EXCAVATIONS AT EARLY BRONZE IV DHAHRAT UMM AL-MARRĀR IN THE JORDAN VALLEY

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Introduction

Following the regional abandonment of the largest settlements in the southern Levant in the late 3rd millennium BC, populations shifted to smaller sedentary settlements or pursued pastoral life-ways. As part of the Jordan Valley Village Project's effort to investigate Bronze Age rural agrarian life, we conducted five weeks of excavation in 1996/97 at Dhahrat Umm al-Marrār in the northern Jordan valley, Jordan. Perched on a hilltop overlooking the broad agricultural lands of the Jordan valley, our excavations revealed an Early Bronze IV village with domestic architecture and artifacts indicative of sedentary agrarian subsistence. Two particularly noteworthy finds from Umm al-Marrār are a stone wall at least 2m wide that encloses an area of 0.34 ha and an *in situ* collection of over two dozen ceramic vessels. The *in situ* pottery contains a variety of forms and provides a rare glimpse of a generalized domestic ceramic assemblage rather than the more specialized mortuary groups known from a variety of Early Bronze IV tombs throughout the region. Thus, Umm al-Marrār joins a growing corpus of excavated Early Bronze IV sites in the northern Jordan valley and provides new insights on the social dynamics of this crucial juncture in Levantine population aggregation and disaggregation.

The Early Bronze IV period (EB IV) (*ca.* 2350-2000BC) witnessed the regionally pervasive abandonment of the largest settlements in the southern Levant. Archaeological excavation and survey over the past half century have established that the region's inhabitants abandoned the towns of Early Bronze II-III (*ca.* 3100 / 3000-2350BC) by the end of Early Bronze III (Adams 2000; Philip 2001). Debate continues over whether these towns represented the first fluorescence of urbanism in the southern Levant (Dever 1995; Falconer 1994; Palumbo 1990, 2001; Philip 2001; Richard 1987). In either case, following the end of the larger Early Bronze Age settlements, pastoral sites prevailed in the arid parts of the region, while farming villages continued in areas with promising agricultural potential (e.g. Helms 1983, 1984, 1986, 1989; Prag 1974, 1986, 1989, 1990, 1991; Rast and Schaub 1978a, 1978b, 2003; Richard 1982, 1983, 1990; Richard and Boraas 1984, 1988; Richard and Long 1995; Richard *et al.* 2010). Sedentary villages continued to manage domesticated animals and plants, including orchard crops, especially grapes and figs (Fall, Falconer and Lines 2002: 463; Fall, Lines and Falconer 1998: 118). Pastoral communities processed plant foods with ground stone querns to complement the herding of domesticated sheep and goats, and the exchange of copper tools and ingots (Adams 2006; Cohen 1992; Cohen and Dever 1979, 1981; Haiman 1996).

Some debates over the nature of EB IV social organization have centered on the degree of political complexity and economic specialization that persisted after the collapse of Early Bronze II-III town life (Dever 1980; Palumbo 1987, 2001; Richard 1987). Changes in large scale specialized production following the abandonment of Early Bronze Age towns may signal the use of new modes of kin-based household production (Dever 1989, 1995). While regional patterns of ceramic production have been elusive (Goren 1996; Palumbo and Peterman 1993; Prag 1988), local pottery exchange (Falconer 1987; Jones 1999) and long distance trade of Canaanean blades clearly characterized the Early Bronze IV economy (Rosen 1996). Burial data also allude to a reduction in the size of social groups. For

example, EB IV shaft tombs at Bāb adh-Dhrā‘ held fewer than seven people, reflecting a return to Early Bronze I burial practices, rather than continuing the tradition of large EB II-III charnel houses (Chesson 1999). Reduced interments per tomb may allude to population decline or a contraction in family size or group membership during Early Bronze IV. This social reconstruction holds implications for the organization of labor, especially for extra-household tasks.

The excavation of Umm al-Marrār in December 1996 and January 1997 was an outgrowth of a multidisciplinary investigation into rural economy and ecology during the period of Early Bronze IV town abandonment and Middle Bronze Age re-urbanization (Falconer and Fall 2006). The results from Umm al-Marrār may be integrated with those from nearby contemporaneous sites, such as Tall Abū an-Ni‘āj, to illuminate the adjustments made by rural communities in societies undergoing population disaggregation (Falconer and Magness-Gardiner 1989; Fall, Lines and Falconer 1998).

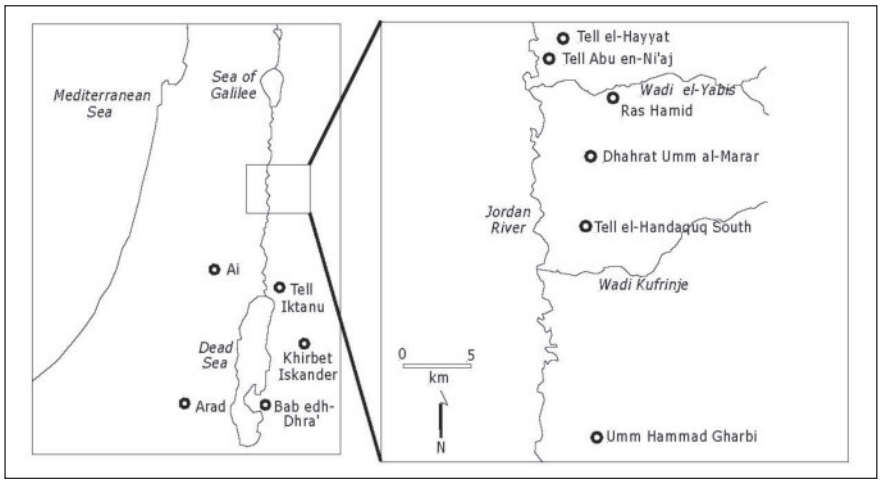
Dhahrat Umm al-Marrār was identified as an archaeological site in 1946, based on surface architecture and large quantities of pottery, chipped stone artifacts, and ground stone mortars and querns (Glueck 1951: 277-78). The East Jordan Valley Survey (EJVS) revisited the site in 1975, inferred an EB IV occupation date based on its pottery, and concluded that the large number of ground stone querns indicated an agricultural subsistence economy (Ibrahim, Sauer and Yassine 1976: 63). The EJVS also located small stone structures and a wider stone wall around portions of the site. Subsequent archaeological surveys corroborated EB IV habitation and continued the discussion about Umm al-Marrār’s enclosure wall (Palumbo 1990).

A variety of questions inspired us to excavate at Umm al-Marrār: (1) What form(s) of settlement and economy are represented by the material remains? (2) What are the larger implications of the enclosure wall? (3) How did this community fit within the structure of EB IV society? Our research results and interpretations provide a profile of Umm al-Marrār that adds to the broader comprehension of rural life during the dramatic social and economic changes experienced by the southern Levant in the late 3rd millennium BC.

Site Setting and Description

Dhahrat Umm al-Marrār (MEGA 9575; Palestine Grid 206.7E 194.8N) lies approximately 5km east of the Jordan River, between Wādī al-Yābis to the north and Wādī Kufranjah to the south (**Fig. 1**) (Falconer, Fall and Jones 1998). The site sits atop an isolated limestone hill with a summit approximately 100 meters below sea level, which overlooks the broad agricultural valley of the Jordan River near the transition between the plain of the Jordan valley and the foothills of the escarpment to the east. A spring emerges from these foothills and flows along the south-eastern foot of the hill 40m below its summit. Thus, Umm al-Marrār’s inhabitants had a commanding view of the surrounding landscape, as well as access to water and fertile agricultural land.

Pottery and lithic artifacts cover a 3.30 ha area on the hilltop and its slopes, while stone

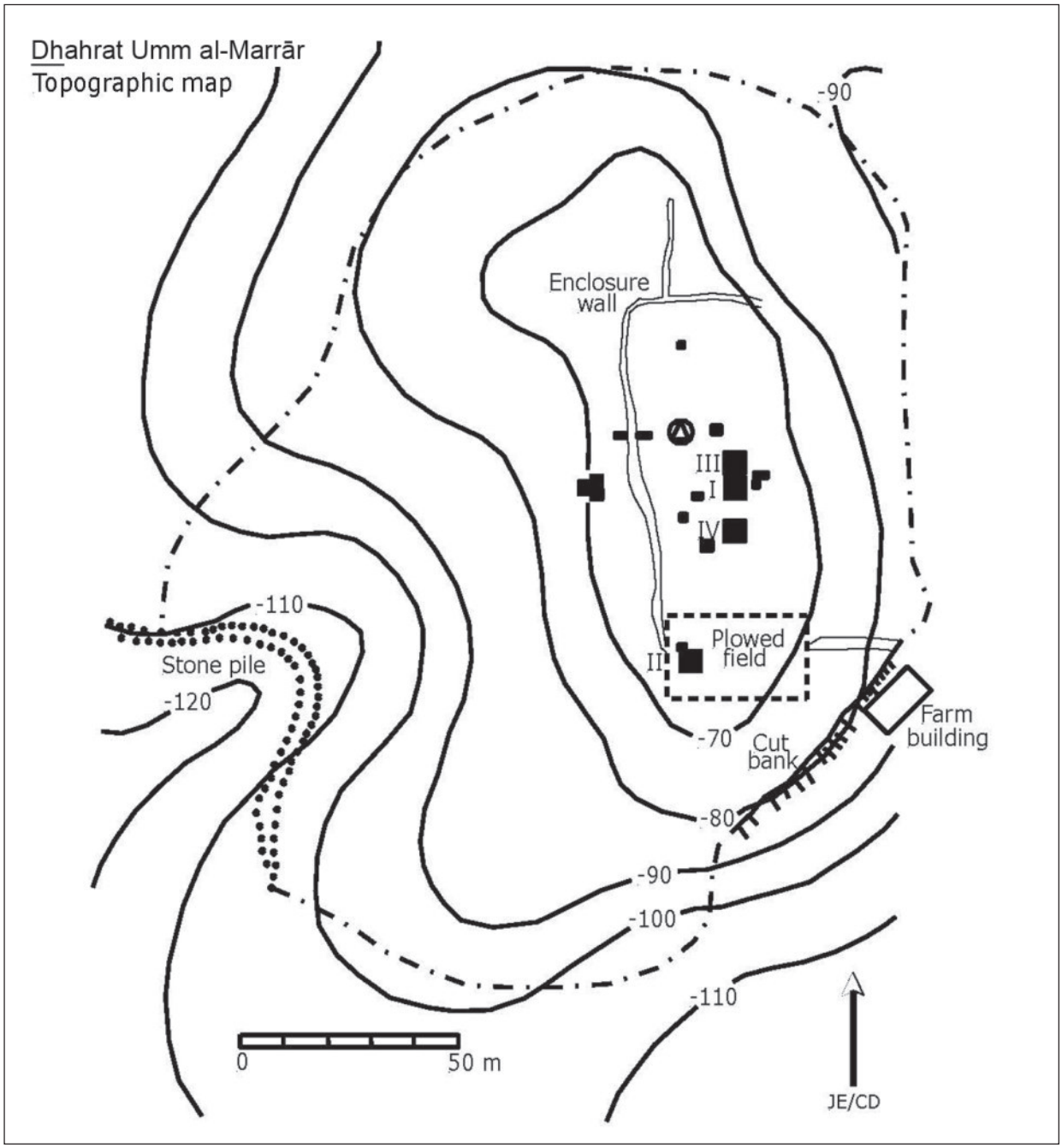


1. Location of Dhahrat Umm al-Marrār in the northern Jordan valley, along with other Bronze Age sites mentioned in the text (drawn by J. Jones).

walls are spread over an area of approximately 3400 m^2 or 0.34 ha within and adjacent to the stone enclosure wall (**Fig. 2**). Cultural deposits cover natural sediments and exposed sections of limestone bedrock. Cemented alluvial chert and limestone cobbles fill natural depressions in the bedrock and were used as hammer stones and construction material. Erosion, modern military earthworks, plowing and contemporary farm buildings have impacted the site, particularly along its southern side.

