

THE WATER RESOURCES
STRUCTURES ON THE SYRIAN AND
EGYPTIAN PILGRIM ROUTES TO
MAKKA AND MEDINAH

BY

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ABSTRACT

Al-Hajj in Arabic means the pilgrimage to MAKKA. This was an ancient rite which was recognised a long time before the rise of Islam. According to the holy Quran and Islamic tradition, Al-Hajj goes back to the time of the prophet Ibrahim. Thus MAKKA was a focus for worship but it was also a commercial centre and a way station/stopping place on the ancient trade caravan road between south western Arabia and Bilad Al-Sham, now Syria. In part the inhabitants of MAKKA practised this trade because their environment was not suitable for other alternative economic activities.

The importance of MAKKA, as a ritual place increased after the rise of Islam because it became Qibla-Kiblah - the direction to which muslims turn in praying towards Al-Ka'aba.

Yathrib - later to become Medinah - is the second holy city. In fact it was not a ritual place, but like MAKKA it was a stopping place on the ancient trade caravan road. The inhabitants of Medinah practised agriculture because their environment was more suitable than that at MAKKA; water was available and the land was fertile so that in addition to trade, they also practised agriculture.

The importance of Medinah as a holy place only developed after Al-Hijra - the immigration of the prophet Mohammad, peace be upon him, to it and his establishing of Islam at that site. Medinah became the capital of the Islamic state both religiously and politically. Islam then spread from Medinah over the Arabian Peninsular to the world beyond. The consequence of the conquest of Iraq, Bilad Al-Sham,

Egypt, the north coast of Africa and Persia was that the majority of the population of these countries accepted and adopted Islam as their religious faith. As a result of this the populations of these countries came annually to make Al-Hajj and in doing so developed several additional pilgrim caravan routes. However, it is the Syrian and Egyptian pilgrim routes - Tareeq Al-Hajj Al-Shami and Wal Masri - which are the objects of this work. In both these cases the pilgrim caravan routes were previously ancient trade caravan routes which travelled through Arabia, particularly through the western province of Al Hijaz.

The geographical location of Arabia, the cross roads of three continents, Asia, Africa, and Europe, made important the pre-Islamic routes which ran through it. Of course the function of this network at that time was commercial but after the rise of Islam the function of this network of routes became to transport the pilgrims. The geological and topographical features, as well as climatic conditions, in Arabia played a great role in determining the ancient routes in Arabia. The availability of water was a very important consideration on these routes and was influenced by environmental conditions. Since the rainfall is insufficient, the resulting absence or shortage of water on the pilgrim caravan routes made the caliphs pay great concern to providing the pilgrim routes with the most essential facilities, particularly water supplies and storage. Ever since the earliest Islamic times, they provided for the travellers Al birak, water tanks; Ahwadh - cisterns; Qanawat - channels; and abyar - wells, in order to

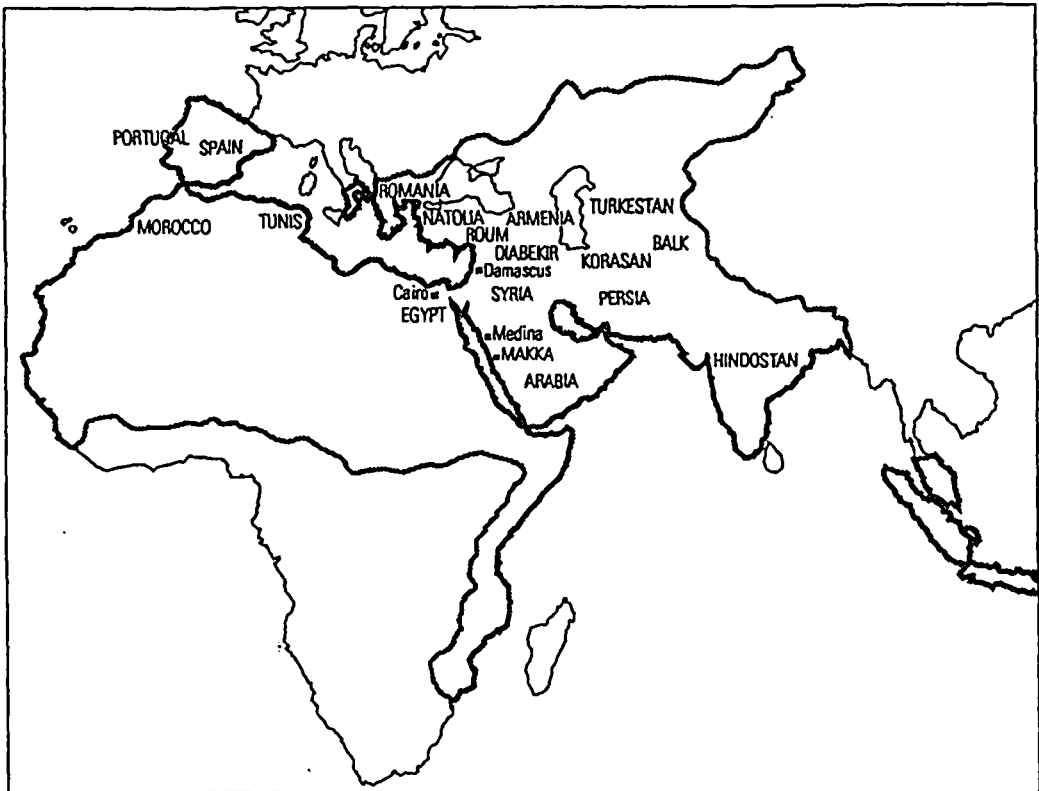
make Al-Hajj journey more comfortable. The pilgrim caravans in general, and the Syrian and Egyptian pilgrim caravan routes in particular, passed through several stages of development since their origin in early Islamic times and these evolutionary stages can be seen until the beginning of this century. Because the object of this thesis is to document the remains of the water resource structures, an extensive survey and investigation has been completed on the Syrian and Egyptian pilgrim caravan routes. The field work has been conducted in Saudi Arabia, particularly in the north western region where the Syrian and Egyptian pilgrim routes cross the country. The field work mainly aimed at ascertaining the location of all the way stations and their names and surveying each station in order to record the surviving remains of water resource structures. The field work covered a large area of about 8,000km transect and extended from MACCA in the south through Medinah to the North as far as Halat 'Ammar on the north at the border between Saudi Arabia and Jordan. From N.W. to S.W it stretched from Haql on the Gulf of Al-'Aqaba as far as MAKKA. These routes consist of the major, or principal caravan routes as well as a number of traverse routes which allow travellers a choice of transit as well as connecting routes. There are large way stations as well as small minor way stations. As part of this dissertation, almost all the stopping places have been identified and documented by mapping and photography.

GLOSSARY OF ARABIC TERMS

Ain (Pl. Uyun)	Spring
Al-Birkah (Pl. Al-Birak)	A water-tank
Al-Bir (Pl. Abyar)	A well with permanent water
Al-Hajj	The pilgrimage to MAKKA Al-Mukarramah
Al-Hijra	The immigration of the Prophet Mohammad, peace be upon him, from MAKKA to Medinah
Harrah (Pl. Harrat)	Lava field
Hawdh (Pl. Ahwadh)	A water cistern or basin
Hisu (Pl. Husyan)	A small well with shallow water
Jabal (Pl. Jebal)	Mountain
Jaddah	A path
Miqat	Rendezvous where the pilgrims start their rites of the pilgrimage
Qalah	Citadel or fortress
Qanat (Pl. Qanawat)	Channel or canal
Qasar	Palace or castle
Qiblah or Kiblah	The direction towards MAKKA (Al-Ka'aba) during prayer
Rukun	Pillar of Islam
Sabkhan (Pl. Sabkhat)	Marsh
Sumum	A very hot summer wind
Tareeq (Pl. Turuq)	Road or route
Thaniyah	Mountain trail
Tihamah	Low land along side the Red Sea

CHRONOLOGICAL CHART OF ARAB DYNASTIES

	<u>A.H.</u>	<u>A.D.</u>
Mohammad (Peace be upon him)	... - 11	570 - 632
Al-Kulafa Al-Rashidon (Orthodox Caliphs)	11 - 41	632 - 661
Umayyad Caliphs	41 - 132	661 - 750
Abbasid Caliphs	132 - 656	751 - 1258
Ayyubids	567 - 648	1171 - 1250
Mamluks	656 - 924	1258 - 1517
Ottoman Empire	918 - 1343	1299 - 1924



Map of the Islamic World 600-1800 (from Atlas Classica (1830)
see table p XXX.

The Principal MAHOMEDAN Sovereignties

Year	Region	Sovereignty	Notes
700		Caliphs of Cordova.	Caliphs of Africa
700		Caliphs of Cordova.	Caliphs of Egypt.
900		Several Kingdoms	Fatimite Caliphs and Sultans.
1100		Kings of Morocco.	Small Seljuk Sultans.
1300	WESTERN	Several Kingdoms	Small Mamlouk Sultans.
1400	WESTERN	and States	Ottoman Turks.
1600	WESTERN	Sheriffs of Morocco	Sultans of Constantinople.
1800	Portugal Spain Morocco Tunis Egypt Syria Roum Natolia Romania Arabia Diarbekir Armenia Persia Korasan Turkestan Balk Hindostan		

CHAPTER ONE

INTRODUCTION**1.1 Objectives**

Water is a religious and physical necessity to pilgrims travelling to MAKKA and Medinah to take part in Al-Hajj. Purification or bathing rituals are part of every pilgrims religions rites. Travelling across semi-desert, on foot, by camel or more recently by train or motorised transport the pilgrim needs regular supplies of water for drinking, cooking and washing.

The object of this thesis is to locate and make a preliminary survey of the water resource sites on two pilgrim routes. The Syrian and Egyptian pilgrim routes to MAKKA and Medinah must have been the most travelled, but there is no systematic archaeological record of these water resource sites. The aim of this thesis is to locate the sites and make a preliminary classification of the structures. To undertake this work a number of requirements can be identified:

- (1) to investigate the literature in order to identify likely stopping places on the pilgrim routes.
- (2) To characterise the geological and climatic variations in the Arabian Peninsula that might influence water resource availability and the choice, therefore, of pilgrim routes.
- (3) To consider historical circumstances that might further affect the choice and dominance of pilgrim routes identified in (1) above.

(4) To conduct a major field survey with the objective of identifying whether any remains of water resource structures exist at the stopping places identified earlier.

(5) Where remains exist, to measure the remains and to determine, as far as possible, their purpose. To provide this information in a suitable mapped and documented form, and thus to provide a major base line survey of water resource archaeology of the pilgrim routes.

(6) From this information to consider differences in water resource availability in different parts of the pilgrim routes and to consider the archaeological variations evident in both design and construction.

1.2 Background and refinement

This thesis is concerned with two particular pilgrim routes, those from Syria and Egypt. These routes are known collectively as Tareeq Al-Hajj Al Shami and Wal Masri; they traverse North West Arabia to the cities of MAKKA and Medinah. The early literature sources, particularly Islamic and Arabic geographers, travellers and historians, provide remarkable and significant sources of information. They identify clearly the main pilgrim routes and list both the major and minor caravan stations. They name and give the descriptive location for the way stations. However, the two pilgrim routes are in fact a mosaic of inter-connected routes and, as will be discovered later in this thesis, the way stations can not often be found at the sites described in early literature.

It is important at this stage to provide an outline of the

geological and climatic conditions in the Arabian Peninsula that might affect water resources and pilgrim routes. Generally speaking, geology and climate interact to control the availability of ground water. Ground water exerts one of the most fundamental influences on the development of Saudi Arabia. Climatic conditions are dominantly arid, rainfall is generally insufficient to create perennial streams such as rivers or lakes. However, in place of the perennial streams, there are various wadis throughout Arabia that flow during the rainy season but often mark the sites of abundant ground water or, because of their relief, provide access to ground water. It is this resource which is the main provider of water for irrigation and domestic use. Because of the dominance of ground waters the two principal water resource structures are dug wells, abyar and springs, uyun.

The importance of water resources is reflected in religious writings. Water resource management is accorded a high importance in the holy Quran, where it states

"we made from water every living thing". (Ali, N.D. Sura XXI verse 30)

At several points in the Quran, verses mention the importance of water for life and this reflects the reality in the region where since early times and at various stages in history, the harsh climatic and physical conditions of the Arabian Peninsula have presented difficulties for the development of transport. Water played, and indeed still plays, a significant role in determining ancient route ways,

such that most of the ancient traffic in Arabia always passes through regions where water is available.

Water resources cannot be considered in isolation from the significance of MAKKA and Medinah, both pre-Islam and after the rise of Islam in the seventh century. MAKKA is a site of antiquity and of ritual significance. Large numbers of people travel from outside Arabia to pay respect at Al-Ka'aba, but MAKKA has importance not only as a shrine but also as a commercial centre and way station on the ancient trade caravan routes between the south western Arabia - the Yemen - and Bilad Al-Sham (modern Syria). Such trade routes as distinct from pilgrim routes are mentioned clearly in the holy Quran, in Sura, Quraish CVI where two trade routes are described, one used in winter and one used in summer. It is important to appreciate the historical background to these ancient trade routes in order that their influence on the pilgrim routes that developed later can be fully understood. In pre-Islamic times the functions of the trade caravan traffic was to transport commodities. After the rise of Islam, a second and perhaps more dominant function rose, that of transporting the pilgrims from their countries to the holy cities of MAKKA and Medinah. While the ancient trade caravan traffic occurred throughout the year, the pilgrim caravans operate only at certain specific periods. This concentration of people and beasts in a specific time of the year of course puts much greater strain on water resource availability.

"In order to trace the history of the pilgrimange to

MAKKA one has to go back long before the beginning of Islam. The pre-Islamic Arabs performed "Al-Hajj" to MAKKA, revered Al-Ka'aba and observed the holiness of MAKKA by abandoning their tribal feuds within its boundary long before Islam." (El-Hamdan, 1976, p. 88)

Al-Hajj, the pilgrimage, is an ancient rite which was well-documented in Arabia prior to the rise of Islam. It dates from the time of the Prophet Ibrahim (Abraham) and the Quran relates the story of the building of Al-Ka'aba by Ibrahim and his son Ismael. (Badawi, 1978, p. 15) Implicit in the call to pilgrimage is the recognition of the hardship of the journeys along the pilgrim routes:

"and proclaim the pilgrimage among men; they will come to thee on foot and (mounted) on every type of camel, lean on account of journeys through deep and distant mountain highways". (Ali, N.D. Sura XXII verse 27)

The pilgrimage to MAKKA did not become obligatory until the rise of Islam. Al-Hajj is the fifth and last Rukun (pillar of Islam) and most reliable sources identify the time at which Al-Hajj became mandatory as the ninth year of the Al-Hijra. (Badawi, 1978 pp. 16, 17) Every Muslim must perform pilgrimage to MAKKA once in their life time if he or she is able, physically and financially. MAKKA then, became a focus for a new religion, "Islam", and from MAKKA and Medinah, Islam spread over the Arabian peninsula and, initially, throughout the Middle East. The relatively populous countries of Iraq, Syria, Egypt, and Persia

increased Muslim numbers and with that came the increase in numbers making pilgrimage. The routes carrying these people were the subject of particular attention by the Caliphs, who provided the routes with many of the necessary facilities, particularly water.

In early Islamic times the number of pilgrims was not great and so the demands for water for both the pilgrims and their animals was limited. At that time water could be provided mainly from dug wells (abyar) or from natural springs which were available for some of the year on the caravan routes. As the number of pilgrims from Syria and Egypt increased, the demand for water also increased and under these circumstances wells and springs became insufficient to meet the concentrated demand. The pilgrim difficulties spurred the Caliphs to seek more sophisticated water resources and since relatively early Islamic times a solution has been sought by either digging more wells or building water tanks (birak) or by constructing cisterns (ahwadh). These had the effect of spreading the demand for water across a larger period of water resource collection time.

Although the number of pilgrims from Syria and Egypt fluctuated according to political and military circumstances, the general growth of numbers of pilgrims was tremendous, and despite the early civil engineering works of the caliphs, many travellers faced shortage of water and death from thirst.

Since the object of this thesis is to document water resource structures, a full survey of all of the documented

way stations was made during field work. From the survey, it is clear that on the Syrian and Egyptian pilgrim routes, not all of the halting places have water resource structures. In many cases it was clear that the sites named from the early literature did not equate with the current communities and a significant amount of time was spent interviewing local inhabitants to determine likely nearby sites for further investigation. A large variety of water resource structures have been observed and recorded and these include dug wells, protected springs, channels (qanawat), cisterns and tanks. Where these structures have been identified, they have been documented by measurement, by mapping, and by still and video photography. There are general similarities in architectural style and design of structures between the pilgrim routes from Syria and from Egypt. In general these are built of locally available material, usually stones plastered with gypsum. However there are significant differences in both the size and the shape of the water resource structures. Shape differences perhaps relate to local topography, whereas size is more likely to be a reflection of the climatic variability at that site or the demand for water resources exerted at that site by the pilgrims. The archaeological evidence indicates that the majority of the structures date from Islamic times but some sites are pre-Islamic.

However in historical times

"the annual pilgrimage to MAKKA, although obviously of primarily religious significance, is

a most interesting geographical phenomenon"

(King, Vol. 26, 1977, p. 62)

there appears to be little work which has dealt with the subject of water resources. There is one exception, however, which is the unpublished work on Darb Zubaydah by Dr. Saad Al-Rashid which focused particularly on water resource structures at this route. Al-Rashid, Darb Zubaydah, The pilgrim Road from Kufa to MAKKA 1980 Riyad University)

1.3 Thesis Outline

This thesis is presented in eight chapters. This first chapter was intended to define clearly the objectives of the thesis, to give some background concerning the significance of MAKKA and the pilgrim routes and finally to outline the structure of this thesis. The second chapter develops this theme and deals in some detail with the historical background of MAKKA and Medinah and their importance both prior to Islam and subsequent to the rise of Islam. Here attention is given to the historical record concerning the ancient trade caravan routes in order that the reader can have a clear picture of the role of these ancient routes in determining the pilgrim caravan routes which are the subject of this thesis. An attempt is made in this chapter to identify the stages in the development of the pilgrim routes from early times to the beginning of the twentieth century. The third chapter places the Arabian Peninsula in context and gives particular emphasis to the geological and physical

factors that would influence pilgrim routes. Clearly here climatic conditions and their documentation is of prime importance. Chapter four documents the field work conducted in Saudi Arabia and identifies the methods used, the routes surveyed, the problems encountered and the inadequacies of the work. Chapter five presents the results of this route survey. The sixth chapter presents an analysis of the water resources found. In this chapter the distribution and estimated capacities are identified. Attention is given to the likely processes through which water resources were collected and distributed. The materials of construction, engineering innovations and likely limitations are identified. In the penultimate chapter, chapter seven, an archaeological interpretation is made dealing with the dating of the water resource structures and the problems of that dating. Here we also identify suggestions for future work, specifically the sites at which future work would be profitable. Comment is made on the likely origins of the constructions, in particular, which caliphs were involved and why they became involved in the constructions. The final chapter presents conclusions, criticisms and views on remaining work.

CHAPTER TWO

The Holy cities MAKKA, Medinah and the Pilgrim Routes

The purpose of this chapter is to discuss the historical background of MAKKA and Medinah and to give an account of their geographical setting, climate and water resources. The second part of the chapter discusses the development of the pilgrimage routes in general, and the Syrian and Egyptian pilgrimage routes in particular.

HISTORICAL BACKGROUND: MAKKA

2.1 Despite shedding light on the history of MAKKA historians and the scholars of Islam have differed in their opinion about the origins of MAKKA's name and its emergence particularly in the pre-Islamic period.

Trying to trace the origins of MAKKA's name and its existence appears to be a complicated question and a solution was not very obvious. Its origins probably lie many years in the past. It is certain that even before MAKKA was built the valley in which it stands must have been used as a resting place on the caravan routes. (Haykal, 1976, p.22)

Despite the differences in opinion about the origins of MAKKA's name and its history, there is no doubt that MAKKA was an ancient town and its history goes back to the patriarch Ibrahim's (Abraham) time or probably earlier. MAKKA was mentioned in several significant sources which provide information about its growth and importance.

The Torah, Old Testament, and Holy Quran all mentioned

MAKKA. Arabic tradition, legends and poetry are important resources which give information about the historical record of MAKKA. Ancient Greek and Roman sources also mentioned MAKKA, particularly, Ptolemy. Certainly it is older than this second century geographer. (Ali 1973, Vol. 4, pp. 5-18)

2.1.1 Names of MAKKA

The most accepted point of view is that MAKKA's name is either Assyrian or Babylonian, because MAKKA in Babylonian language means the house, and that is the name of Al-Ka'aba among the Arabs. This indicates the age of the city, and probably the first residents there were Amaliqa who were succeeded by the Jurham (Zaydan N.D. p. 275). MAKKA has several names, the common are the following: Bakka, MAKKA, the holy house, the ancient house, the holy mosque and Umm Al-Qura. (Ba-Salamah, 1982, p. 11).

2.1.2 Zamzam's well and the growth of MAKKA

According to the Torat and the holy Quran, Allah "God" commanded Ibrahim, to leave Palestine and go to an uncultivated and isolated valley in the Arabian Peninsula where the site of Al-Ka'aba is situated. Ibrahim obeyed and took his wife, Hajar, and their infant son Ismael. Allah, instructed Ibrahim about the route and the place where he should live with his family. Ibrahim left his wife and their infant son without food and with only a little water. When Hajar saw her husband leaving to return to Bilad Al-

Sham - Syria, she asked him saying "to whom are you going to leave us?" Ibrahim replied "I am going to leave you to Allah". She then said "I have accepted." ('Attar, 1977, p. 15). Ibrahim said "O our Lord I have made some of my offsprings to dwell in a valley without cultivation by the sacred House, in order, O our Lord, that they may establish regular prayer, so fill the hearts of some among men with love towards them, and feed them with fruits; so that they may give thanks". (Ali, N.D. Sura, XIV verse 37)

When the water was exhausted and Hajar no longer had milk to feed her infant son, he began suffering from thirst and hunger. The infant started crying and Hajar could not bear it. She left her infant and went to look for water and to avoid seeing her infant dying. Unfortunately, she did not find water and when she returned to him she heard a voice as the Angel Gabriel called her to follow him to a place where the well of Zamzam was sited. He then hit the ground with his foot and water flowed onto the surface of the earth. Hajar then became very pleased and happy, she drank and fed her infant (Al-Azraqi, ND Vol. 1, p.55)

Since that time this source has been known as the well of Zamzam.

"The settlement of MAKKA grew up round a well of brackish water, later known as the famous Zamzam; an annual fair was held there and the pagans regarded it as a place of yearly pilgrimage, for the duty of pilgrimage was apparently one of their religious ideas" (Kiernan, 1937, p. 38).

The valley was a stopping place for the trade caravans between the Yemen to the south and Bilad Al-Sham to the north. It was barren land with no permanent occupants.

Because of the value of water in a desert region and because the valley lies on the caravan route the travellers who saw the water were astonished because they frequently passed through this valley and they knew that this valley lacked water.

"When they saw flocks of birds circling over it, they concluded that there must be water. Some of their men made into the valley to explore it and found a lonely woman with a child sitting by the rim of an abundant well". (Asad, 1954, p. 355).

So they asked Hajar to share the water and allow them to settle there. She agreed and from then on the valley became a dwelling place. Consequently the well of Zamzam was an essential factor in attracting a settled population to this valley.

Since water in desert regions is very valuable, when it is available life begins to flourish and people start to establish permanent settlements around the water resources. (Shalabi, 1978 p. 112) This happened in the case of MAKKA; it was built around the well of Zamzam, grew, extended and became permanent.

"After the well of Zamzam was miraculously created and before Ibrahim began to build Al-Ka'aba, the Arab tribe of Beni Djorham - Jurham - a branch of Al-Amalekites, settled here, with the permission of Ismael and his mother, with

whom they lived. Ismael then married within the Jurham tribe. After Ismael's death they usurped the possessions both of the well and Al-Ka'aba". (Burckhardt, 1968, p. 163)

2.1.3 Early dwellers in MAKKA

According to Muslim belief, Ismael and his mother Hajar were the first settlers to live in the sacred valley. Afterwards, different Arabic tribes kept possession of Al-Ka'aba and its area. The tribe of Jurham took over the possession of Al-Ka'aba from Ismael's sons. After that the Khuzaah tribe seized possession. Subsequently, Qusayy Ibn Kilab whose tribe is Quraish took the authority of Al-Ka'aba and all its affairs. Qusayy became the leader responsible for Al-Ka'aba and everything associated with the pilgrimage and the pilgrims such as providing them with water and food as well as security. Al-Azraqi (N.D., Vol. 1 pp. 80-112) encouraged his tribe Quraish to build their houses around Al-Ka'aba. (Ba Salamah, 1980, p. 6)

In the time of Qusayy Ibn Kilab (fifth to sixth century A.D.) permanent dwelling houses were first built in the valley of MAKKA, though the majority of the dwellings remained houses or tents of hair-cloth. Quraish, after the death of Qusayy, improved and enlarged the town, and continued to encourage the pagan pilgrimage" (Rutter 1928, Vol. 1, p.119)

According to the Holy Quran Al-Ka'aba was the first sacred house set up for all men on earth. In terms of housing Al-Ka'aba was not the first house to be built on the earth, but

Al-Ka'aba was in fact the first house built on the earth for religious worship.

"The first house (of worship) appointed for men was that at Bakka; full of blessing and guidance. For all kinds of being" (Ali, N.D. Sura III, verse 96)

It is suggested that Allah ordered Ibrahim to erect the bases of the shrine upon foundations which already existed. The relevant verse in the Holy Quran runs as follows.

"And remember Abraham and Ismael raised the foundations of the House (with this prayer). "Our Lord! Accept (this service) from us; for thou art the All Hearing, The All Knowing..." (Ali, N.D. Sura II, verse 127)

There is agreement between the Islamic traditions and historians that Al-Ka'aba existed before Ibrahim's time.

2.1.4 Historical reconstruction of Al-Ka'aba

Al-Ka'aba was reputedly rebuilt ten times during its history.

The first time it was built by the angels, the second was by Adam, the third was by his son Shith, the fourth was by Ibrahim, the fifth by Al-'Amalekites (Arabic tribe), the sixth was by the Jurhan (another Arabic tribe) the seventh by Qusayy Ibn Kilab, the eighth was Quraish, the ninth by Abdullah Ibn Al-Zubir and the tenth by Al-Hajjaj Ibn Yusuf Al-Thaqafi. (Al-Nahrawaly, N.D. p. 23)

However after Ibrahim and his son Ismael built Al-Ka'aba the shrine, Allah commanded Ibrahim to call men around the whole world to make Al-Hajj, pilgrimage, to MAKKA; (Ibn Al-Athir

1348 A.H. pp. 60-61) Allah told Ibrahim that the pilgrims will come from far off and from many directions on foot or camels.

"And proclaim the pilgrimage among men; they will come to thee on foot and (mounted) on every kind of camel, lean on account of journeys through deep and distant mountain highways" (Ali, N.D. Sura XXII verse 27).

Most of the Islamic traditions and the historical sources indicate that Al-Hajj pilgrimage to MAKKA was practised before the rising of Islam but was not compulsory. The pilgrimage to this holy shrine, which the pagan Arabs had instituted was then continued by Islam fourteen hundred years ago; Allah required Al-Hajj for all Muslims and Al-Hajj to MAKKA became obligatory. Every Muslim whether male or female, if fit and able must make Al-Hajj once during his or her lifetime so long as he or she is able to afford the costs of the journey.

"Pilgrimage thereto is a duty

Men owe to God.

Those who afford

The journey" (Ali, N.D. Sura III verse 97)

2.1.5 Al-Ka'aba during pre-Islamic times

According to Islamic traditions, old Arabic poetry and Arabic legends Al-Ka'aba was sacred and respected by most if not all the Arabic tribes, whether they were living nearby or far from MAKKA area and whatever their faith. They sanctify Al-Kaaba and make Al-Hajj to it circumambulating

around it, they also offered sacrifices to Al-Kaaba.

"Muslim historians tend to believe that before Islamic religion was established, MAKKA was the focal point for all the Arab tribes who used to come every year to visit the sacred house and to attend the yearly poetry convention. MAKKA gained spiritual importance during the period of the prophet Mohammad - peace be upon him - and has continued to grow. According to Muslim belief, the Lord (Allah) has provided MAKKA with a reason for growth and development as millions of Muslims continue to come for the pilgrimage" (Makky 1978, p.23)

"MAKKA was not merely a commercial centre but the centre of an idolatrous cult widespread throughout Arabia. Pilgrims flocked to the city to visit the celebrated temple known as Al-Ka'aba" (Wavell, 1918, p.9)

In addition to visit and make Al-Hajj they bring goods and merchandise to sell or barter for products not available in their own regions.

The sanctification of Al-Ka'aba extended to include all the region around MAKKA.

However, Arabs were not the only people who held Al-Ka'aba holy, there were some other nations who sanctify it such as India and Persia. Some pilgrims come only for pilgrimage but others come to make Al-Hajj and meanwhile to trade because the season of the Al-Hajj provide good trade as a lot of pilgrims from different areas assemble in MAKKA. (Al

Khurbutly, 1976, p. 26, 27)

"A religious sanctuary, whose shrine, Al-Ka'aba, attracted pilgrims from all over Arabia, MAKKA became the repository of the various idols and tribal goods of the peninsula, and the destination of annual pilgrimage. The pilgrimage also entailed a period of truce, which served not only for religious worship, but also for the arbitration of dispute, the settlement of claims and debts, and, of course, trade" (Lapidus 1988, p. 16).

2.1.6 The Importance of Trade

MAKKA, was a stopping place for the trade caravan routes between areas south of Arabia and Bilad Al-Sham and mediterranean countries. After Al-Ka'aba was built the importance of MAKKA increased as a spiritual place as well as a commercial centre. So Al-Ka'aba was and still is the most important factor to which MAKKA owes its growth. MAKKA was never a source of material wealth but started as a centre for religious and spiritual teachings. (Makky 1978, p.23)

The inhabitants of MAKKA adapted to their environmental circumstances and worked in trade, either as merchants or brokers.

Consequently a number of markets existed around MAKKA on the trade caravan routes. These markets played an important role as commercial centres where the pilgrims and merchants gathered and displayed their merchandise, either for selling or bartering.

"At a certain time every year there was a sort of fair there to which merchants brought their wares" (Wavell, 1918, p. 10)

Also these markets served as rest and provision stations for the caravans. According to ancient Arabic poetry and legends some of them disappeared, but some continued to retain their importance until early Islamic times. These commercial markets also served as cultural centres where the poets and orators from different tribes competed.

The well-known trade markets were Suq 'Aukad, Thi Al-MAJAZ and Mejana, - Suq in Arabic means market. (Al-Fasi, N.D. Vol. 2 pp. 282-85)

"MAKKA, Mohammad's home for half a century, was entirely a commercial city, set amidst barren rocks. The growth of the city as a trading centre came about through the existence there of a harem or sanctuary area, so men could come without fear of molestation. Geographical conditions were also in its favour; it stood at the cross-roads of routes from the Yemen to Syria and from Abyssinia to Iraq" (Watt 1953, pp 2, 3).

2.1.7 MAKKA as a trading centre

Therefore MAKKA was a sacred place, a central market where the pilgrims and the traders gathered annually, and a centre for literature and poetry. In some cases the geographical location determined the economic activities in which the inhabitants were involved. This certainly applied in the case of MAKKA.

"The situation of MAKKA was advantageous for trade; an important route led northwards to Syria (Gaza and Damascus); North-eastwards through a gap in the mountain chain of the Sarat to 'Iraq; southwards to the Yemen and westwards to the Red Sea, where there were sailing boats from Shuayba (and later from Djudda) to Abyssinia and other places". (Bosworth, Donzel and others, 1991, Vol. VI, p. 144)

" One route from southwestern Arabia towards Syria runs through Al-Hijaz with stops at MAKKA and Medinah, to Trans Jordan and Palestine. A western branch led to the Mediterranean, an eastern one to Damascus, Hams, Hama, and Aleppo. Another, chiefly concerned with Indian trade, went through the Persian Gulf, up the Euphrates, then westward through Syria to the Mediterranean". (Garraty & Gay, 1985, p. 256)

MAKKA was then an important network junction where traffic between the south of Arabia and Bilad Al-Sham met that between west and east Arabia.

"The principal town in the sixth century A.D. was MAKKA, where the road to the Mediterranean branched from another leading to Mesopotamia and the Persian Gulf; it had an important pagan cult centring round a meteoric black stone built into a sanctuary called Al-Ka'aba; and it was in this environment, culturally outlandish but impregnated by its commercial contacts with the higher civilization of the Fertile Crescent,

that the Prophet Mohammad was born in 570" (Kirk, 1948, p. 12)

According to the Holy Quran, old Arabic poetry and the legends Quraish tribe who lived in MAKKA practised the trade particularly between Syrian on the north and the Yemen on the south. In the summer when the weather was presumed to be tolerable in Bilad Al-Sham they went there, while in the winter when the weather was assumed to be cooler in the Yemen they traded there.

The caravan city of MAKKA probably the "Makorba" mentioned in the writings of the second century geographer, Ptolemy, had long been an important commercial centre". (Ruthven, 1984, P. 49)

Although Quraishis certainly practised their trade there is no exact information about when they started trading. Some scholars say that Quraishis started their commercial activities during the time of Qusayy (fifth - sixth century A.D.), grandfather of Quraish, others say it started during Hashim's time when trading contracts and treaties were made with other nations (Ali, 1973: Vol. 4, p. 20).

The commodities which the Quraish traded were both local and exotic. The Quraishis acted as traders, middle men and retailers.

"Quraishis were not mere caravaners or camel drivers but were also men of business. They met the ships from India and Africa in the harbours of South Arabia, bought the merchandise, transported it to Syria and sold it at large profit. With the proceeds they bought

the products of Egypt and Syria and sold them in MAKKA and in the other oases of Arabia". (Glubb, 1979, p. 26)

Conclusion

The principal factors which made MAKKA an important commercial centre and made the Makkians (Quraishis) successful merchants include:

- 1 The presence of Al-Ka'aba, whether that was pre-Islam or after the rise of Islam, to which many pilgrims come every year. They come for Al-Hajj as well as for trading.
- 2 Its location centrally placed between Syria on the north and the Yemen on the south, as well as on other routes between east and west made it a favourable halting place.
- 3 The environmental conditions. This factor in my opinion was essential. The site of MAKKA at a barren wadi which lacked permanent water resources such as rivers or springs and with insufficient rain causes agricultural activities to be unsuitable. The inhabitants therefore had to look for other economic activity as a means of earning a living.

MAKKA prospered and flourished as a trading market and the inhabitants became wealthy and rich in contrast to other Arabs.

"According to one exegete, it was on the rise of Islam that the international trade of the Makkians came to an end when the Arabs began to come on pilgrimage to MAKKA

and in delegation to the prophet in Medinah. (Crone, 1987, p 111) "while the commerce gave MAKKA material prosperity, Al-Ka'aba gave it influence and power over the whole of Arabia" (Husaini, 1961, p. 9)

MAKKA

2.2 Geographical description MAKKA Al-Moharamah

MAKKA lies 277m above sea level in the western province of Al-Hijaz, about 75Km east of the seaport of Jeddah on the Red Sea, and about 400Km south of Medinah on about 21° 20'N and about 39° 50'E. (Al Sagoff 1967/1387 A.H.). Figure 2.1a

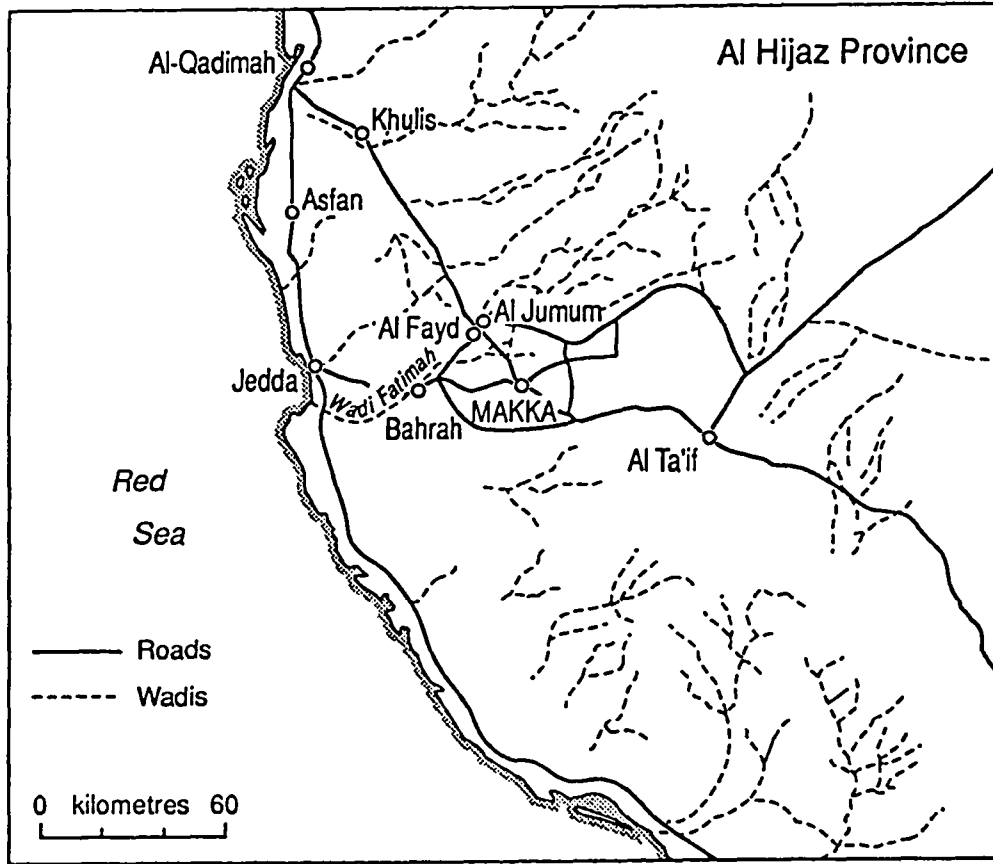
2.2.1 The importance of MAKKA and its physical geography

MAKKA is the spiritual capital of the Kingdom of Saudi Arabia as well as the capital of the Islamic world, because of the presence of the holy house and Al-Ka'aba. It is also Qiblah (the direction) to which all Muslims around the world turn five times daily in praying towards Al-Ka'aba which stands within the great holy mosque. MAKKA is the principal city of Al-Hijaz province and is located at the bottom of a narrow, deep sacred valley.

"The location of the city is unfortunate. It lies in a hot sandy valley absolutely without verdure and surrounded by rock and barren hills, destitute of trees or even shrubs" (Zwemer N.D. p.34).

"The valley of MAKKA runs from north to south and that part of it in which lies the main bulk of the city forms a sort of basin half a mile wide throughout its

Figure 2.1: Map of MAKKA



length. The length of this part of the wadi is some two miles that is from northern extremity of what is now the cemetery Elmaala. The basin of MAKKA, two miles long by half a mile broad is enclosed by a high wall like hill of rock" (Rutter 1928, Vol. 1, p. 115). The most notable mountains are Jabal ahu Qubays at 372m a.s.l. (Jabal in Arabic means mount and the plural is Jebal - mountains) which lie east of the Mosque and Jabal Quaiqian (427m a.s.l.) which lies on the west of the Mosque. (Farsi, 1982: p. 62). Other mountains stand at quite a distance from the holy mosque, but are within the MAKKA area. The distance between these mountains and the holy mosque ranges from 15km to 20 km. These mountains include Jabal Al-Nor, Jabal Thur and Jabal 'Arafat (Kahalah 1964, pp. 154-156) All these mountains are part of Jebal Al-Sarawat or Jebal Al-Hijaz which extends from south to north along the eastern coast of the Red Sea. These mountains have some distinctive features; they are volcanic, sloping, solid and above all, they are waste, barren and uncultivated. Because MAKKA is located at a barren waste wadi as stated in the Holy Quran it relies on adjacent areas such as Al-Taif and wadi Fatimah to supply it with agricultural products particularly vegetables and fruit.

2.2.2 Al-Taif and Wadi Fatimah

(i) Al-Taif is itself an ancient town and was in competition with MAKKA before the rising of Islam (Haykal, 1952, p.330 and Ali, 1973, Vol. 4, p. 153).

"Al-Taif perched on a mount 75 miles southeast of MAKKA and 5,800 feet above the sea (4,800 above MAKKA). Its soil was fertile, its water abundant, and its climate relatively salubrious" (Hitti 1973, p. 17)

It is an important source of vegetables and fruit particularly grapes, figs, pomegranates and opuntia. Al-Taif's pomegranates and opuntia are well known all over Arabia. The vegetables include, beans, peas, tomatoes, cucumbers, onions and pumpkins. Al-Taif continues to supply MAKKA with its agricultural products. (Basha 1983 Vol. 1, pp. 184-86). Al-Taif is also considered a major resort. The Makkians used to leave MAKKA in the hot summers to stay at Al-Taif in order to avoid the blazing sun. Nowadays, Al-Taif has become a big city and the main summer resort and summer capital of the Kingdom of Saudi Arabia to which Cabinet ministers and most members of the government move to avoid the summer heat of Riyadh.

(ii) Wadi Fatimah, MARR Al-ZAHRAN, is located at about 25km north of MAKKA (Basha 1926 Vol. 2, p. 199). It is considered as the first station from MAKKA; it is about one day's journey on the Egyptian and Syrian pilgrim route. It is a fertile wadi and has abundant water sources particularly wells and springs. In consequence of that wadi Fatimah abounds with farming communities. These farmers cultivate plenty of vegetables and fruits. The vegetables include beans, peas, tomatoes, onions and pumpkins, the fruits include lemons, watermelons and dates, and in addition grain: wheat, barley and pearl millet. From wadi

Fatimah fruits and vegetables are brought to MAKKA.

2.2.3 Climate

Generally speaking, the climate in MAKKA is hot and dry in summer; with mild nights; winter is warm. Climatic data are available only for a short period of record from 1980-1989. Temperature may reach 47°C in August, while in winter, January, it falls to 15°C. There are only two obvious seasons, winter is the only season in which MAKKA receives rain. (Kahalalah, 1964, p. 158, 159). Rain may fall within a short period of time and this produces flooding and torrential streams which cause damage within the town and the holy mosque. However, it is not unusual for two or three years to pass without any rain.

"Rain falls rarely, but it is tropical in its violence, and does considerable damage to the town" (Hogarth 1917, p. 32)

The climate data indicated that Mean maximum temperature is 42°C and minimum is 32°C (in August) while in winter the Mean maximum temperature is 30°C and the minimum is 16°C (in January).

The dominant winds, in summer are the north-western and north-eastern trade winds and both of these are dry because they pass over the Arabian desert. In the winter the dominant winds are the north eastern trade winds and the north western winds and both of them are preferable for the inhabitants of MAKKA because the former are cold and latter are usually wet because they come from the Mediterranean and Red Sea.

2.2.4 Water Resources

As a consequence of the circumstances outlined above, the inhabitants of MAKKA always suffered from a shortage of water. However, the residents always tried to adapt to these difficult conditions by obtaining their water from wells which they dug inside the town and from the well of Zamzam "Zamzam well is located at Al-Haram Al-Makky, 20 metres east of Al-Ka'aba Al-Musharrafah" (Ministry of Agriculture and Water, 1984, p. 111) or from the wells mainly dug outside of MAKKA.

The function of these cisterns is either to fill with water from the rain or to fill with water from the wells, particularly during Al-Hajj seasons. The population was, therefore, dependent fundamentally on ground water.

In pre-Islamic times the Quraishis held the position in MAKKA as custodians of Al-Ka'aba. One of their jobs was 'Al-Siqayah' which means watering, traditionally providing water for MAKKA pilgrims. They realized that the available water was not sufficient to meet the pilgrims' requirements and they devoted themselves to make more water available. They dug further wells in and around MAKKA.

At that time the well of Zamzam was subterranean. Abdul Mutalib, the grandfather of the prophet Mohammad peace be upon him, dug the well of Zamzam and it became the principal water resource for the pilgrims as well as for the local people. (Al-Azraqi N.D. Vol. 2, pp. 42-49)

Because of the shortage of water supply in MAKKA particularly during the pilgrimage seasons and in order to

make water more available, the caliphs from the early Islamic times tried to help the pilgrims overcome the shortage of water by digging wells.

When Zubaydah, the wife of the caliph Al-Abbassi Harun Al-Rashid, made Al-Hajj she recognised that the pilgrims as well as the population were suffering from a shortage of water. She ordered water to be brought to MAKKA from 'Ain - spring or fountainhead of water which is located at wadi Al-Numan about 40km from MAKKA towards the south on the road of Al-Taif. That spring later became known as 'Ain Zubaydah.

In the past the water of Ain Zubaydah reaches MAKKA and its precincts by underground conduits which were connected to cisterns placed in the streets for domestic use.

However, in recent times the Saudi government has realised that the number of the pilgrims has increased annually, as a result of improved transport - and the consumption of water has also increased.

"During the pilgrimage, the problems of water supply become very severe" (Makky, 1978, p. 39)

2.3 General Historical Background: Medinah

The second major commercial centre was Yathrib later Medinah which contrasted with MAKKA in terms of the trading. Yathrib was not as important as MAKKA particularly during pre-Islamic time. Their land was very suitable for cultivation and the residents of Yathrib practised agriculture.

However, Yathrib was an important commercial centre and its

inhabitants, especially the Jews, practised trading whether both locally within the Yathrib area or outside Arabia (particularly Syria).

Medinah became famous and increased in importance after the migration of the prophet Mohammad, peace be upon him, to it from MAKKA. As a result of this migration the city has remained important and holy throughout the expansion of Islam. Like most Arabian towns there is little precise information about the history of Medinah. There was no written record about its history, which could be relied on particularly in pre-Islamic times and there have been no archaeological excavations which could give evidence about Medinah's history (Al-Sharif, 1965 p. 314). Unless archaeological excavations are made, one could only rely on some historical sources which mention Yathrib. Abdulqadus Al-Ansari in his book entitled "Athar Al-Medinah Al-Munawarah says that "an accidental archaeological excavation happened in Medinah indicated that Medinah has been established above the ancient ruin of another town" (Al-Ansari 1935, pp. 122-124)

Medinah was well known under the name of Yathrib in pre-Islamic times. The name of Yathrib was mentioned by several ancient historical sources. It is found in the Minoan inscriptions; it is also mentioned by the Byzantines as well as by Ptolemy. So that the history of Yathrib goes back probably before the christian era. (Ali, 1973, Vol. 4. p.128)

"South Arabians named it Yathrib. Pre-Islamic North

Arabians had no other name for it, Ptolemy's geography, written in the mid-second Christian century, makes the name Iathripa. Stephen of Byzantium (flourished first half of sixth century) uses the same form in his geographical dictionary, "Yathrib had no history" (Hitti 1973, p. 33)

It was also mentioned in old Arabic legends and poetry. The Holy Quran also mentions Yathrib and Medinah after the origin of Islam. "Medinah was an agricultural oasis, like MAKKA it was inhabited by various clans not by a single tribe" (Lapidus 1988, p. 26)

At any rate it was well-known among the Arabs that the first people who probably settled in Yathrib Al-'Amalekites were a group of Jews, and after that the Arabic tribes from the Yemen Al-Aws and Al-Khazrai.

The Aws and Khazrai tribes settled in Yathrib, alongside the Jewish tribes of Beni Nadir and Beni Kurayza." (Esin, 1963, p. 37)

Yathrib in the beginning was a group of huts and simple primitive houses which were built from local materials, particularly trunks, stems and leaves of palm trees. These agricultural settlements were spreading here and there without systematic order, surrounded by farms and field gardens. (Mostafa, 1981, p. 10)

The abundance of water and the fertility of the soil in Yathrib made the inhabitants practise agriculture and grow different varieties of plants particularly in groves (Shalabi, 1978 p. 121).

Although the residents of Yathrib became more permanent, practising agriculture as a main resource for their living, they also practised commerce because the location of Yathrib made it a good stopping place for the ancient trade caravan routes.

"Yathrib had now become one of many agricultural oases on the caravan route from Hijaz to Syria inhabited by Jewish mercantile communities" (Esin, 1963, p. 37)

The geographical location of Yathrib was an advantage as it connected easily with other towns in the Arabian peninsula. The location of Medinah in the middle of the trade caravan route between Bilad Al-Sham and the Yemen as well as its environmental conditions and the abundance of water and gardens, made the traders prefer it as a stopping place. The situation of Medinah also made the possibility of the trade for the residents easy. They traded with Bilad Al-Sham. The Jews were powerful as usual in this activity (El-Wakil 1986, p. 18).

"The relation between Yathrib and the most important town in Al-Hijaz, MAKKA, Al-Taif and Khibar - was based on the respect and trade relations" (Ibid 1986, p. 127)

The relationship between Yathrib and other nations particularly Bilad Al-Sham and the Yemen was also commercial (El-Wakil 1986, p. 140).

The situation changed after the rise of Islam and the emigration of the prophet Mohammad, peace be upon him, from MAKKA to Medinah.

"In 622 therefore, Mohammad, peace be upon him, accepted an

invitation to go Medinah where a great many people were ready to accept him as a prophet. His move from MAKKA to Medinah was called Al-Hijra or emigration" (Bosworth, Donzel and others, 1991, Vol. VI, p. 146) The Hijra was an event that founded a new era. In early Islamic times Yathrib provided shelter and protection as well as support to the prophet. There was no conscious break with the past except a change in name and growing role in Islamic history. It became the capital of the Islamic state and from it the teaching of Islam spread. It also became the second sacred city after MAKKA in the eyes of Muslims. Medinah became a focal place of religious, political, cultural and economic affairs.

However, this position did not last for long. After the death of the prophet Mohammad, peace be upon him, and his first three successors the position of Medinah as a centre of authority went into decline in 100 A.H. (750 A.D) The power of Medinah shifted to another Islamic city, Al-Kufa, within Iraq, after that to Damascus within Syria during the Umayyad Caliphate.

Although Medinah had lost its position as a capital city of the Islamic state, it never lost its spiritual place in the hearts of Muslims as the prophet's city where his mosque and tomb exist.

"Medinah enjoys the unique distinction of having been both holy and imperial. Its imperialism was lost by the removal of the caliphal seat to Syria; its holiness was never lost." (Hitti 1973, p. 52)

Many pilgrims who come to MAKKA to make Al-Hajj may wish to visit the prophet's mosque and his tomb.

Consequently almost all the caliphs and the governors since the early Islamic times paid attention both to MAKKA and Medinah and to the pilgrim routes by providing them with their needs, particularly water.

Conclusion

There were a number of factors which made Medinah an important city.

1. the abundance of water supply and the fertility of the soil
2. Its location almost in the middle of Al-Hijaz made it easy for people to reach it from different areas.
- 3 Its situation at a crossroads on the trade caravan routes
4. Above all Medinah became an important city and flourished after Al-Hijra of the prophet Mohammad, peace be upon him, to it and the rise of Islam. It became the focus of Muslims and scholars from different areas, as well as the capital of the Islamic state for a short time.

2.4 Geographical Description: Medinah

Medinah is within the western province of Saudi Arabia.

(24° 30'N and 39° 40'E.)

"Medinah, the second holiest to Muslims" (Al-Farsy 1982, p. 27) "The distance from Medinah to the Red Sea (at Yanbbu) is 275 Kilometres, to Jeddah it is 425 Kilometres, to MAKKA 497 Kilometres". (Hafiz 1987, p. 3) Figure 2.1b

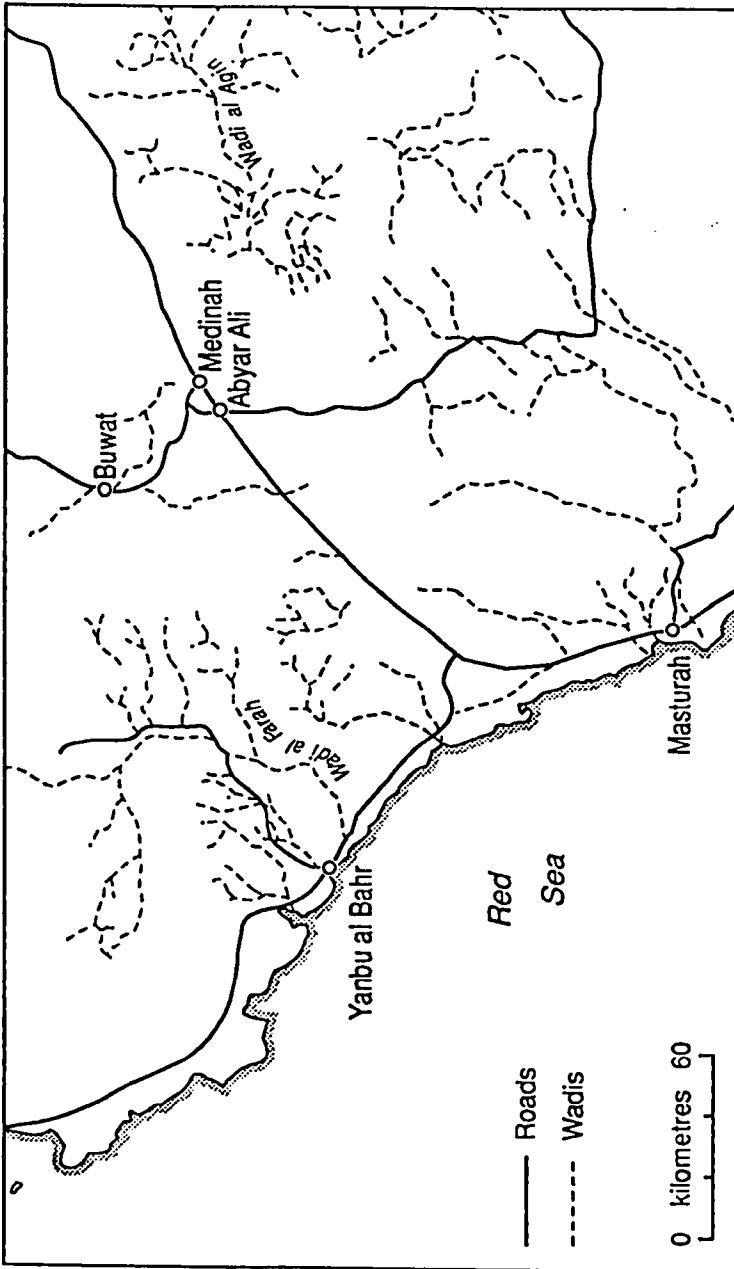


Figure 2.1b: Map of Medinah

"Medinah lies on the central Arabian plateau, thus differing from MAKKA which is a city of the coastal plain" (Rutter 1928, Vol. 2, p. 206)

The plateau comprises a natural basin almost surrounded by barren mountains, hills and lava fields.

Medinah is an oasis with a fertile agricultural area where several natural wadis flow from the mountains towards the city.

"Unlike MAKKA Medinah has always been an agricultural city. It is surrounded on all sides except the west by date plantations and cultivated fields, which extend for several miles" (Hogarth 1917, p. 27)

"Besides lying on the "spice road", which connected the Yemen with Syria, the city was a veritable oasis, especially adapted for the cultivation of date-palms" (Hitti, 1937, p. 104).

These wadis or water courses normally contain water only after rain. They maintain a fairly high water table, so that there are many wells and springs.

These factors brought a naturally fertile soil so that Medinah was veritable oasis. The soil and abundance of water warranted a systematic cultivation and hence its population was given over to farming and gardening. The main produce of the city and its area consisted of dates, of which there were numerous groves, grapes, cereals and a range of vegetables.

"Medinah dates its origin doubtless from ancient times, and the cause of its prosperity is evident in the

abundant supply of water, a necessity generally scarce in Arabia" (Burton, 1986, Vol. 1 p. 380)

2.4.1 Climate

In general, Medinah is very hot and dry in summer, particularly during daytime. In winter the weather is cold, with a chance of rainfall but it is rare. Winter is shorter than the summer, and spring and the autumn are not clearly defined. The location of Medinah makes its weather more temperate than that in MAKKA.

"The climate of Medinah is better than that of MAKKA and the winters are cold and rigorous" (Zwemer, N.D. p. 51)

The daytime temperature may reach 47° in the summer season, August, and falls to about 6°-8°C in winter, January, while at night it may fall below zero centigrade.

2.4.2 Water resources

Unlike MAKKA Medinah never suffers from lack of water. The inhabitants of Medinah gained their water from wells which are usually dug within the houses and the farms (Ali 1973, Vol. 4, p. 132)

The underground water resources were within easy reach almost anywhere. So the land of Medinah irrigated from Al-Abyar, wells, were different in their depth, 2-6 fathoms, and in the quality, some of them were fresh other brackish". (Kahalah 1964 p. 179).

"In the days of the prophet, the Madani consumed the produce of wells. Historians relate that Omar the second Caliph, provided the town with drinking water

from the Northern parts of the plains by means of an aqueduct". (Burton, 1986 Vol. 1, p. 381)

Ibn An-Najjar in his book entitled - Al Durah Al-Thaminah fi Tarikh Al-Medinah - mentions "Abyar Al-Medinah" Medinah's wells which were known in the early Islamic period. These Abyar include, Biraha, Bir Aris, Bir Bidaa, Bir Al-Bassa and Bir Ruma. These wells were major water resources in Medinah for both domestic use and agriculture. (Ibn an-Najjar N.D. p.340-345)

There were also numbers of 'Uyun, springs, the most famous of which is Al-'Ain Al-Zarqa. The residents of Medinah obtained their fresh water from these springs particularly Al-'Ain Al-Zarqa. Water from Al-Ain Al-Zarqa' reached Medinah during the Muawyah' (the first Caliph of the Ummyyad) Caliphate - he ordered his governor in Medinah, Marwan Ibn Al-Hakam, to bring water to Medinah (Basha 1926 Vol. 1, p. 430).

Al-'Ain Al-Zarqa was and is the main source of water which is distributed to the residents by underground pipes.

That of course was in the past, but in the recent years and essentially as a result of the increased population of Medinah and the increase in numbers of visitors the rate of water consumption has dramatically increased. In order to meet the shortage of water to supply to Medinah, the government established a desalination project at Yanbu and has piped water to Medinah. It has also dug a large number of wells around the city to cover all the water requirements particularly during the pilgrimage seasons when large

numbers of pilgrims visit Medinah to pray at the prophet's mosque after they performed Al-Hajj. "MAKKA and Medinah are among the principal religious centres of the world. Even since the foundation of Islam fourteen centuries ago Muslim men and women have turned when they pray towards the birth-place of their faith. Pilgrims have come each year from distant countries and in great numbers to achieve the crowning point of their lives by visiting the holy cities" (Esin, 1963, p. 15).

2.5 Historical background of the Syrian and the Egyptian pilgrim caravan routes

2.5.1 Introduction

These ancient trade routes connected many areas, the East and southeast of Asia, West and southwest of Arabia, east Africa and the Mediterranean countries, Bilad Al-Sham, Egypt and the south of Europe. However, the old caravan trade routes were determined by environmental factors, particularly topographic form and desert environmental conditions which later influenced the pilgrim routes.

"As the topographical factor to a large extent determined the location of the caravan transit routes the climatic and vegetation conditions meant that no means of transport but the camel, and no traders but the Arabs could carry this trade across the desert of Arabia". (Abdo 1969, p. 12)

"From very early times Arabia has formed a transit area between the Mediterranean countries and the Further East and its history has to a large extent been

determined by the vicissitudes of east-west traffic"
(Lewis, 1950, p. 22)

From ancient times Arabia had an important geographical location. It lies at the south western corner of Asia. It was a link between the long-settled continents of Europe, Africa and Asia. It is surrounded by seas and has distinctive climatic conditions, characterized by hot and dry weather. (Abu Al-'Aula 1972 Vol. 1 p. 12)

The geographical situation of Arabia between two varied climatic regions; to the east the monsoon region and to the north and northwest the Mediterranean region.

These two regions vary in their agricultural products as a result of their difference in climate. Thus the disparity in production gave the Arabs opportunity to practice trade between these regions. They exploited their abilities and their experience in these commercial activities. The camel was the main means of transportation for these commodities using caravan routes with which they were familiar (Jawdah 1987, pp. 6, 7). These trade caravan routes traversed Arabia between the consuming regions of the Mediterranean, Syria, Egypt and Rome and the surplus regions of East and Southeast Asia, East Africa and South Arabia.

