

An Archaeological Survey of Mirwah Desert, District Khairpur, Sindh



Master of Philosophy
in
Asian Studies

by
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supervised by
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**Taxila Institute of Asian Civilizations
Quaid-i-Azam University
Islamabad
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An Archaeological Survey of Mirwah Desert, District Khairpur, Sindh

This thesis is submitted in partial fulfilment of requirement for the
degree of

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in
Asian Studies



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2022

Candidate's Declaration

I hereby declare that this M.Phil. thesis currently submit under the title '**An Archeological Survey of Mirwah Desert, District Khairpur, Sindh**' is result of my individual research and has not been submitted concurrently to any other University for any degree.

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Dedication

This thesis is dedicated to my father and beloved mother, who are my real strength, without their support it is impossible for me to get any achievement.

DRSML QAU

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Table of Contents

List of Figures	ix
List of Plates	xi
List of Tables	xiii
Chapter No. 1: Introduction	1
Introduction.....	2
Statement of the problem.....	3
Literature review	4
Research Methodology	7
Key Questions.....	9
Chapter No. 2: Geography, Environment, and Culture-Historical background	11
Geography of Sindh	12
Hydrology of the study area.....	16
Mirwah Canal	17
Geomorphology, environment, and climate of the study area	17
Indus alluvial plains	18
Sand Dunes	19
Lakes.....	20
Alluvial valleys	21
Rohri hills	22
Climate.....	22
Subsistence resources	23
General Culture History background of Sindh	24
The Culture History Background of the study area	25

Palaeolithic.....	26
Mesolithic	26
Neolithic.....	28
Early Indus.....	28
Indus Valley Civilization; Mature and Late phases.....	29
Early Historic, Historic, and late Historic.....	30
Chapter No. 3: Documentation of Archaeological Sites of the Mirwah Desert	32
Dingro (Dingi Dhandh).....	33
Ganero 8.....	36
Ganero.....	40
Jamal Shah	42
Kalro, Dubbi Lake	45
Kujree.....	48
Marhi 1	51
Marhi 2.....	54
Mehrani Goath	56
Nandho Tarko	58
Peer Garho	60
Peer Musafir.....	62
Saneso	64
Tali.....	67
Village Achar Dharejo	71
Distribution of the sites.....	73
Distribution of the Artefacts	74
Chapter No. 4: Results and Discussion.....	76
Conclusion and Recommendations.....	81

Conclusion	82
Recommendations.....	84
Chapter No. 5: Catalogue and Drawings	85
Catalogue and Drawings	86
Chapter No. 5: References	121
References.....	122

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List of Figures

Figure 1. Map showing the research area in Sindh (Produced on google earth)	14
Figure 2. General map of Sindh showing its boundaries (freeworldmaps.net)	15
Figure 3. sand dune border with Indus alluvial plains	19
Figure 4. A general view of the Sand dunes covered by vegetation.....	20
Figure 5. General view of Ganero lake (left), and Jamal Shah (right)	21
Figure 6. General view of the site Dingro, looking south.....	34
Figure 7. general view of the site Ganero8, looking east	37
Figure 8. General View of the site and Ganero Salt Lake	40
Figure 9. A view of the shrine Jamal Shah	43
Figure 10. General view of the site and lake	46
Figure 11. general view of the site and lake	49
Figure 12. General view of the site.....	51
Figure 13. General view of the lake.....	51
Figure 14. view of a dried lake located 500 meters in the north of the site.....	54
Figure 15. General view of the site.....	56
Figure 16. General view of the site.....	58
Figure 17. General view of the site.....	60
Figure 18. General view of the site.....	62
Figure 19. General view of the site and lake	65
Figure 20. General view of the site.....	68
Figure 21. General view of the site.....	71
Figure 22. Map showing the location of investigated sites in the present area (Google Earth)	74
Figure 23. Graph representing the percentage of art	75

Figure 24. Graph showing the relative frequencies of the ceramic categories 75

List of Plates

Plate 1 Dingro, Flint tools and pottery sherds	35
Plate 2 Ganero8, Flint tools	38
Plate 3 Ganero8, Pottery sherds	39
Plate 4 Ganero8, Pottery Sherds	39
Plate 5 Ganero, pottery sherds	41
Plate 6 Jamal Shah, pottery sherds.....	44
Plate 7 Jamal Shah, flint tools.....	44
Plate 8 Kalro Dubbi, pottery sherds.....	47
Plate 9 Kujree, site Pottery sherds.	50
Plate 10 Marhi1, Pottery Sherds	53
Plate 11. Marhi2, pottery sherds	55
Plate 12 Mehrani Goth, pottery sherds	57
Plate 13 Nandho Tarko, pottery sherds.....	59
Plate 14 Peer Garho, pottery sherds.....	61
Plate 15 Peer Musafir, pottery sherds	63
Plate 16 Saneso, pottery sherds.....	66
Plate 17 Saneso, a baked clay piece bearing cloth impression	66
Plate 18 Tali, pottery sherds	69
Plate 19 Tali, pottery sherds	70
Plate 20 Tali, pottery sherds	70
Plate 21 Village Achar Dharejo, Pottery sherds	72
Plate 22 Drawings of the pottery sherds from DN.....	90
Plate 23 Drawings of the pottery sherds from GN8.....	94

Plate 24 Drawings of the pottery sherds from JS.....	96
Plate 25 Drawings of the pottery sherds from KD.....	98
Plate 26 Drawings of the pottery sherds from KD.....	99
Plate 27 Drawings of the pottery sherds from KU.....	101
Plate 28 Drawings of the pottery from KU.....	102
Plate 29 Drawings of the pottery sherds from MR1	104
Plate 30 Drawings of the pottery sherds from MR2	106
Plate 31 Drawings of the pottery sherds from NT	108
Plate 32 Drawings of the pottery sherds from PG	110
Plate 33 Drawings of the pottery sherds from PG	110
Plate 34 Drawings of the pottery sherds from PM.....	112
Plate 35 Drawings of the pottery sherds from PM.....	113
Plate 36 Drawings of the pottery sherds from SN	116
Plate 37 Drawings of the pottery sherds from TL	119

List of Tables

Table 1 Names of Sites and abbreviation	86
Table 2 Site: DN	88
Table 3 Site: GN8	91
Table 4 Site: GN	95
Table 5 Site: JS	95
Table 6 Site: KD	97
Table 7 Site: KU	100
Table 8 Site: MR1	103
Table 9 Site: MR2	105
Table 10 Site: MG	107
Table 11 Site: NT	107
Table 12 Site: PG	109
Table 13 Site: PM	111
Table 14 Site: SN	114
Table 15 Site: TL	117
Table 16 Site: VAD	120

Chapter No. 1: Introduction

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Introduction

Archaeology as field work is under practice since 18th century. Explorations and surveys in this connection have been conducted extensively in south Asian context. South Asian historians and archaeologists have been trying for a long time to understand the cultural evolution and cultural change in the human history of South Asia. The cultural changes during Kot Dijian, Harappan traditions, and post-Harappan traditions of the Indus valley have held the interest of scholars for a long time and onwards. However, one of the significant problems in Indus archaeology of Sindh is that we do not have a complete picture of the settlements in the Thar desert of Sindh. However, the prehistoric cultures have recovered, and very few settlements are known. The upper Palaeolithic, Mesolithic, and Hakra period objects have been reported. The Thar desert is a prominent geographical zone adjacent to the most populated area of the Indus alluvial plains. However, it has remained unstudied since the discovery of the Indus valley civilization except for few explorations by the Shah Abdul Latif University Khairpur archaeology department.

The settlement archaeology of the Thar desert has not been extensively studied, although the valuable contribution in the adjacent regions, such as the Cholistan desert of the Punjab of such research has been recognized by Mughal, (Mughal, 1997, Flam, 2002). The present study focuses on the Thar desert's settlement pattern, specifically focusing on the Mirwah desert region.

Recent research carried out by the present author provides the archaeological data for the archaeological discoveries and their chronology of recorded sites. Different components have been discussed, such as the geography of the region, ancient river channels (hydrology), plains, valleys, lakes, and archaeological sites within the study area. This region has remained adobe for the development of early cultures and Indus Valley Civilization and has also remained the ancient routes between Gaghar-Hakra and Indus plain's populations. Furthermore, this research endeavours to carry out the survey in the Mirwah desert and highlight its cultural importance. This research also provides the basis for further investigating the documented sites and artefacts.

Statement of the problem

The cultural profile of the Mirwah region covers various periods of human history, from the Palaeolithic to modern historical times. However, some gaps are visible in this cultural profile of the region regarding the Hakra phase and Neolithic phase. In the Thar desert of Sindh, the archaeology of the Harappan civilization is only the focus rather than post-Harappan archaeology. However, during the surveys, it is mandatory to keep in mind that the sites' early historic, historical, and late historic antiquity need to be investigated. Despite the many surveys and explorations specifically in the Upper Thar desert, some unstudied sites were discovered by the current author and selected for this study. The settlement history of Sindh is uncertain in the desert environment, more specifically flourishing of Hakra, Kot Diji, Harappan, post-Indus cultures, and historic period cultures how these cultures were developed and collapsed. Either nomadic or sedentary populations occupied this region. These are the integral questions which have been tried to be answered in this study. The documented archaeological sites of the Mirwah desert are studied specifically. Further detailed work is needed to be done on the cultural material from the Mirwah desert and to interpret it. The Mirwah desert is situated between the Indus River and the ancient water flow of the Hakra River. Continuity can be seen in the cultural material. Ranging from the palaeolithic to the historic times shown by the surface of this region.

The regional surveys and village-to-village studies should be the principal focus. The changing landscape is due to many developmental projects, leading archaeological sites to their disappearance as K, Paddayya has observed in the South Asian context (Paddayya, 2016). The trend of developmental projects in the Mirwah desert has been active for a decade. As a result, archaeological sites are being rapidly erased from existence. Therefore, the current author has prioritized the village-to-village survey of the Mirwah desert region. The purpose of this study was to document the unstudied archaeological sites of the proposed area. The archaeological sites of the Mirwah desert are rapidly disappearing. Further, this study aims to provide a piece of appropriate archaeological information and to provide an archaeological map of the region.

Literature review

The roots of systematic studies on the history and archaeology of the Indian subcontinent rest in the colonial period from the early eighteenth century; antiquarian research and investigations resulted in the appearance of India's rich past and archaeological evidence from the origin of human till its civilizational history. The initiatives of the archaeological research in Sindh go back to the 19th century when region came under the influence of British administration in 1843. The earliest archaeological records can be found in *The Gazetteer of Sindh* from 1976. This account, *The Gazetteer of Sindh* gives an information of the earliest documented sites of the Sukkur and Khairpur district. However during that time little interests were paid on the archaeological research in Sindh (Shar, 1995).

Alexander Cunningham (1871) in the *Geography of Ancient India*, writes historical geography of Sindh. The historical city near Sukkur Aror (ancient name Alor), was the capital of Sindh before the invasion of Muhammad Bin Qasim, author describes this city in the light of Greek influence and Alexander the great's invasion on Sindh and documented during the British rule. This is also a pioneer work by Cunningham Alexander the archaeological and historical studies on Sindh. Another pioneer work compiled by Henry Cousens (1929); *Antiquities of Sindh* is a valued work by the author. This work was published much later in. Author documented ancient towns, forts, and other ancient monuments. He carried out excavations at Kahu jo Daro stupa in Mirpur Khas.

N. G. Majumdar (1934) carried extensive field surveys in Sindh and excavated several sites. This account of archaeological information reported published under the title *Explorations in Sindh*. In-fact it provides first reference samples for the establishment of a relative chronology. For example, his discovered Jhukar Jhangar and Trihni cultural phases. Although he paid no attention to the sites dating from the early Historic periods, he exclusively surveyed and excavated prehistoric sites (Shar, 1995). Trihni was first identified on the site of Tali from the Mirwah desert he used Mujumdar's Trihni as refence sample to establish the chronology. However, the Mujumdar's established chronology used by the current author as reference sample. It is hard to find any mention of the current study area in his work. He paid attention in lower Sindh, Thatta, Karachi, Dadu districts.

After the discovery of Mohen-jo-Daro, the archaeological excavation in 1921 on it opened the new doors of the history of Sindh. Detailed reports published by Sir Jhon Marshal, Mackay, and Sir Mortimer Wheeler established the chronology of prehistoric Sindh, and used as the reference sample for the cultural material of sites throughout Sindh.

Mackay (1943) also conducted excavations on Chanhu Daro, his work and titled as *Chanhu-Daro Excavations 1935-36* published in American Oriental Series volume 20, gives a chronological sequence of the Indus Valley civilization's cultural material from its early phases to the late phases. This is also a fundamental work which used as a reference sample for the establishment of chronology of the pottery sherds found from different sites.

Other pioneer works are done by Jhon Evans (1866), and Blandford (1875) that give some earlier indications on the prehistoric Sindh. Other explorers like Paterson and de Terra (1939), and B Allchin also explored Sindh and made large collections of the prehistoric cultural material. However, these explorers did not survey the Thar desert, but they initiated the archaeological expeditions, and as result all research works conducted so far have followed these earlier works.

F. A. Khan (1958) *Excavations at Kot Diji* conducted the systematic excavations at Kot Diji site and discovered the early Indus culture the Kot Diji. This cultural phase of the early Indus differs from the Mature Indus period, and it is said the Harappans borrowed the ideas of the town planning, and ceramic styles. This work provides the current author a reference sample for the establishment of a relative chronology belonging to the Kot Diji phase.

Mughal (1967), author conducted an extensive excavation at the site of Tulumba. The excavations at this site by Mughal provided one of the major reference samples for the establishment of a relative chronology, such as "Tulumba stamped ware" pottery recognized by the present author at few sites of the Mirwah desert.

Lambrick (1964) *Sindh; A General Introduction*. The author discusses Sindh's geography, archaeology, anthropology, history, languages, and socio-political conditions. The author briefly discusses the topography of the Thar desert. Moreover, he writes about the relations between Umar Kot and Rajputana during the Mughal rule on the subcontinent. On the contrary, during Indus Valley Civilization, Mohen jo Daro, Chanhu Daro and Harappa trade relations with Gujarat, Rajasthan, Haryana, and Maharashtra

through this desert route may exist. Thar desert had played a complementary role in the development of the Indus Valley Civilization (Mallah et al., 2002, Mallah, 2000a).

Since 1986 Italian archaeologists like Polo Biagi and others have contributed much to prehistoric studies of Sindh. They focused on the Rohri Hills and adjacent areas in search of the stone age cultures. Kazi, and Biagi (1995) discovered a Mesolithic site in the Mirwah desert and named by them as LS1. This work was an initiative of the research in Thar desert. following this work Biagi and Veesar revisited the area and documented prehistoric sites on the sand dunes of Mirwah desert. they first discovered a Kot Dijian site Ganero⁸ in this territory. Although, they did not paid attention to the historical sites of the Mirwah desert, such as Marhi¹ and Marhi². The southern portion of Mirwah desert had not been visited by the scholars.

Hami (1994), in his PhD, discusses Talpurs' rule, their socio-political and economic conditions and their role in literature. He gave an account of the ancient sites of Khairpur. He provides an account of the archaeological sites in local language, this work also popularises the history and archaeology of Sindh. Hami's work was followed by Bukhari Hakim Ali Shah, and Memon (2008) they compiled the archaeological sites of Sindh, and very few sites of Mirwah tehsil are given. No site from the desert region of Mirwah is mentioned.

Shar (1995), in his PhD thesis, briefly discusses very few sites in the proposed region. This is an essential piece of work by a local archaeologist. On the contrary, he did not give the coordinates of the sites, his studied sites have been occupied by the modern villages, and only the sites Tali and Dubbi of Mirwah desert region are in good condition.

Shar, Negrino and Starnini (1996) briefly discuss finds from a single site in the Mirwah desert, Dhabi. This single site in the desert environment is associated with different cultural assemblages such as Hakra, Kot Diji culture, and exotic objects. However, the researchers also neglect the context of the site and its relation with other sites in its proximity.

Mallah (2002), in *Archaeology and Ethnoarchaeology of the Thar Desert* recorded the sites belonging to the Early Harappan and Mature Harappan periods. The author had paid attention on the eastern portion of the Thar desert, its upper portion, and the modern Nara canal. More recent work by Mallah (2008), in which he recorded the sites camp and settlement of the Mirwah. The author has also given the inventory of the

sites. He reported a single object with the GPS location and interpreted it as a campsite. However, this survey was limited to a specific area, mainly around the lakes.

Veesar G. M (2009), in his PhD conducted study in the Rohri Hills, and Thar Desert, his study is focused on the Mesolithic period settlements. This study helps one for the relative chronology of the Mesolithic period.

Bukhari Mastoor (2010) explored the sites of Sindh in search of Buddhist tradition, and its religious influence. She had discovered several sites and reported the cultural material belonging to Buddhist period, her work also provides the present author a reference sample for the relative chronology of pottery sherds such as, pottery sherds decorated with rosette pattern.

These research works on the area are no by means clarity that all is well and no further works are needed. Although, the works done in the Thar desert have fundamental importance. The archaeological sites of the Thar desert were not known until 1990. Moreover, the existing literature produced by the scholars is a fundamental work. The Thar desert has not been studied before properly, but the literature mentioned above gives a basic idea about the archaeological record of the Thar desert. However, a significant portion of the Thar desert still awaits scholarly attention. Moreover, the previous works have been confined to specific periods, such as the stone age and the Kot Diji period. Multidisciplinary research has needed in the Mirwah desert because of its varied nature within a single zone.

Research Methodology

The Mirwah desert was selected as the area for the current archaeological survey. Fifteen sites were recorded in the area under investigation; seven were newly discovered during the current survey and were not studied before. The study was focused on the lakes. The purpose of this survey was to trace as many sites as possible in the Mirwah desert region to record and describe them. Although, its archaeological importance seems evident as it comprises different geographical units, such as lakes, alluvial valleys, raw chert resources, different species of plants (used as locally medical treatments), and agropastoral. This region is still under exploitation which has continued since prehistoric times. The methodology established for conducting this study comprises two major steps, (a) data acquisition and (b) processing and analysis of data

Data acquisition further comprises four steps, firstly, determine the location of sites, and any other component, with their appropriate coordinates. And for this purpose, the GPS (Global Positioning System) device and google earth were used. The research was so exhaustive in which author tried to document all the features associated with the sites by using motorbikes and sometimes vehicles, and in certain conditions two to five kilometre by walking on foot. The archaeological sites were examined based on the presence or absence of cultural material. The lakes and, both courses of water dried and presently flowing were also considered and were part of this research to understand the flow of rivers which existed in the ancient times and drained the Mirwah desert.

Secondly, the data acquisition contained a systematic surface collection of the artefacts after site(s) were encountered (its actual size, dimensions, nature, condition, etc.). The survey was focused on the presence or absence of artefacts, and the feature, such as architectural, monumental (if any), activity areas, hearth or fire activities, and artefact manufacturing debris. The purpose of this surface survey was to determine the total area occupied (on which settlement temporary, permanent, semi-permanent, or camp site lies), the morphology of the site(s), collection of the exotic items (if available), and the locational context.

Thirdly, mapping of sites the studied area was a significant step. Archaeological sites were documented, and data was utilized to (such data for instance, coordinates) produce the maps through google earth. In the maps, physical and geographical features were also focused. Further, the water bodies and significant river courses were focused to understand the settlement pattern and water flows in the desert environment.

Fourthly and finally, the data acquisition contained the photography in which the following features were documented. General view of each site, general photo of the area where the site was located, other views in general of the region (if necessary), and photographs of every surface feature (if available).

The processing and analysis of data comprises three further stages. Firstly, the classification of artefacts and sites. In this stage, the collected material was classified based on typology and their function and examined to reconstruct the cultural or social patterns and determine the site distribution. After the cultural material was classified, the sites were classified too in alphabetical order. The collected data from all types of sites were examined, and the data was analysed and studied.

Secondly, the catalogue of artefacts is included. Each artefact had assigned a number (site-wise), and they were interpreted and described in detail. Three-dimensional measurements of the stone tools' length, width, and thickness were taken. The measurements of the pottery sherd, rim radiuses, thickness, and their maximum sizes were also examined. Different designs were also examined in the depictions, painted, and slip applied on the surface of pottery sherds. The manufacturing technology was also examined, such as handmade, wheel thrown, and grit mixed.

Thirdly, the drawings of all essential artefacts obtaining all necessary information associated with their manufacture technology, the shape of the pots, the total radius of the rims, the profile, and the section of the pot. The decorated designs and paintings applied over the interior or exterior surfaces of the pottery sherds were part of the drawings.

Collected data were analysed in the light of site catchment analysis and system approach. The site catchment analysis is more quantitative and focuses on the distance. This approach helps one to comprehend the potential yield of the surrounding area that has been exploited by the site occupant (Veesar, 2009). The site catchment is the analysis of mobility and resources available in the given area and exploited by the occupants of the site(s).

The systems approach also helps to understand any given culture at greater length; culture consists of complicated, interrelated components such as social organization and technology, and these both interact with the ecological system (Veesar, 2009). Veesar quoted, “a change in one of these [cultural] components will trigger reactions in many of the other parts of the [culture]” (Veesar, 2009; p-43)

These theoretical approaches have allowed the author to understand the topographic nature of the area of study, the availability of the resources and their exploration, cultural growth, and the changes during ancient times within a given ecological setup.

Key Questions

- 1) What is the archaeological record of the given area?
- 2) What is the settlement pattern, distribution, and subsistence sources of the area?
- 3) Why was this arid zone (Mirwah desert) occupied by the ancient settlers?
- 4) From which river this region was watered and how long it was drained?
- 5) What kind of economy they were dependent on?

Chapter two focuses on the geography of the area. The area's topography contained different geographical units such as the Indus alluvial plains, sand dunes, small valleys, and hydrological units such as lakes within sand dunes. The area has been investigated in order to understand the hydrology, settlement pattern, and relation with the thickly populated adjacent area Indus River plains. Every physical ecosystem is described in this chapter which was investigated during the current survey. Furthermore, the area's hydrology is also described in which all traces, for instance, Paleo-channels of the river Indus and Hakra, were investigated, discussed briefly in the chapter. The cultural history archaeological background is described briefly through reviewed past archaeological records.

Chapter three comprises detailed descriptions of the sites and their cultural material compared with the material from already excavated and studied sites based on the chronological sequence. A general photo of each site is given, and the plate number with objects is also given below the description of finds. The site was observed with all other elements that existed around the site. Coordinates of each site were noted down. The artefacts were analysed and compared with those already found from the stratigraphical excavations of the different sites.

Chapter four comprised two significant parts, the catalogue of all selected objects and drawings of all virtual objects. All artefacts were catalogued for their quantitative measures. Drawings were done to obtain technical information about the pottery sherds. Such as understanding the shapes, maximum diameter, profile, and section of the pots, paint, decorated designs etc. This information will help the reader to understand manufacturing technology and the shapes of rims, which are more identifiable for the established periods, such as the Kot Diji period, mostly short rim was used and short neck.

**Chapter No. 2: Geography, Environment, and Culture-
Historical background**

Geography of Sindh

Primarily, Sindh was the name of the indigenous River Sindhu, pronounced in the western world as the Indus Greek originated term for Sindhu (Lambrick, 1975). And then, the name Sindh became famous for the country watered by the River Indus. In the Vedas, the term Sindhu was used for the Indus River. According to the historians, and archaeology scholars, that the term Sindh has a Sanskrit origin, which was used in the epics of Aryan people, and sung in the songs of the rivers of India, such as Saraswati (in India), or Hakra (in Pakistan), Gaghar-Hakra, and the mighty river Indus or Sindhu (Chakrabarti et al., 1999).

Furthermore, once, a civilization flourished five thousand years ago on the banks of the river Indus, spread over a vast area of the South Asia. It is known as the Indus Valley Civilization, or Harappan Civilization, term Harappa because the Harappa type site (which lies on the left bank of the former course of Ravi River) of this period of first civilization was discovered and excavated a year before the Mohen Jo Daro discovered. However, in the Sindhi local language, this civilization is known as the Sindhu Mathri (Mathri means Valley). In the map produced by Ibn Hawqal in the 10th century, the boundaries of Sindh have mapped out, with the Hind (India), in the east is the sea of Fars, Frontier of Kirman, and the north-west frontier of Sistan (modern Eastern Iran, Baluchistan, and Sothern Afghanistan (Panhwar, 2003).