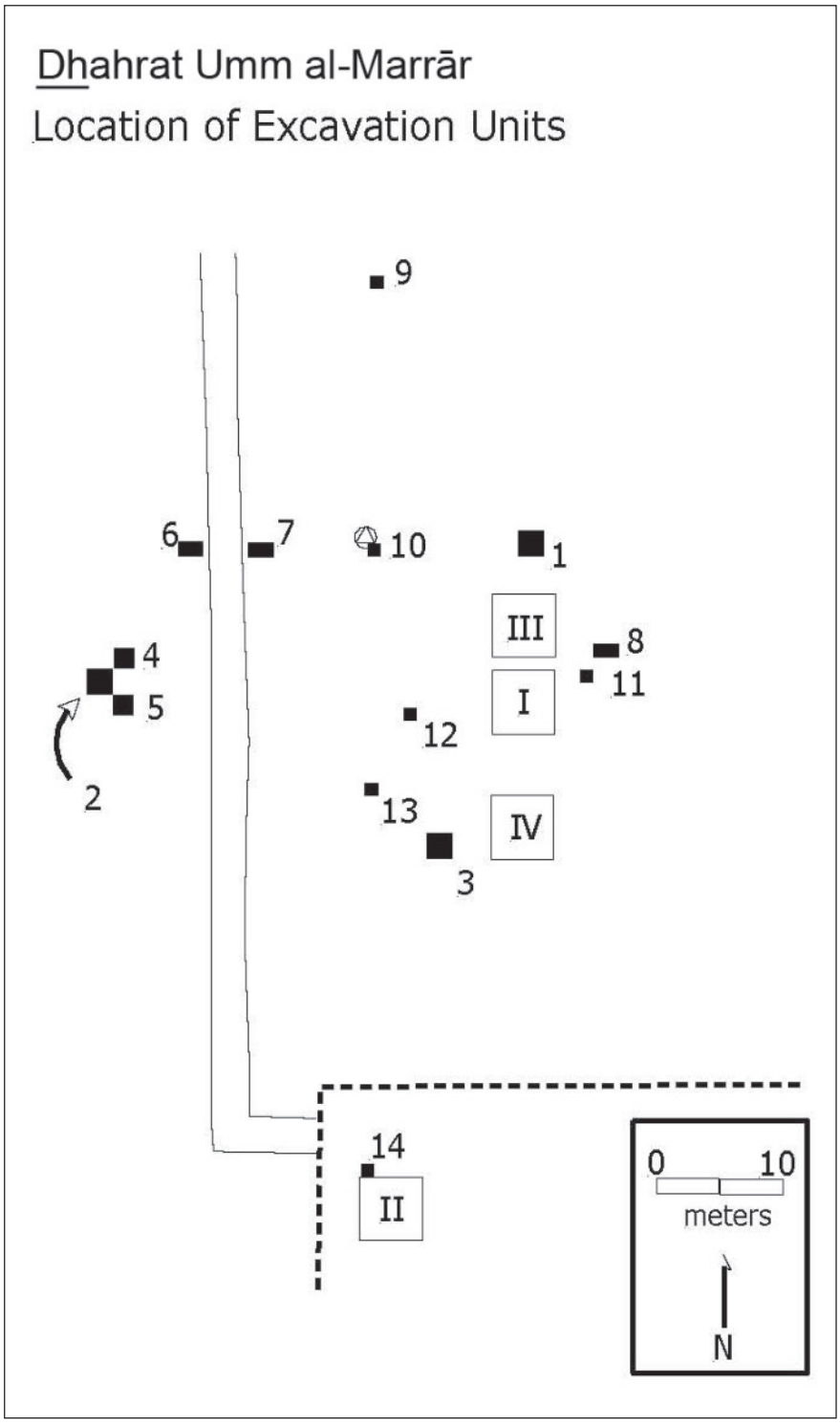
Methods

We investigated the depth and extent of cul-



2. Topographic map of Dhahrat Umm al-Marrār showing the stone enclosure wall and excavation units. Contour lines indicate meters below the main site datum (datum indicated by circled triangle). Dashed line shows the maximum extent of EB IV pottery on the surface in 1996 / 97 (drawn by J. Eighmey and C. Davies).

tural material, and the location of features and architecture using fourteen small excavation units, ranging from 1x1m to 2x2m (**Table 1**; **Fig. 3**). Inside the enclosure wall, near the top of the hill, four additional 4x4m units allowed broad exposures of two structures and a trash midden. We excavated nearly 93m^2 or about 2.7% of the area inside the enclosure wall during the 1996 / 97 season. Consistent with our field methods at Tall Abū an-Ni'āj, we sieved all excavated sediments through a 1cm mesh to recover stone and ceramic artifacts, as well as animal bones.



3. Location of the excavation units at Dhahrat Umm al-Marrār (dashed line shows area disturbed previously by ploughing or bulldozer). Main site datum indicated by circled triangle (drawn by J. Jones).

Table 1: Excavation Units Showing Size and Area Excavated[1].

Excavation Squares	Field Designations	Size	Area Excavated
Area I	Area I	4x4	16m^2
Area II	Area II	4x4	16m^2
Area III	Area III	4x4	16m^2
Area IV	Area IV	4x4	16m^2
Unit 1	1 S / 12 E	2x2	4m^2
Unit 2	12 S / 22 W	2x2	4m^2
Unit 3	25 S / 5 E	2x2	4m^2
Unit 4	10 S/ 20 W	1.5x1.5	2.25m^2
Unit 5	13.5 S / 20 W	1.5x1.5	2.25m^2
Unit 6	1 S / 15 W	1x2	2m^2
Unit 7	1 S / 9.5 W	1x2	2m^2
Unit 8	9 S / 17.5 E	1x2	2m^2
Unit 9	20 N / 0 E	1x1	1m^2
Unit 10	1 S / 0 E	1x1	1m^2
Unit 11	11 S / 17 E	1x1	1m^2
Unit 12	14 S / 3 E	1x1	1m^2
Unit 13	20 S / 0 E	1x1	1m^2
Unit 14	50 S / 0 E	1x1	1m^2
	Total m^2 excavated		92.5m^2

Approximately 150 liters of excavated sediments were processed with a Float Tech 2000 water flotation machine to recover charred seeds and plant material. Faunal data are presented as numbers of identified specimens (NISP), permitting comparison with assemblages from other sites. Ceramic sherds were counted and weighed; all rim, handle, base and decorated sherds underwent further analysis, primarily to infer ceramic chronology and to identify vessel form and function. Vessel forms were coded using a morphological classification system developed for Tall Abū an-Ni'āj based on Cole's (1984) study of Middle Bronze Age pottery from Shechem. The size of ground stone tools and their utilized surfaces were measured in the field to the nearest millimeter and their functional types and raw materials recorded.

Results

The Enclosure Wall

Dhahrat Umm al-Marrār's most prominent architectural feature, a lengthy rectangular enclosure wall, was built from unshaped blocks of limestone up to 70cm long, laid 2.0-4.5m wide on the surface. Preserved one course high, the widest section of the wall lies directly west of Areas I and III (see **Fig. 2**). This feature bounds the top of the hill with a 100m long segment along the western side of the hilltop, and northern and southern sections that extend 30m east to the edge of the hill. A separate wall extends

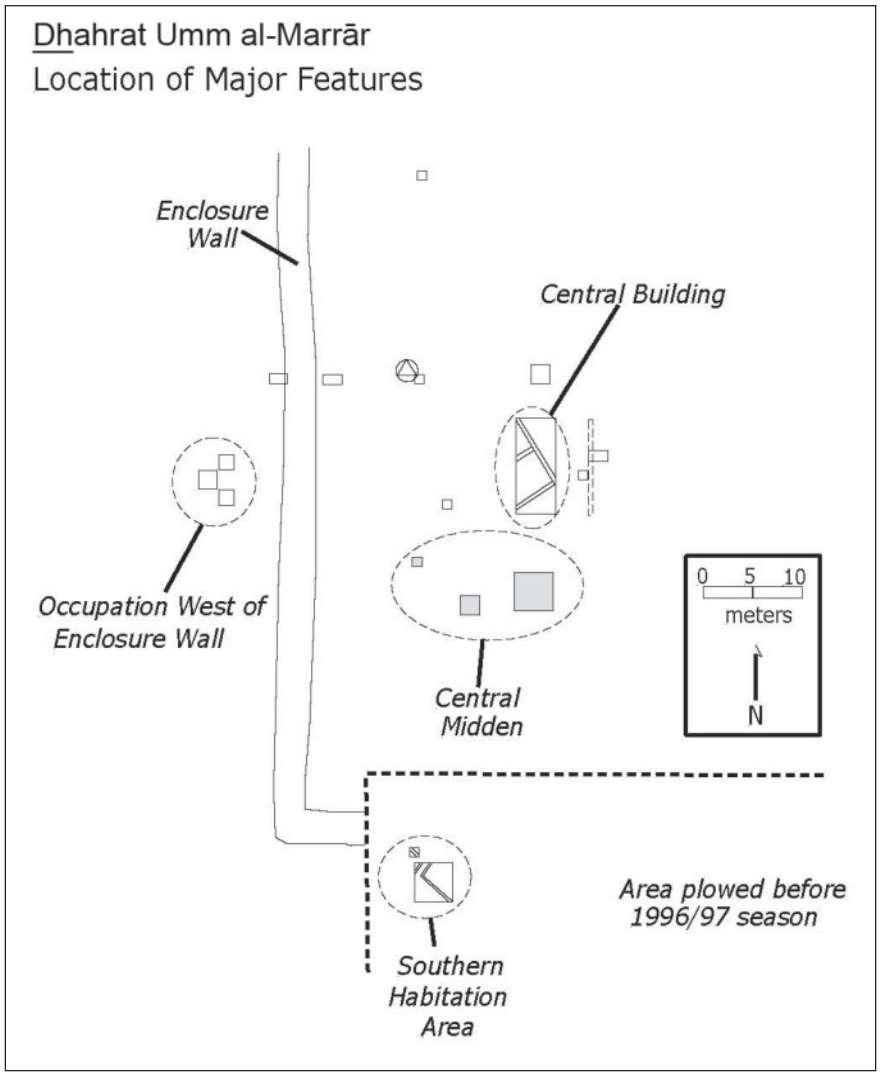
1. Field designations for each excavation unit refer to the distance (in meters) from the south-west corner of each unit to the main site datum.