In fact the Yemenis in South Arabia preceded the other Arabs in practising trade. They dominated and monopolised the commerce, particularly between south Arabia and the Mediterranean countries especially Bilad Al-Sham.

"Radiating from south western Arabia were great caravan routes. Some of these ran along the western side of

the Peninsula through MAKKA and Yathrib (now Medinah) and thence to Palestine or Damascus or around the head of the Gulf of Aqaba to Egypt". (Lebkicher and others, 1960, p. 32).

However, the Yemenis dominance of commerce lasted until the destruction of Sad Maarib - Dam of Ma'rib, and the decline of the Yemenis civilization. Then since the sixth century the Quraishis replaced them (Al Khurbutly 1976) p. 49).

"The great Dam of Ma'rib seems to have been broken several times and restored again and again. With each break of the Dam some tribes moved North; and the prosperous country of the Yemen declined due to foreign rule, ruin of agriculture and Roman competition in the field of trade. The final collapse of the Dam seems to have taken place between 542 and 570 A.D." (Husaini, 1961, P. 3)

The Yemenis traded either with what their country produced particularly myrrh and frankincense or with what they brought from other regions such as spices, gold, silk and ivory.

The Makkians (Quraishis) displaced the Yemenis as traders, in the sixth century (Rida 1979, p. 195). Although there were a number of trade caravan routes, there were two principal commercial caravan routes which are most important; The first traversed south to north parallel with the Red Sea Coast. The northern section of this route, subdivided into two branches, one went northwest to Palestine and Egypt, the second went northeast to Syria.

The second main trade caravan route came from the Red Sea passing across MAKKA towards the east. At the centre of Arabia it too subdivides into two branches, one northeast to reach Iraq, the other southeast to the coast of the Arabian Gulf passing through Dubai, Masqat and Zufar. (Shalabi 1978, pp. 123-127)

As a result Makkians' trade flourished and the Quraishis became rich and their celebrity as merchants spread among the other Arabs within the Arabian Peninsula as well as among other ethnic groups outside Arabia.

The Makkians (Quraishis) established commercial treaties with various states particularly in the north and the south. In the north Hashim Ibn 'Abd Manaf, the chief of Quraish, obtained a contract from Caesar allowing the Quraishis to trade with Bilad Al-Sham and gave them also privileges to trade with their countries with safe and secure transit. (Ali 1973, Vol. 4 p. 19)

"There is complete agreement in the tradition that the MAKKANS traded (or used to trade) in Syria. This is, in fact, the only point on which agreement is total and the commercial activities of Quraish in Syria are far better attested than those elsewhere" (Crone, 1987, p 115)

The relation between Al-Hijaz and the Yemen is very ancient and goes back to the times of the states of the Minoans, Sabateans and Himyar between 1350 BC and 525 AD whose authority spread to the northern Hijaz, where they established settlements along the trade route. During the

time of Quraish one of them Al Motalib Ibn 'AbdManaf went to the Yemen and made a contract with the Himiar to allow Quraish to trade in their lands; this was in about the beginning of the sixth century AD (Al-Sharif 1965 p. 173)

As a result of this contract the Makkians' trade caravans went regularly back and forth between Syria, Egypt and the Mediterranean countries on the north and the Yemen in the south.

Meanwhile, the Makkians made contracts with Abyssinia, Persia and Iraq. Since then, MAKKA became an important commercial centre, where the merchandise brought from the Yemen and Abyssinia was transported to be sold at Syrian and Egyptian markets.

The Holy Quran mentions the two journeys which take place during winter and summer where the Makkians trade in the winters with the Yemen and in the summers with Bilad Al-Sham.

1 " For the covenants (of security and safeguard enjoyed) by the Quraish"

2 Their covenants (covering) journeys by winter and summer

3 Let them adore the Lord of this House, who provided them with food against hunger, and with security against fear (of danger) (Ali N.D. Sura CVI)

The second aspect of relations between MAKKA and other states is the religious relations connected with Al-Hajj, pilgrimage.

In the pre-Islamic time and during the Jahilyah period

(pagan times) pilgrimage was voluntary, but according to the holy Quran Allah commanded Ibrahim to call men for Al-Hajj.

"And proclaim the pilgrimage among men; they will come to thee on foot and (mounted) on every kind of camel, lean on account of journeys, through deep and distant mountain highways" (Ali, N.D. Sura XXII verse 27)

Al-Hajj to MAKKA continues and at the rise of Islam in the sixth century Al-Hajj became obligatory for Muslims, and became one of the five pillars of Islam.

"Al-Hajj (The pilgrimage) The fifth and last pillar of Islam is the Al-Hajj. It is explicitly stated in the Holy Quran that every physically and financially able Muslim should make Al-Hajj to MAKKA once in his or her lifetime. Al-Hajj is considered the final culmination of each Muslim's religious duties and aspiration" (Al-Farsy 1982 p 30)

After the rise of Islam and its diffusion over the Arabian peninsula and outside of Arabia, the inhabitants of these parts of the world adopted the new religion as their faith. Many Muslims came to perform Al-Hajj which was held annually in a particular month - dhu Al-Hijjah - the twelfth month in the Islamic lunar calendar (Hijra) between the eighth day and thirteenth day.

"Islam inherited from antiquity the principal trade routes of the world; there was no way by which the West could trade with the east without passing through territory controlled by Islam. The pilgrims made use

of the sea routes as formerly the only way one could travel was via caravan" (Islam & Zaki, 1986, 7)

The Muslim pilgrimage to MAKKA, Al-Hajj, is one of the most remarkable of population movements. Although other pilgrimages involve greater numbers of people in India, the annual pilgrimage to MAKKA stands out for the breadth of the area from which pilgrims come. The eastern shore of the Atlantic Ocean to East Asia and for its thirteen centuries of history. The pilgrimage is one of the world's greatest gatherings of different races and languages and has tremendous impact, not merely on MAKKA and Al-Hijaz of Saudi Arabia, but also on the economic well-being of cities elsewhere on the pilgrim routes and on the entire transportation network of the area". (Erich, 1973, p. 409)

However, some pilgrim routes received more concern and attention from the authorities than others, consequently the facilities on these routes became more abundant.

The first pilgrimage caravan to MAKKA was that prepared by the Prophet Mohammad, peace be upon him, under the authority of Abu Bakr Al-Siddiq. That was in the year 9th A.H.

In the 10th year of the Hegirah the prophet Mohammad, peace be upon him, performed Al-Hajj that is called Hijjah Al-Wada - pilgrimage farewell. The number of the pilgrims who performed Al-Hajj with the prophet is estimated at between 90,000 and 114,000 pilgrims (Al-Jaziri 1983, Vol. 1 p. 205). However, the caliphs continued to perform Al-Hajj annually and take responsibility for the pilgrim caravans until the

decline of the Islamic state and its division into a number of countries.

As a consequence of the break up of the unified Islamic state and its division into small countries, each country became responsible for arranging the pilgrim caravans and this situation continues today.

2.5.2 Sources of information

Major sources from which we could obtain information about the pilgrim routes are as follows;

1 The Holy Quran and the Islamic traditions

They are regarded as reliable sources. The Holy Quran is a reliable and important source of information about Al-Hajj and the Holy cities MAKKA and Medinah. Islamic traditions are also reliable sources about Al-Hajj and the location of water resource facilities.

2 The early Muslim and Arabic, geographers, historians, and travellers

The early Muslim and Arabic geographers, historians and travellers, who accompanied the pilgrim caravans or recorded what they saw during their journeys. They listed pilgrim stations and halting places and the distance between them.

Little information was provided about water resource structures.

Ibn Khurdadhabah who lived in the 3rd century AH in his book entitled Al-Masalik wal Mamalik enumerates the stations on the conventional pilgrim routes between Damascus and the holy cities MAKKA and Medinah and between Egypt and Medinah

and MAKKA.

Ibn Rostah who lived in the 3rd century of AH in his book Al-'Alaq Al-Nafisah mentions the pilgrim routes from Egypt to Medinah, from Damascus to Medinah and from Medinah to MAKKA.

Al-Idrisi who lived in 5th C A.H counted the stations between Egypt and Medinah and the station between Damascus and Medinah; he also enumerates the station between Medinah and MAKKA.

Al-Yaqubi (3rd century of AH) in his book Kitab Al-Buldan, mentions the Egyptian pilgrim route from Egypt to MAKKA passing Medinah and enumerates stations between Medinah and MAKKA.

Al Maqdisi who lived in the 4th century of AH mentions the way stations on the Egyptian pilgrim route and also the way stations from MAKKA to Medinah.

Qudamah (4th century AH) in Kitab Al-Kharaj enumerates the Egyptian and Syrian pilgrim caravan routes to MAKKA passing through Medinah.

Al-Harbi (3rd century AH) in Kitab Al-Manasik wa Amakin Turuq Al-Hajj wa Ma'alim Al-Jazirah mentions the Syrian and the Egyptian pilgrim routes.

Further details of the Syrian and Egyptian pilgrim routes are found in Al-Wohaibi (1973). (The Northern Hijaz in the writings of the Arab geographers).

3 The ancient Jahili. Arabic poetry is considered as a significant archive of information where the poets record mainly location and place names. The poetry is most helpful

in identifying ancient places and sites. Arabic poets in the desert moved from one place to another looking for water and grass, so the poets recorded the place-names in their poetry.

"In general geographers did not study poetry in order to define names of places in Arabia or locate them, Ibn Khurdadhubah quoted some verses containing place-names, and Ibn Rostah, Ibn Al-Faqih and Al-Maqdisi recorded some verses of poetry but in so doing, their aim was solely to clarify a story. It was the regional geographers who partly relied on poetry as a basis for mapping the localities. Chief among them was Al-Hamshani who recorded many poems relevant to this" (Al-Wohaibi 1973 p 422)

4 The European travellers and explorers The European travellers and explorers, provided very valuable information about Arabia, the pilgrim routes and holy cities in particular. In addition they gave information about environmental conditions, especially geographical features and climate. Some gave details of the social organisations, way of life and water resources.

4. Western writers

The following European travellers are well known for their writings on Arabia.

1 Ludovico Varathema - (16th century AD) was a Roman citizen and one of the first Europeans to reach MAKKA and describe Al-Hajj. (Bidwell, 1989, p. 23). He described the pilgrim route from Syria to Medinah and described Medinah

"Medinah well peopled and has surrounding walls or bulwarks of earth. The houses were made of stone and brick" "A water course was nearby, the Ain Al-Zarqa which flows from the direction of Kuba, falling away to a lower plain to which the pilgrims lead their thirsty camels" (Freeth and Winstone 1978 p. 28)

He continued his journey and entered MAKKA on 18 May 1503. He described the Holy City and El-Mashar Al-Haram, Muna an 'Arafat, Al-Ka'aba and Zamzam well.

"The first non Muslim to look on the forbidden city and set down a description of it observed its features and recorded its legends in great detail" (Freeth & Winstone 1978 p. 32)

2 Joseph Pitts was born about 1663 in Exeter. He performed Al-Hajj without choice as he was a slave. He described his impression of the holy cities and Al-Ka'aba "It was, he said, about four and twenty paces square. At one corner was a black stone fastened and framed in silver, the Hajar Aswad". (Freeth & Winstone 1978 p. 49)

He says about MAKKA "It is a town situated in a barren place about one day's journey from the Red Sea in a valley, or rather in the midst of many little hills." (op. cit., p. 51)

3 Jean Louis Burckhardt (1778 - 1817), gave full details about MAKKA and the holy Mosque, he also described Medinah

4 Ali bey Al-'Abbosi "And in Burckhardt's own century a Spaniard, Domingo Budiay Lieblich, travelling under the name of Ali Bey Al-'Abbasi, had made the MAKKA pilgrimage in 1807." (Freeth & Winstone 1978 p. 101)

Ali Bey is considered as the first one who gave the west a systematic description of MAKKA, its trade, its vegetation and its location (Bidwell, 1989, p. 31)

5 Richard Burton, in 1852 reached MAKKA, performed Al-Hajj and also went to Medinah. He returned to the Arabian peninsula again in 1877. His description and impressions about the holy cities MAKKA and Medinah were put in his book "Pilgrimage to Medinah and MAKKA, first published in 1855.

6 Charles Doughty 1843-1902, gave information about the Arabian Peninsula

2.5.3 Documentary Evidence

These sources particularly the early Islamic geographers, historians and travellers, have provided valuable information about the pilgrim routes.

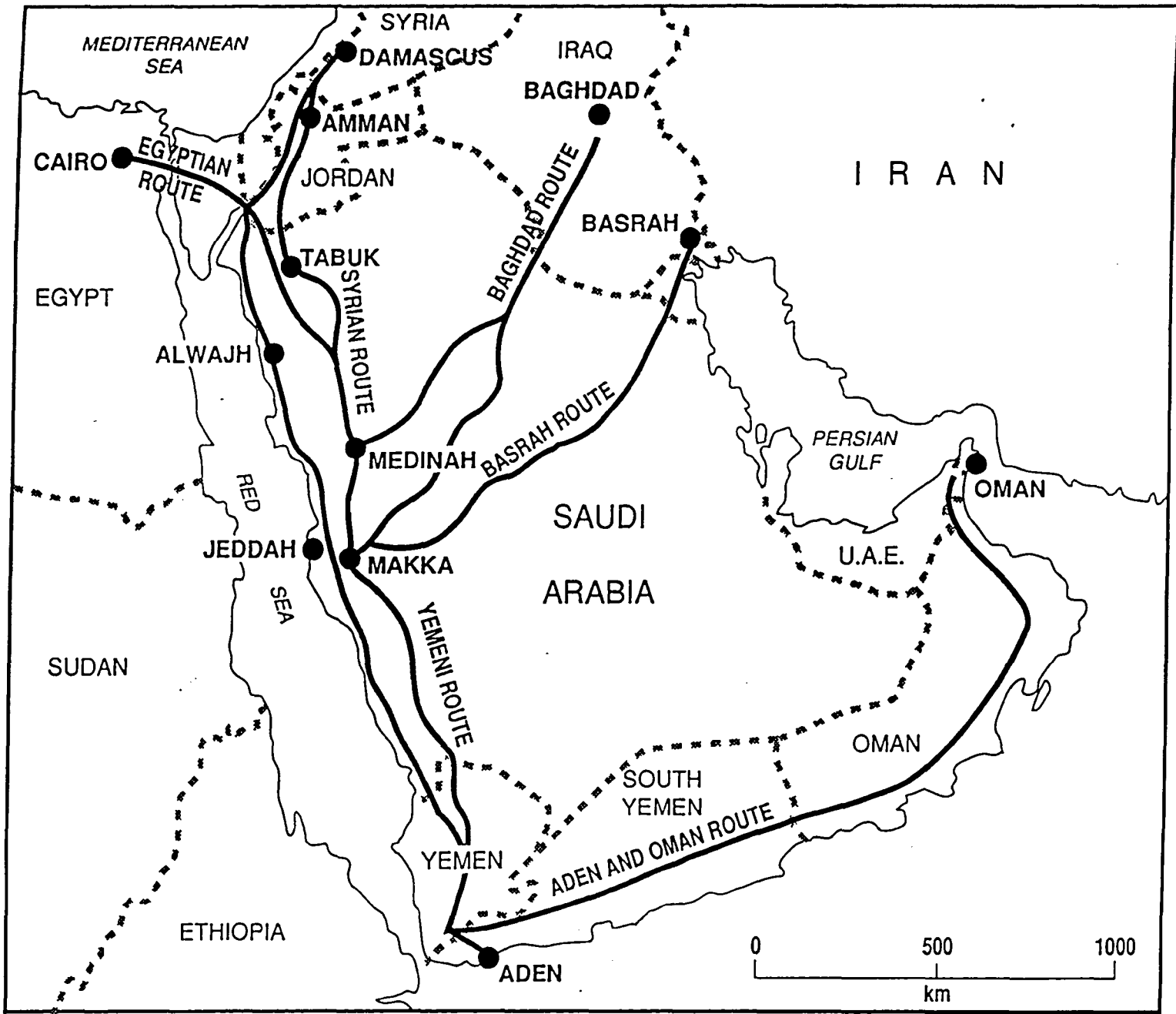
"One annual caravan assembled in Damascus, and took about a month to complete the journey. A second caravan taking somewhat longer, began in Baghdad, and included Muslims from Central Asia and Iran. A third assembled in Cairo, gathering those who journeyed from Egypt and north of Africa and a fourth from Oman, Hadhramaut and Yemen". (Amin, 1976)

There were seven principal routes which led from the various regions to the holy cities.

These pilgrim routes are as follows: (see fig. 2.1c)

1. The Iraqi pilgrim route - Tareeq Al-Hajj Al-Iraqi
 - 1a Kufa MAKKA route
 - 1b Basra MAKKA route

Figure 2.1c The Pilgrim Routes.



2. The Yemeni pilgrim route - Tareeq Al-Hajj Al Yemeni
3. The 'Aden pilgrim route - Tarreq Al-Hajj Al-Aden
4. The 'Oman pilgrim route - Tareq Al-Hajj Al-'Omani
5. The Syrian pilgrim route - Tareeq Al-Hajj Al-Shami
6. The Egyptian pilgrim route - Tareeq Al-Hajj Al-Masri

According to Abdo:

"Thus 4 of the seven Hajj routes were pre-Islamic transit routes. These were the Syrian, Egyptian Hajj routes and the inland Yemeni Hajj route and the coastal Yemeni Hajj route."

"The other Hajj route were entirely created by the pilgrim traffic these were An Najaf - MAKKA Hajj route, the Basra - MAKKA Hajj route and the Oman - MAKKA Hajj route". (Abdo 1969 pp.31, 33)

The Syrian and Egyptian pilgrim routes - Tareeq Al-Hajj Al-Shami and Al-Masri - are the main routes studied in this thesis and will be discussed in detail. (see fig. 2.2) The other routes will be briefly discussed.

1. The Iraqi - MAKKA Route

There were two Iraqi pilgrim routes leading to MAKKA.

a. Al-Hirah-'Kufah' - MAKKA Route

Al-Hirah-MAKKA Route was known in pre-Islamic time. The relation between MAKKA and Al-Hirah goes back to Al-Jahiliyah times - where Nufal Ibn Abd Manaf gained a contract from Kisra (Khosraas) to trade in the Persian State, so that the Makkians' trade reached Iraq. The trade between MAKKA and Iraq was not at the level of MAKKA trade

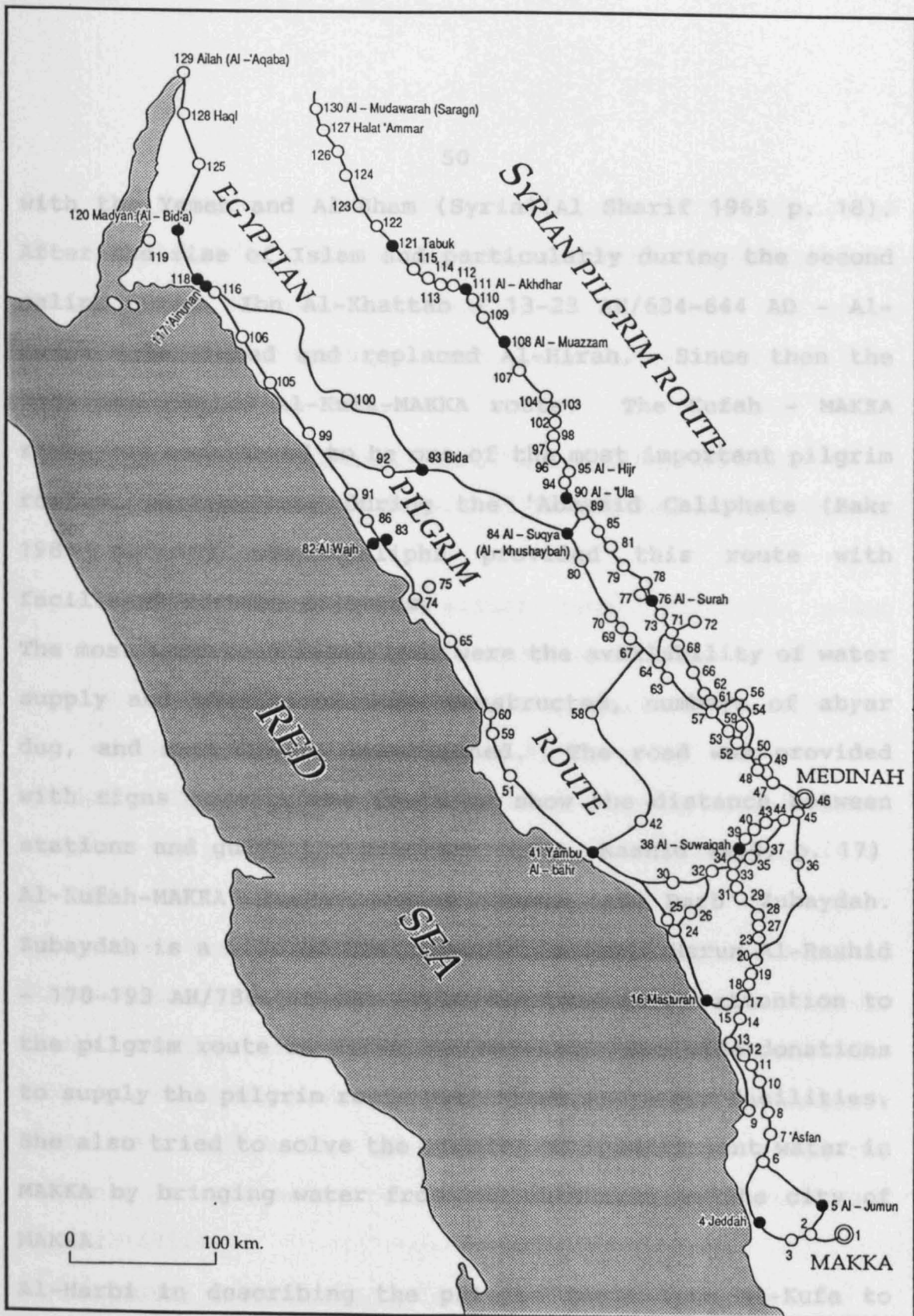


Figure 2.2: The Syrian and Egyptian pilgrim routes

with the Yemen and Al-Sham (Syria)(Al Sharif 1965 p. 18). After the rise of Islam and particularly during the second caliph 'Omar Ibn Al-Khattab - 13-23 AH/634-644 AD - Al-Kufah established and replaced Al-Hirah. Since then the road was called Al-Kufa-MAKKA route. The Kufah - MAKKA route was considered to be one of the most important pilgrim routes, particularly during the 'Abbasid Caliphate (Bakr 1981 p. 18) when caliphs provided this route with facilities for the pilgrims.

The most important facilities were the availability of water supply and thus birak were constructed, numbers of abyar dug, and rest houses established. The road was provided with signs to mark the route to show the distance between stations and guide the pilgrims. (Al. Rashid 1980, p. 17) Al-Kufah-MAKKA route became known as Darb Zubaydah. Zubaydah is a wife of the 'Abbasid Caliph - Harun Al-Rashid - 170-193 AH/786-809 AB. Zubaydah paid great attention to the pilgrim route to MAKKA and Medinah. She made donations to supply the pilgrim route with water and other facilities. She also tried to solve the problem of insufficient water in MAKKA by bringing water from the outskirts to the city of MAKKA.

Al-Harbi in describing the pilgrim route from Al-Kufa to MAKKA (Darb Zubaydah) mentioned the pilgrim stations along this road and noted facilities particularly water resource structures. These facilities were attributed to Zubaydah and called by her name. For instance there are several Birak known as Birkah Zubaydiyyo (Al-Harbi, 1981 p.).

Both Ibn Jubayr (539-614 AH/1144-1277) and Ibn Batutah (703-777 AH/1304-1377) mention the pilgrim route, Darb Zubaydah, from Medinah to Iraq enumerating the stations and water resources that Zubaydah provided. (Ibn Jubayr, 1980, p. 185, Ibn Batutah N.D. pp. 117, 118)

b The second Iraqi pilgrim route Al-Basrah - MAKKA

This pilgrim route is the twin of Darb Zubaydah and starts from Al-Basrah.

"It traverses the north-eastern region of Arabia, along wadi Al-Batin, through a mainly desert area. It passes through Al-Qasim district where there is an abundance of water supply." (Al-Rashid 1980, p. 4)

Al-Basrah MAKKA route joins Al-Kufa Darb Subaydah MAKKA route at the station of Madin an-Naqirah. (Al-Hamadani 1974, p. 338)

After that the pilgrims on Al-Kufa pilgrim route went to MAKKA directly. Pilgrims coming through Al-Basrah route go towards Medinah firstly then on to MAKKA. Early Arabic and Islamic geographers and historians provide information about this route. Al-Harbi, gave detailed information about the stations and the water resource structures. (Al-Harbi 1981 pp. 572-603)

2 The Yemeni - MAKKA Route Tareeq Al-Hajj Al-Yemeni

This pilgrim route is one of the most ancient roads used from the pre-Islam period for trade caravans (and after the rise of Islam) for pilgrims from the Yemen to MAKKA. It is called the southern pilgrim route. (Farsi 1982, p. 40)

The early Islamic and Arabic writers mention two other

Yemeni pilgrim routes leading to MAKKA, the inland route and the coastal route. Al-Ya'qubi (1892 p. 317) mentions the Yemeni MAKKA route saying that it takes 21 days to travel from MAKKA to San'a.

The inland pilgrim route comes from San'a towards MAKKA crossing the highland of Asir, passes through the city of Al-Taif and then descends to MAKKA. It is distinguished by the abundance of its stations and their closeness to each other. Although it passes across mountainous areas, it also traverses fertile, cultivated lands where there is an abundance of facilities, water and food. (Farsi 1982, p. 40)

Al-Hamadani mentions these two Yemeni routes. He gives the names of the halting places as well as the distances between stopping places. He also provides significant information about the coastal route which passes along the Tihama plain on the Red Sea Coast. (Al-Hamadani 1974, pp. 338-341).

Al-Harbi (1981) provides similar information without mentioning distances. (Al-Harbi 1981 pp. 643-647)

3 Aden - MAKKA Route

Because it is a part of the southern pilgrim route only some early Islamic writers provide information about this route. There are again two pilgrim caravan routes from Aden to MAKKA. The inland pilgrim route travels north until it reaches San'a and then joins the pilgrim caravans from San'a to MAKKA. The coastal pilgrim route which goes along the coast of the Red Sea through Tihoma. (Al-Hamadani, 1974, pp. 341-344)

Basha mentions this pilgrim caravan route and names the

resting stations. He added that there is another route which the pilgrims from San'a and Aden could travel along calling this road is Nejd Al-Yemen. He says that the pilgrim caravan could take this road from Aden alongside the mountains towards the north, then meets the pilgrim caravan from San'a, then all the caravans travel toward San'a and via Al-Taif to MAKKA. The coastal pilgrim caravan route follows the coast of the Red Sea through the Tihama plains. This pilgrim route from Aden calls at several ports, Mokha, Hidiydah, Jizan and Allith. This coastal pilgrim route was used by the pilgrims who lived within these coastal plains and the pilgrims who come from east Africa joining from any seaport. (Basha, 1983, Vol. 2 pp. 246-248)

4 Al-Oman-MAKKA Route Tareeq Al-Hajj Al-Omani

Al-Omani pilgrim caravans follow the coast of the Arabian Sea until they reach the Yemen then join the Yemeni pilgrim caravan to MAKKA (Ibn Khurdadhabah, 1889, pp. 147, 148). Qudamah agrees with Ibn Khurdadhabah but he adds that the pilgrims who want to travel through Tareeq-Al-Jadda-Al-Jadda take the route from Ather to Al-'Aarsh then continue to MAKKA (inland). Pilgrims who want to travel along the coast head from 'Ather to Marsu Dankan and Jeddah thence to MAKKA (Qudamah, 1889, pp. 192, 193). Al-Maqdisi dates (1906, pp. 110-111) also mentions Al-'Omani pilgrim caravan route from Oman to MAKKA.

The Omani pilgrims sometimes go through the eastern province of Arabia and from there they go to join the pilgrim caravan from Yamamih (now Riyadh region). Basha, a Turkish

historian, says that the Omani pilgrim caravan route is the fourth among the seven pilgrim practicable routes. He says that the route from Oman to MAKKA consists of 20 stages. Because of lack of water in most of the inland routes the Omani pilgrims prefer to travel by sea to MAKKA. (Basha 1983, Vol. 2, p. 248).

2.5.4 The Syrian Pilgrim route Tareeq A;-Hajj Al-Shami

Introduction:

The Syrian pilgrim route was well-trodden and much travelled since the Jahiliyah times, when the trade caravans were travelling between Bilad Al-Sham and Al-Hijaz where the Holy Quran indicates the winter journey and the summer journey (Sura CVII). After the rise of Islam the Islamic army who conquered Bilad Al-Sham used this road. (Al-Balathri 1983 p. 115).

After the conquest of Bilad Al-Sham which became part of the Islamic state, the pilgrim caravans travelled regularly between Bilad Al-Sham and MAKKA. This pilgrim route continued as a main route for the Syrian pilgrims and pilgrims from other countries who joined the Damascus caravans.

The early travellers provide important information about the Syrian route but differ in the treatment of detail. Some provide full details, others just give a list of the major stations. Ibn Khurdadhabah (3CAH), Ibn Rustah (3CAH), Al-Idrisi (5 CAH), Qudamah (3 CAH) enumerate the stations on the conventional pilgrim route between Damascus and MAKKA and Medinah. However, Ibn Khurdadhabah and Al-Idrisi name

more way-stations on the Syrian pilgrim caravan route than Ibn Rostah and Qudamah.

Al-Harbi, lists without details the halts on the pilgrim route from Syria to Medinah. He indicates that the Syrian pilgrim route meets with the Egyptian pilgrim inland route at Al-Suqya-Al-Khushaybah, then they continue travelling towards Medinah (Al-Harbi, 1981 p. 653). At a later period Ibn Batutah, 703-777 A.H. (1304-1377) in his journey from Damascus to MAKKA listed and described the stations. He mentions water resource structures which were available such as Birkat Al-Muazzam, a water tank at the station of Al-Muazzam, saying it is huge and attributed to Al-Malik Al-Muazzam, the great king, one of Ayub's sons (Ibn Batutah N.D. pp. 77-89).

Al-Mawsawi, 1012-1070 A.H. (1613-1671) mentions the way-stations on the Syrian pilgrim route from Damascus to MAKKA and describes halting places and water resource structures and the castles. For instance, he mentions the pilgrim station of That Al-Hajj saying there is a castle and a spring located within. The water comes from this spring and fills Al-birkah outside. He also mentions and describes Tabuk saying there is a spring, a castle and a well inside the castle and it has abundant farms and palm trees.

He also mentions Al-Akhdhar as a pilgrim station saying it is a valley where there is a castle dated 938 A.H. and Ain - spring, and three Birak linked to the castle and filled with water from this spring. (Al-Mawsawi 1965, pp. 235-236)

2.5.4.1 Stages in the development of the Syrian Pilgrim Route

The Syrian pilgrim caravan route probably passed through five historical stages. (Bakr 1981 pp. 169-174) During these historical stages, therefore, some changes took place influencing the direction of roads, the means of transportation and the pilgrim caravan traffic. These principal changes were determined by factors such as progress in the means of transportation by invention of railways, vehicles, and airplanes. Consequent to these circumstances and changes the pilgrims tried to use the means which they found to be safer and less costly. (Al-Diqn 1985, p. 51) However, the five stages which will be discussed are briefly as follows:

The first stage started from the early Islamic times particularly after the conquest of Bilad Al-Sham and continued during the Umayyad caliphate, the 'Abbasid caliphate and the Fatimid caliphate until the invasion of the crusaders to Bilad Al-Sham, particularly south of Jordan, at about the middle of the 5th century of Al-Hijra. It lasted about five centuries. (630-1100 AD (Al-Diqn 1985 p. 51). This stage was characterized by the following aspects. The Islamic state was so strong, particularly during the early part of this period, so that the Muslim caliphs whether the Umayyad or Abbasid caliphs paid great attention to the pilgrim routes. Some of the caliphs accompanied the pilgrim caravans to show their care in this matter.

The Muslim caliphs provided the pilgrim routes with a lot of most needed facilities essentially water resource structures such as birak, basins and wells as well as rest-houses. (Maliki 1987 p. 126). In addition to these important facilities they erected marks and signs along the pilgrim routes to help the pilgrim caravans to follow the right direction to the holy places. Other aspects which were observed were that the Syrian pilgrim caravans travelled along the conventional trade route which was used pre-Islam. The route was busy and the movement of the pilgrim caravans traffic active. As a consequence of these activities a number of stations and settlements were established along the route particularly within the Arabian territory. These stations and settlements often became populated towns.

The second historical stage saw the invasion of the crusaders to Bilad Al-Sham in the middle of the fifth century AH until the middle of the 7th century AH (Al-Dign 1985 p. 52). The crusaders' invasion which lasted about two centuries threatened the pilgrim caravans from both Syria and Egypt particularly when they occupied the fortress of Al-Kark in Jordan. (Bakr 1981 p. 171)

The result of these circumstances affected the pilgrim caravan traffic, so that the conventional pilgrim route was abandoned. The Syrian pilgrim caravans, in order to avoid passing through the regions which the crusaders occupied, changed their normal route by either of the two alternative ways.

The first alternative was to go further towards the east,

while the second was to join the Iraqi pilgrim caravans. However, this stage was marked by some features. As a result of the abandonment of conventional Syrian pilgrim routes, towns and settlements which were mainly dependent economically on this route disappeared, and became ruins, until the caravan traffic came back to the normal route.

The third historical stage took place during the Mameluk regime over Syria and Egypt after the ending of the crusades. The most important aspect which marked this stage was that the Syrian pilgrim caravans returned to use their former conventional route. (Al-Diqn 1985 p. 52). The Mameluk caliphs provided the pilgrim route with the most necessary facilities. They built a number of water resource structures, wells, basins and fortresses and citadels particularly near the water resources to protect them and the pilgrim caravan routes.

The fourth historical stage was during the Ottoman rule 1516-1918AD when most of the Arab countries were governed by the Ottoman. (Bakr 1981 p. 172)

There were two significant features which characterized this stage the first aspect was the increase of pilgrims as a result of the spread of Islam into new regions particularly Anatolia, the peninsula of the Balkans, Bulgaria and Serbia. As a result many pilgrims from these regions came to join the Syrian pilgrim caravans. The second aspect was that the Ottomani caliphs provided the pilgrim route with much needed facilities including wells, cisterns and tanks, castles, fortresses and rest-houses. In addition to

building these facilities they also repaired these structures to keep them in good condition. They also tried to keep the pilgrim route safe and secure to make sure that the pilgrims could perform Al-Hajj without worrying about their safety.

The fifth historical stage is a continuation of the fourth stage, but started in the beginning of the twentieth century. This stage was marked by the establishment of Hijaz railway in 1910 which connected Damascus with Medinah. The development which took place in this stage led to many changes on the Syrian pilgrim caravan route, the most significant were the disappearance of the camel caravans, the reduction in the travel time for the journey to the holy cities from 40 day to only 4 days and the increased number of pilgrims who want to perform Al-Hajj. (Al-Diqn 1985 p. 53) In addition the journey became more comfortable and safe.

"The caravans from Syria declined with the operation of the 1325 kilometer rail link from Damascus to Medinah which began functioning in 1908 but was forced to close down years later because of the war situation" (Amin,1976) The Ottoman rulers built stations and adjoining these stations they established castles and forts to protect the railways. They also built repair yards and provided the stations with water and rest-houses.

The railway from Damascus to Medinah followed for most of its path the caravan route, unless there are natural obstacles such as mountains or low valleys in this case the

path of the railway was diverted. Unfortunately, Al-Hijaz railway did not last for long because of the start of the First World War. Since the end of the war the railways and particularly the part which lies within the Saudi Arabian territories was destroyed.

2.5.5 The Egyptian pilgrim route "Tareeq Al-Hajj Al-Masri"

The relations between Egypt and the Arabian Peninsula particularly with the Yemen and Hijaz, probably existed before the rise of Islam. However, this kind of relationship was economic and commercial. The merchants who traded between Arabia and Bilad Al-Sham also travelled to Egypt.

After the rise of Islam and conquest of Egypt during the second caliph 'Omar period in about 13-23AH/634-644 a lot of the Egyptian population accepted Islam as their religion, and from Egypt Islam spread over adjoining parts of Africa. In consequence many of the pilgrims who wanted to perform Al-Hajj gathered in Egypt to start their holy journey. There were two routes radiating from Egypt to MAKKA, the sea route to Jeddah and from Jeddah to MAKKA and the inland road through desert to the south to Al-'Aqaba and from there to the Holy cities along the eastern coast of the Red Sea. (Al-Suliman, 1973, pp 61-64)

2.5.5.1 Stages in the development of the Egyptian pilgrim routes

The Egyptian pilgrim caravan routes passed through various historical stages since the early Islamic times. During these different stages several things took place including the increase of number of the pilgrims, changing the pilgrim

stations and towns continued, others disappeared. However, the Egyptian pilgrim caravan routes passed through four historical stages as follows; (Bakr 1981 pp. 75-80)

The first historical stage started precisely after the conquest of Egypt during the period of the second caliph Omar Ibn Al-Khattab, when most of its population accepted Islam as their faith. This stage lasted until the invasion of Bilad Al-Sham by the crusaders. During this historical stage the Egyptian pilgrim caravans from all parts of Egypt gathered in Al Fustat, the old capital of Egypt. Then the route crossed the Sinai peninsula to Ailah-Al-Aqaba on the eastern shore of the Gulf of Aqaba. From Ailah the pilgrim caravans travelled through the northwestern part of Arabia almost alongside the eastern coast of the Red Sea. This pilgrim route divides (about 50km north east of Yanbu Al-Bahr) into two branches, one southeast towards Medinah, the other followed the Red Sea Coast to Al-Qdhimah and inland to MAKKA.

The second historical stage started after the invasion of the crusaders to Bilad Al-Sham particularly south Jordan which threatened the pilgrim caravans from Egypt. Al-Maqrizi in his book Al-Khitat says that the pilgrims from Egypt and Bilad Al-Maghrrib, northwest Africa, were unable to go to MAKKA through the conventional route through Sinai for more than 200 years but travelled through the Nile valley as far as Qaws and from there the pilgrims marched through the eastern desert to Aithab on the Red Sea. From 'Aithab they sailed to Jeddah on the other side of the Red Sea, the sea port of MAKKA, and from Jeddah they continued their journey

The third historical stage started after the end of the invasion of the crusaders. During this stage the pilgrim caravans returned to travel by the ancient conventional inland route crossing the peninsula of Sinai. However, because this route had been abandoned for more than two centuries, there are some changes which happened regarding the way stations. Some stations previously existing had disappeared, some new stations emerge either replacing the ancient ones or appear at new locations.

In consequence to these changes the Islamic and Arabic geographers and travellers give different information especially about the determination of the location of some halting places. They also varied when they mention some station names. Therefore, these differences probably refer to the time in which each travelled. This stage lasted more than six hundred years from 667-1301 AH/1268-1883.

The fourth stage was distinguished by the development in the system of the means of transportation particularly in Egypt with the appearance of the railway. Egypt was the second country after England to use the railways about the middle of the 19th Century (Al-Diqn 1985 pp 46-47). The evolution and the advance in the communications changed the pilgrim caravans from camels to trains so that the Egyptian pilgrims travelled from Cairo to Suez on the Gulf of Suez and from there they sailed to Jeddah and thus to MAKKA.

In addition to Egyptian pilgrim caravans others came from Al Andalus - Spain, Morocco, West and Central Africa and from other parts of Africa. The pilgrims gathered in Cairo then from Cairo started the journey to the Holy places.

of the Red Sea ships, and the last great procession left Cairo in 1883 with 1170 pilgrims" (Amin, 1976)

Al-Batanuni who performed Al-Hajj in 1327 AH/1909 provides us with most important details of the Egyptian pilgrim route from Egypt to the holy cities.

Al-Hijaz railway was constructed to serve pilgrims journeying from Damascus in Syria to MAKKA. However the railway terminal ends at Medinah. The railway proved more comfortable and secure than the camel routes and also decreased the time of the journey (Al-Diqn, 1985 p. 301).

"Al-Hijaz railway has many remarkable features which distinguish it from other lines. Its principal object is to provide a means for faithful Moslems to perform their pilgrimage to the holy places of MAKKA and Medinah with a greater degree of comfort than formerly. There are still many of the more rigidly orthodox who prefer the long tedious journey by camel, with its fifty-two stages from Damascus to Medinah, and count the hardships involved as part of the duty of pilgrimage. The railway also has the object of binding together some outlying provinces of the empire to the centre. Its inception is due to the initiative of the present Sultan, and the enthusiasm created by its first announcement brought in subscriptions from the faithful in all parts of the Islamic world. A special stamp-tax forms a solid annual contribution to the expenses, somewhat less evanescent than other contributions may prove to be." (Maunsell 1908, pp. 570)

Al-Hijaz railway is distinctive in that its principal purpose is to provide a means to transport pilgrims.

largely destroyed during the First World War and was closed in 1924" (World Atlas of Agriculture 1973 Vol. 2, p. 4). After its short life the pilgrim traffic returned to caravan routes although the short existence of the railway may have had a great impact on the particular route ways. Pilgrims continued to use camel caravans until the advent of modern vehicles, cars and later aircraft. "The first use of motor vehicles in what is now Saudi Arabia occurred about the time of the First World War" (Abdo, 1969, p.57) However this means of transport was limited to official and private purposes and was not available for public service. The first pilgrims came to perform Al-Hajj from outside Arabia by car in 1933-34 (Farsi, 1982 p. 40) "At the first, the camel and the automobile went side by side, with the camel still taking the great share of the traffic" (El-Hamdan, 1976, p. 108)

"The automobile was gradually taking over from the camel. However, until 1947 the take-over by the automobile from the camel was not complete" (Ibid, p. 111)

In the 1950s the camel caravans started to disappear completely and were replaced by modern transportation. This was accelerated by the discovery of oil and as a consequence Saudi Arabia became financially strong and many modern strong paved roads were constructed.

Air transport came later in approximately the 1950s. MAKKA has no airport so the cities of Jeddah and Al-Taif are the main airports for the pilgrims because of their location near MAKKA. "The Saudi Airlines was established 40 years ago in 1946. Its first international operation took place

chartered for Lyddah in Palestine it returned with pilgrims bound for MAKKA via Beirut" (Saudi Arabian Airlines, 1985 p. 50)

Over the last two decades as Saudi Arabia developed the government gave particular attention to road development and thousands of kilometres of roads have been constructed and paved. Along these roads are a number of pilgrim cities providing facilities for the pilgrims. In addition the government constructed a number of airports for domestic use and international use particularly in Jeddah, Medinah and Al-Taif. In large part these airports serve pilgrim uses. The airport at Jeddah (King Abdul Aziz) is one of the largest airports in the world built to receive the thousands of pilgrims annually.

CHAPTER THREE

CLIMATE, GEOGRAPHY AND GEOLOGY IN SAUDI ARABIA3.1 Introduction

This chapter describes and discusses the climate and climatic changes in Saudi Arabia. It is valuable first to distinguish between climate and weather. Climatologists and meteorologists have developed a universal climatic definition that is applicable throughout the world. Climate is the consequence of the weather record conditions within a specific area. These weather conditions include temperature, atmospheric pressure, rainfall, humidity, sunshine and winds, recorded over at least a year. The weather is the daily condition of the atmosphere, in other words, the weather is the measurement of the temperatures, air pressure, amount of rainfall, sunshine, clouds and winds during 24 hours.

"Climate is the average state of the atmosphere over a particular place or region of the earth's surface, related to a particular epoch and taking into consideration the average and extreme variation to which the atmospheric state is subject." (Conrad and Pollak 1962, pp. 1,2)

"Weather varies from day to day, and climate differs from region to region." (Trewartha 1968, p. 3)

The world may be divided into a number of climatic types according to the Koppen classification based on temperature and rainfall. (Jones, 1984, p. 19) Saudi Arabia is

classified as B, - a dry climate, not unduly influenced by proximity to the sea because the Red Sea and the Arabian Gulf are very narrow, their influence on the climatic conditions over Saudi Arabia is reduced.

3.2 Climatic Changes

Climatic change has been taking place throughout the existence of the planet. At sometimes these changes have been rapid, at other times stable climates have predominated.

"Studies of climatic change can be based on actual measurements of atmospheric parameters only as far as the instrumental records extend. Even in the best documented regions of North-West Europe this is only to the late eighteenth century. However, other forms of documentary evidence may be invoked with care to give indications of climatic change in historic times, but this approach yields acceptable results back to only about the eleventh century."

(Barrett, 1974, p. 7)

Evidence of climatic changes which have occurred before historic records and systematic measurement of atmospheric phenomena may be obtained from the archaeological and biogeographical record. By studying pollen and the distribution of the vegetation on the earth, and the fossils and rock record provides some evidence about the climatic conditions in ancient times. Study of the large dry valleys which prevail in the arid regions also give valuable information about the climate which was dominant in these regions. The remains of fauna and flora may also provide

information about the ancient climates because the distribution of the plants and animals reflect the climatic environment in any region.

Change in climate can be observed today. "The most significant climatic change in the period of instrumental observation commenced at the end of the nineteenth century. It was marked by a gradual increase in the air temperature over all latitudes in the northern hemisphere, during all seasons of the year, while the great warming occurred in high latitudes during the cold half of the year." (Budyko, 1977, p. 12)

"The warming was continuous throughout the 1910's, and 1920's and reached its maximum in the 1930's when the main air temperature in the northern hemisphere registered an increase of about 0.6 degrees as compared to the end of the nineteenth century. In the 1940s this warming gave way to a cooling process which has continued to recent time and resulted in a lowering of the mean air temperature by 0.3-0.4 degrees." (Ibid., p. 12)

Climatic changes can be readily observed as increases in air temperature over all the latitudes in the northern hemisphere. The warming of the atmosphere still continues today. The climatic changes are attributed to a number of fundamental factors, some of these factors are natural such as volcanic eruptions and earthquakes, others are man-made such as vegetation change, burning of fossil fuels and pollution. Undoubtedly, climatic conditions have affected the activities of people since their appearance on the

planet. Man has changed some climatic phenomena, particularly within the local environment, by removing natural vegetation and forests and by replacing them with cities, towns, industry and highways.

Since the industrial revolution, the release of increasing amounts of gases and particulate matter have added to the pollution of the atmosphere, which has modified the passage of solar energy into and out of the biosphere and so modified the climate. The modification can be seen today and will continue into the future.

Climate has an important influence on the activity of people. The climate is responsible for determining the need for shelter and clothing and the materials and design of buildings and textiles.

In the context of this research, the routes that have developed to link Medinah and MAKKA, whether they are for pilgrimage or for trade, are influenced by the need for, and availability of shelter. Similarly climate affects agriculture and natural vegetation. Food for travellers and forage for their animals also determine the choice of routes.

3.3 The Climatic Condition Over Saudi Arabia

In general, the climatic conditions of Saudi Arabia belong to desert climates. This is a continental climate which is described as having hot dry summers, and cold winters with limited rainfall. Because Saudi Arabia occupies a large area and has various topographical terrains, variation of the climatic conditions exist. An analysis of the existing

climatic map shows that there are three climatic types over the Arabian Peninsula and Saudi Arabia in particular. These three climatic types are as follows: (Figure 3.1)(Jones, 1984, p. 19)

1-BW. The desert climate. This type of climate exists in most of the central and northern parts of the country.

2-BC. Steppe. This type of climate appears in two areas. The first lies between BW in the east and west. The second, much smaller area, is the southeastern corner of the Arabian Peninsula. Both these two areas have dry climates.

3-CW. Dry winters. This type of climate dominates the southwest of the Arabian Peninsula, it is a warm temperature climate with dry winters.

The climatic zones are caused by a number of factors including altitude, and latitude, as well as the waters which surround the Arabian Peninsula. However the influence of altitude is greater than the others. The most important climatic elements particularly in relation to routes for travelling include rainfall, temperature, winds and humidity.

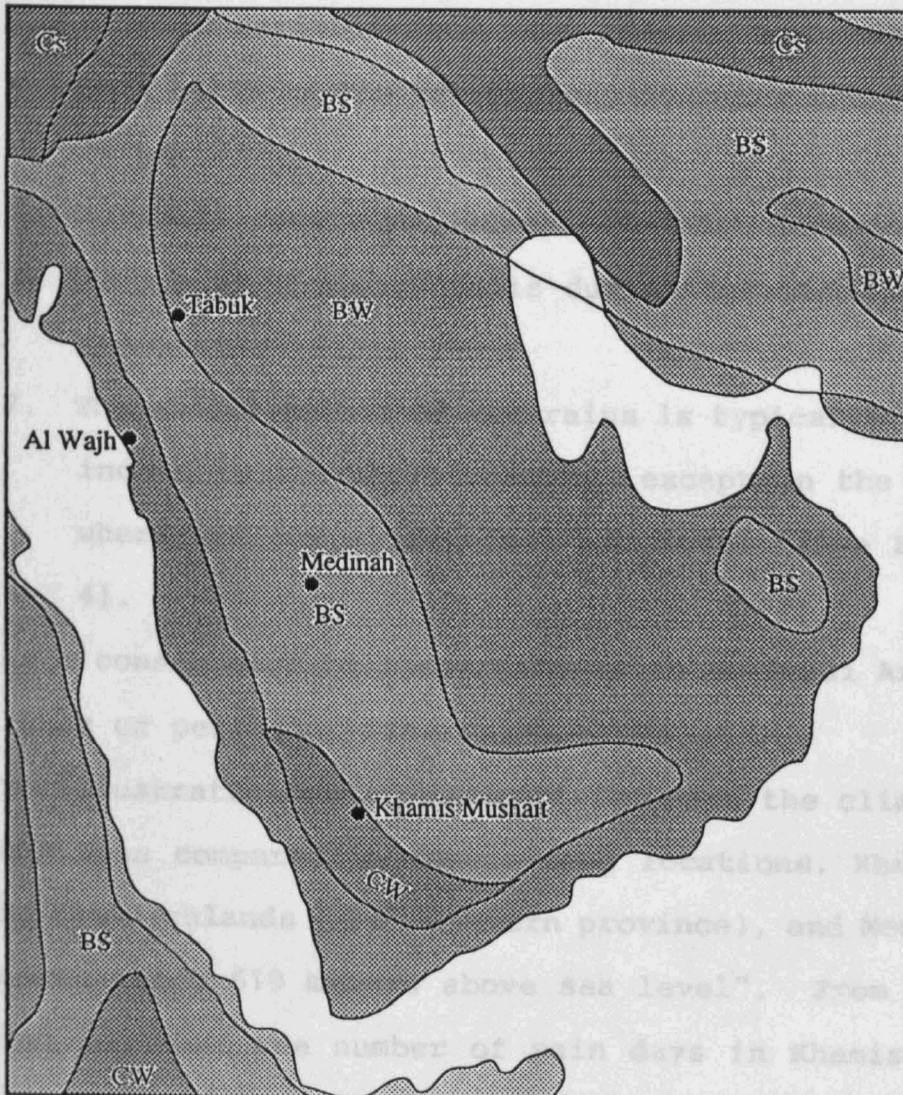
3.3.1 Rainfall

In any dry region the characteristics of the available rainfall are extremely important "Arabia owes its rainlessness to its position in the high pressure belt, and lofty encircling rim which intercepts any moisture which might reach the interior." (Stamp, 1939, p.449) Rainfall in Saudi Arabia can be characterized as follows:

1. Rain is insufficient for extensive agriculture.

2. Rain falls in the winter seasons, except in the highlands in the southwest (Jabal Asir and Al-Taif) where rain falls in summer as well as in the winter.

WORLD CLIMATE ZONES
(KOPPEN)



KEY			
	BS Steppe		CW Dry winters
	BW Desert		Cs Dry summers

Figure 3.1: The climatic types over the Arabian Peninsula

2. Rain falls in the winter seasons, except in the highlands in the southwest (Jebal Asir and Al-Taif where rain falls in summer as well as in the winter.
3. Rain is variable from year to year and unreliable.
4. Some parts of the country may go years without receiving rains.
5. Rainfall occurs in showers of short duration.
6. Rain almost always falls during the night when the temperature falls.
7. The annual amount of the rains is typically less than 10 inches in the whole country, except in the highlands where the annual rainfall is higher. (See Fig. 3.2, 3, 4).

As a consequence of these circumstances Saudi Arabia has no lakes or permanent rivers.