The modern geography of Sindh is divided into three parallel geographic zones, the Indus alluvial plains, the Kirthar mountain ranges and the Thar desert, and the Arabian sea in the south. The Thar desert of Sindh also has distinct geography, and this also is divided into two portions, the Upper Thar desert and the lower Thar desert (Mallah, 2000a, Mallah, 2010). The Upper Thar desert constitutes the Rohri hills, small alluvial Valley, Indus alluvial plains, sand dunes, and lakes. However, the lower Thar desert in the south of Sanghar and Shaheed Benazirabad (formerly Nawabshah) districts constitutes much of the plain area and the hilly range of Karoonjhar mountains in Tharparkar districts and finally submerges in the Rann of Kutch.

The monsoon winds make the sand of the Thar desert in heaps form and hollow it out into the parallel ridges, which are locally known as “Bhit” (Lambrick, 1975). The sand dunes are separated by the valleys that are present in the almost sandy desert, separating the sand dunes from each other and making the slopes. The configuration of

the sand hills of the Thar desert is due to the wind, and all sand is windblown from the coast (Lambrick, 1975).

The region of the Mirwah desert is located in the district Khairpur Mir of Sindh. It begins from the Taluka Kot Diji and ends near Faiz Ganj in the South, Nara taluka in the east, and the west, bordered by the Indus alluvial plains. The Mirwah desert is a part of the upper Thar desert of Sindh, comprised of high elevated sand dunes, small alluvial plains, Indus alluvial plains, lakes, and the low-lying sequence of the Rohri Hills. The Thar desert of Sindh is a vast western portion of the Great Indian desert that lies between the Arabian sea and the Cholistan desert of Punjab. It is divided into two distinct parts due to its varied nature: the Upper Thar desert and the lower Thar desert (Mallah, 2000a). Generally, the Thar desert of Sindh is geomorphologically divided into two parts the "Pat" (flat) and the Thar (Pithawala, 1936, Panhwar, 1969, Mallah, 2000a). This division is based on geo-climatic and topographic features such as the sand dunes' size, layout, and direction. The climatic differences, for instance, wind velocity and annual monsoon rainfall. The "Pat" portion comprised the fertile small valleys as useful for cropping as Indus alluvial plains.

The Mirwah desert comprises the western fringes of the Thar desert, which has a common border with the Indus alluvial plains. The old bed of the river Indus, described by Flam as the course three (Flam, 1981), Kandhkot and Khairpur course and perhaps the presently flowing Mirwah canal. That course is flowing along with these fringes of the Thar desert in the west including Mirwah desert furnishing the water within sand dunes in the westernmost margin of the generally Thar desert and specifically the Mirwah desert. Panhwar describe the Khairpur course as a Prehistoric course, which also comprised the same routes as Flam suggested (Panhwar, 1969).

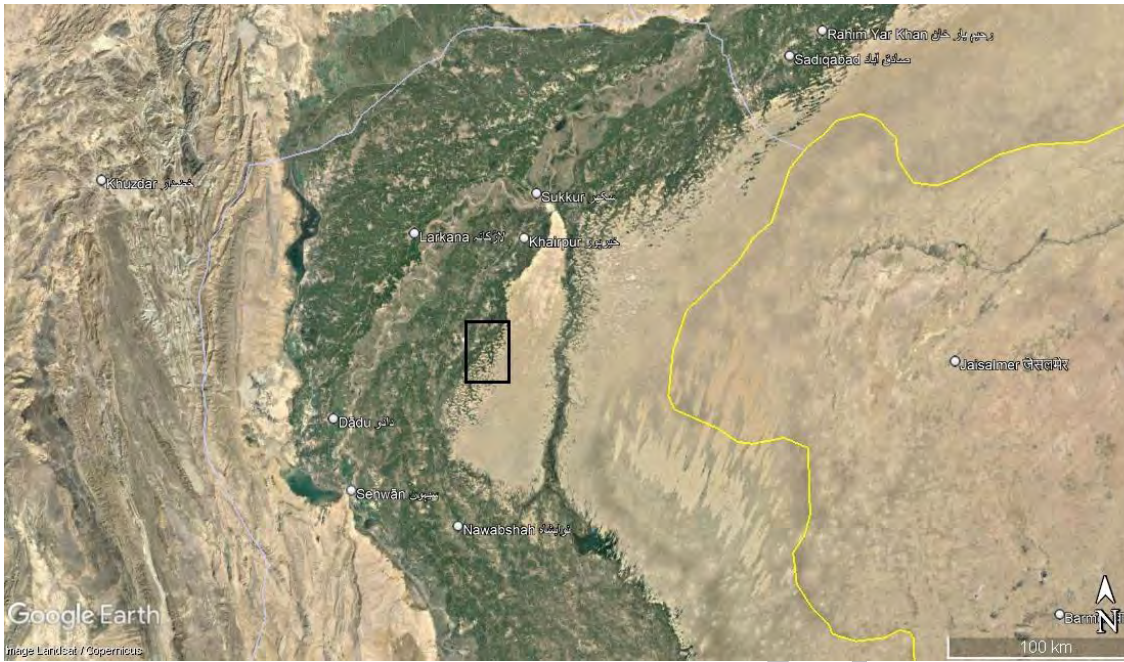


Figure 1. Map showing the research area in Sindh (Produced on google earth)

DRSML QAD



Figure 2. General map of Sindh showing its boundaries (freeworldmaps.net)

Hydrology of the study area

The scientific studies to understand the dried river courses in Sindh, using different approaches, such as historical accounts by Romans, Greeks, Chinese, Arab and Persian geographers, history and travel accounts, and aerial photographs (Flam, 1981, Flam, 2002), geomorphological studies and ground observations (Pithawala, 1936, Panhwar, 1969) have been conducted. The area of cultural evaluation in the Indus and Gangetic River systems has long held scholars' interest in understanding its hydrography. The major river systems in Sindh were the Indus and Hakra rivers (Hakra dried). However, the flow of Hakra river in the lower Indus basin in the easternmost part is considered as the Nara-Nadi course (Flam, 1981). The Thar desert and its water system were stabilized during the early quaternary and late territory (Misra, 1989), as quoted by (Mallah, 2000a).

The Nara-Nadi has various names in Pakistan, and Louis Flam recognized these all courses through aerial photographs. Such names are from the fort Abbas to the fort Derawar in Punjab province, known as the Hakra (Flam, 1981, Mughal, 1997). From the fort Derawar to the Rohri hill known as Raini and Wahind channels (Mallah, 2000a, Flam, 1981). From the southeast of Rohri hills to the Rann of Kutch is known as the Nara-Nadi course, and this course is also active with its natural channel, and later in the British period, it was re-excavated as a feeder canal of the modern irrigation system (Flam, 1981). During the current survey, traces of river silt and also the traces of the water channels were observed by the current author. If the major river course did not pass from this area (Mirwah desert), at least the paleochannels of the Indus River and Hakra river might drain this area. Therefore, several valleys within sand dunes contain very fertile soil, which is also as usable as Indus alluvial plain for multi-cropping. Before the barrage system on the Indus River, the Nara canal flooded into these valleys, creating lakes during inundation (Mallah, 2000a).

Furthermore, the western portion of the Mirwah desert is surrounded by the Indus alluvial plains, which depends on the water from the feeder channel Mirwah canal, the Minor channels Saneso, Dedhano, Sawri, and Pndryhio carrying water from the Mirwah canal, feeding the plains within sand dunes of Mirwah desert, and Faiz Ganj desert region. Before the Sukkur Barrage, the Indus made frequent spill channels into this western margin of the Thar desert and fed the lakes (Shar, 1995, Mallah, 2000a). Therefore, in the

Mirwah desert, three clusters of lakes were also surveyed during this study. The occurrence of the most archaeological sites over the lake shore and the sand dunes reflects the situation that people in ancient times depended upon the water through rain and flooded spill channels from which water collected in the lakes. Moreover, this situation also continued from the Mesolithic period. The availability of the remains from the Middle Palaeolithic to the historic periods suggests this type of environment (Veesar, 2009).

The former course of the Indus River as Flam suggested, the Khairpur course (Flam, 1981). This course most probably furnished the Mirwah desert. The depressions of that course are apparent. This depression is known as Dhoro along Mehran Highway near Sui Gas town, and a maximum of twelve km in the west of Mirwah desert parallelly lies with this western margin of this desert.

Mirwah Canal

The irrigation system through barrages on the river Indus, the barrage on Sukkur Gorge was built in 1923; the canals were completed at this time. At present, the Mirwah canal is a fundamental source of water to be exploited for the cultivation and domestication of the animals in the Khairpur, Kot Diji, Mirwah, and Faiz Ganj tehsils.

It is said that the canals were built in the British period after Sukkur Barrage was installed, and those canals were built on the ancient courses of the Indus and Hakra rivers. The Mirwah canal might be one of those ancient courses, as Nara Canal is the ancient Hakra flow. The Mirwah canal is perhaps a route of the paleo-channel of the former course of the Indus River, the Khairpur course.

Geomorphology, environment, and climate of the study area

The area of present study consists of 70 square kilometre in Thari Mirwah Taluka of district Khairpur Sindh. It basically is a small portion of the upper Thar desert of Sindh, making its western limit. It lies between two tehsils of district Khairpur in the north Kot Diji, and in the south, Faiz Ganj, further in the west Indus alluvial plains are spreading to the boundary of Mirwah tehsil with Sobhoderi tehsil. The Mirwah desert constitutes the sand dunes which are the extension of the Nara desert towards Mirwah. The distinctive geomorphological features also make this desert region useful for fodder. The Mirwah

desert consists of Indus alluvial plains, sand dunes, lakes, desert valleys, plain areas, and low-lying Rohri hills.

In the winters, the lakes of the Mirwah desert become the camps of migrated birds. Different birds migrate from Siberia, Cyprus, and other countries with intense winters. People also place their camps for catching birds. In ancient times people occupied the Mirwah desert region for multipurpose, for instance catching birds in winters, fishing from the lakes, grazing herds, agriculture, and obtaining raw chert for making tools.

Indus alluvial plains

The vast portion of Sindh comprises the Indus alluvial plains, on which a greater part of the economy of the population of Sindh is dependent. This portion is very fertile in which Kharif and Rabi crops are fertilized. Because of the fertility, the ancient cities of the Indus Valley Civilization like Mohen jo Daro, Chanhu jo Daro and Lakhan jo were also established on the banks of the river Indus in the plains of Sindh. These alluvial plains lie among the hilly tracts of Rohri hills, Kirthar mountains, and the Thar desert. These alluvial plains border the western margin of the Thar desert in the east (Figure 2). Some isolated Indus alluvial plains extend within the sand dunes making the fringes. Most of the Mirwah desert's population depends on these Indus alluvial plains for the agricultural economy.

Moreover, these alluvial plains touch the toes of sand dunes. An ancient river course's traces are still visible near the sand dunes (Mallah, 2008). In ancient times high floodwater must touch the sand dunes and fill the low-lying areas in the present study area.



Figure 3. sand dune border with Indus alluvial plains

Sand Dunes

The Thar desert is generally divided into two portions the “pat” (flat areas, including alluvial valleys), and the “Thar” (Panhwar, 1969). The Thar further constitutes sand dunes that are actually the “regular sea of sands” (Mallah, 2008, Veesar, 2009). The desert characterizes by the rolling surface with high and low sand dunes. These sand dunes are separated by the barren hills and alluvial valleys. Furthermore, these sand dunes remain in the continual motion, the winds shift them and take on varying shapes and sizes. However, the older dunes are in semi-stabilized or stabilized positions. The dunes vary regarding their height some of them are the highest and some are low lying. The maximum elevation rises to 500 feet (1500 metre), however, in the present study area the dunes do not exceed 250 feet in height. The sand dunes lie in east-west direction with steep ridges from the north. These sand dunes covered with sparse vegetation, and after few rain showers they become very green, different species of plants seasonally growing on the rains provide additional subsistence to the animals, and as well as for the nomadic

populations. The nomads set up their camps during the monsoon season and exploit these sand dunes for their subsistence.



Figure 4. A general view of the Sand dunes covered by vegetation

Lakes

The several geomorphic units have been described above. These geomorphic units further hold the micro-ecological niches such as lakes. Several lakes within sand dunes are present throughout the Thar desert of Sindh (Figure 5). In the present area several brackish water lakes are present. Initially, the present author has divided the lakes in groups because of their locations in different villages, and the presence or absence of the sites around these lakes. Generally, these lakes are two to three meters deep, and these lakes vary in the sizes. The maximum size does not exceed the ten square kilometres. These lakes locally known as, Bakri Waro Sim, Char Baro Sim, Jamal Shah Sim, Tal Sim, Wadi Sim, Sain Sim, Ganero Sim (Ganero Salt Lake), Saneso Sim, Sutyaro Dandh (lake), Kujree Dandh (lake), Kalro Dubbi Dandh (lake), and Khuth Sim. Some of these lakes are surrounded by the dense vegetation (Figure 5, right)

Besides there are other several lakes in the present area, that now have been dried, and such lakes are the Chann sim, on which the site Lagharian Jo Goth was documented earlier by Shar (1995) and Bukhari (2010). The Sutyaro Dandh2 (now dried), Nandho Tarko Dandh. The traces of the ancient spill channels of the river Indus leading within the sand dunes are still visible, and these traces have already been documented by Veesar (2009). It can be assumed that in the ancient times the repeating floods by the Indus River must have touched the toes of the sand dunes. These floods and the heavy rains might have created the lakes of Mirwah desert (Veesar, 2009). Hence, the settlements from Mesolithic period to the historic periods occur on in this western margin of the Thar desert mostly on the lake shores or the nearby lakes (Veesar, 2009, Mallah, 2008). Furthermore, the rainfall must filled the low lying areas within sand dunes and created many swamps in The thar desert (including the area under present study).



Figure 5. General view of Ganero lake (left), and Jamal Shah (right)

Alluvial valleys

There are several alluvial valleys within sand dunes throughout the Thar desert of Sindh. The soil of these valleys is very fertile that comprises of silt/clay somewhere alluvium deposits, and sandy loam (Veesar, 2009). These valleys are very suitable for the germination of the grasses, and different types of the trees. The most usable plants in these valleys are the Prosopis Cineraria (locally known as Kindi, and that provides food from the cattle), Capparis Aphyly (locally known as Kirir), Salvadori (locally Khabar), Ziziphus Mammillaria (locally Ber). These trees not only provide the food for animals, but also provide fruits for human consumption and as well as provide shade in the desert

environment which works as a shelter for the animals, and humans. These valleys might be formed due to the Indus river and Hakra river spill channels during the early Holocene, middle Holocene geological times (Flam, 1981, Mallah, 2000a, Mallah, 2008).

The thick alluvium deposits make these valleys very fertile and usable for the crops as Indus alluvial plains. These valleys locally known as “Wero” (singular), “Wera” (plural), and are connected each other. The sand dunes also encroached these valleys, and these high elevated windblown sand dunes lying upon the these valleys (Lambrick, 1975). There are several valleys which are closely connected with each other, it is therefore some valleys in deep desert are under cultivation by the peoples through tube well water system. This phenomenon of the region suggests that this region was occupied by the ancient people for the purpose of small-scale agriculture when catastrophic conditions and high floods occurred in the adjacent Indus plains at different. Besides, there are several plain areas are present in the Thar desert, and locally known as “Sakro” and these areas are very rich in the chert sources.

Rohri hills

Rohri hills are located in the northwest of the upper Thar desert, and In the south stretching from Sukkur in the northeast and finally its low lying sequence extended into the Mirwah desert which was greatly exploited during the Mesolithic, and Harrapan period.

Climate

Research into the paleoclimate and palaeoenvironment has been conducted in the eastern part of the great Indian desert in Rajasthan. The earlier studies in this regard have been conducted based upon the palynological research in which the Didwana and Nal lakes were selected for the palynological samples. According to this research, that there during 3000 – 1500 BC that there was a moist climate, and the rains were 500mm more than today (Misra and Rajaguru, 1985, Misra, 1989, Mallah, 2000a). Misra, 1989 as cited by Mallah 2002), that, in western India (including Rajasthan), there was an increase in rainfall between 4000 and 2000 BC, and the area was favourable from the development of the Indus Valley Civilization (Enzel et al., 1999), it suggests that the climate and

environment of the past 5000 years were similar to the climate and environment of the present.

Furthermore, prehistoric climate studies in Rajasthan have been conducted (Singh, 1971). Singh has investigated the lakes of Rajasthan, including Pushkar lake, Didwana lake, Sambhar lake, and Lunkaramsar lake and collected the pollens on which paleoclimatic study was based other studies into the prehistoric climate (Singh et al., 1990, Singh et al., 1974), have been conducted and concluded the climate of this arid zone of India, and Pakistan (Prasad et al., 2014, Enzel et al., 1999, Singh, 1971) has divided prehistoric climatic conditions into the four phases, such as Phase I, 800 BC; at the beginning of this, the arid climate was uncertain, and this phase ended with an inevitable increase in rainfall (Singh, 1971). phase II 8000 to 7500 BC, the vegetation during this period that was deduced from the collected pollen suggests that this phase of climate was the period of higher rainfall. Phase III 7500- 3000 BC was also the time of high rain falls. While phase IV 3000 – 1800 BC noticed that the climate during this phase oscillated to the drier conditions, this phase was also mentioned by Singh as a “sudden change” that came during this phase (Singh, 1971).

Moreover, during the Harappan periods, the periodic floods and rainfall were sufficient for the cultivation of crops and seed germination of desert plants in the alluvial valley in the Thar desert and on the surfaces of the dunes (Mallah, 2000a). However, studies on the prehistoric climate in the Thar desert of Sindh have not been conducted yet. The Indian desert is also an arid zone that is uniform in its geomorphological configuration in Pakistan and India.

Subsistence resources

The subsistence is a more important than any other cultural aspect that it connects people to their environment (Mallah, 2000a). The primary subsistence resources of the research area are included a wide range of wild and domesticated animals. Furthermore, the major subsistence sources are the alluvial valley, and lakes that provide fishing. The chert resources from the low lying Rohri hill sequence are present within the research area that must have been exploited by the Mesolithic, and Harappan communities (Veesar, 2009). The flora and fauna available in the research area are thought to have been extensively exploited in the ancient times. The wild animals used in food sources were the rabbit, fox, jackal, monitor lizards etc.

General Culture History background of Sindh

Generally, Sindh's cultural-historical background has its roots in the stone age period. Before the emergence of the Indus valley civilization, the Sindh passed from at least earlier cultural evolutionary stages, such as savagery, barbarism, and civilization (Taylor, 1871). Archaeological studies have contributed a tremendous amount of information to Sindh's prehistoric, protohistoric, early historic, and historic timeline. The earliest known stone tools except for Oldawan, the Acheulian, and Levallois technology-based flint tools have been reported from the different regions of Sindh. The well-known regions where flint sources are available in great quantity include the Rohri hills in upper Sindh, Ongar hills, Mulri hills and Karachi gulf (Biagi, 2006). The Ongar and Mulri hills were also repeatedly visited by A R Khan in 1979, and in 1972 and 1973, he made collections related to the Middle Palaeolithic period (Biagi and Starnini, 2008).

The evidence of earliest known people living during the lower palaeolithic, middle, and upper palaeolithic have been recovered from the Rohri hills, the upper portion of the Thar desert, and lower Sindh Milestone 101 (Biagi and Starnini, 2008). The archaeologists mapped out the well-known sites of the Palaeolithic period, Acheulian-type hand axes from upper Sindh. The joint Rohri hills project by the Italian archaeologists and department of archaeology Shah Abdul Latif university professors carried out detailed studies, providing archaeological information through scientific analysis dotted several sites in the upper Thar desert, Rohri hills, and the Khairpur district from Shadi Shaheed, and peer Shaban.

The hills south of Hyderabad (Laki range), Ongar, Daphro, and Bekhain yielded several prehistoric sites, which were first reported by the B Allchin (Allchin and Allchin, 1997). The limestone bed of the Rani Kot was first pointed out by Blandford (Blanford, 1880) regarding the occurrence of flint sources. The middle Palaeolithic assemblages have been reported from only a few well-known regions: The Landhi Karachi (coastal region), Mulri Hills, Deh Konka, Ongar (the Laki range, and Rohri hill (Biagi, 2006). Furthermore, an Acheulian workshop at ziarat Pir Shaban is of fundamental importance regarding the early stone age records of the Sindh (Biagi et al., 1996).

The Mesolithic microlithic tool technology is also well defined from the Upper Sindh and lower Sindh, and this tradition continued to the Harappan period. The well-defined regions bearing this cultural assemblage are the Upper Thar desert, Rohri Hills,

and the Lower Sindh. The evidence of the Neolithic period has also been recovered from the Thar desert near Mirwah town (Chandio et al., 2012).

Sindh, because of its location between the Indian subcontinent and the Iranian plateau, is also a vital region regarding cultural evolution. The Iranian plateau and Indian subcontinent are also representing two different cultural zones. After the Indus valley civilization, Sindh suffered from several calamities because of different factors, such as the changes in river courses at different times, inundations, wars, and migrations from the Iranian plateau and central Asia. The period of the Indus Valley Civilization was the period of the glory of Sindh, in which it touched all developing stages and declined due to some particular reason.

Again, during the Mauryan rule, the Sindh perhaps regained its position, and merged into the Magadha dynasty during King Ashoka. Before the Chandragupta, Maurya Alexander, the Great invaded the region. According to the Pithawala, near Bekkar, Alexander the great found an area, shar quoted "the richest part of India and the city so commodiously situated that he determined to erect a citadel and leave a sufficient garrison for its support" (Shar, 1995). The Bakkar is also an old name of the modern Sukkur, and the ruins of the fort of Bakkar are also located in Sukkur, another fort at Arore, Seeraj Ji Takari, and Kot Diji fort, other forts respectively, Pako Kilo in Hyderabad, and Rani Kot in Jamshoro district, the fort of Umar Kot in the Lower Thar all these architectural units representing the Historical, and early Historic Sindh.

The western portion of the Sindh, in the west of Indus, was under King Xerxes of Persia's control in the 5th century BC (Shar, 1995).

The Culture History Background of the study area

The studied area (Mirwah desert) has been investigated, and different cultural assemblages have been reported, but still, this area needs to be studied for further understanding of the archaeological records. Although, the cultural material ranging from the palaeolithic to the historical periods is also collected on the surface of sand dunes and around the lakes of the Mirwah desert (Mallah, 2008). However, there are many gaps regarding the prehistoric cultures in Sindh, such as the Neolithic is not well-defined due to the limited explorations overall in Sindh. In this study, we will discuss a few prehistoric

sites of the region which previous scholars have already studied. Prehistoric evidence from the Mirwah desert is given below.

Palaeolithic

The region occupied during the Palaeolithic period in upper Sindh was the Thar desert and Rohri hills. The Palaeolithic flint tools have been recovered from the site of Veesar valley, located in a deep desert some 25 km east-south from the Thari Mirwah on the northern side of Thari-Nara Road. Few tools of this earliest cultural assemblage have been reported from the Mirwah desert region.

The earliest known people first occupied the hilly regions of Sindh, where they exploited the flint sources for making the tool industries, and thousands of the industries have been reported from the Rohri Hills; in the Thar desert, the palaeolithic quarries have also recovered quarried for the appropriate raw chert material for making the tools (Biagi and Veesar, 1998). Explorations by the archaeology department at Shah Abdul Latif University had increased the sites of upper palaeolithic in the Thar desert. The 95 workshops of the upper Palaeolithic have reported only the Fulko Veesar Valley in the Thar desert (Mallah et al., 2002, Mallah, 2008). However, research works undertaken so far have also failed to find the remains of living huts, camps or other features such as ashes or charcoal in the Thar desert. Furthermore, five sites were observed in the Mirwah desert along the shores of lakes, such as Dubbi Lake, Wadi Sim lake, Bakri Waro lake, Jamal Shah, and Dingro lake (Mallah, 2008). The number of upper palaeolithic sites in the eastern portion of Sindh is 123, that have been documented.

