations in Areas B and G yielded only a small amount of pottery and one glass vessel; two coins were found on surface levels. Most of the pottery was found in secondary and unstratified contexts. The finds from these two areas are presented together.

Hellenistic- and Roman-Period Pottery

Rouletted Bowls.— The bowls in Fig. 17:1, 2 have a body decorated with rouletted diagonal lines. This type dates from the second (Magness 2005:104–108) to the late sixth century CE (Magness 1993:154). Figure 17:1 has a folded, thickened ledge rim with a small ridge on its lower external part and a concave body. Figure 17:2 is an out-turned thickened rim with a small ridge below.

Cooking Pots.— Figure 17:3, 4 depicts two triangular rims of closed cooking pots. Similar cooking pots are dated from the Hellenistic (Berlin 2005:36–38) to the Byzantine (Magness 1993:219) periods. Due to the small size of the preserved fragments, the exact type or period cannot be determined.

Casseroles.— Figure 17:5 is the angular everted rim of a casserole. This type is dated from the Hellenistic to the Roman periods (Vincenz 2010:150, Fig. 8.34:1) and is found in many sites throughout Israel (Johnson 2008:72, 174:839). Figure 18:6 is the rim of a shallow casserole. These casseroles have an inward beveled rim with a small ridge on its inner part, and an uplifted handle. They are dated from the late second to the eighth centuries CE,

and are the most popular casseroles in the repertoire (Johnson 2008:71; 168:819). Similar casseroles were also found in Ramla (Vincenz 2010:150–151, Fig. 34.7).

Juglet.— Figure 17:7 is a rim with a flat upper part sloping inward, square on the inside, with a convex, narrow neck. Its outer part is folded and rounded. This vessel might be a local version of the Hellenistic lagynos dated at Jericho to the end of the first century BCE (Bar-Nathan 2002:46).

Bag-Shaped Jars.— This is the most common jar type in Hellenistic-period assemblages (Guz-Zilberstein 1995:311). They have an elongated body widening toward the base and a rounded shoulder. At Dor, they are dated to the fourth–first centuries BCE (Guz-Zilberstein 1995:311). The subtypes of this jar are defined by the shape of their rims: Fig. 17:8 is a folded, out-turned rim with a shallow and narrow depression between the end on the rim and the neck. Similar jars are well-known from Hellenistic assemblages throughout Judea (Bar-Nathan 2002: Fig. 6:37). The rim of Fig. 17:9 is rounded, folded and out-turned, rounded in profile, and the neck is relatively thin. Similar vessels were found at Jericho (Bar-Nathan 2002: Fig. 3:17). Figure 17:10 has a folded rim ending in a sharp angle and with a shallow depression on its lower part. The upper part of the rim is sharpened. Similar vessels were found at Jericho (Bar-Nathan 2002: Fig. 6:16). Figure 17:11 has a folded straight rim and neck. The upper part of the rim is flat and slightly sloping inward, forming a small ridge on its inner part. The inner part of the rim is slightly concave and has visible wheel marks. Similar vessels were found at Jericho (Bar-Nathan 2002: Fig. 6:32). Figure 17:12 has a folded rim whose lower part slightly pulls outward, forming an emphasized depression in its lower part. The upper part of the rim is simple and rounded. Similar vessels were found at Jericho (Bar-Nathan 2002: Fig. 3:14).

Palestinian Bag-Shaped Ribbed Jar (RSJ).— This is the most common storage jar in the Roman and Byzantine periods in Israel. It is characterized by a sharp ridge at the bottom of the neck, and a globular body ribbed mainly on its upper part. It is dated from the early first century CE to the Early Islamic period (Johnson 2008:85). The RSJ jar has several subtypes differing in the shapes of the neck, rim and body. Based on parallels from Masada (Bar-Nathan 2006:51–60) and Jericho (Bar-Nathan 2002:150–156), the RSJ jars found at Khirbat Ḥasan can be dated to the first century BCE–early second century CE.

Figure 17:13 is a rim with a small ridge at the bottom. The rim is simple and rounded on its upper end, flaring out slightly and bearing wheel marks on both sides. Figure 17:14 also flares out, with a thickened, flat upper part. The rims in Fig. 17:15–18 are slightly incurved, with an inner thickened angle on their upper part, forming a depression below it. Only the ridge at the bottom of the rim is preserved. Figure 17:19–22 depicts folded rims slightly out-turned on their lower part, forming a small ridge. The upper part of the rim is simple and rounded, and the inner part is concave.