To illustrate some of these differences the climatic record has been compared in contrasting locations, Khamis Mushait in the highlands (southwestern province), and Medinah in the north about 619 meters above sea level". From fig. 3.5 we can see that the number of rain days in Khamis Mushait is more than double that in Medinah, Khamis Mushait has 37 days, while Medinah has only 14 days. Also from fig. 3.5 we can observe that Khamis Mushait received some rain in 9 months of the year while Medinah received rain only during 5 months. In Medinah rain falls during spring and autumn, while rain in Khamis Mushait is experienced from January until August. From fig. 3.6 we can see that the total annual rainfall (mm) which Khamis Mushait received is more

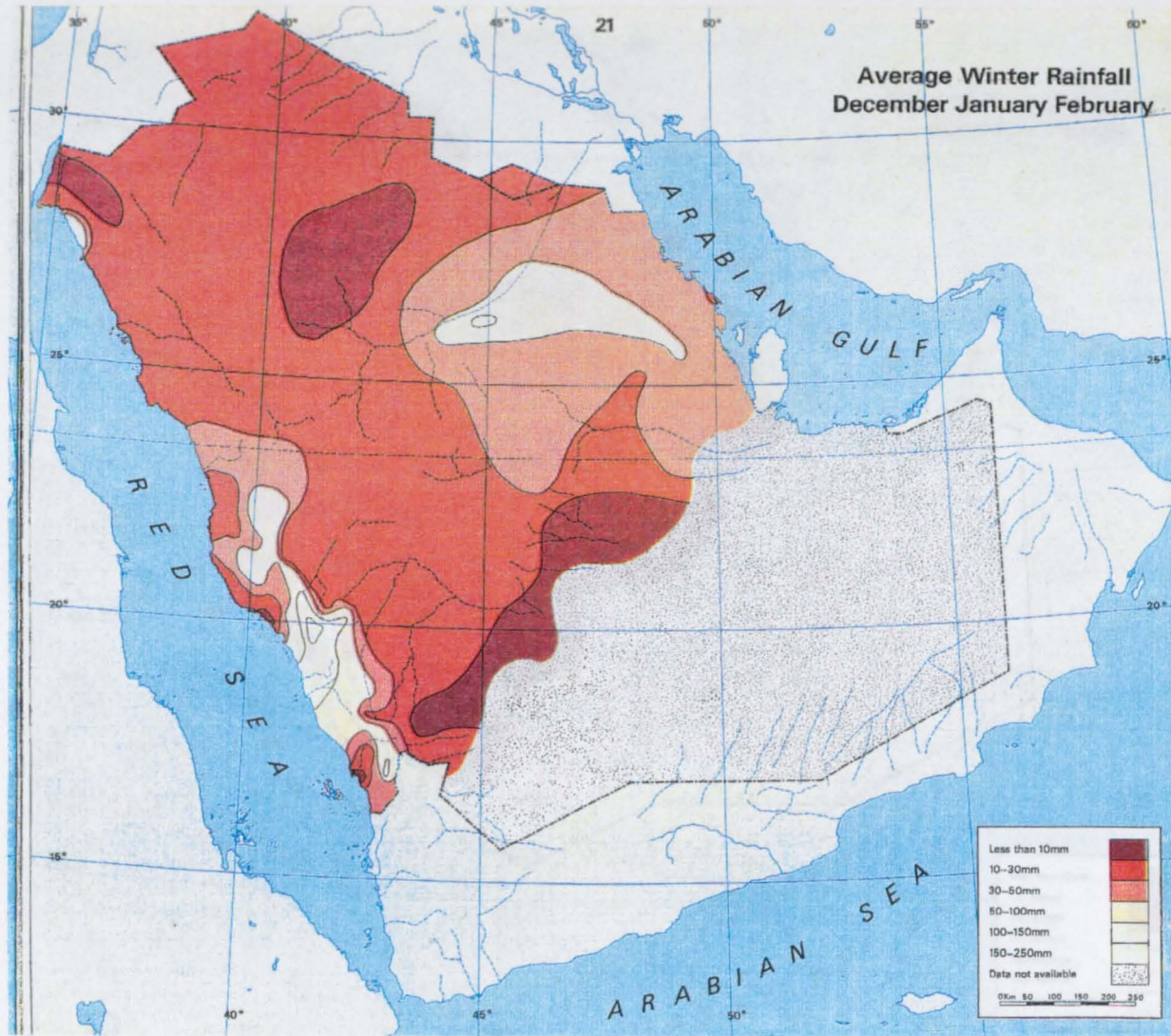


Figure 3.2: Average winter rainfall in Saudi Arabia (Bindagji, 1980)

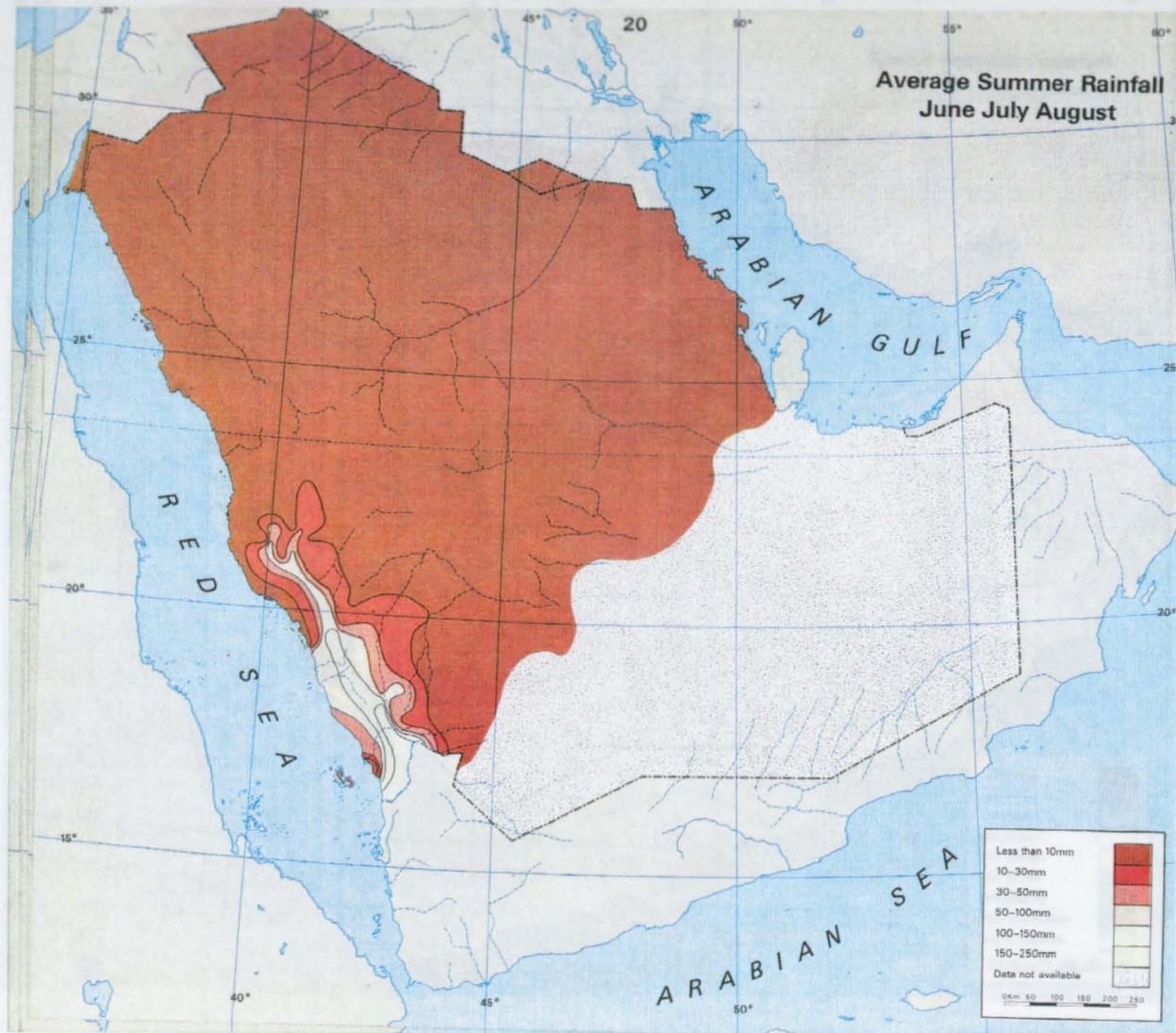


Figure 3.3: Average summer rainfall in Saudi Arabia (Bindagji, 1980)

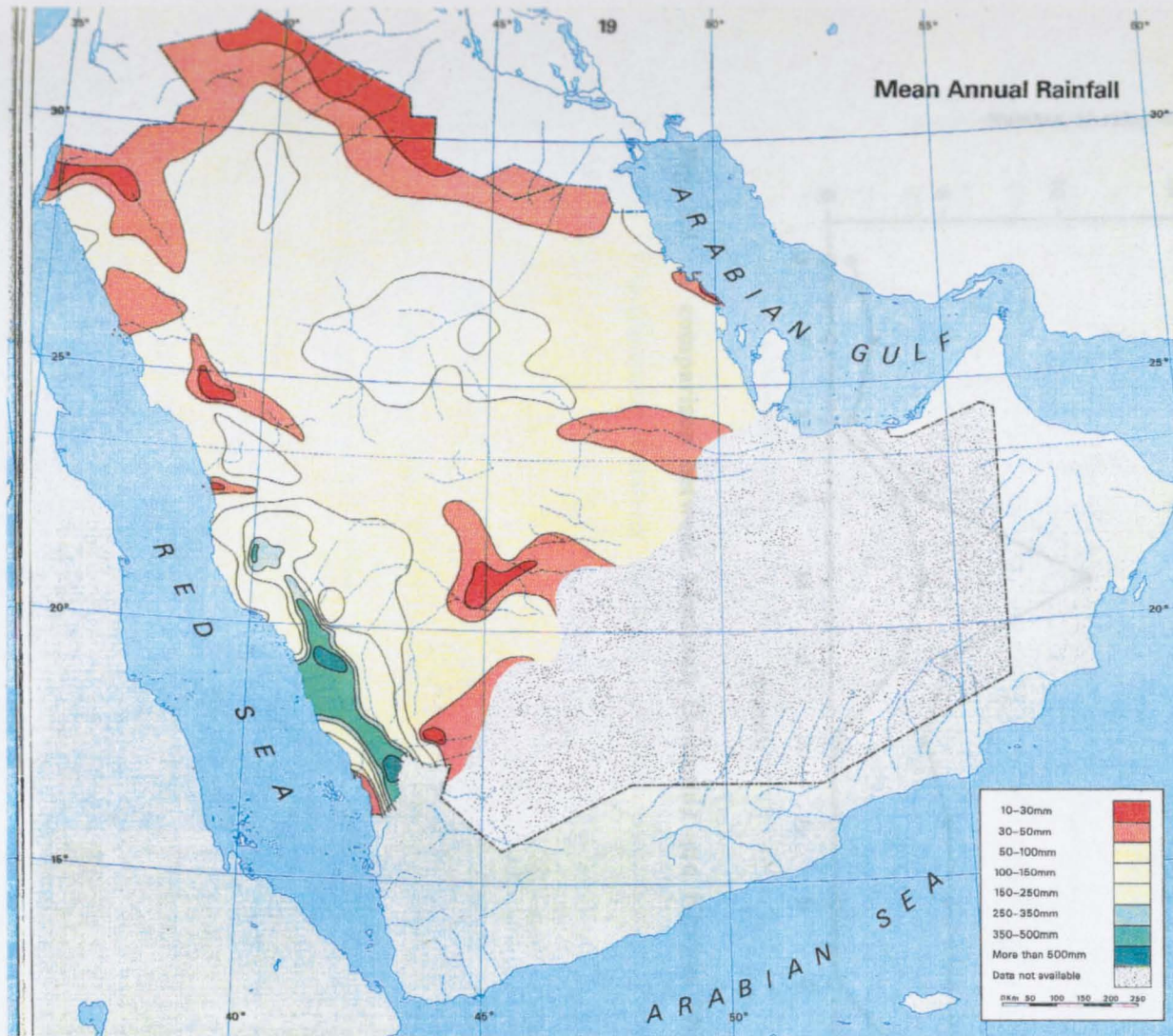


Figure 3.4: Mean annual rainfall in Saudi Arabia (Bindagji, 1980)

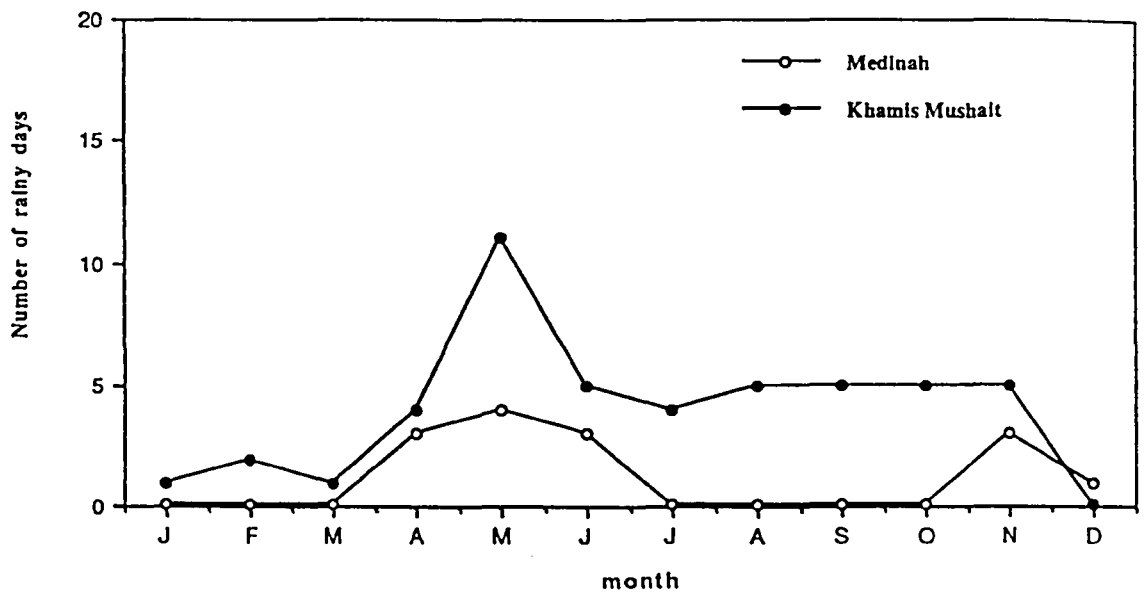


Fig. 3.5 A comparison between Medinah (lowland) and Khamis Mushait (highland)

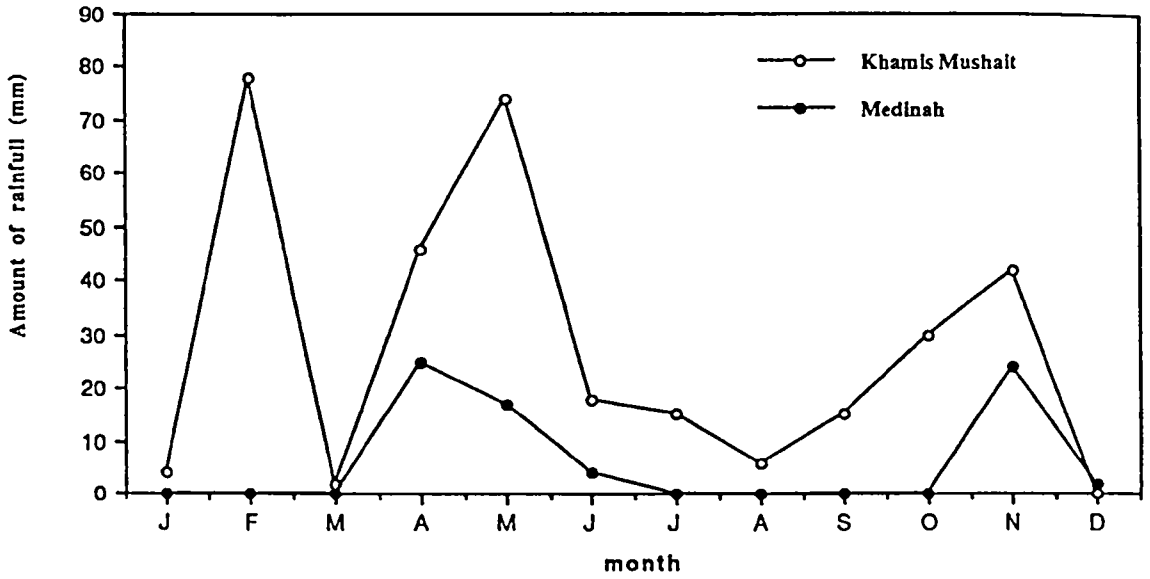


Fig. 3.6 A comparison between Medinah (lowland) and Khamis Mushait (highland).

than 3 times that received at Medinah (Khamis Mushait 269 mm; Medinah only 72 mm.) From fig. 3.7 we observe that the maximum rainfall during a 24 hour period in Khamis Mushait reaches 65mm. while in Medinah it does not exceed 16 mm; a quarter of that value. Thus Khamis Mushait receives a significantly greater, more intense and more distributed rainfall than Medinah.

3.3.2 Temperature

In general Saudi Arabia is extremely hot in summer and cold in winter. There are some exceptions, particularly in the north and northwest where the temperatures are affected by the latitude and in the highlands where the height affects the temperatures particularly during the summer months. (See Fig. 3.8, 9, 10).

"Over much of Arabia, with the exception of the mountains temperatures during the period May to September rise very high and this is one of the few areas of the world where temperatures above 48C (120F) are not unusual. Inland the daytime humidity falls quite low and there is usually a sharp drop of temperature at night." (Pearce and Smith 1984, p. 276).

"In the interior, and in the higher mountains in the north west of Saudi Arabia, winter temperature occasionally falls low enough for frost and snow to occur." (Ibid, p. 276).

Particularly in inland locations, marked differences exist both between summer and winter conditions and between night and day temperatures.

To illustrate these differences data from inland and coastal

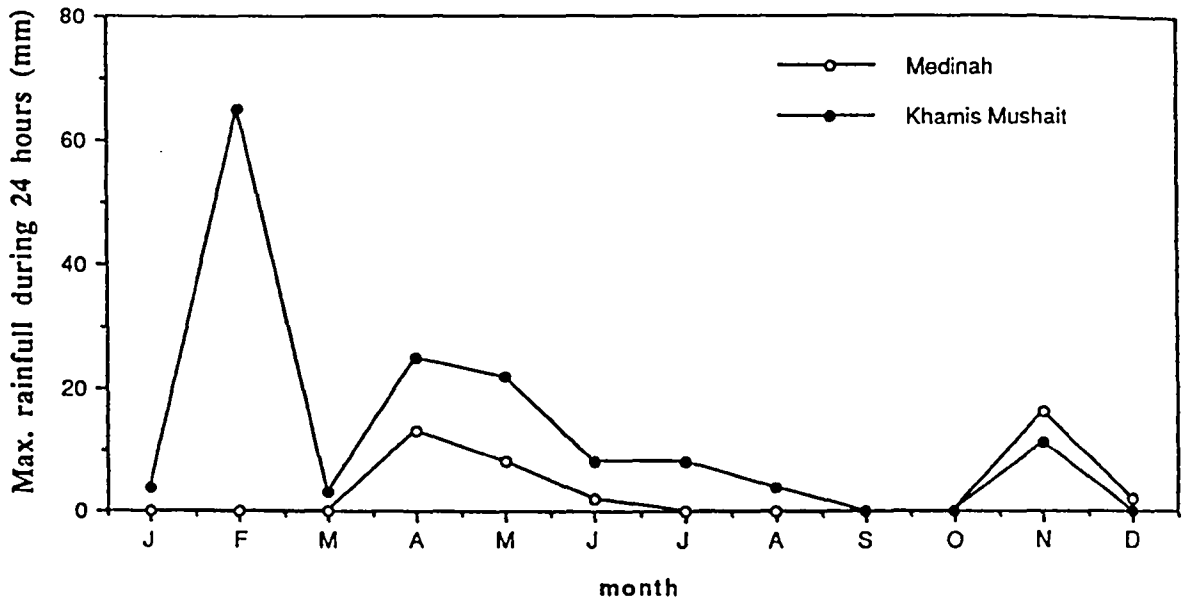


Fig. 3.7 A comparison between Medinah (lowland) and Khamis Mushait (highland).

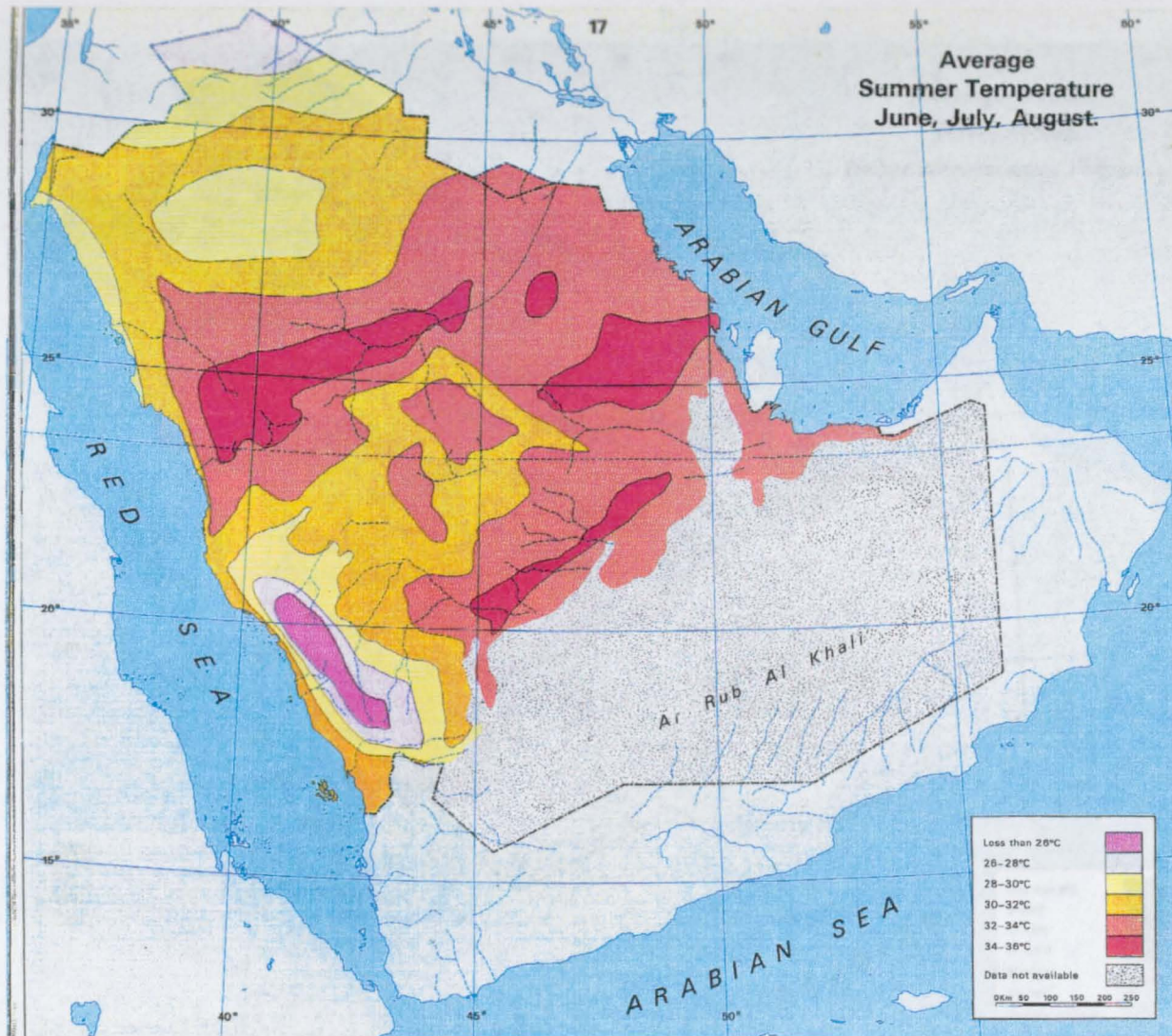


Figure 3.8: Average summer temperature in Saudi Arabia (Bindagji, 1980)

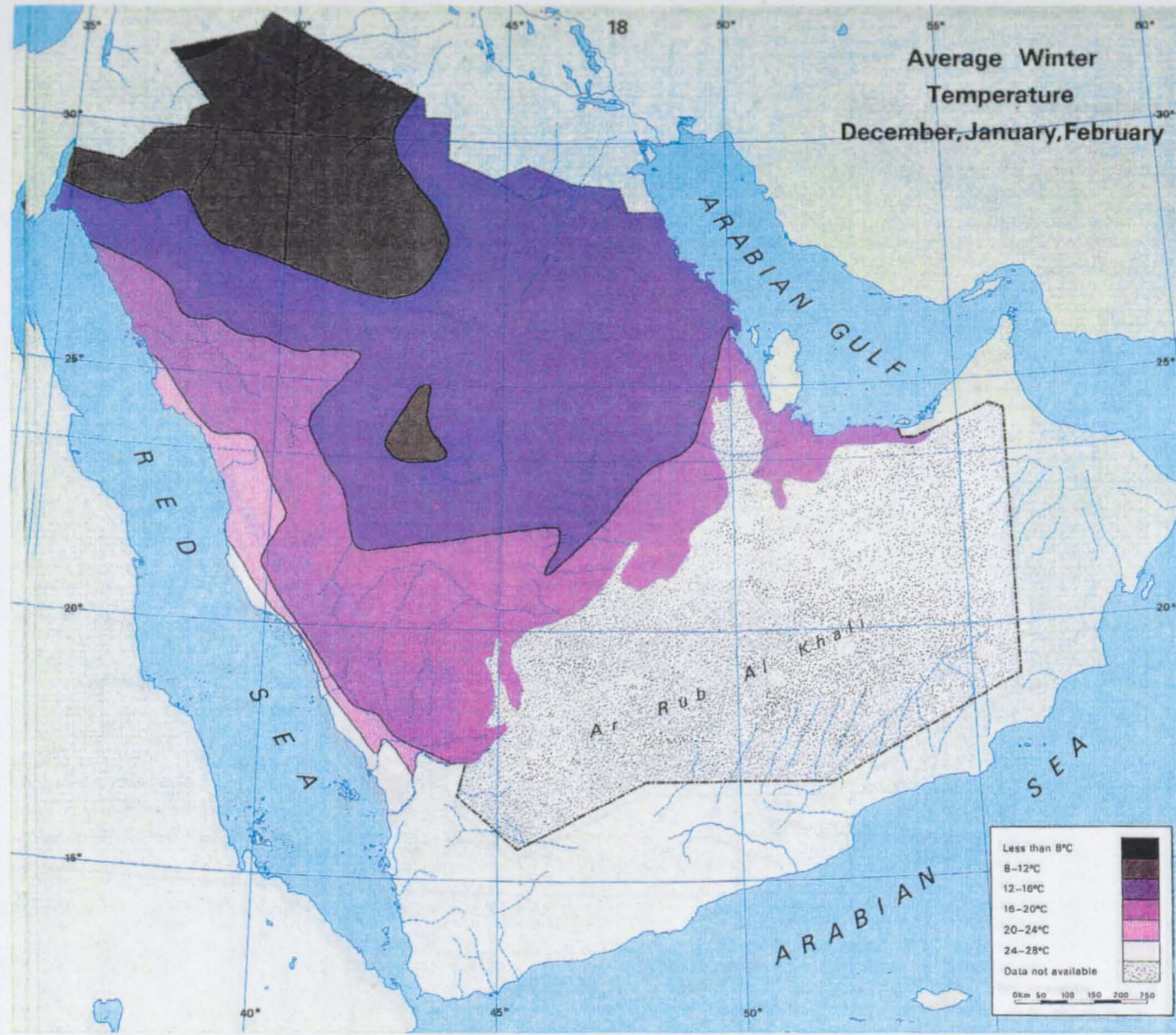


Figure 3.9: Average winter temperature in Saudi Arabia (Bindagji, 1980)

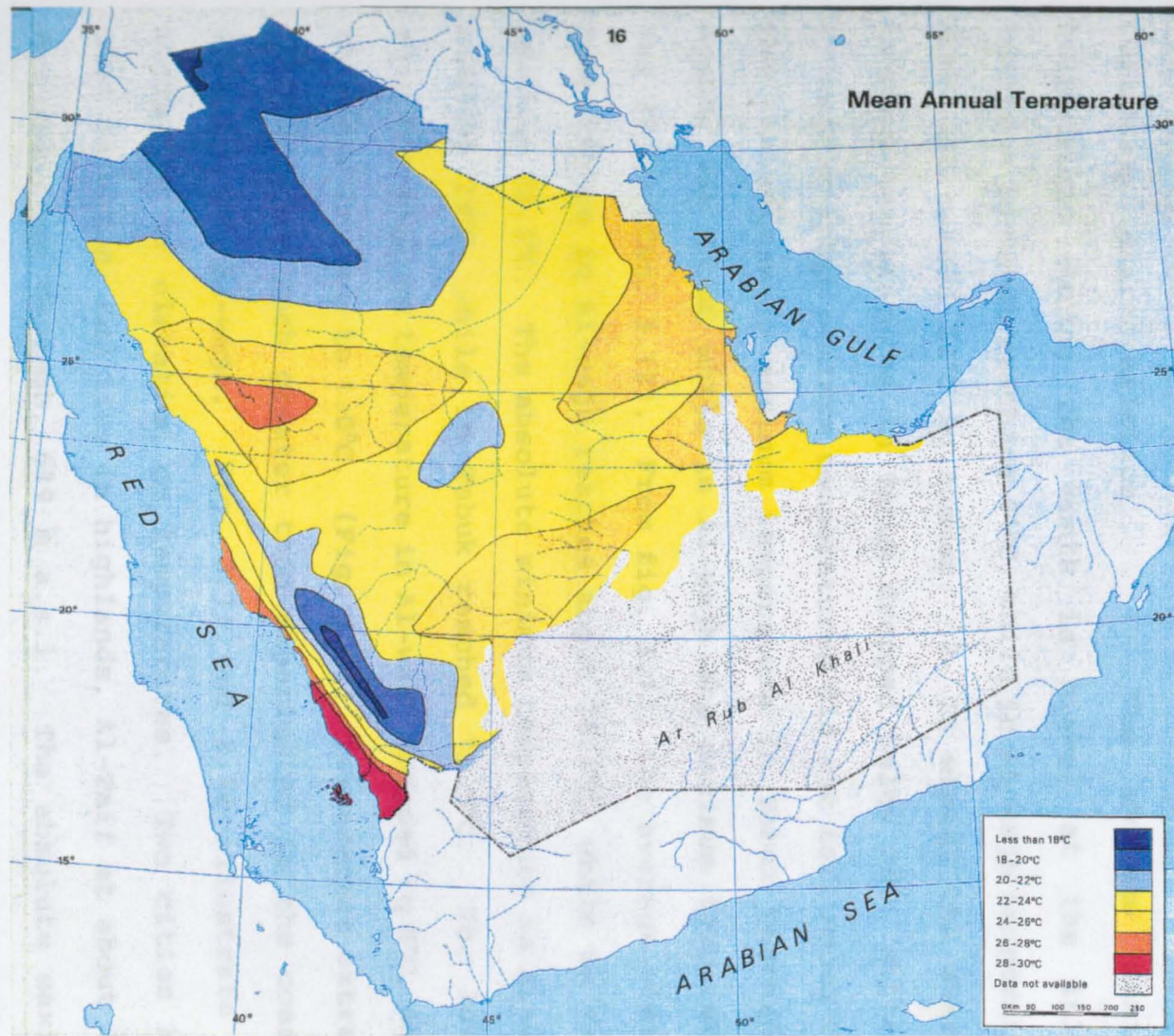


Figure 3.10: Mean temperature in Saudi Arabia (Bindagji, 1980)

sites have been analysed. Tabuk is situated inland and Al-wajh is on the Red Sea coast (both the two cities lie on the pilgrim routes). From fig. 3.11 we can identify the following characteristics. 1- The average maximum temperature during the month is higher at the inland location in Tabuk reaching 41°C , while in Al-wajh temperature does not exceed 34°C in summer. 2- In winter the average maximum temperatures in Tabuk dropped below 20°C , while in Al-wajh average maximum temperatures did not fall below 22°C . The instantaneous maximum temperature in Tabuk reached in summer was 44.6°C while in Al-wajh the maximum temperature was 38.5°C (fig. 3.12). From fig. 3.13, the average minimum temperature in Al-wajh reaches about 26.5°C , while in Tabuk reaches 23.5°C . The absolute minimum temperature in Al-wajh reached 24°C , while in Tabuk reached 19.5°C . The lowest absolute minimum temperature in Al-wajh dropped to 8°C , while in Tabuk dropped to 1.0°C . (Fig. 3.14) Temperature extremes in Tabuk are much greater than experienced in the coastal location of Al-wajh. Fig. 3.15 and 3.16 illustrate the influence of elevation on temperatures. Two cities have been selected; one lies in highlands, Al-Taif at about 1565 m a.s.l. and Medinah, 619 m a.s.l. The absolute maximum temperature reached in July and August is 46°C , in Medinah, but in Al-Taif the absolute maximum temperature in June is 39°C . The highest absolute minimum temperature in any month in Medinah reached 27°C , while at its lowest dropped to 8°C . In Al-Taif the absolute minimum temperature at its highest reached about 19°C , while at its lowest reached about 2.3°C .

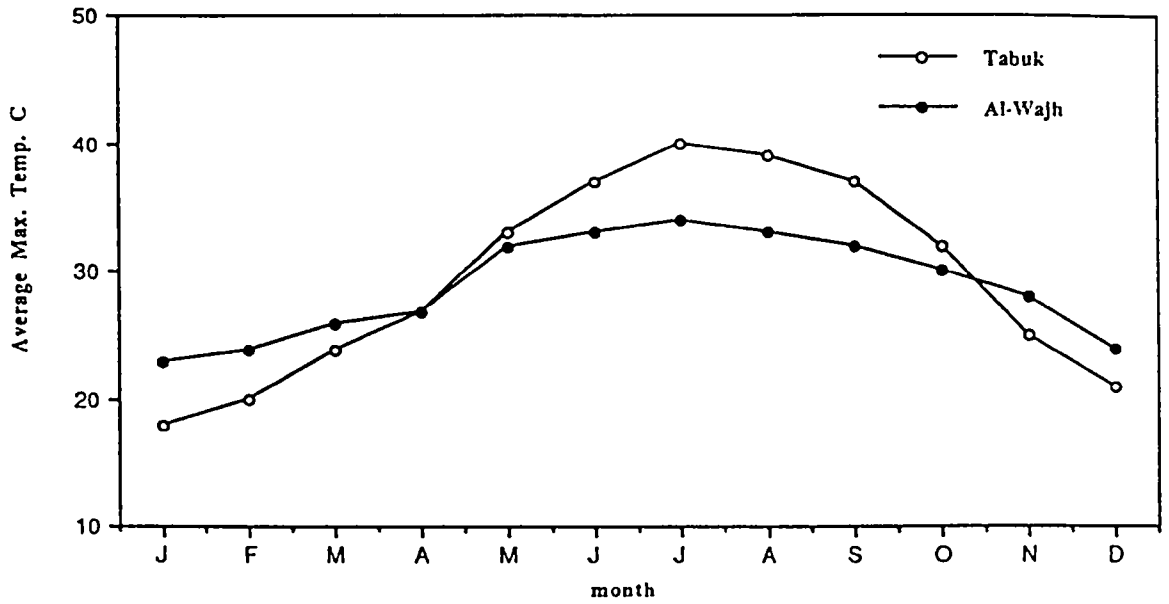


Fig. 3.11 A comparison between Tabuk inland (North) and Al-Wajh in the coast Sea (Red sea) average Max. temperature.

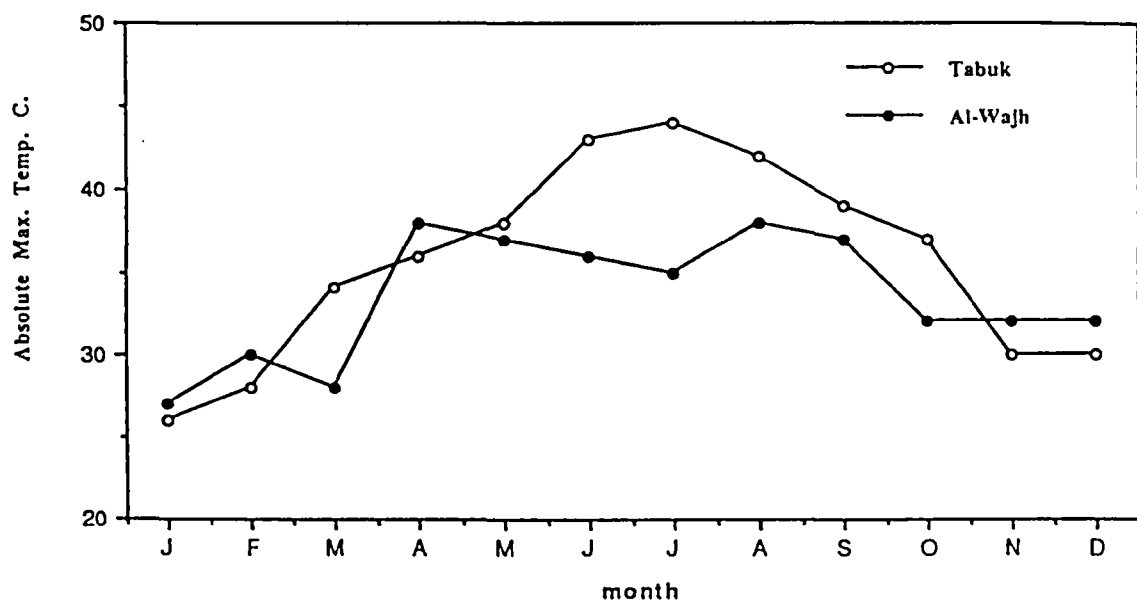


Fig. 3.12 A comparison between Tabuk inland (North) and Al-Wajh on the Red sea coast. Absolute Max. Temp. in the month.

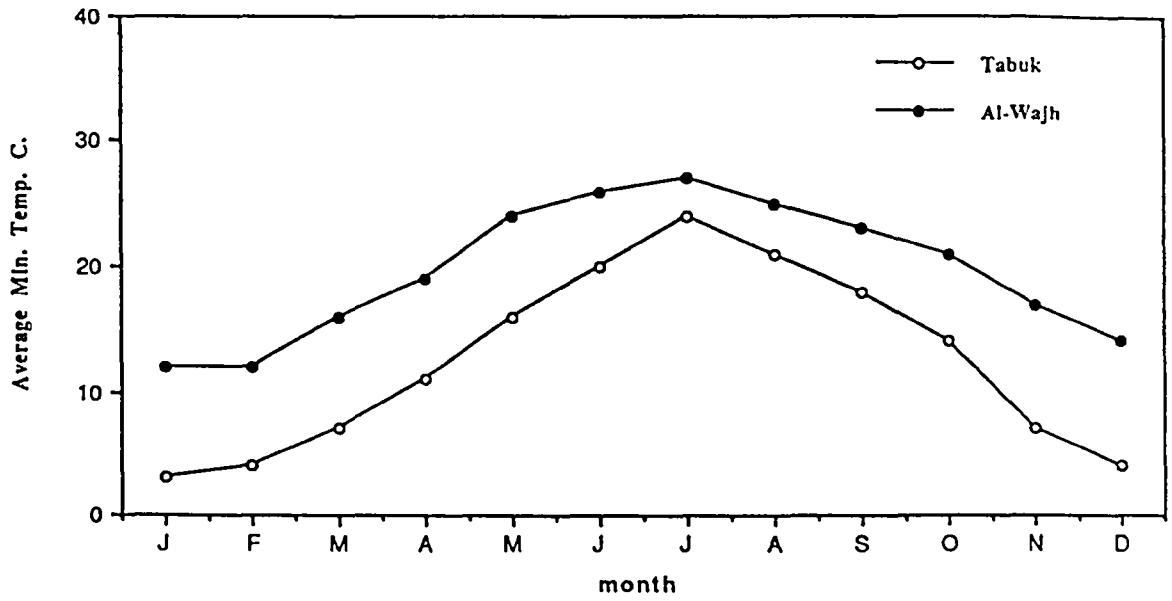


Fig. 3.13 A comparison between Tabuk inland (North) and Al-Wajh on the Red sea coast average Min. temperature.

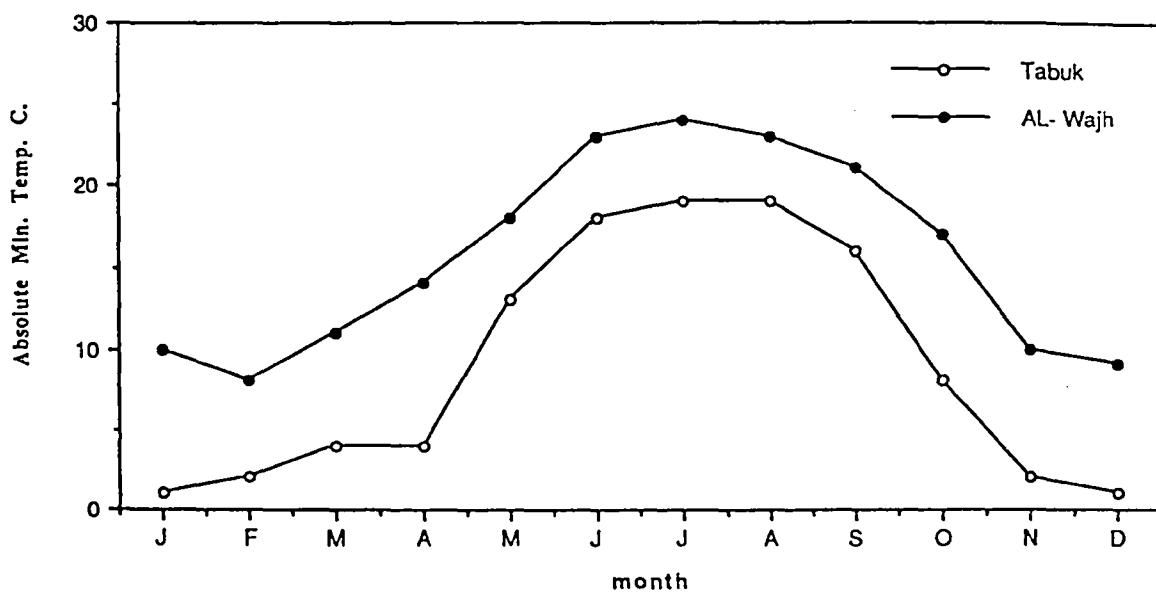


Fig. 3.14 A comparison between Tabuk inland (North) and Al-Wajh on the Red Sea coast. Absolute Min. temperature in the month.

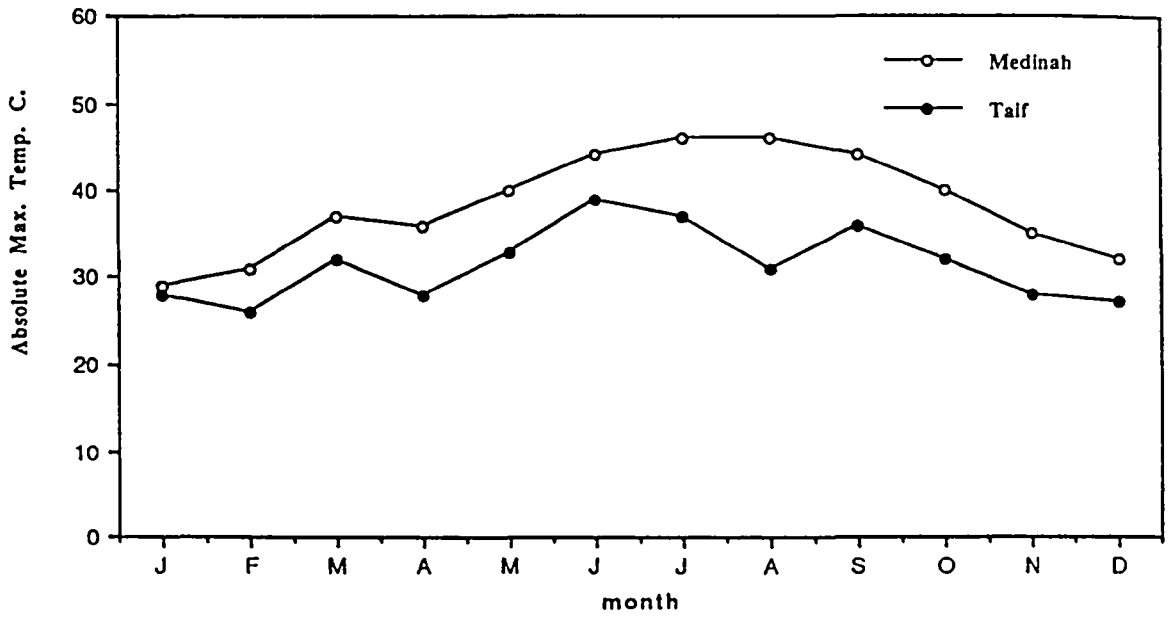


Fig. 3.15 A comparison between Taif (highland) its height about 1565 m and Medinah its height about 619 m. Absolute Max. temperature in the month (C).

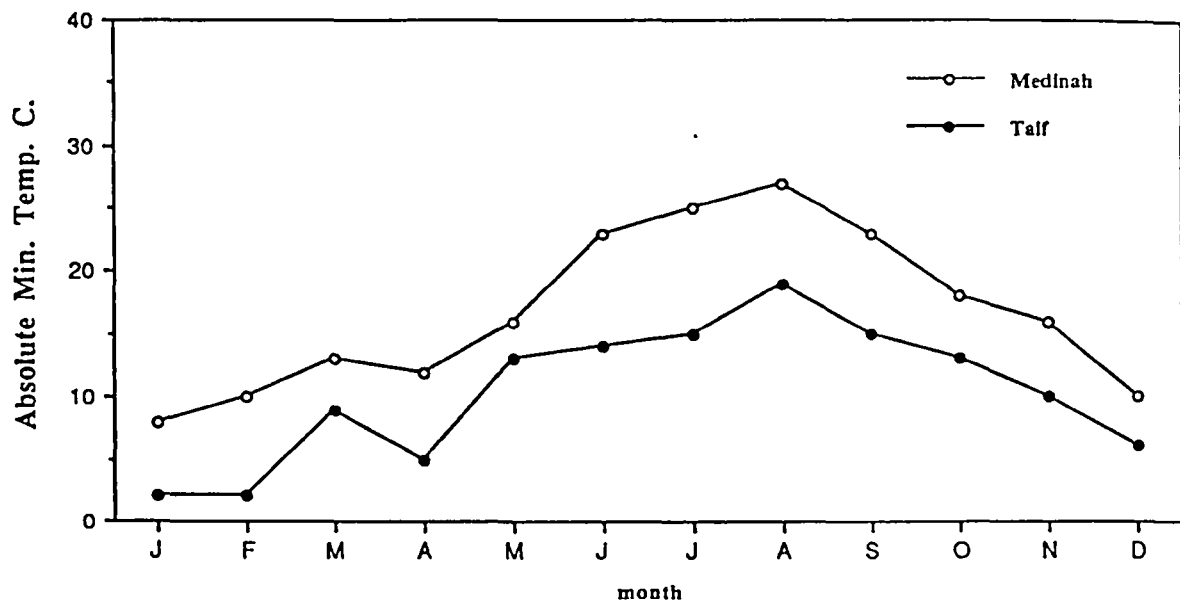


Fig. 3.16 A comparison between Taif (highland) its height about 1565 m and Medinah its height about 619 m . Absolute Min. Temperature in the month (c).

Altitude causes a great depression of temperature.

In regard to the pilgrims attitude in travelling to MAKKA and Medinah to make Al-Hajj (pilgrimage), I believe that they prefer to make Al-Hajj when the Al-Hajj season corresponds with either autumn or winter for several reasons. These reasons include the following:

1. A lot of pilgrims come from high latitudes (north). Most of them are old, and used to living within either a cold or temperate environment, thus they cannot easily tolerate hot weather.
2. Since the water supply on the pilgrim routes is scarce, and because the pilgrims coming to make Al-Hajj are either on camels, horses or on foot, they need a lot of water for their personal needs and for their caravans. Thus, they dislike to make Al-Hajj during the summer season.
3. In summer, when the temperatures go very high, people and animals lose excessive water from their bodies by perspiration. They need to compensate for this water loss.

3.3.3 Humidity, Wind, Fog

In the United Kingdom and in many parts of Atlantic Europe the significance of humidity is low. In Saudi Arabia, it is a significant element of the coastal high altitude climate which experiences high humidity in contrast to the interior areas.

In summer months, humidity with high temperatures in coastal regions is uncomfortable for living and for travel. In winter months, inland regions have high humidity, because winter is the rainfall season.

3.3.4 Wind, Fog and Cloud

In the winter season winds often blow from the northwest. The winds promote rainfall and make the weather over most of Saudi Arabia temperate, because they blow from the Mediterranean. The northeast winds which blow from central continental Asia are dry and cold. They affect the weather in most of Saudi Arabia particularly central, north and northeastern regions. In the central province these winds are known as Nasriyah (eastern). They are very cold winds even when the sun is shining brightly. In summer months the southwest of the country is affected by the monsoon winds which blow from east Africa and the Indian Ocean. These monsoon winds cause rainfall in the highlands. Sandstorms are not unusual, occurring during the summer. They reduce visibility for several days. Sandstorms impede travel both by making it inherently difficult to travel and by hindering navigation. Another very hot wind during the summer months is called Samum (very hot wind).

The other weather phenomena which occur in Saudi Arabia are fog and clouds. Fig. 3.17 shows a comparison between Tabuk inland and Al-wajh on the Red Sea coast. The comparison shows that Tabuk experiences no fog, while Al-wajh has some foggy days. Again fog may influence both choice of route and time of travel. Fig. 3.18 shows the comparison between Tabuk and Al-wajh in relating to the number of cloudy days. Fig. 3.18 also shows that both Tabuk and Al-wajh have cloudy days especially during the winter. Tabuk and Al-wajh lie on the pilgrim routes (Syrian and Egyptian pilgrim routes).

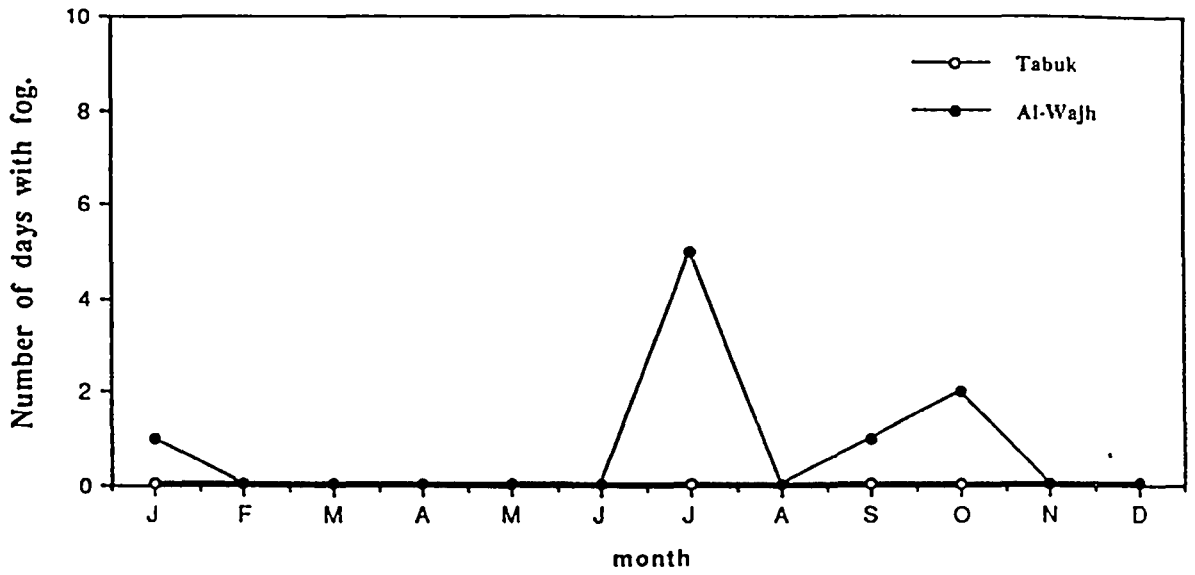


Fig. 3.17 A comparison between Tabuk and AL-Wajh on number of fog days.

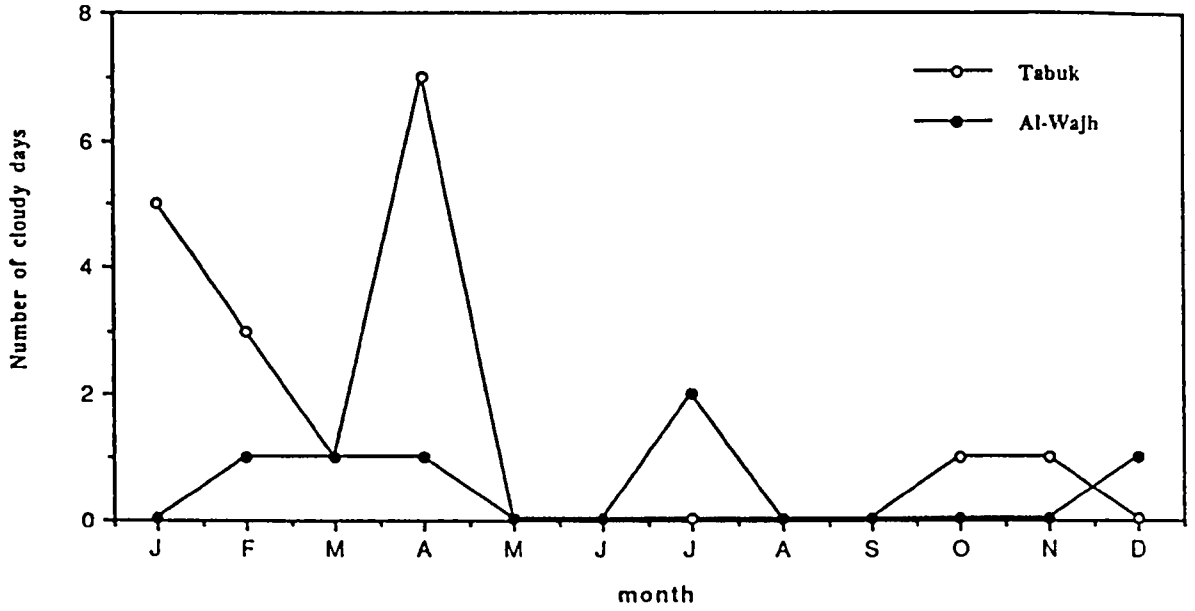


Fig. 3.18 A comparison between Tabuk and Al-Wajh on number of cloudy days.

Pilgrims come as a group of caravans numbering perhaps thousands or ten thousand. They prefer the cloudless days to avoid getting lost, but sunny days cause stress due to thirst. The cloudy or foggy days are most favourable to the pilgrims as a protection from the sun's heat. Pilgrims often travel during daytime to avoid wandering and losing their way, robbing and plundering. So choice of route can only be partially controlled by climate. Route choice is determined by the origin of the pilgrims. Egyptian pilgrims have two options; they may follow the coastal routes or the inland route, while the Syrian pilgrims have to follow the inland route.

3.4 GEOGRAPHICAL DESCRIPTION

Saudi Arabia lies in the southwestern corner of the continent of Asia. The country being situated between 42°E and 52°E and 18°N to 32°N. It occupies about 80% of the Arabian Peninsula. It is bounded to east and west by water. To the north lies Jordan, Iraq and Kuwait, and on the east Qatar and United Arab Emirates, to the south and southeast Oman, the People's Democratic Republic of Yemen, and the Yemen Arab Republic on the west. Its area covers approximately 2,400, 900sq.km. (925,745 sq. miles), and the population was 9,684,000 in 1982." (The Times Atlas of the World, 1985, p. xii)

"Geologists tell us that the land of Arabia once formed the natural continuation of the Sahara (now separated from it by the rift of the Nile valley the great chasm of the Red Sea)

and of the sandy belt which traverses Asia through central Persia and the Gobi Desert." (Hitti 1937, p. 14)

The Arabian peninsula, generally, and Saudi Arabia, particularly, slopes gradually and gently from the west towards the east and northeast. Since Saudi Arabia occupies a large area, as was seen above, it can be divided into four main geographical features as follows: (Fig. 3.19, 20)

(1) The Western and Southwestern Province. (2) The Central Province (Plateau of Nejid). (3) The Great Deserts. (4) The Eastern Coastal Province.

1. The Western and Southwestern Province. These areas contain the highest elevation in the whole country. These mountains as a whole are called Jebal Al-Sarawat (Jebal in Arabic means mountains), but they are known in the south as Jebal Asir (the mountains of Asir), in the north they are named Al-Hijaz (Hijaz mountains). They stretch parallel to the Red Sea coast. (The Ministry of Agriculture and Water, 1409 A.H./1988, p. 3) "The highest mountains are located in Asir (south) where peaks rise to over 3,000 m above sea level. They decline to 2,700 to the west of MAKKA; to 1,400 to the west of Mahd Adh-Dhahab, and to 1,200 at Medinah. The range extends to the north with the same elevation." (Statistical Year Book, 1389 A.H./1969 A.D. p. 8) The mountains overlooking the Red Sea leave a narrow strip plain along the Red Sea coast (known as Tihamah).

This strip varies in width from 45 km. to 65 km. The strip is barren and marked by many marshlands, which make it poor in natural vegetation, and farming, except in some wadis.

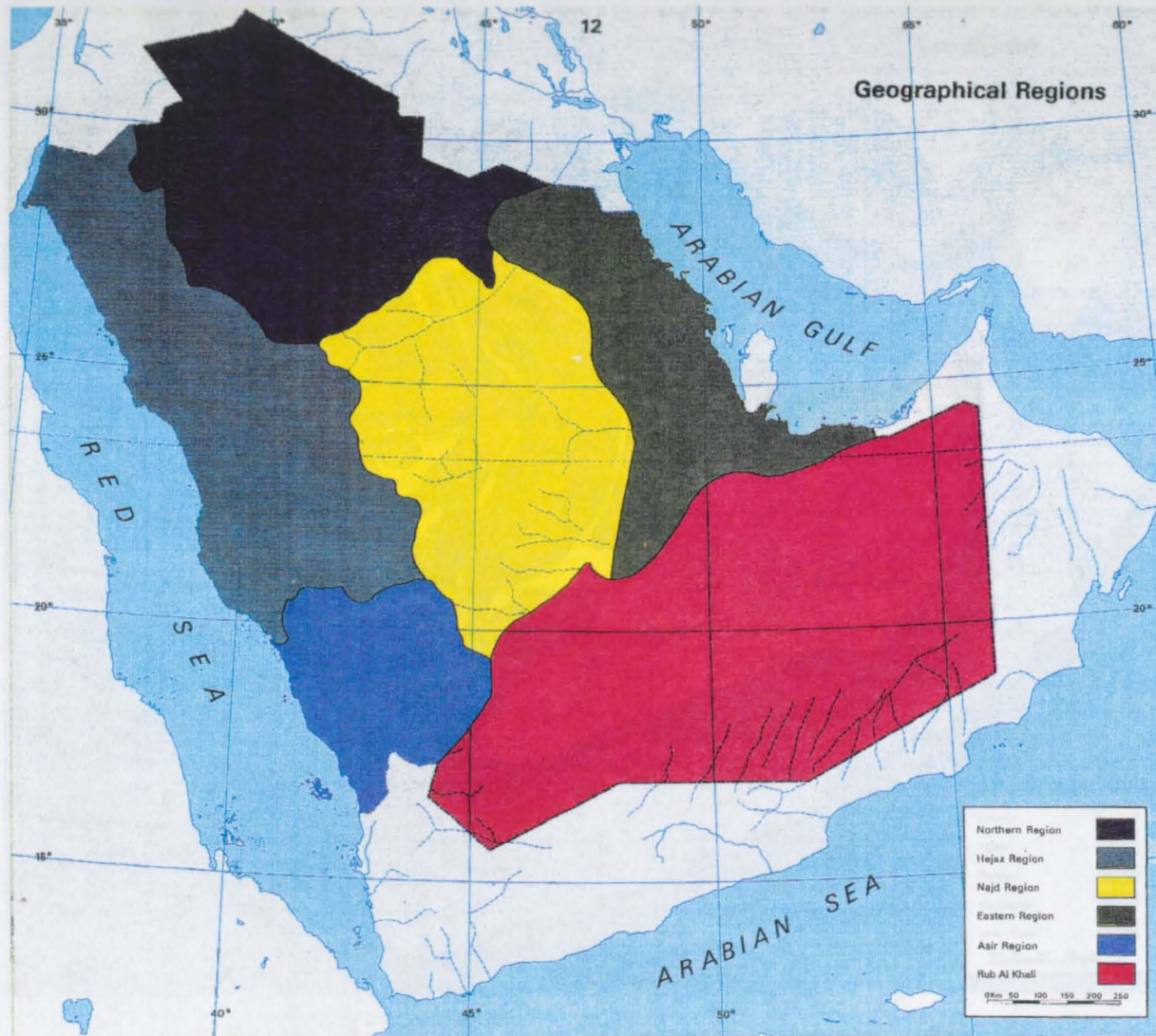


Figure 3.19: Geographical regions in Saudi Arabia (Bindagji, 1980)

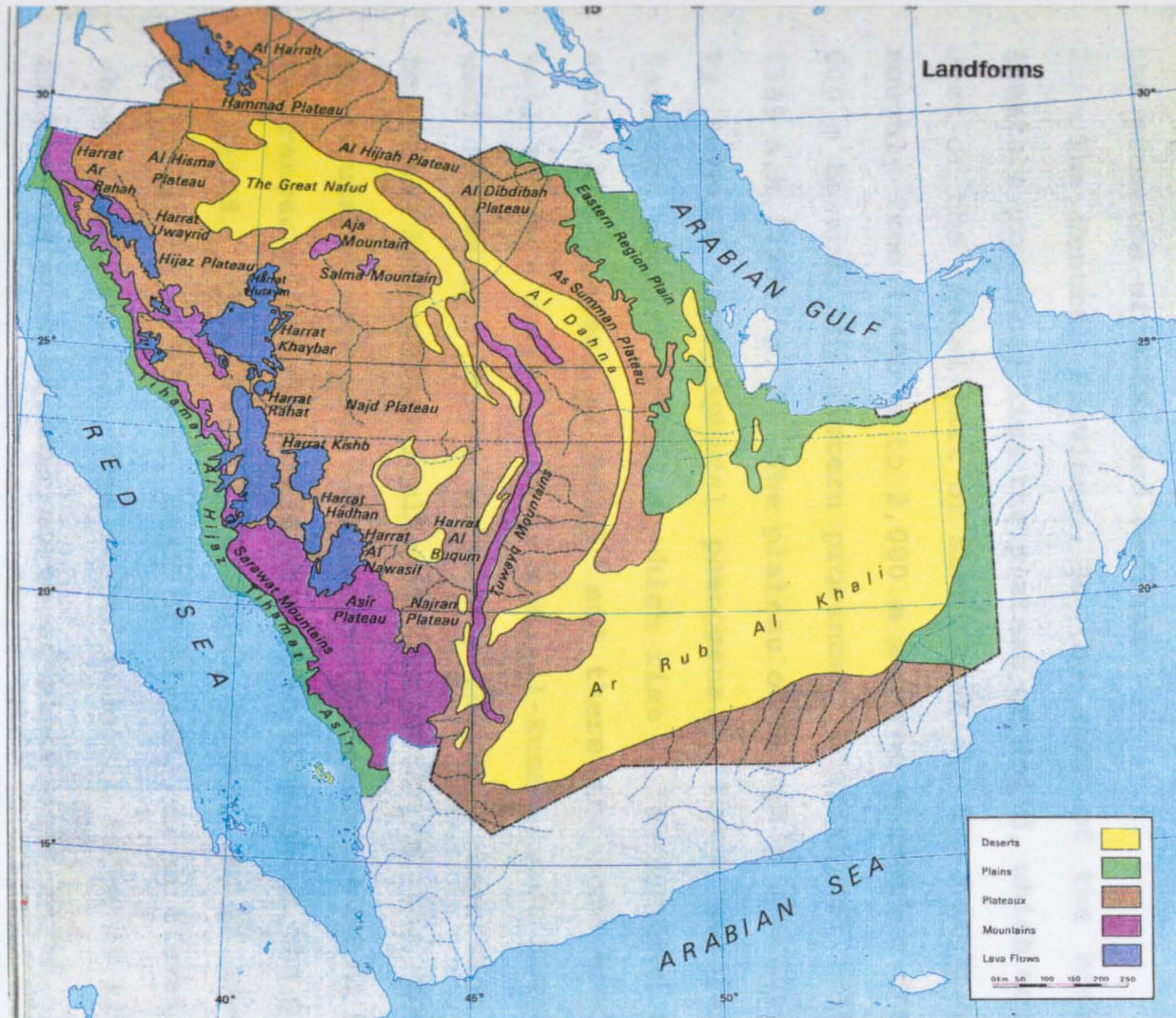


Figure 3.20: Landforms in Saudi Arabia (Bindagji, 1980)

The wadis receive water from rainfall in the mountains, and allows some oases and settlements (Al-Sayyid Rajab 1979 pp. 106, 107). The western province is important, because of the presence of MAKKA and Medinah.

2. The Central Province. To the east of the highlands (western province) lies the plateau of Nejid, which occupies most of the central part of Saudi Arabia. The height ranges roughly from 1,400 m to 2,000 m and the elevation drops to 600 m towards the eastern province. (Statistical Yearbook, 1389 A.H./1969, p. 8) The plateau of Nejid is characterized by several topographical phenomena. These geographical features consist of hills which rise a few hundred meters above the plateau of Nejid; and there are some basins as well as many wadis, such as wadi Al-Rumah, wadi Hanifa and wadi Al-Dwasir. These wadis are the most important areas for the largest agricultural projects in the country, particularly near wadi Al Rumah in the district of Al Qasim. Two ranges of mountains are scattered throughout the plateau of Nejid. The first are Jebal Tuwaiq which run from southwest to northwest, west of Riyadh, at an elevation of about 1,060 m a.s.l. The second mountain range is situated in the district of Hail north of plateau of Nejid. These mountains are known as Jebal Shammar (Shammar mountains). These mountains consist Jabal Aja, and Jabal Selma. Height roughly ranges 1,400 m to 1,700 m. (Kanoo, 1971, p. 34) The central province (Nejid) comprises the capital of Saudi Arabia, Riyadh, the political centre of the country.

3. The third geographical feature of Saudi Arabia is the

great sandy deserts or sea of the sands. These sand dunes are a part of the central province, but differ in its composition and in its environmental conditions. Sandy desert extends from the south to the north separating the central regions from the eastern coastal regions, forming a belt of sands in an arc-shape. These vast sand dunes vary in size, as well as in natural circumstances. They carry different names according to location as follows:

a) The Great Nafud extends from south to north and joins the Syrian Desert in the north, to the Addhna desert in the south. It covers roughly 235,520 sq.km. (Twitchell, 1958, pp. 14, 15). Occasionally, the Great Nafud receives some rain in the winter seasons, which may be enough to cover it with verdure and herbage, which are adequate to pasture cattle.

b) The second large sandy desert is Addhna, a belt of sand which links the Great Nafud and Al-Rub Al-Khali (Empty Quarter) together. When Addhna receives winter seasonal rains, it is able to support grazing during most of the year.

c) The third sandy desert is Al-Rub Al-Khali (Empty Quarter). It is the largest sand dune desert area, covering much of the south and southeast of Saudi Arabia. The Al-Rub Al-Khali, which encompasses the southeastern one-fifth of the Kingdom, is the most arid desert on earth. (Mackey, 1987, pp. 42, 43) It occupies an area of approximately 6000,000sk (Bowen and Ulrich, 1987, p. 244). This large area is uninhabited because the environmental conditions are

extremely harsh.

4) The Eastern Coastal Province occupies the coastal plains extending along the Arabian gulf, near sea level. The coast is sandy and has many salt swamps (called in Arabic Sabkhat). The Eastern province is characterized by two main things. It contains the main oil fields and petrochemical factories, and it contains a large agricultural area with many oases including Al-Hassa, where a large irrigation project is located, and the Qatif oasis.