25m north from the northern segment. These walls are presumably those identified by Glueck (1951) during his regional survey over 50 years ago. No gates, openings or towers are visible from the surface remains examined by the JVVP team, although the southern side of the wall was damaged prior to our 1996 / 97 excavation season. In the years immediately following our season, the western wall segment was damaged further when much of it was pushed to the eastern side of the hill with a bulldozer. Less than 25 meters of the western wall was visible on a subsequent visit to the site in 2000.

The enclosure wall marks a depositional transition at the site with more organic material and ash in soils deposited inside than outside. Two excavation units bisecting the western wall (Units 6 and 7) contain 50cm of soil and decayed mudbrick above bedrock, along with EB IV pottery, chipped stone artifacts and a shell pendant (see **Fig. 3**). These artifact-bearing sediments include a cobble fill that is found across the site, ranging from very thin layers inside structures to deposits 40cm deep in areas with no architecture.

The Domestic Occupation

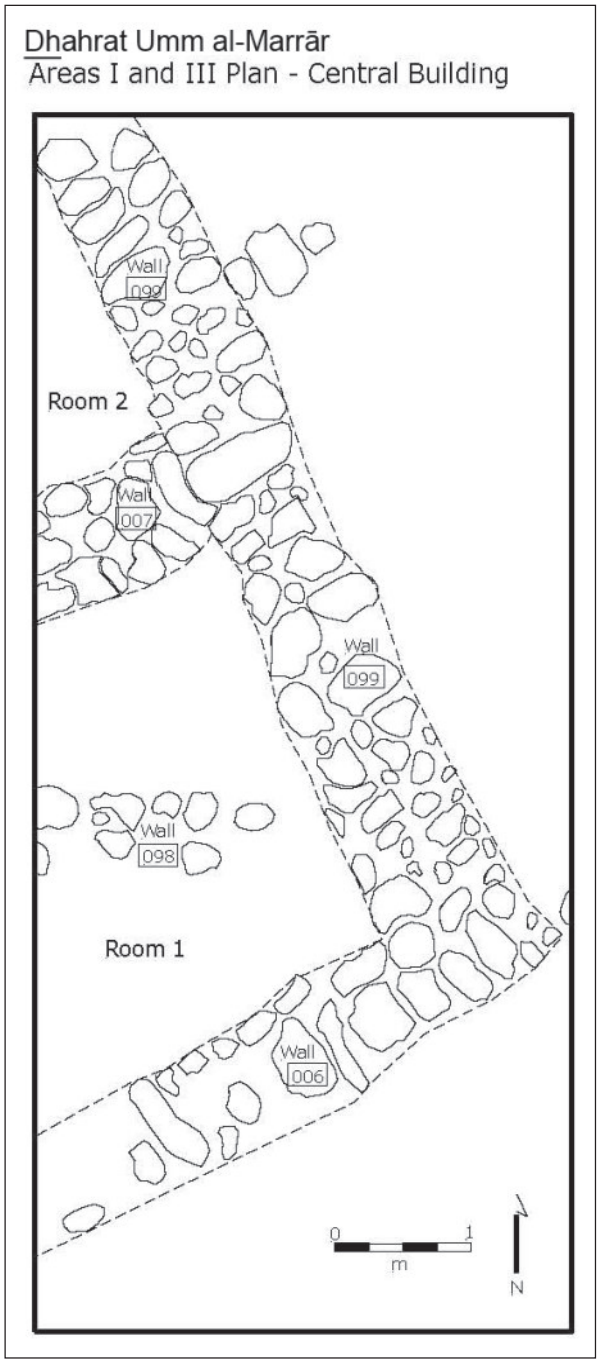
We sampled rectilinear stone structures within a number of our excavation units. The four large excavation areas (Areas I-IV) revealed rectilinear buildings in the central and southern parts of the site, a trash midden and features associated with domestic food processing and storage. Units west of the enclosure wall, and north and east of the central building, contain stone wall foundations and domestic assemblages including pottery, chipped stone, perforated



4. Location of major architectural features at Dhahrat Umm al-Marrār. Main site datum indicated by circled triangle (drawn by J. Jones).

whorls and weights, and a boulder mortar.

The central building lies at the summit of the hill in the middle of the enclosure wall (**Fig. 4**). Preserved three courses high, the three exposed walls divide the structure into two interior spaces (**Fig. 5**). The two exterior walls are 80cm wide and the interior wall was expanded from an initial width of 40cm to match the exterior segments. An uneven sherd pavement and earthen surfaces overlay a basal cobble fill inside the building. Considerable amounts of decayed mudbrick lay in the interior deposits, along with animal bone, pottery, chipped stone tools and debitage, and a vesicular basalt bowl base.

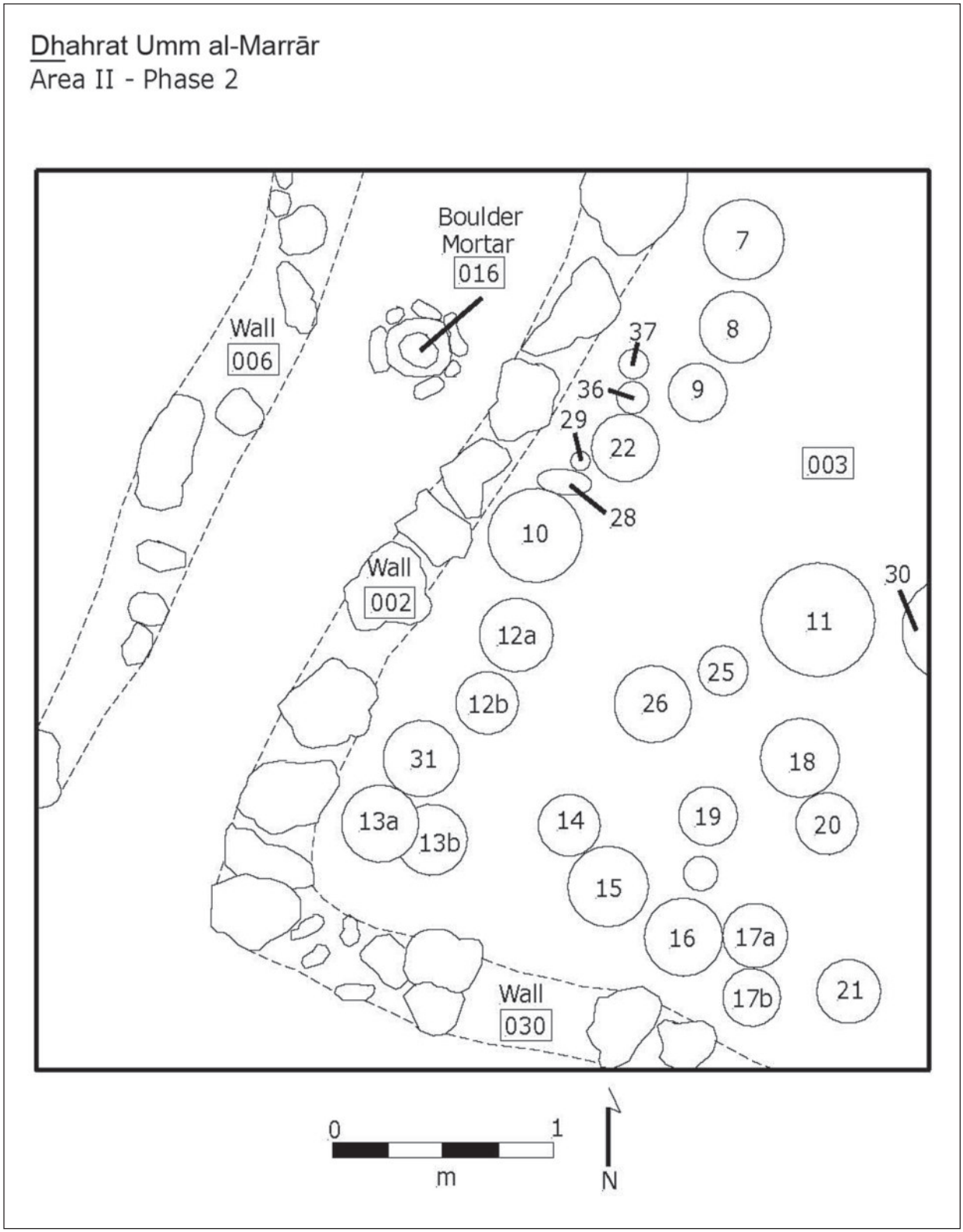


5. Plan view of the central building at Dhahrat Umm al-Marrār. The southern and interior walls (I:006 and III:007) abut the eastern wall (I:099 / III:099). (drawn by J. Jones).

Ashy soil and large numbers of sherds and chipped stone artifacts on the surface of the site mark two trash middens at Umm al-Marrār; one along the eastern slope and one south of the central building. Three excavation units in the central midden delineate archaeological sediments 20-50cm thick, covering at least 12m laterally. This artifact-laden cultural layer rests on top of decayed mudbrick and a mudbrick surface.

The southern habitation area contains two phases of domestic occupation associated with 20-60cm of sediment and features (see **Fig. 4**). The Phase 1 features include a boulder mortar, clay-lined pit, bedrock mortar, a stone platform supporting a pottery vessel, and a compacted earthen surface over a layer of cobble fill. These features were later covered by approximately 20cm of sediment with a clearly defined and compacted upper use surface. Phase 2 remodeling added two adjacent structures, with single row stone walls preserved one to three courses high (**Fig. 6**). A series of sherd pavements, a boulder mortar and earthen surfaces with ash lenses, charcoal, burned daub and mudbrick fragments lay within and between the walls.