Mesolithic

The upper Thar desert was primarily a fascinating and attractive area for the hunter-gatherer societies of the Sindh during the Mesolithic period. The Microlithic tool manufacturing activity on the sand dunes is also present. The Mirwah desert region was rich with sources of raw chert material in its northern limit where Rohri hills sequence end (Veasar, 2009). Therefore, hundreds of Mesolithic workshops and activity spots have been reported by the scholars confined between the Rohri hills and Mirwah. The lakes in the desert environment played a complementary role in the development of early Indus cultures. The Mirwah desert was exploited extensively during the Mesolithic period. Several workshops associated with this period were recorded in 2008 by Mallah around

Dubbi lakes of Mirwah desert (Biagi and Veesar, 1998, Mallah, 2008, Veesar, 2009, Mallah et al., 2002, Shaikh et al., 2001, Biagi and Kazi, 1995).

The systematic surveys were carried out on the Rohri hills and adjacent regions, including Mirwah, by the Department of Archaeology at Shah Abdul Latif University Khairpur (Biagi and Shaikh, 1994, Biagi and Starnini, 2008). Furthermore, the Mesolithic has also been recovered from the desert of the Indian state Rajasthan (Misra, 2001), and the Cholistan desert of Punjab (Mughal, 1997). Moreover, this phenomenon suggests that the Mesolithic people were moved towards the lakes, and plains of Sindh, where they got easy access to water and food.

The distribution of Mesolithic sites in the Sindh, The first group Rohri Hills. Other groups, Daphro, Ongar, and Bekhain lower Sindh. The first group is in upper Sindh; the other is in lower Sindh. In the proximity of the Rohri hills there are thousands of workshops associated with the different periods of the stone age have been reported (Biagi and Pessina, 1994, Biagi and Shaikh, 1994, Laghari, 1994).

Several Mesolithic remains from the Thar desert of Sindh have been reported (Shaikh et al., 2001); the Mirwah desert region was selected for the further investigation because of its varied geographical setting. The previous research works have focused on examining the extension of the stone age culture from the Rohri hills towards the Thar desert. Consequently, these studies demonstrated the Mesolithic sites in the Thar desert of Sindh. Five groups of Mesolithic settlements have been recognized within sand dunes. Furthermore, Veesar noted that Mesolithic sites occurred around the lakes in Mirwah Within desert areas (Veesar, 2009). Moreover, he observed the variation in quantitative concentration of the cultural material scattered on the surface. In the Mirwah desert, the Mesolithic settlements are divided into two groups based on location and quantity of cultural material. Some sites are close to lake shores, and some are located away from the lake where micro flaking debitage are known. The sites located on the lakeshores were used for hunting purposes, and the sites away from the lakeshore were used for home bases or residential purposes (Mallah, 2008).

Neolithic

The Neolithic period in Sindh is still not well known; however, the Mehargarh in Baluchistan bearing this cultural period has a dominant role in the prehistoric archaeology of south Asia. Very recently, neolithic chaff-tempered pottery was discovered in the Thar desert (Chandio et al., 2012). This Neolithic chaff tempered pottery is similar to pottery found in Mesopotamia, Iran, Mehargarh (Baluchistan), Sheri Khan Tarakai (in Bannu District of KPK), Turkey, Zagros Mountains, Afghanistan, and many sites from India (Chandio et al., 2012). No evidence of neolithic chaff tempered pottery is recovered in the Mirwah desert. However, the Mesolithic tools are visible on almost every sand dune of the Mirwah desert.

Although, the knowledge of the Neolithic period in the plains of Sindh is still unclear. Excavations at Kot Diji by F. A Khan revealed sixteen occupational layers; some stone tools such as sawed and leaf-shaped arrowheads were recovered at lower levels. The leaf-shaped arrowheads and sawed are generally known as these tools were made and used in the Neolithic period. During the current survey, the author has reported some handmade crude pottery sherds with cloth marks and pottery bits. Moreover, this indicates that the earliest ceramic types used in the Hakra phase were the evaluation from Neolithic to the early Indus cultures.

Early Indus

The three well-known pre-Indus cultures from Sindh are Kot Diji, Hakra, and Amri; the settlements of these three well-defined cultures, the Kot Diji and Amri sites, are the type sites. However, the Hakra cultural phase is reported at large from the Cholistan desert of Punjab along the dried Hakra river. Although Sindh it is an emerging archaeological complex. According to scholars, Hakra culture flourished on the banks of the Hakra river (in Pakistan) and Saraswati River (in India), which is now dried. But some evidence of the Hakra phase has been found in the Taung Valley of Sindh Kohistan by Mallah (Mallah, 2010).

The explorations by the Mughal in the Cholistan desert (Mughal, 1997). He made a great collection of the Hakra phase cultural material. He characterized the pottery as Hakra phase pottery such as handmade, coarse, grit mixed pottery, pottery with mud applique applied on the external surface, and cloth marks on the interior side (Mughal,

1997). Some handmade pottery sherds and short-necked rims have been collected during the survey by the current author from the Mirwah desert. The sherds with cloth marks, grit mixed, and mud applique was also reported during the current survey.

This identical Hakra pottery is also reported from the sand dunes of the Mirwah desert, and several Hakra phase rims have been discussed by Mallah (Mallah, 2008). The pottery sherds bearing cloth marks from the interior and mud applique from the exterior were also observed at the site of Ganero during the current survey.

Furthermore, Kot Diji culture is also well known in the Mirwah desert region. The Ganero and Dubbi sites are also important sites, from where the Kot Dijian Fish scale pottery sherd and short-necked rims have been collected in previous studies (Mallah, 2000a, Shar, 1995). However, the Amri phase is not much known from the desert environment. Although, The cultural evolution of the Indus valley civilization took place in Indus alluvial plains and on the sand dunes of the Thar desert (Mallah et al., 2002).

Many studies have been conducted on the Indus valley civilization since the discovery of Mohen jo Daro as the metropolitan city of the Indus valley civilization. A general framework of the development of the Indus valley civilization is divided into three phases: Each early Indus, Mature Indus, and Late Indus. The evidence of three phases is systematically present in the Sindh (Kenoyer, 1998, Shaffer and Thapar, 1992).

The Amri (type site in Sindh and Nal in Baluchistan) and Kot Diji flourished during the fourth and third millennium BC. These pre-Indus cultures were involved in village life and forming communities and later transformed into the first urbanization. They have an important place in the development of the Indus Valley civilization. Furthermore, evidence of the Neolithic period has been recovered from the sand dunes of the Mirwah Desert.

Indus Valley Civilization; Mature and Late phases

The evidence of the growth of the Indus valley civilization has been outlined and studied extensively. Its geography, economy, distribution, and trade relations with other civilizations out of its territory have been mapped out. The distribution of its sites in Indian states, Gujrat, Rajasthan, Maharashtra, Utter Pradesh, and Haryana. Manda Jammu in Jammu Kashmir. In Pakistan, Sindh, Punjab, KPK, and Baluchistan. The outermost site is Shortugai in north-eastern Afghanistan.

The significant sites representing the IVC in Sindh are Mohen jo Daro (Dales, 1961, Mackay, 1976), Chanhu Daro (Mackay, 1934, Chakrabarty, 2009), and Lakhan Jo Daro (Shaikh et al., 2004). Several sites belonging to the mature Indus period are present on the surface and subsurface in Sindh.

The extensive excavations at Mohen jo Daro proved that the massive buildings, streets, drainage system, fortification, town planning, writing system, and exotic items of international trade are a fundamental part of the human history of Sindh. In the western margin of the Thar, the major structural sites are Taloor Je Bhit and Garho Bhiro in Faiz Ganj in the South of Mirwah desert bearing Kot Dijian and Mature Indus pottery assemblages (Shar, 1995, Mallah, 2008). However, that kind of Mature Indus settlements have not been known from the Mirwah desert, but the pottery assemblages have been observed.

Majumdar first discussed the late phase of Indus based on some continued but modified styles of the pottery assemblages found in the upper levels at Lohum Jo Daro and Jhukar in Sindh (Chakrabarty, 2009). This phase of the Indus Valley Civilization, labelled as Jhukar and Jhangar, is attributed to the late Indus, the idea of degeneration of the Indus Valley. Moreover, this cultural phase of the late Indus was reported from the other sites of Sindh, such as Chanhu Jo Daro (Mackay, 1943). Mohen Jo Daro, Lohum Jo Daro, Lakhan Jo Daro (Majumdar, 1981). There is no cultural break from the Early Indus Culture to the late Indus cultures. However, no similar pottery sherds of the so-called late Indus cultures, for instance, Jhukar or Jhangar, have been observed at the Mirwah desert sites. Although, the Trihni ware is already attributed to the post-Indus period and hardly dates back to the 7th century B.C (Mackay, 1943). This pottery is also reported from the sites of the Mirwah desert and the Tali site (Shar, 1995).

Early Historic, Historic, and late Historic

The ceramic types, such as stamped, and moulded, have already been attributed to different early historical periods, historical and late historical periods. However, the cultural material of these periods is not well known in the Mirwah desert. From the site of Tali, Shar has reported some stamped decorated designs on the pottery sherds that have been associated with Tulumba stamped ware and dated from the eighth century A D up to the 16th century and later. During the current survey, the pottery sherds of these periods have been collected and selected for this study. The remains of early Historic culture from

the sand dunes of the Mirwah desert and generally from the Thar desert have been observed. The Department of Archaeology Shah Abdul Latif university made extensive collections of pottery sherds from the Thar desert, including the Mirwah desert region. The site of Lagharian jo Goth and Tali is an essential site regarding the cultural sequence from the late Indus culture to the stamped Tulamba ware pottery dated back to the 8th century to 11th centuries A.D (Shar, 1995, Mallah, 2008). Another important site is Dubbi bearing the early historic pottery on its surface.

DRSML QAU

**Chapter No. 3: Documentation of Archaeological Sites of the
Mirwah Desert**

DRSML QAU

This chapter introduces the sites that have been documented during the current survey. Fifteen sites are included; their general and artefact photos are included here. Further, the nature of each site and coordinates are given below in this chapter. The sites were examined based on cultural material, which was observed at each site. The material was correlated with other studied artefacts for the chronology of sites. Detailed photographs (plates) of each site's finds are given after each site's description, and the description of finds is also given before each plate. The nature of sites concerning periods that almost sites are multi-periods.

Dingro (Dingi Dhandh)

Site: Coordinates. 27° 06' 18.0" N 68° 41' 05.0" E.

Description. The site is located about 2 km southeast of the Village Lakhmir Khan Shar, within the sand dunes of Mirwah desert, on the northern shore of lake Dingi in the east-west direction of about seven hundred meters. The north Jamal Shah Lake and the northwest Ganero salt lakes are present. The site was first reported by Mallah (2008) and revisited by the G. M. Veesar in 2009. The lithic activity was observed, and pottery sherds were collected on the stabilized slope of the sand dune from the south-eastern side. Although, no direct evidence of the architectural structures was observed on the surface. This might indicate that the occupants lived in the temporary or semipermanent huts during the catastrophic conditions in the plains following river floods or heavy rain. However, very fertile soil encroached by the sand dunes along the lake's northern edge suggests that the site was permanently occupied during the Mesolithic period and reoccupied for the purposes of fishing and pasturage of herds.

The surface of the site is covered with flint micro tools, flakes and a low concentration of pottery sherds, including painted and plain pottery sherds covering an area of about three-square kilometres. Flint artefacts have been reported by Mallah from the surface of the site, and he writes a short note on the site in his report (Mallah, 2008).

The environment of the site is varied along with sand dunes, alluvial deposits, and a saline water lake. However, no architectural remains were noted at the site. Very few pottery sherds have been collected on the site's surface, among which two are painted sherds and perhaps attributed to the historical periods (Plate 1). However, one rim, with an incised decoration, one incised wavy line, perhaps a potter's mark, and one small body

sherd have incised wavy design on the exterior (plate 1). Two bases resemble Kot Dijian-type bases (Plate 1). The cultural material suggested that the site was reoccupied.



Figure 6. General view of the site Dingro, looking south

Finds

Flint tool types 1 to 17 (Plate 1) are included pointed tools, and micro blades, showing the Mesolithic activity at the site. In the Mesolithic period the Thar desert was entirely occupied exploiting the different resources. The stone assemblages on the edges of lakes in Thar desert are great evidence of the subsistence economy based on fishing and hunting the desert animals (Mallah, 2008, Misra, 2001, Allchin and Allchin, 1968, Veesar, 2009).

The pottery sherd types 20 and 21, (Plate 1) are crudely manufactured, thick bodied mixed with pottery bits in the overall surface and the texture are very similar to those Hakra period pottery sherds found from the site of Magrrain-jo-Pat from the Thar desert by the team of Shah Abul Latif University Khairpur Archaeology Department (Shaikh et al., 2002).

Sherd type 29 (Plate 1) is painted in black on orange background, with slight texture resemble with the pottery sherds found from the phase-3 of excavations at Sehwan sharif (Kervan, 2001). Rim sherd type 36 (Plate 1), with incised decorated design is similar to those sherds found from Kaath Banbhan site, and from Tali (Shar, 1995) generally attributed to the Muslim period tradition. The discussed cultural material indicated that the site is multiperiod, and reoccupied time to time

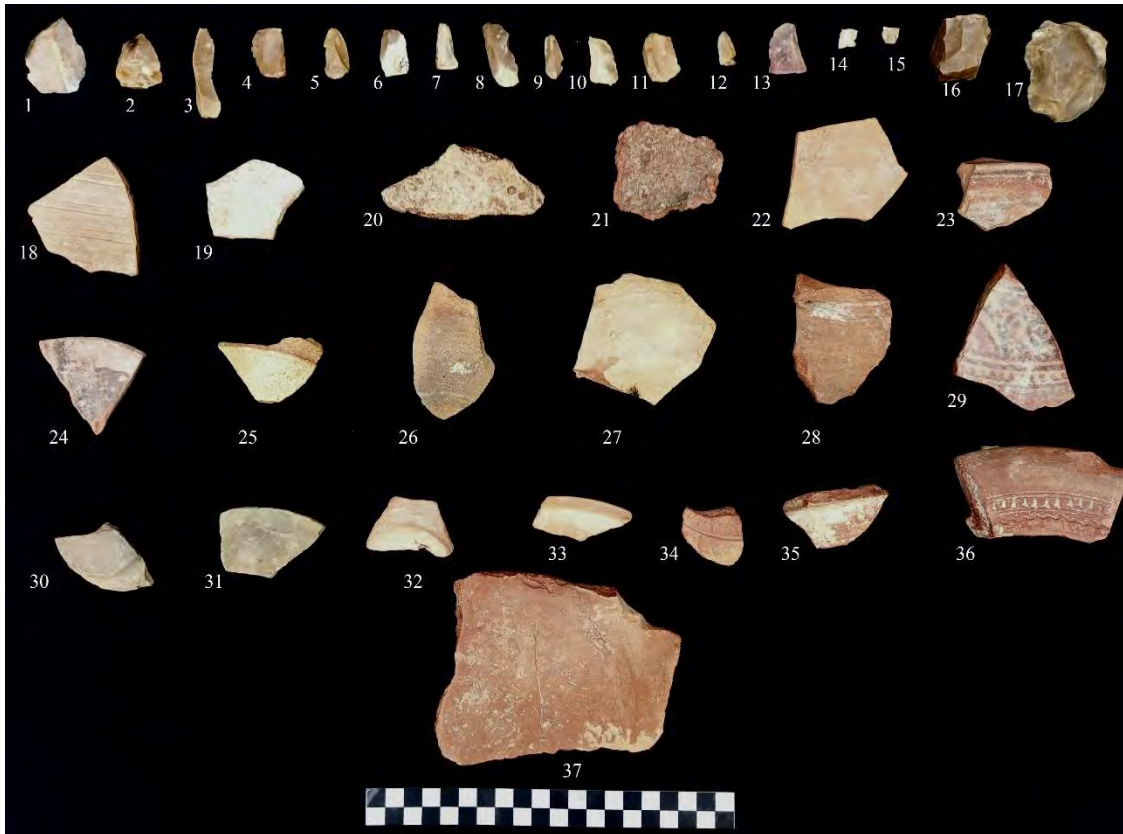


Plate 1 Dingro, Flint tools and pottery sherds

Ganero 8

Site: Coordinates. 27° 05' 47" N 68° 40' 15" E.

Description. The site is located about nine hundred meters east of the village, Haikhhal Goth, and 1 km southeast of the Village Lakhmir Khan Shar. The site is situated on the surface of a stabilized sand dune, in the south of the Lake by the same name. The site was reported in 1998 by Paolo Biagi, and G.M Veesar as the first site in the Mirwah desert to yield Kot Diji culture pottery (Biagi and Veesar, 1998). Further, they reported 118 flint tools, including spherical hammerstone, subconical bladelet core, crested blade, side scraper, and parallel-sided blades (Biagi and Veesar, 1998). Following their study in 2002, the expedition by a team of the Shah Abdul Latif University Archaeology department Khairpur visited the site and wrote a short note on the reported cultural material. The current author visited the site in December 2021 for this study. The thick cultural deposits on the pottery were scattered over an area of about 1.5 square kilometres.

The site is surrounded by the lakes of Ganero Sim, (sim locally used for the small saltwater bodies), Sain Sim, Jamal Shah Sim, and Wadi Sim. In the east of the site further small lakes, and small plains are present. In the west the Indus alluvial plains and Heekal Goth are present. Already reported cultural material suggests that the site was chosen from the stone age till the Indus Period because of its strategic location, and easy access to the resources. Such resources were the Indus alluvial plains for agriculture, chert sources, and hunting for their subsistence economy. The Indus Rive course three or the Kandhkot course described by Flam, 1981), and the prehistoric course by Panhwar 1969 furnished the area of the Mirwah desert during Middle Holocene activity (Flam, 1981). This ancient course had dried, and its traces are still visible near the town of Sui Gas near Thari Mirwah city which is known as the Dhoro that perhaps the old flow of River Indus.



Figure 7. general view of the site Ganero8, looking east

Finds

The cultural material collected during the current survey included flint tools and ceramics including terracotta bangles. Few identical flint blades and pointed tools were collected (plate 2), that are showing the stone age activity at the site.

The pottery sherd types 1, 5, and 6 (Plate 3) having mud applique mixed with pottery bits applied on the outer surface, these sherds have cloth impression on the interior surface are closely resemble to those Hakra phase pottery sherds reported from the Hakra settlements of Cholistan by Mughal (Mughal, 1997). The cloth mark pottery sherds have been reported from the settlements of the Thar desert of the Sindh, and attributed to the Hakra phase which have the similarity with these 1, 5, and 6 (pl.) sherds (Shaikh et al., 2002).

The sherd types 2, 3, 4, and 8 (Plate 3) are Kot Dijian vessel type sherds, their colour, the body wall thickness, and the manufacturing technology are closely resembled to the Kot Diji pottery

The rim sherd types 30 to 34 (Plate 4) with their Kot Dijian features, such as slightly headed or everted rims, with pinkish or red background are similar to those pottery sherds which have been found from the layers 4 to 16 excavations at Kot Diji by F. A Khan (Khan, 1964, Khan, 1965, Khan, 2002).

The cultural material at the indicate that the site was reoccupied since Mesolithic period to the mature Indus period (Biagi and Veesar, 1998). The thick cultural deposits suggests that the site was permanently occupied, for the further understanding of occupations a small-scale excavation should be done on the site. Furthermore, the ceramics of early Historic, and Historic periods were absent, it can be assumed that site was abandoned during the mature phase of Indus valley civilization. Although, later periods cultural material is present at the sites nearby Ganero8, such as Dubbi, (Shar et al., 1996). Tali, Mehrani Goth, and Saneso; these sites showing the cultural continuity after the Indus valley civilization declined.



Plate 2 Ganero8, Flint tools



Plate 3 Ganero8, Pottery sherds



Plate 4 Ganero8, Pottery Sherds

Ganero

Site: Coordinates. 27° 06' 20.0" N 68° 40' 39.0"E.

Description. The site is located on a small mound at the north-eastern shore of the lake by the same name on the road leading to peer Jamal Shah ziarat. The mound is marked by the ruins which are attributed to the mosque (Biagi and Veesar, 1998). The cultural material scattered over the surface about 400 m in north-south and 250 m east-west direction. The site was visited by Biagi and Veesar while investigating the stone age cultures on the sand dunes of Mirwah desert (Biagi and Veesar, 1998, Shar et al., 1996). In 2010 Bukhari visited the site and wrote short note on the cultural material (Bukhari, 2010), she attributed to site as Buddhist period site on the some pottery sherds with Buddhist tradition. Furthermore, she documented the mosque which is now completely fallen in the shape a mound. The site is also closely connected with lake and Indus alluvial plains, the Village of Lakhmir Khan Shar is 500 m west north. The proximity of the site is used for the pasturage of the herds of the animals, mostly sheep, goat, camel, and cows by the villagers. The site is surrounded by the different species of the plants.



Figure 8. General View of the site and Ganero Salt Lake

Finds

Cultural material collected on the surface of site. Among pottery, the rims and body sherds, were collected.

Rim sherd types 1 and 4 (Plate 5) are closely resemble with the Kot Dijian type sherds, their colour and shape are of Kot Diji type sherds that have been found from excavation at Kot Diji (Khan, 2002). The rim sherd no 3 with dark brown or chocolate slip resemble with the pottery of Mature Indus period found from the excavations at Lakhan jo Daro. Sherd type 6 with the cord mark is similar to the pottery sherd from the Lakhan-JO-Daro that has been attribute to the Mature Harappan pottery characters (Mallah, 2017).

Furthermore, the glazed pottery sherds for instance sherd types 11, and 12 (Plate 5) perhaps are very modern. The sherd types 13 to 15 are closely related to the Muslim period pottery sherds those found from the Kaath Banbhan and have been dated between the 14th and 18th centuries A. D (Shaikh, 2018).



Plate 5 Ganero, pottery sherds

Jamal Shah

Site: Coordinates. 27° 07' 22" N 68° 40' 46" E.

Description. The site is situated on the southern slope of sand dune, and just three hundred meters north of the shrine of Peer Jamal Shah, and five hundred meters in same direction from the a by the same name. The lake and alluvial plain making a green valley with different kind plants. The area around the site is very favourable to the pastoral populations. The old bed of the river Indus is three km west, and the traces of a spill channel in the east at the distance of approximately 1 km, where currently the cultivation is active through tube well system, and this also known as the Vakar Valley. Louis Flam pointed out that the Hakra course is more recognisable in the Cholistan desert from fort Abbas to the Derawar fort. However, in the Thar desert a continue flow has not been traced out, but the different courses, as Raini, and Nara Nadi have been traced out and attributed to the course of the Hakra river and considered as the Hakra river encroached by the Sand dunes but still its flow Nara Nadi again merges into the Indus alluvial plains. It is therefore the current observation suggest that the valleys within sand dunes were highly exploited for the small-scale agriculture.

The climate change in the South Asia during late Holocene era have been recorded. The research on the isotopes of oxygen and hydrogen in the Indus delta reveals the climate change in the Indus delta from 2200 BC. Transformation occurred in the Indus Valley civilization from the highly organised urban centres towards the post-urban phase of smaller settlements (Staubwasser et al., 2003). The Hakra river dried due to climate change and population moved towards west and the Thar desert remained in draught.



Figure 9. A view of the shrine Jamal Shah

Finds

The cultural material on the site was scattered very thinly, two flint tools, in one blade type 16 (Plate 7) perhaps Mature Harappan blade. Tool type 17 (Plate 7) is also included in the flint collection.

The sherd type 13 (Plate 6.) with the characters of Hakra ceramics, such as pottery bits in the texture, is the similar with Hakra period pottery found from settlements of Thar desert such as Mangrian-Jo-Pat (Shaikh et al., 2002), and from the Mirwah desert (Mallah, 2008).

The sherd types 1 and (Plate 6) are the similar to historic period pottery sherds, which have been already reported from the Mirwah desert (Mallah, 2008), and at the historic period sites from Khairpur by Shar (Shar, 1995).

Other pottery sherds (Plate 6) were weather effected, and hard to relate them with the other pottery sherds. Although, their texture is similar to the prehistoric type ceramics, which have been reported already from the Thar desert of Sindh.



Plate 6 Jamal Shah, pottery sherds



Plate 7 Jamal Shah, flint tools

Kalro, Dubbi Lake

Site: Coordinates. 26° 56' 46" N 68° 35' 00" E.