3.4.1 Hydrological Processes

To assess the possible functions of the water resource structures observed in the field it is necessary to have a basic description of the hydrological processes that operate in the areas under consideration. The description that follows focuses on two sets of processes. Firstly those that lead to the formation of surface flows and secondly those that promote groundwater accumulation. Hydrological processes are frequently the object of detailed research investigations and what follows must necessarily be an outline of current thinking and so suffers from the lack of detail inherent in a short synopsis.

Rapid surface flows may be generated either by Hortonian runoff or by rapid near surface runoff which may eventually become saturated overland flow. Hortonian flow occurs when the rate of rainfall exceeds the infiltration capacity of the surface. In Saudi Arabia rainfall is low and is also extremely infrequent. Such rainfalls as do occur generally

are high intensity events. Infiltration capacities (the maximum rate at which water can pass into the ground surface) which might be expected to be high given the sandy texture of the media have been shown to be particularly low (Berkowicz et al, 1992). This low infiltration capacity is created by the very low hydraulic conductivity of dry soils and exacerbated by the presence of hydrophobic biofilms and physical capping occurring at the ground surface. Rainfalls in excess of infiltration capacity run off the ground surface as a sheet at high speed until it reaches the channels. As the shear strength of the flows increase they pickup debris, over long time periods this erosion results in the formation of a wadi. Overland flows to wadis must be diverted and funnelled into cisterns and tanks if the water is to be available for human use at that site. The long low diversion walls that we map a number of wadi sites serve this function.

Waters that infiltrate the ground surface will either become deep ground waters or will become near surface flows. This latter process will operate if they encounter a layer of reduced permeability which will cause flow to move laterally. Although these flows will be slower they may eventually exfiltrate especially on relatively steep slopes and this return overland flow will move across the surface at speeds of up to 100m. hr.

Ground waters will accumulate either as a true groundwater table or a perched groundwater table dependent upon the subsurface hydraulic characteristics and topography. In

either case extraction of the water will take place through wells or through adits, which in this area are known as qanats. Artesian springs are relatively uncommon although gravity fed springs from the groundwaters in higher terrain areas commonly feed agriculture. Groundwaters are renewable only if the long term rate of extraction does not exceed the rate of replenishment and if the rate of transport from the site of replenishment exceeds the rate of utilisation. In general while these groundwater systems have high storage capacity they are poor transmission systems.

3.5 GEOLOGICAL STRUCTURE

The Arabian Peninsula covers a large area bordered on the north by Syrian Desert, on the west by the Red Sea and the Gulf of 'Aqaba, on the south by the Arabian Sea, and on the east by the Arabian Gulf. The available geological evidence indicates that Arabia was part of Africa and separated from it by the Red Sea Rift Valley.

Generally, the Arabian Peninsula geological structure was formed in the pre-Cambrian and overlain by more recent deposits. The Arabian Peninsula consists of two main geological features as follows:- (El Khatib 1980, p. 6)(Fig. 3.21)

1. The Arabian Shield
2. The Arabian Shelf

3.5.1. The Arabian Shield

the Arabian Shield covers the western part of Arabia, that

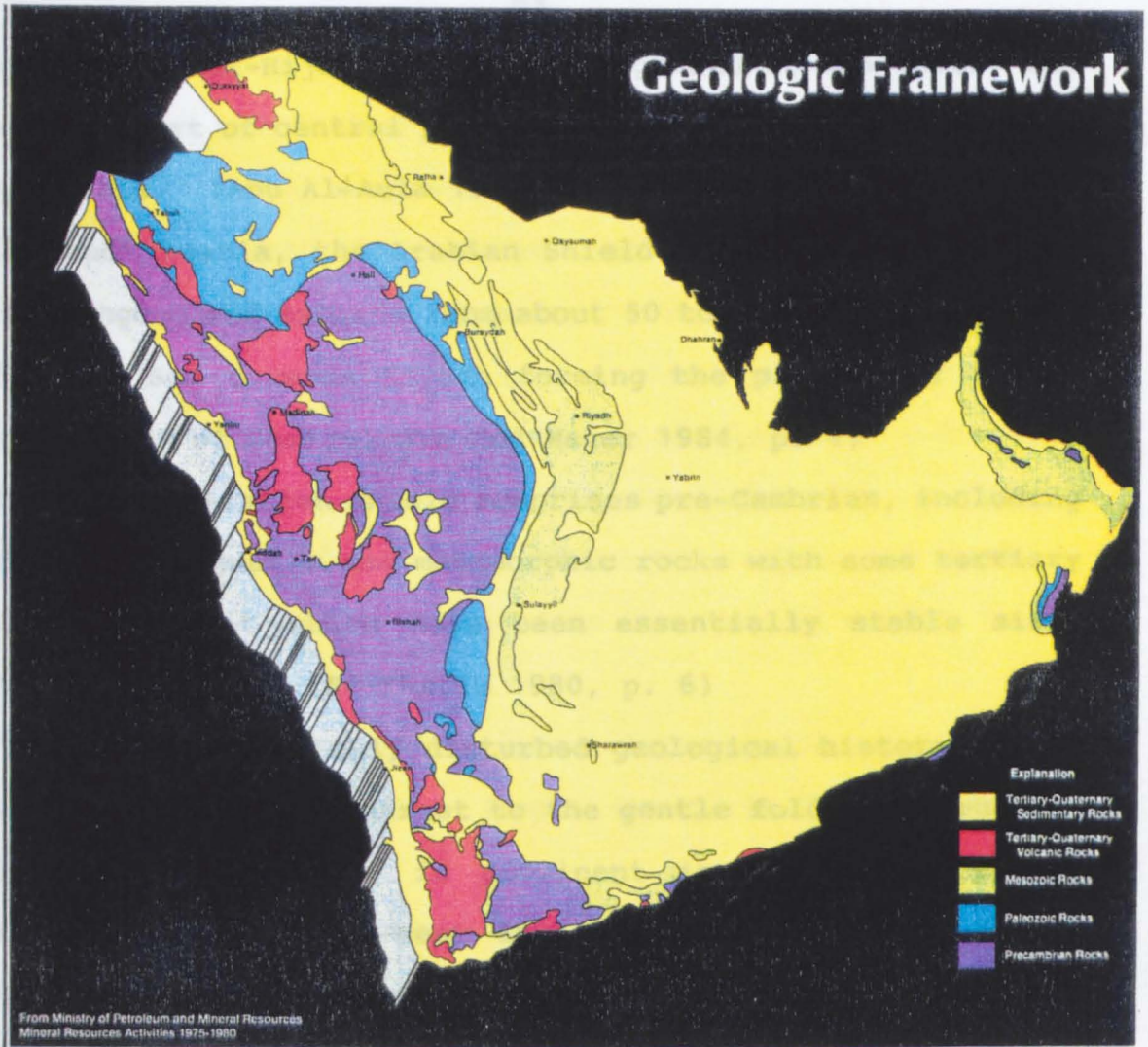


Figure 3.21: Geological framework in the Arabian Peninsula (Ministry of Agriculture and Water, 1984)

The western part of it is raised creating the range of mountains of the Archean rocks along the Red Sea. (Utah 1981 p. 41) Therefore these mountains vary considerably in their height and width from place to place. There are a number of wadis that run from the mountains, some of them run towards the Red Sea, others towards the west. These wadis are supplied by groundwater which supports agricultural settlements.

3.3.4. The Arabian shelf

The Arabian Peninsula in general and Saudi Arabia in particular

consists of Al-Hijaz, 'Asir, the highland of the Yemen, the western part of central plateau Nejid and the southern coast of Arabia. (Abu Al-'Aula 1972, p. 32)

In Saudi Arabia, the Arabian Shield occupies one third of the Kingdom and extends from about 50 to 700 km. inland from the Red Sea towards Riyadh forming the plateau of Nejid. (Ministry of Agriculture and Water 1984, p. 4)

The western Arabian shield comprises pre-Cambrian, including plutonic, magmatic and metamorphic rocks with some tertiary plateau basalt which have been essentially stable since Cambrian times. (El-Khatib 1980, p. 6)

"Because of the highly disturbed geological history of the west and south in contrast to the gentle folding in much of the east volcanicity is prominent in the former areas. Throughout the north-west lava fields (harrah) of recent formation produce desolate landscapes whilst in the south lava flows, though less prominent are still to be found" (Fisher, 1950, pp. 442, 443) This results in Arabia sloping eastward. The western part of it is raised creating the range of mountains of the Archean rocks along the Red Sea. ('Uthman 1983 p. 41) Therefore these mountains vary considerably in their height and width from place to place. There are a number of wadis that run from the mountains, some of them run towards the Red Sea, others towards the east. These wadis are supplied by groundwater which supports agricultural settlements.

3.5.2. The Arabian shelf

Arabian Peninsula in general and Saudi Arabia in particular

is gently sloping from west to east in the basin which was occupied by the Tethys Sea. This region is known as the Arabian shelf and covered by the sedimentary rocks. The difference between the Arabian shelf and Arabian shield is that in the former the archean rocks or the pre-Cambrian rocks do not appear on the surface because the sedimentary rocks cover it, while in the Arabian shield the pre-Cambrian rocks appear on the surface. (Abu Al-'Aula 1972, p. 33)

"The Arabian shelf is of sedimentary origin and forms a cover of rocks ranging in age from Cambrian to recent." (El-Khatib, 1980, p. 6)

Some basins are covered by accumulated sands, these dunes include Al-Rub Al-Khali - (Empty Quarter), Nafud Al-Dahna, and Al-Nafud.

There are also several wadis where the availability of ground water is satisfactory enough for a number of oases and agricultural settlements to exist.

CHAPTER FOUR

FIELDWORK CONDUCTED IN SAUDI ARABIA

In this chapter the nature of the fieldwork and a review of the results of that fieldwork are presented. The chapter addresses three areas (i) The purpose of fieldwork (ii) the methods employed in the fieldwork (iii) preliminary conclusions and observations concerning the fieldwork.

4.1 PURPOSE

The main objective of the fieldwork was to conduct a full survey of the remains of water resource structures that have survived on the Syrian and Egyptian pilgrim routes. Reviews of literature discussed earlier, have indicated the routes and stopping places that are claimed to exist. This objective breaks down to three further tasks. The first to find the claimed pilgrim stopping point. The second, if the site can be found, to ascertain whether or not there are any remaining archaeological\resource structures. The third where remaining structures are found to measure and articulate the nature of the water resource structures.

4.2 METHODOLOGY

All sites that have been historically recorded as being pilgrim stopping places were visited. From the earlier analysis of regional and seasonal variations in climate in Saudi Arabia it was agreed to survey firstly the northern provinces and subsequently the southern provinces. Preparation for fieldwork commenced in September 1989 and the field work started on the 20th December 1989 and continued until the end of January 1990. During this 40 day

period some 8,000 kilometres were travelled, approximately half of this on unpaved roads. In order to document the stopping places the expedition consisted of an archaeologist, a surveyor and a photographer. During the field work and the extensive survey various instruments and equipment were used principally a theodolite, various tape measures (linen tape, steel tape), compasses, etc. Cameras were used to take both black and white and coloured slides; and a video camera was used to make a documentary film of the pilgrim routes.

The surveys started in Medinah and initially, extensive surveys were conducted on the pilgrim stations around this site. Fig. 4.1 shows the areas where the field work has been conducted. Thereafter the sequence of surveying is shown in the table below

SEQUENCE OF SURVEYING

Stage No.	Starting point	Ending point	Notes
1	Medinah	Al-'Ula	
2	Al-'Ula	Tabuk	
3	Tabuk	Halat 'Ammar	
4	Haql (Gulf of Aqaba)	'Ainunah	
5	'Ainunah	Bida	inland route to join Syrian pilgrim route
6	'Ainunah	Yanbu Al-Bahr	coastal route
7	Yanbu Al-Bahr	Wadi Al-Safra	inland route through Yanbu Al-Nakhl
8	Wadi Al-Safra	Al-Qadhimah	on the Red Sea
9	Al-Qadhimah	MAKKA	inland

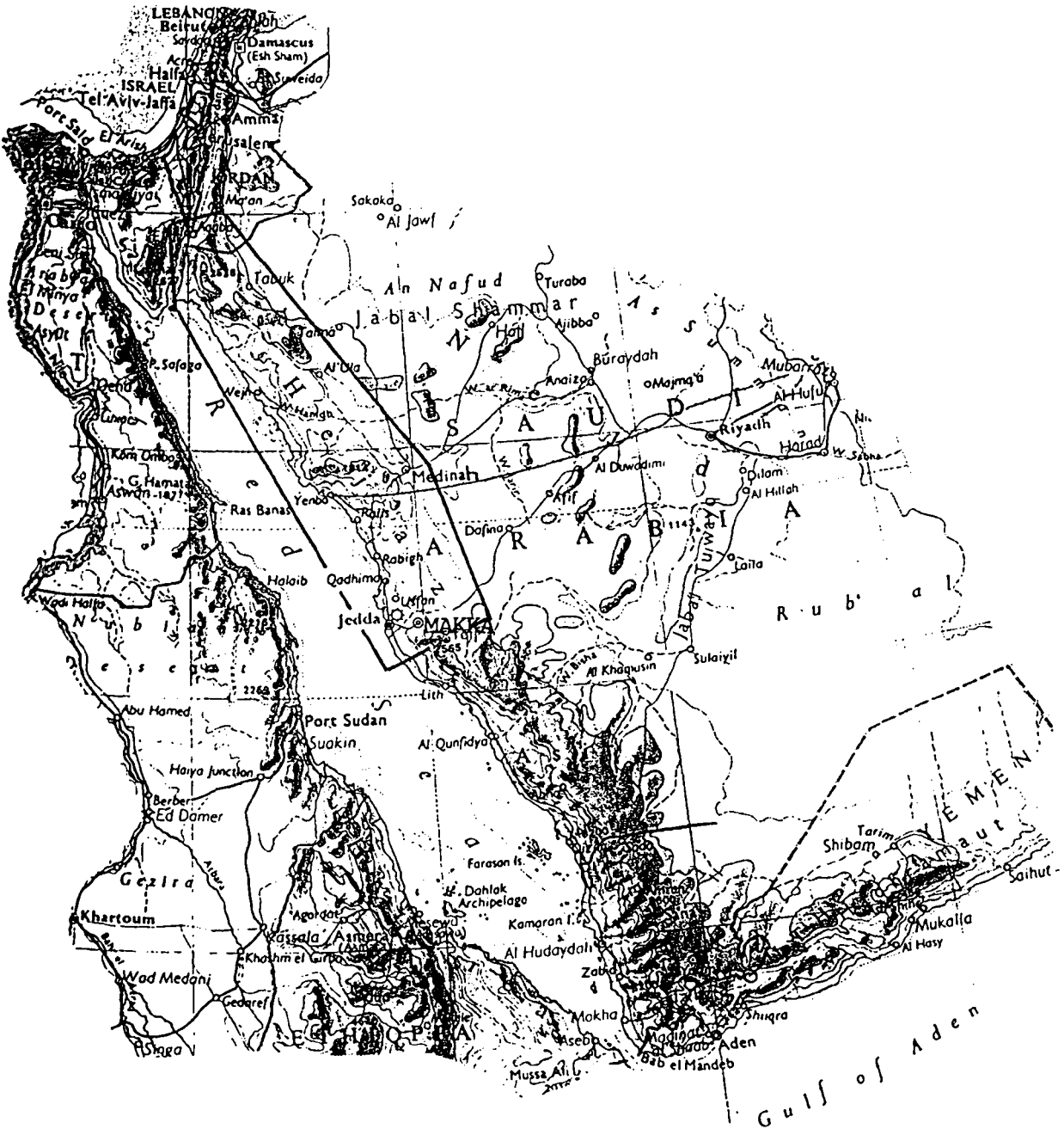


Figure 4.1: The area where the field work was conducted

10	MAKKA	Jeddah
11	MAKKA	Medinah

For the purpose of field work routes were divided into coastal, inland and traverse routes (C, I, T). Each of these route types was further subdivided eg C₁, C₂, C₃ etc. Figure 4.2 shows this subdivision.

In addition to the documented pilgrim routes there are interconnecting (traversing routes) which were also surveyed. Following the field survey a further three months were taken to analyse the survey data to provide the documentation elsewhere in this thesis and the plans of each of the sites where structures remained.

4.3 CONCLUSIONS

A number of pilgrim stations no longer exist. In some cases they appear to have changed their names and in other cases may have moved from an ancient location to a new one, perhaps promoted by changes in contemporary road patterns. For instance Al-Suqya was a well-known pilgrim station where the Syrian and the Egyptian pilgrim caravans gathered before continuing their journey to Medinah. Now it is called Al-Khushaybah. Another example is Dhu Khushub which is a pilgrim station situated on the Syrian pilgrim route and which is now called Al-Mendassih.

Al-Suqya-Umm Al-Birak was a large and well known pilgrim station situated between Medinah and MAKKA. It has now moved to a new location about 10km away from the original site. Al-Jar was a pilgrim station on the Egyptian coastal route and was the seaport for Medinah and now no longer exists. Waddan also no longer exists but was a pilgrim station on the caravan route between

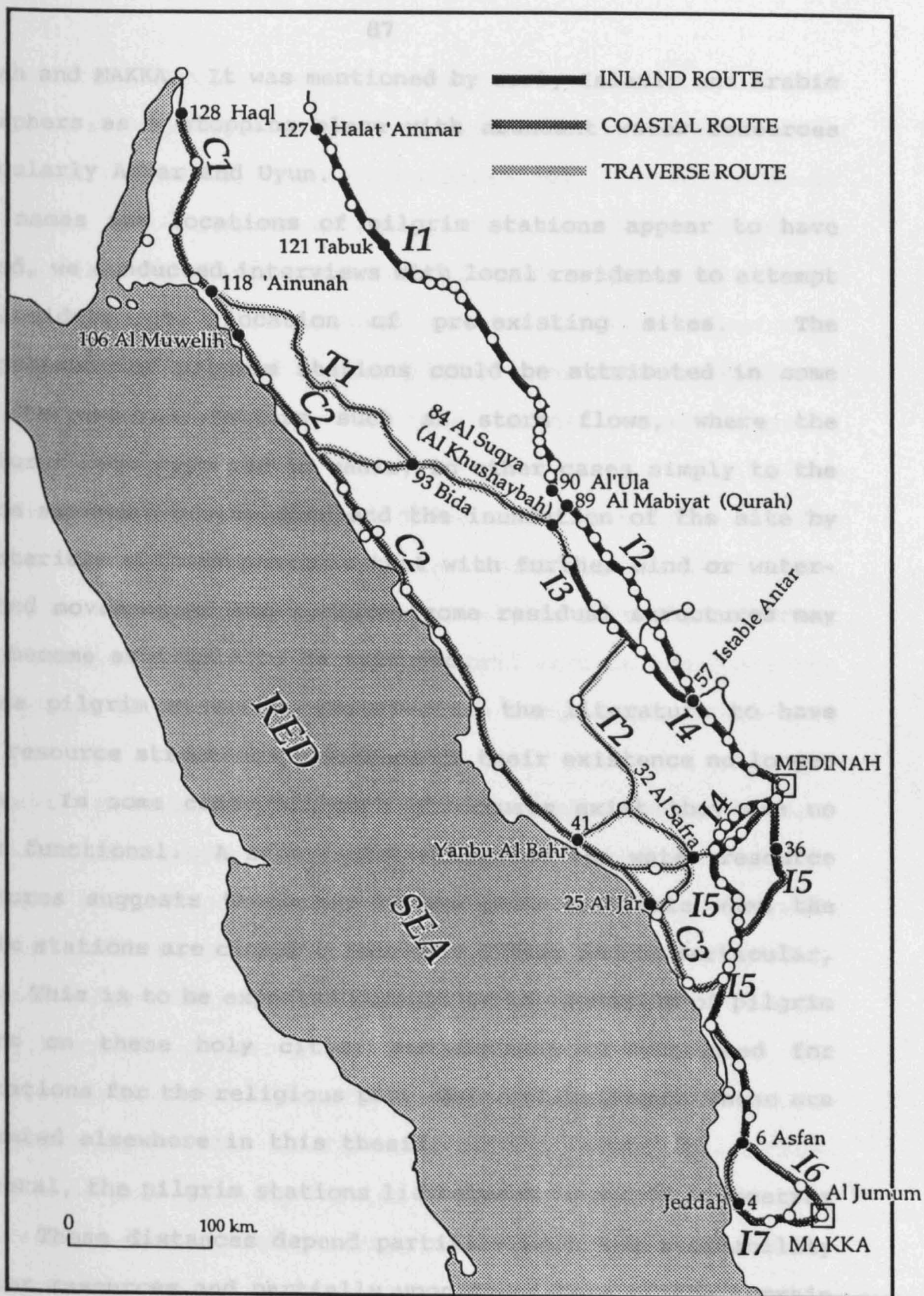


Figure 4.2: The subdivision of the pilgrim routes

Medinah and MAKKA. It was mentioned by early Islamic and Arabic geographers as a stopping place with abundant water resources particularly Abyar and Uyun.

Where names and locations of pilgrim stations appear to have changed, we conducted interviews with local residents to attempt to elucidate the location of pre-existing sites. The disappearance of pilgrim stations could be attributed in some cases to natural factors such as storm flows, where the structures were reported in wadis; in other cases simply to the surface movement of the sand and the inundation of the site by dry materials. It is possible that with further wind or water-promoted movement of the surface, some residual structures may again become available to be surveyed.

At some pilgrim stations, reported in the literature to have water resource structures, evidence of their existence no longer exists. In some cases although structures exist they are no longer functional. A superficial review of the water resource structures suggests that they become more available when the pilgrim stations are closer to the holy cities and in particular, MAKKA. This is to be expected because of the focusing of pilgrim numbers on these holy cities and because of the need for preparations for the religious part of the pilgrimage. These are documented elsewhere in this thesis.

In general, the pilgrim stations lie between 30 and 60 kilometres apart. These distances depend partially upon the availability of water resources and partially upon the nature of the terrain which might limit the speed of travel between pilgrim stations. There are considered to be three kinds of pilgrim halting places.

The first are large stations where the pilgrims can find essentials such as food, water and shelter both for themselves and for their animals. It is considered that they may stop at these sites for a number of days. The second site might be termed a watering place. Here the pilgrims would stop only to provide themselves and their animals with water but may rest overnight. The final form of stopping place represents a temporary rest place and is likely to have limited water resource structures.

In addition to these functional differences in pilgrim halting stations there are also differences which depend upon their location in the network. During the analysis of the survey data we gave particular attention to sites that were on the junctions of routeways as opposed to sites which were simple traversing sites.

The survey reveals a diversity of water resource structures including birak, abyar, qanawat, cisterns and springs.

Most water resource structures appear to be built near the banks of wadis, particularly the biraks and the cisterns. The wells are usually found at the bottom of the wadis or very close to the base of the wadis. Here ground water is easier to reach. The birak and the cisterns appear to be fed from a variety of sources such as springs, wells or from trapped rainwater during rain periods. As explained earlier in the thesis, the intensity of water requirements is higher during particular religious seasons. We believe that during Al-Hajj, water would have been brought to some cisterns in water skins.

The water resource structures are diverse in their shape and size

and these have been fully documented in the appendices to this thesis. In the case of tanks and cisterns, the most common shape is square or rectangular but there is evidence of irregular oval, circular and rhomboid structures on occasions. Most wells are circular. The depth of tank ranges typically between 2 - 5m. It is rare to exceed a 5m depth. The locations of the water resource structures have been carefully selected and in general they are built from locally available materials, in particular stone and gypsum. Most of these features are well constructed and have survived for long periods of time. They are almost entirely hand-worked and hand-built. The style of construction of cisterns, wells and tanks is characterised by the use of two lines of stones which are almost always trimmed. In some cases there is evidence of settling ponds, filters and deflecting walls, both to capture the water from nearby wadis and wells and to some extent to clean the water of particulate matter. Some of the water-trapping channels (today usually known as catchwaters) run for many kilometres. It is not always possible today to determine the functional relationships between some of the residual catchwaters, tanks, and cisterns.

The importance of water resources is emphasized by the presence of fortresses to protect the water resources, particularly during Al-Hajj seasons. These castles are built adjacent to the water tanks and in addition have the security of a dug well within their perimeter. Where feasible these fortresses have been surveyed and are presented in the diagrams in the appendix to this thesis.

It may be the case that wells were the earlier form of water

resource structure. However, with the increasing number of pilgrims using the Syrian and Egyptian pilgrim routes, it may have become necessary to build tanks in order to store water from a wider area and over a wider time period. This would also have made water available to higher concentrations of pilgrims. In view of these higher concentrations and of the condensed timing of the pilgrim period, the fortresses could have performed a policing as well as a military role.

Because of the importance of animals to the transport of early pilgrims it is clear that the water resources found on the Syrian and Egyptian pilgrim routes would have served a dual function, firstly for the direct supply of water to the pilgrims and secondly for the watering of the caravan animals.

CHAPTER FIVE

FIELD WORK RESULTS: SOME EXAMPLES FROM THE DOCUMENTATION OF WATER RESOURCES5.1 Introduction

The purpose of this thesis was to document the water resources of the pilgrim routes. The results of the extensive survey, the methods of which were described in the previous chapter, are presented in Appendix 1, 2, 3 and 4. We discuss this survey in the subsequent chapter, but in this chapter some examples of the range of results and the difficulties of obtaining these results are presented.

5.2 Early Syrian and Egyptian pilgrim routes

After the rise of Islam and the Islamic conquest of Bilād Āl-Shām and Egypt, in the first century of Al-Hijra the adoption of Islam among most of the population in these countries promoted pilgrimage to MAKKA. The roads between Bilād Al-Shām and Egypt and Arabia were conventional and much travelled, so that the pilgrim caravans from Syria and Egypt followed the ancient trade caravan roads in most of its parts.

"The Syrian pilgrim's highroad follows the old transport route of at-Tebükijje. After the conquest of Syria, many pilgrims and even caliphs and members of the ruling house of Umayyads journeyed every year along this road to the Holy Cities." (Musil 1926 Vol. 1, p. 326)

The Syrian pilgrim caravans follow the conventional inland route through Tabuk. The Syrian pilgrims who come through

Palestine met the Egyptian and North African pilgrims at Ailah - a seaport on the end of Gulf of Al-'Aqabah. The pilgrims assembled at Ailah then continued their trip taking either the inland route which runs from Ailah to Medinah through Wadi Al-Qura (Ibn Rostah, 1892, p. 183; Al-Yaqubi, 1892 pp. 329-330) or they might take the coastal route until they reached the seaport of Al-Jar. This is the ancient port of Medinah from which they either go to Medinah or directly to MAKKA through Al-Juhfah. (Al-Yaqubi, 1892 P. 340 and Al Maqrizi N.D. p. 61).

The coastal road which runs alongside the Red Sea coast is called Al-Mu'riqah route, while the inland route is called the Tabukiyya road (At-Tabari, 1879-1903 Yaqut, 1955 Musil 1926, Vol. 1. p. 321)

"The inland route from Medinah to Ailah is identical with the old Muriqah route used by the Quraishis caravans between MAKKA and Syria or Egypt" (Al-Wohaibi 1973 p. 324).

Since the early Islamic period the caliphs paid great attention to these routes and provided them with most necessities. They established a lot of facilities which included wells, tanks, cisterns, castles and rest-houses. (Maliki, 1987, pp. 125-127)

Because the purpose of the thesis is to document the remains of water resource structures on the Syrian and Egyptian pilgrim caravan routes an extensive survey and investigation was undertaken in the field along these routes. Because the pilgrim routes pass through a large area more than a hundred pilgrim stations have been documented and recorded.

Too much evidence exists to be recorded in the body of the thesis. What is presented here represents the typical and the unusual. An indication is given, before each record, of the reason for the selection.

5.2a Selected Sites

A typical site consists of three main water resource structures namely a water tank (birkah), a well (bir) and canals (Qanawat). For instance the site of Az-Zibiniyah which is located within the pilgrim station Marr Al-Zahran (Al-Jumum) (Site number 5) is considered a typical site. It has a water-tank, a well and a canal or channel.

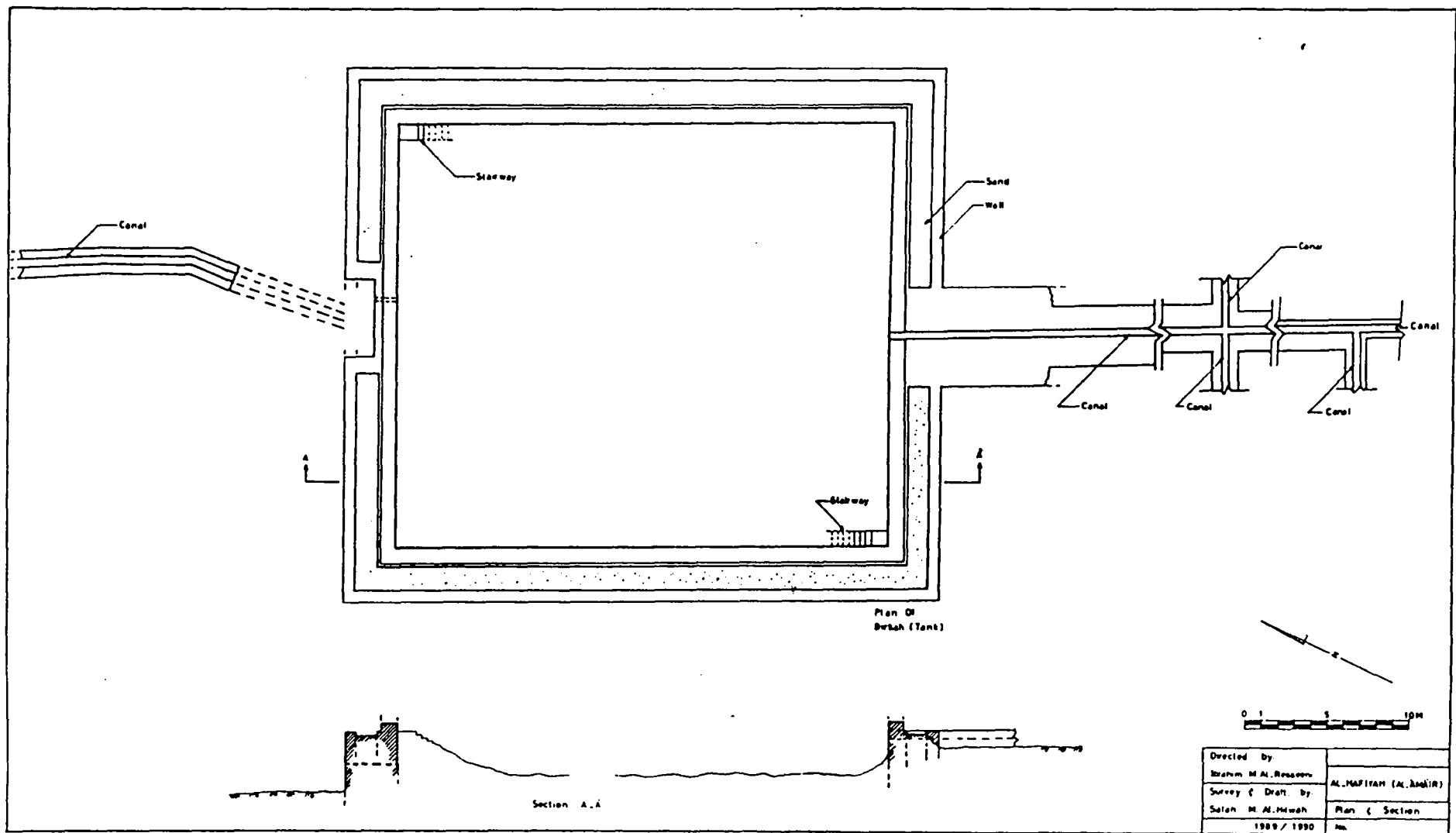
5.3 Sites selected

5.3.1. Al-Hafiyah Al-'Amair

This site has been selected because, first of all, as far as is known it has not been mentioned by any writer. Even the Department of Antiquities in the Ministry of Education has no record of this site. It therefore represents new and original data. The interview with some bedouins who live nearby and are familiar with this area said that this site was a pilgrim station and showed us the route through which the pilgrim caravan passed.

The other factor which made this site interesting is that the site consists of both a tank and remains of a qanawat. Both are of distinctive construction. (See plan 5.1 Folder 1)

The survey of the area showed that there are many remains of qanawate and that might indicate that the area had been cultivated by irrigation.



Plan 5.1: Birkah and distribution system at Al-Hafiyah (Al-'Amair)

Al-Hafiyah-Al-'Amair: Site Number 43, route identified: I4,
site type: simple

This site is 16km north of bir Al-Sharyofi and about 7km west of Mfarhat about 24°23'N and 39°17'E at Wadi Malal. The site consists of a watertank and some remains of canals. The watertank is quite big and has distinctive architectural features. It is a rectangle about 29.93 x 24.70m. The tank is constructed with two stone walls set with mortar and the space in between the walls is filled with rubble. The base of the outer wall is about 1.10m wide but narrows to about 83cm wide higher up and is about 4m in height. The inner wall is separated from the first by a distance of about 1.30m and is 70cm in width at the top. Of course the unusual architectural feature, the second wall, which surrounds the main wall of the tank gives it more strength and protection from outside influences. The tank itself is choked up with sand and has a remaining depth of about 2m. (See plate 5.1a)

The tank has two stairways, one is situated at the north corner and is about 88cm wide, with steps about 32cm in width and about 15cm in height. (See plate 5.1b) The second stairway of similar dimensions is located at the southern corner and links up with the western wall. The stairways are used to go down to the base of the tank. In the south-eastern wall, there is a canal about 40cm wide and 20cm deep, built of stones and plastered with gypsum. It is situated between two stone walls. The width of the walls differ, near the tank and up to a distance of 6m away they



Plate 5.1a

The birkah in topographic context is constructed with cut stones.



Plate 5.1b

The staircase at the northeastern corner of the birkah is built of roughly cut stone, it also appears to have been plastered.

measure about 2.60m but then they gradually decrease in width until they measure about 37cm at 300m distance. Two channels branch off from the canal in the form of a cross. One runs towards the east the other, westwards. Following these two channels there is another channel which runs westwards. The main channel runs for about three kilometers and then disappears at the foot of the mountains. Manholes are located at varying distances and connect to the main channel. This channel was probably the means by which the tank was fed with water from the springs which originated in the mountains. Unfortunately, the springs have now dried up. In the middle of the inner NW wall there is a culvert which consists of a circular ceramic pipe which has a diameter of about 20cm. The culvert is located about one meter from the top of the wall of the tank. The culvert connects to a canal which runs outside, its width is about 47cm and it is about 20cm deep. The canal was built between two walls, each of which are about 50cm wide. The canal and the walls are built of stones and the canal is plastered with gypsum. This canal is probably the outlet for Al-birkah acting as a spillway. It is a curved canal and runs for a distance of about 20m and then disappears under the sand.

There are some remains of buildings to the south of the resource structures.

5.3.2 Madyan-Al-Bida'-Maqhair Shu'aib

This pilgrim site is an ancient town mentioned in the Holy Quran - Surá XXVIII verse 23 - and by the early Islamic

writers as a pilgrim station on the Egyptian pilgrim route. Ibn Khurdadhabah (1889, p. 129) placed it on the Egyptian pilgrim route after Haql and before Al-Aghra, Ibn Rostah (1892, p. 183) mentioned it after Sharaf Al-Naml and before Al-Aghrá, Al Idrisi (1878, p. 350, 351) mentioned it saying it is a town larger than Tabuk and placed it between Haql and Al Aghrá.

The reasons for the selection of this pilgrim way station are as follows:

Firstly, this pilgrim halting place consists of two archaeological sites: one is ancient and goes back to the pre-Islamic period; the second is considered as an Islamic site, where the pilgrim caravans from Egypt passed through it. The remains of water resource structures still stand and their condition is good. The surveying of the area indicated an abundance of water and the area is richly cultivated.

5.3.3 Al-Bid'a-Madyan - Maqhair Shu'aib, Site Number 120, route identified:C1, site type: simple

This pilgrim station is located 60km south of Al-Sharaf and 60km north-west of 'Ainunah (28°28'N and 35°02'E). According to historical records this pilgrim station is situated in an ancient area. The area is mentioned in the Holy Quran by Islamic writers and by western historians. Musil (1926, vol 1, pp. 109-120) visited Madyan and describes its tombs that had been hollowed out of the soft limestone rocks. He adds that the ruin of Al-Malhah was a pilgrimage station established after the sixteenth century and has a

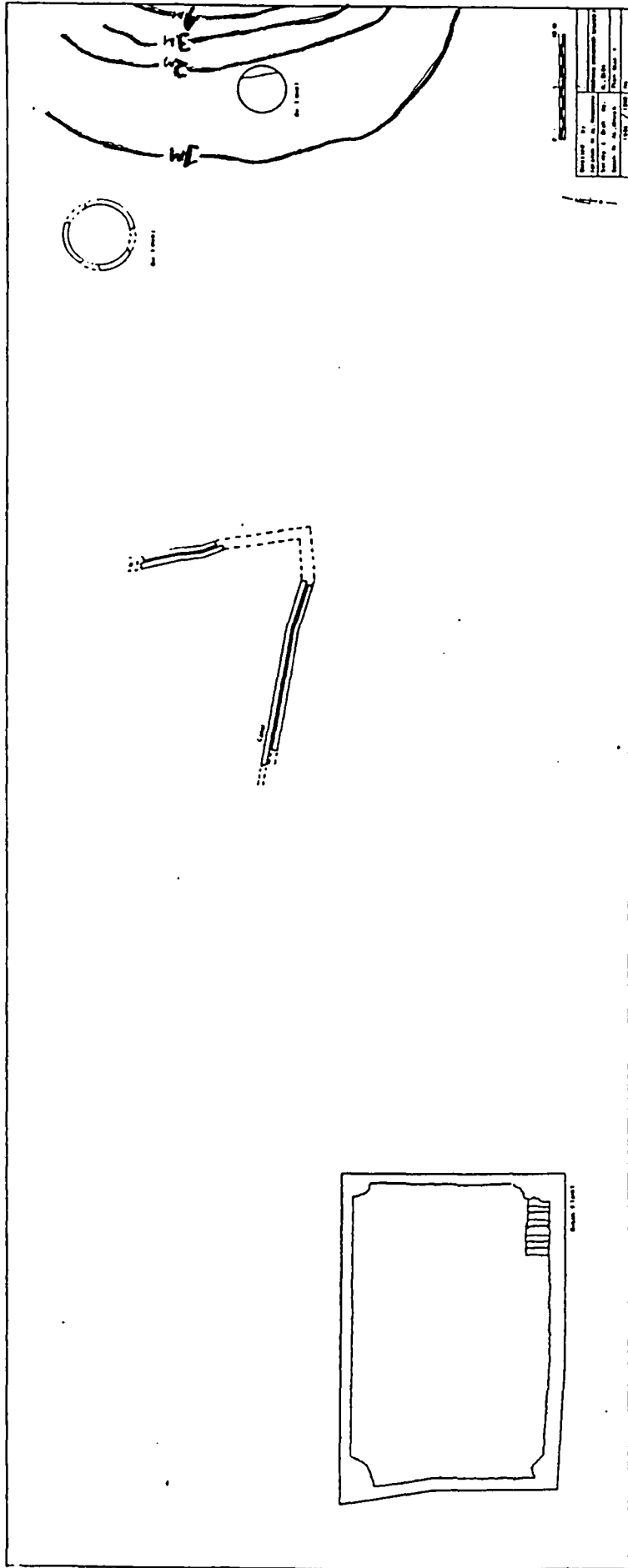
rain pool. He also mentions the site of Al-Malqatah as the most ancient settlement in the Oasis of Al-Bid'a. Philby (1957, pp. 213-218) describes the Madyan region and mentions three sites within it. One is Al-Malhah described as a tiny oasis with a number of wells and palms. The second site of Bir Al-S'aidini with a water-trough and the third site as Al-Malqutah. He states "The Island lies less than a mile from Al-Malhah it possesses palm-groves and small reservoirs". Later the area became a pilgrim station on the inland Egyptian caravan route leading from Ailch in the north to MAKKA. The area extends for about 45km and has abundant ground water, the soil is very fertile and the inhabitants cultivate various plants and crops. The area consists of three principal sites.

1. the first site is Bir Al-S'aidini
2. The second site is known as an Islamic site or Al Malqatah
3. The third site is Al-Malhah

5.3.3.1 The first site - Bir Al-S'aidini

This site consists of a watertank, a well, the remains of a further well and canal. (See plan 5.2 & folder 2)

The watertank is rectangular in shape, and measures 27.60m x 18.20m. The thickness of the surviving wall is about 1.40m in some parts, while in others it is about 90cms. Almost all of the interior sides of the walls have collapsed. There is the remains of a stairway in the south-east corner and along its southern wall. The four corners of this tank have collapsed and are covered with debris and



Plan 5.2: Birkah and abyar at Bir Al-S'aidini

stones. The tank is now filled with sand and earth and the visible depth is about 2.50m. It was built with locally available materials - sedimentary stones plastered with gypsum and mud (see plate 5.2a). This birkah is probably the first one where mud was used as plaster. There is no visible evidence to indicate where the inlet and outlet were situated, if indeed it had an inlet and outlet, because most of the tank is in ruins. However, about 35m to the east there are the remains of an uncovered surface canal constructed with sedimentary stones. Its width is 20cm as is its depth. It is bordered by two walls each about 50cm wide. Some plaster remains are still visible on the canal and the walls. There is a well 100m away on a rocky hill (see plate 5.2b). It has a circular mouth opening dug into the rock with an interior diameter of about 4.50m. The visible depth is about 11m. The well is unusual in its design, the upper shaft was dug in a circular shape while in the middle the shape of the shaft is roughly semi oval. It probably existed prior to Islamic times. About 15m north-west of the above mentioned well, there are the remains of another well. It has a circular mouth opening with a diameter of about 6m. It is almost completely choked up with sand and earth and only the upper shaft, which is lined with stones and clear of debris, survives today. The site is surrounded by settlements which consist both of modern and old houses.

5.3.3.2 The second site "Al-Malqatah - the Islamic site"

This site is located about 3km west of bir Al-S'aidini. It



Plate 5.2a

A view showing the remains of an ancient bir which is dug into the rock near the top of the hill. It also shows the shaft built with stones plastered with gypsum.



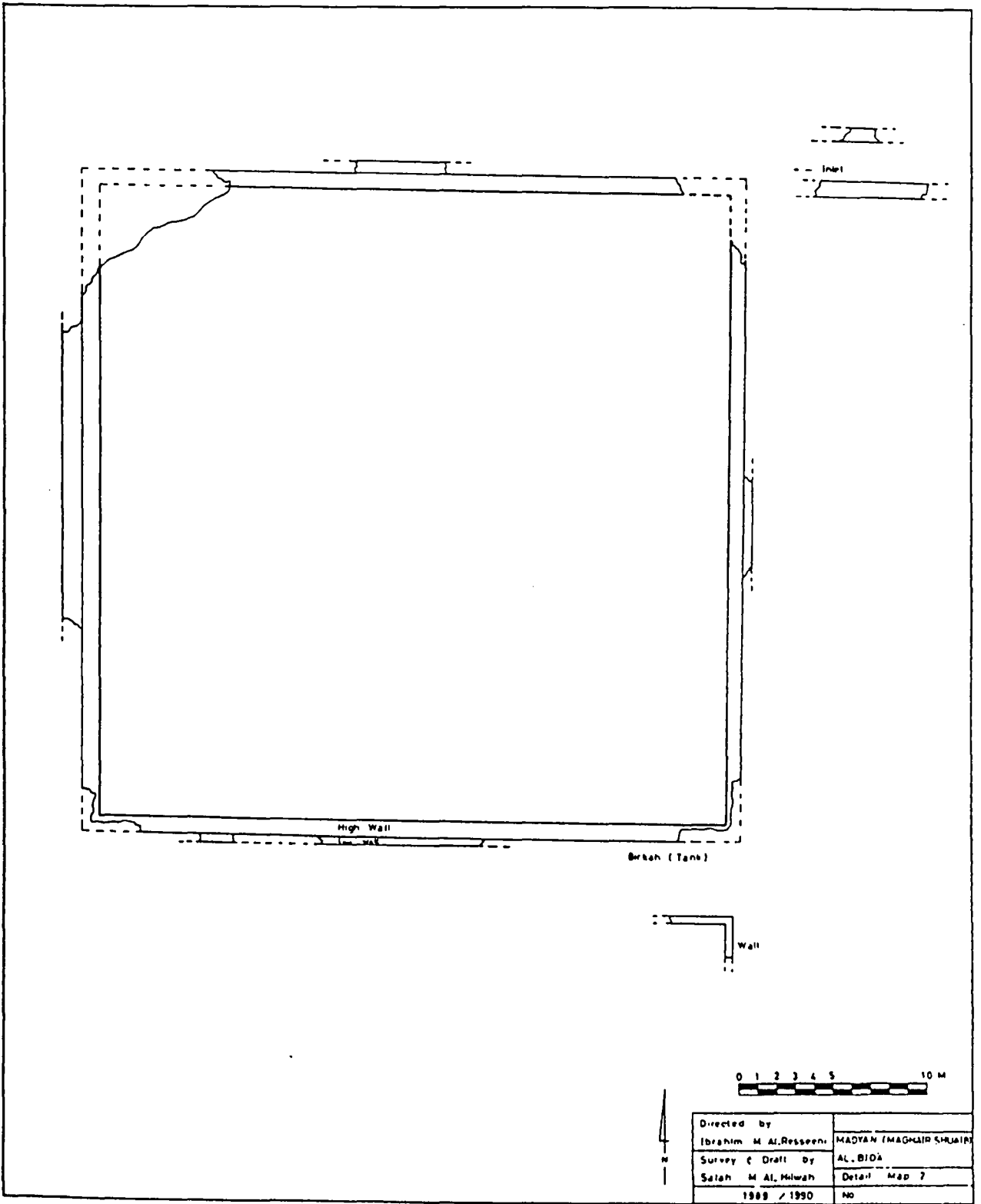
Plate 5.2b

A view showing the remains of a birkah with gypsum plastered stones. It also shows the residual depth of Al-birkah.

consists of a watertank and the remains of some foundations and the walls of buildings. (See plan 5.3 & folder 3) The tank is quite large, approximately square with an internal measurement of about 34m x 34m. It was constructed with red sedimentary stones which were available locally. The thickness of its walls is about 2m. Above these walls, which may be the foundations, is another wall above ground level. Its width is about 80cm. Almost all of the corners of Al-birkah have been destroyed; it is plastered with gypsum inside. It is filled in with sand, earth and plants and small trees so that the remainder of its depth is about 1 meter at the centre. (See plate 5.3) The inlet is situated at the north-east corner, where there are two parallel walls which measure about 80cm in width, they are constructed with stone and there is a gap of about 2m between them. It is impossible to say if the well has an outlet due to the damage which has occurred which prevents the identification of such features. About 4m south of the south-east exterior corner there are the remains of a stone wall. Its width is about 40cm and its purpose is unknown, but it may be part of a deflecting wall. There are also the remains of some foundations and walls nearby. The site is surrounded by farms and gardens which have abundant supplies of water drawn from artesian wells

5.3.3.3 The third site - Al-Malhah site

This site is situated 1km north of Al-Malgatah site - the Islamic site - and 30m south-west of the modern paved road which comes from Tabuk through Al-Bida to 'Ainunah. It

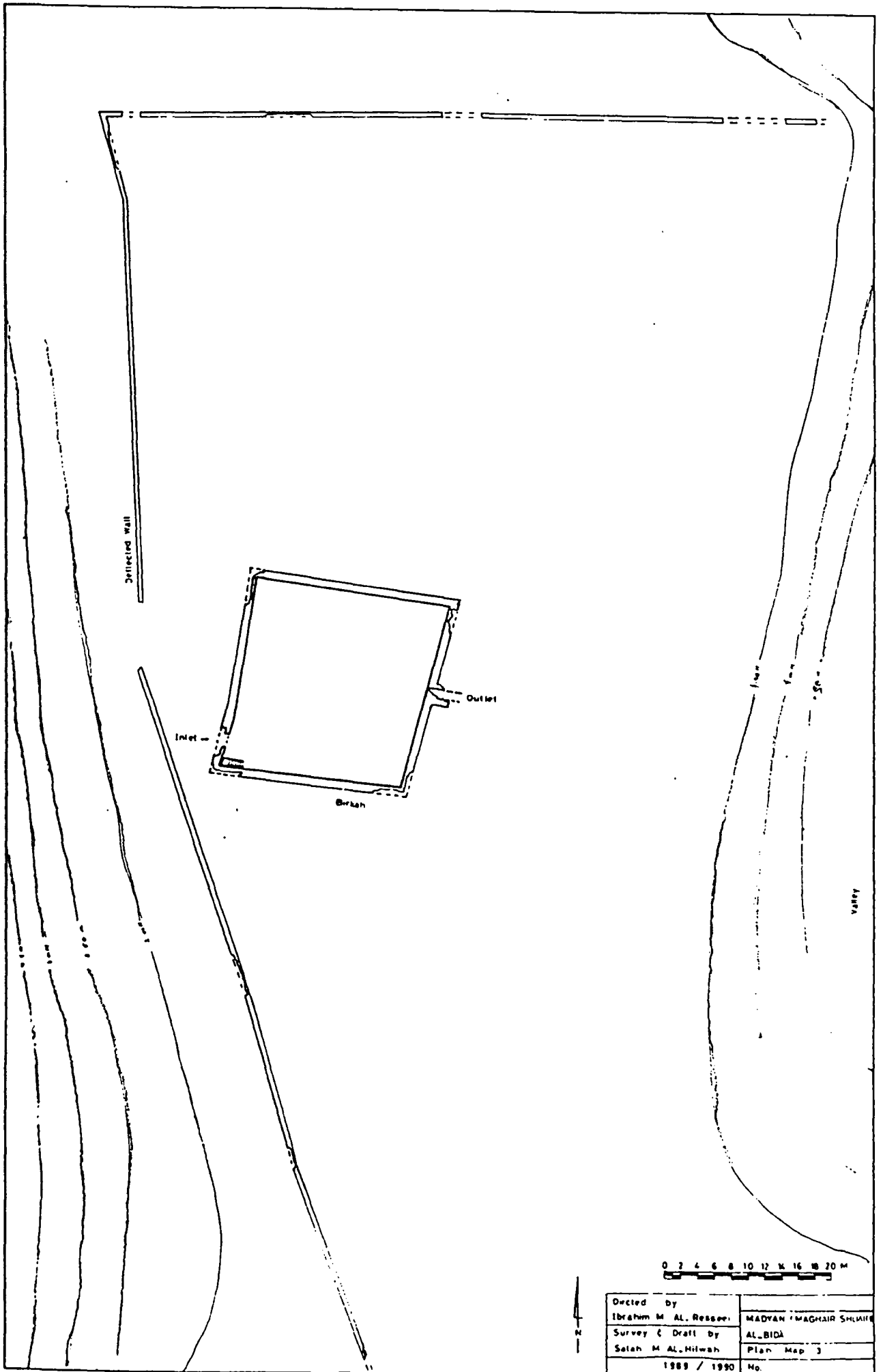


Plan 5.3: Birkah at Al-Malqotah - the Islamic site

consists of a water tank. The tank is rhomboid in shape, (see plan 5.4 & folder 4) its wall is about 24m long and the width is about 50cm. There is a stairway to the south-west corner which links up with the south wall. The stair width is 85cm. The inlet is situated in the west wall, north of the stairway. The outlet is situated in the middle of the east wall. Again the tank was constructed with red sedimentary stones plastered inside with gypsum. Because it is filled with sand and earth the visible depth is about one meter at the centre, but this must be an underestimation. (See plate 5.4). A wall in the shape of a letter L surrounds the tank. the first part of it is located about 55cm north of the water tank, its length is about 80m and it runs from east to west. This part of the wall joins the second part of the wall which runs from north-west to south-west and lies to the north-west of the tank. Its length is about 140m and it stops about 4m from the tank. The width of the wall is about 70cm and it was built with sedimentary stones. It probably served as a deflecting wall and turned water from the western area into the tank which was established on a small hill west of a wadi. There are the remains of foundations and buildings scattered around the area. The area also has an ancient archaeological site similar to Al-Hijr and Al-Petra in Jordan which consists of tombs cut into the rock faces of the mountains.

5.3.4 Marr Al-Zahran, site number 5, route identified I6, site type simple.

This pilgrim station is one day's journey from MAKKA (Yaqu



Plan 5.4: Birkah and deflected wall at Al-Malhah site

Site: Al-Malqatah (the Islamic Site)



Plate 5.3

A view showing the remains of a birkah which is built with cut stone plastered with gypsum. It is now filled with earth and trees.

Site: Al-Malhah



Plate 5.4

A view showing the remains of a birkah which is constructed with stones plastered with gypsum. It also shows the residual depth of Al-birkah.

1955, Vol. 5, p. 104). Marr is the village and Al-Zahran is the valley. It has a lot of springs and palm trees ('Arram N.D. p. 38). It lies on the Egyptian and Syrian pilgrim routes (Abu-Al-Fida 1840 p. 95).

(Al-Himyari 1975, p. 93) describes Batun Marr saying it is located in Al-Hijaz 34 miles from Asfan. He adds it is a large village populated with fine houses. It has abundant palm-groves and farms, and there is a water tank taking water from the mountain. This pilgrim halting place has been chosen for the following reasons. Firstly water was abundant at this site so that it was and still is one the the main sources of agricultural products for MAKKA. Secondly, it was considered a large station as the pilgrims from Egypt and Syria gathered there. Thirdly, this pilgrim station consists of a number of sites and each site contains a number of water resources. These water resource structures include tanks, cisterns, channels and wells together with a lot of remains of foundations of buildings. Most of the remains of water resource structures are still in very good condition, although the areas around them are ploughed and cultivated.

This pilgrim station is well known to geographers, historians, pilgrims and ordinary people. It is known by three names. Formerly it was called Marr Al-Zahran or Wadi (valley) Fatimah, but nowadays it is known as Al-Jumum.

It is situated about 20 km north-west of the holy city of MAKKA on about 21°37'N and about 39°41'E. This pilgrim station is considered to be a large pilgrim halt and is

very important because it is close to the holy city of MAKKA and has to provide for the needs of the pilgrims and their animals. It is also a main stopping point on the route between MAKKA and Medinah.

It lies on the Syrian and Egyptian pilgrim routes and covers a large, area approximately 10km x 20km which consists of a number of small dispersed settlements and agricultural communities.

Since the pilgrim station is located near to the holy city of MAKKA and because many pilgrims pass through Marr Al-Zahran annually, there are many water resources and facilities available in this region. In addition to the pilgrim station, Wadi (valley) Fatimah, is considered to be one of the largest and most fertile wadis in the western province (Hijaz) in Saudi Arabia. It had abundant water resources such as springs, wells, water-tanks, canals, cisterns and basins.

Unfortunately, most of these water resources have been destroyed, either by natural factors such as winds, floods and dry weather or by human factors such as ploughing the arable land around the water resources, particularly where the canals, basins and water-tanks are situated. However, some of the water resources still exist especially the water tanks because they have been solidly constructed and situated below ground level which protected them from conditions above ground. At the pilgrim stations there is normally one water-tank, and a well channel but in many cases there is more than one major water resource as can be

seen in Al-Jumum.

Out of the number of water resource structures in Al-Jumum pilgrim station, water-tanks were selected not only because of their construction and size but because they have a distinctive architectural style. Their design indicates that the tanks probably date back to the early Islamic period, possibly the Abbaside period. Gilmore, Al-Hilwah and Al-Resseeni Vol. 8 1404A.H./1984) "The sites are substantially close together. This may be explained by two factors; the proximity to the holy city of MAKKA and its density of pilgrims and by the richness of the soil and water resources".

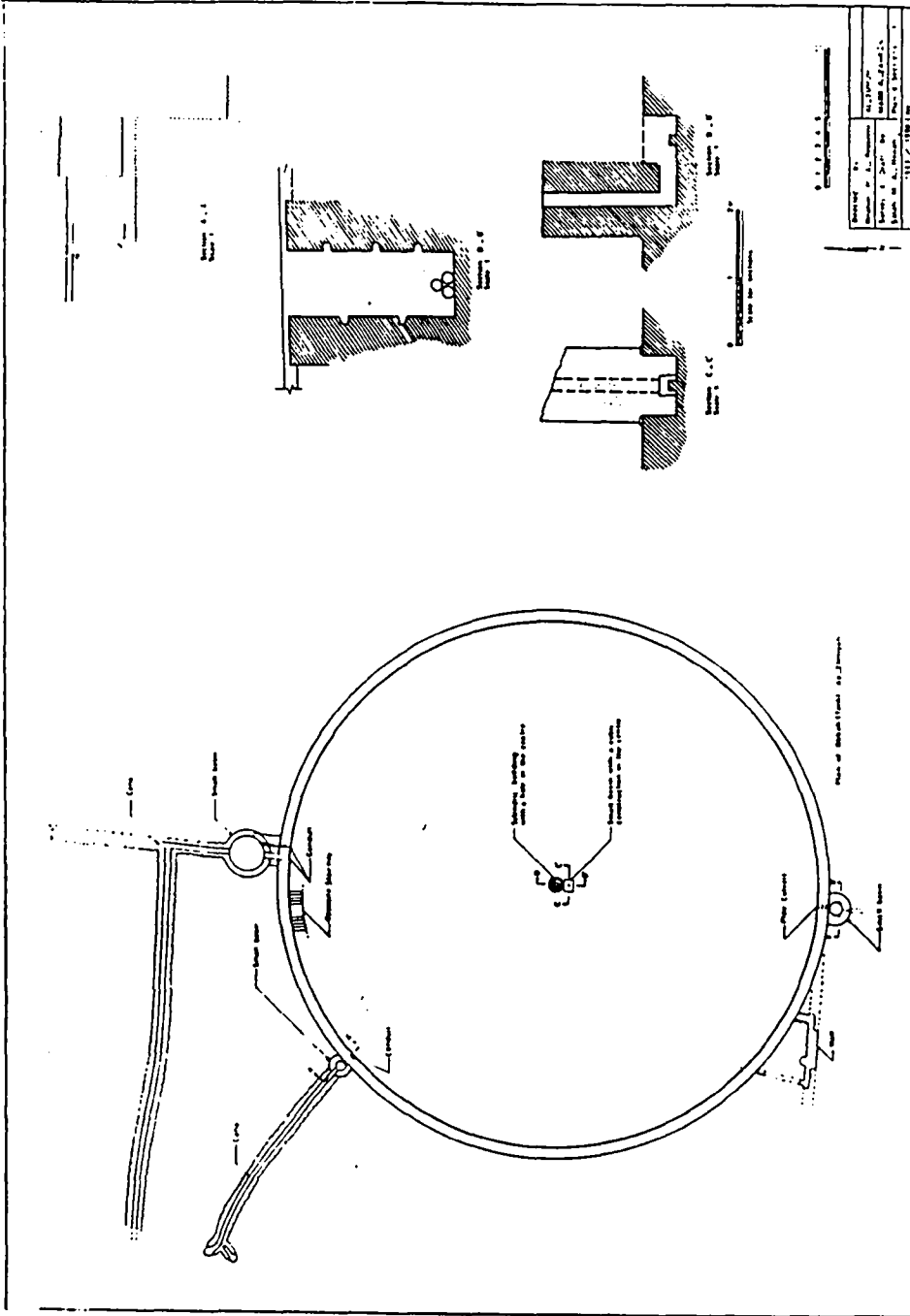
The water resources at this site selected for detailed documentation are as follows:

1. Birkat Az-Zibiniyah
2. Birkat Al-Fayjah
3. Birkat Tandhub
4. Birkat Riy'a Qiriyah

5.3.4.1. Az-Zibiniyah

This site consists of two principal water resources, a water tank and a well. It is situated at about 12 km north-north-east of Al-Jumum on the west bank of Wadi Fatimah. (See plan 5.5 & folder 5)

Al-birkah is quite large with a diameter of about 39.80 m and has a remarkable architectural design. It has been constructed of roughly trimmed granite stones, available locally from the mountains nearby. The walls are



Plan 5.5: Birkah and distribution system at Az-Zi'biniyah

approximately 90 cm thick and are situated below ground level with double courses of granite stones set in mortar and filled in between with rubble. The interior walls and floor of Al-birkah are plastered with gypsum. The thickness of the plaster on the walls is about 30mm. (See plate 5.5a) In the centre of Al-birkah there is a cylindrical structure. It has a diameter of about 1.10m. The upper part has been destroyed, but the height of the remaining structure is about 1.50m. There is a circular ceramic pipe in the centre, the diameter of which is about 22cm. This vertical ceramic pipe goes down to the bottom of the cylindrical structure where it is connected to a small rectangular basin which is about 75 cm wide, 90 cm in length and 50 cm deep. The small, rectangular basin is built of granite and plastered with gypsum. The birkah is now filled with sand and earth deposits, so that the remaining depth is about one meter. (See plate 5.5b)

A double stairway is placed along the interior northern wall of Al-birkah descending in two opposite directions to the floor of Al-birkah. The width of the stairway is about 80 cm and each step is about 1.20m long. It is built of stone and is plastered in gypsum. On the northern side of Al-birkah and abutting the stairway from the east there are two ganats (canals). One is about 50 cm wide and the second is about 25cm wide. These two canals are considered to be the inlet of Al-birkah, they join a circular basin, the walls of which are about 2.55 m in diameter, 2.50 m deep and about 50 cm thick, again granite plastered with gypsum.