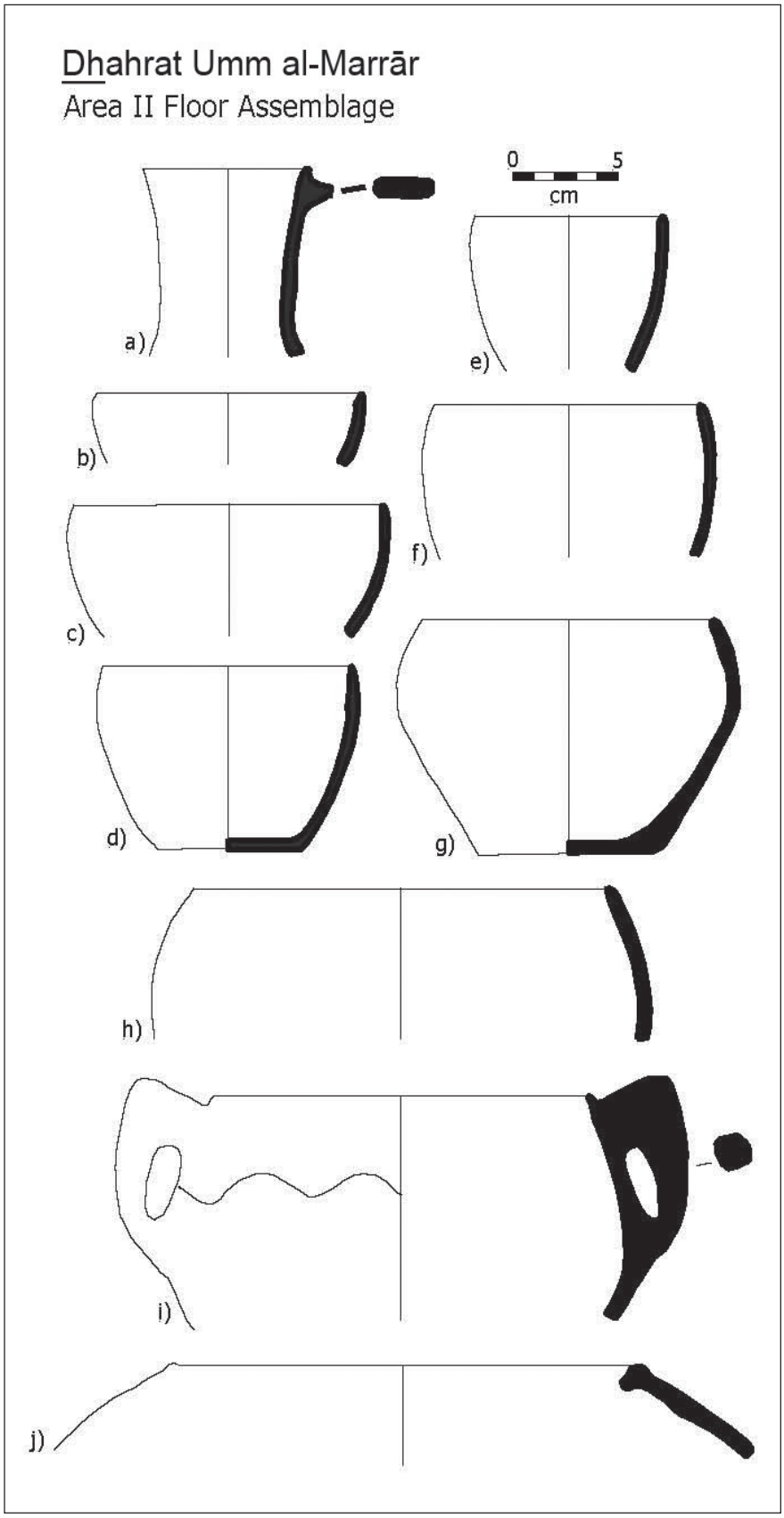
The eastern room revealed a remarkable *in situ* pottery assemblage featuring the bases of approximately two dozen flat-bottomed pots whose upper sections were sliced off by modern bulldozing. The whole and partially reconstructable vessels in this floor assemblage include a churn, eight plain cups, an eared cup, a small double-handled bowl, a holemouth cook pot, a strap handled juglet and numerous everted neck storage jars (**Table 2**; **Figs. 7-10**). Notably absent are lamps, wide, shallow, platter style bowls, and hole mouth jars, all of which were recovered elsewhere at the site. The activities represented in the floor assemblage include cooking, serving individual food portions, churning and long-term dry food storage. Activities not represented include shorter-term storage and preparation, as well as serving food from a common vessel.



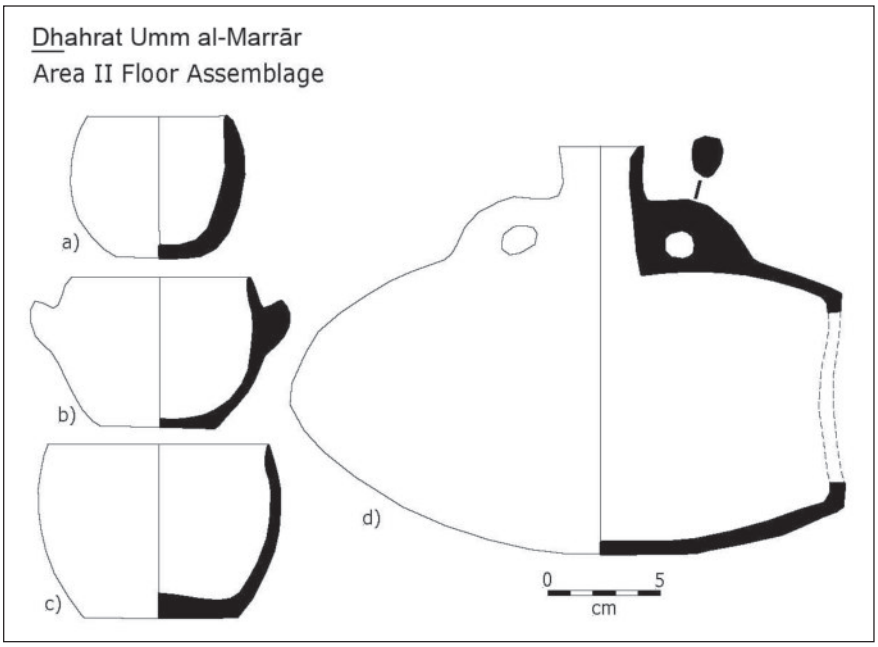
6. Plan view showing locations of ceramic vessels found in situ on Phase 2 domestic floor, Area II, Dhahrat Umm al-Marrār. Pot #28 is a complete churn (FIG. 8d) and #29 and #37 are cups (FIG. 8b and a respectively) (Cole 1984, forms Cn and Bd) (drawn by J. Jones).

Table 2: Munsell Colours for Exterior and Interior Surfaces of Pottery Vessels in the Area II Floor Assemblage.

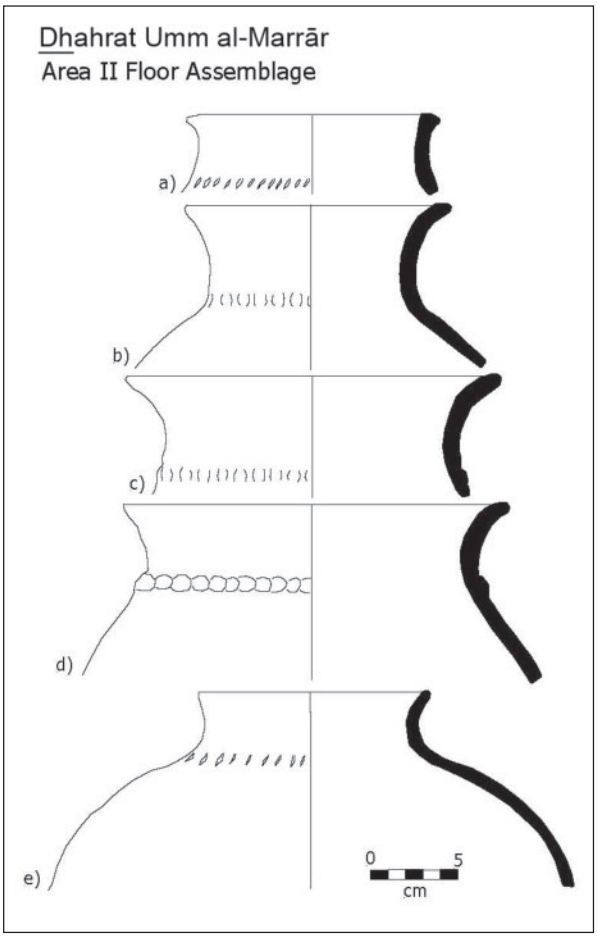
Figure and sherd	Vessel Type	Colour (Ext / Int)
Fig. 7a	Necked bottle with strap handle (Jg)	5 YR 7/6 - reddish yellow 5 YR 7/6 - reddish yellow
Fig. 7b	Cup (Bd)	10 YR 7/4 - very pale brown 10 YR 6/3 - pale brown
Fig. 7c	Cup (Bd)	10 YR 7/4 - very pale brown 10 YR 7/4 - very pale brown
Fig. 7d	Cup (Bd)	5 YR 7/6 - reddish yellow 5 YR 7/6 - reddish yellow
Fig. 7e	Cup (Bd)	10 YR 6/3 - pale brown 10 YR 6/3 - pale brown
Fig. 7f	Cup (Bd)	10 YR 7/4 - very pale brown 5 YR 6/6 - reddish yellow
Fig. 7g	Cup (Bd)	Int/Ext - 10 YR 6/3 - pale brown Core - 10 YR 6/3 - pale brown
Fig. 7h	Open bowl (Bo)	2.5 YR 6/6 - light red 2.5 YR 6/6 - light red
Fig. 7i	Double-handled open bowl (Bo)	7.5 YR 6/1 - grey 10 YR 6/2 - light brownish grey
Fig. 7j	Holemouth cooking pot (Ch)	5 YR 5/4 - reddish brown 5 YR 5/2 - reddish grey
Fig. 8a	Cup (Bd)	10 YR 6/3 - pale brown 10 YR 7/3 - very pale brown
Fig. 8b	Cup with handles (Bd)	10 R 5/1 - reddish grey 10 R 5/1 - reddish grey
Fig. 8c	Cup (Bd)	7.5 YR 7/6 - reddish yellow 7.5 YR 7/4 - pink
Fig. 8d	Churn (Cn)	2.5 YR 7/4 - light reddish brown 5 YR 7/4 - pink
Fig. 9a	Everted rim jar (J)	2.5 YR 7/3 - pale yellow 2.5 YR 7/3 - pale yellow
Fig. 9b	Everted rim jar (J)	2.5 YR 7/4 - pale yellow 2.5 YR 7/4 - pale yellow
Fig. 9c	Everted rim jar (J)	2.5 YR 8/3 - pale yellow 2.5 YR 8/3 - pale yellow
Fig. 9d	Everted rim jar (J)	10 YR 7/3 - very pale brown 10 YR 7/3 - very pale brown
Fig. 9e	Everted rim jar (J)	2.5 YR 7/4 - pale yellow 7.5 YR 7/6 - reddish yellow
Fig. 10a	Everted rim jar with ledge handle (J)	10 YR 6/2 - light brownish grey 10 YR 6/2 - light brownish grey
Fig. 10b	Everted rim jar with ledge handle (J)	5 YR 6/3 - light reddish brown 5 YR 6/6 - reddish yellow
Fig. 10c	Everted rim jar with ledge handle (J)	5 YR 7/4 - pink 5 YR 7/4 - pink
Fig. 10d	Everted rim jar (J)	10 YR 7/3 - very pale brown 10 YR 7/3 - very pale brown