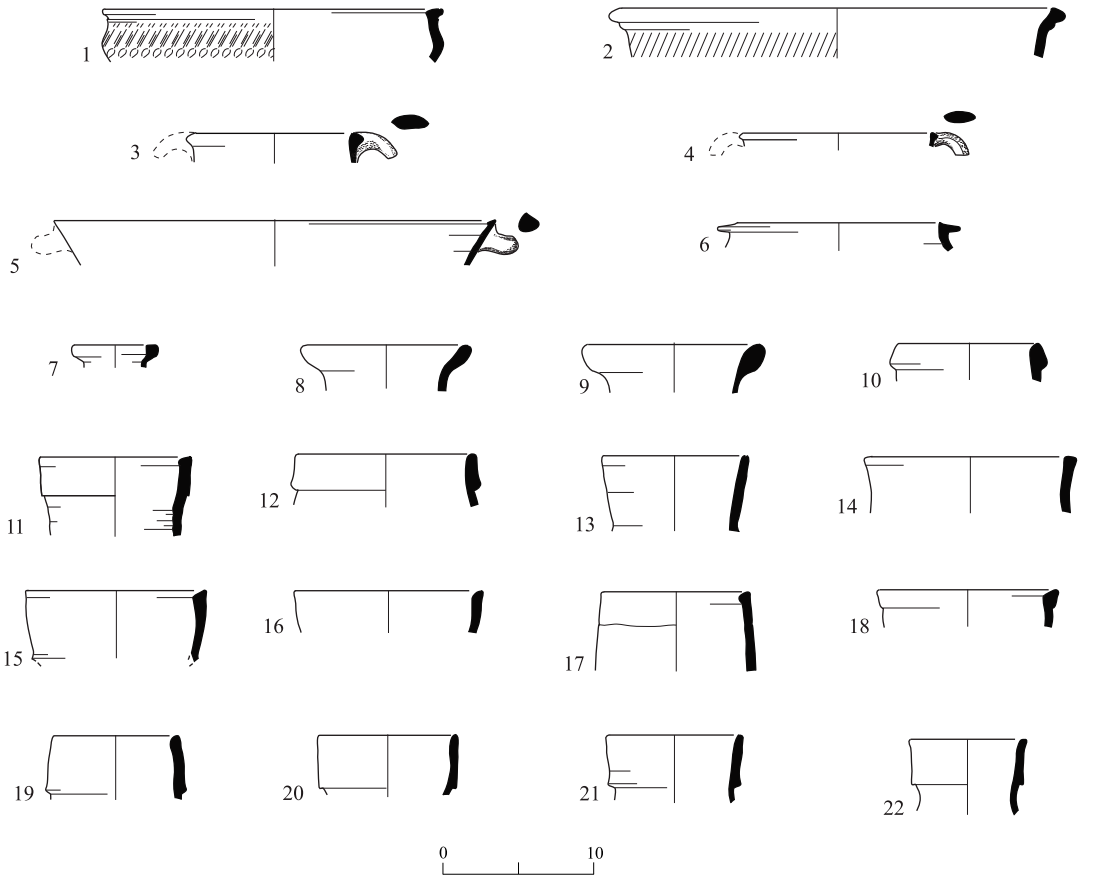


Fig. 17. Areas B and G, Hellenistic- through Medieval-period pottery.

No.	Vessel	Area	Locus	Basket	Description
1	Roulated bowl	G	631	6070	Orange-pink well-sorted clay, gray to brown thin core; large brown medium-sized red, small white and small gray inclusions; rouletting and circles on int.
2	Roulated bowl	B	227	2054/1	Light orange to gray well-sorted and porous clay, light gray thin core; small to medium-sized gray, and tiny and large white inclusions
3	Cooking pot	G	626	6104/2	Brown-gray core; small to medium white and gray inclusions
4	Cooking pot	G	644	6063/2	Brown-gray core; small to medium white and gray inclusions
5	Casserole	G	670	6127/1	Brown clay; small to medium white and gray inclusions
6	Casserole	B	222	2025	Dark brown clay; large white, gray and black inclusions
7	Juglet	G	614	6074/4	Light brown core; small to large white, gray, pink-brown and red inclusions
8	Jar	G	644	6093/3	Well-sorted and porous light gray clay with light gray core; small to large gray, white and red inclusions
9	Jar	G	644	6093/2	Medium porous clay with brown-gray core; small to large white, gray, pink and red inclusions

Fig. 17. (cont.)