Plate 5.5a

A view showing the width of the wall of Al-birkah and the plaster work. The "basin" identified by the ranging pole is one of two at this site but the purpose is unclear.



Plate 5.5b

A view showing the western part of Al-birkah and part of the filter which is built with stone and plastered.

On the northern side of that basin there is a canal which is about 50 cm wide and about 20 cm deep. The canal is situated between two parallel walls, each of which is about 50 cm thick. The canal as well as the walls are plastered in gypsum.

The canal runs towards the north for about 4.5 meters and then connects to a canal coming from the north-west. This canal probably fed the Al-birkah with water from Az-Zibiniyah spring which flowed out of the upper reaches of Wadi Fatimah (see plate 5.5c). The spring has now dried up. In the north west side of Al-birkah there is a circular basin which abuts the exterior wall. It has a diameter of about 70cm and is about one meter deep. It is built with stones and plastered with gypsum. The thickness of the wall is roughly 50 cm. There is a circular ceramic pipe (culvert) which is about 18 cm in diameter and connects Al-birkah with the basin. On the opposite side there is a culvert which exits from the basin in an unknown direction. Above that canal there is another canal which is level with the land, its width is about 30 cm and it runs towards the north-west to a distance of about 17m.

A small circular basin links the southern exterior wall of Al-birkah, it has a diameter of approximately one meter from the inside. It is built of stones and the thickness of the wall is about 75cm, while the depth is about 2.50m. The basin connects with Al-birkah via circular ceramic pipes (culverts) each of them has a diameter of about 16cm, they form a pyramidal shape; two of them form a base and the

third is placed above them. There is a canal which emerges from the southern side of the basin. It is buried so that its direction is unknown. These two basins which are mentioned above are the likely outlets to Al-birkah.

On the south west side of the interior wall of Al-birkah there is a remaining portion of a wall which is about 4m long. This wall runs towards the east and links up to form a triangular shape. The thickness of the wall is about 50 cm, it is built with stones and is plastered with gypsum. There is a semicircular buttress which has a diameter of about 80 cm and is situated in the middle of the wall.

The structure of the basin could indicate possible functions. Firstly, it may be a filter. Secondly it could perhaps be a deflecting wall since Al-birkah was built in a valley. Thirdly, it could be a simple basin where cattle were watered.

The second water resource is Al-bir (well). The well is located at about 300m south east of birkat Az-Zibiniyah. It has an oval opening measuring 4m by 5m. It is lined with granite stones and is choked with sand and earth so that the remaining depth is about 5m. There is no water. The thickness of the wall is about 70 cm. Al-bir seems to have been reconstructed recently because there is evidence of new repair material such as cement (see plate 5.5d).

5.3.4.2. Birkat Al-Fayjah

Birkat Al-Fayjah is situated 14 km north-north-east of Al-Jumum and about 4 km north-west of birkat Az-Zibiniyah,

Site: Az-Zibiniyah



Plate 5.5c

A view showing remains of the qanat which is built with stones and plastered with gypsum. It fed Al-birkah with water from a spring.

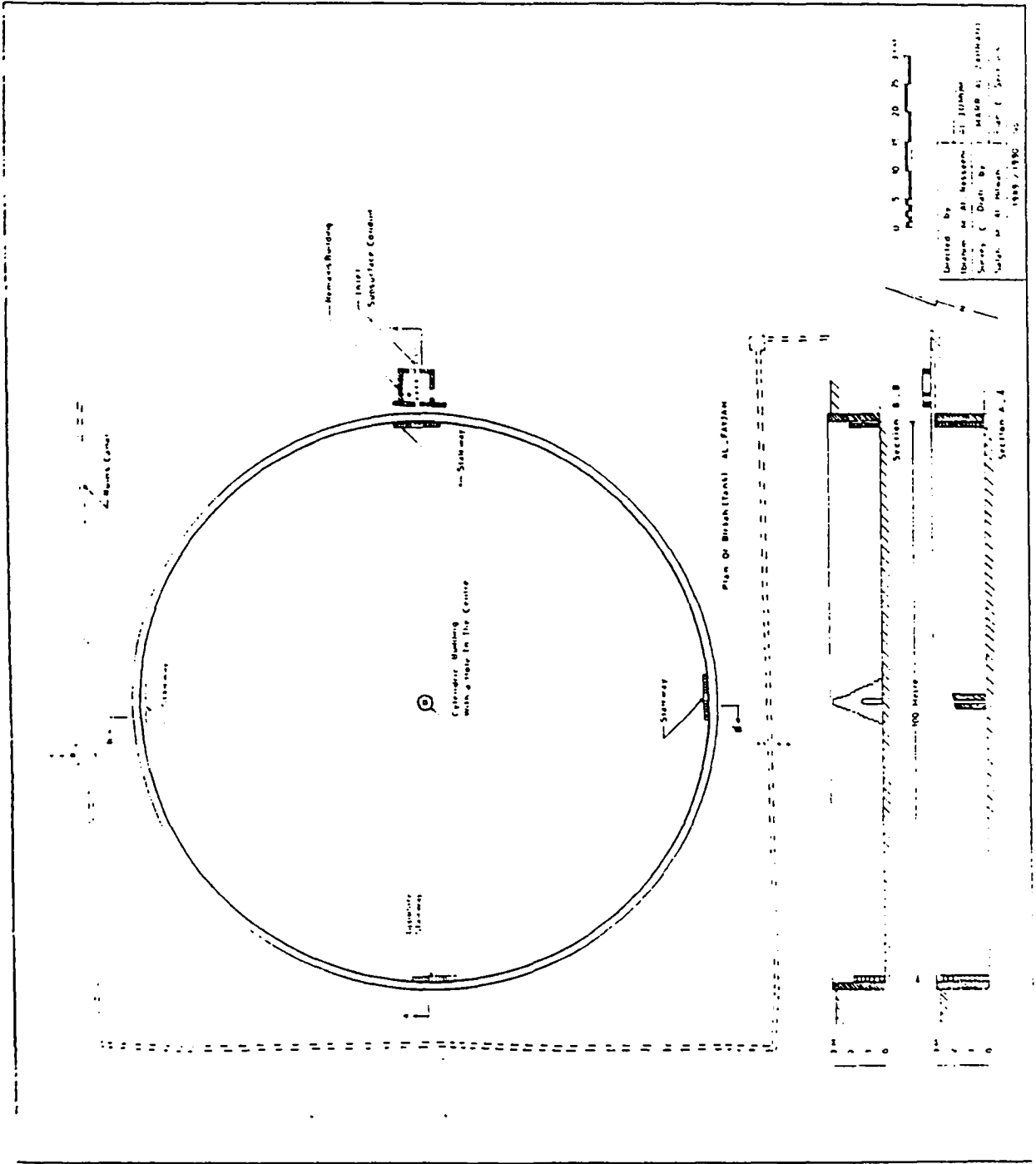


Plate 5.5d

A view showing the residual depth of a bir located about 300m south east of Al-birkah. It is built with black and brown stones and plastered with gypsum. The light brown stones may be a recent addition.

at the junction of wadi (Alaf with wadi Fatimah. It is a huge birkah (water tank) of outstanding architectural design. It is circular and has a diameter of about 100m (see plan 5.6 & folder 6). The structure consists of a double course of quite large (1m x 0.5m), granite stones, set in mortar, the faces of which have been trimmed. The gaps between the stones have been filled in with rubble. The structure is entirely plastered with gypsum which has been mixed with very tiny stones. The plaster is in very good condition and varies in thickness between 3 and 6 cm. The walls are roughly 1.25m thick and the depth of Al-birkah is approximately 3m. The floor of al birkah is completely plastered with gypsum. Al-Mughannam, Al-Hilwah and Morsi (Vol. 7, 1403a.H./1983A.D.) "It is the largest station even compared with those of Darb-Zubayda. Al-birkah is similar in construction to those on Darb-Zubayda, but lacks inside or outside buttresses"

In the centre of Al-birkah there is a solid cylindrical structure which has a diameter of about 2.6m. It is built of granite stones and plastered in the same way in which Al-birkah was plastered. Its height today is only 2m, the upper part being destroyed. In the centre there is a vertical hole but this does not appear as an outside opening as in the case of the cylindrical column at birkat Az-Zibiniyah. In fact, the purpose of the cylindrical structure is not known, but in my opinion it was probably built to serve as a measure of the water level inside Al-birkah. Al-birkah, has four double stairways, each



Plan 5.6: Birkah and distribution system at Al-Fayjah

placed symmetrically at each interior side of Al-birkah, and are easily visible as Al-birkah is completely clear of rubble and debris. The stairways are about one meter wide at the top and about 70cm at the bottom, each stairway has fourteen steps. The stairways are built of granite stones like the stone of Al-birkah and are plastered in the same way. The double stairways lead down in two opposite directions to the bottom of Al-birkah. (See plate 5.6a)

The inlet of Al-birkah is situated on the eastern side above the stairway. (See plate 5.6b) It is a subsurface channel (conduit) extending towards the east, underneath the remains of the building foundations.

The inlet of Al-birkah is square shaped and about 50cm x 50cm. The outlet of Al-birkah has been completely destroyed. Al-birkah is surrounded with the remnants of channels and basins; unfortunately, all these water features no longer exist because the area around Al-birkah is suitable for cultivation and the land has been ploughed and planted.

5.3.4.3. Birkat Tandhub

Birkat Tandhub lies about 17 km NNE of Al-Jumum and about 4km NE of birkah Al-Fayjah. It is situated at the foot of the mountain of Tandhub on the eastern bank of wadi `Alaf. Al-birkah is square, about 37 x 37m, 2.20m deep and the walls are about 1.25m wide. It is constructed of local stones which were available from the mountains around Al-birkah. Al-birkah has been restored with new, modern materials (cement) (see plan 5.7 & folder 7).



Plate 5.6a

A view showing part of Birkat Al-Faijah. It is a huge circular birkah built with stones and plastered with gypsum. The location of a double stairway and part of the construction at the centre of Al-birkah is shown. The floor of Al-birkah.

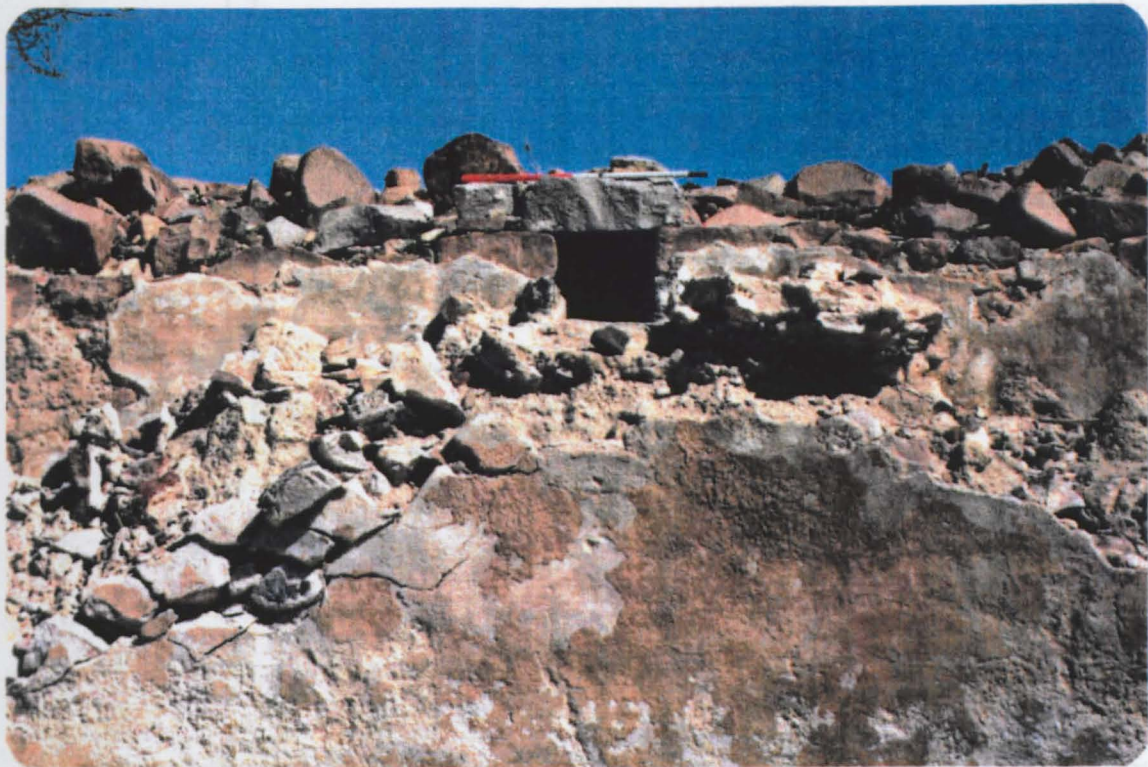
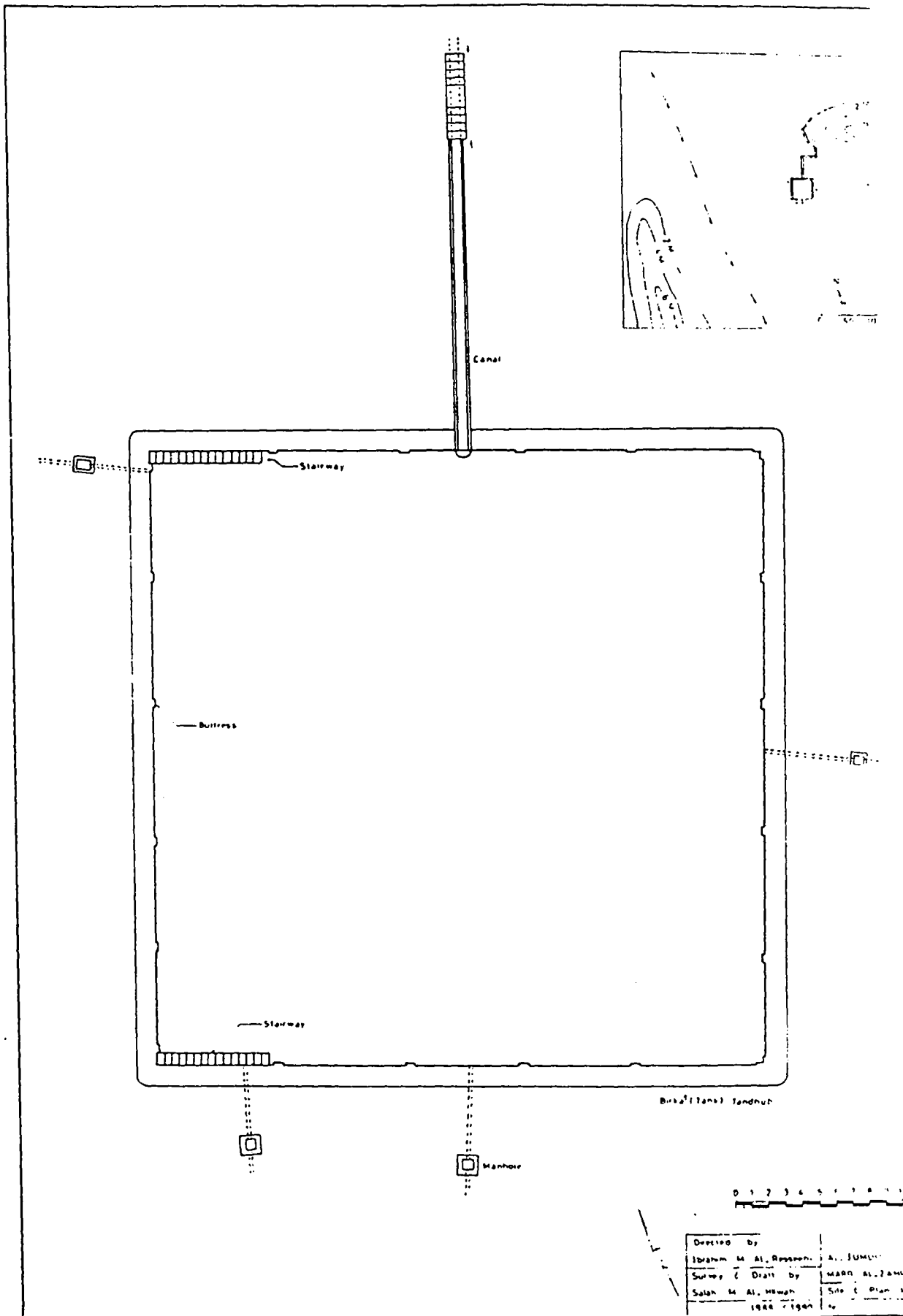


Plate 5.6b

A view showing the inlet to Al-birkah above the double stairway at the eastern side of Al-birkah. It also shows the plaster on the walls.



Plan 5.7: Birkah and distribution system at Tandhub

Al-birkah feeds from a spring located about 3km to the north via a qanat (channel) which runs along the foot of the mountain which lies east of Al-birkah. The water still flows from the spring to Al-birkah through the channel. There is a new water supply in Al-birkah, water is now drawn from well (see plate 5.7a).

Al-birkah has two stairways leading down to the bottom of the tank, one is placed at the north-western corner and links up with the north wall, the other is at the south-western corner and links up with the southern wall. The stairways are both about 70 cm wide.

There are small rectangular buttresses inside Al-birkah. Each wall has four rectangular buttresses about 20 x 60 cm in size. They extend to the ground floor level.

The inlet of Al-birkah is located in the middle of the north-east wall. It is about 30cm wide and 20cm deep. The inlet is connected with an uncovered canal. The uncovered canal is built between two walls built of stones which have been plastered. The width of each wall is about 20cm.

The canal itself is built of stones and plastered with gypsum. The canal runs towards the north for about 100m then deviates towards the east before turning towards the north and running along the foot of the mountain until it reaches the spring about 3km from Al-birkah. This spring was the main source of water which Al-birkah received (see plate 5.7.b).

Al-birkah has four spillways each of them has a circular ceramic pipe (culvert) about 18cm in diameter. The first



Plate 5.7a

A view showing Birkat Tandhub which is located within a farm. It gets water from an artesian well and from a spring.



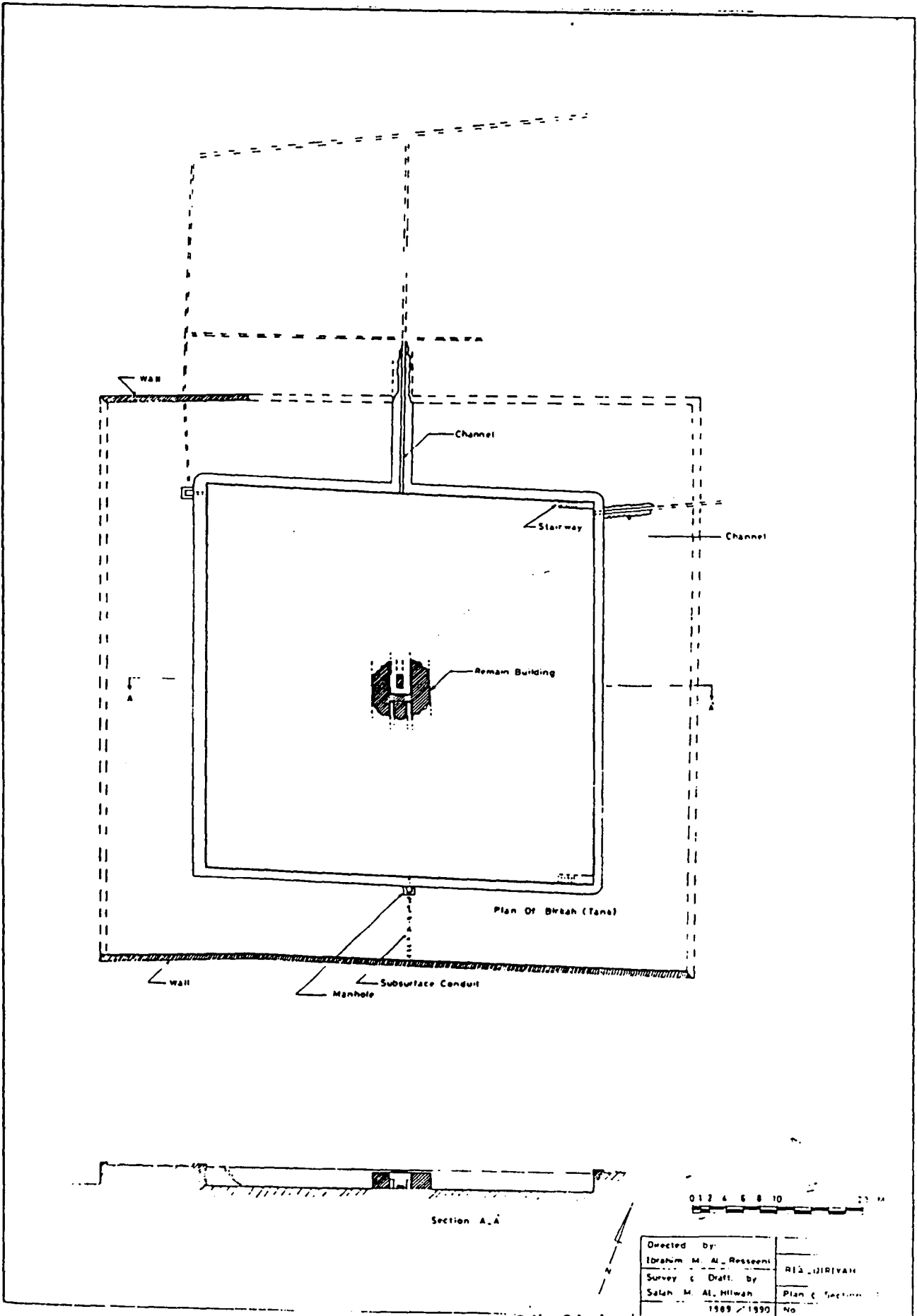
Plate 5.7b

A view showing a channel bringing spring water from at least 3km away to birkat Tandhub. The channel is built with stone and plastered with gypsum.

spillway is located in the middle of the south-east wall, the second in the middle of the south-west wall, the third in the south-west corner of Al-birkah and the fourth in the north-west corner of Al-birkah. Each of these spillways connects with a square basin outside Al-birkah, each of which is about 60 x 60cm and about 2.30m deep. At Al-birkah, the basins and canals have recently been restored because Al-birkah is now used for irrigation as well as for pisciculture.

5.3.4.4. Riya Qiriyah

Birkat Riya Qiriyah is situated about 22km NNE of Al-Jumum, and at 6km NE of birkat Tandhub, on the east bank of wadi `Alaf. It is surrounded by mountains and hills. Al-birkah's water tank is approximately square measuring 46 x 46m (see plan 5.8 & folder 8). It is quite a large birkah built in good architectural style showing strength and craftsmanship. It was constructed of large, rough, basalt stones from the surrounding area. The walls of Al-birkah are diverse in their measurements; the northern wall is about 1.20m thick, the southern and eastern walls are about 1.10m thick and the west wall is about 1.50m thick. As it is choked up with sand and debris the measurable depth is about 2.60m. It is plastered with gypsum and the thickness of the plaster on the walls is about 4cm (see plate 5.8a). Al-birkah has a stairway in the northern corner which runs along the northern wall. It is 95cm wide built of stones and seems to be plastered with gypsum. The stairway leads down to the ground of Al-birkah. There is a heap of debris



Plan 5.8: Birkah and distribution system at Rifa Qiriyah

in the southeastern corner of Al-birkah which may be a ruined stairway. The inlet of Al-birkah is situated in the middle of the northern wall. The inlet connects to a canal about 50cm in width and is about 20cm in depth. The canal is surrounded by two stone walls (plastered with gypsum from the interior), the width of each being about 80cm. The canal runs forwards for about 17m then disappears. In the past it probably continued towards the water resource, a spring, which provided Al-birkah with water via that canal. The spring lies in the NE mountains (see plate 5.8b). Al-birkah has, however, two possible outlets, one is placed in the centre of its southern wall. It is a culvert made of ceramic material and has a diameter of about 15cm. That circular culvert connects to a small rectangular basin the dimensions of which are about 65 x 85cm of unknown depth. The other outlet is located at the north-western corner of Al-birkah. It is a square subsurface culvert and it measures about 30 x 30cm. That outlet connects to a small rectangular basin with almost the same dimensions as the one mentioned above. The canals and the basins are built of stones and plastered with gypsum.

Near the north-eastern stairway there is a small covered opening extending east for about 5m. This was probably another outlet. In the centre of Al-birkah there is a construction. It seems to be two parallel walls built of stones. The thickness of each wall is 2.25m and they are about 7m long. The distance between them is 2.70m. In the middle of these walls there is a further wall which runs

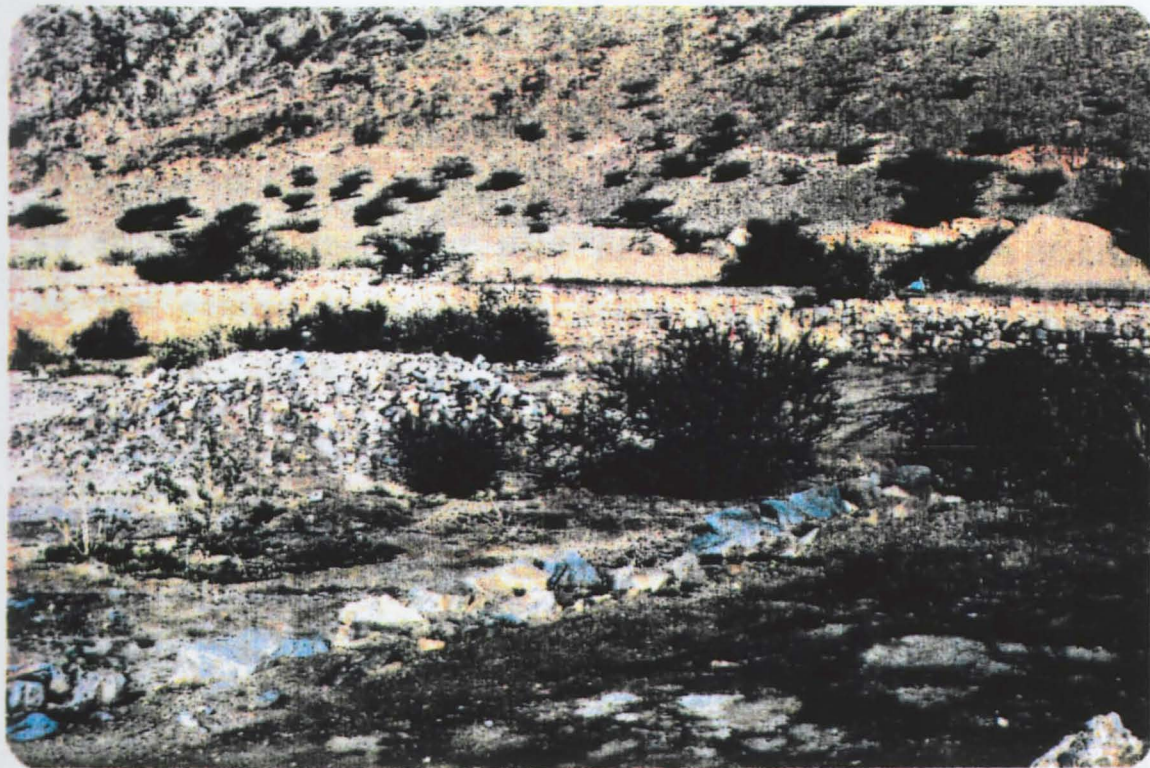


Plate 5.8a

A view showing Birkat Riya Qiriyah which is constructed with stones plastered with gypsum. It also shows a ruin in the middle of Al-birkah.

Al-birkah and the basins have completely disappeared.

At the south-eastern side of Al-birkah there is a small



Plate 5.8b

A view showing a stone and plaster channel flowing into Al-birkah. The width of the wall of Al-birkah is also visible.

parallel to them, its width is about 1.60m and its length is about 4m. The upper part of this third wall is joined to the others by a lintel (beam of stone) the width of which is about 80cm. The middle wall divides the construction into two parts, each of which appears to be an entrance. In the centre of the construction towards the north, there are the remains of the foundations of a wall. The construction is built of stones and is about 2m in height. It has almost been destroyed so that it is very difficult to identify precisely the function of it. Since the area around Al-birkah is ploughed up and used for cultivation, almost all the canals which were connected to Al-birkah and the basins have completely disappeared.

At the south-eastern side of Al-birkah there is a path between the mountains called Riya Qiriyah. That path was used by the caravans of the pilgrims who were heading towards MAKKA.

5.4 Al-Suqya (Umm Al-Birak) Site number 20, route identification I4, Site type simple.

This pilgrim station has been selected because it was mentioned as a large pilgrim station with abundant water on the pilgrim route between Medinah and MAKKA. According to Ibn Khurdadhabah (1889 p. 130) it lies on the conventional pilgrim route between Medinah and MAKKA. He locates it at 36 miles south of Al-Ruwaithah and 29 miles north of Al-Abwa towards MAKKA. He says it possesses a flowing river. Qudamah (1889 p. 157) follows him exactly to the letter, but he adds it has an abundance of trees. When Al-Yaqubi (1892

p. 314) lists the way-stations on the road between Medinah and MAKKA he places it between Al-'Araj on the north and Al-Abwa on the south via MAKKA. He calls it Suqya bani ghifar. Al-Bakri (1983, Vol., 3, pp. 742, 743) describes Al-Suqya as a principal village which lies on the conventional pilgrim route between MAKKA and Medinah. He adds that it has plenty of abyar, `Uyun and birak. Its name Umm Al-Birak means mother of springs but unfortunately the survey of the area indicated that despite the remains of ancient water resources structures, the inhabitants have abandoned the area and established a new village.

This site is 30km north of bir Mubayrik about 23 25'N and about 39 13'E at wadi Al-Qahah. Al-Suqya was a large and important pilgrim halting place on the Eypptian and the Syrian pilgrim inland routes between Medinah and MAKKA. In fact, it was widely known as a large pilgrim station which had abundant water resources such as springs, wells and birak (water tank).

Unfortunately, Al-Suqya (Umm Al-Birak) is now in ruins. There is evidence that the area was once inhabited because of the remains of foundations of ancient buildings and rest-houses that can be found. However, there are almost no indications that there were any ancient water resources in the form of springs, wells or water-tanks. There is a bir (well) which is probably ancient, with a diesel-powered pump to pump the fresh water from Al-bir to a new cistern. (see plate 5.9)

This pilgrim way station developed when the pilgrim caravans

from Egypt and Syria passed through it and when the caravans were replaced by cars the way station was still

Site: Umm Al-Birak Al-Suqya



Plate 5.9

The location of the ancient well now repaired with diesel powered pumps installed to raise water to modern cisterns nearby.

condition. It is used as a watering-place not only for the pilgrims but also for the Bedouins. There is also a castle near Al-birkah and it is in good condition (see plan 5.9 & folder 9). The remains of the Hijaz railway buildings still stand in very good condition.

Al-muazzas, Site number 106, Route Identified 11, Site type simple

This pilgrim station is situated 55km north-west of Birkat Bar Al-Hears (27°44'N and 37°32'E). It is probably one of the largest pilgrim stopping places on the Syrian pilgrim caravan route. The station consists of a birkah, a castle

from Egypt and Syria passed through it and when the caravans were replaced by cars the way station was still inhabited.

Unfortunately, a new paved road which runs between Medinah and MAKKA turns away from the old way station and consequently the population of Al-Suqya decreased. The people who left created a new village about 2km south-west of the old pilgrim station and it is called Al-Suqya (Umm Al-Birak).

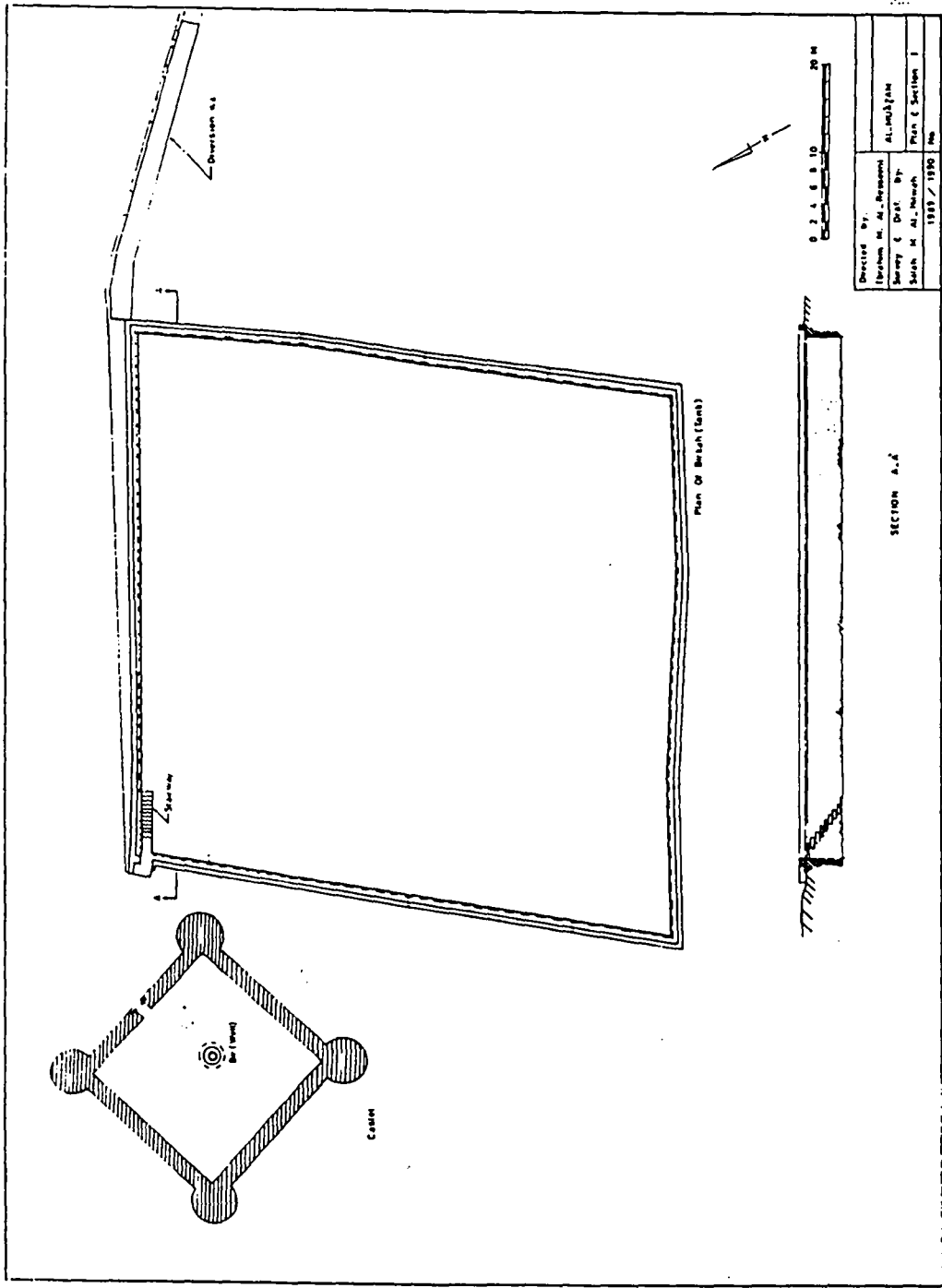
5.5 Al-Muàzzam

This pilgrim station has been chosen because despite mention by some Islamic writers as a pilgrim station on the Syrian pilgrim route, the survey shows no indication that the area had been inhabited.

The only thing which made the area important is the watertank. It is one of the largest water resource structures on the pilgrim routes and is still in very good condition. It is used as a watering-place not only for the pilgrims but also for the Bedouins. There is also a castle near Al-birkah and it is in good condition (see plan 5.9 & folder 9). The remains of the Hijaz railway buildings still stand in very good condition.

Al-Muàzzam, Site number 108, Route Identified I1, Site type simple

This pilgrim station is situated 55km north-west of Birkat Dar Al-Hamra (27°44'N and 37°32'E). It is probably one of the largest pilgrim stopping places on the Syrian pilgrim caravan route. The station consists of a birkah, a castle



Plan 5.9: Birkah, deflected wall and a castle at Al-Muazzam

and a railway station. Al-birkah is quite large and its construction and design are very interesting. It is roughly square in shape and measures about 62m x 62m. The foundations are 1.50m thick while the wall above these is 80cm thick and rises about 1m above ground level. Al-birkah now contains mud and sand and its visible depth is about 4m. It was built of quite large, brown, granite stones which measure about 2.50m in length, 1m in width and they are about 25cm thick. The interior of Al-birkah is plastered with gypsum and there is a stairway on the inside of the north corner. This links up to the north-east wall, its width is about 1.10m and its visible length is about 7.20m. There are some openings near the top of the north, west and south walls of Al-birkah and there is a wall which links to the south-east corner. The wall is built of large stones and its width is 1.20m. It extends southwards and then turns west for about 500m. This is probably a deflecting wall which directed the torrents of water from Al-wadi into Al-birkah, during periods of heavy rainfall. The wall resembles a dam because there are uncovered openings on the surface which were probably used for drawing off the surplus water. Al-birkah was well constructed and is still in very good condition (see plate 5.10a, b). There is nothing to indicate that Al-birkah was connected to Al-bir which is located inside the castle. The castle is situated about 5m north-west of Al-birkah and built on a hill and appears to be higher than Al-birkah. The castle is square and measures about 17m x 17m. It has



Plate 5.10a

A view showing the remaining depth of Al-birkah. It also shows that the interior walls are plastered and that there are a number of inlets on the top of the southern wall.

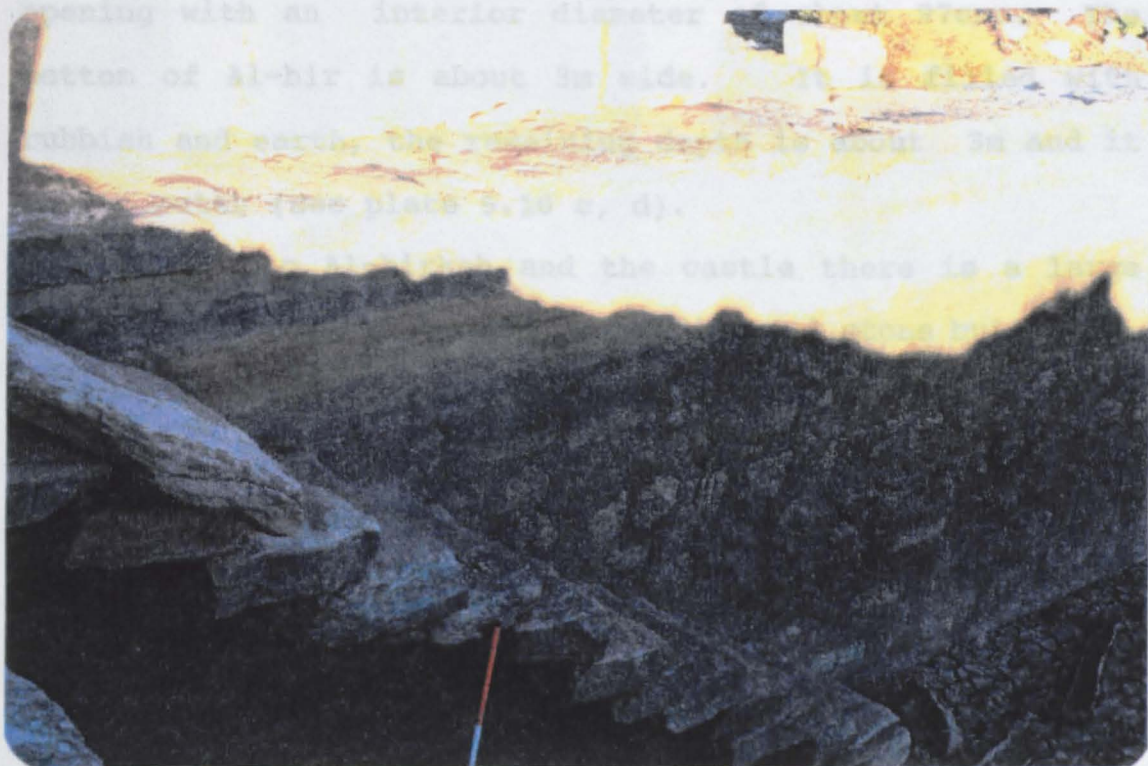


Plate 5.10b

A view showing the stone stairway on the northern corner of Al-birkah's wall.

a circular tower at each corner and the entrance is in the east wall. There is an inscription above the entrance which indicates that the castle was built in 1031 H (1622). (Al-Mawsawi) better known as Kibrit says that Al-Muazzam is a pilgrim station located in a valley and there is a castle which belongs to the Ottomans which was constructed in 1031 H (1622) (Al-Mawsawi, 1965, pp. 235, 236). While Ibn Batutah says that Al-Muazzam or birkat Al-Muazzam is a huge water tank built by the Ayubites and used by pilgrims who stayed there. In some years Al-birkah fills up with rain water and in other years it can be dry. (Ibn Batutah N.D. p. 79)

The stone built castle is in very good condition. There is a dug well in the courtyard which has a circular mouth opening with an interior diameter of about 97cms. The bottom of Al-bir is about 3m wide. It is filled with rubbish and earth, the remaining depth is about 3m and it has no water (see plate 5.10 c, d).

In addition to Al-birkah and the castle there is a large railway station with associated traditional stone buildings. They were probably used for officials, soldiers and railway passengers. The buildings are mainly situated about 500m south of Al-birkah although some are adjacent to Al-birkah on the west side. The whole area lies in wadi Al-Muazzam which is a barren wasteland. There are no signs of any further ancient water resources. The area probably becomes populated when Al-birkah occasionally fills up with water. Al-birkah then becomes a watering place and the bedouins

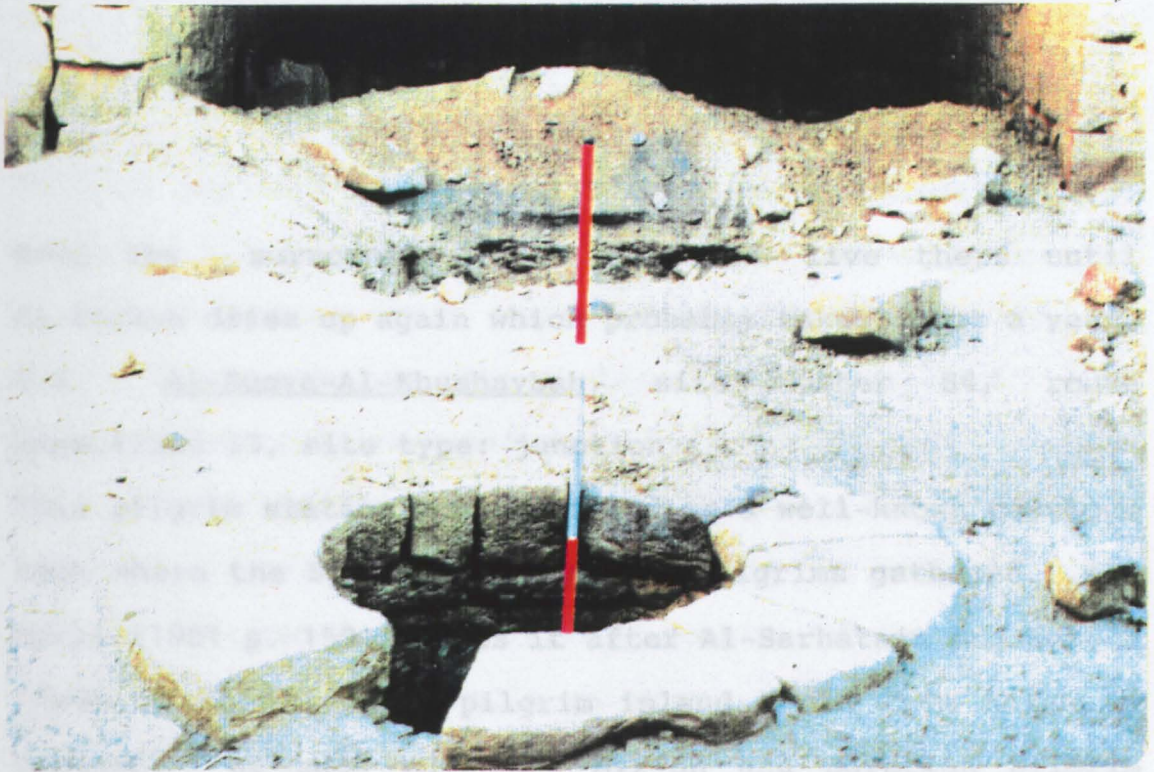


Plate 5.10c

A view showing a circular bir lined with cut stone. It is located in the court yard of the castle.



Plate 5.10d

A view from the interior of the castle, showing architectural style.

from the surrounding area come and live there until Al-birkah dries up again which probably takes about a year.

5.6 Al-Suqya-Al-Khushaybah, site number 84, route identified I3, site type: junction

This pilgrim station was mentioned as a well-known populous town where the Syrian and Egyptian pilgrims gathered. Al-Harbi (1981 p. 150) places it after Al-Sarhatain and before 'Anab on the Egyptian pilgrim inland route from Ailah to Medinah. he adds that the Syrian and Egyptian pilgrim routes converge there. Al-Bakri (1983, Vol. 3, p. 743) calls it Suqya Al-Jazil and describes it as a village in wadi Al-Qura. Al-Maqdisi (1906 p. 84) describes it as the best town in the region of Qarah, where there is an abundance of palm groves and trees. He also says there is a mosque located outside the town. He locates it three day's journey from Bida and one day's journey from Al-Marwah on the inland road between Ailah and Medinah. Al-Yaqubi (1892 p. 341) mentions it as a way-station on the Egyptian pilgrim inland route from Egypt to MAKKA. He places it after Bida and before Al-Marwah in the direction of Medinah. The survey and investigation of the area show that the region is rich in water resources and the soil is fertile so that the area is cultivated. However, the reason for selecting this pilgrim station is because there are no visible indications of ancient water resource structures. Because its name changed from Al-Suqya to Al-Khushaybah we remain unsure that this is the original site. Al-Khushaybah is situated about 30km north-west of Al-

kathifah (26°21'N and 37°58'E) This pilgrim station was also mentioned by early writers. This station was well known as a pilgrim station under the name of Al-Suqya but this no longer exists and has been replaced by Al-Khushaybah. The pilgrim station is situated where wadi Al-`Ula meets wadi Al Jazil. This station was the gathering place for Syrian and Egyptian pilgrims who were on their way to Medinah. The pilgrim station consists of many remains of buildings and foundations and castle walls which can be found on top of a small mountain.

Al-wadi appears to be very rich in water supplies which support a rich agriculture but there are no remains of early water resource structures. (See plate 5.11)

2.7. Towards an Hierarchy of Sites

From the extensive survey and investigation it is possible to categorise the pilgrim way station by both size and by function. The size categories are large, medium, small and local. The function categories are junction, settlement, junction and seaport.

Site: Al-Suqya (Al-Khushaybah)



Plate 5.11

Farms and the residual foundations of buildings are widely scattered over the area.

5.7 Towards an Hierarchy of Sites.

From the extensive survey and investigation it is possible to categorise the pilgrim way station by both size and by function. The size categories are large, medium, small and lost. The functional groupings are simple, religious, junction and seaport.

The major or large stations

There are a number of pilgrim way stations which can be classified as major or large way stations, because of their size and facilities but I will give one example.

The site of Marr-Al-Zahran (Al-Jumum) site number 5. This way station is considered as a large major way station on the Syrian and the Egyptian pilgrim routes. It covers a large area about 10-15 km. It has all the kinds of water resource structures Birak, Abyar, Qanawat, and has a lot of remains of building foundations. Above all it is still a permanent settlement where agriculture is practised.

(For other examples see Table 5.1)

The medium way station

The medium way stations offer rather more than the simple 'overnight stop' facilities of the small stations. There are frequently a number of water resource structures. Al-Rauha, Site 35, has evidence of a birkah, several bir and qanawat. This site has a rebuilt mosque but on much older

foundations and is still in use. The bir are still in use. That Al-Hajj, site 126, is another station of this type this time with a castle defending the stop. Other sites are listed in table 5.1.

The small way station

There are many small way stations on the Syrian and the Egyptian pilgrim routes. The small stations can be described as places where the pilgrim could stay for a short time for watering and probably resting themselves and their animals (Camels).

These stations have water resource structures but have no evidence of permanent settlements. One example of these minor way stations is Birkat Antar (Site number 91) on the Egyptian pilgrim coastal route. For other examples see Table 5.1.

The lost way station

There are a number of way stations that have been mentioned by the early Islamic geographers and travellers. Unfortunately, these pilgrim way stations no longer exist. They have disappeared and there is no precise information about the reason for their disappearance. One example of these way stations that once existed and have now disappeared is Waddan. This way station was mentioned by the early Islamic geographers and travellers as an important

pilgrim station where water is abundant. However its location is near Masturah (Site number 16) where there is a wadi named Waddan. (p. 226). For other examples see Table 5.1.

The simple way station

This is a station with no other apparent function than as a stop over, and watering site. These may be small as at Al-Hafirah, site 48, which has a bir. This continued as a site as the railway station was built here. Medium sized simple sites can be exemplified by Shajwa, site 56. This group includes the majority of the sites we mapped. Other examples are listed in Table 5.1.

The religious way station

The religious way stations are those which are known to be places where pilgrims performed religious rites as part of Al Hajj. They tend to be close to the main sites at MAKKA and Medinah. Al-Juhfah, site 11, is a good example of this type of site. Pilgrims would stop here and wash, as part of the ritual of cleansing before travelling the final hundred miles to MAKKA. Other religious sites are listed in Table 5.1.

The seaport way station

These sites on the Red Sea were embarkation and

disembarkation points for pilgrims using the sea routes to travel for Al Hajj. Yanbu Al-Bahr, site 41, was a small seaport site on the route which has since developed into a very large and important industrial city. By contrast Al-Jar was a way station which is now in the "Lost" size category, with the nearest village 10km to the south. Other seaport sites are listed in Table 5.1.

The junction or traverse way station

The junction or traverse station is where the pilgrims need to decide which route to follow or where the route combines after different passages have been chosen. One example is Ainunah (Site number 118) pp. 240-2 on the Egyptian pilgrim route. It is a traverse route where those who wish to visit Medinah before making Al-Hajj then go from Ainunah towards the south east to meet the Syrian pilgrims at Al-Suqya (Al-Khushaybah) (Site number 84) and from there they continue their journey to Medinah. For other less certain examples see Table 5.1.

Dating and design characteristics

From the analysis of the information that obtained from the survey and the investigation, we found some relations between the water resource structures and the remains of buildings particularly castles or fortresses regarding their features and their architectural structure. They all are

constructed from local materials particularly stones that are available nearby. They are also plastered with gypsum. However, the relationship between the Ottoman castles and the water resource structures (wells) which are located inside these castles and fortresses are much clearer than the relationships between the castles or fortresses and the water resource structures which are located outside. This indicates that the castle and the water resource structure built in the courtyard were probably built at the same time, while the water resource structures which were built outside are constructed at different times. The close relationship is well illustrated Al-Mu'azzam (Site number 108) on p. 114-6, where the castle and its well dates to 1622 but the tank is of a different construction and is most probably earlier in date.

The contemporary construction of castle, well and tank is shown at That Al-Hajj (Site number 126) on pp. 158-160, and at Al Wajh (Zurib) Site 82 - p252-55. In the absence of dated inscriptions over the entrance, dating by plan and other features is uncertain. However, in my opinion the water tanks are usually older than the castles that are built near them.

Generally it is not possible to date the structures closely, but there are a few places where the style of architecture makes dating more secure.

At Al-Sayalah (Site number 39, appendix one) there is a cistern which has a style of pointed arch also to be seen in Darb Zubaydah. A circular birkah (water tank) at Al-Jummum (Site number 5) has a style and architectural structures

which are similar to Birkat Al-Rabathah at Darb Zubaydah. Bir Abbas (Site number 33, appendix one) in its style and architectural structure looks like Al-Abyar in Darb Zubaydah particularly at Al-Juf area. They can be firmly dated to Abbasid period (132-656 AH/750-1258 AD). There are two paved trails on the Syrian and the Egyptian pilgrim routes: one is at Al-Hamra (Site number 54) pp. 204-5 and the other is at Riya Harsha (Site number 14) pp. 227-8. These mountain ways are paved and are similar to those found in Darb Zubaydah from Iraq to MAKKA at Al-Rasifa. These similarities suggest a date in the Abbasid period.

Table 5.1 CLASSIFICATION OF PILGRIM-ROUTE SITES

(see notes at end)

Site No.	Route Name	Site Name	Type	Size	Structures		Period*
					Water Resource Structures	Buildings	
5	I6	Al-Jumun	Simple	Very large	Birak, Abyar, Qanawat	Remain of build.	Early Islamic
6	I6	'Asfan	Simple	Medium	Birak, Abyar, Qanawat		Early Islamic
7	I6	Khulis	Simple	Small	Cistern, Qanawat	Fortress	Early Islamic
8	I6	Qudid (Al Birkah)	Simple	Small	Springs		Early Islamic
10	I6	Kulayyah	Simple	Small	Abyar		Early Islamic
11, 12	I6	Al-Juhfah	Religious	Small	Abyar	Castle	Abbasid
14	I5	Harsha (Riya Harsha)	Simple	Small	Basin		Early Islamic
15	I6	Al-Abwa	Simple	Small			Early Islamic
17	I5	Bir Mubayrik	Simple	Small	Bir		
20	I5	Al-Suqya (Umm Al-Birak)	Simple	Small	Abyar		Early Islamic
23	I5	Al-Qahah (Bir Qaidhi)	Simple	Small	Abyar		
31	I5	Al-Ruwaithah	Simple	Lost			Early Islamic
33	I5	Bir 'Abbas	Simple	Small	Bir	Fortress	
34	I5	Al-Misijeed	Simple	Small			
35	I4	Al-Rauha	Simple	Medium	Birkah, Bir, Qanawat	Mosque	Early Islamic
37	I4	Bir Adriwish	Simple	Small	Abyar, Qanawat	Castle	

36	I5	Bir Al-Mashi	Simple	Small	Abyar		
38	I4	Al-Suwaïqah	Simple	Medium	Birkah, Abyar, Qanawat		Early Islamic
39	I4	Al-Sayalah	Simple	Small	Abyar, Ciste		Early Islamic
40	I4	Bir Al-Sharyofi	Simple	Small	Bir		
43	I4	Al-Hafiyah	Simple	Large	Birkah, Qanawat		
44	I4	Bir Al-Mfarhat	Simple	Small	Bir, Basin		
45	I4	Thu Al-Hulyfah (Abyar Ali)	Religious	Large	Abyar, Qanawat		Early Islamic
47	I4	Mukhit (Railway Station)	Simple	Small		Buildings	Turkish
48	I4	Al-Hafirah (Railway Station)	Simple	Small	Bir	Buildings	Turkish
49	I4	Al-Mindassih (Thu Khushub)	Simple	Small	Birkah, Abyar		Early Islamic
50	I5	Buwat (Railway Station)	Simple	Small		Buildings	Turkish
52	I4	Abar Nasif	Simple	Small	Abyar	Castle, Buildings	
54	I4	Al-Hamra	Simple	Small	Qanawat		
56	I4	Shajwa	Simple	Medium	Birkah, Bir	Castle	Ayubites
53	I4	Al-Buwayr (Railway Station)	Simple	Small	Abyar	Buildings	Turkish
57	I4	Istable Antar	Simple	Small			
61	I2	Abu Al-Naam (Railway Station)	Simple	Small		Buildings	Turkish

62	I2	Jada'ah (Railway Station)	Simple	Small		Build- ings	Turkish
66	I2	Hadiyah	Simple	Small	Bir	Castle, Remains of Build- ings	
63	I3	Bir Aba Al- Hilu (Al- Murr)	Simple	Small	Bir		Early Islamic
67	I3	Umm Zarb (Al-Marwah)	Simple	Small	Abyar		Early Islamic
80	I3	Al-Kutayfah (Al-Rahbah)	Simple	Small		Archae- logical Site	Early Islamic
68	I2	Madraj (Railway Station)	Simple	Small		Build- ings	Turkish
72	I2	Burmah	Simple	Small	Abyar		Early Islamic
71	I2	Al-Wabyan (Railway Station)	Simple	Small		Build- ings	Turkish
73	I2	Al-Tawayrah (Railway Station)	Simple	Small		Build- ings	Turkish
76	I2	Al-Surah	Simple	Medium	Birkah, Bir	Castle	
77	I2	Bir Jadid	Simple	Small	Bir		
78	I2	Bir Da'aih	Simple	Small	Bir		
79	I2	Zumurrud	Simple	Medium	Birkah, Bir	Castle, Build- ings	Turkish
81	I2	Sahl Mutran	Simple	Small		Build- ings	Turkish
85	I2	Mashhad (Railway Station)	Simple	Small		Build- ings	Turkish
88	I2	Al-Baday'a (Mghirah)	Simple	Small			
89	I2	Al-Mabiyat (Qarah)	Simple	Small		Archae- logical Site	Early Islamic

84		Al-Suqya (Al-Khushaybah)	Junc- tion	Small			Early Islamic
90	I1	Al-Ula	Simple	Medium	Springs, Qanawat		Early Islamic
94	I1	Al-Athib (Railway Station)	Simple	Small		Build- ings	Turkish
95	I1	Al-Hijr (Madain Saleh)	Simple	Large	Birkah, Abyar	Castle, Build- ings	Pre- Islamic
96	I1	Al-Mazham	Simple	Small			
97	I1	Buwijrah (Abu Taqah)	Simple	Small		Build- ings	Turkish
98	I1	Al-Juninah	Simple	Lost			
102	I1	Al-Aqra (Mutala)	Simple	Small		Build- ings	Turkish
103 104	I1	Al-Brikah (Al-Dar Al- Hamra)	Simple	Large	Birkah	Remains of Castle	
107	I1	Khoshm Suna (Railway Station)	Simple	Small		Build- ings	Turkish
109	I1	Disad (Railway Station)	Simple	Small		Build- ings	Turkish
108	I1	Al-Muazzam	Simple	Large	Birkah	Castle, Build- ings	Ayubites
111	I1	Al-Akhdhar	Simple	Large	Birak, Bir	Remains of Build- ings	Early Islamic
110	I1	Hams (Railway Station)	Simple	Small		Build- ings	Turkish
112	I1	Mustabighah (Railway Station)	Simple	Small		Build- ings	Turkish
113	I1	Al-Awjaryah (Railway Station)	Simple	Small		Build- ings	Turkish
114	I1	Birak (Railway Station)	Simple	Small		Build- ings	Turkish

115	I1	Al-Uthayli (Railway Station)	Simple	Small		Build- ings	Turkish
121	I1	Tabuk	Simple	Large	Birak, Abyar	Castle	Early Islamic
122	I1	Al-Muhtatib (Railway Station)	Simple			Build- ings	Turkish
123	I1	Al-Hazam (Railway Station)	Simple	Small		Build- ings	Turkish
124	I1	Al-Bir Bir Ibn Hirmas	Simple	Small	Abyar		Ottaman
126	I1	That Al- Hajj	Simple	Medium	Birkah, Abyar	Castle	
127	I1	Halat Ammar	Simple	Small			
128	C1	Haql	Sea Port	Small	Springs		Early Islamic
125	C1	Al-Sharaf	Simple	Small	Bir		Early Islamic
119	C1	Maqna	Sea Port	Small	Springs		
118	C1	Ainunah	Junc- tion	Small	Springs		Early Islamic
117	C1	Al- Khuraybah	Sea Port	Small			
120	C1	Al-Bida (Madyan)	Simple	Large	Birak, Abyar	Remains of build- ings	Pre- Islamic, Early Islamic
100	T1	Shaghab	Simple	Small			Early Islamic
93	T1	Bida	Simple	Large	Birkah, Qanawat		Early Islamic
106	C3	Al-Muwelih	Sea Port	Medium	Abyar	Castle	Early Islamic
105	C2	Dhiba or (Duba)	Sea Port	Medium	Abyar	Castle	Early Islamic
99	C2	Al-Azlam	Simple	Small	Bir	Castle	Early Islamic
91	C2	Birkat 'Antar	Simple	Large	Birkah, Abyar		

82 83	C2	Al-Wajh and Zurib	Sea Port	Large	Birak, Abyar	Castle	
74	C2	Bir Al- Qusayr	Simple	Small	Bir, Basin		
65	C2	Bir Al- Amarah (Hanak)	Sea Port	Small	Bir		
60	C2	Al-Hawra	Sea Port	Small (Lost)		Archae- logical Site	Early Islamic
59	C2	Ummluj	Sea Port	Small			
51	C2	Nabat	Simple	Small	Abyar		
41	C2	Yanbu Al- Bahr	Sea Port	Small			Early Islamic
42	T2	Yanbu Al- Nakhl	Simple	Medium	Springs		Early Islamic
32	I4	Al-Safra	Simple	Medium			Early Islamic
26	I4	Badr	Simple	Small			Early Islamic
25	C3	Al-Jar	Sea Port	Lost		Archae- logical site	Early Islamic
16	C3	Masturah	Sea Port	Small	Abyar		Early Islamic
		Waddan	Simple	Lost			
13	C3	Rabigh	Sea Port	Small			
9	C3	Al-Qadhimah	Sea Port	Small	Abyar		
4	I7	Jeddah	Sea Port	Small			Early Islamic
3	17	Bahrah	Simple	Small			
2	I7	Haddah	Simple	Small			

Notes:

*Period means date of visible structures; other sites are presumed to be early Islamic but are not closely datable.