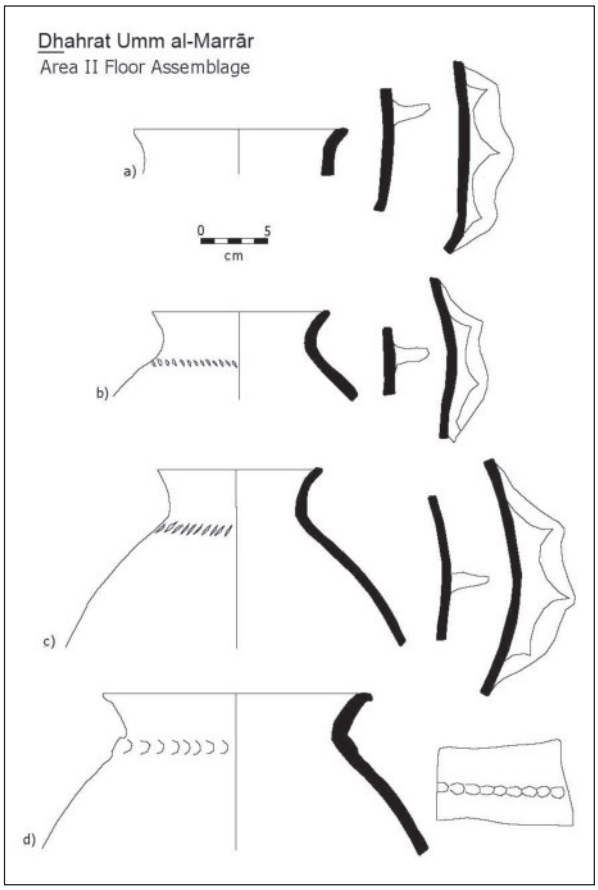
7. Pottery vessels from the Area II floor assemblage, Dhahrat Umm al-Marrār (vessel form designations adapted from Cole [1984]): (a) necked jug, (b)-(g) cups (Bd), (h) open bowl (Bo), (i) double-handled open bowl (Bo) and (j) holemouth cooking pot (Ch) (drawn by J. Jones).



8. Cups and churn from Dhahrat Umm al-Marrār (vessel form designations adapted from Cole [1984]): (a)-(c) cups (Bd) and (d) churn (Cn) (drawn by M. al-Nahar).



9. Storage jars (comparable to vessel form J, adapted from Cole 1984) from the Area II floor assemblage, Dhahrat Umm al-Marrār (drawn by J. Jones).



10. Storage jars (comparable to vessel form J, adapted from Cole 1984) with: (a) - (c) associated ledge handles and (d) associated body sherd with decorative motif from the Area II floor assemblage, Dhahrat Umm al-Marrār (drawn by J. Jones).

In contrast, for example, different subsets of the EB IV ceramic repertoire are found in tomb assemblages and the storeroom at Khirbat Iskander. Small spouted vessels, shallow bowls and jars are found in these two contexts, while multiple lamps are common in tombs (Richard and Boraas 1988). Functional and chronological differences likely account for the differences in form composition from these various contexts. Taken as a whole, the floor assemblage in the eastern room at Umm al-Marrār reflects domestic food-handling activities, with an emphasis on long-term storage, dairy processing, and the cooking and consumption of individual servings of foods or liquids.

Material Culture and Subsistence Economy

The vessel forms from Umm al-Marar include cups, open bowls with ledge handles at and below the rim, holemouth and everted cooking pots, holemouth and everted rim storage jars, jugs and pitchers (**Table 3**; **Figs. 11-12**). The vessel morphology and decorative styles, including trickle-painted cups and folded 'envelope' ledge handles, are exclusively EB IV. We did not encounter any Byzantine or Islamic sherds, which had been noted in very low numbers during a previous survey (Palumbo 1990: 88). Based on diagnostic rim sherds, 40% of the site assemblage consists of everted and holemouth rim storage jars, 27% are straight sided cups, 15.5% open bowls, 13.5% cookware and 3.5% jugs and pitchers (**Table 4**).

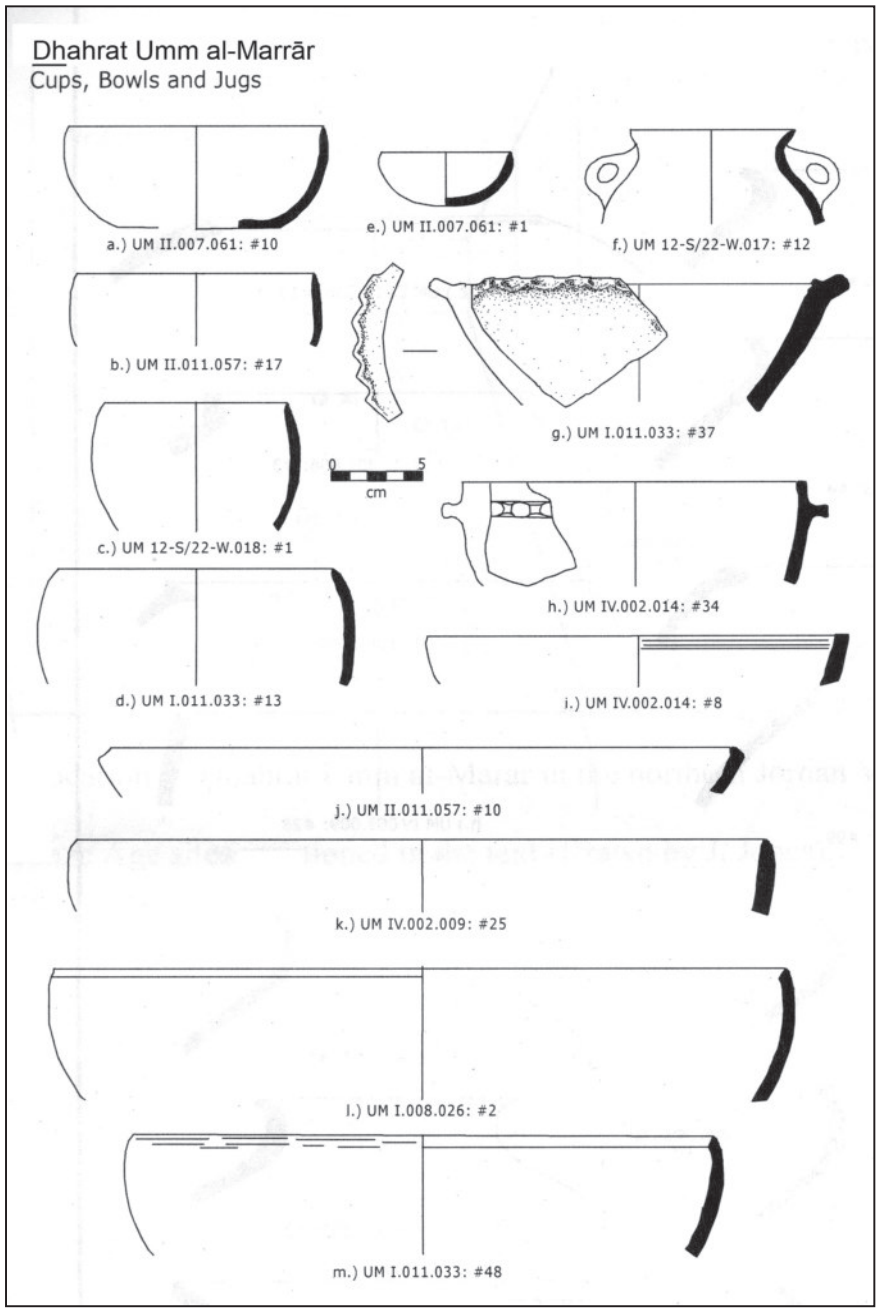
The stylistic characteristics of the vessels in the eastern room within Area II offer a unique opportunity to estimate when during the EB IV period Umm al-Marrār was occupied. In particular, the assemblage includes features considered indicative of the later part of EB IV, such as ledge handles with three or four large 'envelope' folds, as well as everted rim jars with incised, stacked coin and punctuate designs (Palumbo 1990: fig. 27, 2001: 239). An occupational date later in the period is supported further by the relatively high proportion of cups in the assemblage at Umm al-Marrār, which mirrors the frequency of this vessel type in the latest three phases at Tall Abu an-Ni'āj (Czarzasty 2005: fig. 7.4). Trickle painted cups also appear, although in low numbers (5 of 181 cup sherds).

The identifiable faunal specimens include 25 sheep or goat bones, seven pig bone fragments, nine cattle bone fragments, and four canid bones and a possible gazelle bone. The percentage of identifiable bones (32 percent) among the faunal fragments excavated from Umm al-Marrār is consistent with results from other nearby, contemporary villages (**Table 5**). In spite of the relatively large amount of sediment processed for flotation (150 liters) and approximately 48.5 m^3 of cultural material sieved, no carbonized plant

Table 3: Munsell Colours for Exterior and Interior Surfaces of Pottery Vessels in the Umm al-Marar General Assemblage.

Figure and sherd	Vessel Type	Colour (Ext / Int)
Fig. 11a	Cup (Bd)	5 YR 6/8 - reddish yellow 5 YR 7/8 - reddish yellow
Fig. 11b	Cup (Bd)	5 YR 6/6 - reddish yellow Int - obscured
Fig. 11c	Cup (Bd)	5 YR 7/6 - reddish yellow 5 YR 8/4 - pink
Fig. 11d	Cup (Bd)	7.5 YR 6/4 - light brown 5 YR 6/4 - light reddish brown
Fig. 11e	Cup – ad hoc form (Bd)	5 YR 7/8 - reddish yellow 5 YR 7/8 - reddish yellow
Fig. 11f	Jug (Ja)	7.5 YR 6/4 - light brown 5 YR 7/6 - reddish yellow
Fig. 11g	Open bowl with impressed handle at rim (Bo)	5 YR 7/6 - reddish yellow 5 YR 7/6 - reddish yellow