Description. The site is located within the sand dunes on the north-eastern shore of the lake of Dubbi, about a half km to east of a village by Kalro name at the border of Faiz Ganj near the Wahler about 10 km southeast of the Thari Mirwah. The small alluvial valley and lake were connected in each other. The sparse vegetation, around the site over sand dunes, and thick vegetation nearby lake, and the valley are useful for the fodder. The site was discovered by the current author. It is covered by the thick vegetation. The fertile soil and the lake make area very important for the animals for their grazing, birds, and nomadic populations. After few rain showers the site become very green. The site was surveyed during the occasional rainy days in the month of February. At the were also herds and people practicing the prey of birds which migrated to Sindh because strong cold from the Sypris and Siberia. In ancient times might be the area exploited for the multi reasons as in the present. The western side of the site where modern village is present is the very steep and Indus alluvial plains touching the toes of the steep sand dunes however, the eastern side continue with the sea of sand desert.



Figure 10. General view of the site and lake

Finds

The artifacts at site were observed in thin concentrations, some pottery sherds were collected among which.

The sherd type 1 and 2 (Plate 8) with everted rims, and short necked, are the similar to those pottery sherds which have been reported from the site of Ganero⁸ Kot Dijian period settlement. These sherds have also been compared to Kot Dijian period pottery found at the Kot Dijian levels at the site by same name in Khairpur.

Sherd type 19, with traces of dark purplish brown slip on the external surface with mature Harappan texture, and this slip also reminding the Harappan tradition of the ceramics (Mallah, 2017, Méry et al., 2017).

Sherd type 16, with a stamped decorative style known as rosette pattern is similar to the style on pottery sherd found from the sites such as Siraj-ji-Takri, Misri Shah, Dubbi, Tali (Bukhari, 2010). About this pattern Bukhari writes as “a very important pattern with some small carved lines around the circle like sun motif”. However, the rosette pattern

extensively used in the Medieval Islamic period (Baer, 1989). Similarly, this pattern was used on the pottery sherds, first those with thick texture, and others with thin texture and very light weight as compared to preceding. The rosette pattern on thin bodied ceramics used in the Muslim period till the 16th century A D (Shar, 1995).

Sherd type 24 (Plate 8) is a lid that showing the affiliation with historic periods pottery, and has resemblance to the lids type that have been reported by Mallah from the Mirwah desert around Dubi lakes, and attributed to the historic periods, Muslim period 14th century to 18th centuries A. D (Mallah, 2008). Some similar types of the lids have been found from the excavations at Kaath Banbhan site. Sherd type 12 painted black on red with broad bands, with thick fabric, is also attributed to the Muslim period pottery, perhaps Sama and Soomra periods of Sindh have been reported from Kaath Banbhan site (Shaikh, 2018).

Other pottery sherd types 8, 9, and 10 (Plate 8) showing the affiliation with Harappan period pottery.

The pottery of different periods collected from the site shows that the site was reoccupied. Probably used by the nomadic populations seasonally.



Plate 8 Kalro Dubbi, pottery sherds

Kujree

Site: Coordinates. 26° 57' 41" N 68° 37' 43" E.

Description. the site is located on the north-western shore of the homonymous lake, about six hundred meters southeast of the village Adam Khan Khaskheli. Some ten kilometres in the southeast of the Thari Mirwah town, and 4 km south of the Marhi Hindu temple Sutyaro. The active Indus plains are located in the west of the. The cultural material is scattered along the northeast shore of the lake, on the slope of sand stabilized sand dune. The site was first visited by the current author, a local villager Shah Nawaz Lashari informed about the site, and author became able to visit the site in the month of January 2022. The pottery sherd which are thinly scattered around the lake shores can be collected within a surface of approximately 600 X 600 meters, and this area was measured through footsteps.

Only the identical pottery sherds were collected, no architectural remains were observed at the time, however some ash type spot was observed, which suggest the fire activity at the site. However, the pastoral people in the Thar desert make huts from the local timber available within the desert, and this type of houses are still going on in the Thar desert which probably continuing since pre-Indus cultures, (Lambrick, 1975), or Mesolithic period (Mallah et al., 2002). However, no remains of such type of huts have reported from the Thar desert belong to early Indus, Mature Indus, or late Indus, as wood is no more stable it become decomposed even in a short period of time. But this activity indicating the ancient tradition. The plain area, and alluvial deposits, with river silt were observed at the northeastern shore of the lake. The lake is covered by the different species of plants which are the main source of grazing.



Figure 11. general view of the site and lake

Finds

The artifacts were thinly scattered on the surface of site, mainly pottery sherds were collected. Sherd types, 1 and 7 (Plate 9) are the Kot Dijian type sherds with everted rims and short necked, this type of sherds have already found from the Ganero 8 site (Biagi and Veesar, 1998), Kalro Dubbi, and have resemblance with the pottery sherds of Kot Diji period that were found from Kot Diji site in Kot Diji Occupation levels (Khan, 1965)

However, 5 and 6 pottery sherd types (Plate 9) are similar to the Kot Dijian pottery types that have been reported from Ganero 8.

Sherd type 9 (Plate 9) is a rim with body painted in black design on red ware similar to the rim sherds found from the Kaath Banbhan Muslim period pottery sherds dated between 14th and 18th centuries A. D.

Sherd type 18 (Plate 9) with stamped decorative design, is similar to the pottery with stamped ware found in period V VA of Tulumba which has been termed by Mughal

as “Tulumba Stamped ware” which he dated as “Period V 15-16th century A.D, and Period VA 16th century A. D or latter” (Mughal, 1967).

The pottery collection from the site suggests that the site was used on temporary basis, or as cam site. Because no architectural remains were noticed on the site but probably huts as discussed above were used for the residential purpose as seasonal based for pastoral purposes.

Other pottery sherd types such as 3, 4, 11, and (Plate 9), are crudely made with rough surface, author was not able to assign these sherds to any specific period of the time. They can be the latter Muslim period pottery stuffs.



Plate 9 Kujree, site Pottery sherds.

Marhi 1

Site: Coordinates. 26° 59' 36.0" N 68° 34' 00.0" E.

Description. the site is located in UC Mandan, some 400 meters in the north of the Sutyaro Hindu temple, and 8 km south of the town Thari Mirwah within the sand dunes of Mirwah desert. The site is surrounded by the Indus alluvial plains from the north, south, and sand dune further extend towards west. Whereas the site is closely lies along the Sutyaro lake on the stabilized sand dune at north-western corner of the lake, at the elevation of approximately five meter high. on the north-western edge of the Sutyaro lake the stabilized sand dune the distance of 400-meter northeast from the Sutyaro Hindu temple. The area covered by the site is about 500-meter square. The site was first visited in the February 2019 by the current author, and MSc student Sadaf Shamas. Eventually, the current author paid visit again to the site in December 2021 for this study.

The site is situated on the surface of a sand dune very close to the Sutyaro lake. Another lake depression is present some three hundred meters in the west of the site. However no architectural remains were reported on the site, but hearth traces were noticed.



Figure 12. General view of the site



Figure 13. General view of the lake

Findings

The surface scattering is mainly included the pottery sherds. Sherd types 1 to 8 (Plate 10) are the identical Kot Diji pottery types sherds that have been already found from Ganero, and Dubbi sites of Mirwah desert (Shar et al., 1996).

The sherd types 12, 13, and 22 (Plate 10) body fragments painted black on red background with geometrical design are similar to the pottery sherds that have been found from the excavation at Kaath Banbhan site. This tradition painted in black on red with floral and geometrical designs were used extensively in the Muslim period (Shaikh, 2018). That kind of ceramic tradition reported from the several sites in Sindh and generally dated between the 14th and 18th centuries A. D (Shaikh, 2018). Sherd type 14 (Plate 10) painted in black on very polished red/slip background with geometrical design is also similar to that type of Muslim period ceramic tradition.

The sherd type 9 (Plate 10) is a rim with body fragment, is similar to coarse type pottery which has been found in Phase-2 of Sehwan Sharif excavation and dated from the BC 50 up to 400/420 A D (Kervan, 2001).

Sherd type 17 (Plate 10) is a body sherd is similar to the Mughal's "Tulumba ware" stamped pottery found in the periods III, V, IV, and VA of Tulumba and that have been dated from 8th to the 16th centuries A D (Mughal, 1967).

Sherd types 26, and 27 (Plate 10) are the glazed pottery sherds similar to the glazed pottery of Kaath Banbhan (Shaikh, 2018).

Cultural material suggests that the site was reoccupied. As in the desert environment lakes played an important role in the subsistence of ancient people. Almost every settlement is in the small alluvial valley, on the lake shores, some were established close to the Indus alluvial plains. In the Mirwah desert a huge portion of the population is living in the mud houses and in the huts, that have the thatched roofs rest on the erected wooden pillars, and pise walls. This type of houses is not much durable. Plants decomposed, and nothing left remain after few hundred years passed. People in the ancient times may lived in this type of shelters in the desert environment. Thar desert, because of it varied nature, along with lake and alluvial valleys (locally Varo) was in fact quite conducive to human settlement (Mallah et al., 2002).



Plate 10 Marhi1, Pottery Sherds

DRSML

Marhi 2

Site: Coordinates. 26° 59' 27" N 68° 33' 53" E.

Description. The site is located three hundred meters south to the Marhi 1 on the western shore of the lake Sutiyaro nearby the Hindu temple (locally Marhi). A dried lake depression was present nearby the site at 500 m distance in the northwest (Figure 9). The mud architectural remains were noticed, and pottery sherds were scattered thickly. There is a Hindu temple further in the south, which is famous as Marhi, and name of site is behind this. According to a local Shahnawaz Lashari that there was a town of Hindu Population before partition. A Hindu saint who was the spiritual leader of the Hindus was living there before the partition 1947. The Hindu population left their town, but the saint did not leave, and he had killed in the dispute.

The ravines caused by the rainwater erosion along the eastern slope of sand dune cut through the clay deposits was very rich in the pottery sherds, and the architectural remains of the mud structures are visible in the ravine. Merely pottery sherds were collected from the site



Figure 14. view of a dried lake located 500 meters in the north of the site

Finds

The artifacts collected from the mainly are pottery sherds. The pottery sherds painted black on red background (see pl)

The sherd types 16 and 17 (Plate 11) are the lids that are similar to those Muslim period lids that have been found at Kaath Banbhan site (Shaikh, 2018). Nevertheless, the sherd types 8 to 14 (Plate 11)



Plate 11. Marhi2, pottery sherds

Mehrani Goath

Site: Location, 27° 06' 26" N 68° 40' 33" E.

Description. the site is situated on the north-eastern shore of the lake Ganero, some eight hundred meters east to the village Lakhmir khan shar. The site is located along the Jamal Shah pass. The cultural material scattered in about six hundred meters. The hearth features are visible, and mud architectural remains are also present (fig).

The Indus alluvial plains are closely connected from the western site at the distance of about 500 meters. According to an old man (namely Saleh Veesar, personal communication) a century ago there was a village of Mehrani community, and in its proximity, there was a little town filled with the shops of Hindu traders (the Hindu traders locally knowns as Seth, pl Seths). However, no traces of such town were discovered.



Figure 15. General view of the site

Finds

Although, cultural material was thinly scattered, and only six pottery sherds were collected. The painted sherd types 1 to 4 (Plate 12) are the Muslim period pottery sherds. Sherd type 6 is glazed, that appeared to have very modern.



Plate 12 Mehrani Goth, pottery sherds

Nandho Tarko

Site: Coordinated, 27° 01' 13.0" N 68° 33' 29.0" E.

Description. The site is located within the sand dunes of Mirwah desert, in the village by same name. It is surrounded by the Indus alluvial plains. There is a lake depression just to the west of the site perhaps a dried river channel or a flooded course. The site is lies on the surface of a sand dune in the village Nandho Tarko. The end of Mirwah canal is one km to the south which is locally known as “Trimuhn” (Three mouths), where Mirwah canal divided into three minors, and the three minors of Mirwah canal carrying water to the Mirwah desert region and to the Faiz Ganj. The site was discovered by the current author during the survey for this study. Soon after the discovery of the site author visited the site in the month of February. The surface scatters were mainly pottery sherds. The locals almost occupy the site, from the southern side there is an agricultural activity and remaining portion of that sand dune is under the construction of the further extension of the village Nandho Tarko.



Figure 16. General view of the site

Finds

Findings from the site of Nandho Tarko are mainly pottery sherds are included. The sherd types 1, and 2 (Plate 13) are the similar to the pottery sherds found from Ganero8 Dubbi, showing the affiliation to Kot Diji cultural phase.

The sherd types 4 to 6 (Plate 13) are decorated with the rosette pattern like a sun motif attributed to the Buddhist period, and this type of ceramics have been reported from Kalro Dubbi site. Furthermore, Bukhari had reported it from the different settlements of Sindh (Bukhari, 2010).

Sherd types 8 and 14 (Plate 13) are the body sherd fragments painted black on red showing the affiliation with Muslim period pottery tradition that has been found from the excavation of Kaath Banbhan site (Shaikh, 2018). The cultural suggests that site was used as semi-permanent especially seasonal basis.



Plate 13 Nandho Tarko, pottery sherds

Peer Garho

Site: Coordinates. 26° 59' 32" N 68° 32' 21" E.

Description. The site of Peer Garho is located in the village of same name, on km northeast of the Peer Garho graveyard in UC Baki Khan some 11 km southwest of Thari town. The old Indus River course which is now famous as Dhoro is in the west of the site at the distance of 12 km. The modern water courses which drained the village Peer Garho plains is known as Pandhriyo Wah (minor). The cultural material was scattered in huge area; however, the site is now totally occupied by modern construction activity in which mud fort has been built by the villagers. The artifact clusters were documented inside the fort. The artifacts scattered five hundred meters north south, and approximately eight hundred metres east west.

The site was discovered by the current author, after the local named Shahnawaz Lashari informed to the current author. Eventually, in the month of January 2022 author became able to visit the site and collected the cultural material for this study.



Figure 17. General view of the site

Finds

The only pottery sherds were scattered in thick concentration, no architectural remains were present at the site. However, a newly constructed small mud fort surrounded the thick cultural deposits was present.

Sherd type 1 (Plate 14) Rosette pattern depicted on it, is similar to those pottery sherds that have been reported by Bukhari from Misri Sha, Siraj-ji-Takri, Dubbi, and Tali which attributed to Buddhist pottery tradition (Bukhari, 2010).

The sherd types 4 and 9 (Plate 14) have the similar texture and colour, which have been found from phase-3 from excavations at Sehwan Sharif (Kervan, 2001).

The sherd types 18, 19, 20, 21, and 23 (Plate 14) are similar in relation to the texture, and colour such as orange background, and light weight to the Sehwan pottery of phase 3.



Plate 14 Peer Garho, pottery sherds

Peer Musafir

Site: Coordinates. 26° 58' 16" N 68° 34' 39" E.

Description. The site of Peer Musafir located nearby the tomb by the same name at the distance of some seven hundred meters in the east of the Tomb within the sand dunes. The site is surrounded by the Indus alluvial plains. The site was first reported by the current author in January 2022. The salty lake depressions were present in the west of the site which merged with the active Indus alluvial plain. the cultural material including pottery sherds were thinly scattered in large area and few sherds were collected.

The scarcity of the cultural material at the surface of the site shows that the site probably used as cam site seasonal based. As the old bed of the river Indus is described by shar (Shar, 1995), and Bukhari (Bukhari, 2010), that it was flowing the 2 kilometres west of the Western margin of Thar desert. Few sites reported by Bukhari according to her that these sites are 2 km east from the old bed of river Indus.



Figure 18. General view of the site

Finds

The sherd types 1, 2, 9, 10, and 14 (Plate 15) with short neck, everted rims, are the similar to those sherds found from the Kot Dijian settlement of Ganero-8, and already have been compared to the pottery found from Kot Dijian layers at the Kot Dijji site (Khan, 1965).

The sherd type 11 (Plate 15) plain, is Indus type plain sherd. The sherd type 17 is with the traces of dark brown slip, with Harappan texture, and perhaps related to the Mature Harappan period. The flint tools and Hakra type pottery was absent, the occurrence of the Kot Dijian, and Harappan type pottery sherds, and absence of any type of architectural feature suggest that most probably site was occupied during Kot Dijian and Harappan periods as campsite.



Plate 15 Peer Musafir, pottery sherds

Saneso

Site: Coordinates. 27° 04' 36" N 68° 40' 50" E.

Description. The site is located in the village of Soomar Sahito near the Dhani Dino graveyard, some 6.5 km north-east of the Thari town. The cultural material was scattered on the western shore of the Saneso salt-lake and on the eastern slope of the stabilized sand dune. The nature of site is diverse, regarding its environment along with other geographical units for instance sand dunes, salty water lake of Saneso and its extensions within sand dunes, the Indus alluvial plains connected to the site. The river silt and the shells were also observed along the western shore of SN lake. Further in the southeast of the site there is a small valley enclosed by sandy desert, full of the different species of plants. This valley used for pastoral purpose, and agriculture, in some certain seasons the valley extensively exploits by the nomadic people mostly in during the monsoon season when rain showers make region green, and this would be the useful for fodder.

The site was documented by Mallah in 2008 and he writes a short note the site and its cultural material which he collected (Mallah, 2008). He documented six different spots based on the presence of absence of artifact clusters. During the current survey a different spot was selected where pottery sherds, and flint flakes, microlithic, were scattered in huge area.



Figure 19. General view of the site and lake

Finds

The cultural material collected on the surface of site including flint artifacts, pottery sherds, and flint tools. Few retouched flint tools were also collected, for instance tool types 1 to 11 (Plate 16) are showing that the flint activity at the site.

Sherd type 1 (Plate 16) is rim with neck and body fragment with impressed design is similar to the rim sherds that period I to IA of Tulumba known as “decorated pottery with impressed design” (Mughal, 1967). Period I of Tulumba is date back to the 5th 6th century B C, to the end of 2nd century B. C (Mughal, 1967). Latter this type of decorated pottery with impressed design perhaps with little modification from the IIA and IIB levels of TLB-III of Tulumba which have been dated from the 4th – 5th century A D, up to 6th – 7th century A D (Mughal, 1967).

Object no 16 (Plates 16 and 17) is baked clay piece (Tablet?), that bearing the cloth mark from one side. It is also an additional discovery from this site, that helps us to understand the ancient textile methods. That kind of tablets bearing basketry impressions

have been found from Harappan phase, it differs from the Harappan clay pieces in the colour and texture.



Plate 16 Saneso, pottery sherds



Plate 17 Saneso, a baked clay piece bearing cloth impression

Tali

Site: Coordinates. 27° 08' 40" N 68° 40' 41" E.

Description. The site of Tali located within the sand dunes of Mirwah desert, and about the one kilometre east of the village by same name on the western shore of the lake of Tall. The lakes wadi Sim, Bakri Waro, Jamal Shah Lake, and Khuth lakes are located in the south of the site. The site was first discovered by Mallah in 1983, soon after Shar visited the site in 1992 and wrote a brief note on the cultural material in his PhD thesis (Shar, 1995). Followed by the work by shar Mallah in 2008 collected some ceramics on the surface, and an spot of the bones he reported, that he wrote as the butchering area (Mallah, 2008) this may be indicate the economic conditions during ancient times at the site. Besides during the current survey some heart features were observed at the site. The old bed of Indus River is located two km west of the site, (Shar, 1995). Shar writes that the old bed of Indus River located two km east in the site.

However, Flam discusses three major course of the Indus River of the Lower Indus Basin (Flam, 1981). Each course described by him as, “the earliest course (early Holocene activity) the Jacobabad Course and was comprised Jacobabad, Shahdadkot, Sindh Hollow, and Sanghar courses of the lower Indus Basin. Later date (middle Holocene activity) than the Jacobabad course has been named as Sindhu Nadi and was comprised of the Warah Sindh Hollow, and Samaro-Dhoro Badahri courses of the lower Indus basin. The later courses has been named as the Kandhkot course, and was comprised of the Kandhkot, Khairpur, and Shahdadpur courses of the lower Indus basin” (Flam, 1981; p70-76). The Khairpur course might be the same which is now Mirwah canal flowing in the western margin of the Thar desert and in ancient times this may be the old Indus bed which is mentioned by Shar in the east of the site, but it is west not east. Furthermore, there is a small green valley just in the south-east of the site. This is full of different species plants, used as the shelter by both herdsmen and herds in strong summer sunny days.

The pottery sherds are scattered on the surface of the sand dunes in a large area approximately 200 m n/s X 800 m e/w. however no architectural features were reported at the site.



Figure 20. General view of the site

Finds

The artifacts repertoire comprised of the huge quantity of the varieties of the pottery sherd. Only pottery sherds were collected and selected for the examination of the site. Among the pottery sherds, the stamped pottery, pottery moulds, painted and plain pottery, burnished pottery resemble to that found from Sehwan fort excavations was collected. And total forty-nine sherds were selected for the chronological observation. However, this study is based on the surface survey of the sites, and it is therefore, the cultural sequence cannot observe as stratigraphical sequence. Multi-cultural objects can be seen on every site mixed with each other.

Sherd types 1, and 2 (Plate 18), resemble with the pottery found from Trihni, Shah Hassan, and Lakhiyo by Majumdar (Majumdar, 1981). Soon after Mackay found at Chanhu jo Dro from the upper levels, and he dated it at the basis of some motifs which hardly dated back to 7th century BC (Mackay, 1943). However, the texture of these rim sherd is of burnish type compared to those pottery sherds painted in red and black on buff or orange background slip found from the excavations at Sehwan Sharif dated to the 420 A D up to 711 A. D by Monique (Kervan, 2001). The black paint on these sherds showing the continuity of Majumdar's Trihni ware.

Sherd types 4, up to 8, (Plate b18) with incised small cut mark decoration, and graffiti marks of potter and body sherds, 35, 38, 39, and 42 catalogue nos 378, 381, 382, and 85 decorated with black geomaterial paint on dark red slip are similar to those pottery sherds that have been already reported from the excavation at Kath Banbhan site by Shaikh, which have been dated back to the 14th century to the 18th century A.D middle and late historic period (Shaikh, 2018).

Mould types 10 up to 14, (Plate 18 and 19) and stamped body sherd types 24, 29, and 31 (Plate 19) are closely resemble to the moulds and pottery sherds that have been reported by Bukhari on the surface of different sites from Sindh which she has been attributed to the Buddhist period ceramics (Bukhari, 2010).

The pottery assemblage suggest that the site was reoccupied at different times. The cultural deposits scattered over the large area also suggest that the site occupied on a semi-permanent probably seasonal basis (Shar, 1995). Presently the area used during the monsoon season and the winters for pastoral people. Their huts around the Tal Lake, and Bakri Waro



Plate 18 Tali, pottery sherds



Plate 19 Tali, pottery sherds



Plate 20 Tali, pottery sherds

Village Achar Dharejo

Site: Description. The site of Village Achar Dharejo located in a village by same name within the sand dunes, some 7 km southeast of the Thari Mirwah town. The Shar Jo Pat is also the local name of the area where site is located. There is a small mound on which cultural material is scattered. The ravines in the eastern side making sections and deposits of the alluvium was present, the freshwater shells and river silt were also observed 600 meter away in the west of the site. The site was visited in the month of February 2022 with the help of a villager Shahnawaz Lashari, no account regarding the site is present. No previous study has been conducted on the site.



Figure 21. General view of the site

Finds

The surface scatters at the site including only pottery sherds. Some identical pottery sherds were collected (Plate 21)

Sherd types 1 to 15 (Plate 21) resemble the pottery sherds found at the above discussed site of Tali (pl.) which have been compared to the pottery found from the excavations at Kaath Banbhan site (Shaikh, 2018).



Plate 21 Village Achar Dharejo, Pottery sherds

Distribution of the sites

As defined in the earlier chapters, sites were recognized in the study area based on the absence or presence of the cultural material. Generally, the artefacts were noticed around the lakes on their shores or nearby the lake shores. Lakes were characterized in the groups based on the distance among them. For example, the first group of lakes present in the northern portion of the Mirwah desert such as Tal Lake, Jamal Shah Lake, Wadi Sim, Khuth Lake, and Sain Sim Ganero Salt Lake. Another group is found in the Sutyaro where three lakes are present together and still another group, where Kujree and Kalro Dubbi lakes are present is situated near Faiz Ganj.

All discussed sites occurred around these lakes. However, the primary water source for the Mirwah desert region is based on the Indus water system. Course three or the Khairpur course (former course of the Indus River) had also furnished this region. Khairpur's course has been traced out by Flam and other scholars, now known as the Dhoro and lies at the discretion of some 10 km westerly in the Mirwah desert. Panhwar also discusses this course known as prehistoric course (Panhwar, 1969). Moreover, few sites occurred on this course of the Indus River. For instance, the old Indus riverbed lies 2 km away from the site of Tali (Bukhari, 2010).