Sites 18, 19, 21, 22, 24, 27, 28, 29, 30, 58, 69, 70, 86, 87, 92, 101, and 116 are numbered on the maps but have no evidence of ancient water resources, nor are they mentioned in the pilgrimage literature.

Site numbers 55, 64 and 75 were not used in the survey.
Site 1 is MAKKA; Site 46 is Medinah.

CHAPTER 6

ANALYSIS OF WATER RESOURCES**6.1 Background**

Water was and still is invaluable and priceless, the holy books narrate the value of water. For instance the Holy Quran has a number of verses which are relevant to the importance of water for the life of the human beings, flora and fauna.

Since ancient times people have realized the value of water and so they have tried by various means to make water available in both quantity and quality.

The Arabian Peninsula - now the Kingdom of Saudi Arabia - is always described as "one of the driest and hottest countries in the whole world" [Hitti 1937 pp. 17]. This means it has no rivers or lakes or even perennial springs or mountain streams. The courses of various wadis which run through Arabia may be considered as the main water resource. In the past dug wells were the major water resources for irrigation and domestic use. Consequently since ancient times people have tried to establish dams, build basins, cisterns, ponds, dug wells and have built channels in order to use the ground water to the best advantage and to utilize rain and torrents which usually occur suddenly and in short periods. This applied clearly in the case of Arabia where the inhabitants constructed water structures to retain water and thus benefit from rains and torrents. For instance "The construction of early Arabian dams is generally associated

with the growth of the ancient south Arabia cultural centres such as Marib in The Yemen, which existed during the first millennium B.C. and the first centuries A.D." "Significant dams were later built near Najran, Taif, and Khaybar, each supplied by surface runoff from wadis" (The Ministry of Agriculture and Water, 1984 p. 13)

The distance over which the pilgrim caravans pass is very long -the distance between Damascus and Medinah is about 1302km while the distance between Cairo and MAKKA is 1450km (Bakr, 1981, pp. 82, 211)

The most valuable commodity to the pilgrims on this journey is water. Since the early Islamic period the caliphs and the rulers realized the importance of water for the pilgrims and were concerned that water should be made available on the conventional pilgrim routes and at the holy cities.

From our survey and observations during the field work a number of water resources have been found on the Syrian and the Egyptian pilgrim routes, though more can be seen on the former, particularly tanks and wells. (See figure 6.1)

In my opinion the Syrian pilgrim caravan route from Damascus to Medinah received more attention than the Egyptian route particularly during the Umayyad Caliphate, where the caliphs accompanied the pilgrim caravans on this road to the holy cities.

The other factor which made the water resources more available on the Syrian pilgrim route than on the Egyptian pilgrim route was because the Syrian pilgrim route passes through an almost desert area with few permanent

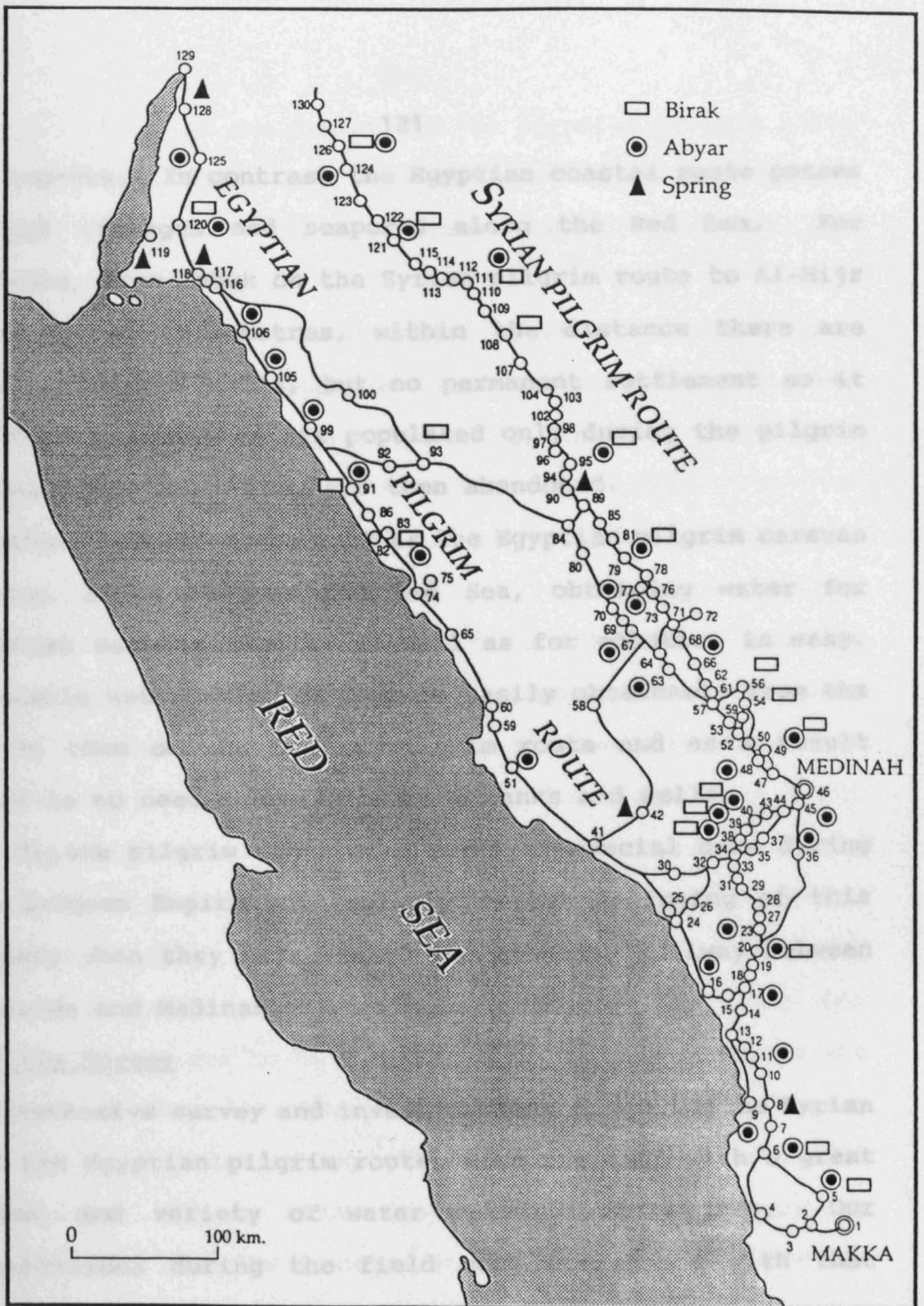


Figure 6.1
Distribution of Birak, Abyar and Springs on the Syrian and Egyptian pilgrim routes

settlements. In contrast the Egyptian coastal route passes through villages and seaports along the Red Sea. For instance, from Tabuk on the Syrian pilgrim route to Al-Hijr is about 263 kilometres, within the distance there are several pilgrim halts, but no permanent settlement so it might be these halts are populated only during the pilgrim season after which they are then abandoned.

A further factor may be that as the Egyptian pilgrim caravan coastal route follows the Red Sea, obtaining water for purposes such as laundry as well as for ablution is easy. Drinkable water seems to be more easily obtainable from the ground than on the Syrian pilgrim route and as a result there is no need to build as many tanks and wells.

The Syrian pilgrim route also received special care during the Ottoman Empire particularly in the beginning of this century when they established the Al-Hijaz railway between Damascus and Medinah.

6.2 The Survey

The extensive survey and investigations show that the Syrian and the Egyptian pilgrim routes were provided with a great number and variety of water resource structures. Our observations during the field work correspond with that obtained from the early writers regarding water resources which were built at the major way-stations and intermediate halts.

The water resource developments were not restricted to the main route, minor and transverse routes were also furnished with water resource structures.

The full survey on the Syrian and the Egyptian pilgrim route indicates that there are several types of water resource structure. These include tanks, wells, cisterns and channels.

From the analysis of the different types of water resource structures much information has been derived. The following brief statement may give some information about the constructional features of these water resources.

The structures which are provided on the pilgrim routes are quite varied. For example they vary in shape, in size and thus in their capacity. The tanks appear as perfect squares, rectangles, circles and occasionally as complex irregular rhomboids. The locations of these structures are provided in figures 6.2, 6.3, 6.4 and 6.5. Both square and rectangular tanks are widely distributed whereas the irregular and circular tanks are at very specific sites. The square and the rectangular shapes are the most common. (See Figure 6.6) Other shapes are very rare. Only two circular tanks are to be found along the pilgrim routes and they are at Marr Al-Zahran (Al-Jumum) near MAKKAH. Figure 6.7 shows the relative capacities of Al-Birak found during the survey. It is clear that there is a vast range in capacity but that the circular and square structures are the largest.

Wells also vary in shape although the most common is circular.

Most of the construction materials used are local. They therefore vary a great deal. Amongst the stones used are

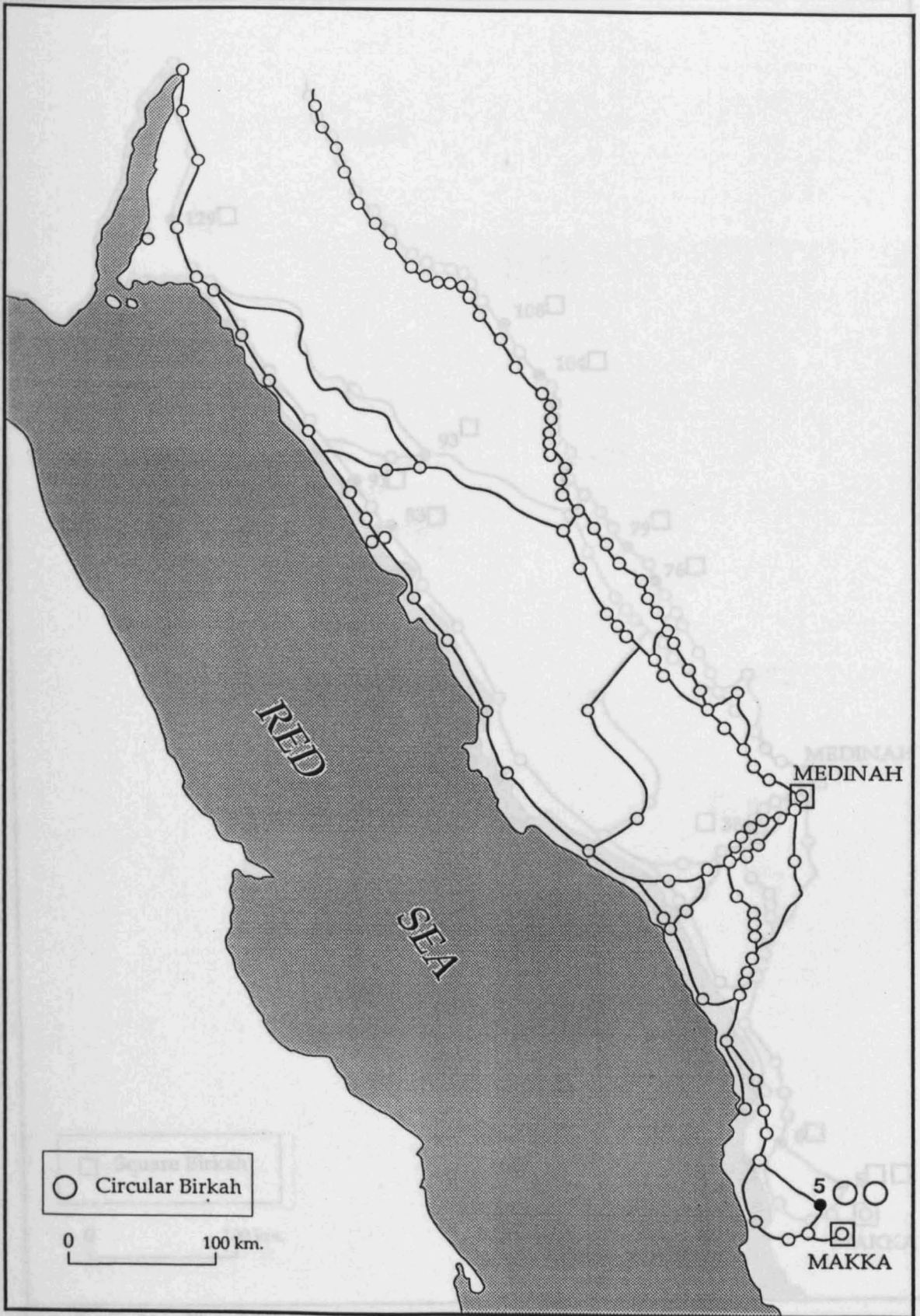


Figure 6.2: The location of the circular Birkah

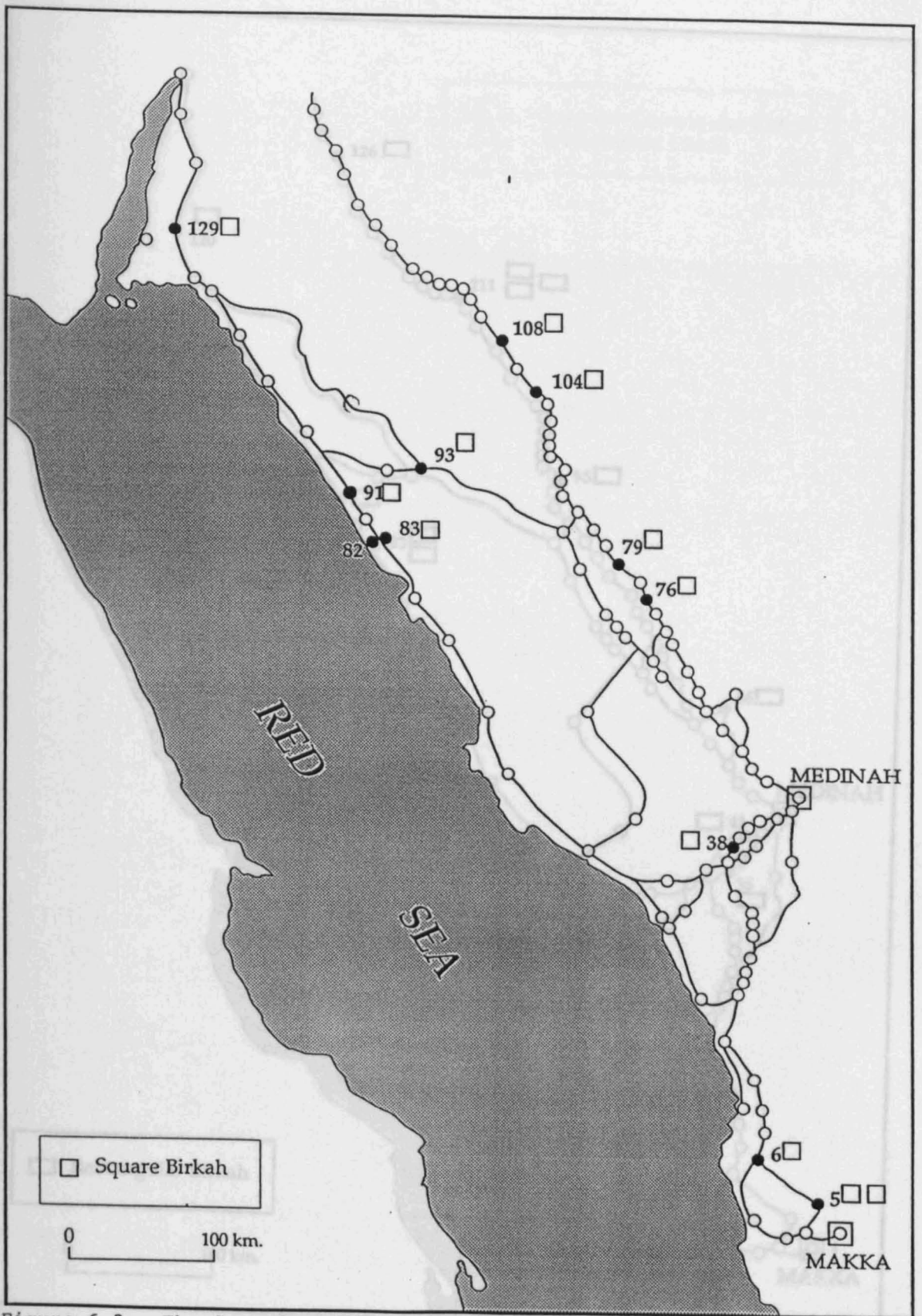


Figure 6.3: The location of the square Birkah

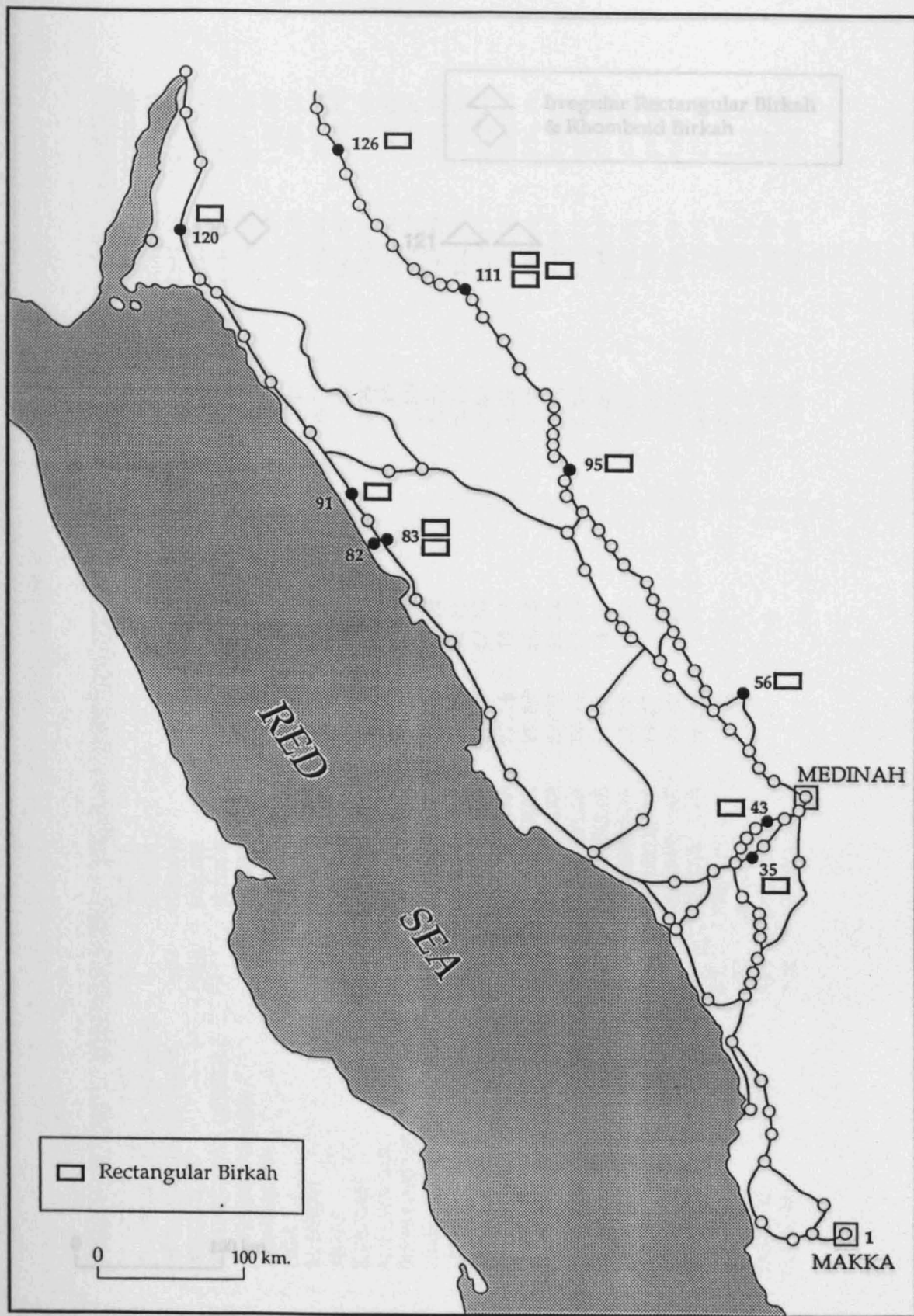


Figure 6.4: The location of the rectangular Birkah

and the location of the irregular rectangular Birkah and rhomboid Birkah

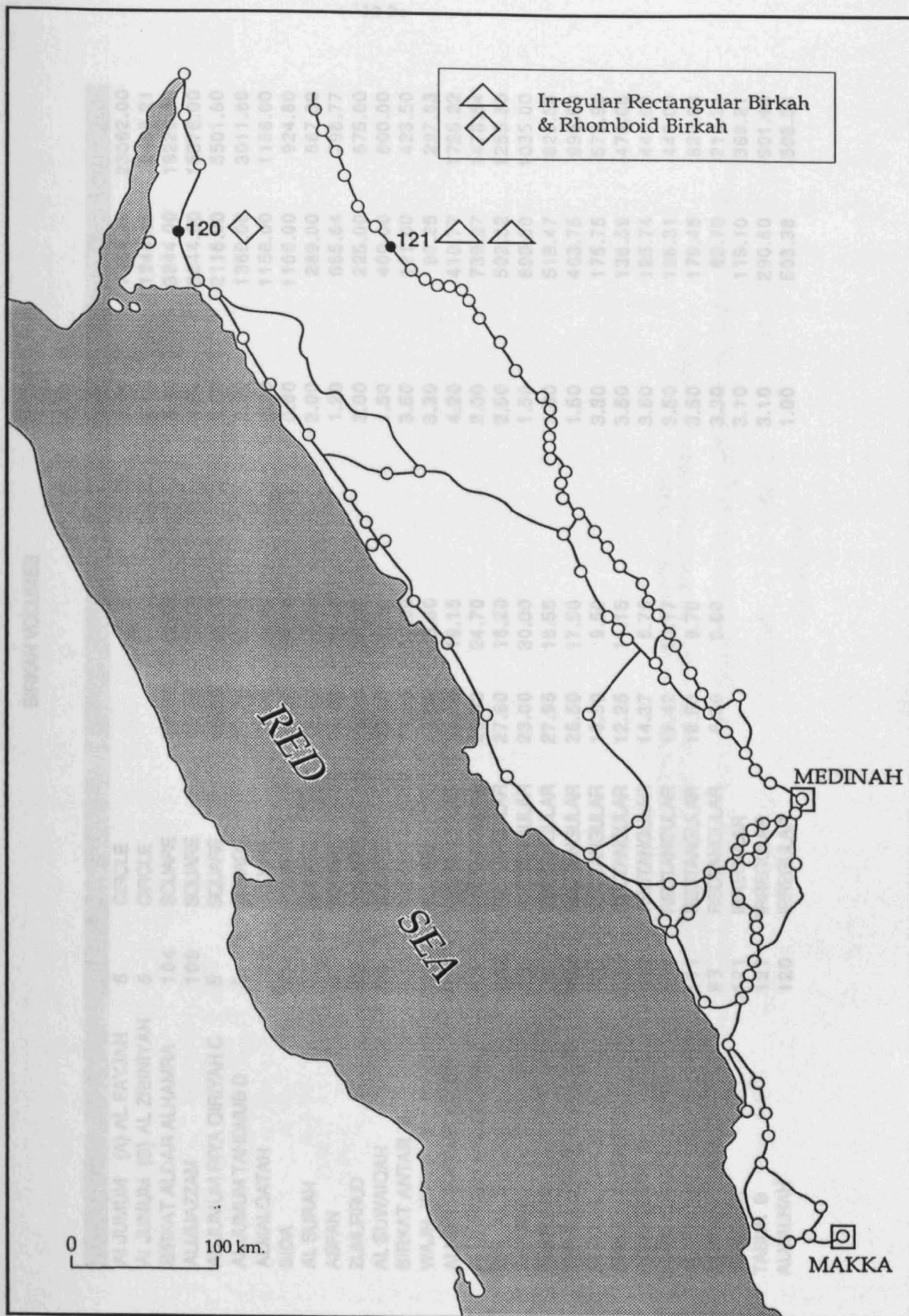


Figure 6.5: The location of the irregular rectangular Birkah and rhomboid Birkah

BIRKAH VOLUMES

NAME of SITE	SITE No	SHAPE	WIDTH (m)	LENGTH (m)	DIAMETER (m)	DEPTH (m)	SURFACE AREA (m ²)	VOLUME (m ³)
AI JUMUM (A) AL FAYJAH	5	CIRCLE			100.00	3.00	7854.00	23562.00
AI JUMUM (B) AL ZIBINIYAH	5	CIRCLE			39.80	2.00	1244.11	2488.21
BIRKAT ALDAR ALHAMRA	104	SQUARE	62.00	62.00		5.00	3844.00	19220.00
ALMUZZAM	108	SQUARE	62.00	62.00		4.00	3844.00	15376.00
AL JUMUM RIYA QIRIYAH C	5	SQUARE	46.00	46.00		2.60	2116.00	5501.60
AL JUMUM TANDHUB D	5	SQUARE	37.00	37.00		2.20	1369.00	3011.80
ALMALQATAH	120	SQUARE	34.00	34.00		1.00	1156.00	1156.00
BIDA	93	SQUARE	34.00	34.00		0.80	1156.00	924.80
AL SURAH	96	SQUARE	17.00	17.00		3.00	289.00	867.00
ASFAN	6	SQUARE	25.80	25.80		1.20	665.64	798.77
ZUMURRUD	79	SQUARE	15.00	15.00		3.00	225.00	675.00
AL SUWAIQAH	38	SQUARE	20.00	20.00		1.50	400.00	600.00
BIRKAT ANTAR B	91	SQUARE	11.00	11.00		3.50	121.00	423.50
WAJH ZURIB B	83	SQUARE	9.50	9.50		3.30	90.25	297.83
ALHJIR MADAIN SALEH	95	RECTANGULAR	21.45	19.15		4.20	410.77	1725.22
ALHAFIYAH (AL-AMAIR)	43	RECTANGULAR	29.93	24.70		2.00	739.27	1478.54
BIR AL S'AIDINI	120	RECTANGULAR	27.60	18.20		2.50	502.32	1255.80
SHAJWA	96	RECTANGULAR	23.00	30.00		1.50	690.00	1035.00
ALRAUHA	35	RECTANGULAR	27.95	18.55		1.60	518.47	829.56
THAT ALHAJJ	126	RECTANGULAR	26.50	17.50		1.50	463.75	695.63
ALWAJH ZURIB A	83	RECTANGULAR	18.50	9.50		3.30	175.75	579.98
BIRKAT ANTAR A	91	RECTANGULAR	12.25	11.15		3.50	136.59	478.06
ALAKHDHAR A	111	RECTANGULAR	14.37	8.75		3.50	125.74	440.08
ALAKHDHAR B	111	RECTANGULAR	12.42	10.17		3.50	126.31	442.09
ALAKHDHAR C	111	RECTANGULAR	18.50	9.70		3.50	179.45	628.08
ALWAJH ZURIB C	83	RECTANGULAR	6.50	9.80		3.30	63.70	210.21
TABUK A	121	IRREGULAR				3.10	119.10	369.21
TABUK B	121	IRREGULAR				3.10	290.80	901.48
ALMALHAH	120	IRREGULAR				1.00	503.38	503.38

FIGURE 6.6

BIRKAH VOLUMES

(Site numbers are given in figure 6.6)

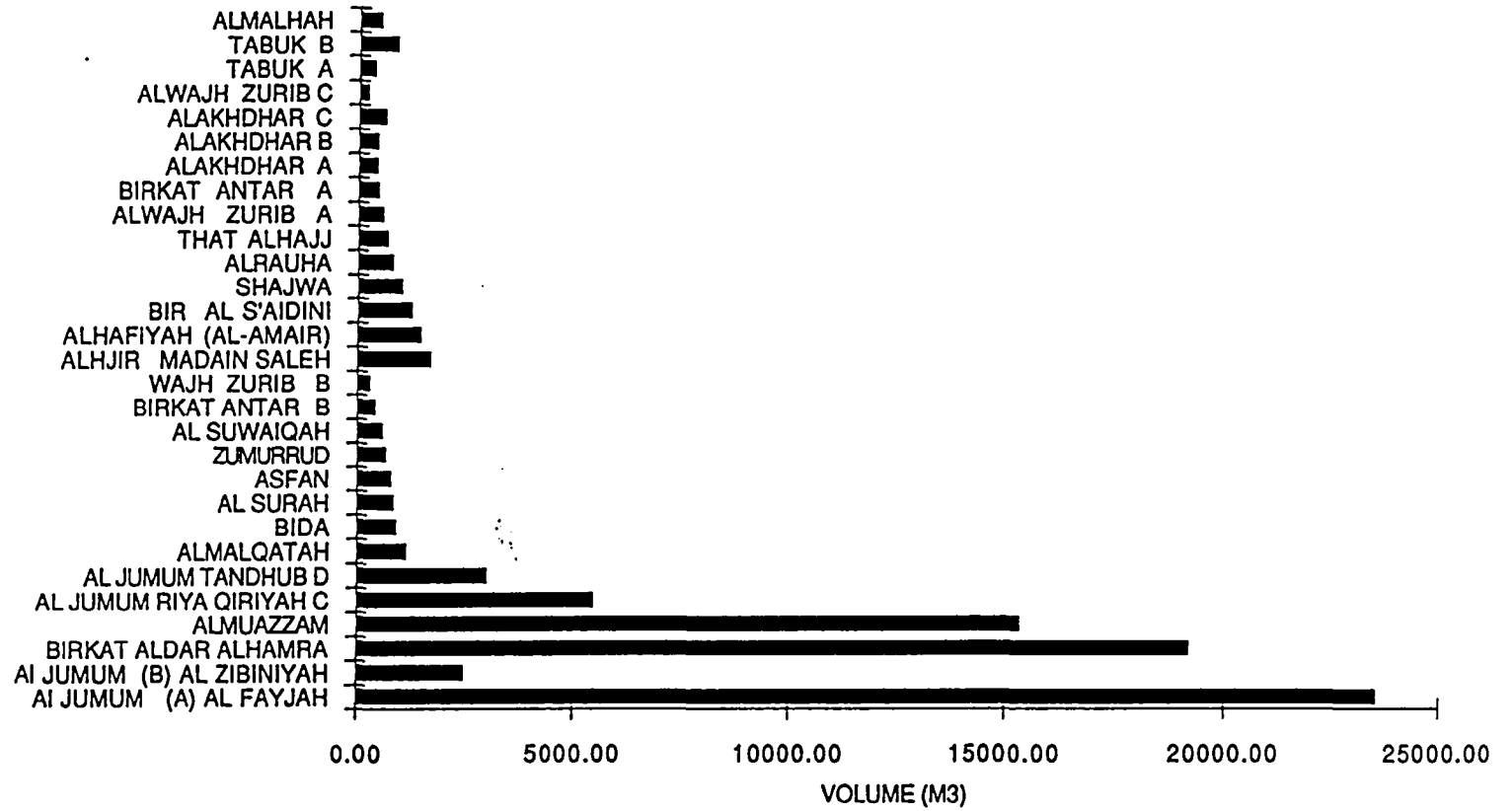


FIGURE 6.7

granite, other volcanic rocks, limestones and sandstones depending on the location of the water resource. Gypsum was also used extensively as part of the plaster on the structures face. Sand, earth, gravel and small stones have been used as infill material. Tanks and cisterns constructed below ground level range between 3 - 5 meters in depth. The gypsum plaster has been used on the base of tanks and on the walls of tanks and cisterns to prevent water from exfiltrating into the earth and to strengthen the structure.

Tanks in particular may have complexes of inlets and outlets, they are usually connected by channels either from wells or springs. The complexities of the structures provide clear evidence of the skills and abilities of the engineers and labourers who constructed them. In addition to the high quality of construction the water resource locations were particularly carefully chosen. There are some sites which allow waters from wadis to flow during rainfalls by gravity into the holding tanks. To aid this there are sometimes deflecting walls. The tanks and wells are almost always connected with qanawats, channels which are very common and used as a means of bringing water from springs into the wells and tanks. The water channels are usually built with the same materials as the tanks and have the same gypsum plastered face. The same techniques are used to distribute water for irrigation. The water channels differ in depth, width and length however, and some of them are built below ground as conduits. The surface water

channels may either be covered or uncovered. Almost all of the tanks contain stairways, usually located in the corners presumably to provide access to the water at times of differing storage volume.

Some of the tanks have buttresses externally and internally but some appear to have only internal buttresses, the purpose of these buttresses is to strengthen the walls of the tanks, the pressures on which will vary with the storage volume within the tanks.

6.3 Labour requirements and journey times

It is of course impossible to identify directly the number of labourers and engineers involved in the construction of the water resources of the pilgrim routes. Nor can it be identified whether these were local workers or brought in from abroad. In order to estimate the relative amount of labour involved the weight of construction material has been determined for a variety of structures. These figures are provided in Figure 6.8. Masonry weighing in excess of 200,000 tonnes (calculated from wall volumes alone and excluding flow materials) would have been quarried locally and transported to the site. However, this material was generally quarried within 1-2km of the site. In most of the structures the stones had to be trimmed to fit the design (particularly the faces which had to be plastered). The variations in masonry weights is presented in Figure 6.9. Before construction could start partial excavation of the site was necessary and the weight of spoil material would have been substantial. An indication of spoil volumes is

SPOIL AND MASONRY VOLUMES AND WEIGHTS

NAME of SITE	SITE NUMBER	PERIMETER (m)	WALL WIDTH (m)	MASONRY VOLUME (m ³)	MASONRY WEIGHT (tonnes)	SPOIL WEIGHT (tonnes)
AI JUMUM (A) AL FAYJAH	5	314.16	1.25	1178.10	3534.30	70686.00
AI JUMUM (B) AL ZIBINIYAH	5	125.04	0.90	225.06	675.19	7464.63
BIRKAT ALDAR ALHAMRA	104	248.00	1.80	2232.00	6696.00	57660.00
ALMUZZAM	108	248.00	1.10	1091.20	3273.60	46128.00
AL JUMUM RIYA QIRIYAH C	5	184.00	1.25	598.00	1794.00	16504.80
AL JUMUM TANDHUB D	5	148.00	1.25	407.00	1221.00	9035.40
ALMALQATAH	120	136.00	2.00	272.00	816.00	3468.00
BIDA	93	136.00	1.00	108.80	326.40	2774.40
AL SURAH	96	68.00	1.15	234.60	703.80	2601.00
ASFAN	6	103.20	0.65	80.50	241.49	2396.30
ZUMURRUD	79	60.00	1.00	180.00	540.00	2025.00
AL SUWAIQAH	38	80.00	1.00	120.00	360.00	1800.00
BIRKAT ANTAR B	91	44.00	1.30	200.20	600.60	1270.50
WAJH ZURIB B	83	38.00	2.20	275.88	827.64	893.48
ALHJIR MADAIN SALEH	95	81.20	1.83	624.10	1872.31	5175.67
ALHAFIYAH (AL-AMAIR)	43	109.26	1.67	364.93	1094.79	4435.63
BIR AL S' Aidini	120	91.60	1.10	251.90	755.70	3767.40
SHAJWA	96	106.00	1.20	190.80	572.40	3105.00
ALRAUHA	35	93.00	1.30	193.44	580.32	2488.67
THAT ALHAJJ	126	88.00	1.50	198.00	594.00	2086.88
ALWAJH ZURIB A	83	56.00	2.20	406.56	1219.68	1739.93
BIRKAT ANTAR A	91	46.80	1.00	163.80	491.40	1434.17
ALAKHDHAR A	111	46.24	0.95	153.75	461.24	1320.24
ALAKHDHAR B	111	45.18	1.20	189.76	569.27	1326.27
ALAKHDHAR C	111	56.40	1.12	221.09	663.26	1884.23
ALWAJH ZURIB C	83	32.60	2.20	236.68	710.03	630.63
TABUK A	121		1.37	0.00	0.00	1107.63
TABUK B	121		1.37	0.00	0.00	2704.44
ALMALHAH	120		1.00	0.00	0.00	1510.13

FIGURE 6.8

MASONRY WEIGHT

(Site numbers are given in figure 6.8)

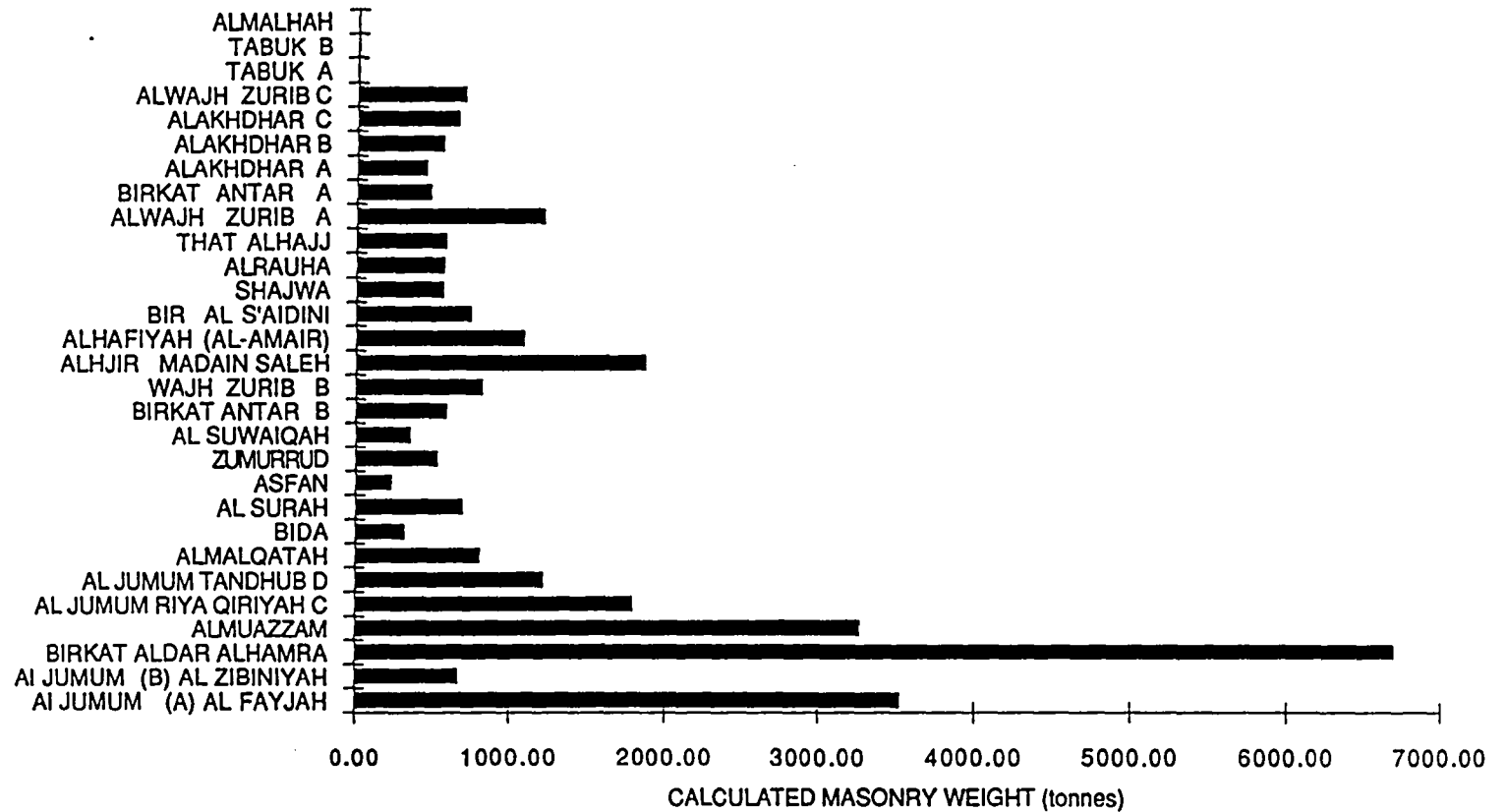


FIGURE 6.9

given in Figure 6.10.

Because there are so many variables in wall building and tank construction the only valid comparison of effort is in the weight of spoil shifted during the period of construction. We have assumed that one cubic metre of spoil would require approximately 2.24 man hours of effort. Therefore, in Al-Jumum the removal of the spoil would take 158,565 man hours. It would, therefore, take ten men nearly 320 days at 5 hours per day. Clearly, if there is a requirement to move the spoil any considerable distance these times would be greatly extended.

Along the Syrian and Egyptian routes there are a number of way stations. Some of these are large, essentially to feed, rest and prepare the pilgrims for the next phase of their journey, others are simply intervening halts which might have some water resource structures, but it is anticipated that the pilgrims would remain there for no more than a day. Interviews conducted during the field work indicated that there were also stopping places designed simply for brief rests and pasturing which were not provided with any kind of water resources. Some pilgrim stations are at the junction of routes where pilgrims from Syrian and Egypt gathered to travel on together towards the holy cities, such sites for example include Ailah and Al-Suqya-Al-Khushaybah.

Figure 6.11 shows the stations between Medinah and MAKKA identified by early Islamic writers. The distances between each station is given. Figure 6.12 gives the same information for the Egyptian pilgrim routes from Ailah to

CALCULATED WEIGHT OF SPOIL

(site numbers are given in figure 6.8)

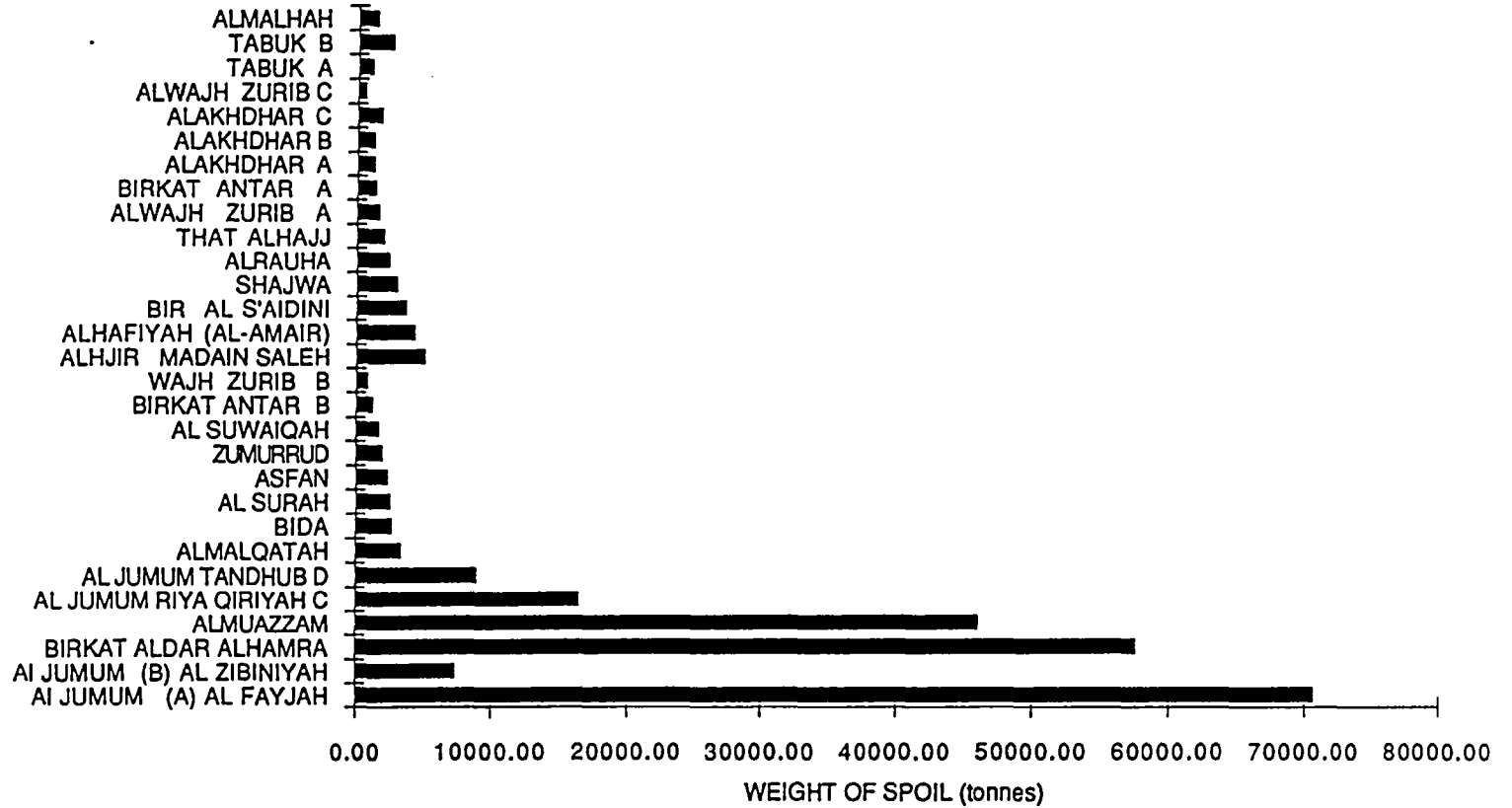


FIGURE 6.10

Figure 6.11

The conventional route Medinah - MAKKA with the mileage

Ibn Khurdadhaba	Ibn Rostah	Qudamam	Al-Hamadani	Al-Idrisi
Medinah	Medinah	Medinah	Medinah	Al-Shajarah
6 miles	6 miles	6 miles	23 miles	Medinah
Al-Shajarah	Thu Al Hulaifah	Al-Shajarah	Al Sayalah	12
12	31	12	2	Mala1
Mala1	Al-Sayalah	Mala1	Al-Rauha	17
19	(Al Rauha)	19	13	Al-Sayalah
Al-Sayalah	34	Al-Sayalah	Al-Ruwaithah	34
34	Al-Ruwaithah	34	24	Al-Ruwaithah
Al-Ruwaithah	36	Al-Ruwaithah	Al-'Arj	36
36	Al-Suqya	36	24	Al-Suqya
Al-Suqya	29	Al-Suqya	Al-Suqya	27
29	Al-Abwa	29	19	Al-Abwa
Al-Abwa	27	Al-Abwa	Al-Abwa	27
27	Al-Juhfah	27	23	Al-Juhfah
Al-Juhfah	29	Al-Juhfah	Al-Juhfah	26
27	Qudid	26	24	Qu
Qudid	24	Qudid	Quda1d	24
24	'Asfan	24	23	'Asfan
'Asfan	34	'Asfan	'Asfan	33
34	Batn Marr	16	23	Batn Marr
Batn Marr	16	16	13	MAKKA
MAKKA		MAKKA	MAKKA	

Figure 6.12

The stages of the Egyptian pilgrim routes mentioned by Al-Jaziri 1983, Vol. 2 pp. 1249-1254

Name of Station to	Name of station	Distance	from
Ailah	Haql	a day's journey	
Haql	Madyan	4 day's journey	
Madyan	'Ainunah	2 day's journey	
'Ainunah	Al-Muwelth	3 day's journey	
Al-Muwelth	Al-Azlam	4 day's journey	
Al-Azlam	Al-Wajh	5 day's journey	
Al-Wajh	Akra	2 day's journey	
Al-Akra	Al-Hawra	4 day's journey	
Al-Hawra	Nabat	2 day's journey	
Nabat	Yanbu	5 day's journey	
Yanbu	Badr	3 day's journey	
Badr	Rabigh	5 day's journey	
Rabigh	Khulis	3 day's journey	
Khulis	'Asfan	2 day's journey	
Marr al-Zahran	MAKKA	a day's journey	

The pilgrims who want to visit Medinah before going MAKKA travel from:

Badr	Al-Safra	a day's journey
Al-Safra	Thu Al-Hulifah	3 day's journey
Thu Al-Hulifah	Medinah	a day's journey

MAKKA, this time with distances between the stations given in journey time. Figure 6.13 provides the same information for the Damascus to Medinah route. This information was taken from Ibn Batutah again identifying stations and their distances in days. Figure 6.14 provides information on the distances and journey times for the railway routes developed in the early part of the 20th century.

The coastal route has considerable distances between its way stations often as long as four or five days journey. Perhaps this is an indication of the relatively more equitable climate involved on the coastal route. Although a large amount of water is available at each stopping place its quality is rather poorer much of it being brackish water. Of course there are some pilgrim stations on this route which have drinkable water such as `Ainunah, Nabt and Badr.

Ibn Batutah and others say that the Syrian pilgrims arriving at Tabuk stay there for four days to rest and water their animals. They also prepare themselves by filling animal skins with water to be ready for the next stage of the journey which is considered to be dangerous desert. The pilgrim caravans march day and night scared of this hostile desert. Through the stage between Tabuk and Al-`Ula there are two well known way stations, Al-Akhdhar which has water structures and Birkat Al-Muazzam which only fills with water during rainfall. However despite these halts the area is very harsh.

During the field work on the Syrian and Egyptian pilgrim

Figure 6.13

The pilgrim stations from Damascus to Medinah

Station Name From	Station Name To	Distance (Days)
That Al-Hajj	Tabuk	-
Tabuk	Al-Hijr	5 days
Al-Hijr	Al-'Ula	$\frac{1}{2}$ day
Al-'Ula	Wadi Al-'Attas	1 day
Wadi Al-'Attas	Hadiyah	-
Hadiyah	Medinah	3 days

Ibn Batutah (N.D. pp. 77-79)

Figure 6.14

The pilgrim and Railway Stations

Station name from	Stations name to	Distance kilometres
Halat 'Ammar	That Al-Hajj*	13
That Al-Hajj	Bir Ibn Hirmas*	24
Bir Ibn Hirmas	Al-Hadhim	22
Al-Hadhim	Al-Muhtatih	23
Al-Muhtatih	Tabuk*	15
Tabuk	Wadi Al-Uthayli	28
Wadi Al-Uthayli	Dar Al-Hajj	24
Darr Al-Hajj	Mustabighah	11
Mustabighah	Al-Akhdhar*	5
Al-Akhdhar	Hams	22
Hams	Disad	23
Disad	Al-Muazzam*	17
Al-Muazzam	Khoshm Suna	31
Khoshm Suna	Al-Dar Al-Hamra	27
Al-Dar Al-Hamra	Matala	24
Matala	Abu Taqah	14
Abu Taqah	Al-Mazham	12
Al-Muzham	Madain Saleh*	25
Al-'Ula	Al-Badaya*	19
Al-Badaya	Mashhad	23
Mashhad	Sahl Mutran	22
Sahl Mutran	Zumurd	15
Zumurd	Bir Jadid	23
Bir Jadid	Al-Tawayrah	18
Al-Tawayrah	Al-Madraj	26
Al-Madraj	Hadiyah	17
Hadiyah	Jadd'ah*	22
Jadd'ah	Abu Ana'am	12
Abu Ana'am	Istable 'Antar*	46
Istable 'Antar	Bwair	19
Bwair	Abyar Nasif	20
Abyar Nasif	Bwat*	19
Bwat	Al-Hafirah	21
Al'-Hafirah	Al-Mukhit*	19
Al-Mukhit	Medinah	15

(Al-Batanuni N.D. p. 304)

* Watering place

caravan routes we observed that some stages of these routes are very harsh, hostile and very difficult to traverse even by modern transportation.

As a means of travel, however, the camel was the only means of transport until the last few decades when modern communications were introduced.

In the harsh desert climate and topography, the camel played a major role in transport, earning the name Safinah Al-Sahra - the desert's ship. The camel is very patient and has the ability to suffer a desert's hostile environmental conditions.

"The camel is remarkably well adapted to life in the desert" [Hamilton 1971 p. 12]

"The Arabian camel can go for about twenty five days in winter and about five days in summer without water".

(Hitti 1937 p. 22)

Without the camel the transport in the desert would be very difficult if not impossible.

"Fully laden a camel can cover some 25 miles a day, but without packs it can go much further - sometimes up to 100 miles in a single day" [Hamilton 1971 p. 12]

6.4 Water requirements

The consumption of water by either a pilgrim or by a camel depends on many factors. In the case of humans the rate of water consumption depends on the age and health of an individual as well as the time of year. In the summer heat a person loses water through sweat so that water is needed to compensate. About 5-6 litres is needed for drinking each

day and 4-8 litres for various purposes such as ablution and cleaning. In winter of course the amount decreases. In summer a person cannot go for more than 1-2 days without drinking water, while in winter it could be 3 days. The camel can drink between 28-48 litres at a time.

At any site the demand for water by people and animals is a major factor. Added to this however, is the loss of water by evaporation and the loss by infiltration.

The consumption of water by pilgrims and their camels depends on how frequently the pilgrim caravans pass and how many pilgrims and camels are in each caravan.

It is difficult to identify precise numbers of pilgrims who come to make Al-Hajj every year particularly before this century because there were no records and archives which might give the number of pilgrims. However, there are some sources which could provide an estimate of the number of pilgrims. About 300 Muslims were sent with Abu Bakr by the prophet, peace be upon him, in the first Hijjah in Islamic times in 9 AH (Ibn Kathir 1966 Vol. 5, p. 185). The number of pilgrims who accompanied the prophet Mohammed peace be upon him in Hijjah Al-Wada (farewell's pilgrimage) in 10 A.H. was about 90,000 or 114,000 pilgrims (Al-Jaziri 1983 Vol. 1 p. 205). Clearly then the sizes of the pilgrim groups were growing rapidly. The number of pilgrims during the times of Islamic growth increased. Nevertheless the increase or decrease in numbers of pilgrims may be affected by the political, economic and military situation of the Islamic countries, so that the number of the pilgrims is

changeable from year to year.

There are some examples provided by individuals concerning the number of the pilgrims, these include the following:

The pilgrimage season in 1279 was very large "With 40,000 Egyptians alone and the same number of Iraqis and Syrians". (King, 1977 Vol. 26, p. 65).

"The first European to record a pilgrimage to MAKKA was the Italian traveller, Ludovico Bartheima, he stated that the great caravan that was leaving Damascus for MAKKA on April 1503 consisted of 40-50,000 pilgrims, 35,000 camels and thousands of horses and asses" (Wellard 1977 p. 142).

Another European explorer reported the number of the Syrian pilgrims was Doughty in 1876 when he accompanied the Syrian pilgrim caravan he says "The Hajjaj -pilgrims - were this year 6,000 persons 10,000 of all kinds of cattle, the most camels and mules". (Garnett 1956 p. 10).

Despite these examples which probably indicate the number of pilgrims who might have travelled through the Syrian and the Egyptian pilgrim routes there is no precise information about the exact number of pilgrims who used these routes particularly before this century.

There is a way which could help to estimate the number of pilgrims who have travelled on the Syrian and the Egyptian conventional routes by measuring the capacity of the water resource structures and then estimating the amount of water which each pilgrim may need for drinking, ablutions, cleaning and washing clothes.

One of the largest sites, the circular tank of Al-Jumum has

a capacity of at least 23 million litres. Assuming 10l per head per day for travellers without animals this tank could supply over 70,000 people for a 30 day period. In contrast at Tabuk the combined capacity is 1.25 million litres and so if pilgrims were to rest for only 3 days the pilgrim capacity would be about half that of Al-Jumum. If however some assumptions about canals and transit water are entered these estimates change dramatically. If each group of 3 pilgrims accompany a camel and and take 1 days supply of water the "per capita" intake at the station becomes 43 litres. Thus the pilgrim capacity of Al-Jumum drops to 25% of the previous figure.

CHAPTER 7

ARCHAEOLOGICAL INTERPRETATIONS7.1 Objectives

The problem of interpreting and dating archaeological sites and the ancient remains is one of the most difficult tasks confronting the archaeologist. Despite the difficulties, this is an essential task for without an accurate chronology it is impossible to create the sequence of development at a site or to relate this to other sources of information.

7.2 Dating Problems

In general these problems include the environmental conditions by which the archaeological site is influenced. An immediate and important factor in the condition of an archaeological site is whether remains are visible above the ground such as in the case of birak, cisterns and channels or whether the remains are located underground. In some cases the archaeological remains are completely destroyed and therefore dating such remains cannot be easy and may be impossible. In the sites under consideration, the lack of datable evidence such as pottery and coins make the establishing of a date and thus the interpretation of the remains more difficult. Much archaeological work depends upon analogies from other sites. In Arabia generally and Saudi Arabia in particular, there has been relatively little archaeological excavation until today. Recent excavations that have been started under the authority of the Department of Antiquities and Museums, in the Ministry of Education, and in the Department of Archaeology at the King Saudi

University in Riyadh have not yet been completed. Consequently, the results of these excavations will not be published for some time.

Despite the extensive nature of the surveying in the Syrian and Egyptian pilgrim routes, the problem of interpretation and dating the material remains will still exist until substantial excavation takes place.

During the field work the survey was concentrated mainly on water resource structures. These water resource structures are associated with other facilities that are built adjoining them. Some survive in good condition, whilst others do not.

In considering dates generally, because the main subject of the thesis is the pilgrim routes it is logical and potentially likely that the majority of the way stations and the remains all belong to Islamic times. However, some probably belong to the early Islamic period whilst others might be more recent. The exceptions are some stations such as Al-Hijr, Madain Saleh, Al-'Ula and Tabuk, which existed in pre-Islamic times. In earlier chapters the available literature sources which provide significant information about Syrian and Egyptian pilgrim routes were cited. Although these sources give information about the distances between stations and the nature of the way stations they give no information on dating. However, some of them give dates to castles and forts apparently associated with water resource structures; also, there are some castles and forts which have inscriptions written on the main entrance to

indicate their date of construction.

7.3 Sites selected on the Syrian Pilgrim Route

On the Syrian pilgrim caravan routes three sites have been selected each having a castle or fort which illustrate the dating material and evidence that is available.