Fig. 11h	Open bowl with impressed band decoration and lug handles (Bo)	10 YR 8/3 - very pale brown 10 YR 7/4 - very pale brown
Fig. 11i	Open bowl with incised lines (Bo)	10 YR 8/3 - very pale brown 10 YR 8/4 - very pale brown
Fig. 11j	Open bowl (Bo)	7.5 YR 7/6 - reddish yellow 7.5 YR 8/6 - reddish yellow
Fig. 11k	Open bowl (Bo)	10 YR 8/4 - very pale brown 10 YR 8/3 - very pale brown
Fig. 11l	Open bowl (Bo)	5 YR 7/6 - reddish yellow 7.5 YR 7/6 - reddish yellow
Fig. 11m	Open bowl (Bo)	2.5 YR 6/6 - light red 2.5 YR 6/6 - light red
Fig. 12a	Everted rim cooking pot (Cs)	5 YR 6/8 - reddish yellow 5 YR 7/2 - pinkish grey
Fig. 12b	Everted rim cooking pot (Cs)	5 YR 6/6 - reddish yellow 7.5 YR 5/4 - brown
Fig. 12c	Holemouth cooking pot (Ch)	5 YR 6/6 - reddish yellow 5 YR 5/4 - reddish brown
Fig. 12d	Everted rim cooking pot (Cs)	5 YR 7/8 - reddish yellow 5 YR 6/6 - reddish yellow
Fig. 12e	Holemouth jar (Jh)	10 YR 7/4 - very pale brown 10 YR 7/4 - very pale brown
Fig. 12f	Holemouth jar with punctuate pattern (Jh)	5 YR 6/8 - reddish yellow 5 YR 7/6 - reddish yellow
Fig. 12g	Holemouth jar (Jh)	10 YR 8/4 - very pale brown 7.5 YR 8/4 - pink
Fig. 12h	Holemouth jar with incised decoration (Jh)	7.5 YR 8/3 - pink 5 YR 7/6 - reddish yellow
Fig. 12i	Everted rim jar (J)	7.5 YR 5/1 - grey 10 YR 5/1 - grey
Fig. 12j	Everted rim jar (J)	7.5 YR 6/6 - reddish yellow 5 YR 6/6 - reddish yellow
Fig. 12k	Everted rim jar with incised decoration (J)	2.5 YR 6/6 - light red 2.5 YR 6/6 - light red
Fig. 12l	Everted rim jar (J)	10 YR 8/3 - very pale brown 10 YR 8/2 - very pale brown
Fig. 12m	Everted rim jar (J)	7.5 YR 8/4 - pink 7.5 YR 8/6 - reddish yellow
Fig. 12n	Everted rim jar with impressed band decoration (J)	2.5 YR 6/3 - light yellowish brown 10 YR 7/2 - light grey



11. Cups, bowls and jugs from Dhahrat Umm al-Marrār (vessel form designations adapted from Cole [1984]): (a)-(e) cups (Bd), (f) jug (Ja) and (g)-(m) open bowls (Bo) (drawn by J. Jones, A. Caywood and J. Anders).

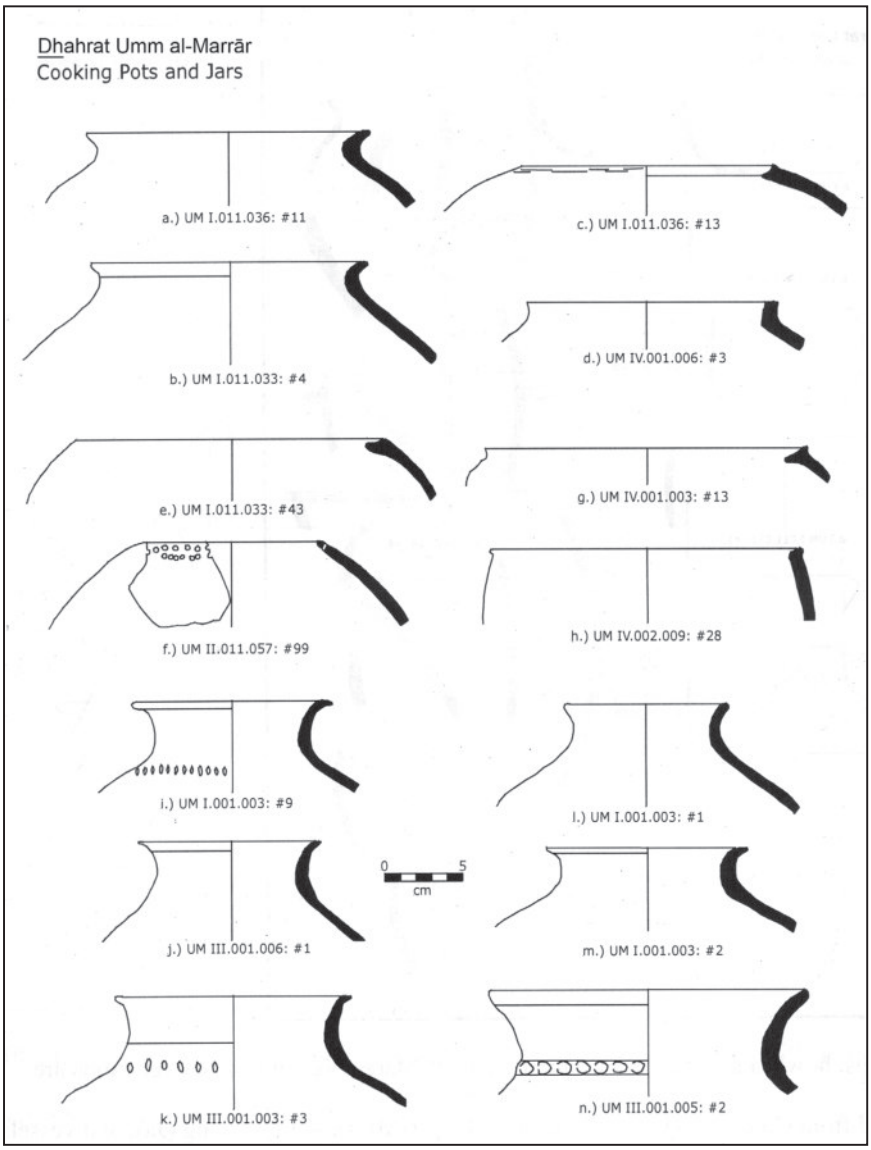
material was recovered, presumably because of the shallow sediments which inhibited organic preservation.

The chipped and ground stone tools and ceramic forms at Umm al-Marrār provide indirect evidence for the harvesting, processing and food storage activities characteristic of an agricultural subsistence regime. The presence of chipped stone sickle blades made on both locally available raw material and non-local high quality chert attests to the harvesting of grains. The ground stone assemblage at Umm al-Marrār consists predominantly of slab and boulder mortars made from fossiliferous chert, silicified limestone, vesicular basalt, fine-grained basalt and sandstone, mirroring the assemblage from Tall Abū an-Niʿāj (**Table 6**).

Discussion

The Enclosure Wall

The founding of the Umm al-Marrār enclosure wall on deposits containing exclusively EB



12. Cooking pots and storage jars from Dhahrat Umm al-Marrār (vessel form designations adapted from Cole [1984]): (a)-(b) and (d) everted rim cooking pots (Cs), (c) holemouth cooking pot (Ch), (e)-(h) holemouth jars (Jh) and (i)-(n) everted rim jars (J) (drawn by J. Jones and J. Anders).

IV material culture supports a late 3rd millennium date for this feature. Its width far exceeds the dimensions of the domestic structures at the site or pastoral enclosures from other sites, and its location augments a naturally defensible hilltop position. The large stones in the founding course at Umm al-Marrār suggest that it could have supported a superstructure of substantial height. At Khirbat Iskander, a layer of small rocks in a shallow foundation trench still supported an eleven course stone wall to a height of at least three meters (Richard and Boraas 1988: 110). Thus, the Umm al-Marrār wall defines one of the few EB IV walled enclosures in the southern Levant, in contrast to numerous examples of Early Bronze II - III defensive systems. Other enclosure walls have been identified via survey at predominantly EB IV Jabal Rāḥīl, Khirbat Umm Rujum and ar-Raṣayfah, but Umm al-Marrār provides a rare example of an excavated EB IV settlement enclosure. Using a common Near Eastern estimate of 250 people per hectare, nearly 100 people may have lived within the enclosure wall at Umm al-Marrār, while a maximum of about 800 could be inferred from the 3.30 ha extent of the sherd scatter.

The walled village of Umm al-Marrār was contemporary with the longer occupied and unfortified village of Tall abū An-Niʿāj, which contains seven EB IV architectural phases within 3.5 meters of cultural deposits. As Palumbo notes (2001: 242), the EB IV landscape incorporated a

Table 4: Diagnostic Rim Sherd Counts and Frequencies from Dhahrat Umm al-Marrār (Vessel Form Typology Based on Cole [1984]).

Ceramic Type	Count	Percent[1]
Cups		
Bd – Straight Sided Cups	181	27%
Bowls		
Bo – Open Bowls	98	15%
B - Indeterminate	3	0.5%
Cooking Pots[2]		
Cs – Everted Rim	53	8%
Ch – Holemouth Rim	36	5%
C – Indeterminate	3	0.5%
Storage Jars		
J – Everted Rim	238	36%
Jh – Holemouth Rim	28	4%
Jugs		
Ja – Loop handled jugs, short necks	11	2%
Jb – "Bottle necked" Jugs	2	0.5%
Jg - Pitchers	7	1%
Total	660	99%

1. Percentages may not add up to 100% due to rounding.
2. Cooking pots are characterized by dispersed, large, angular inclusions, including calcite and basalt, and a red-dish-brown-orange paste color.

Table 5: Animal Bone Frequencies from Dhahrat Umm al-Marrār Compared to Assemblages from Early Bronze IV Tall Abū an-Ni'āj and Middle Bronze II Tall al-Ḥayyat[1].

Bone Frequencies (%)			
Animal	Umm al-Marrār	Tall Abū an-Ni'āj(1)	Tall al-Ḥayyat(1)
Sheep / goat	55.6	55.5	54.5
Pig	15.6	30.9	20.8
Cattle	20.0	13.0	10.4
Wild taxa	8.9	0.6	14.3

1. Data from M. Metzger published in Falconer *et al.* 2004. NISP: Umm al-Marrār = 43, Tall Abū an-Ni'āj = approximately 15,000, Tall al-Ḥayyat = 12,798 for domestic contexts only.

Table 6: Comparison of Ground Stone Tool Assemblages from Dhahrat Umm al-Marrār and Tall Abū an-Ni'āj[1]

Tool Types	Umm al-Marrār	Tall Abū an-Ni'āj
Slab Mortar	44 (76%)	38 (45%)
Boulder Mortar	6 (10%)	12 (14%)
Bedrock Mortar	2 (3%)	0 (0%)
Trough Mortar	2 (3%)	0 (0%)
Composite Mortar	0 (0%)	3 (4%)
Hand stone	1 (1%)	8 (9%)
Pestle	0 (0%)	1 (1%)
Indeterminate[2]	3 (5%)	23 (27%)
Total[3]	58 (98%)	85 (100%)

1. Data provided by Jane D. Peterson. Most of the ground stone tools from Umm al-Marrār come from surface contexts, while those from Tall Abū an-Ni'āj are from excavation units. Hammer stones enumerated separately.
2. The larger number of indeterminate implements at Umm al-Marrār is because of the number of broken tools in this assemblage.
3. Percentages may not add up to 100% due to rounding.

variety of fortified and unfortified settlements, including some in naturally defensible positions, often in close proximity. Other unfortified sites around Umm al-Marrār include Tall Umm Ḥammād and possibly Khirbat al-Ḥammih. Nearby Tall Rās Ḥāmid is unfortified, but is located on a steeply sloped hilltop overlooking the Jordan valley.