The archaeological significance of the area investigated for this study embraces the different geographical units, which consist of the Indus alluvial plains, sand dune, lakes small alluvial valleys, must not be underestimated as its role as a key contributor in the development of Indus valley civilization. All these sites that have been selected for this study are closely connected to Indus alluvial plains; the Harappan flint blade making workshops have also been discovered from the adjacent area of the Mirwah desert.



Figure 22. Map showing the location of investigated sites in the present area (Google Earth)

Distribution of the Artefacts

Generally, the cultural material selected for this study embraces two major categories, a) stone tools and b) ceramics. From the material sample collected at the fifteen sites under investigation, 407 artefacts were collected. The pottery associated with the Hakra, Kot Diji, mature Harappan, early historic and historic periods were selected for documentation. The relevant percentage of the artefacts is given below in the graph. Furthermore, the total number of ceramics selected for this study is 363, among which the amount of bangles equals 0.8%, the tile/table 0.2%, and clay tablet bearing cloth impression 0.2%. However, the pottery sherds categorised in which the amount of painted sherds is equal to 27%, plain sherds are 50%, stamped sherds are 9%, incised pottery sherds are equal to 5%, cord marked 1.1%, glazed 2%, pottery moulds 1%, Hakra applique, and cloth marked pottery 0.8%, and pottery mixed with pottery bits (Hakra associated) is equal to 0.5% (see chart below).

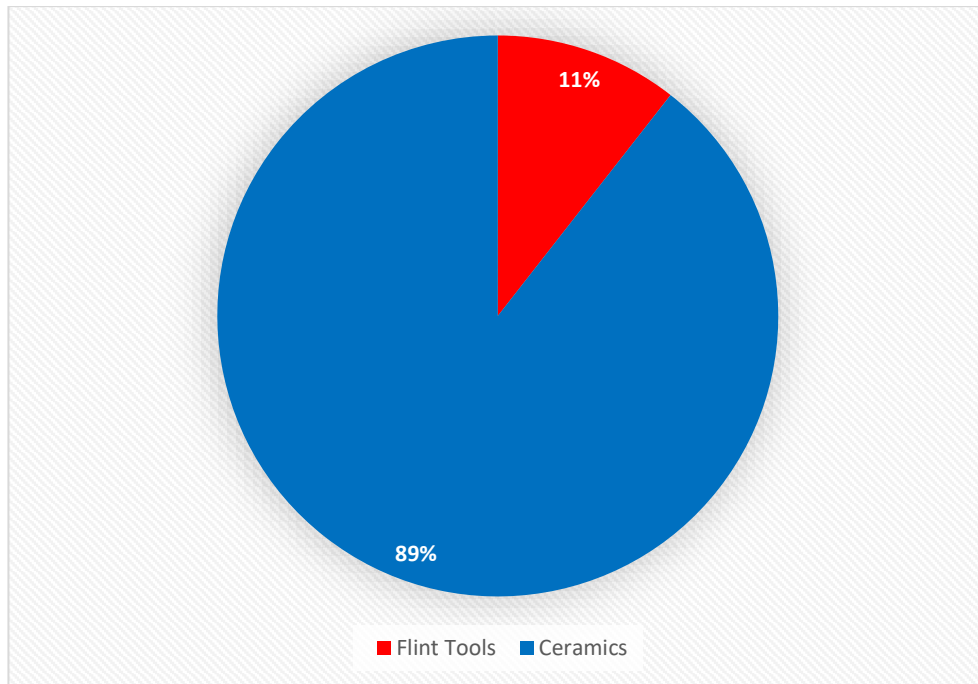


Figure 23. Graph representing the percentage of art

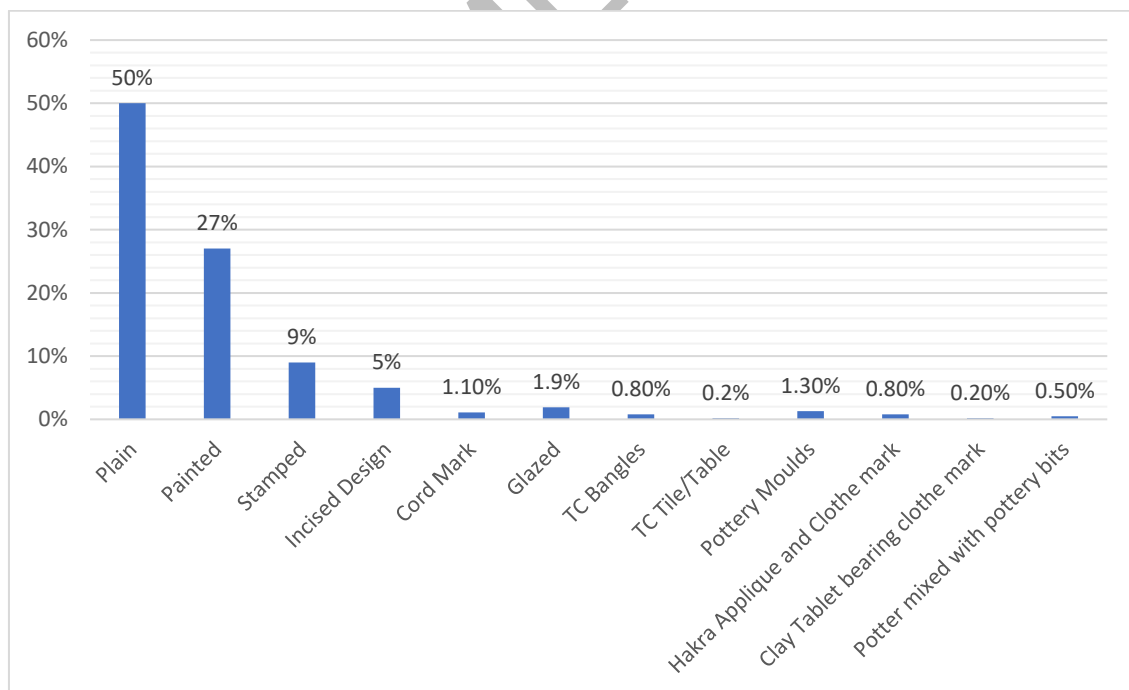


Figure 24. Graph showing the relative frequencies of the ceramic categories

Chapter No. 4: Results and Discussion

The results of the present study discovered nine new sites; the total sites selected for this study were fifteen. The cultural material was examined, ranging from the stone age to the historic periods. The cultural material of the sites was used to relate to previously studied material for the chronological sequence. For example, the flint material that has been reported during the current survey also reminds the Mesolithic tradition already documented by Italian archaeologists from the Rohri hills and the plains of Sindh. Some identical tools were selected for the correlation that were reported from the sites Dingro, Jamal Shah, Saneso, and Ganero.

Similarly, the two varieties of ceramics related to the Hakra Phase have been reported during current survey from two site, Ganero8 and Dingro. Such varieties are body sherds with coating of mud mixed with pieces of pottery applied on external surface, cloth mark on interior surface. This ceramic variety with mud applique mixed with pottery bits is also well defined by Mughal that he found at several sites from Cholistan along dried Hakra river (Mughal, 1997). The cloth mark tradition on the Hakra pottery has also been recognised by Shaikh, and Mallah from the Mangrian-jo-Pat (Shaikh et al., 2002). Another type of pottery is hand-made, such as two sherds from Dingro (Plate 1); this pottery is earlier than the Kot Diji period and is characterized as hand-made Hakra pottery. This pottery shows similarities to those found in the Cholistan and Thar deserts. However, the Hakra-related material, such as ceramics, from the Thar desert are known through the spatial surveys by the previous scholars. The “Hakra Applique” pottery that has been reported during the current survey is also similar to that found from the stratified levels of Jalilpur that had been assigned to Jalilpur period I that overlapped by Kot Diji period II (Mughal, 1980, Mughal, 1997).

The continuity after the Hakra phase has also been reported. The Hakra tradition was succeeded by the Kot Diji period. The incredible density of the Kot Diji period sites is also known from the Sindh; much occurrence has been reported from the Thar desert. The sites related to the Kot Diji period in the Mirwah desert that was known earlier are the Dubbi and Ganero8; however, the Kot Diji-related ceramics have also been reported in a scarce amount from the dunes of the Mirwah desert in previous explorations (Shar, 1995, Shar et al., 1996, Mallah, 2008). During the current survey, the Kot Diji-related pottery sherds have been reported from five newly discovered sites. The discovered pottery is very similar in the shapes and texture of the body wall to the pottery of the Kot Diji period that was already recognized by Khan during the excavations at Kot Diji in

1958 (Khan, 1965). However, several Kot Diji sites were reported by Mughal in the Cholistan and later in the Thar desert of Sindh repeatedly by the Archaeology Department Shah Abdul Latif University Khairpur. These previous scholarships in this connection were used as a reference sample to comprehend the newly discovered Kot Diji ceramic tradition. In great quantity of the Kot Diji sites in the Cholistan along with the Hakra river and the Thar desert of Sindh along both river systems, the Hakra and Indus also suggest that these arid regions were the centre of the Kot Diji acumination (Flam, 1981). However, the Kot Diji occupation in Bannu Basin at the sites of Lewan, Sheri Khan Tarakai (NWFP) perhaps indicates the cultural exchange during the Kot Diji period and the extension of the Kot Dijian societies. Further, the Kot Dijian sites are well known in northern Baluchistan in the Loralai district (Zahir and Khan, 2020). Archaeologically, the Kot Diji and Hakra phases of the early Harappan period are important and help in comprehending the process of Urbanization and the earliest forms of the sedentary of life. However, the evidence of the Neolithic phase is lesser known than the Mesolithic, early Harappan and mature Harappan periods from the Sindh

Furthermore, the terracotta bangles and some pottery sherds with red and chocolate slips found at the site of Ganero⁸ show the similarity of mature Harappan tradition in the territory of the Mirwah desert. However, some mature Indus items were reported at the site of the Dubbi of Mirwah desert (Mallah, 2008). However, the adjacent area of Mirwah desert, such as in Faiz Ganj sites of Taloor Ji Bhit (Kazi, 1992, Mallah, 2000b, Mallah et al., 2014, Shar, 1995) and Garho Bhiro are present that represent the Mature Harappan tradition in the Thar desert of Sindh. Furthermore, the settlements may have played a role in connecting the two separate river systems during the 3rd and 2nd millennium BC. However, mature Harappan pottery types have been reported from the three sites during the current survey. After the Harapan tradition, the late Harappan period ceramics are also scarce at the Mirwah desert's sites.

The Trihni pottery style that was first identified by Majumdar at the sites of Trihni, Peer Lakhiyo, and Shah Hussain (Majumdar, 1934). Soon after Mackay had reported it in upper level from Chanhu Daro (Mackay, 1943), Mackay attributed this pottery to the date back 7th century BC. This of pottery is also reported during current survey at the site of Tali. However, the date of Trihni ware is still uncertain.

After Trihni ware pottery styles, there appeared another pottery with burnish type texture and colour like orange background from site Dingro (Plate 1), this pottery is

similar to those found from excavations at Sehwan Sharif and attributed to the Phase 3 of Sehwan Sharif, dated from 420 AD up to 711 AD (Kervan, 2001). During this time period, there is a considerable change in the ceramics in the overall Sindh. The so called “rosette pattern” pottery that is considered as the Buddhist tradition, found earlier from the sites, Siraj-ji-Takri, Tali, Misri Shah and several other sites of Sindh (Bukhari, 2010). The pottery with rosette pattern decoration is also reported from six sites. However, this pattern continued to the Muslim periods perhaps till 16th century, and the basis of such inference comes from Mughal’s Tulumba excavation report, and from the Kervan’s Sehwan Sharif excavation report (Mughal, 1967, Kervan, 2001).

Furthermore, the stamped pottery, also reported during the current survey at the site of Saneso (Plate 16) that resemble to the pottery of Tulumba period I to IIA decorated with impressed design. This pottery style has also continued from the 6th century BC to the end of 2nd century BC (Mughal, 1967). Similarly, the stamped pottery sherds (see plates 9 sherd type 18, and 10 sherd type 17) reported from the sites Kujree and Marhi1 are very similar to “Tulumba stamped ware” pottery sherds of Tulumba period V and VA, dated from the 15th 16th century A D, or later (Mughal, 1967). However, there is a little difference between “Tulumba Stamped ware”, and those reported from Marhi1 and Kujree sites, in the colour and texture. These differences perhaps indicate the regional differences of the ceramic tradition during middle historic period or later or may be the continuity from early historic ceramic traditions.

Furthermore, an account of the Muslim period pottery sherds has been confirmed by Shaikh from the excavation at the site of Kaath Banbhan in Badin district of Sindh (Shaikh, 2018). The pottery of Muslim period that has been reported during current survey from the eight sites. Such pottery (Plate 10 and 22) painted in black on red background, is also similar to the pottery of Kaath Banbhan.

Furthermore, the cultural continuity at the sites suggests that the Mirwah desert region was repeatedly occupied till the colonial period. The Indus River course 3 continued its flow from the post-Pleistocene till the instalment of Sukkur barrage in 1932. Heavy floods must have touched the toes of sand dunes of the Mirwah desert. It may be a good reason to the ancient settlers of the Mirwah desert that during the floods and heavy rainfall in adjacent Indus plains, they moved to this elevated western margin of the Thar desert. as already discussed in chapter two that subsistence sources in Mirwah desert were exploited, extensively, and even presently, nomadic people exploit the region for grazing.

Furthermore, there are good fish resources in the lakes of the Mirwah desert; the fish and water birds are also useful for human consumption.

Moreover, rainfalls also provide additional sources for exploitation. Such as Mushrooms that germinate, especially after a few rain showers on the sand dunes, are the most favourite and traditional vegetable throughout Sindh. Further, some desert plants provide fruits for human consumption. Several sites in the Mirwah desert that have already been discovered are considered semi-permanent seasonal-based sites, but this consideration may be invalid because no single site has been excavated in the region. The information gathered through the surface survey may not recover the stratigraphical sequence. Furthermore, the nature of sand dunes is also rolling, winds shift them through erosion, and somehow the archaeological remains are covered by the sand dunes, and somehow uncovered that kind of the nature of sandy desert may also keep the archaeological remains buried under the sand dunes.

Conclusion and Recommendations

DRSML QAU

Conclusion

The present study was conducted around the lakes located in Mirwah tehsil along the western margin of the Thar desert. The survey was launched from village to village in the desert area of Mirwah tehsil. The GPS device and google earth were used for recording the archaeological sites. It has been noticed that all sites are located around lakes, depending on the Lakes or the Indus River courses. The spill channels of the river Indus during ancient times (Harappan, or early Harappan) resulted in the present water bodies (lakes) in the Mirwah and locally known as "Dhandh" (Mallah, 2010). However, the local people have different stories about these lakes; there are few shrines in the desert of Mirwah. During the Mesolithic period, people exploited this region; the artefact repertoire and some Mesolithic workshops have been discovered in the Mirwah desert region and the adjacent region Nara desert. This lithic tradition continued to the Hakra, Kot Diji, and Harappan periods; several Harappan flint blades have been reported in previous works. Most of the scholars in Sindh paid attention to prehistory and protohistory. The early historic and historical periods have still uncertain in the desert zone of Sindh. However, in the present survey, the pottery sherds belong to early historic and historic periods correlated with the pottery found from the excavations of different sites; these cultural assemblages have been defined in chapter four.

The present work has been a regional and archaeological study in which the archaeological sites and other ecological components, such as lakes, sand dunes, Indus alluvial plains, ancient Indus River courses, and the small alluvial plains, were observed. The cultural material collected from the surfaces of the sites was analysed and interpreted in the light of the system approach and the site catchment theoretical frameworks. These approaches have provided a foundation for reconstructing the ancient settlement pattern and local resource diversities in this western Margin of the Thar desert (Chapters 3, 4). The different period settlements are present here in the Mirwah desert. Mesolithic, Hakra, Kot Diji, mature Harappan, and early historic period sites are present. The lakes provided an appropriate environment for survival in the desert environment. The chert resources of the desert region were discussed in the light of their utilization by the occupants of presently known prehistoric sites of the Mirwah desert.

Nevertheless, the sites of Tali, Marhi1, Marhi2 Ganero, and Saneso (chapter 4) are the larger settlements of the area, and the occupants of these settlements in this merciless desert environment could not survive without potable water. Hence, it can be assumed that this region depended on the Indus River spill channels until the historic periods and just before the Sukkur barrage was installed. Presently, dependent on the feeder canal Mirwah, which furnishes the water throughout this western margin of the Thar desert, including the Mirwah desert.

The Hakra period artefacts have been reported from the 13 sites of the Mirwah desert around Dubbi lakes. Mughal also highly recognized this cultural phase in the Cholistan desert's settlements. However, in Sindh, this is an emerging phase generally dated 3800 to 3200 BC. The present author has also reported the Hakra period ceramics from the sites of Ganero⁸ and Dingro. The Hakra period sites in the upper portion of the Thar desert from Rahim Yar Khan to Pano Aqil have not been recognized yet. These striking issues still need to be addressed; the remaining regions need to be explored.

The collected cultural material like flint tools and ceramic types show the continuity in cultural sequence till the Mature Indus; however, there is a missing link after mature Indus to the early historic periods. Only Trihni-type sherds were noticed, and some have been discussed in the present study. This missing link is expected to find in future explorations in this area. Although, the Jhukar and Jhangar phases have already been reported from the adjacent area Faiz Ganj like Taloor Ji Bhit and other sites. The availability of Hakra and Kot Diji ceramics.

Moreover, the availability of Kot Diji and Hakra period material indicates that people living during these early Indus phases must have shared the pervasive interaction system. They must have links with the Cholistan region, northern Rajasthan, as well as the plains of Sindh. Furthermore, the Nara tehsil, where the ancient course of the Hakra and presently Nara canal flowing, should be explored, and Hakra period settlements are expected to appear in this region. However, a few explorations have discovered the Hakra and Kot Diji period settlement in Nara tehsil.

Recommendations

- Excavations should be conducted on the already discovered sites from Thar desert for an appropriate chronology of the early Indus periods Hakra and Kot Diji.
- The cultural material that has been collected by the previous explorers and stored in the departments should be analysed for further understanding.
- MSc, MPhil, and PhD research works should be done and should prioritize the regional surveys. This could decrease the encroachment of archaeological sites by the people and natural actions.
- The collected material during the present survey provides a basic information about the chronology of the area. However, in the future further work can be done the material for instance, microscopic analysis, 3D analysis of the ceramics.
- The discovered sites by the present author, such as Marhi1 and Marhi2 are the settlement sites on later site architectural remains were noticed and is mounded site. This site should be excavated for the confirmation of the chronological sequence of the historic and early historic period ceramics and other occupations.
- The site of Ganero is of great importance yielding the Hakra and Kot Diji phase material is also awaiting an attention regarding archaeological excavation.
- Hakra is a newly emerging cultural phase, in the Thar desert of Sindh and a considerable portion of this region is still waits for the scholarly explorations. It is expected that more Hakra period settlements could be find out along the dried Hakra course such as Raini (From Rahim Yar Khan to the Rohri Hills), Nara-Nadi (from Rohri Hills to the Rann of Kutch in the south). This region should consider for the explorations.
- However, in the India there have been conducted more studies into the paleoclimate and environment, but the region of Thar desert should be consider as the area for that kind of study in future for the understanding of prehistoric climate.

Chapter No. 5: Catalogue and Drawings

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Catalogue and Drawings

The drawings and catalogue of the artifacts is supplementary work that helps to understand the quantity, and manufacture technologies, and the period of the artifact to which it is associated. Table 1. Comprises the names of sites and their abbreviations. Key is also given below for the abbreviations that have been used in the catalogue tables. Furthermore, the drawings are given after ever table ends, each table contains the artefacts from each site

Table 1 Names of Sites and abbreviation

S. No	Name of the site	Abbreviation
01	Dingro	DN
02	Ganero-8	GN-8
03	Ganero-3	GN-3
04	Jamal Shah	JS
05	Kalro Dubbi Lake	KD
06	Kujree	KU
07	Marhi-1	MR-1
08	Marhi-2	MR-2
09	Mehrani Goath	MG
10	Nandho Tarko	NT
11	Peer Garho	PG
12	Peer Musafir	PM
13	Saneso Dandh	SD
14	Tali	TL
15	Village Achar Dharejo	AD

Key

Cat. No	Catalogue Number	B A	Base
Obj. No	Object Number	N	Neck
S.T.	Sherd Type	R	Rim
Dia	Diameter	I	Interior
B.W.T.	Body wall Thickness	E	Exterior
B O	Body	P	Plain

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Table 2 Site: DN

Cat No	Obj No	S. T. (R Ba, Bo, N)	Depiction (I, E)	Dia (cm)	B.W.T (cm)	Description
DN-01	1	=	=	=	1.5	A piece of terracotta tile/table? Broken, with maximum length 12.3cm and 10cm width
DN-02	2	Ba	=	needed	1	Exterior has two irregular incised lines.
DN-03	3	Bo	E	=	0.7	Floral design painted in black on the dull red background, the light yellowish band are also parallel to the black band.
DN-04	4	Bo	=	=	0.7	Plain.
DN-05	5	R	=	needed	1.2	Broken, plain.
DN-06	6	Bo	=	=	0.5	Plain (weather effected)
DN-07	7	R	=	needed	0.8	Plain.
DN-08	8	=	=	needed	1.1	Base with body, fire effected.
DN-09	9	R	I	needed	1.2	An incised decorated design.
DN-10	10	Bo	=	=	0.6	Exterior has parallel incised lines.
DN-11	11	Ba	=	needed	0.9	Plain.
DN-12	12	Bo	=	=	1.3	Coarse surface, sand mixed.
DN-13	13	Bo	=	=	1.1	Fire effected.
DN-14	14	Bo	E	=	0.9	Incised decorated design.
DN-15	15	Bo	E	=	0.7	Traces of black paint.
DN-16	16	Ba	=	needed	1	Grayish color.
DN-17	17	Ba	E	=	0.9	Black bands on the dull red background.
DN-18	18	R	=	needed	0.6	Plain.
DN-19	19	=	=	=	1.2	Flint tool (pick?), with maximum length 5.3cm, and 3.9cm width.
DN-20	20	=	=	=	1	Flint blade, incomplete with maximum length 3.8cm, and 2.9cm.
DN-21	21	=	=	=	0.6	Flint flake, maximum length 2.9cm, and 1.9 width.
DN-22	22	=	=	=	2.4	Flint core, with maximum length 3.2cm, and width 2.9c.
DN-23	23	=	=	=	2.2	Flint core, with maximum length 2.8cm, and 2.6 width.

DN-24	24	=	=	=	0.5	Flint leaf shaped arrowhead, with maximum length 3.7cm, and 3cm width.
DN-25	25	=	=	=	0.4	Flint leaf shaped arrowhead, maximum length 2.8cm, 2.2cm width.
DN-26	26	=	=	=	0.4	Flint blade incomplete, maximum length 3.4cm, and 1.3 width.
DN-27	27	=	=	=	0.4	Flint (trapeze?), maximum length 3cm, and 2.1cm width.
DN-28	28	=	=	=	0.3	Flint blade, incomplete with maximum length 2.4cm, and width 1.2cm.
DN-29	29	=	=	=	0.6	Flint (lunate), with maximum length 2.9cm, and 1.5cm width.
DN-30	30	=	=	=	0.3	Flint blade incomplete, with maximum length 2.5cm, and 1.7cm width.
DN-31	31	=	=	=	0.5	Flint tool (?) with maximum length 4.2cm, and 1.2 cm width.
DN-32	32	=	=	=	0.3	Flint arrowhead, maximum length 2.5cm, and width 1.4cm.
DN-33	33	=	=	=	0.6	Flint (borer?), with maximum length 4.5cm, and 1.6cm width.
DN-34	34	=	=	=	0.3	Flint blade incomplete, with maximum length 2.3cm, and 0.5cm width.
DN-35	35	=	=	=	0.3	Flint micro arrowhead, with maximum length 1.7cm, and 0.3 width.