No.	Vessel	Area	Locus	Basket	Description
10	Jar	G	614	6047/2	Medium porous clay with gray core; medium to large white, light gray and red inclusions
11	Jar	G	621	6053	Medium porous clay with light brown core; small to medium white, gray and red inclusions
12	Jar	B	227	2044	Low porous brown clay; small and very large white and gray inclusions
13	Jar	B	216	2067	Light orange to pink clay with some large bubbles; small and large red, gray and white inclusions
14	Jar	G	614	6047/3	Light brown clay with light gray to brown core; small to medium gray and light brown inclusions
15	Jar	B	214	2039	Well-sorted light gray clay; small to large light gray and red inclusions
16	Jar	G	671	6161	Gray to brown porous clay, gray core; small and large light gray, white and red inclusions
17	Jar	G	637	6356/2	Light brown porous clay, light gray core; small and large gray, white and red inclusions
18	Jar	G	670	6127/2	Porous clay, gray core; small to large gray and white inclusions
19	Jar	G	644	6128	Medium porous clay, dark gray core; small to large gray, white and red inclusions
20	Jar	G	626	6104/1	Medium porous clay; small to medium white, gray and red inclusions
21	Jar	G	644	6063/1	High porous clay, dark gray core; small to large white, gray and red inclusions
22	Jar	G	614	6047/1	Gray clay; small and large dark and light gray inclusions

Byzantine and Medieval Pottery and Glass

Basins.— Figure 18:1 is a rim of a large basin with a thickened incurved rim. Below the rim, the body of the vessel shows 12 combed incised horizontal lines, beneath which are four combed incised wavy lines. This type is common throughout the country during the sixth–eighth centuries CE (Vincenz 2010:122–123). Figure 18:2, 3 depicts two fragments of an arched rim basin. This type is dated to the Byzantine period and has been found in sites throughout Israel (Magness 1993:204–209; Vincenz 2010:131, Fig. 8.12:9, 10).

'Khirbet el-Jiljil' Handle.— The handle illustrated in Fig. 18:4 is handmade; and is decorated on its upper part with four sets of incised herringbone decorations, separated by shallow ridges. Remains of the incised decoration were preserved at the end of the spout, at its joining point with the vessel. The most suitable parallels are the vessels found at the nearby site of Khirbat el-Jiljil, where they were probably manufactured. 'Khirbat el-Jiljil' pottery is dated to the late Byzantine period (Vincenz 2005:132–137, Figs. 9:1–3).

Glass Beaker.— One fragment of a glass vessel (Fig. 18:6) was found in Area G, inside one of the northern walls of the Roman road (W632, see above). The rim is made of colorless glass with no weathering. Similar rims were found at the Jalame glass workshop (Weinberg and Goldstein 1988:60–63, Fig. 4:23) and at Khirbat Ka'kul in Judea (Gorin-Rosen 2006:108, Fig. 1:3). Based on the parallels from Khirbat Ka'kul, the vessel can be dated to the fourth century CE.

Bowl.— Figure 18:5 is a Medieval bowl with a ledge rim thickened at the edge. The bowl is glazed with a monochrome green glaze on a white slip (both worn). This type of bowl is usually dated to the twelfth–thirteenth centuries CE (Avissar and Stern 2005:16, Fig. 6:1).

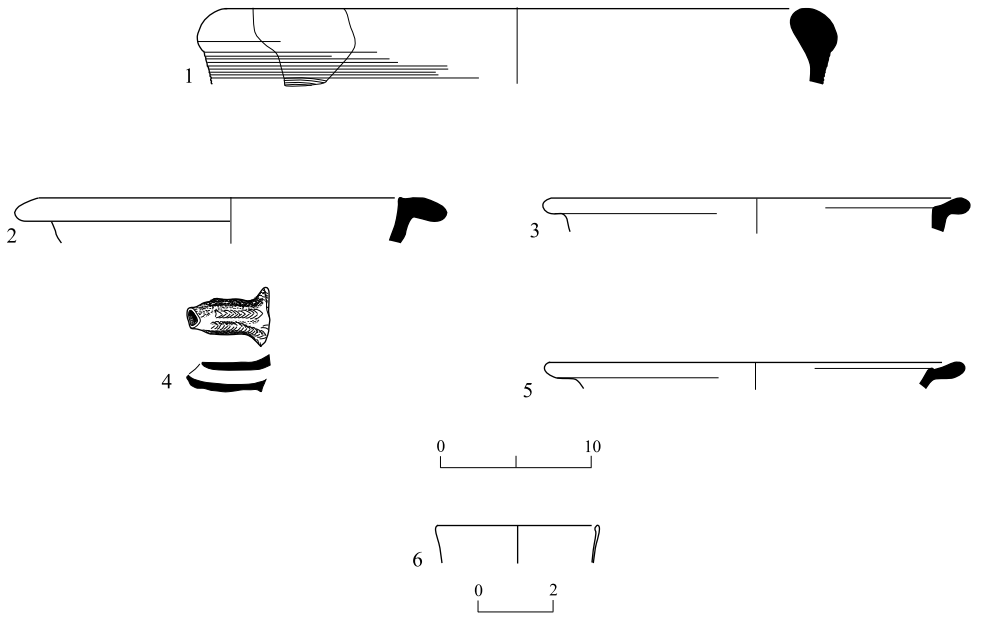


Fig. 18. Areas B and G, Hellenistic- through Medieval-period pottery (1–5) and glass (6).