Building on the proximity of fortified and unfortified settlements, Palumbo proposes that Umm al-Marrār and the potentially fortified sites of Jabal Rāḥīl, Khirbat Umm ar-Rujum and ar-Raṣayfah formed a defensive border between people living in fertile agricultural areas of the Jordan valley and (presumably) more pastoral people living in arid lands to the east. An evaluation of this border hypothesis would benefit from more details on the extent to which these walls were in use at the same time. For example, while the wall at Umm al-Marrār appears to date to late EB IV, the Khirbat Iskander enclosure went out of use prior to the latest period of occupation at the site (Richard 1990: 37). Nonetheless, the contemporaneity of occupation at Umm al-Marrār and lowland sites like Tall Abū an-Ni'āj indicates that fortified sites served localized defensive needs in the northern Jordan valley at the end of EB IV, perhaps as part of a broader regional matrix of walled and unwalled villages and hamlets.

Domestic Architecture and Pottery

A combination of rectilinear structures, the robust construction of the central building and the presence of pig bones suggests a sedentary occupation at Umm al-Marrār. This site thus joins a growing corpus of excavated sedentary EB IV sites from Jordan (Falconer, Fall, Metzger and Lines 2004). The distribution of architecture and differing investments of effort in its construction add greater detail to the domestic history of Umm al-Marrār. For example, architecture in Units 2, 4, 5 and the southern habitation area show domestic occupation both inside and outside the enclosure wall. Similarly, the more substantial construction of the walls in the central building illustrates a degree of architectural variability within the domestic structures.

The shallow deposits at Umm al-Marrār support the inference of a relatively short-term

occupation of this hilltop settlement. The intensity of occupation – judging from the depth of archaeological sediments – varied across the site, with shallow 10cm deposits to the north contrasting with deeper sediments and multiple phases of occupation preserved in 60cm of cultural deposits along the southern side. Close examination of intrasite deposition reveals an array of formation details within this time span, *viz*. differing intensities of occupation across the site, secondary deposition within abandoned structures and the remodeling of domestic spaces. In keeping with ethnographic studies, similar densities of rim sherds within the central building (20.53 per m^3) and in the midden (17.61 per m^3) suggest that people dumped garbage into this structure after it went out of use (Kamp 2000: 91). In contrast, the sherd density in loci immediately adjacent to the central building is 9.74 per m^3, suggesting unintentional deposition. The two phases of architectural construction in Area II allow us to see the dynamic creation, use and extensive remodeling of domestic spaces. For example, the occupation of Umm al-Marrār lasted long enough for people to install and then build over potentially long-lived features, such as the boulder and bedrock mortars of Phase 1 in the southern habitation area.

The relative frequencies of serving, storage and food preparation vessels in the pottery assemblages from two phases at nearby Early Bronze III Tall al-Ḥandaqūq South (Ḥandaqūq) and from three Middle Bronze Age phases at Tall al-Ḥayyāt provide a comparative framework for understanding changing Bronze Age village behaviors in the northern Jordan valley (**Table 7**). At al-Ḥandaqūq, a slight decline in the percentage of serving vessels is offset by modest increases in storage and food preparation vessels (Chesson 2000). At Tall al-Ḥayyāt, storage vessels predominate in the later three phases over generally consistent percentages of food preparation vessels and an increasing percentage of serving vessels (Falconer and Fall 2006).

An increase in storage vessels with tall necks and constricted openings is seen in the ceramic assemblages from all three sites. This form is appropriate for the long-term preservation of dry grains, fruits, legumes and liquids (Falconer 1995: 413; Joffe 1993). The increase in storage vessels as a percentage of the assemblage implies a greater investment of labor devoted to harvesting, processing and storage of these foods. The impact on household labor allocation and seasonal scheduling extends beyond the agricultural realm to ceramic production as well. As the tallest vessels in the assemblage, these jars would require more clay to construct than other forms, material that would need to be gathered, cleaned and tempered. Ethnographically, seasonal variation in temperature and humidity may delay some stages of pottery production. The steady ambient temperature needed to dry pots slowly before firing can limit vessel construction to warmer times of the year, rather than wet or dry ones (Arnold 1985: 71-77). To meet the increased demand for storage vessels, potters at Umm al-Marrār could have allocated more of their time to production, more people may have made vessels, or non-potters could have assisted with stages of production, such as gathering or preparing clay.

At Tall al-Ḥayyāt, the ratio of long-term to short-term storage vessels declined through the Middle Bronze Age (Falconer 1995: 413). Short-term food storage vessels have wide openings, in contrast to the constricted neck forms. At Umm al-Marrār, only 28 of 266 jar sherds represent ceramic forms with wide openings (**Table 4**). The low number of open storage forms relative to closed forms suggests that much of the agricultural output of Umm al-Marrār may have been stored, traded or consumed off-site. Several compositional studies provide data that support the local exchange of ceramics produced at Umm al-Marrār. For example, five jars produced at Umm al-Marrār were transported to Rās Ḥāmid, a 2 ha settlement in the mountains 4 km to the north-east (Jones 1999: table 9.4, 176) (**Fig. 1**). Another study identified two traded vessels, a cup and a jar, produced at Umm al-Marrār that were found at Tall Abū an-Niʿāj and Umm Ḥammād al-Gharbī respectively (Falconer 1987: 256).

The higher relative frequencies of serving vessels at al-Ḥandaqūq and Umm al-Marrār (64 to 76% of the analyzed ceramic assemblage) point to an emphasis on communal food preparation and consumption as an aspect of domestic life during the Early Bronze Age (**Table 7**). Most notably at Umm al-Marrār, sherds from straight-sided cups dominate the serving vessel

Table 7: Comparison of Serving, Storage and Food Preparation Vessel Frequencies from Dhahrat Umm al-Marrār, Tall al-Ḥandaqūq South and Tall al-Ḥayyat[1] (counts and % data shown where possible).

	Serving[2] (bowls, cups, jugs)	Storage (constricted neck)	Food Preparation (cooking pots, open mouthed jars)
Tall al-Ḥayyat (Middle Bronze II - Phase 3)	39%	35%	26%
Tall al-Ḥayyat (Middle Bronze II - Phase 4)	23%	50%	27%
Tall al-Ḥayyat (Middle Bronze II - Phase 5)	21%	58%	22%
Umm al-Marrār (Early Bronze IV)	46% 302	36% 238	18% 120
Tall al-Ḥandaqūq South (Early Bronze III - Phase IV)	37% 201	26% 142	36% 197
Tall al-Ḥandaqūq South (Early Bronze III - Phase III)	42% 173	24% 97	34% 140

1. Two special use vessels from Tall al-Ḥandaqūq are excluded from this comparison because they have no EB IV parallels. The designation of serving, storage and food preparation vessels follows Chesson's schema (2000: 375) to facilitate comparison.
2. We adapted Cole's pottery typology to designate serving vessel forms B, Bd, Bo and all jugs. Storage vessels include constricted neck form J. Food preparation vessels include forms C, Cs, Ch and Jh. Holemouth jars (Jh) from Tall al-Ḥayyat are included in the storage category.

category (181 of 302 sherds). Based on their relatively small size and open form, we may imagine that people consumed individual servings of food or liquid from these vessels. The presence of so many cups at Umm al-Marrār points to the possibility that the consumption of small, individual servings had an enhanced role within the broader social milieu of Early Bronze IV. Eating together, whether from larger bowls or small cups, would have allowed people to establish or maintain social ties strained by the social dislocations arising from the Early Bronze III and IV population disaggregation.

The Subsistence Economy

Umm al-Marrār's geographic position close to the Jordanian foothills raises the possibility that subsistence exploitation at this settlement differed from the economies of villages located closer to the Jordan River. However, the relatively modest animal assemblage has a taxonomic profile very similar to that of Tall Abū an-Ni'āj, with a majority comprised of sheep / goat, plus some cattle and pig. Although pig bones are less frequent than at Tall Abū an-Ni'āj, this faunal profile clearly indicates that the households at Umm al-Marrār practiced sedentary farming in the fields around their hilltop village, possibly supplemented by local gazelle hunting. Abundant ground stone and debitage from locally available basalt, chert and limestone suggest that Umm al-Marrār's households produced expedient plant-harvesting and processing implements as components of their subsistence technology.

Umm al-Marrār and the Early Bronze IV Period

The pastoral nomadism attested to by the architecture and artifacts from hundreds of sites in the Negev and Sinai exemplifies the mobile component of Levantine society in the late 3rd millennium BC (see e.g. Cohen 1992; Cohen and Dever 1979, 1981; Palumbo 1990). The deep

stratigraphy at sites such as Tall Abū an-Ni'āj and Khirbat Iskander highlights contrasting examples of long-term occupation. Settlement continuity and the repeated division of domestic space over time is also seen by walls that persist through several architectural phases at Tall Abū an-Ni'āj (Czarzasty 2005). Any simple dichotomy of short-term occupation at pastoral sites and long-term habitation at agricultural sites is, however, belied by the presence of sites like Umm al-Marrār. Here, a combination of shallow deposits, domestic architecture, ceramic forms and fauna associated with agricultural subsistence attests to the movement of farmers over the landscape as they established new villages or moved into pre-existing ones. This evidence accords with the larger regional pattern of settlement establishment and abandonment in which 50% of EB IV settlements, both pastoral and farming ones, have no prior Early Bronze Age occupation (Palumbo 1990: fig. 11).

The rural community at Umm al-Marrār, though modest in size, participated in a diverse set of productive and subsistence activities that reinforced local and regional connections. For example, Umm al-Marrār's chipped stone assemblage includes tools made from both local and non-local materials. Based on the percentages of serving, storage and food preparation vessels, residents also devoted a substantial portion of their ceramic technology to long-term food storage and possibly to trade with nearby lowland villages. The balance of the pottery assemblage primarily includes serving vessels, suggesting the importance of food consumption in communal settings. A diverse set of contacts across a variety of environmental settings is reflected by the exchange of pottery with sites in the mountains to the east, as well as along the Jordan River to the west.

Dhahrat Umm al-Marrār provides invaluable comparative evidence for reconstructing Bronze Age rural society after the abandonment of larger Levantine towns in the late 3rd millennium BC. The architecture, features and artifacts from this settlement reflect a sedentary agrarian community engaged in food production and storage. The enclosure wall at Umm al-Marrār highlights the existence of easily defensible settlements within a larger suite of unfortified EB IV communities in the Jordan valley. These features thus mark points of continuity with the Early and Middle Bronze Ages, and emphasize the household and community adjustments used to cope with sociopolitical changes during a time of regional population disaggregation.

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Bibliography

Adams, R.B.
2000 The EBA III-IV Transition in Southern Jordan: Evidence from Khirbat Hamra Ifdan. Pp. 379-401 in G. Philip and D. Baird (eds.), *Ceramics and Change in the Early Bronze Age of the Southern Levant*. Levantine Archaeology 2. Sheffield: Sheffield Academic Press.
2006 Copper Trading Networks Across the Arabah During the later Early Bronze Age. Pp. 137-144 in P. Bienkowsi and K. Galor (eds.), *Crossing the Rift: Resource Settlement Patterns and Interaction in the Wadi Arabah*. Council for British Research in the Levant Monograph. London: Council for British Research in the Levant.