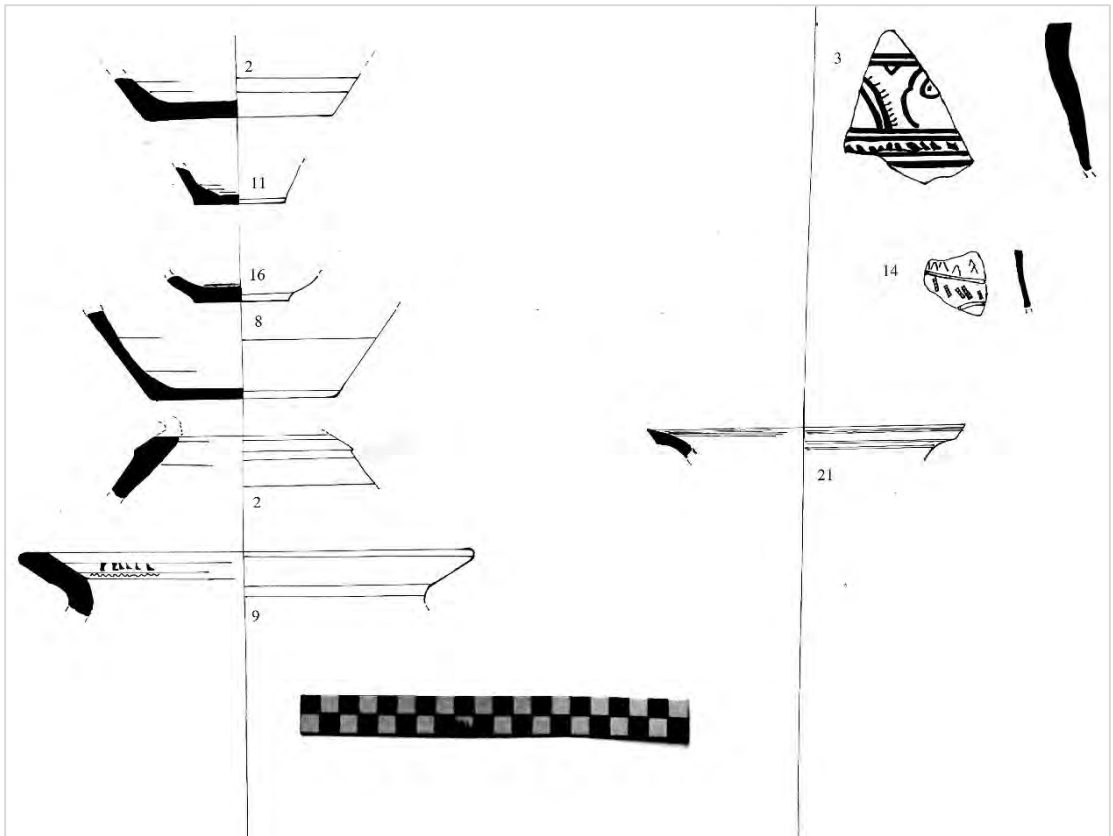


Plate 22 Drawings of the pottery sherds from DN

DRSM

Table 3 Site: GN8

Cat. No	Obj. No	S. T. (R, Ba, Bo, N)	Depiction (I, E)	Dia (cm)	B.W.T (cm)	Description
GN8-36	1	R	=	7	0.7	Plain with coarse surface
GN8-37	2	R	=	9	1.3	Grayish color, coil technology
GN8-38	3	R	=	9	1-1	plain
GN8-39	4	R	=	4.1	1.7	Plain with coarse surface
GN8-40	5	R	=	7	1.2	Weather effected, fossilized sand particles on the exterior surface
GN8-41	6	N/Bo	=	=	1.5	Neck with body, plain with coarse surface
GN8-42	7	R	=	9	0.8	Plain, two incised lines on the exterior neck. Various very thin incised marks are visible on the exterior surface
GN8-43	8	R	E	10	0.7	Traces of black paint. Interior is weathered effected.
GN8-44	9	R	E	6	0.6	Grey slip, grayish texture.
GN8-45	10	R	=	7	1.1	plain
GN8-46	11	R	=	7	0.7	Plain, coarse
GN8-47	12	=	=	=	1.1	Weathered affected, thin concentric lines are visible on the interior.
GN8-48	13	R	=	7	0.8	Plain with coarse surface.
GN8-49	14	R	=	19	1	Plain.
GN8-50	15	=	=	1.2		Handmade, not baked well.
GN8-51	16	R	=	15	1.1	Fire affected, plain.
GN8-52	17	R	=	10	1	Plain, incised lines on the exterior of neck.
GN8-53	18	R	=	11	1.2	Plain with coarse surface.
GN8-54	19	R	=	8	1	Weather effected.
GN8-55	20	R	E	14	1	Nail impression or cord marked line.
GN8-56	21	R	E	8	0.8	Nearly gray, traces of black band on the neck.
GN8-57	22	R	=	14	1.7	Plain. Ledge rim along the thick incised bands on the top, concentric lines are visible on both I.E.
GN8-58	23	R	=	6.5	0.6	Plain

GN8-59	24	R	=	8	0.8	Plain
GN8-60	25	R	=	5.5	0.6	Fire effected.
GN8-61	26	R	E	3	0.4	Thinly made, traces of light brown slip.
GN8-62	27	R	E	5	0.4	Thinly made, traces of dark brown slip
GN8-63	28	Bo	E	=	0.4	Dark red slip.
GN8-64	29	N	E	=	0.9	Brown slip, interior is weathered effected
GN8-65	30	Bo	E	=	0.5	Grayish texture, dark gray slip.
GN8-66	31	Bo	E	=	0.5	Painted in black on the dull red background (fish scale motif).
GN8-67	32	Bo	E	=	0.7	Painted gray ware, black paint on the gray background.
GN8-68	33	N	E	=	0.7	Dark red slip.
GN8-69	34	Bo	E	=	0.8	Fish scale motif painted in black on the red slip.
GN8-70	35	Bo		=	0.6	Dark brown slip.
GN8-71	36	Bo		=	0.7	Body sherd of a vessel Kot Diji type, exterior is weather effected, interior has visible impressions of cloth/plant?
GN8-72	37	Bo	=	=	0.8	Hakra mud applique on the exterior.
GN8-73	38	Bo	=	=	0.9	Fire effected.
GN8-74	39	Bo	=	=	1	Kot Diji type of a vessel, parallel dragging lines on the exterior.
GN8-75	40	Bo	=	=	1.2	=
GN8-76	41	Bo	=	=	1	=
GN8-77	42	Bo		=	0.9	=
GN8-78	43	Bo		=	0.5	Hakra ware, grit mixed mud applique applied on the exterior surface, while interior has cloth impression.
GN8-79	44	Ba	=	5	1.5	Plain.
GN8-80	45	Ba	=	3.5	1.2	Plain.
GN8-81	46	=	=	5	1.1	Terracotta bangle broken, red color.
GN8-82	47	=	=	4	1.3	=
GN8-83	48	=	=	=	1.2	Terracotta bangle broken.
GN8-84	49	=	=	=	1.9	Flint tool (borer), with maximum length 9.2 cm, and 2.6 cm width.

GN8-85	50	=	=	=	1.4	Flint tool (small borer) with maximum length 7.7 cm, and 2.5cm width.
GN8-86	51	=	=	=	1	Flint bladelet with maximum length 6.8cm, and 2.2cm width.
GN8-87	52	=	=	=	1.1	Flint bladelet maximum length 5.8cm, and 2.4cm width.
GN8-88	53	=	=	=	3.6	Flint blade, incomplete with maximum length 4.1cm, and 2.4cm width.
GN8-89	54	=	=	=	0.6	Flint blade incomplete, maximum length 4.1cm, and 1.9 width.
GN8-90	55	=	=	=	0.6	Flint blade incomplete, maximum length 4.5cm, and 1.4 cm
GN8-91	56	=	=	=	0.7	Flint blade incomplete, maximum length 4.1cm, and 1.4cm width.
GN8-92	57	=	=	=	0.7	Flint flake, (blade?) maximum length 2.3cm, and 2.5cm width.
GN8-93	58	=	=	=	0.6	Flint blade incomplete, maximum length 3.8cm, and 2.2cm width.
GN8-94	59	=	=	=	0.4	Flint blade incomplete, maximum length 2.4cm, and 2cm width
GN8-95	60	=	=	=	0.5	Flint blade incomplete, with maximum length 3.4cm, 1.1cm width.
GN8-96	61	=	=	=	4	Chert nodule (core?) with maximum 6.2cm, and width 5.8cm.

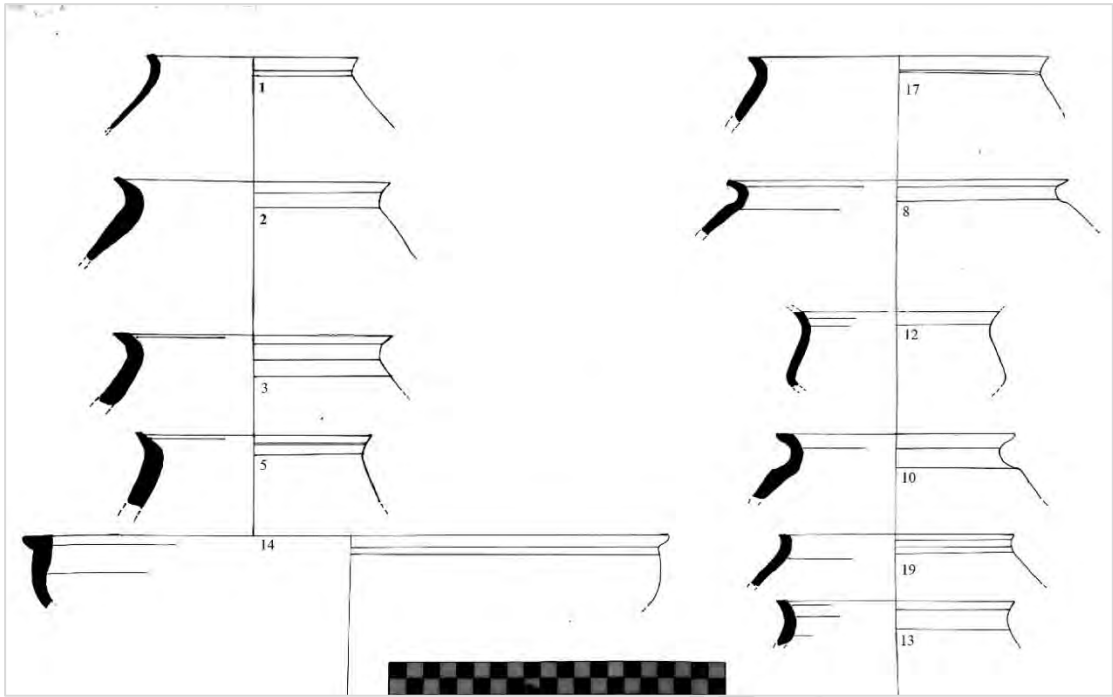


Plate 23 Drawings of the pottery sherds from GN8

DRSML QA

Table 4 Site: GN

Cat No	Obj No	S. T. (R, Ba, Bo, N)	Depiction (E,I)	Dia (cm)	B.W.T (CM)	Description
GN-97	1	R	E	Needed	0.8	Traces of black band.
GN-98	2	R	=	Needed	0.6	Plain.
GN-99	3	R	E	Needed	2	Double ledged rim, black bands on red background.
GN-100	4	R	=	Needed	1	Fire effected.
GN-101	5	Ba	=	Needed	2	Plain one circular incised line.
GN-102	6	Bo	E	=	0.4	Red slip.
GN-103	7	Bo	E	=	0.8	Two cord marked lines.
GN-104	8	Bo	E	=	0.4	Dark red slip.
GN-105	9	Bo	=	=	0.8	Plain.
GN-106	10	Bo	=	=	0.5	Fire effected.
GN-107	11	Bo	=	=	0.5	=
GN-108	12	R	E	Needed	0.4	Burnished, traces of dark red slip.
GN-109	13	N	E	=	0.9	Dark red slip.
GN-110	14	Bo	=	=	0.7	Plain.
GN-111	15	Bo	=	=	0.5	Plain.
GN-112	16	Bo	E	=	1.3	Glaze.
GN-113	17	Bo	E	=	0.9	Glaze.
GN-114	18	Bo	E	=	0.8	Glaze.

Table 5 Site: JS

Cat No	Obj No	S.T (R, Ba, Bo, N)	Depiction (E, I)	Dia (cm)	B.W.T (cm)	Description
JS-115	1	R	E	13-ext. 11-int.	0.8	Two black bands on dull red background.
JS-116	2	R	=	14	0.7	Plain.
JS-117	3	R	=	12	0.6	Plain.

JS-118	4	Bo	=	=	1	Weather effected.
JS-119	5	Bo	E	=	0.9	Traces of black paint.
JS-120	6	Bo	=	=	0.5	Plain.
JS-121	7	Bo	=	=	0.6	Plain.
JS-122	8	Bo	=	=	0.6	Plain.
JS-123	9	Bo	=	=	0.8	Plain.
JS-124	10	Bo	=	=	0.6	Plain.
JS-125	11	Bo	=	=	1	Exterior has concentric lines.
JS-126	12	N	=	=	1	Plain.
JS-127	13	=	=	=	1.7	Baked clay.
JS-128	14	=	=	=	0.6	Plain.
JS-129	15	Bo	=		0.7	Exterior is weather effected, and interior has visible concentric lines.
JS-130	16	=	=		0.4	Flint blade incomplete with maximum length 4.4cm, and 0.6cm width.
JS-131	17	=	=		1.3	Flint bladelet with maximum length 6.4cm, and 2.3 width.

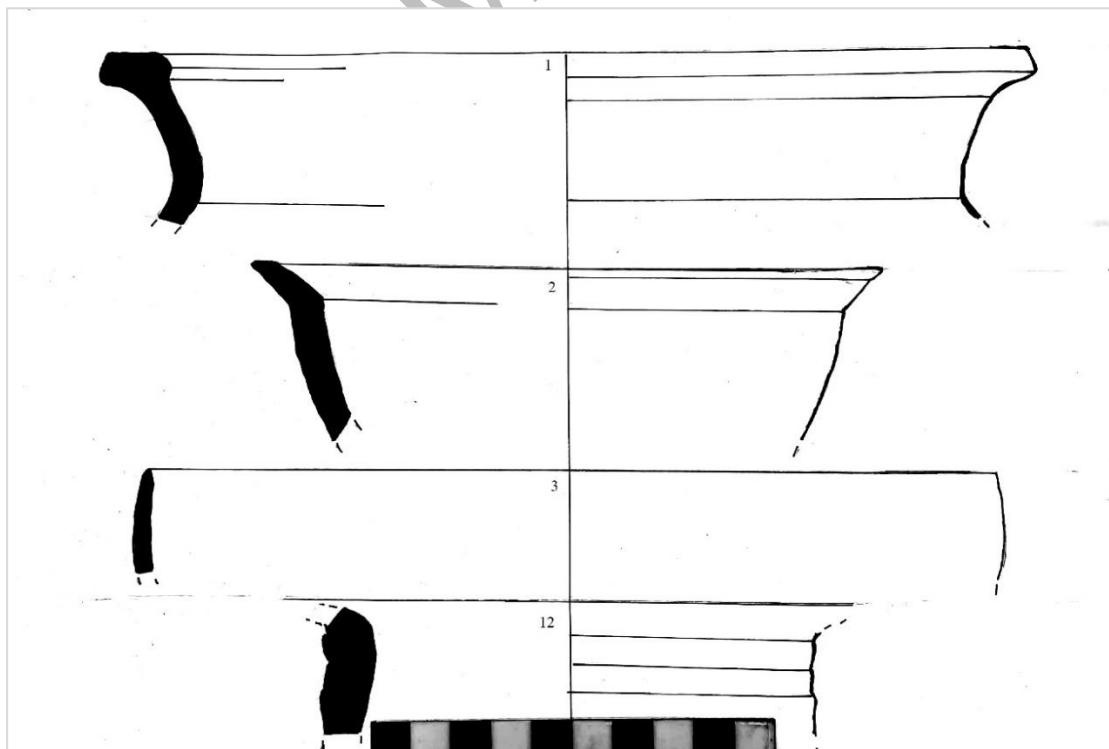


Plate 24 Drawings of the pottery sherds from JS

Table 6 Site: KD

Cat No	Obj No	S. T. (R, Ba, Bo, N)	Depiction	Dia (cm)	B.W.T (CM)	Description
KD-132	1	R	=	10	0.8	Fire effected.
KD-133	2	R	E	10	1.1	Traces of black paint on the rim's top.
KD-134	3	R	I	?	1	Painted in black on dark red background.
KD-135	4	R	=	12	0.8	Coarse surface.
KD-136	5	R	=	10	1.8	Weather effected.
KD-137	6	R	=	13	0.6	Coarse surface.
KD-138	7	R	I	?	0.6	Two deep incised lines making angle of 450 degree.
KD-139	8	Bo	E	=	1	Stamped design, lotus flower.
KD-140	9	Bo	E	=	0.4	Stamped design.
KD-141	10	Bo	=	=	1.6	Roughly made.
KD-142	11	Bo	=	=	0.6	Plain.
KD-143	12	Bo	E	=	1.7	Painted in black on dark red background.
KD-144	13	Bo	E	=	0.4	Painted in black on dark red background.
KD-145	14	Bo	=	=	0.7	Plain, exterior has dragging lines, and also concentric lines.
KD-146	15	Bo	E	=	0.7	Traces of red slip.
KD-147	16	Bo	E	=	0.8	One incised line.
KD-148	17	Bo	E	=	0.5	Traces of brown slip.
KD-149	18	Bo	=	=	0.4	Interior has concentric lines.
KD-1450	19	Bo	=	=	0.6	Interior has concentric lines, and exterior has on incised lines.
KD-151	20	N	E	=	0.3	Traces of dark brown slip.
KD-152	21		=	=	1	Weather effected.
KD-153	22	Ba	=	5	1	Plain, interior has concentric lines.
KD-154	23	Bo	=	=	0.6	Burned applique layer applied on the external surface.
KD-155	24		=	=	1	Plain.
KD-156	25		E	=	0.4	Painted in black on dull red background.

KD-157	26		=	2.5	0.8	Plain.
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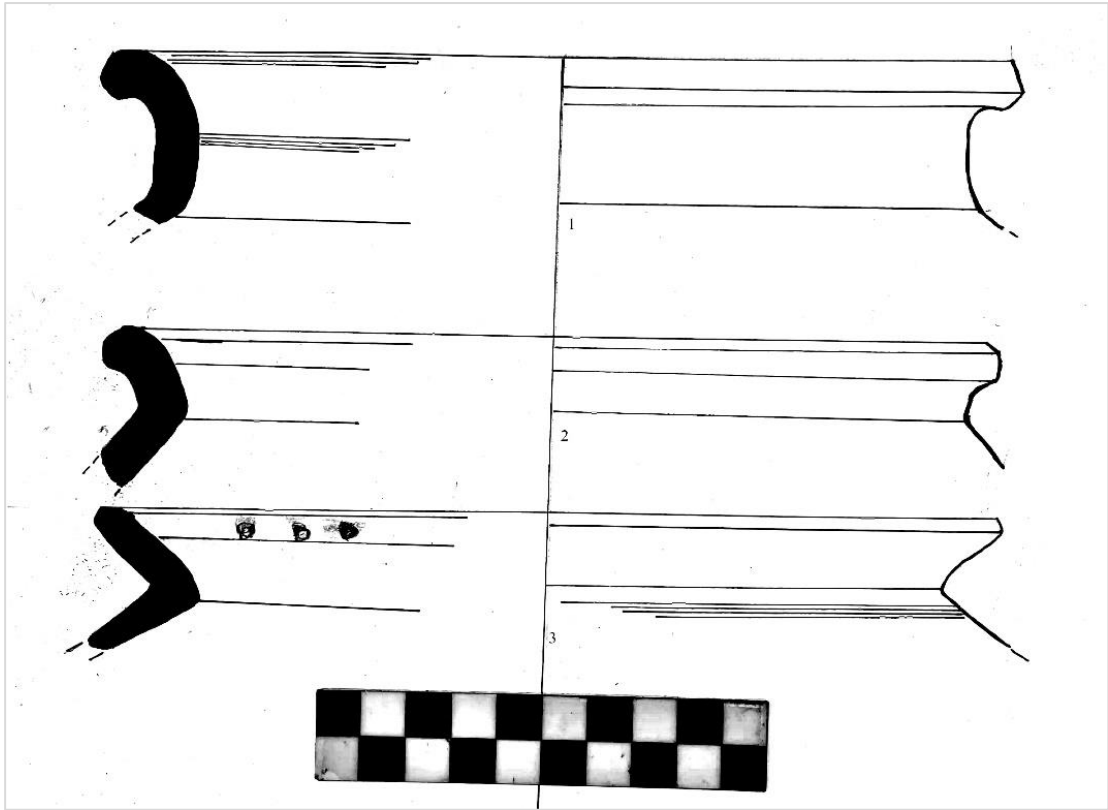


Plate 25 Drawings of the pottery sherds from KD

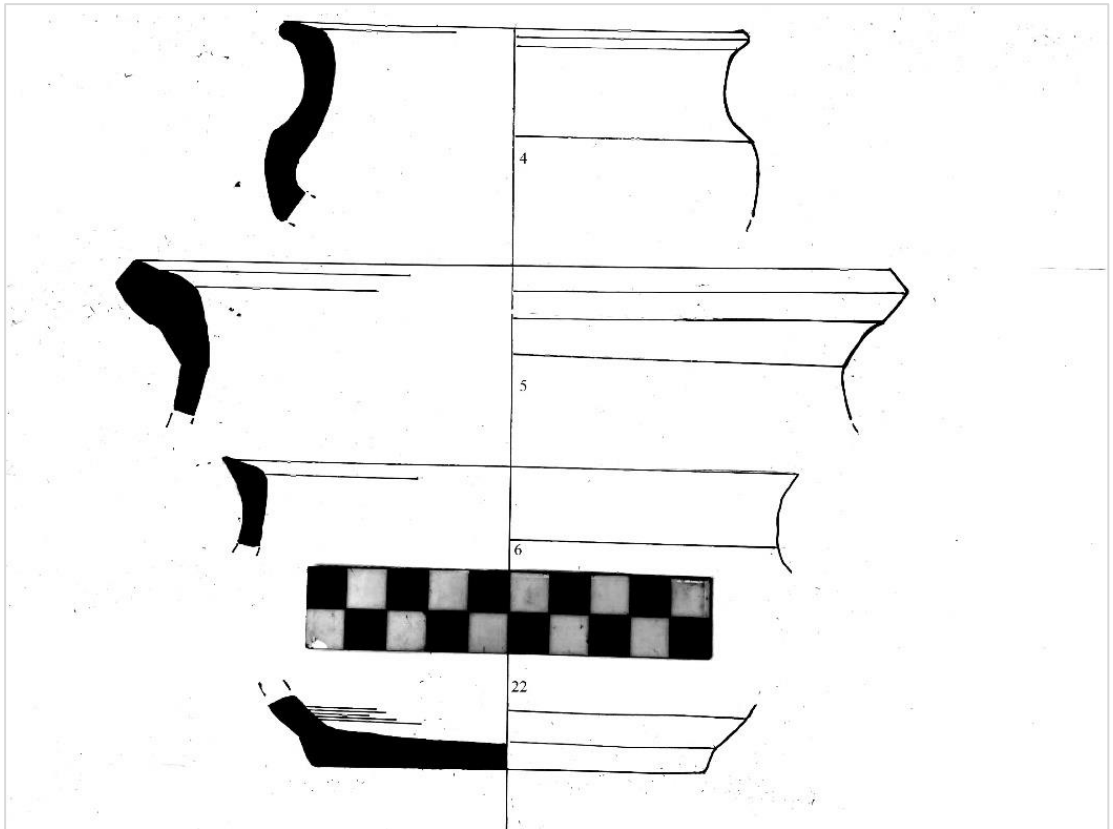


Plate 26 Drawings of the pottery sherds from KD

Table 7 Site: KU

Cat No	Obj No	S. T. (R, Ba, Bo, N)	Depiction	Dia (cm)	B.W.T (CM)	Description
KU-158	1	Bo	=	=	0.7	Plain, concentric lines are visible.
KU-159	2	Bo	=	=	0.9	Weather effected.
KU-160	3	Bo	=	=	0.5	Plain, interior has concentric lines.
KU-161	4	Bo	=	=	0.5	Plain, exterior has concentric lines.
KU-162	5	Bo	=	=	1	Roughly made.
KU-163	6	Bo	=	=	1.5	Roughly made.
KU-164	7	Bo	=	=	1.2	Roughly made.
KU-165	8	=	=	=	1.4	Roughly made.
KU-166	9	Ba	=	5	1	Weather effected.
KU-167	10	Ba	=	5	1	Plain, interior has concentric lines.
KU-168	11	Bo	=	=	1	Weathered effected.
KU-169	12	=	=	=	0.9	Roughly made.
KU-170	13	Bo	=	=	0.6	Weather effected.
KU-171	14	Bo	=	=	0.9	Plain.
KU-172	15	Bo	=	=	0.8	Plains, exterior has lines.
KU-173	16	Bo	E	=	0.7	Geometrical stamped design, (squares), (Tulamba stamped ware)
KU-174	17	Bo	E	=	0.9	Painted in black.
KU-175	18	Bo	E	=	1	Painted in black.
KU-176	19	R	=	=	1.2	Weather effected.
KU-177	20	N	=	=	0.6	Weather effected.
KU-178	21	R	=	7	0.7	Weather effected.
KU-179	22	R	E	11	0.5	Traces of brown slip.