- i) The site of this station, That Al-Hajj, is located about 60km north of Tabuk. This pilgrim station is mentioned by a number of Arabic writers, for instance Ibn Batutah c727 AH/1327 mentions it as an important pilgrim station only and does not mention its castle. While Al-Mawsawi (kibrit) when he passed through it in 1039 AH/1629 mentions it as a pilgrim station that has both a castle and a birkah. This would suggest that the castle was constructed between 1327 and 1631 and indeed the inscription above that castle indicates That Al-Hajj was built in 971AH/1563. The coincidence of the written date with the inscription date gives confidence then that Al-birkah associated with the castle and the way station may well have been constructed between the same dates. It might be noted however, that the castle itself was renewed in 1266AH/1849 and so the photographic and cartographic evidence associated with this site may well be misleading under superficial examination.
- ii) The second pilgrim station is Al-Akhdhar. This is a wadi visited by the prophet Mohammad, peace be upon him, on his way to Tabuk in 9AH. It is located south of Tabuk. Ibn Rashid Al-Andalusi, also mentioned it as a pilgrim station in 684AH/1287 when he travelled through it on a pilgrimage. Al-Mawsawi (Kibrit) mentions it stating that it is a pilgrim

station which lies in the Syrian pilgrim caravan route. It has a castle, Sulimaniyah, which was built in 938AH/1532. It also has a spring which feeds 3 birak. The inscriptions that have been found near the ruins of the castle indicate that the castle was built in 938AH/1532. Clearly then this pilgrim way station which has a very early documented history of existence, has only had the castle added at a much later date and therefore castles alone are likely to provide dating information indicating the latest possible date of creation of the water resource structures.

iii) The third station is Al-Muazzam which lies south of Al-Akhdhar and is mentioned by several early Islamic travellers. For example Ibn Batutah indicates that it has a castle attributed to Al-Malik Al-Muadham min aulad Ayyub which means that it belongs to the Ayubites times. Al-Mawsawi mentions it as a pilgrim station and that it has a castle. He attributed the castle to the Ottoman's time saying that it was built in 1031AH/1622. He also says that there is a great birkah adjacent to the castle. The inscriptions that have been written above the entrance of the castle however indicate that it was first built in 767AH/1365.

7.4 Sites Selected on the Egyptian Pilgrim Route

The three sites selected from the Egyptian pilgrim routes as examples are as follows:

i) Al-Muwelih is a pilgrim station on the Egyptian coastal route south of 'Ainunah. It is mentioned by a number of Muslim and Arab writers as a pilgrim way station; Al-Jaziri

mentions it - as a nabac in the tenth century AH, saying that its castle was built in 967AH/1560. He also mentions that Al-sultan ordered that some wells (abyar) be dug to provide the pilgrims with water. As identified previously there are still some wells at this site but it is difficult to say whether they are the above mentioned wells or not. However, the surviving wells are still in very good condition. From their style and construction they are probably ancient.

Al-Mawsawi mentions this site as a pilgrim way station and notes the presence of the castle. Al-Zayani mentions this site in 1170AH/1756 as a sea port where the ships from Al-Suez arrive. He also mentions its castle saying that the pilgrims journeying through this site put their luggage in the castle. (Al-Zayani 1967, p. 222) The inscriptions that are located in the castle indicate its date of 968AH/1560.

ii) The second Egyptian way station is Al-Azlam. It too is mentioned as a pilgrim way station on the Egyptian coastal route. Al-Mawsawi writing about his journey in 1039AH/1629 describes it as a wadi consisting of a castle on the half way point between Egypt and MAKKA. He says that the castle had been rebuilt in 916AH/1510. Again he suggests that the pilgrims used the castle as a secure storage space for their luggage. The inscription on the castle confirms the date of its construction as 916AH/1510.

iii) The third of the Egyptian way stations is Al-Wajh. Mentioned again by several early arabic writers and travellers, it is a pilgrim halting place lying again on the

coastal caravan route. Al-Yaqubi in his book Al-Buldan, (1892), mentions it. Qudamah also identifies it as an Egyptian pilgrim caravan route. Ibn Rashid Al-Andalusi writing of his journey in 685AH/1286 notes it as a pilgrim station. In reality the pilgrim route passes about 10k east of Al-Wajj and here there are a number of wells and a castle as well as a water tank connected to the castle. This castle called Qalah zurib was according to the inscription constructed in 1025 or 1026AH/1616/1617.

7.5 Methods of Dating

Despite the absence of dating most of the archaeological remains in the pilgrim routes there are probably some elements from which one might directly or indirectly derive dating at most of the archaeological sites and remains. These elements may include pottery, coins and building construction techniques. Since the variety of remains associated with this project are quite varied, for example well, water tanks, cisterns, buildings, castles etc, the representation of the dating elements may differ in different situations.

Pottery is a valuable subject and it will remain as an important source of information associated with archaeological remains. All the pottery found during the field work was collected from the surface and all belongs to the Islamic period, apparently the Abbasid period. [reference may be made to articles in the journal Atlat and to collections in the national museum at Riyadh].

A second element which may help when establishing the date

of archaeological sites and remains is coinage. Unfortunately during the extensive survey in the field work no coins were found.

The third element which may help in dating the archaeological remains and particularly the buildings and other constructions is the style and the constructional techniques. By examining buildings of well established date, it is then possible to identify styles and techniques which can be used to date buildings of unknown date which use the same styles and techniques.

A review of the surviving archaeological remains indicates clearly that most if not all of the castles and forts are very similar in their construction. Wallin (1979) says "The Castles on the Egyptian pilgrim route and the Syrian pilgrim route are nearly all similar in construction, although differing in size; they were probably built by the Turkish Sultans for the protection and supply of the pilgrims, and to guard the wells which they generally enclose." Water resource structures are more varied in the size and shape of construction and this should indicate a greater date range, although there are differences due to local stone supplies. Despite the extensive survey which has been made, the problem of dating the archaeological sites and remains will still exist unless excavation is made at these archaeological sites.

7.6 Directions for future work

Although a great deal of work has been conducted during the field investigations it is believed that the work in this

area is incomplete. The survey reported in this dissertation was extensive and therefore had to be relatively superficial. It is highly desirable that further work in this field should be carried out in the future by scholars skilled in field archaeology. In this way more information about the pilgrim routes can be deduced particularly for the Syrian and Egyptian routes.

However, it is very difficult to specify particular sites or routes to be the subject for further work because the area has received so little archaeological attention in the past. Therefore virtually the whole area needs to be explored. Nevertheless, there are, in my opinion, some way stations which are more important than others and more helpful in terms of archaeology; these might produce a lot of useful evidence and related information. There are also a number of traverse roads which connect between pilgrim routes and which need more survey and investigation in order to confirm the location and names of some of the sites which have changed.

i) Dealing first with the stopping places:

1.1) The first pilgrim stopping place - archaeological site - which is, in my opinion, very important and needs further work is the station of Marr Al-Dhahran-Al-Jumum. The factors which make this pilgrim station more important and useful for future work both in surveying and excavation are as follows. Firstly, the site is not far from the holy place of MAKKA being about 25km to the north. At this site a large number of pilgrims gather from different directions

before entering MAKKA. It covers quite a large area of about 10 x 15km and contains a number of different sites. Each site has some archaeological remains which include water resource structures, buildings, castles and foundations of a number of other constructions which cannot currently be identified. I believe that more archaeological work carried out in these areas will probably produce more significant evidence which will help to explain more about this site, historically, archaeologically and geographically.

1.2) The second pilgrim station - archaeological site is in fact a group of sites with a distance between each one varying from between 3 - 7km. The sites include the following;

1.2a Al-Hafiyah Al-Amair.

This site consists of water resource structures that include tanks and channels; it also consists of the remains of the foundations of buildings. Actually this site is very important because of the unusual nature and complexity of its features. It needs more surveys of the whole area as well as investigation of the relationship of the features. Excavation at specific points is necessary in order to obtain more information about this site.

1.2b Al-Swaiqah is mentioned by a number of early Islamic writers as a pilgrim station. Following interviews with the native Bedouins who are familiar with this area it is claimed that the village of Al-Swaiqah was both large and well populated. Unfortunately only the ruins of water

resource structures which include tanks, wells and channels are still visible. There are also some remains of a small building in a cemetery nearby. I believe that more archaeological work on this site particularly excavation, would therefore, uncover valuable information and evidence which might support the available written information about this site.

1.2c Al-Sayalah is also mentioned by early writers as a pilgrim station; it lies south of Al-Swaiqah. It consists of water resource structures that include wells and cisterns, together with the remains of buildings. It needs further archaeological survey work because the three sites are relatively close together and more information may be gained relating to the linkages between the sites.

ii) Concerning routes

The second suggestion for further work that I would like to see undertaken in the future relates to some of the traverse roads that are in fact, completely or partially abandoned. These traverse roads were once much travelled and a number of way stations existed on them. These traverse roads in my view need further extensive survey to be sure about their locations and names. In addition some of these sites may need excavation in order to obtain more information about the dimensions and character of the water resource structures. Because the traverse roads are abandoned it may well be that some of the remains have been less tampered with than on the other sites where contemporary pilgrim routes cross. These traverse roads include the Egyptian

pilgrim caravan inland route which branches from the coastal route at `Ainunah, passes south east, running inland and incorporates a number of ancient pilgrim stations until it reaches Al-Suqya-Al-khushayhah where the Syrian pilgrim route and the Egyptian pilgrim routes meet. The reason behind selecting this road as the subject for further work is because there were some sites which formerly existed but which have now disappeared; also there are some names which have either changed or disappeared so that this traverse needs especial and extensive survey to confirm some of the information determined in this current extensive survey.

Other traverse roads which require attention include the road between Yanbu Al-Bahr which passes through Yanbu Al-Nakhl to Medinah. This was a traditional road but it is now abandoned because a modern paved road takes a different route. Again this may have preserved some ancient features. The sites and traverse roads that have been mentioned above are clearly not the only sites which may require further work but are selected because they have an archaeological priority. It is likely that as a result of archaeological survey and excavation that these regions would then provide an obvious and clear picture of the structures that supported the water needs of pilgrims.

7.7 The origins of constructions on the pilgrim routes

According to Islamic tradition, as was mentioned earlier, Al-Hajj, the pilgrimage to MAKKA, goes back to the time of the construction of the house of Allah, Al-Kaaba by Ibrahim and his son Ismael. So Al-Hajj was in existence before the

rise of Islam and has continued ever since. Because the pilgrims who come to MAKKA for Al-Hajj need some kind of help and care, the rulers of MAKKA - pre-Islam - Quraish as the custodians of the House of God, paid considerable attention to the well being of pilgrims who came to perform Al-Hajj. They tried to provide near MAKKA the necessities for the pilgrims, particularly food and shelter. They dug wells to make water more available, and organised the provision of shelter and food as a devotional task. This task continued after the rise of Islam when the Caliphs paid special attention to the holy cities of MAKKA and Medinah, to the welfare of pilgrims as well as to the maintenance of the pilgrim routes. Each of the holy cities was provided with further facilities and constructions to provide resources and shelter. The caravan routes were provided with most of the necessary facilities for the journeys, particularly rest houses and water structures. However, during all of the historical stages that the development of the pilgrim caravan routes passed through, the caliphs and later rulers clearly wished to promote the facilities of these cities of MAKKA and Medinah and the caravan routes. Of course they were hoping to obtain greater reward from Allah on the day of judgement, but they also wished to make the pilgrims and other travellers who used these routes able to travel with greater comfort. All of the caliphs and rulers since the period of the second caliph Omar until the decline of the Islamic caliphate tried to establish facilities, particularly water resources, along the caravan

routes.

CHAPTER EIGHT

CONCLUSION AND RECOMMENDATIONS

The objective of this thesis was to make a documentary record of the remains of water resource structures on the Syrian and Egyptian pilgrim caravan routes leading to the holy cities MAKKA and Medinah.

8.1 Conclusions

MAKKA and Medinah are of course of fundamental significance to the pilgrim routes. MAKKA and Yathrib, later on Medinah, were widely known among the Arabs before the emergence of Islam. Despite the location of MAKKA in a barren waste wadi it was a target to people from Arabia and from outside Arabia who came regularly to practise the religious rites around Al-Ka'aba.

Since the time of Abraham Al-Ka'aba was a spiritual place but then it became a place for idols where paganism was practised, the sanctification and the pilgrimage to Al-Ka'aba existed prior to Islam, and continued after the rise of Islam.

"Al-Hajj was an organized institution even before Islam" (Husaini, 1961, p. 47).

"The Pilgrimage to Al-Ka'aba at MAKKA has existed from time immemorial, for even in pagan times the Arabs flocked there to do homage to the idols enshrined in Al-Ka'aba" (Cobbold, 1935, p. 107)

In addition to its religious importance, MAKKA, because of its geographical location, close to a junction of roads leading from Babylonia and Syria to the plateaux of the

Yemen, to the shores of the Indian Ocean and the Red Sea was a commercial centre and stopping place for caravans and traders.

Yathrib (Medinah) unlike MAKKA was not a religious place in pre-Islamic times, however, it was, as MAKKA, a station on the caravan trade route. It was also an agricultural oasis, the inhabitants of Medinah practised trade but they also engaged in agriculture.

After the rise of Islam Al-Hajj became one of the pillars of Islam and it became obligatory for every Muslim to make Al-Hajj once in his or her lifetime. After that MAKKA and Medinah became a terminal for the pilgrim caravans.

During pre-Islamic times the roads which passed through the north-west of Arabia were utilised for commercial activities merchants transported their goods and commodities between Arabia, Bilad Al-Sham and Egypt.

Climatic conditions and topographical features played a significant role in determining the trade caravan routes. In fact one of the most serious problems which threatened the traders and the travellers who used these ancient roads was the shortage of water supply.

After the rise of Islam the trade caravan routes continued but developed a pilgrimage function. The trade caravans operated all year while the pilgrim caravans were and still are used within a limited time period, Al-Hajj season, which means that they received special treatment.

"It can be said that most of the routes leading through Al-Hijaz were in use in the pre-Islam era and were the object

of continuous care in the early centuries of Islam" (Al-Wohaibi 1973 p. 384).

The function then of the ancient trackways changed from the transit of goods to the transit of pilgrims.

The survey that has been conducted on the Syrian and the Egyptian pilgrim routes shows that they traverse various topographical terrains such as wadis, hills, mountains and sand dunes. In fact these physiographical features may have caused some difficulties and problems to the trade caravans and after that to the pilgrim caravans because animals, mainly camels were the only means of transport. In addition to these difficulties the lack of water supply since the pre-Islamic period became a main problem faced by travellers.

After the rise of Islam the caliphs realised how much the pilgrims could suffer during their journey to the holy cities, particularly from thirst. They were greatly concerned to ensure that the pilgrim routes should be provided with necessary essential water resources. Consequently the pilgrim caravan routes leading to Medinah and MAKKA were provided with many facilities, including water supplies, castles, fortresses and rest houses.

"The improvement made by the Umayyads on the Tabukiyan (Syria) route consisted of digging wells" (Al Wohaibi 1973, p. 386).

The extensive survey shows that there are a lot of visible archaeological remains of facilities which were constructed along the Syrian and the Egyptian pilgrim caravan routes.

The remains of water resource structures that have been documented show that the materials used for construction were obtained locally. They were also constructed massively and carefully to endure harsh environmental conditions.

Contrasting the Syrian pilgrim caravan route with the Egyptian pilgrim caravan route - the coastal and the inland - there are some distinctive aspects which characterise each route. However, they also share some features.

With regard to the features which they share:

- 1 Both of them were used pre-Islam for trade caravans and have had stations located along them.
- 2 Both of them were used for military purposes when the Islamic armies conquered Bilad Al-Sham and Egypt.
- 3 Both of them became the pilgrim routes after the rise of Islam so that they have conventional and beaten roads.
- 4 The Syrian and the Egyptian pilgrim caravan routes are provided with water resource structures and other facilities such as castles, fortresses and rest houses.
- 5 The Syrian pilgrim caravan route goes inland, while the Egyptian pilgrim caravan routes either follow the shore of the Red Sea or travel inland, and then meet the Syrian pilgrim caravans at Al-Suqya-Al-Khushaybah and thus continue to Medinah.
- 6 The survey shows that the Syrian pilgrim caravan route in most parts passes through desert waste regions with few permanent settlements. The Egyptian pilgrim caravan coastal route which follows the Red Sea coast passes through a number of populated seaports and villages.

7 Both the Syrian and the Egyptian pilgrim caravan routes have large pilgrim stations where the pilgrims and their animals might find their needs for water and food catered for. There are also small way stations or watering places. Both have a mixture of major routes as well as some traverse roads. The traverse roads might be used when water was not available on the main road or when the caravans felt there was danger.

8 In regard to distance because there are some intersections between them, there is no significant difference between the Syrian and the Egyptian pilgrim caravan routes.

9 In general, water resource structures become more available when the pilgrim routes approach the holy cities MAKKA and Medinah.

10 However the water resource structures of the Syrian pilgrim caravan route consist of more and larger water resource structures than the Egyptian pilgrim caravan routes. The number of tanks and wells on the Syrian pilgrim caravan route is greater than the number on the Egyptian pilgrim routes.

11 At the beginning of this century Al-Hijaz railway between Damascus and Medinah was built. This was an unusual development at this time. The introduction of the Al-Hijaz railway as a new modern means of transportation replaced the camels. That means that the Syrian pilgrim route had an advantage over the Egyptian pilgrim routes. This increased the dominance of the Syrian route although the Al-Hijaz railway did not last for a long time, because of the First

World war and the political situation in the region. It was very useful in providing a safer and shorter journey from Damascus to Medinah.

During the survey and the investigation on the pilgrim routes - the Syrian and the Egyptian - we faced some difficulties and problems. The period which was given officially to us was shorter than planned so we worked day and night trying to survey as much as possible. We were aided in this by the mild weather.

One of the problems we faced during the field work was that we were unable to obtain precise information about some of the way stations which were mentioned by early Islamic and Arabic geographers and travellers despite contact with some old citizens who might have known the area very well. We also faced problems with names of some stations because of local pronunciation but we managed to solve this.

The area which we covered during the survey was very large, more than 8,000 km were travelled altogether. Most of the roads on both the caravan routes are unpaved and pass through difficult terrain. Despite the use of modern cars we faced difficulty in reaching some of the way stations particularly those which are situated on the transverse roads. This emphasises the difficulties which the original pilgrim caravans had to overcome.

8.2 RECOMMENDATIONS FOR FURTHER RESEARCH

The study which has been conducted on the Syrian and the Egyptian pilgrim caravan routes in the north western part of

Arabia is incomplete. In order to document the remaining water resource structures further survey work is required. The subject of the research report in this thesis has proved interesting. Further work is need to confirm and validate some of the conclusions presented. In addition, more precise information about pilgrim caravan routes in general and in particular about the archaeological remains of facilities constructed on these routes is required.

In detail the future work that is required is as follows:

1. Further work on the Syrian and Egyptian conventional caravan routes in order to obtain a clearer picture of their history and particularly the volume of traffic movement through these sites.
2. It is recommended that a detailed series of archaeological investigations take place at specific pilgrim way stations. This would be useful in removing ambiguities relating particularly to dating of the archaeological remains and thus in providing a clearer interpretation of some features.
3. Apparently associated with a number of water resource sites are castles and fortresses on the Syrian and Egyptian pilgrim caravan routes. Where possible we have surveyed these sites but they require further investigation in order to obtain more detailed information about their historical record and to clarify their purpose. Their construction as well as their design and decoration require further study and analysis.
4. A number of pilgrim halting places which were known and

recorded by early Islamic and Arabic travellers have now declined in importance and are forgotten. Further investigation is required in order to locate these sites. A number of such sites were determined during the field work.

5. A number of pilgrim stopping places were reported in the early literature as having abundant water supplies, particularly springs. Unfortunately many of these sites have now dried up and so there could be valuable investigations to provide more information on the causes of the disappearance of these water resources. This present study cannot determine whether they have declined through over use or through modification of water resources elsewhere in the region. It is possible that climatic modifications over this period may have been responsible.

6. The traverse roads which link the main pilgrim routes and offer a choice of routes to the pilgrims require further investigation, in particular those traverse roads which branch from the Egyptian pilgrim routes require further investigations. It is these sites in particular that were difficult to locate.

7. Some of the sites are particularly vulnerable to damage. There is an urgent need to identify which sites cause greatest concern and to promote work to maintain those sites in order that they will survive.

8. Although the general survey which was conducted allowed the identification of the quantity of material which required to be moved and constructed, we have no detailed

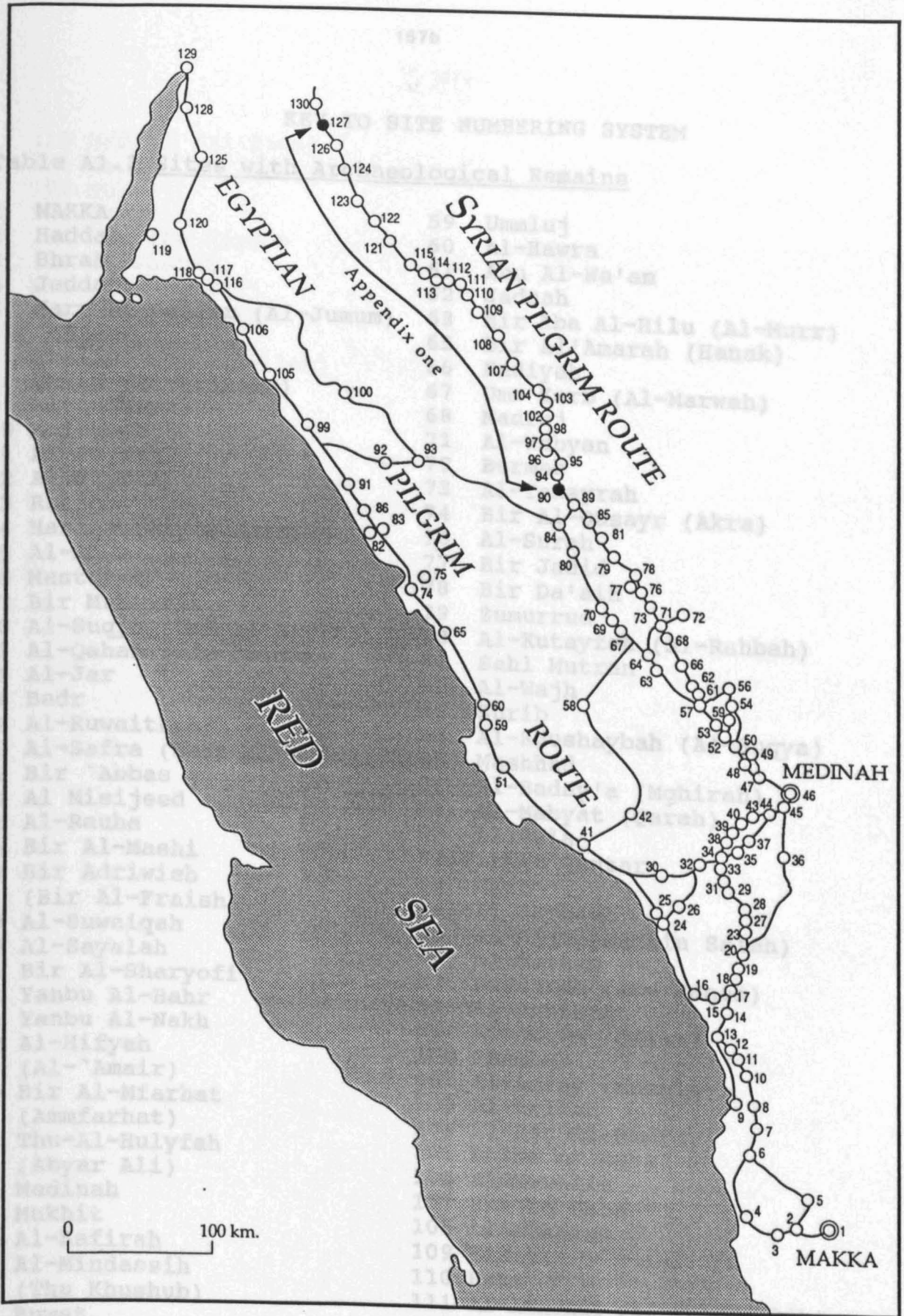
information on the numbers of workers or the origins of the workers or the skills that were required by the workers in order to create some of these remarkable structures in relatively harsh sites. There is need for further work on the labour input and skills base of these sites.

APPENDIX 1

The Syrian Pilgrimage Route

(northern section)

sites 127-90



Numbering system used to identify sites for investigation

- 129 Maqna
- 128 Hadd
- 125 Bhrat
- 120 Jeddah
- 119 Madinah
- 118 Hadd
- 117 Hadd
- 116 Hadd
- 115 Hadd
- 114 Hadd
- 113 Hadd
- 112 Hadd
- 111 Hadd
- 110 Hadd
- 109 Hadd
- 108 Hadd
- 107 Hadd
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- 15 Hadd
- 14 Hadd
- 13 Hadd
- 12 Hadd
- 11 Hadd
- 10 Hadd
- 9 Hadd
- 8 Hadd
- 7 Hadd
- 6 Hadd
- 5 Hadd
- 4 Hadd
- 3 Hadd
- 2 Hadd
- 1 Hadd

KEY TO SITE NUMBERING SYSTEM

Table A1.1 Sites with Archaeological Remains

1	MAKKA	59	Ummluj
2	Haddah	60	Al-Hawra
3	Bhrah	61	Abu Al-Na'am
4	Jeddah	62	Jadaah
5	Marr Al-Zahran (Al-Jumum)	63	Bir Aba Al-Hilu (Al-Murr)
6	`Asfan	65	Bir Al'Amarah (Hanak)
7	Khulis	66	Hadiyah
8	Qudid (Al-Brikaha)	67	Umm Zarb (Al-Marwah)
9	Al-Qadhimah	68	Madraj
10	Kulayyah	71	Al-Wabyan
11	Al-Jujfah	72	Burmah
12	Al-Jujfah	73	Al-Tawayrah
13	Rabigh	74	Bir Al-Qusayr (Akra)
14	Harsha (Riy`a Harsha)	76	Al-Surah
15	Al-Abwa	77	Bir Jadid
16	Masturah	78	Bir Da'aih
17	Bir Mubayrik	79	Zumurrud
20	Al-Suqya (Umm Al Birak)	80	Al-Kutayfah (Al-Rahbah)
23	Al-Qahah (Bir Qaidhi)	81	Sahl Mutran
25	Al-Jar	82	Al-Wajh
26	Badr	83	Zurib
31	Al-Ruwaithah	84	Al-Khushaybah (Al-Suqya)
32	Al-Safra (Wadi Al-sufra)	85	Mashhad
33	Bir `Abbas	88	Al-Baday'a (Mghirah)
34	Al Misijeed	89	Al-Mabyat (Qarah)
35	Al-Rauha	90	Al-`Ula
36	Bir Al-Mashi	91	Birkat `Antar
37	Bir Adriwish (Bir Al-Fraish)	93	Bida
38	Al-Suwaiqah	94	Al `Athayb
39	Al-Sayalah	95	Al-Hijr (Madain Saleh)
40	Bir Al-Sharyofi	96	Al-Mazham
41	Yanbu Al-Bahr	97	Buwijrah (Abu Taqah)
42	Yanbu Al-Nakh	98	Al-Juninah
43	Al-Hifyah (Al-`Amair)	99	Al-Azlam (Qalat)
44	Bir Al-Mfarhat (Ammfarhat)	100	Shaghab
45	Thu-Al-Hulyfah (Abyar Ali)	102	Al-Agray (Mutala)
46	Medinah	103	Al-Brikah
47	Mukhit	104	Al-Dar Al-Hamra
48	Al-Hafirah	105	Dhiba or Duba
49	Al-Mindassih (Thu Khushub)	106	Al-Muwelih
50	Buwat	107	Khashm Sana
51	Nabat	108	Al-Muazzam
52	Abar Nasif	109	Disad
53	Al-Buwayr	110	Hams
54	Al-Hamra	111	Al-Akhdhar (Al-Muhddithih)
56	Shajwa	112	Mustabighah
57	Istable `Antar	113	Al Awjaryah
		114	Birk
		115	Al-Uthayli
		117	Al-Khuraybah
		118	`Ainunah (`Uyun al-Qasab)
		119	Maqna

- 120 Madyan (Al-Bida)
- 121 Tabuk
- 122 Muhtaib
- 123 Al-Hazm
- 124 Bir Ibn Hirmas
- 125 Al-Sharaf
- 126 That Al-Hajj
- 127 Halat `Ammar
- 128 Haql
- 129 Al-`Aqaba (Ailah)

Table A1.2 Sites without Archaeological Remains

18	Bustan
19	Al-Thibrah
21	Bir Salih
22	Al-Sidr
24	Riyis
27	Bir Al-Hafat
28	Al-Watayah
29	Bir Al-Gnom
30	Bir Al-Sayd
58	Alis
69	Al-Amair
70	Bir Al-`Am
86	Bir Haramil
87	Al-Shihiban Castole
92	Abu al-Qazaz
101	Shewaq
116	Shormah

Sites which are numbered on the map but are not named on this list do not have any evidence of ancient water resources or any mention in historic pilgrimage literature.

Site numbers 55, 64 and 75 were not used.

Site Number: 127

Route Identified: I1

Site Type: simple

Halat 'Ammar

This station is situated 17km north-west of That Al-Hajj and 23 km south east of Al-Mudawarah (Saragh) ($29^{\circ}10'N$ and $36^{\circ}04'E$) on the borders of Saudi Arabia and Jordan. It was the second railway station after Al-Mudowarah (Saragh). This village had an ancient bir at which the pilgrims stopped for water (Al-Qithami 1985, Vol.2 p.49). But today there are no signs of any ancient water resources.

Halat 'Ammar is now a town with all the public services available; it is also considered as one of the most important pilgrim stations in the northern borders of Saudi Arabia. There is a pilgrim city built for the pilgrims provided with the necessary facilities.

Site Number: 126

Route Identified: I1

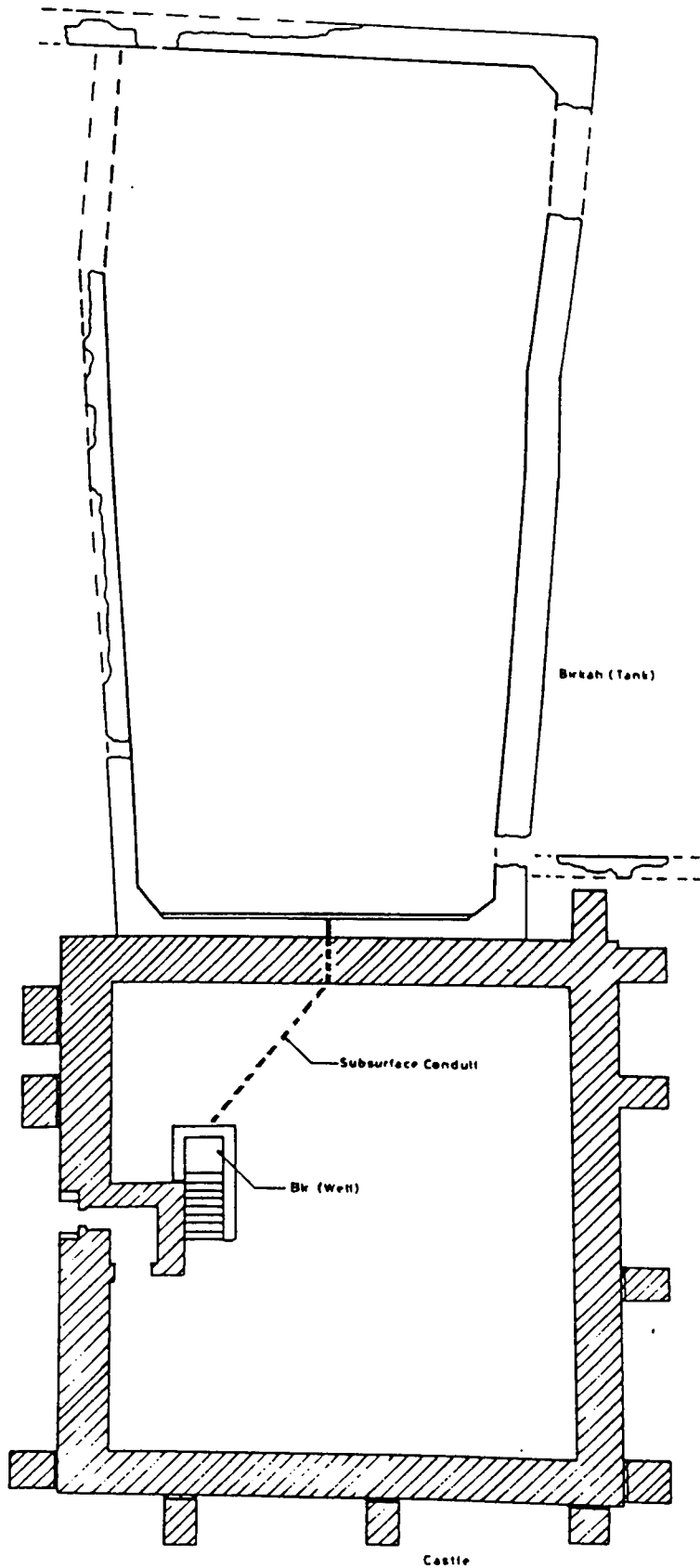
Site Type: simple

That Al-Hajj

This pilgrim station recorded as being on the inland Syrian caravan route is 23km north-west of Bir Ibn Hirmas and 17km south-east of Halt 'Ammar ($29^{\circ}03'N$ and $36^{\circ}10'E$.) It consists of a birkah, the remains of some

wells and a castle (see A1 plan I & folder 10). Ibn Batutah (n.d. p. 78) mentions That Al-Hajj as an uninhabited halt on his journey from Damascus to Medinah saying it consists of Husyan (small wells with shallow water). Al-Mawsawi (Kibrit) says it is a wadi which consists of a nice castle which there is a mulberry tree and a hole in a stone water flows from it to fill Al-birkah which is located outside the castle. It has palm groves (Al-Mawsawi (Kibrit), 1385/1965 p 253).

Al-birkah is approximately rectangular and measures 26.50m x 17.5m. The walls are about 1.50m thick and were built with reddish yellow sedimentary sandstones, which are available locally. The gypsum used to plaster the interior walls is clearly visible. Three of the corners of Al-birkah have been destroyed, only the south-west corner still survives. Al-birkah is now filled with sand, plants and trees so that the visible depth is only 1.50cm which with the structural destruction means there are no signs of any inlets or outlets (see A1 plate Ia). According to old residents who used to live there, there was once a spring in the south west corner of Al-birkah but now of course there is no evidence of a spring. There is a subsurface canal situated by the southern wall of Al-birkah which connects up with another canal which goes underneath the northern wall of the castle to join Al-bir in the centre of the open courtyard of the castle. The castle is situated south of Al-birkah and linked up with its northern wall.



0 1 2 3 4 5 6 7 8 9 10 M

Directed by:		
Ibrahim M. Al-Resseeni		THAT AL-HAJ
Survey & Draft by:		Plan Map 1
Salah M. Al-Muwah		No.
1989/1990		

Appendix I Plan I: Birkah and a castle at That Al-Hajir

The castle is square (24m x 24m) with rectangular buttresses on the external sides. Some of the buttresses are ancient, others are quite modern. The castle was built with locally available materials similar to those used for Al-birkah (see A1 plate 1b, 1d).

There is a dug well located in the centre of the open courtyard of the castle. This bir is square with a side of 1.60m. It is stone lined and has a stairway which runs south. Al-bir and the stairway form a rectangular shape, which is surrounded by a wall which is about 50cm thick. Al-bir is now filled up with earth and debris so that the visible depth is 2.25m and there is no water in it. Al-bir was connected to Al-birkah via a subsurface canal (conduit) as was mentioned above. This provides good evidence that al birkah received water from Al-bir, particularly during rainless periods (see plate A1.1e).

The main entrance to the castle built on the orders of Suleiman Al-Qanuni (1520-1566) is located in the centre of the west wall (see A1 plate 1c). About 63m south-west of the castle there are the remains of an ancient bir now completely choked with debris.

That Al-Hajj was quite a large village with abundant water resources and associated farms, but the modern paved road between Tabuk and Halat 'Ammar bypasses That Al-Hajj and has caused a decrease in the importance of the settlement.



Al Plate 1a

The northern aspect of Al-Birkah showing its stone walls



Al Plate 1b

The northern wall of the castle adjacent to Al-Birkah showing the southern aspect of Al-birkah.



Al Plate 1c

The castle entrance and the supporting buttresses



Al Plate 1d

An interior view of the castle showing the architectural style. The arches are constructed of stone, plastered with gypsum.

Site: That Al-Hajj



Al Plate le

The well is located in the centre of the castle courtyard. It links to the birkah located outside the castle through a sub-surface channel.

Site Number: 124

Route Identified: I1

Site Type: simple

Al-Bir (Bir Ibn Hirmas)

This pilgrim station, also a railway station, is located 23km south of That Al-Hajj (28°51'N and 37°17'E.) Now a village which lies on the new modern paved road which runs between Tabuk and Halat `Ammar, the village has plenty water resources but the ancient bir no longer exists, however there are some abyar which seem to be ancient (see A1 plate II).

Site Number: 123

Route Identified: I1

Site Type: simple

Al-Hazm Railway Station

This station and associated buildings 22km north-west of Al-Muhtatib railway station is in a barren area with no signs of current habitation or past water resource structures.

Site Number: 122

Route Identified: I1

Site Type: simple

Al-Muhtatib Railway Station

Site: Bir ^{ibn} Hirmas



Al Plate ii

The stone-lined well has a surrounding shaft built with mud.

This station is 15km north-west of Tabuk. However the expansion of the city of Tabuk has rendered the station redundant and has obliterated any small water resource developments that may have been associated with this site.

Site Number: 121

Route Identified: I1

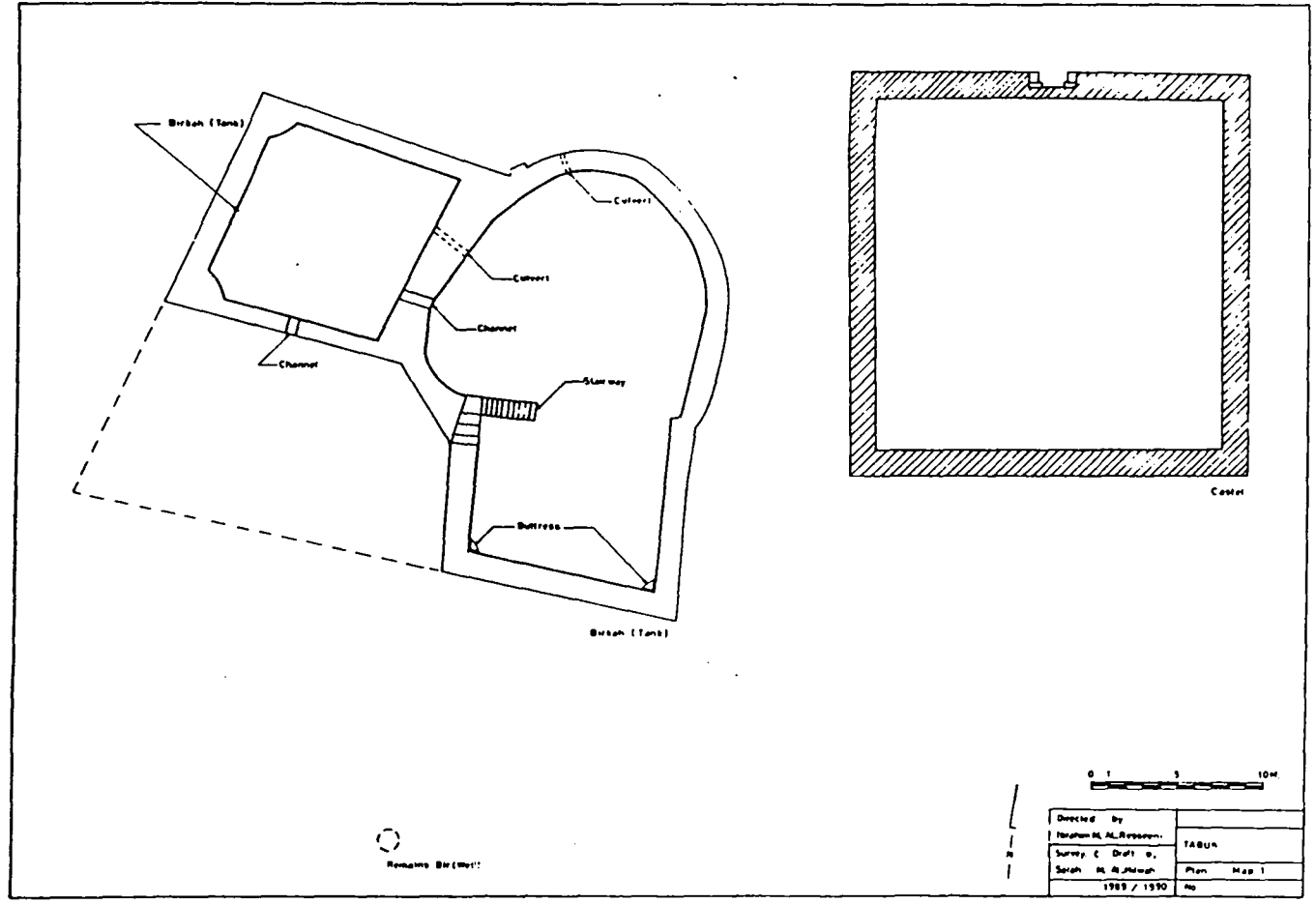
Site Type: simple

Tabuk

This pilgrim station lies about 85km south of That Al-Hajj and about 70km north of Al-Akhdhar ($28^{\circ}23'N$ and $36^{\circ}34'E$) on flat land at the meeting place of wadis so that Tabuk has plenty of ground water. It also lies between two mountains, jabal Hasmah to the west and jabal Sharair on the north-east (Yaquat 1955, Vol. 2, pp. 14-15). This pilgrim station was mentioned by Arabic and Islamic geographers and travellers as one of the important pilgrim stations on the Syrian pilgrim caravan route leading from Damascus to Medinah. "Tabuk has from ancient times been an important station on the north-south highway, by which the spices come to the Mediterranean World, and the pilgrims went down thence to the holy cities of Islam." (Philby, 1957, p 113). It was also a large and very important railway station on the Hijaz railway which ran between Damascus and Medinah. Tabuk has many archaeological sites which include

ancient water resources, biraks, wells and springs as well as a castle and old houses. Unfortunately, most of the ancient archaeological sites have disappeared due to the modernization of the city of Tabuk. However, I selected some principal water resources, two birkahs and the remains of a well and spring (see A1 plan ii & folder 11). The eastern birkah, the largest one, is irregular in shape so that it can be divided into two parts, the southern part is approximately rhombus shaped, its side is about 11m and the northern part is oval in shape. The large diameter measures about 16.70m, the small diameter measures about 15m. Part of a stairway can be seen which is situated between the two parts of Al-birkah. The width of the stairway is about 1.17m and its length is about 2.90m. It leads down to the ground and resembles the letter L in shape.

The wall of Al-birkah is about 1.37m thick. It runs adjacent to and links up with the oval shaped part of Al-birkah. The side of the rhombus shaped birkah measures about 10.5m and is about 1.10m wide. There are two connections between the birkahs. One is an uncovered surface channel which runs along the top of the wall that separates the two birkahs, the other is a circular culvert (20 cms diameter) that is situated at the bottom of the wall at the same level as the eastern birkah. The uncovered surface channel is about 60cm deep and about 50cm wide (see A1 plate iiiia).



Appendix 1 Plan ii: Birak, bir and a castle at Tabuk



Al Plate iiia

This view shows the two birak which link together. They are constructed of cut stones plastered with gypsum. A stairway leads to the base of the birak.



Al Plate iiib

A general view of the northeastern aspect of the castle and Al-birak.

There is also a circular culvert of similar measurement in the north-west wall of the oval shaped part of the eastern birkah at ground level. It is difficult to find which direction it runs in because the modern paved street covers part of the area which is adjacent to Al-birkah (see A1 plate iiib).

There is another uncovered surface channel again of similar dimension at the top of the southern wall of the N.W. birkah. This channel indicates that there was once a birkah linked to the north west birkah from the southern side. This probably confirms the information given to us by the inhabitants of the area who used to live nearby that there was another birkah which has since disappeared. Musil (1927 Vol. 2 p. 167) says around the spring there are three cement reservoirs.

All the water tanks were constructed with red and yellow sedimentary sandstone and the remains of gypsum used for plastering the walls can be seen (see A1 plate iiic).

According to the old inhabitants there was a spring in the south-west corner of the eastern birkah. This 'Ain, Al-Sukari, Philby described as being used for drinking water and for irrigation (Philby 1957 pp. 115-116). This has now dried up. The floors of Al-birkah are clear and their depth is about 3.10m. They are in very good condition. There are two buttresses which have sections shaped like a quarter of a cylinder, situated in the south-west and south-east corners of the eastern birkah

which may have been added recently.

There are the remains of an ancient bir located about 15m south of the southern corner of the eastern birkah. It has a circular mouth opening with a diameter of 1.25m. It is now only a pit.

The castle is situated about 7m east of the large eastern birkah. It is approximately square in shape and has an external measurement of about 23.5 x 23.5m (see A1 plate iiid). The castle was built with locally available materials as was Al-birkah. It was designed to protect the water supply and the pilgrim caravans camping in the area (Philby 1957 pp 116-117). Around the castle and Al-birkah there are farms and plenty of palm trees.

Site Number: 115

Route Identified: I1

Site Type: simple

Al-Uthayli Railway Station

This station is 12km north-west of Birk railway station (28°13'N and 36°46'E).

Wadi Al-Uthayli passes through the area, so there are many trees, particularly tamarisk. The area is barren and uninhabited and no water resource structures were found.

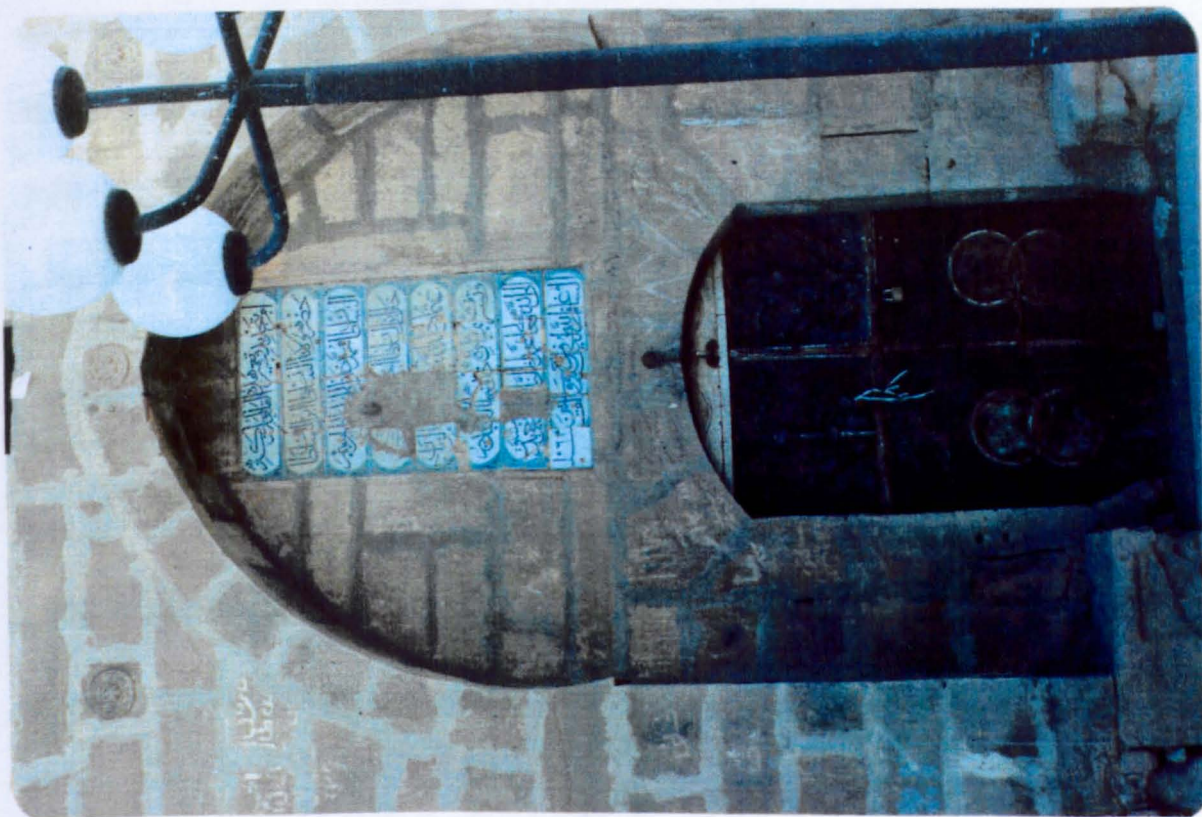
165a

Site: Tabuk



Al Plate iiic

A subsurface connecting channel or conduit can be seen at the base of Al-birkah. This view also gives some indication of the thickness of the plastering.



Al Plate iiid

The castle entrance, doors and inscriptions.

Site Number: 114

Route Identified: I1

Site Type: simple

Birk Railway Station

This railway station 12km north-west of Al-Awjaryah (28°10'N and 36°51'E) is surrounded by rocky hills and rough land and the area is unpopulated. No resource structures exist.

Site Number: 113

Route Identified: I1

Site Type: simple

Al-Awjaryah Railway Station

This station 10km west of Al-Mustabighah railway station (28°06' and 36°57'E) has no water resource structures. The area is very rough and mountainous, barren and uninhabited, thus it discourages population.

Site Number: 112

Route Identified I1

Site Type: simple

Mustabighah Railway Station

This station and buildings is located 10km north-west of Al-Akhdhar (28°07'N and 37°3'E). The road between Al-Akhdhar and Mustabighah passes

close to the railway. The station lies very close to the mountains. The area is very rough and mountainous, barren and uninhabited. There is no evidence of ancient water resource structures.

Site Number: 110

Route Identified I1

Site Type: simple

Hams Railway Station

This station (dated 1325H, 1905) is situated 23km north-west of Dis'ad railway station (28°03'N and 37°16'E). It has only one traditional stone building. The region is a barren, unpopulated, mountainous wasteland with no sign of any water resources.

Site Number: 111

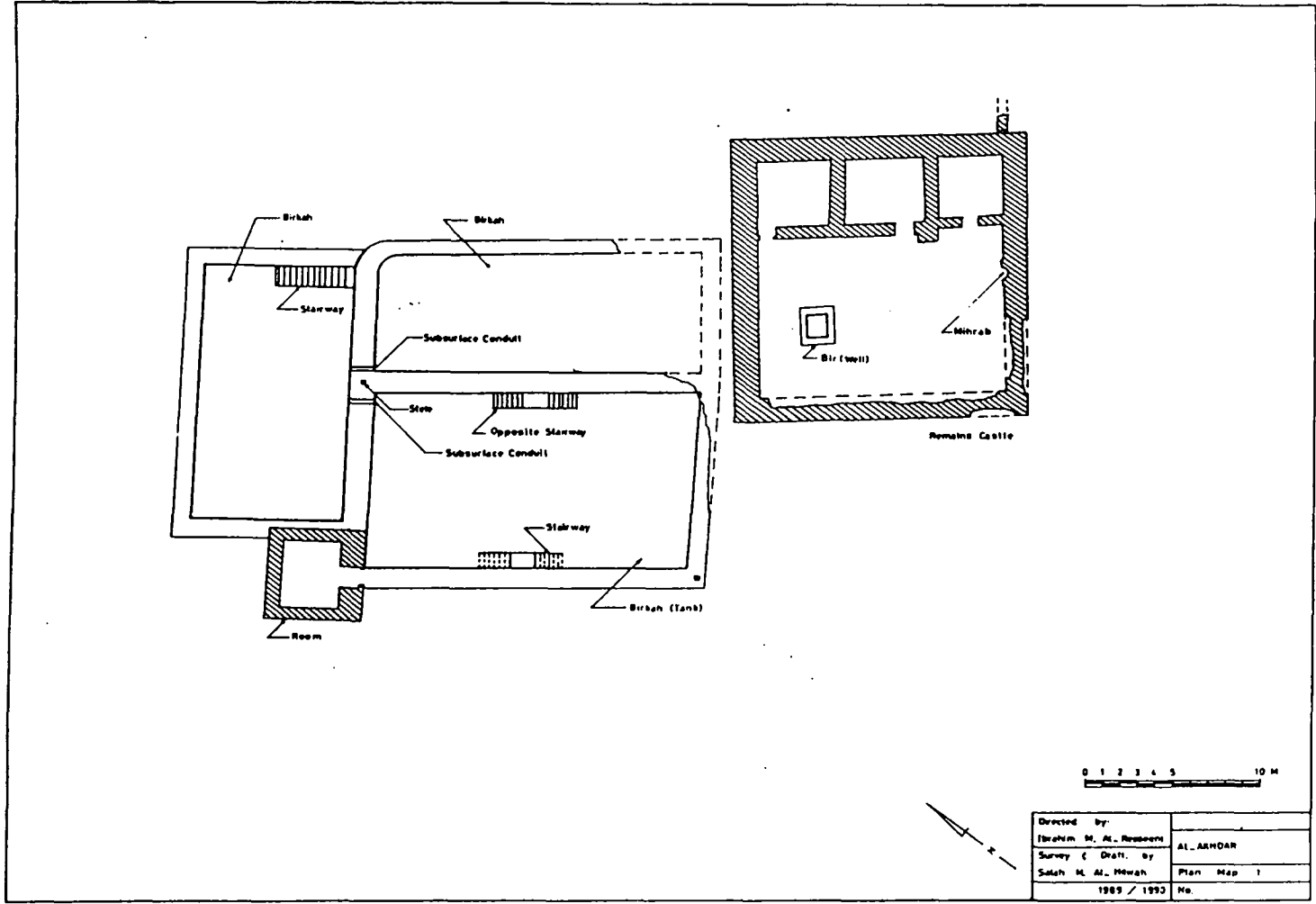
Route Identified: I1

Site Type: Simple

Al-Akhdhar (Al-Muhdithih)

This pilgrim station is situated 50km north-west of Al-Muazzam and about 70km south of Tabuk (28°04'N and about 37°12'E). Early writers placed it between Tabuk on the north and Al-Muazzam on the south and on the Syrian pilgrim caravan route leading from Damascus to Medinah Ibn Batutah (N.D. pp. 78, 79) says then the caravans depart from Tabuk

travelling day and night in dread of this desert until they reach Al-Alkhidhrs wadi. He adds that in some years storms blew and caused some hardship to the pilgrims. Al-Jaziri (1983, Vol. 2 pp 1261, 1262, 1267, 1268) says the caravans march through a desert between Tabuk and Al-`Ula and there is no water resource except a well in the middle of this desert at a place known as wadi Al-Aikhidhr so it is called Bir wadi Al-Aikhidhr. In another passage he says, "then the caravans depart from Tabuk to Aqaba of Al-Aikhidhir (steep road), then pass the steep road, then the station where the castle which contains a bir inside it. There are three birak located outside the castle, water is brought to them from Al-bir which is situated inside the castle on the camels backs. Musil who passed through the station of Al-Akhdhar in the early 20th century says "We reached the reservoir of the station of al-Akhzar (Al-Akhdhar). The station is built on the right-hand side of the valley of the same name and is a rectangular stone stronghold without towers. On the north and east are six deep reservoirs, the water for which used to be obtained from a well about ten metres deep and more than two meters broad, hollowed out in the courtyard of the stronghold". (Musil 1926 Vol 1 p. 229) The station comprises major water resources which include three birak (water tanks), a bir and remains of foundations (see A1 plan iii & folder 12). In addition there are also the traditional buildings associated with a railway station.



Appendix 1 Plan iii: Birak and the remains of a castle at Al-Akhdhar.

The water tanks lie adjacent to each other and are connected (see A1 plate IVa). The northern birkah is rectangular in shape and measures 14.37 x 8.75m. It has a stairway in the south-east corner which runs along the east wall. The width of the stairway is about 1.15m and it leads down to the bottom of Al-birkah. Three of the walls of Al-birkah have the same width while the south wall which is a common wall to all three birak has a width of 1.35m.

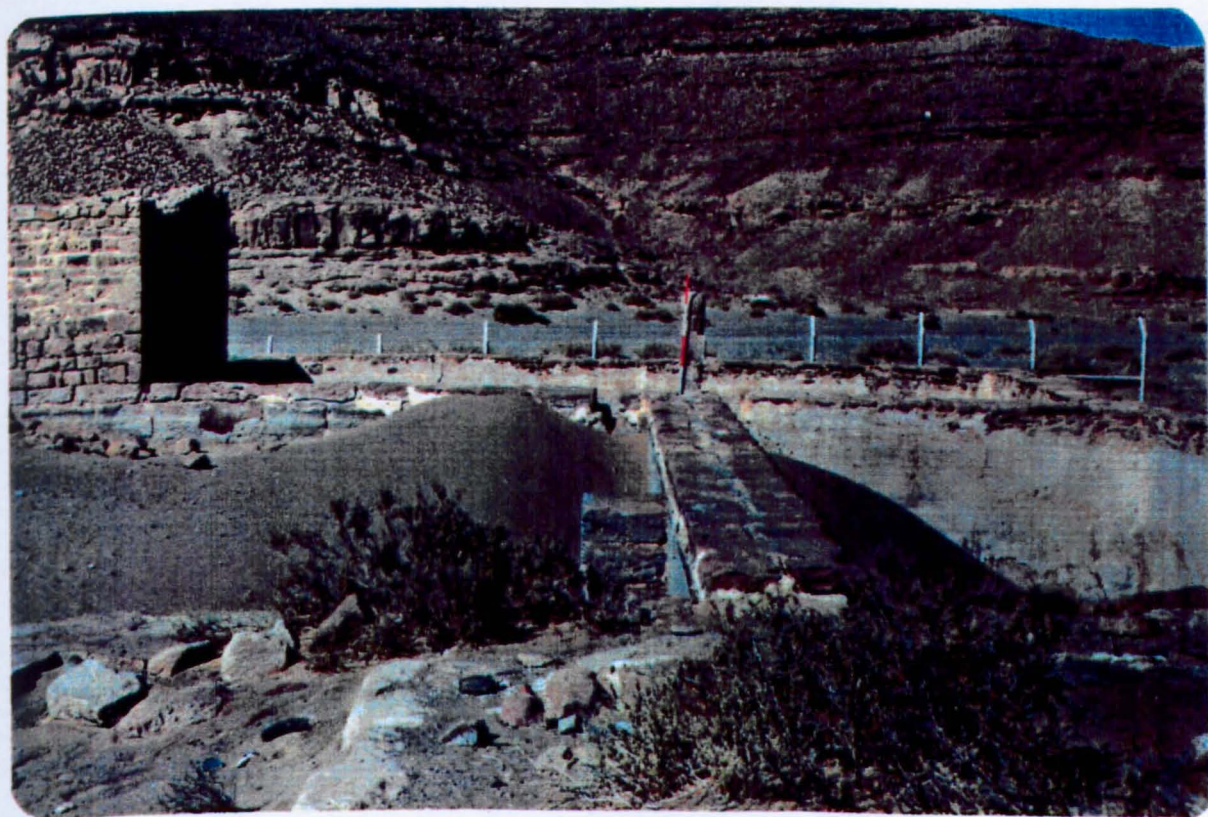
The west birkah is also rectangular in shape and has an interior measurement of 18.42m x 10.17m. There are two double stairways, one of which is situated in the middle of the east wall. The stairs run in opposite directions and lead down to ground level. The width of each stairway is about 90cm. A second similar double stairway is situated in the west wall, its stairs also run in opposite directions and lead down to the ground. The south and west wall are about 1.20m thick. There are the remains of the base of a stela or pillar in the south corner of Al-birkah and another stela which has been constructed above the north corner which is common to all three birak and has an inscription on it (see A1 plate IVb).

The eastern birkah is roughly rectangular in shape, its dimensions are 18.5m x 6.70m. The thickness of its east wall is about 83cm, its south wall and part of its east wall no longer exist and are covered in sand. The northern birkah is about 3.50m deep while the other two are filled



Al Plate iva

The three birak are linked together. They are constructed with cut stone and plastered with gypsum. A single room has been built adjacent to Al-birak.



Al Plate ivb

The thickness of Al-birkah wall is clearly seen as is the plaster on the interior wall. A stele has been erected above the end of the wall which separates the eastern and western birkah. The stele has been inscribed.

with sand and it is difficult to tell exactly what their depth is, but it is probably the same as the northern birkah (see A1 plate IVc).

All three birak (water tanks) were constructed with sedimentary sandstones and plastered inside with gypsum. They were built on a small hill which is located about 40m north of al wadi. Al-birak rise about 1m above ground level. A room has been built onto the walls of the northern and southern birkah but appears to be of modern construction.