Arnold, D.E.
1985 *Ceramic Theory and Cultural Process*. Cambridge: Cambridge University Press.

Chesson, M.S.
1999 Libraries of the Dead: Early Bronze Age Charnel Houses and Social Identity at Urban Bab edh-Dhra', Jordan. *Journal of Anthropological Archaeology* 18: 137-164.
2000 Ceramics and Daily Life in the Early Bronze Age Household: Form, Function and Action in Residential Compounds at Tell el-Handaquq South, Jordan. Pp. 365-378 in G. Philip and D. Baird (eds.), *Ceramics and Change in the Early Bronze Age of the Southern Levant*. Sheffield: Sheffield Academic Press.

Cohen, R.
1992 The Nomadic or Semi-Nomadic Middle Bronze I Settlements in the Central Negev. Pp. 105-131 in O. Bar-Yosef and A. Khazanov (eds.), *Pastoralism in the Southern Levant: Archaeological Materials in Anthropological Perspectives*. Monographs in World Archaeology, 10. Madison, WI: Prehistory Press.

Cohen, R. and Dever, W.G.
1979 Preliminary Report of the Second Season of the "Central Negev Highlands Project". *Bulletin of the American Schools of Oriental Research* 236: 41-60.
1981 Preliminary Report of the Third and Final Season of the "Central Negev Highlands Project". *Bulletin of the American Schools of Oriental Research* 243: 57-77.

Cole, D.P.
1984 *Shechem I: The Middle Bronze IIB Pottery*. The American Schools of Oriental Research. Winona Lake, IN: Eisenbrauns.

Czarzasty, J.L.
2005 Community Dynamics at the Early Bronze IV Period Village of Tell Abu en-Ni'aj. Unpublished Ph.D. Dissertation, Arizona State University.

Dever, W.G.
1980 New Vistas on the EB IV-MB I Horizon in Syria-Palestine. *Bulletin of the American Schools of Oriental Research* 237: 35-64.
1989 The Collapse of the Urban Early Bronze Age in Palestine: Towards a Systemic Analysis. Pp. 225-246 in P. de Miroschedji (ed.), *L'urbanisation de la Palestine à l'âge du Bronze Ancien: Bilan et Perspectives des Rescherches Actuelles*. Vol. BAR International Series 527(i). Oxford: British Archaeological Reports.
1995 Social Structure in the Early Bronze IV Period in Palestine. Pp. 282-296 in T.E. Levy (ed.), *The Archaeology of Society in the Holy Land*. New York: Facts on File.

Falconer, S.E.
1987 Village Pottery Production and Exchange: A Jordan Valley Perspective. *SHAJ 3:* 251-259.
1994 The Development and Decline of Bronze Age Civilization in the Southern Levant: A Reassessment of Urbanism and Ruralism. Pp. 305-333 in C. Mathers and S. Stoddert (eds.), *Development and Decline in the Mediterranean Bronze Age*. Sheffield, England: Sheffield University Press.
1995 Rural Responses to Early Urbanism: Bronze Age Household and Village Economy at Tell el-Hayyat, Jordan. *Journal of Field Archaeology* 22: 399-419.

Falconer, S.E., and Fall, P.L.
2006 *Bronze Age Rural Economy and Village Life at Tell el-Hayyat, Jordan*. Oxford: British Archaeological Reports.

Falconer, S.E., Fall, P.L. and Jones, J.E.
1998 Winter 1996/97 Excavations in the Northern Jordan Valley: The Jordan Valley Village

Project. *American Journal of Archaeology* 102: 588-589.

Falconer, S.E., Fall, P.L., Metzger, M.C. and Lines, L.
2004 Bronze Age Rural Economic Transitions in the Jordan Valley. *Annual of the American Schools of Oriental Research* 58: 1-17.

Falconer, S.E. and Magness-Gardiner, B.
1989 Bronze Age Village Life in the Jordan Valley: Archaeological Investigations at Tell el-Hayyat and Tell Abu en-Ni'aj. *National Geographic Research* 5: 335-347.

Fall, P.L., Falconer, S.E. and Lines, L.
2002 Agricultural Intensification and the Secondary Products Revolution Along the Jordan Rift. *Human Ecology* 30: 445-482.

Fall, P.L., Lines, L. and Falconer, S.E.
1998 Seeds of Civilization: Bronze Age Rural Economy and Ecology in the Southern Levant. *Annals of the Association of American Geographers* 88: 107-125.

Glueck, N.
1951 Explorations in Eastern Palestine IV: Parts 1 and 2. *Annual of the American Schools of Oriental Research* 25-28.

Goren, Y.
1996 The Southern Levant in the Early Bronze Age IV: The Petrographic Perspective. *Bulletin of the American Schools of Oriental Research* 303: 33-72.

Haiman, M.
1996 Early Bronze IV Settlement Pattern of the Negev and Sinai Deserts: View from Small Marginal Temporary Camps. *Bulletin of the American Schools of Oriental Research* 303: 1-32.

Helms, S.W.
1983 The EB IV (EB-MB) Cemetery at Tiwal esh-Sharqi, in the Jordan Valley, 1983. *ADAJ* 27: 55-85.
1984 Excavations at Tell Umm Hammad esh-Sharqiya in the Jordan Valley 1982. *Levant* 16: 35-54.
1986 Excavations at Tell Um Hammad, 1984. *Levant* 18: 25-50.
1989 An EB IV pottery repertoire at Amman, Jordan. *Bulletin of the American Schools of Oriental Research* 273: 17-36.

Ibrahim, M.; Sauer, J.A.; and Yassine, K.
1976 The East Jordan Valley Survey, 1975. *Bulletin of the American Schools of Oriental Research* 222: 41-66.

Joffe, A.H.
1993 *Settlement and Society in the Early Bronze I & II Southern Levant: Complementarity and Contradiction in a Small-Scale Complex Society*. 1st ed. Monographs in Mediterranean Archaeology 4. Sheffield, England: Sheffield Academic Press.

Jones, J.E.
1999 Local Ceramic Exchange in a Collapsed Early Urban Society in the Southern Levant. Unpublished Ph.D. Dissertation, Arizona State University.

Kamp, K.
2000 From Village to Tell: Household Ethnoarchaeology in Syria. *Near Eastern Archaeology* 63: 84-93.

Palumbo, G.
1987 "Egalitarian" or "Stratified" Society? Some Notes on the Mortuary Practices and Social Structure of Jericho in EB IV. *Bulletin of the American Schools of Oriental Research* 267: 43-59.
1990 *The Early Bronze Age IV in the Southern Levant: Settlement Patterns, Economy and Material Culture of a "Dark Age." Contributi e Materiali di Archeologia Orientale III*. Roma: Universita di Roma la Sapienza.
2001 The Early Bronze Age IV. Pp. 233-269 in B. MacDonald, R. Adams and P. Bienkowski (eds.), *The Archaeology of Jordan*. Sheffield: Sheffield Academic Press.

Palumbo, G. and Peterman, G.
1993 Early Bronze Age IV Ceramic Regionalism in Central Jordan. *Bulletin of the American Schools of Oriental Research* 289: 23-32.

Philip, G.
2001 The Early Bronze I-III Ages. Pp. 163-232 in B. MacDonald, R. Adams and P. Bienkowski (eds.), *The Archaeology of Jordan*. Levantine Archaeology. Vol. I, R. Adams and Y. Goren, general editors. Sheffield: Sheffield Academic Press.

Prag, K.
1974 The Intermediate Early Bronze-Middle Bronze Age: An interpretation of the evidence from Transjordan, Syria, and Lebanon. *Levant* 6: 69-116.
1986 The Intermediate Early Bronze - Middle Bronze Age Sequences at Jericho and Tell Iktanu Reviewed. *Bulletin of the American Schools of Oriental Research* 264: 61-72.
1988 Kilns of the Intermediate Early Bronze-Middle Bronze Age at Tell Iktanu: Preliminary Report, 1987 Season. *ADAJ* 32: 59-73.

1989 Preliminary Report on the Excavations at Tell Iktanu, Jordan, 1987. *Levant* 21: 33-45.

1990 Preliminary Report on the Excavations at Tell Iktanu, Jordan, 1989. *ADAJ* 34: 119-30.

1991 Preliminary Report on the Excavations at Tell Iktanu and Tell Al-Hamman, Jordan, 1990. *Levant* 23: 55-66.

Rast, W. and Schaub, R.T.

1978a Preliminary Report of the 1981 Expedition to the Dead Sea Plain. *Bulletin of the American Schools of Oriental Research* 254:35-60.

1978b A Preliminary Report of Excavations at Bab edh-Dhra‘, 1975. In D.N. Freedman (ed.), Preliminary Excavation Reports: Bab edh-Dhra‘, Sardis, Meiron, Tell el-Hesi, Carthage (Punic). *Annual of the American Schools of Oriental Research* 43: 1-32.

2003 *Bab edh-Dhra‘: Excavations at the Town Site (1975-1981)*. Winona Lake, Indiana: Eisenbrauns.

Richard, S.

1982 Report on the 1981 Season of Survey and Soundings at Khirbet Iskander. *ADAJ* 26: 289-299.

1983 Report on the 1982 Season of Excavations at Khirbet Iskander. *ADAJ* 27: 45-53.

1987 The Early Bronze Age: The Rise and Collapse of Urbanism. *Biblical Archaeologist* 501: 22-44.

1990 The 1987 Expedition to Khirbet Iskander and its Vicinity: Fourth Preliminary Report. *Bulletin of the American Schools of Oriental Research, Supplement* 26: 33-58.

Richard, S. and Boraas, R.

1984 Preliminary Report on the 1981-1982 Seasons of the Expedition to Khirbet Iskander and its Vicinity. *Bulletin of the American Schools of Oriental Research* 254: 63-87.

1988 The Early Bronze IV Fortified Site of Khirbet Iskander, Jordan: Third Preliminary Report, 1984 Season. *Bulletin of the American Schools of Oriental Research* 25: 107-130.

Richard, S. and J.C. Long, Jr.

1995 Archaeological Expedition to Khirbet Iskander and its vicinity, 1994. *ADAJ* 39: 81-92.

Richard, S., Long, J.C.Jr., Holdorf, P.S. and Peterman, G. (eds.)

2010 *Archaeological Expedition to Khirbet Iskander and its Environs, Jordan. Volume One –Khirbet Iskander. Final Report on the Early Bronze IV Area C Gateway and Cemetaries*. Boston: American Schools of Oriental Research.

Rosen, S.A.

1997 *Lithics after the Stone Age: A Handbook of Stone Tools from the Levant*. Walnut Creek, California: Altamira Press.