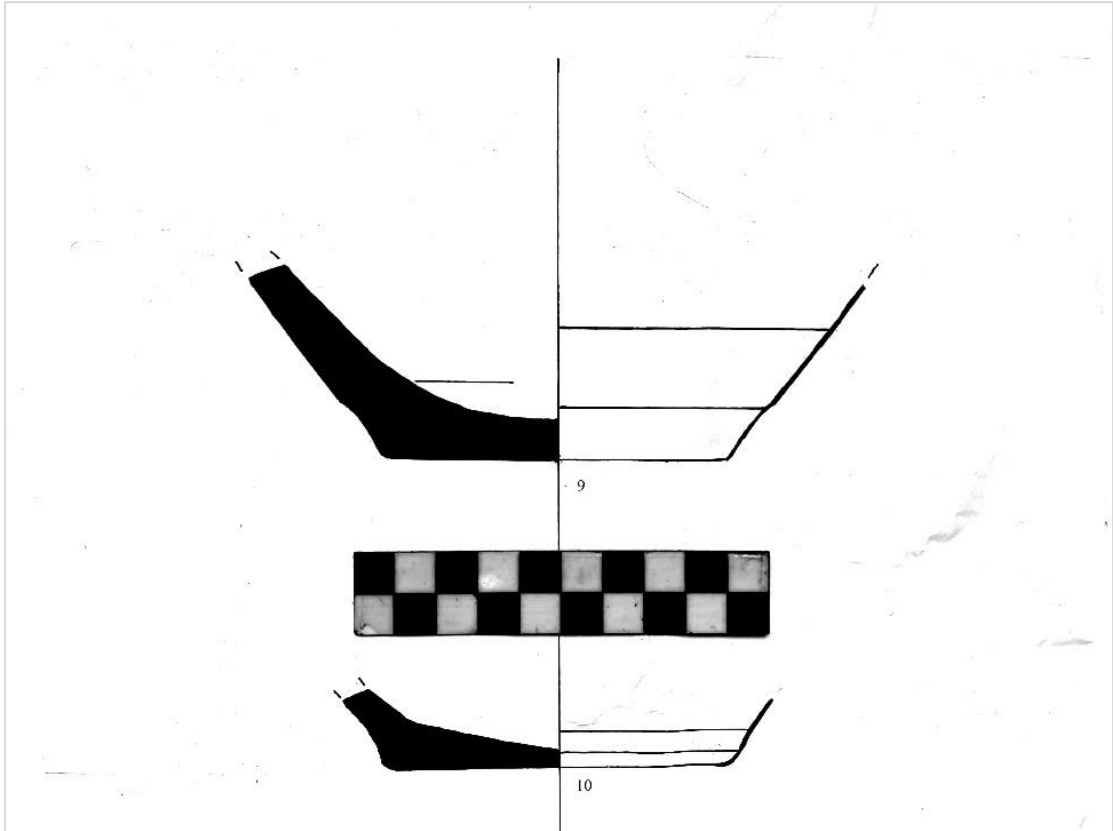


Plate 27 Drawings of the pottery sherds from KU

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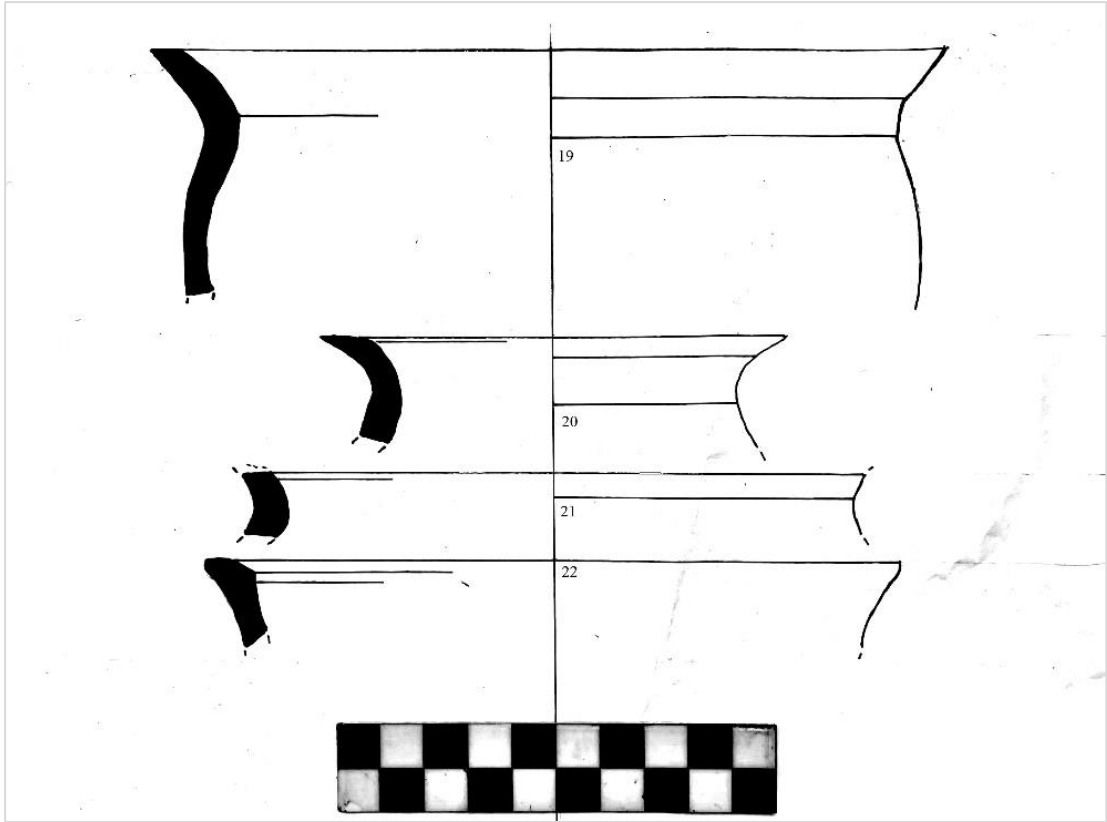


Plate 28 Drawings of the pottery from KU

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Table 8 Site: MRI

Cat No	Obj No	S. T. (R, Ba, Bo, N)	Depiction	Dia (cm)	B.W.T (CM)	Description
MR1-180	1	=	=	12	0.8	Plain.
MR1-181	2	=	=	9	0.7	Plain, fire effected.
MR1-182	3	=	=	=	0.5	Coarse surface.
MR1-183	4	R	=	=	0.8	Plain.
MR1-184	5	Bo	=	=	0.8	Plain.
MR1-185	6	Bo	=	=	0.5	Plain.
MR1-186	7	Bo	=	=	0.7	Plain.
MR1-187	8	Bo	E	=	0.4	Very thin incised lines.
MR1-188	9	Bo	E	=	0.6	Buff texture, and slip.
MR1-189	10	Bo	E	=	0.6	Buff slip.
MR1-190	11	Bo	E	=	0.6	Buff slip/
MR1-191	12	Bo	E	=	0.6	Greenish color/ slip or fire effected.
MR1-192	13	Bo	=	=	0.5	Plain.
MR1-193	14	Bo	E	=	0.6	Stamped design.
MR1-194	15	Bo	E	=	1	Stamped design.
MR1-195	16	=	E	7	0.6	Painted in black on red background.
MR1-196	17	N	E	=	0.6	Painted in black, geometrical design on the dark red background/ slip.
MR1-197	18	R	I	19	1	Painted in black on the red slip.
MR1-198	19	Bo	E	=	0.8	Painted in black on dark red background.
MR1-199	20	Bo	E	=	0.4	Painted in black on red slip.
MR1-200	21	Bo	E	=	0.5	Painted in black on dull red background.
MR1-201	22	Bo	E	=	0.6	Painted in black on red background.
MR1-202	23	Bo	E	=	0.8	Painted in black on red background.
MR1-203	24	Bo	E	=	1.1	Painted in black on red background.
MR1-204	25	Bo	=	=	0.5	=
MR1-205	26	R	E	15	2.5	Painted in black on dull red background.
MR1-206	27	R	=	18	1.2	Plain.

MR1-207	28	R	E	15	1	A zigzag/wavy incised decorated band is visible on the top of rim, and another same band below the rim is visible.
MR1-208	29	R	E	19	1.6	Exterior has two incised lines one above the ledge and one below the ledge.
MR1-209	30	R	=	7	0.5	Plain.
MR1-210	31	=	=	=	1.3	Black, (similar to the Gandhara Grave Culture).
MR1-211	32	R	=	13	1.1	=
MR1-212	33	R	=	6	0.5	Plain.
MR1-213	34	=	E	=	2.3	Stamped decorated design.
MR1-214	35	Bo	E	=	2.5	Stamped design.
MR1-215	36	=	=	=	1.1	Handle; red color, and traces of black paint on the red background.
MR1-216	37	Ba	I	5	4	Glazed.
MR1-217	38	Bo	I	=	0.6	Glazed.



Plate 29 Drawings of the pottery sherds from MRI

Table 9 Site: MR2

Cat No	Obj No	S. T. (R, Ba, Bo, N)	Depiction	Dia (cm)	B.W. T (CM)	Description
MR2-218	1	R	=	25	3.8	Plant impression on whole surface.
MR2-219	2	R	E	9	1	Black bands on dull red background.
MR2-220	3	R	I	12	1.1	Traces of black band.
MR2-221	4	R	=	=	1.1	Plain.
MR2-222	5	R	=	7	0.6	Plain.
MR2-223	6	R	E	9	0.6	Two black bands.
MR2-224	7	Bo	E, I	=	1.3	Red slip, black paint.
MR2-225	8	Bo	I	=	1.3	Traces of black bands and brown slip.
MR2-226	9	N	E	=	1	Black paint.
MR2-227	10	Bo	=	=	1.6	Burnished.
MR2-228	11	Bo	E	=	1.2	Incised decorated design.
MR2-229	12	Bo	E	=	0.6	Black paint.
MR2-230	13	Bo	E	=	0.5	Painted in black.
MR2-231	14	Bo	E	=	0.4	Traces of red slip, buff slip and vertical black bands.
MR2-232	15	Bo	=	=	1	Fire effected.
MR2-233	16	=	=	12	1	Plain.
MR2-234	17	=	=	=	0.7	TC glass/ bowl plain.
MR2-235	18	=	=	=	1.2	TC glass/ bowl plain.

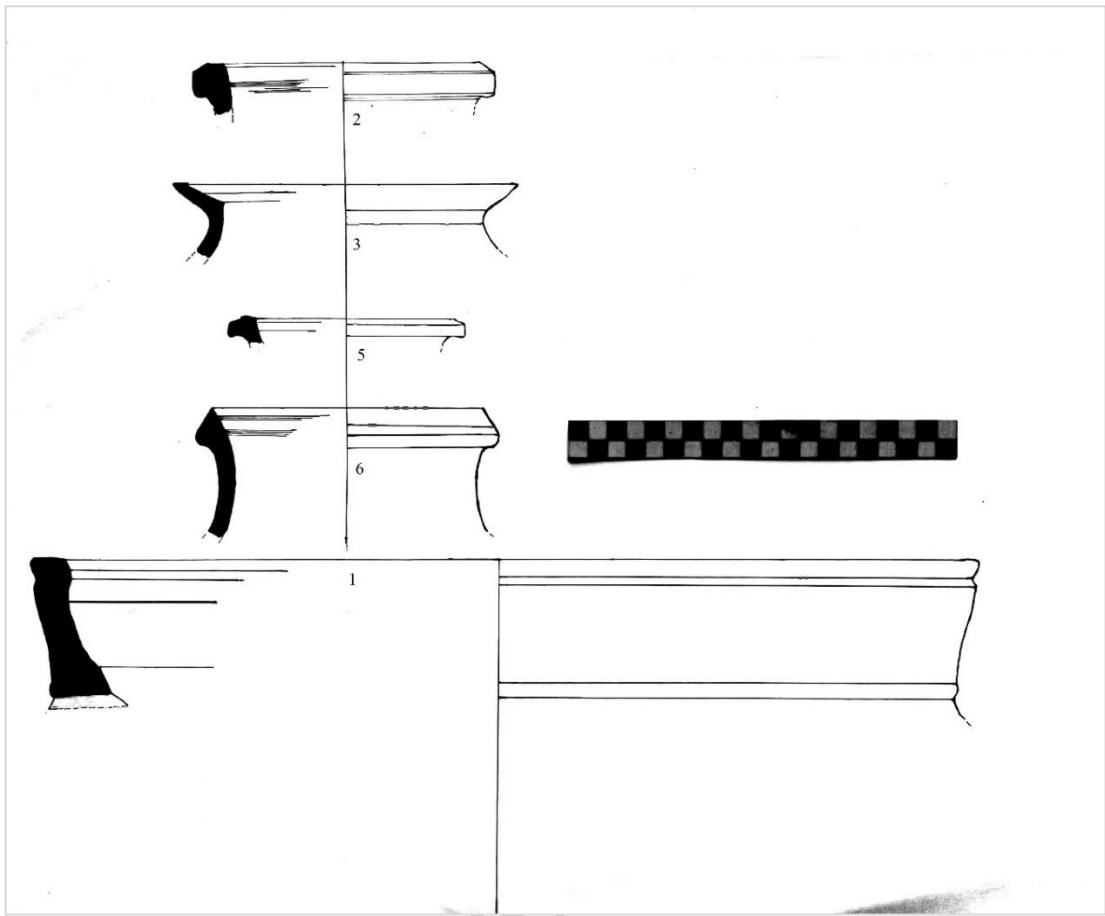


Plate 30 Drawings of the pottery sherds from MR2

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Table 10 Site: MG

Cat No	Obj No	S. T. (R, Ba, Bo, N)	Depiction	Dia (cm)	B.W.T (CM)	Description
MG-236	1	Bo	E	=	0.4	Rim with ledge, painted.
MG-237	2	R	E	=	1.2	Painted in black.
MG-238	3	Bo	E	=	0.6	Painted in black.
MG-239	4	R	E		0.4	Painted in black.
MG-240	5	Ba	E	=	0.5	Traces of black paint.
MG-241	6	Bo	E	=	1	Glazed.

Table 11 Site: NT

Cat No	Obj No	S. T. (R, Ba, Bo, N)	Depiction	Dia (cm)	B.W.T (CM)	Description
NT-242	1	Bo	=	=	0.4	Plain.
NT-243	2	Bo	=	=	0.4	Plain.
NT-244	3	Bo	=	=	0.6	Plain.
NT-245	4	R	=	9	5	Fire effected.
NT-246	5	Ba	=	10	1.7	Plain.
NT-247	6	R	=	9	0.9	Plain.
NT-248	7	R	E	=	0.8	Three parallel black bands.
NT-249	8	R	=	=	1.1	Coarse surface.
NT-250	9	Bo	=	=	1.2	Plain.
NT-251	10	R	=	7	0.9	Plain.
NT-252	11	Bo	E	=	0.8	Painted in black
NT-253	12	Bo	E	=	0.5	Stamped design.
NT-254	13	Bo	E	=	0.6	Stamped design.
NT-255	14	Bo	E	=	0.7	Stamped design.
NT-256	15	Bo	=	=	0.6	Plain.

NT-257	16	Bo	=	=	0.8	Coarse surface.
NT-258	17	Bo	=	=	0.8	Fire effected.
NT-259	18	Bo	E	=	0.6	Painted in black on dull red background.

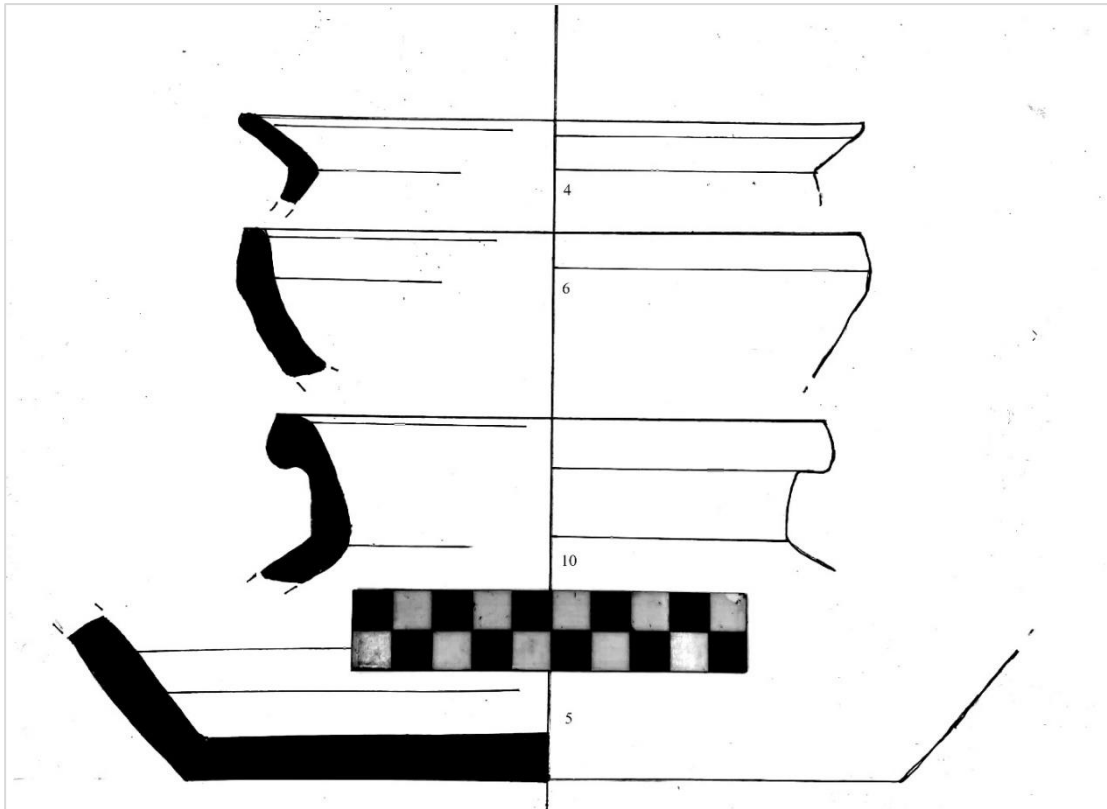


Plate 31 Drawings of the pottery sherds from NT

Table 12 Site: PG

Cat No	Obj No	S. T. (R, Ba, Bo, N)	Depiction	Dia (cm)	B.W.T (CM)	Description
PG-260	1	Bo	E	=	0.6	Stamped design.
PG-261	2	Bo	E	=	0.5	Stamped design.
PG-262	3	Bo	E	=	0.7	Stamped design.
PG-263	4	Bo	E	=	0.4	Stamped design.
PG-264	5	Bo	E	=	0.5	Stamped design.
PG-265	6	Bo	E	=	0.6	=
PG-266	7	Bo	E	=	0.4	Stamped design.
PG-267	8	Bo	E	=	0.6	Stamped design.
PG-268	9	Bo	E	=	0.4	Stamped design.
PG-269	10	Bo	E	=	0.6	Stamped design.
PG-270	11	Bo	E	10	0.8	Incised design.
PG-271	12	R	E	10	0.8	An incised design.
PG-272	13	R	E	13	0.6	Black bands, and vertically cut marks, potter's marks.
PG-273	14	R	I	9	0.7	Traces of black bands.
PG-274	15	R	I	=	0.9	Two incised lines, and potter's marks.
PG-275	16	R	=	10	1	Plain.
PG-276	17	R	E, I	5	0.5	Black paint.
PG-277	18	Bo	E	=	0.9	Painted in black.
PG-278	19	Bo	E	=	0.6	Painted in black.
PG-279	20	Bo	E	=	0.7	Painted in black.
PG-280	21	Bo	E	=	0.7	Painted in black.
PG-281	22	Bo	=	=	0.8	Blackish, fire effected.
PG-282	23	Bo	E	=	0.4	Painted in black, and traces of red band.
PG-283	24	=	=	=	1.1	Handle.

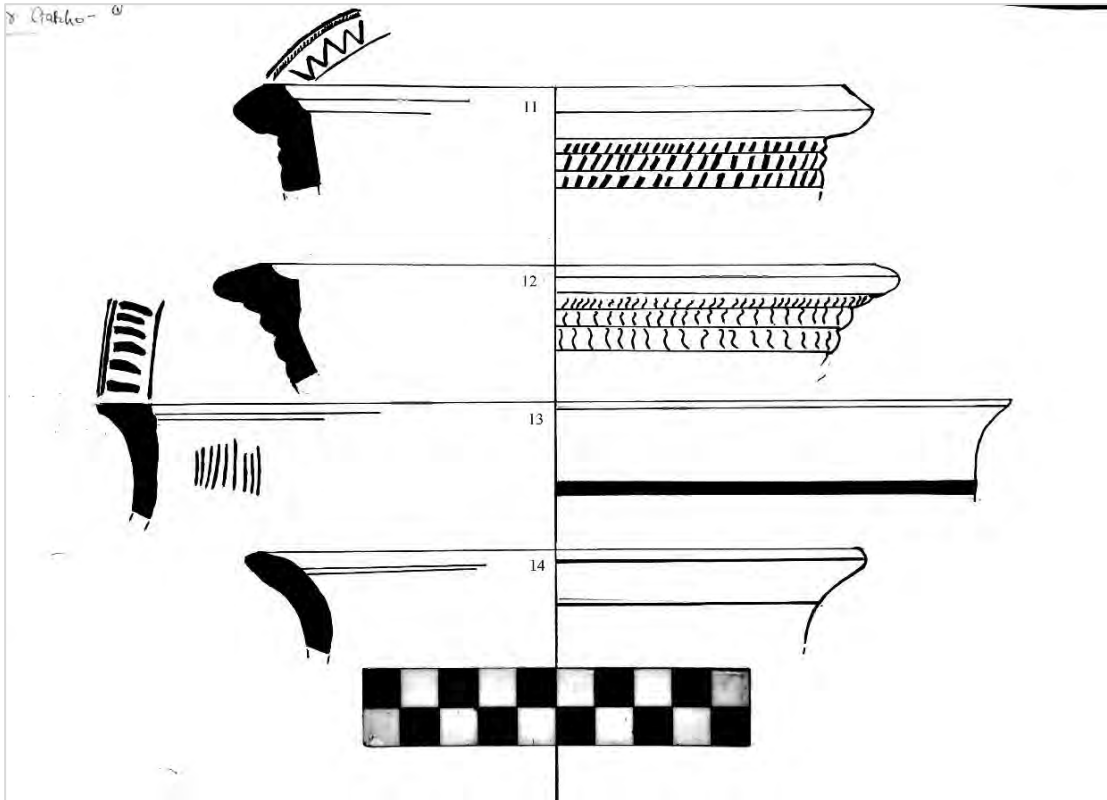


Plate 32 Drawings of the pottery sherds from PG

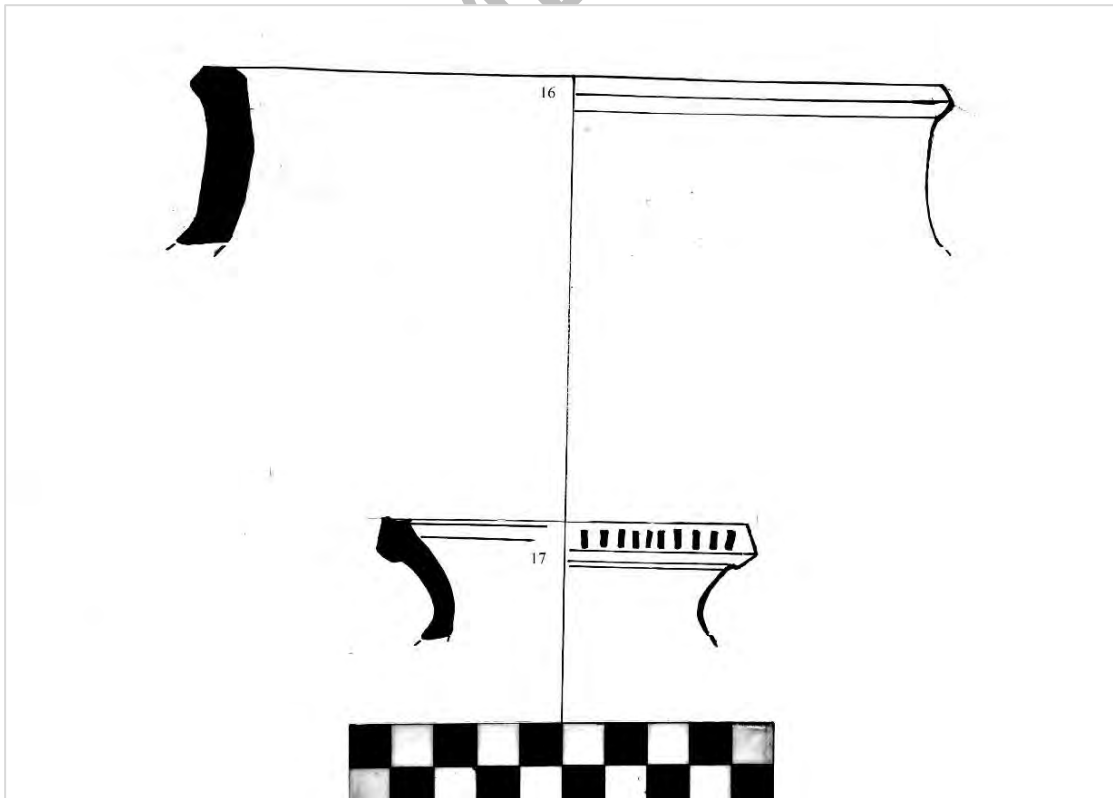


Plate 33 Drawings of the pottery sherds from PG

Table 13 Site: PM

Cat No	Obj No	S. T. (R, Ba, Bo, N)	Depiction	Dia (cm)	B.W.T (CM)	Description
PM-284	1	R	=	9	0.7	Plain.
PM-285	2	R	=	=	0.8	Weather effected.
PM-286	3	R	=	7	0.7	Weather effected.
PM-287	4	R	=	=	1	Plain.
PM-288	5	R	=	5	0.6	Plain.
PM-289	6	Bo	=	=	0.6	Plain.
PM-290	7	R	=	9	0.8	Weather effected.
PM-291	8	R	=	11	0.8	Plain.
PM-292	9	R	=	=	0.5	Fire effected.
PM-293	10	Bo	=	=	0.9	Plain.
PM-294	11	Bo	=	=	1	Plain.
PM-295	12	Bo	=	=	0.8	Plain.
PM-296	13	Ba	=	7	1.3	Plain.
PM-297	14	Ba	=	5	1	Fire effected.
PM-298	15	Ba	=	7	0.6	Plain.
PM-299	16	N	E	=	0.5	Brown slip.
PM-300	17	N	=	=	1.1	Plain.