No.	Vessel	Area	Locus	Basket	Description
1	Basin	G	641	6061	Light gray clay with no core; small to medium dark gray and white inclusions
2	Arched rim basin	G	674	6162	Gray to brown low porous clay, gray core; small and large dark gray white and red inclusions
3	Arched rim basin	G	670	6127/3	Gray to brown low porous clay, light core; small and large brown to reddish, dark gray and white inclusions
4	Kh. El-Jiljil Ware	B	207	2020	Buff low porous clay, gray core; small and medium gray and red inclusions
5	Bowl	G	637	6356/1	Low porous clay, dark-brown core; small and large dark gray, brown, gray and white inclusions
6	Glass beaker	G	W632		

Byzantine–Umayyad-Period Coins
Two coins were found on surface levels: one dates from the fourth century CE and the other, from the Umayyad period.[7]

1. Reg. No. R/3040, L315. IAA 138504.
351–361 CE.
Obv.: Pearl-diademed and draped bust r.
Rev.: [FEL T]EMP [REPARATIO] Virtus spearing falling horseman.
Æ, ↙, 0.62 g, 13 mm.
Cf. *LRBC* II:87, No. 2039.

2. Reg. No. R/3042, L315. IAA 138505.
Umayyad, anonymous, post-reform (697–750 CE).
Obv: [وحده \الاالله]\لااله

Discussion

The main feature in Areas B and G is the paved rural road. The small number of diagnostic sherds retrieved from the section inside the pavement (L670; Figs. 17:5, 18; 18:4) offers a *terminus post quem* for the construction of the road, i.e., the fourth century CE. The glass beaker, dated to the fourth century CE, was also found inside one of the walls of this rural road (W632; Fig. 18:6). Though the road is dated to the fourth–fifth centuries CE, most of the pottery from the protecting walls north of the road dates from the late Hellenistic–Early Roman periods (Fig. 17:4, 9, 11, 16, 19, 21).

A few late Byzantine (Fig. 18:1, 4) and Medieval (18:5) sherds represent later activity in the region. Thus, it can be suggested that the road, the plots, and the barriers built on both sides, were first aligned during the late Hellenistic–Early Roman periods and rebuilt in the Late Roman–early Byzantine periods, perhaps in connection with the construction of the bath in Area T just 1 km to the east (see above; Avner, forthcoming).

Summary and Conclusions

The excavations at Khirbat Ḥasan revealed a variety of human activities reflecting the bilateral relationship of its inhabitants with the natural environment, mainly with Naḥal Har'el. The finds attest to the human groups that cultivated the fields along the stream, coping with flooding water and massive erosion from the hills. While many of the remains, mainly pottery, were found in secondary contexts, and are thus suspected to have resulted from erosion, some episodes of human activity were preserved *in situ*.

[7] The coins were identified by Donald T. Ariel.

The earliest episode is the scatter of Khirbet Kerak Ware and other EB III pottery sherds, perhaps reflecting an ad hoc agricultural activity initiated by residents of the fortified town at Ḥorbat Shovav during the mid-third millennium BCE.

Next, three types of agricultural-related activities were discovered, dated to the Intermediate Bronze Age: the water-control system in Area A, reflecting the need to control the stream's water regime already in this period; an *in situ* occupation replaced by two dam-like walls, representing a dynamic rhythm of control and adaptation to natural conditions during the same period; and adjacent stone surfaces, which may have been used for processing agricultural products, thus reflecting another aspect of human activity along the stream, perhaps connected with the settlement at nearby Moshav Tarom.

The large amounts of Iron Age II potsherds found in Area C may date the water-control system that was established in this area along the stream to this period.

The most extensive activity connected with the stream's ecosystem was during the Roman and Byzantine periods. Dam walls were constructed along the stream, and other walls were constructed to stop erosion from reaching the valley that stretched along the eastern part of the site. The rural road segment from this period probably connected the fields, most likely cultivated on behalf of a local authority, during this time.

Acknowledgments

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