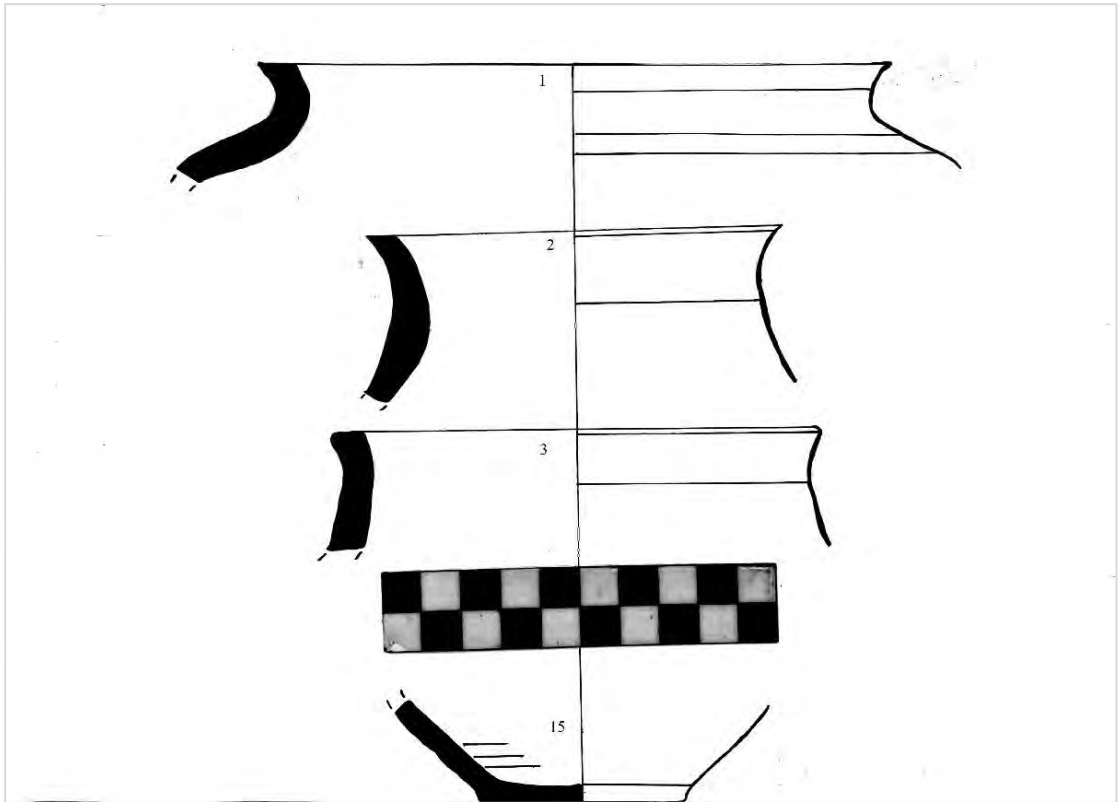


Plate 34 Drawings of the pottery sherds from PM

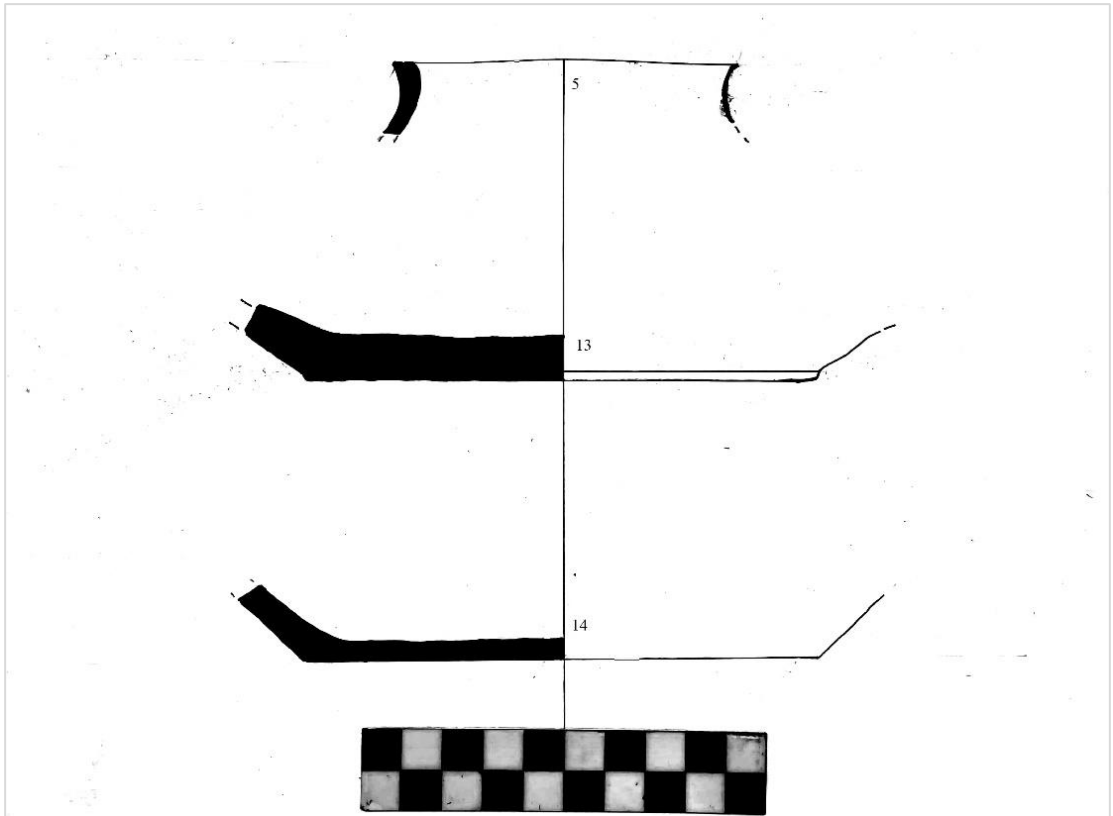


Plate 35 Drawings of the pottery sherds from PM

DRSML

Table 14 Site: SN

Cat No	Obj No	S. T. (R, Ba, Bo, N)	Depiction	Dia (cm)	B.W.T (CM)	Description
SN-301	1	Bo	=	=	0.8	Incised lines on the exterior.
SN-302	2	R	I	18	1.2	Black bands.
SN-303	3	R	E	4	0.5	Black paint on the dark brown slip.
SN-304	4	N	E	=	0.6	Black paint on the dark brown slip.
SN-305	5	=	E	5	0.9	Painted in black.
SN-306	6	R	=	6	0.4	Weather effected.
SN-307	7	R	=	8	0.5	Plain.
SN-308	8	R	E	=	0.9	Deep incised marks.
SN-309	9	N	E	=	0.9	Black paint.
SN-310	10	=	=	=	0.5	Two incised lines in the base from exterior side.
SN-311	11	R	I	11	1	Potter's marks.
SN-312	12	R	=	19	0.8	A wavy band on the rim's top, fire effected.
SN-313	13	R	E	5	0.4	Painted in black, and the incised lines on rim's top.
SN-314	14	R	=	5	0.4	Plain.
SN-315	15	Bo	E	=	0.9	Painted in black on the red slip.
SN-316	16	Bo	E	=	0.4	Painted on the black on the buff slip.
SN-317	17	Bo	E	=	0.5	Painted in black on dark on the dark red slip.
SN-318	18	Bo	E	=	0.6	Painted in black on dark red background.
SN-319	19	R	I	7	0.7	Three parallel incised lines.
SN-320	20	Bo	E	=	0.6	Painted in black on dark red background.
SN-321	21	Bo	E	=	1	Painted in black.
SN-322	22	Bo	E	=	1	Painted in black on dark red background.
SN-323	23	Bo	E	=	0.7	Painted in black on dark background.
SN-324	24	R	=	10	1.2	Perforation on rim.
SN-325	25	Bo	E	=	1.4	Nail impressed design, and also incised lines.

SN-326	26	=	=	1.2	0.7	Broken smoking pipe.
SN-327	27	Bo	=	=	0.6	=
SN-328	28	Ba	I	3	0.6	Glazed.
SN-329	29	=	=	=	1	broken terracotta handle, the surface is painted with black on the dark red background.
SN-330	30	=	=	=	1.3	Broken terracotta handle, the surface is painted with black on the dark red background.
SN-331	31	=	=	=	1.9	Terracotta tablet, having cloth impression from one side.
SN-332	32	=	=	=	1.3	Flint tool with maximum length 5.7 cm, and 4.3 width.
SN-333	33	=	=	=	1.5	Flint tool with maximum length 5 cm, and 3.8 cm width.
SN-334	34	=	=	=	0.8	Flint tool with maximum length 5.8 cm, and width 3.3cm.
SN-335	35	=	=	=	0.8	Flint tool (knife) with maximum length 5.6 cm, and 3 cm width.
SN-336	36	=	=	=	0.5	Flint blade with the length of 3.9 cm, and 2 cm width.
SN-337	37	=	=	=	0.9	Flint tool (arrowhead), with maximum length 3.8cm, and 2.8 width.
SN-338	38	=	=	=	0.5	Flint blade with a maximum length 3.1 cm, and 1.6 cm width.
SN-339	39	=	=	=	0.4	Flint blade with maximum length, 3.1 cm and 1.3 cm width.
SN-340	40	=	=	=	0.3	Flint blade with maximum length of 2.2 cm and width 1.3 cm.
SN-341	41	=	=	=	0.3	Flint blade, maximum length 2cm and 1.3 cm width.
SN-342	42	=	=	=	0.2	Flint blade with maximum length 1.6 cm, and 0.8 cm width.
SN-343	43	=	=	=	0.3	Flint tool trapeze, with maximum length 2 cm, and 1.3 cm width.

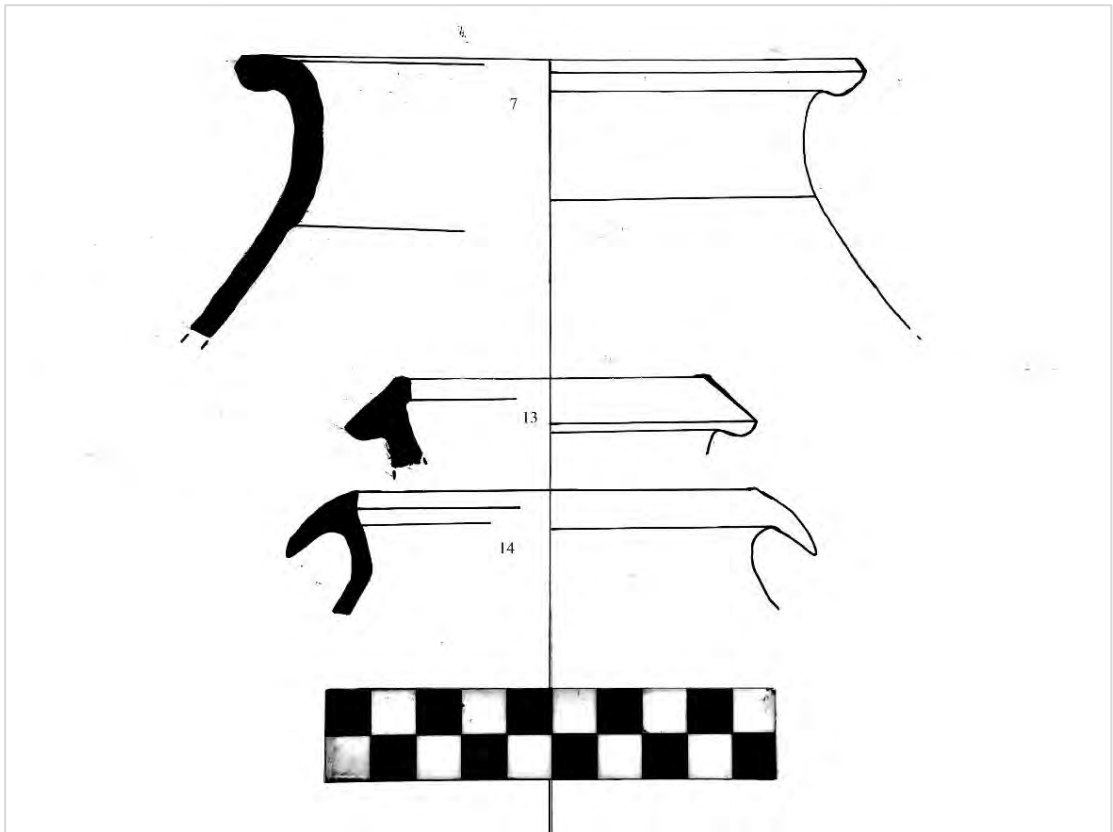


Plate 36 Drawings of the pottery sherds from SN

DRSM

Table 15 Site: TL

Cat No	Obj No	S. T. (R, Ba, Bo, N)	Depiction	Dia (cm)	B.W.T (CM)	Description
TL-344	1	R	E	=	0.9	Painted in black, Trihni ware.
TL-345	2	R	E, I	9	1.1	Painted in black.
TL-346	3	R	E, I	10	0.9	Potter's marks and painted in black.
TL-347	4	R	I	10	0.8	Three parallel incised/grooved lines.
TL-348	5	R	E, I	11	0.9	Dark red slip, grooved/incised lines, and potter's marks.
TL-349	6	R	I	8	1.2	Incised design, and black paint on rim's top.
TL-350	7	R	I	=	0.9	Potter's marks.
TL-351	8	R	I	13	0.8	Potter's marks.
TL-352	9	R	I	7	1	Potter's mark.
TL-353	10	=	=	16	1.5	Pottery mould.
TL-354	11	=	=	=	2.9	Pottery mould.
TL-355	12	=	=	=	2.2	Pottery mould.
TL-356	13	=	=	=	1.4	Pottery mould.
TL-357	14	=	=	=	1	Pottery mould.
TL-358	15	R	E	10	0.9	Painted in black, dark red, and willowish or white color.
TL-359	16	R	E	5	0.5	Painted in black, dark red, and willowish or white color.
TL-360	17	R	=	8	0.5	Weather effected.
TL-361	18	N	=	=	0.7	Weather effected.
TL-362	19	B	E	=	0.5	Painted in black.
TL-363	20	N	=	=	0.6	Weather effected.
TL-364	21	Ledge	E	=	0.9	Traces of black, and dark brown color.
TL-365	22	Bo	E	=	1	Black bands.
TL-366	23	Bo	E	=	0.4	Stamped, and painted in black
TL-367	24	Bo	E	=	0.6	Stamped, and black painted design.
TL-368	25	Bo	E	=	0.5	Stamped design.

TL-369	26	Bo	E	=	0.9	Stamped design and black bands.
TL-370	27	Bo	E	=	0.8	Stamped design and black bands.
TL-371	28	Bo	E	=	0.5	Stamped design and painted in black.
TL-372	29	Bo	E	=	1	Incised decorated circles, stamped?
TL-373	30	Bo	E	=	1	An incised decorated design.
TL-374	31	Bo	E	=	0.7	Stamped design.
TL-375	32	Bo	E	=	0.6	Stamped design.
TL-376	33	Bo	E	=	0.5	Stamped design.
TL-377	34	Bo	E	=	0.6	Stamped design.
TL-378	35	Bo	E	=	0.6	Stamped design and painted in black on dark red background.
TL-379	36	Bo	E	=	0.8	Painted in black on whitish background.
TL-380	37	Bo	E	=	0.7	Painted in black on red background.
TL-381	38	Bo	E	=	0.8	Painted in black on dark red background.
TL-382	39	Bo	E	=	0.6	Painted in black.
TL-383	40	Bo	E	=	0.5	Painted in black.
TL-384	41	Bo	E	=	0.5	Painted in black on dark red/ brown slip.
TL-385	42	Bo	E	=	0.7	Painted in black on dark red background.
TL-386	43	Bo	E	=	0.6	Painted in black on red slip.
TL-387	44	R	E, I		0.7	Painted in black on dark red slip.
TL-388	45	R	E, I		0.7	Painted in black.
TL-389	46	Bo	E	=	0.6	Painted in black on dark red background.
TL-390	47	=	=	=	0.4	Plain.
TL-391	48	N	=	=	0.6	Plain.
TL-392	49	=	=	=	0.9	Plain.

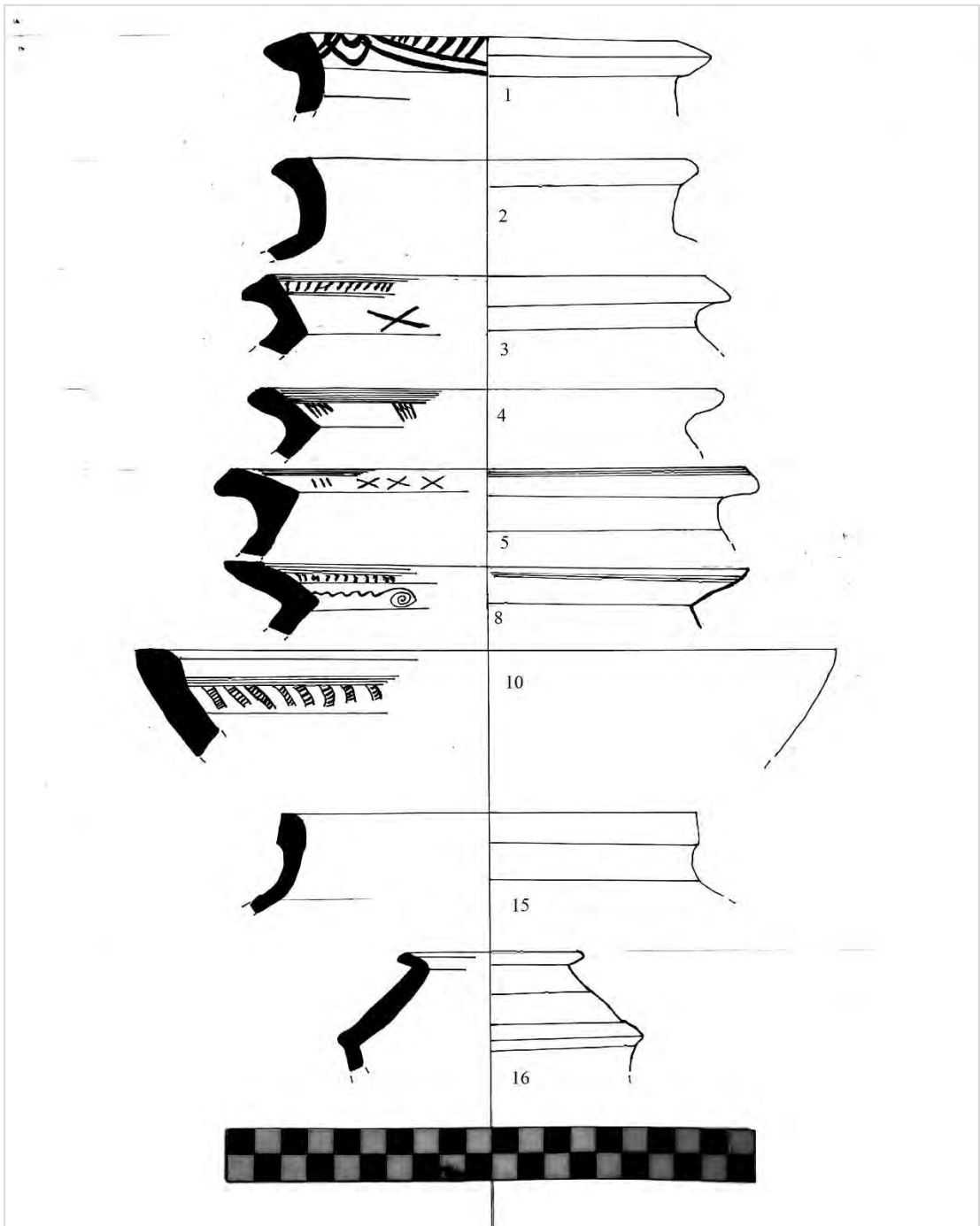


Plate 37 Drawings of the pottery sherds from TL

Table 16 Site: VAD

Cat No	Obj No	S. T. (R, Ba, Bo, N)	Depiction	Dia (cm)	B.W.T (CM)	Description
VAD-393	1	N	E	=	1.2	Painted in black on red slip.
VAD-394	2	Bo	E	=	0.7	Traces of dark slip.
VAD-395	3	R	E	=	0.5	Painted in black.
VAD-396	4	Bo	E	=	0.7	Painted in black.
VAD-397	5	Bo	E	=	0.5	Dark red slip and black bands.
VAD-398	6	Bo	=	=	0.7	Painted in black.
VAD-399	7	Bo	E	=	0.5	Painted in black.
VAD-400	8	=	=	=	1.2	Plain.
VAD-401	9	Bo	E	=	0.6	Stamped design.
VAD-402	10	Bo	E	=	0.5	Stamped design.
VAD-403	11	Bo	E	=	0.5	Stamped design.
VAD-404	12	Bo	E	=	0.8	Stamped design.
VAD-405	13	Bo	E	=	=	Painted in black on dark red slip or grayish.
VAD-406	14	Bo	E	=	0.5	Painted in black on red background. Ladder design.
VAD-407	15	Bo	E	=	0.6	Painted in black.

Chapter No. 5: References

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