The remains of the castle are very close to the east birkah, about 5-10m to the south. It is square and measures about 16.80 x 16.80m from the outside. There is well inside the castle. It has a square mouth opening, the sides of which measure about 1.35m. The well still has fresh water drawn from it by a modern pump (see A1 plate ivd). There is a small niche in the middle of the south-east wall pointing towards MAKKA rather like a mosque.

Al-Mawsawi (Kibrit (1965 p. 235) described Al-Akhdhar as a valley with three sides, with a castle to the south belonging to a Sulumanic. The castle was built in 938H (1531) and has a spring which feeds all three birak. Al-birak lie adjacent to the castle which was constructed in order to protect and preserve Al-bir during the rebellion of beni Lam and beni 'Auqbah. The spring that he mentioned no longer exists, only the well remains.

There is a railway station with associated traditional buildings. The

170a

Site: Al-Akhdar (Al-Muhdithih)



Al Plate ivc

A stairway in the southeastern corner of the northern birkah descends to the floor of the tank. The interior walls are plastered and a buttress supports the wall. The stele mentioned previously is more clearly visible.



Al Plate ivd

Castle ruins remain at this site adjacent to which is an ancient well now modernised for use by residents.

area is rough and mountainous.

Site Number: 109

Route Identified I1

Site Type: simple

Disa'd Railway Station

This station and associated buildings is located 23km north of Al-Muazzam pilgrim station (27°57'N and 37°22'E.) The area is rough, mountainous and barren and there is no evidence of any ancient water resources and inhabitants.

Site Number 107

Khoshm Suna Railway Station

This station and associated buildings 28km north-west of Al-Dar Al-Hamra railway station (27°33'N and 37°38'E) dates back to 1325 (1905) and is situated on a lava field surrounded by mountains. In our survey no evidence of ancient water resources were found.

Site Number: 103 and 104

Route Identified I1

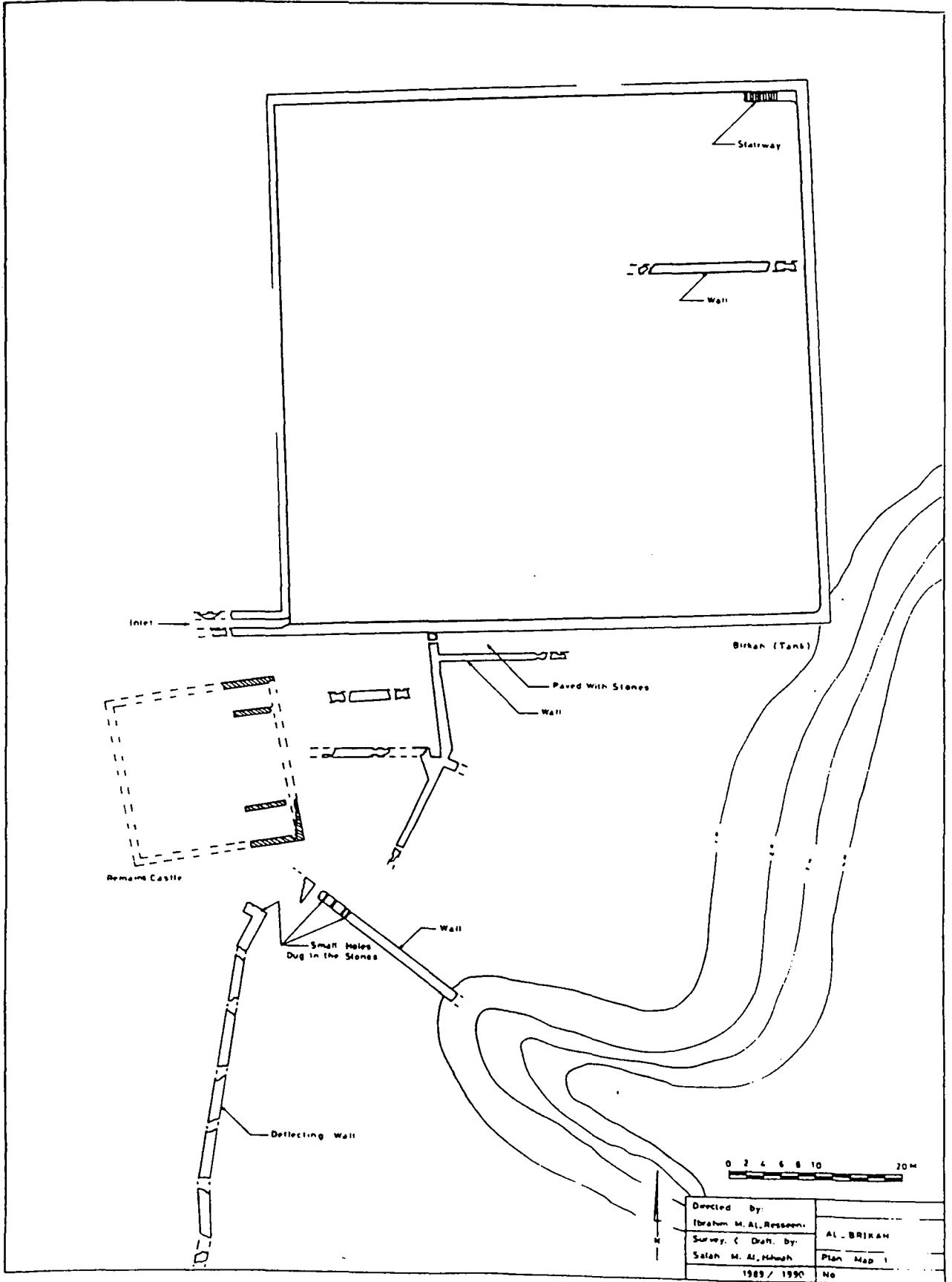
Site Type: simple

Al-Brikah (Al-Dar Al-Hamra)

This pilgrim station is 23km north-west of Mutal`a (Al-Aqra'), 2km south-west of Al-Dar Al-Hamra railway station and about 55km south-east of Al-Muazzam, ($27^{\circ} 20'N$ and $37^{\circ} 48'E.$) The site consists of a birkah (water-tank) the remains of a castle and the remains of other buildings and walls. There is a small settlement near Al-birkah and a railway station located nearby (see plan iv & folder 13).

Al-birkah is square shaped and roughly measures 62m x 62m. It is a large birkah which is impressive both in its architectural style and in the technique of its construction. Three of the walls of Al-birkah are of similar width, about 1.25m. Only the west wall differs, its width is about 90cm.

There is a stairway (1.3m wide and 7.5m long) situated at the north-east corner of Al-birkah which runs along the north wall. There is an opening which is about one meter wide at the south-west corner of Al-birkah; this is probably an inlet, it runs outside Al-birkah towards the west. There is an interior wall which is situated about 20m from the north wall and runs parallel to it. This wall runs from east to west for about 20m and then ends. It is probably of modern construction and only added recently, its purpose is unknown. Al-birkah was dug into the ground and the upper parts of its walls rise about 1.20m above ground level. The bottom of Al-birkah is filled with mud and sand which has been brought by torrential streams so the remaining depth is about 5m (see A1 plate



Appendix 1 Plan iv: The remains of castle, birkah and distribution system

Va).

Al-birkah was constructed with local materials (brown granite from the mountains nearby) and plastered with gypsum, mixed with coarse sand. In order to strengthen Al-birkah the corners have been plastered into a semi-circular shape.

There is no certain outlet to be seen in Al-birkah, however, there are some remains of the original foundations which link up with the south wall. The thickness of these foundations is about one meter. They are built with stones and plastered with gypsum both inside and out. The remains of these foundations rise about 20cm above ground level, some extend towards the south, others to the east. There is a wall which runs parallel to the south wall of Al-birkah. Between these walls is a floor which consists of quite large, smooth flagstones. It measures approximately 1.50m in length, 80cm in width and is approximately 10-15cm thick. The floor is probably a filter. There is also a wall located about 30m south of Al-birkah, its width is about 1.20m and it is about 22m in length; it is built of large stones which have been plastered with gypsum. It has small openings along the top surface which run down to the bottom (see A1 plate Vb). The deflecting wall which turns the torrents of water into Al-birkah is situated about 35m south of the south-west corner of Al-birkah. It runs southwards and then turns south-west, then west for about 500m and then disappears into the valley.

Site: Al-Brikah (Al-Dar Al-Hamra)



Al Plate va

The interior of Al-birkah shows a stairway at its northeast corner. Although there is obvious debris the residual depth of Al-Birkah can be seen.



Al Plate vb

The remains of a filter/sediment trap paved with thin flat stone is clearly seen adjacent to the trimmed stone, plastered walls of Al-birkah.

This wall is built of large stones which measure about 1.50 in length, 80cm in width and they are 30cm, thick. The wall rises about 50cm, above ground level. The remains of gypsum (used for plastering the wall) is clearly visible in some parts of the wall on both sides (see A1 plate Vd). Al-birkah was probably fed with water which came from Al-wadi which lies to the south-west, because of this there are no signs of any kind of ancient water resources near to Al-birkah. But note that some parts of Al-birkah have been destroyed and the stones have been removed for use in other buildings.

About 5m south of the south-west corner of Al-birkah there are the remains of a castle. It is square in shape and roughly measures 20m x 20m externally. It was built with black granite stones and was probably constructed after Al-birkah as it is situated on the main inlet of Al-birkah. To the south-east of Al-birkah there are rocky hills and there is a wadi about 300m to the west (see A1 plate Vc).

Site Number 102

Route Identified I1

Al-Agra (Mutala')

This pilgrim station is 22km north of Abu Taqah railway station, and 13km north of Al-Juninah (27°10'N and 37°53'E.) The site consists of a pilgrim station and a railway station. The pilgrim station was mentioned

174a

Site: Al-Brikah (Al-Dar Al-Hamra)



Al Plate vc

The wadi in the foreground provides the flow of water to Al-birkah.



Al Plate vd

A deflecting wall turns the torrential storm streams to the wadi into Al-birkah. It also shows the castle remains adjacent to Al-birkah.

by a number of early writers.

Ibn Khurdadhabah (1889 p. 150) mentioned it as a stopping place on the Syrian pilgrim caravan route from Damascus to Medinah. He located it between Al-Muhdithih (Al-Akhdhar) on the north and Al-Juninah on the south. Al-Hamadhani, Al-Idrisi and Qudamah all counted Al-Aqra as a pilgrim station when they enumerated the halting places on the Syrian pilgrim caravan route between Damascus and Medinah. They placed it between Al-Muhdithih (Al-Akhdhar) to the North and Al-Juninah to the South. (Al-Idrisi 1878, p. 376, Qudamah, 1889, p. 191, Al-Hamadhani, 1885, p.340).

In our survey only Mutala railway station which dates back to 1325AH (1905AD) could be identified. It consists of traditional stone buildings but there was no evidence of an earlier way station and associated water resources.

Site Number 98

Route Identified I1

Site Type: simple

Al-Juninah

Al-Idrisi placed the station between Al-Aqra (Mutala) and Al-Hijr when he listed the halting places on the pilgrim route between Damascus and Medinah. Ibn Khurdadhabah mentions Al-Junainah as a stopping place on

the Syrian pilgrim caravan route from Damascus and Medinah and located it between Al-Aqra' on the north and Al-Hijr on the south. (Ibn Khurrdadhab 1889 p. 150). Qudamah also mentioned Al-Juninah when they enumerated the way stations and they placed it south of Al-Aqra' (Mutala') and north of Al-Hijr. (Qudamah, 1889 p. 191).

However, all the scholars who mentioned Al-Juninah provided no information about it, other than its general location and name. Unfortunately, Al-Juninah no longer exists and no one can give any information about it, even the old people who are familiar with the area. From information available to us, particularly from historical sources, we could place Al-Juninah approximately 41km north of Al-Hijr and 13km south of Mutala (Al-Aqra'). The area is a barren wasteland with no sign of any ancient water resources and is unpopulated.

Site Number 97

Route Identified I1

Site Type: simple

Buwijrah (Abu Taqah - railway station)

This railway station is 17km north of Al-Mazham ($26^{\circ} 09'N$ and $37^{\circ}01'E$), is typical of many such stations we surveyed. It does not have any evidence of residual water resource structures.

Site Number: 96

Route Identified I1

Site Type: simple

Al-Mazham (Al-Mahrak)

This pilgrim station is situated at 14km north-west of Al-Hijr (Madain Saleh) ($26^{\circ}54'E$ and about $37^{\circ}55'E$.)

It was recorded as a minor pilgrim stopping place on the conventional Syrian pilgrim route leading from Damascus to Medinah. It is situated on a mountainous path which the pilgrim caravans used. Al-Mawsawi (Kibrit) (1965, p. 336) describes Al-Mabrak saying it is a path between two great boulders the caravans pass through it. There are no indications that there were any water resources there.

There is a railway station located about 2km from Al-Mazham. The traditional, stone buildings were constructed very close to the valley, and torrents of water, during periods of heavy rainfall, have caused substantial damage.

The area is mountainous, barren and very rough. The road northwards to the next station, Abu Taqah, is unpaved and runs through very rough, barren, uninhabited land.

Site Number: 95

Route Identified I1

Site Type: simple

Al'Hijr (Madain Saleh)

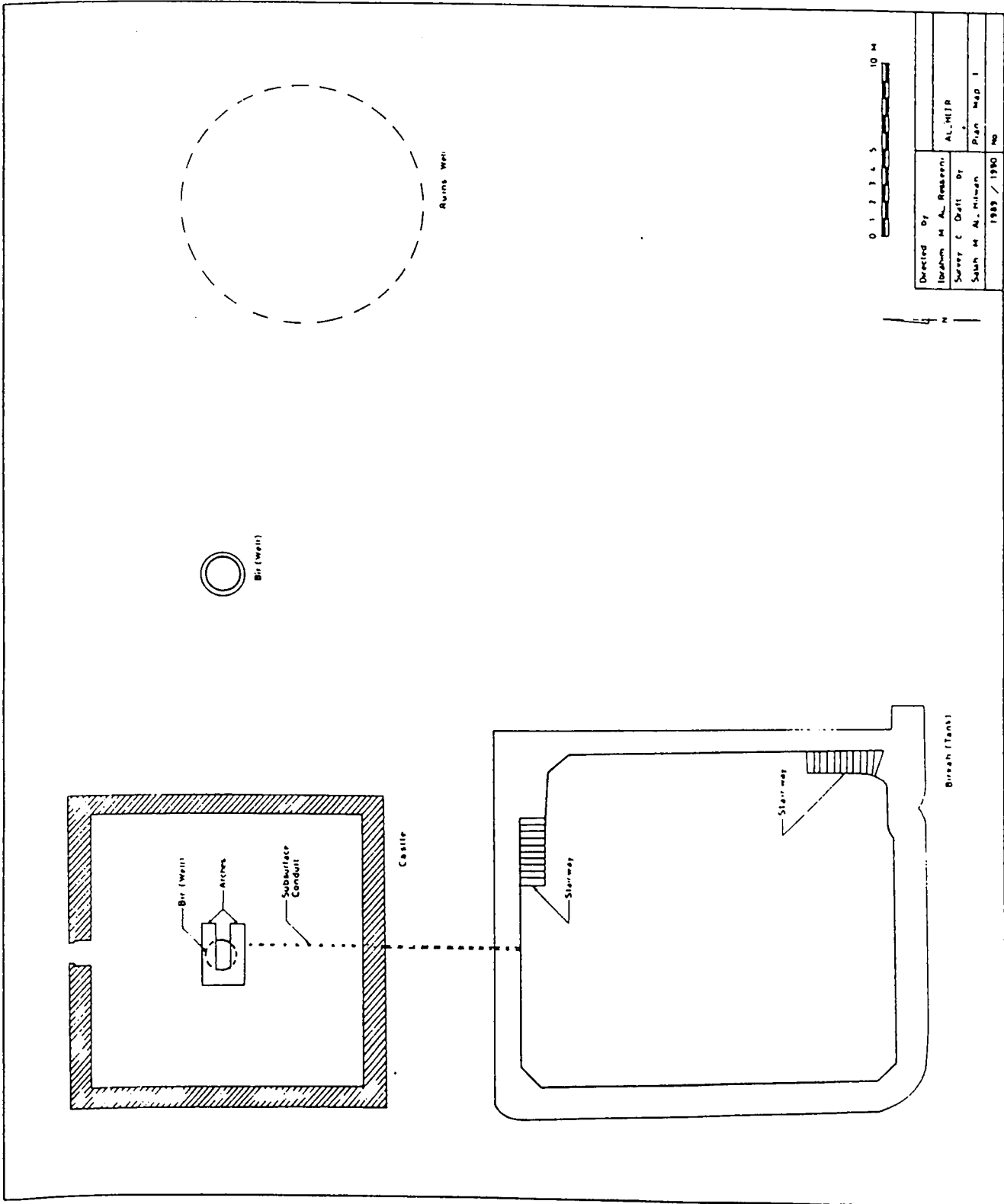
This pilgrim station on the pilgrim route is 22km north of Al-Ula (26° 44'N and 37° 57'E). It was mentioned by both European and Islamic travellers and historians. This pilgrim way station was well known, not only as a pilgrim halting place, but as one of the most important archaeological sites in the whole of the Arabian peninsula. Al-Hijr is also mentioned in several verses and on many occasions in the Holy QURAN. (Sura XV)

(1) Ibn Khurdadhabah, (1889, p. 150) when he lists the way-stations on the Syrian pilgrim conventional route to Medinah, he placed it south of Al-Juninah and north of wadi Al-Qura).

(2) Al-Idrisi says it is a fine citadel located between mountains. It has houses hewn out of the mountains, Al-Hijr is surrounded by mountains and sand. It consists of Bir Thamud (Al-Idrisi 1878 p. 351).

(3) Al-Maqdisi describes Al-Hijr saying it is small and fortified. It has abundant wells and farms. It has Thamudians wondrous and their houses (Al Maqdisi, 1906 p 84).

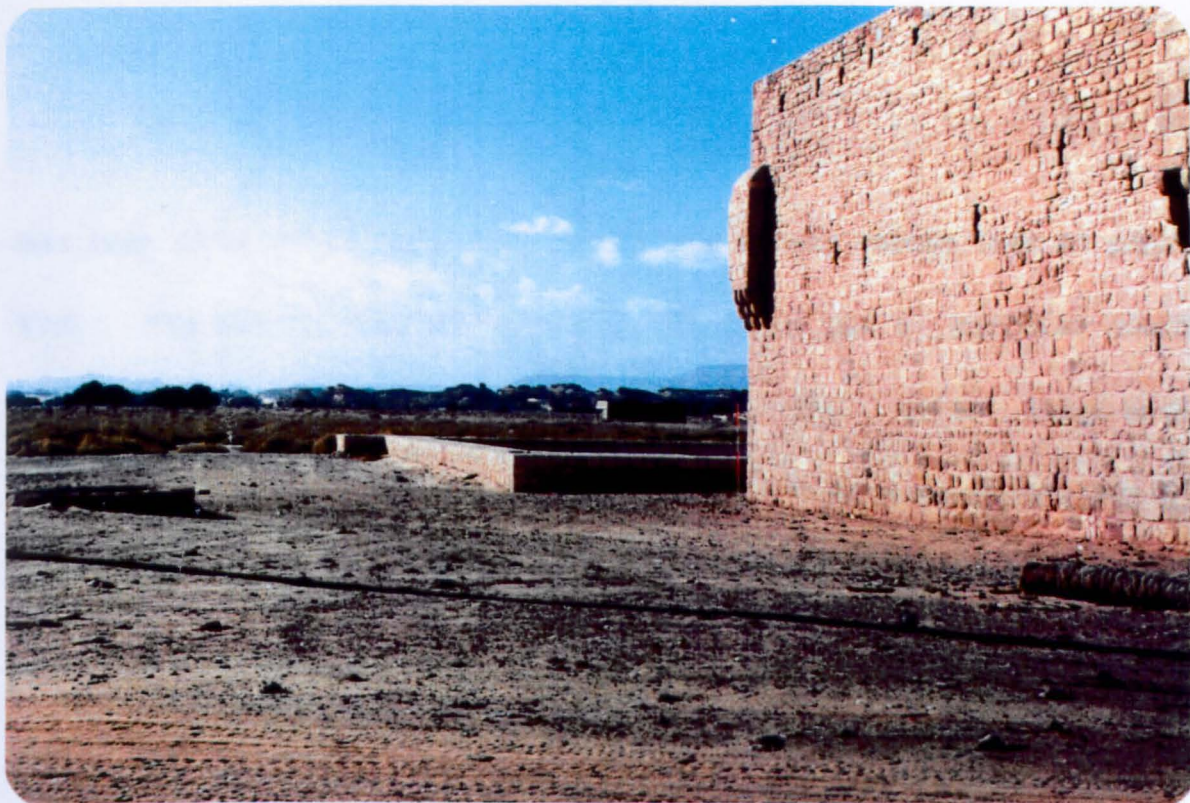
The pilgrim station consists of major water resources which include a birkah and a number of Abyar as well as a castle (see A1 plan v & folder 14 and plate VIa). The area also has archaeological remains and a large railway station. Al-birkah is a rectangular shape. Its interior



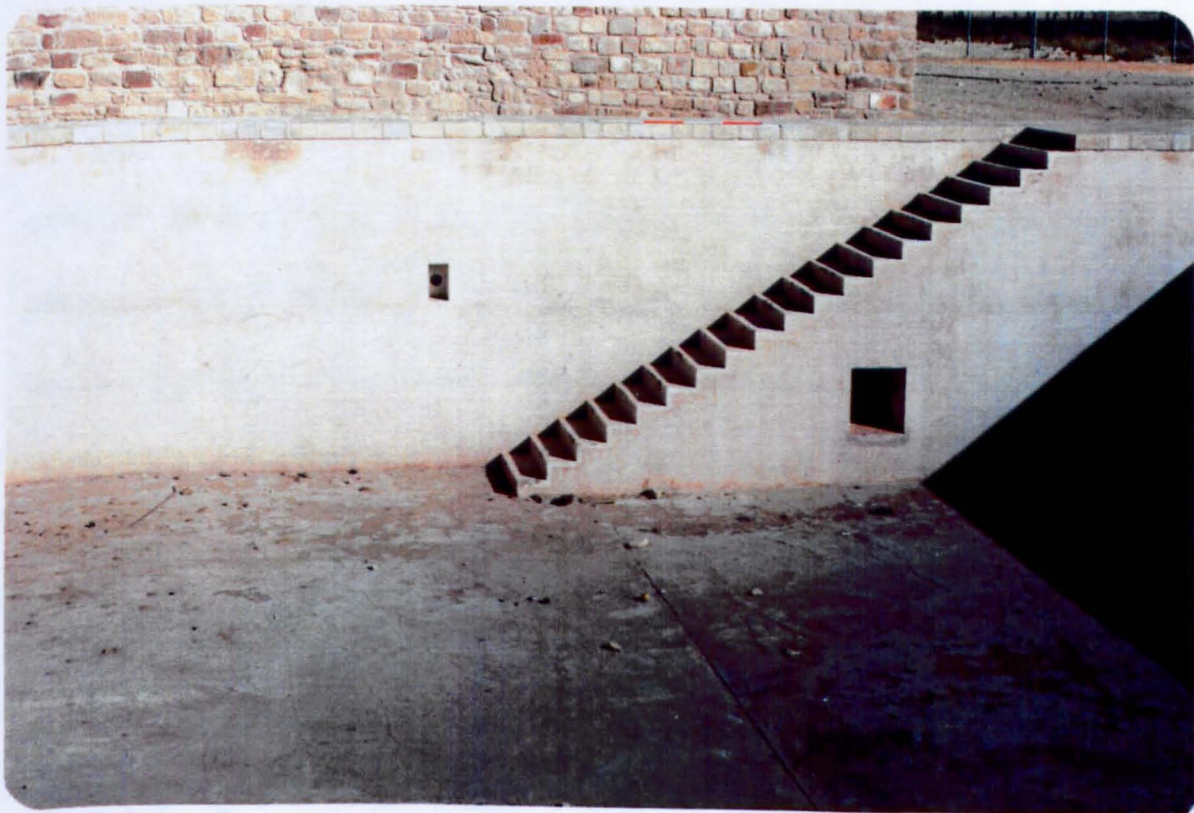
Directed By	Ibrahim M. Al. Resseem
Survey C. Dept. By	Sabah M. Al. Hussein
1989 / 1990	Map
AL-MIJR	
Plan Map 1	

measurement is 21.45 x 19.15m and its wall are 1.83m thick. There are two stairways, one 1.45m wide is situated in the north-east corner and is linked to the north wall (see A1 plate VIb). The second, 1.2m wide is situated in the south-east corner and also linked to the north wall. Al-birkah was constructed with sandstones which were available from the mountains in the area and these stones were plastered with gypsum. The style and building technique used to construct the water tank is quite distinctive and differs from many of the other water tanks that we have seen. On the inside of each corner of Al-birkah there is a buttress which has a triangular section. These were built to strengthen the corners. The north-west and south-west corners are curved, while the north-east corner was built in the shape of a pillar. The south-east corner has a square shaped buttress. The south wall of Al-birkah runs adjacent to the south-east stairway which is carved. The depth of Al-birkah is about 4.20m. It has recently been repaired and the floor is plastered with gypsum (see A1 plate VIb). A wall divides Al-birkah into two parts (average about 1.4), it runs from south to north and is probably of recent construction. Al-birkah and Al-bir (which is located in the courtyard) are connected via a subsurface channel. The castle is located about 6m north of Al-birkah and parallel to its northern wall. It is a square shaped castle with an exterior measurement of about 18 x 18m. Its entrance is in the middle of the north wall. It

Site: Al-Hijr (Madain Saleh)



Al Plate via
A general view of Al-birkah, well and castle.



Al Plate vib

The interior of Al-birkah showing its renovation with modern materials. The stairway is at the northeastern corner and runs the full depth of the birkah. The conduit connecting Al-birkah to the well within the castle is clearly seen.

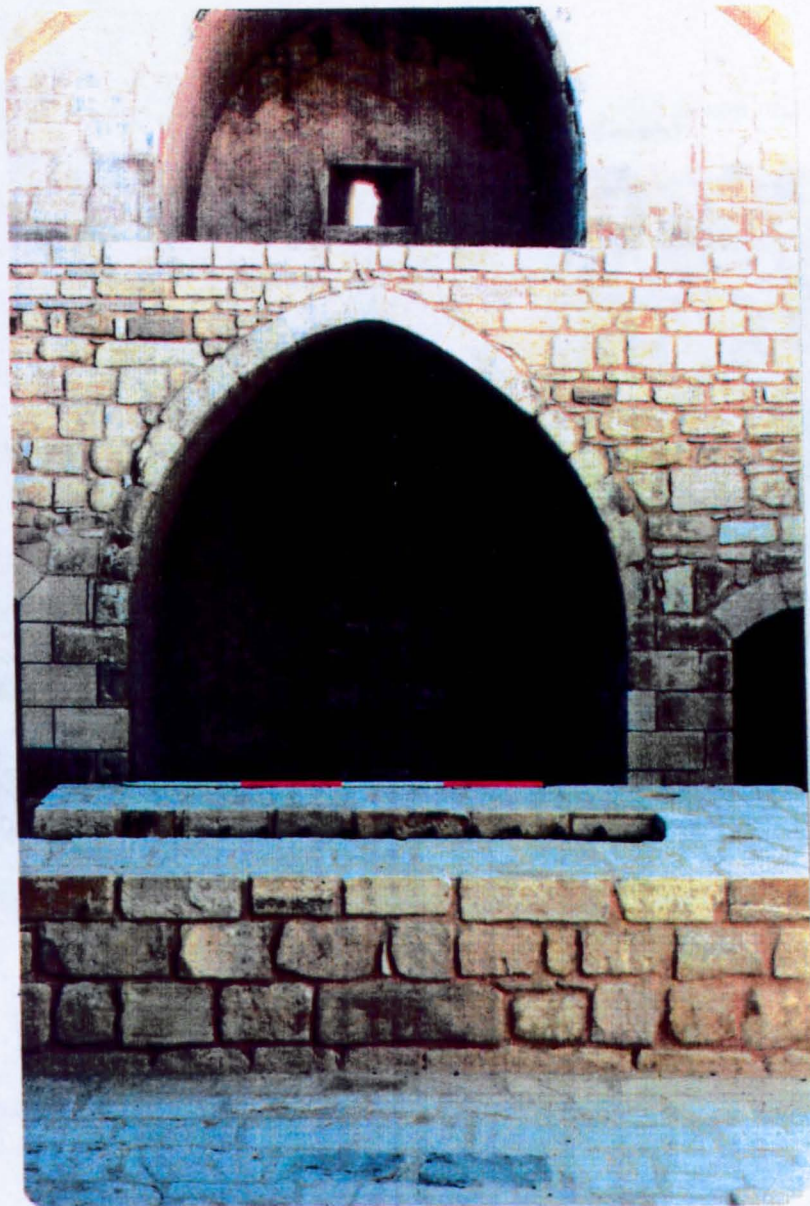
has been constructed with local materials mainly stones (see A1 plate VIId). The bir in the centre of the courtyard has a circular mouth opening with an interior diameter of about 1.75m. It is lined with stones and its depth is about 11m and it still contains water (see A1 plate VIc).

Two arches were built on the shaft of Al-bir, one on the north side, the other on the south. The distance between them is about 80cm. It has a rectangular shaped opening which is used for lifting water from the well. As was mentioned previously, Al-bir is connected to Al-birkah by a subsurface channel (conduit). This is circular conduit which passes underneath the castle until it reaches the well, its diameter measures about 15cm and it was particularly useful when there was no rainfall.

The region had plenty of ancient wells, some of which probably dated back earlier than Islamic times, as they have been dug from the rock. I selected two as examples. The first, is located at about 11m east of the castle has a circular mouth opening about 2m wide. It is lined with volcanic stones and level of the water is about 11m. The well is now abandoned.

The second bir (well) is a large pit situated 14m east of the former well. It has a 14m circular mouth opening. According to the local residents it was a huge well, but it is now filled up with sand and earth. The area had many farms which obtained their water from wells,

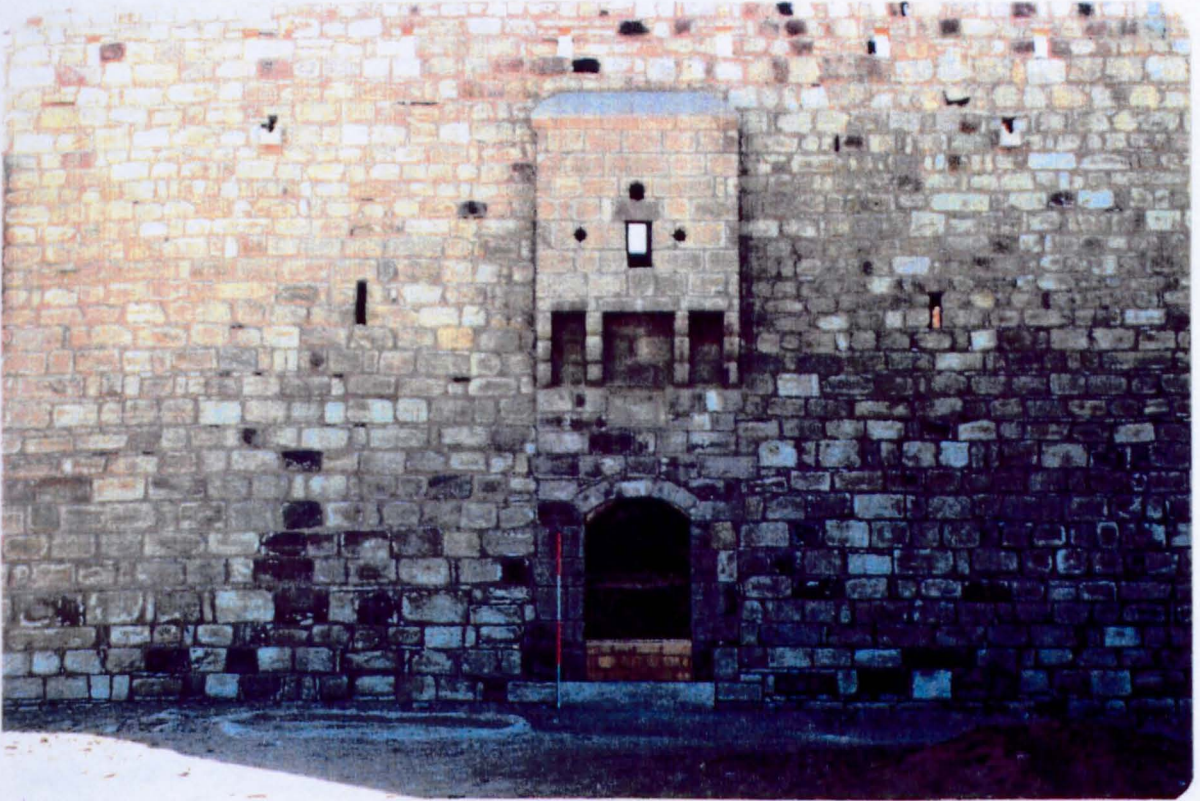
Site: Al-Hijr (Madain Saleh)



Al Plate vic

A view from the interior of the castle showing the location of the well which is linked to a tank via a conduit. It also shows the architectural style of the castle.

Site: Al-Hijr (Madain Saleh)



Al Plate vid

An exterior view of the castle showing the entrance and defensive peep holes.

but the farms have now been abandoned.

In addition to the pilgrim station, Al-Hijr possesses one of the most important ancient archaeological sites not only in the kingdom of Saudi Arabia, but in the whole of the Arabian peninsula. There are groups of remains of edifices which were hewn into the rocks. These remains are similar to those which can be found at Petra (a city in Jordan about 500km north of Al-Hijr).

Al-Hijr was a large railway station situated on the Hijaz railway between Damascus and Medinah. It consists of a group of about 16 buildings. These buildings were probably used for different purposes and were constructed in stone. It is possible to distinguish what the buildings were used for. One was a hospital, one was a jail, some were for residential use, some for official employees of the railway (workshops to repair the trains) and some as rest houses for soldiers.

Site Number: 94

Route Identified

Site Type: simple

Al-'Athib Railway Station

This railway station is 9km north of Al-'Ula and 13km south-west of Al-Hijr. This small collection of traditional houses and farms is supplied by artesian wells but there is no evidence of further ancient

water resources.

Site Number: 90

Route Identified I1

Site Type: simple

Al'Ula (ancient Dedan)

This pilgrim station is situated 22km north-west of Al-Mabiyat and 22km south-west of Al-Hijr (Madain Saleh) ($26^{\circ} 38'N$ and $37^{\circ} 55'E$) at wadi Al-'Ula, (valley of Al-'Ula).

Al'Ula is a green oasis surrounded by mountains to west and east. Al-'Ula wadi is a sedimentary valley which has abundant water resources supporting green forests of palm-groves and flourishing plantations of fruits and vegetables.

Al-'Ula was mentioned by some Arabic and Islamic geographers and travellers as a principal pilgrim stopping place on the Syrian pilgrim route leading to Medinah.

Ibn Batutah (N.D. p. 79) who lived in the fourteenth century (1304-1377) made his first Hajj pilgrimage to MAKKA in 727 H (1327CE). He described Al-'Ula as a large village, abundant with springs and wells, with many date palms and cultivated land. The pilgrims stayed at Al-'Ula for perhaps four days, washing their clothes, watering their animals and gathering together provisions for the next stage of their journey.

After about three centuries another Arabic scholar, Al-Mawsawi (Kibrit), (1965 pp 276-277) who lived in the eleventh century hejira which corresponds to about the seventeenth century CE (1602-1670CE), described Al-'Ula as a nice village situated about 6 days journey from Medinah. He also said that it was a gorgeous meadow and abundant with palm trees and a citadel was also situated there. Al-Jaziri, (1983, Vol 2, pp 1268-1269) talked about Al-'Ula as one of Al-Hijaz towns abundant with flowing water (springs), palm-groves and farms where the pilgrim caravans stay for two days. Winnet and Reed say:

"There are many springs at Al-'Ula, an assurance that the oasis was inhabited in very early times" (Winnet and Reed, 1970, p. 38)

"Al-'Ula is undoubtedly the most strikingly beautiful oasis in all North Arabia (Ibid p. 42)

An inspection of the area showed many remains of ancient water resources, particularly springs. A well known as 'Ain (fountainhead or spring) called 'Ain Tad'ail was located at the centre of the ancient town. It has now dried up, but according to the inhabitants of the town was a watering place for the Syrian pilgrims who passed by Al-'Ula. Ruins of channels can still be seen which show that there were once springs in the area (see A1 plate Vii a & b). Although clearly important this site could only be assessed by full archaeological survey and not through the measurement survey employed in this fieldwork.



Al Plate viia

An ancient adit spring named ain Tadal. Once productive but now dried up.



Al Plate viib

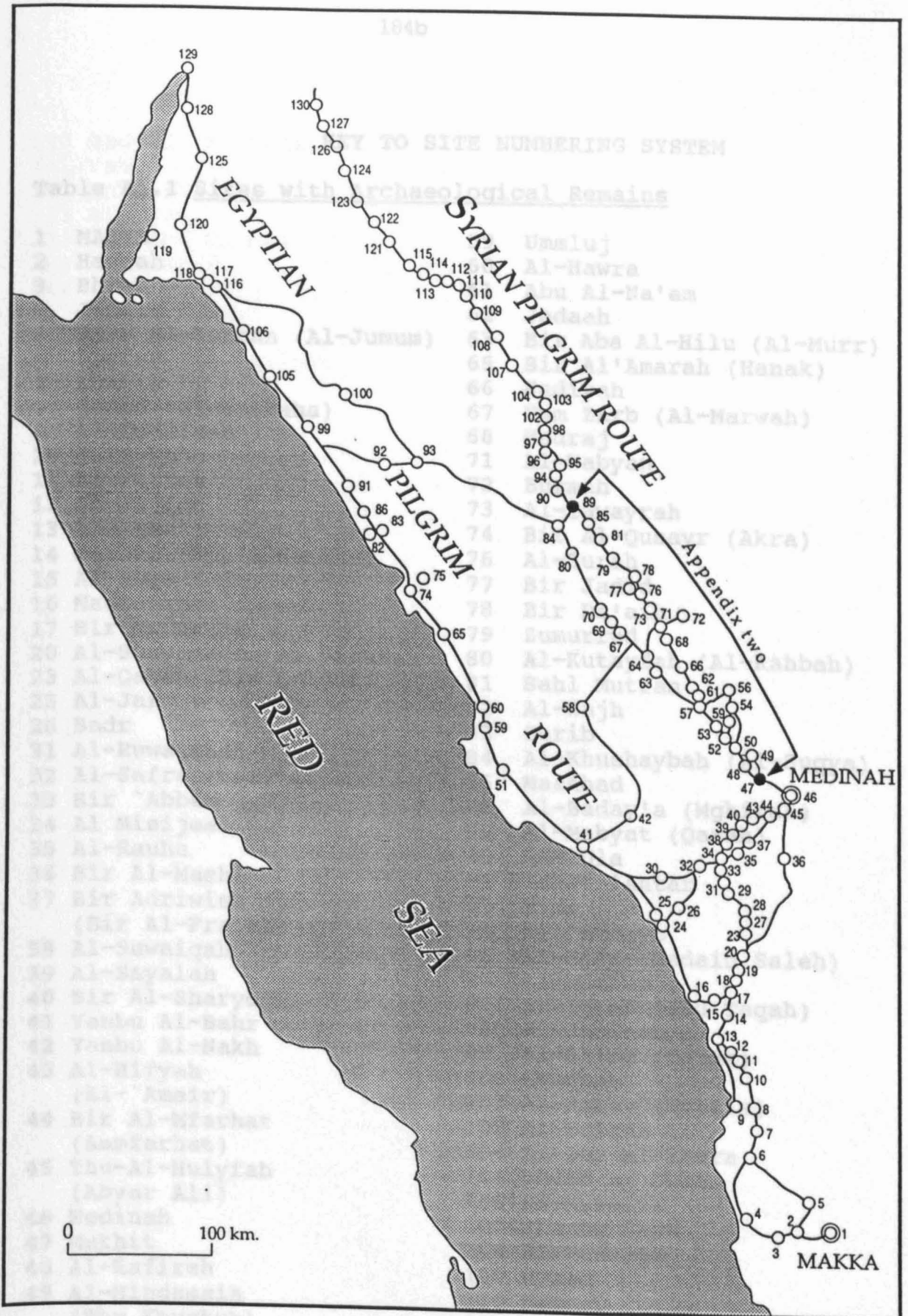
The subsurface canal is built of rough stone and is clearly a less sophisticated watering device.

APPENDIX 2

The Syrian pilgrimage route

(southern section)

sites 89-47



Numbering system used to identify sites for investigation

- | | | | |
|-----|----------|-----|---------------------------|
| 100 | Al-Jumus | 113 | Al Awjaryah |
| 101 | Al-Jumus | 114 | Birk |
| 102 | Al-Jumus | 115 | Al-Uthayli |
| 103 | Al-Jumus | 117 | Al-Shursybah |
| 104 | Al-Jumus | 118 | 'Aisunah ('Uyun al-Qasab) |
| 105 | Al-Jumus | 119 | Naqah |
| 106 | Al-Jumus | | |
| 107 | Al-Jumus | | |
| 108 | Al-Jumus | | |
| 109 | Al-Jumus | | |
| 110 | Al-Jumus | | |
| 111 | Al-Jumus | | |
| 112 | Al-Jumus | | |
| 113 | Al-Jumus | | |

KEY TO SITE NUMBERING SYSTEM

Table A2.1 Sites with Archaeological Remains

1	MAKKA	59	Ummluj
2	Haddah	60	Al-Hawra
3	Bhrah	61	Abu Al-Na'am
4	Jeddah	62	Jadaah
5	Marr Al-Zahran (Al-Jumum)	63	Bir Aba Al-Hilu (Al-Murr)
6	`Asfan	65	Bir Al'Amarah (Hanak)
7	Khulis	66	Hadiyah
8	Qudid (Al-Brikaha)	67	Umm Zarb (Al-Marwah)
9	Al-Qadhimah	68	Madraj
10	Kulayyah	71	Al-Wabyan
11	Al-Jujfah	72	Burmah
12	Al-Jujfah	73	Al-Tawayrah
13	Rabigh	74	Bir Al-Qusayr (Akra)
14	Harsha (Riy`a Harsha)	76	Al-Surah
15	Al-Abwa	77	Bir Jadid
16	Masturah	78	Bir Da'aih
17	Bir Mubayrik	79	Zumurrud
20	Al-Suqya (Umm Al Birak)	80	Al-Kutayfah (Al-Rahbah)
23	Al-Qahah (Bir Qaidhi)	81	Sahl Mutran
25	Al-Jar	82	Al-Wajh
26	Badr	83	Zurib
31	Al-Ruwaitah	84	Al-Khushaybah (Al-Suqya)
32	Al-Safra (Wadi Al-sufra)	85	Mashhad
33	Bir `Abbas	88	Al-Baday'a (Mghirah)
34	Al Misiheed	89	Al-Mabyat (Qarah)
35	Al-Rauha	90	Al-`Ula
36	Bir Al-Mashi	91	Birkat `Antar
37	Bir Adriwish (Bir Al-Fraish)	93	Bida
38	Al-Suwaiah	94	Al `Athayb
39	Al-Sayalah	95	Al-Hijr (Madain Saleh)
40	Bir Al-Sharyofi	96	Al-Mazham
41	Yanbu Al-Bahr	97	Buwijrah (Abu Taqah)
42	Yanbu Al-Nakh	98	Al-Juninah
43	Al-Hifyah (Al-`Amair)	99	Al-Azlam (Qalat)
44	Bir Al-Mfarhat (Ammfarhat)	100	Shaghab
45	Thu-Al-Hulyfah (Abyar Ali)	102	Al-Agray (Mutala)
46	Medinah	103	Al-Brikah
47	Mukhit	104	Al-Dar Al-Hamra
48	Al-Hafirah	105	Dhiba or Duba
49	Al-Mindassih (Thu Khushub)	106	Al-Muwelih
50	Buwat	107	Khashm Sana
51	Nabat	108	Al-Muazzam
52	Abar Nasif	109	Disad
53	Al-Buwayr	110	Hams
54	Al-Hamra	111	Al-Akhdhar (Al-Muhddithih)
56	Shajwa	112	Mustabighah
57	Istable `Antar	113	Al Awjaryah
		114	Birk
		115	Al-Uthayli
		117	Al-Khuraybah
		118	`Ainunah (`Uyun al-Qasab)
		119	Maqna

- 120 Madyan (Al-Bida)
- 121 Tabuk
- 122 Muhtaib
- 123 Al-Hazm
- 124 Bir Ibn Hirmas
- 125 Al-Sharaf
- 126 That Al-Hajj
- 127 Halat `Ammar
- 128 Haql
- 129 Al-`Aqaba (Ailah)

Table A2.2 Sites without Archaeological Remains

18	Bustan
19	Al-Thibrah
21	Bir Salih
22	Al-Sidr
24	Riyis
27	Bir Al-Hafat
28	Al-Watiyah
29	Bir Al-Gnomom
30	Bir Al-Sayd
58	Alis
69	Al-Amair
70	Bir Al-`Am
86	Bir Haramil
87	Al-Shihiban Castole
92	Abu al-Qazaz
101	Shewaq
116	Shormah

Sites which are numbered on the map but are not named on this list do not have any evidence of ancient water resources or any mention in historic pilgrimage literature.

Site numbers 55, 64 and 75 were not used.

Site Number: 89

Route Identified: I2

Site Type: simple

Al-Mabiyat (Qarah)

This pilgrim station is situated 20km south-east of Al-'Ula (26° 31'N and 38° 03'E) on the Syrian pilgrim route.

This Islamic town is now ruined and consists only of remains (see A2 plate I). The area, relatively rich in water has many farms used for the cultivation of crops. Although there are many archaeological sites such as a castle located about 2km south-west of Al-Mabiyat, there is no evidence of ancient water resource structures.

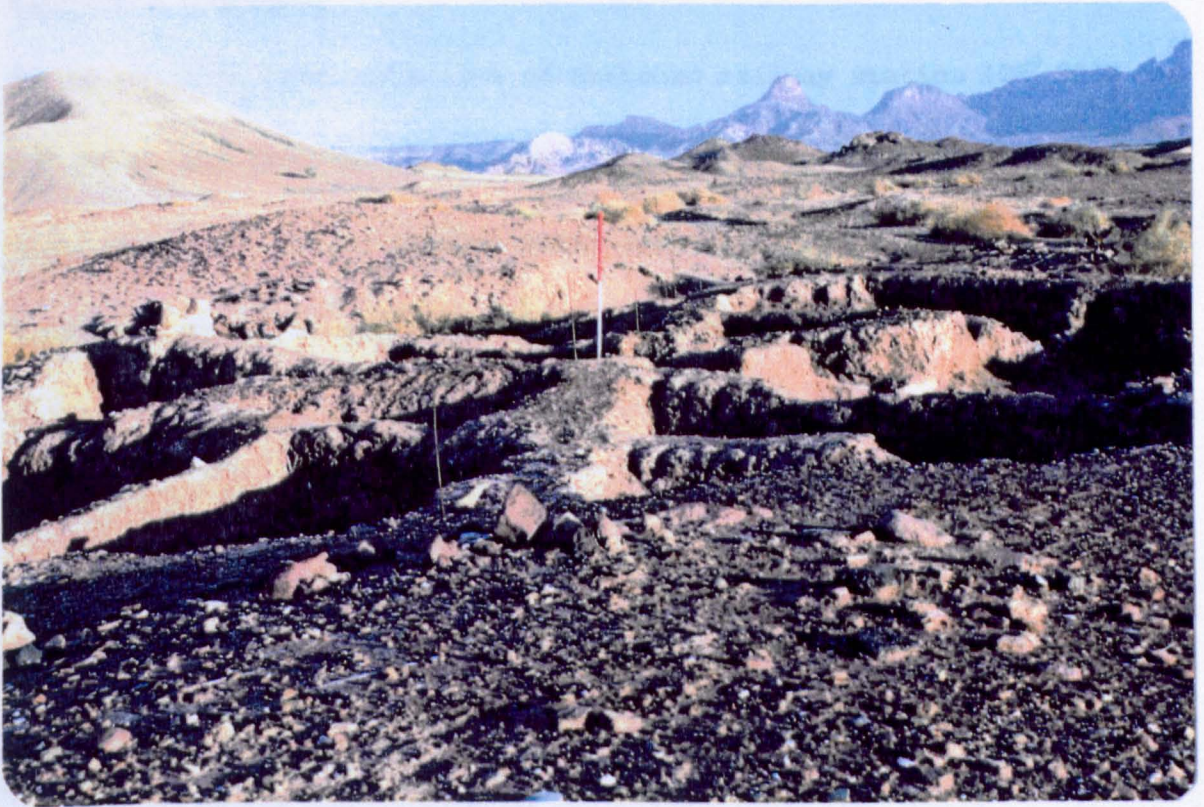
Qarah which we believe is Al-Mabiyat is mentioned by early writers for example, Yaqut (1955, Vol. 1, pp. 320-322) says Qarah is a market town situated at wadi Al-Qura.

Al-Maqdisi (1906, pp 8384) describes Qarah as a principal town in Al-Hijaz, it is populated and its residents are merchants and rich. It has a fortress and castle, it consists a good dates, its houses are nice and abundant of water.

Al-Bakri (1483, Vol. 3 p. 1061) mentions Qarah as a place merely without giving any more information.

Site Number: 88

Site: Al-Mabiyat (Qarah)



A2 Plate 1

A general view of the archaeological site.

Route Identified: I2

Site Type: simple

Al-Badaya (Mghirah)

It is situated 14km north-west of Mashahad railway station ($26^{\circ} 30'N$ and $38^{\circ} 04'E$) and 200m from the modern paved road which leads to Al-'Ula. Although there are no ancient water resources, the area has many farms and there are also small settlements dotted around.

Site Number: 85

Route Identified: I2

Site Type: simple

Mashhad Railway Station

This railway station is situated 21km north-west of Sahl-Mutran railway station ($26^{\circ} 25'N$ and $38^{\circ} 11'E$) and dates to 1907.

The area is barren and lacks water resources and therefore is uninhabited.

Site Number: 81

Route Identified: I2

Site Type: simple

Sahl-Mutran

This pilgrim station was mentioned by early writers. It is situated 13km

north-west of Zumurrud railway station ($26^{\circ} 16'N$ and $38^{\circ} 19'E$).

Sahl-Mutran railway station was founded in 1327H (1907) and consists of some traditional buildings which are situated at wadi Mutran which flows into wadi Al-Hamd. The area is roughly flat so it is suitable for herbage, particularly after rainfall. Despite its suitability for grazing and the records of its use as a pilgrim station no resource structures could be found.

Al-Mawsawi (Kibrit) (1965, p. 238) describes Sahl-Mutran as a barren waste wadi.

Site Number: 79

Route Identified: I2

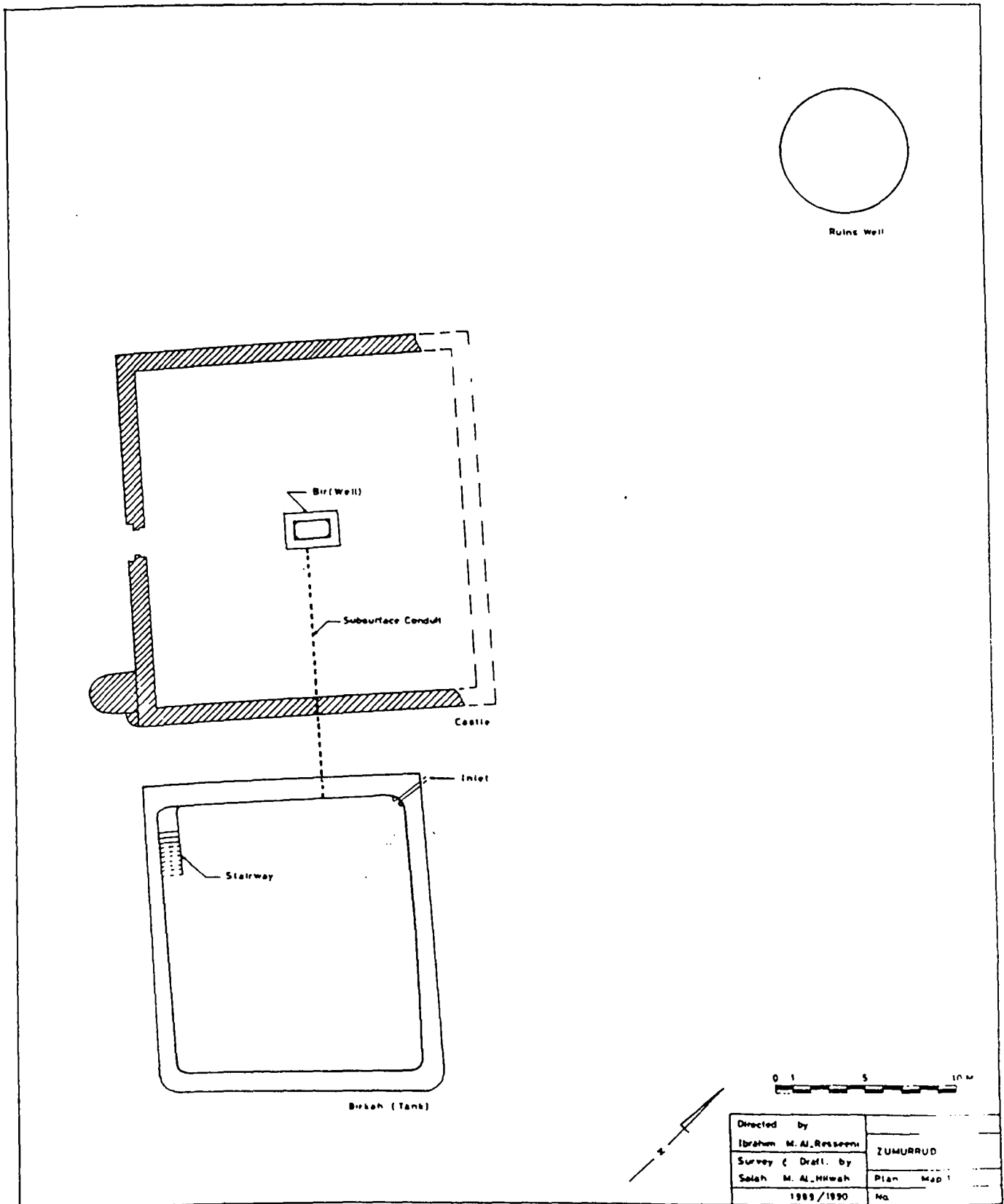
Site Type: simple

Zumurrud

This pilgrim station is situated 4km north-west of Zumurrud railway station and 9km south-east of Sahl Mutran ($26^{\circ} 13'N$ and about $38^{\circ} 22'E$) at wadi Zumurrud. (Al-Mawsawi (Kibrit) 1965 p. 238 names it bir Al-Zumurrud and describes it as a watering place on Al-Jaddah (the road) between the mountains.

This pilgrim station lies on the Syrian pilgrim route from Damascus to Medinah. It comprises some major water resources which include a birkah the remains of a bir and a castle with a bir inside it (see A2 plan I & folder 15). Al-Birkah is roughly a square about 15m x 15m measured from the inside. Its wall is approximately one meter in width. There is a stairway which leads to the bottom of Al-birkah which is situated at its western corner and linked to the south-west wall, it measures 1.10m in width. There is an opening in its northern corner, which was probably the inlet which supplied Al-birkah particularly during periods of heavy rainfall. There is also a culvert (subsurface channel) which has a small circular opening which links Al-birkah (water tank) and Al-bir (the well) which is located in the middle of the courtyard of the castle.

Al-Birkah was constructed with granite stones which are available



Appendix 2 Plan I: Birkah, a bir and a castle at Zumurrud

Directed by	
Ibrahim M. Al-Rasheed	ZUMURRUD
Survey & Draft. by	Plan Map 1
Saleh M. Al-Muwah	No.
1989/1990	

locally from the mountains nearby. It is plastered with gypsum inside and it rises about 30cm above ground level. (See A2 plate iia)

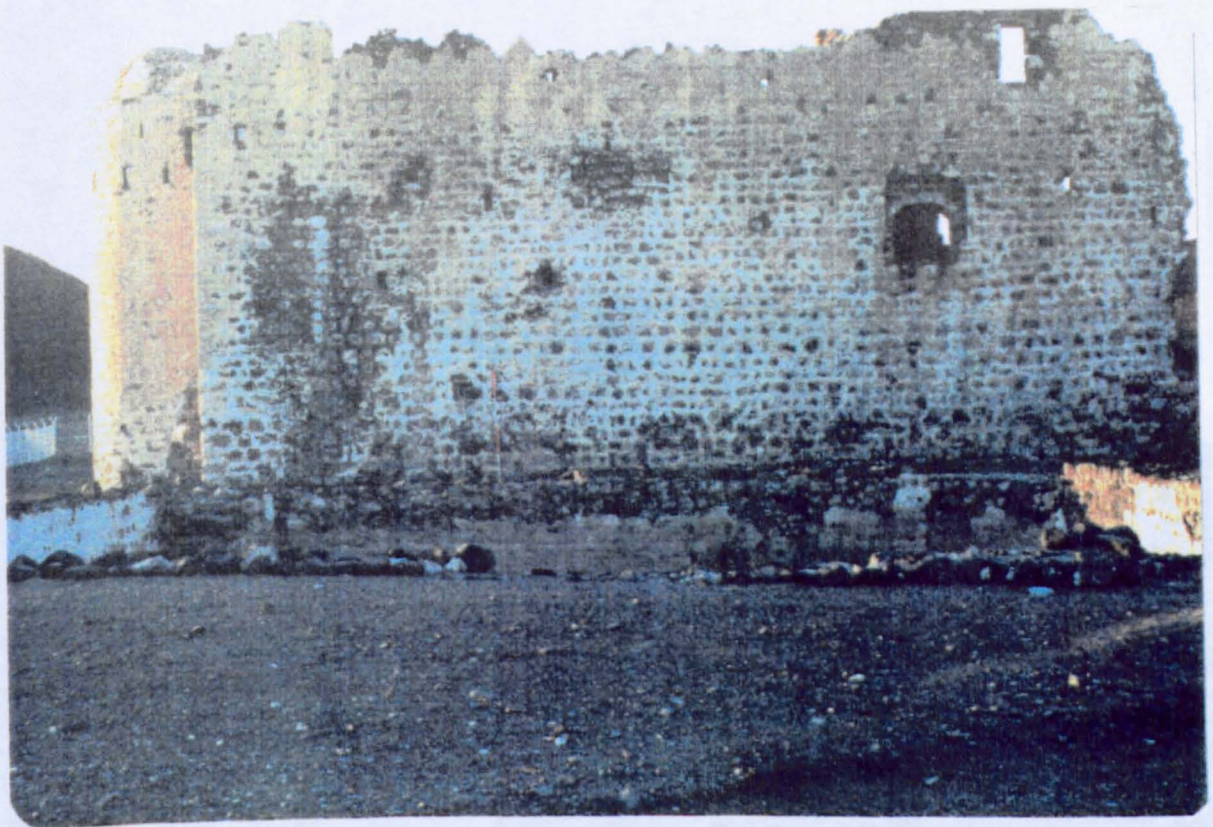
In order to strengthen Al-birkah, all the corners have been plastered inside to form a curved shape. Outside, the plastered curve can only be found on the south and east corners.

The castle is about 3.5m north-west of Al-birkah and parallel to its north-west wall (see A2 plate iib). It forms a square shape about 19m x 19m. The main entrance to the castle is located on the south side and all but the northern wall, which has completely fallen down, seems to be in quite good condition (see A2 plate iic). There is a dug well in the courtyard of the castle. It has a rectangular mouth opening, its interior measurements are about 2m x 1m. There are projections of stone at each corner of Al-bir which go from top to bottom, the distance between each of them is about 80cm. These projecting stones are used as a stairway so that the well may be cleaned. Al-bir is lined with stone from top to bottom and there is a supply of water. Al-bir probably fed Al-birkah with water, particularly when there was a shortage of rain, via a subsurface channel placed at the north-west side of Al-birkah. About 21m from the castle to the north there are the remains of a further bir, it is a deep pit with a diameter of about 7m (see A2 plate iid). The area is almost surrounded by mountains which have a narrow valley running through them. The region is barren and uncultivated and



A2 Plate iia

The stone castle and birkah both plastered with gypsum.



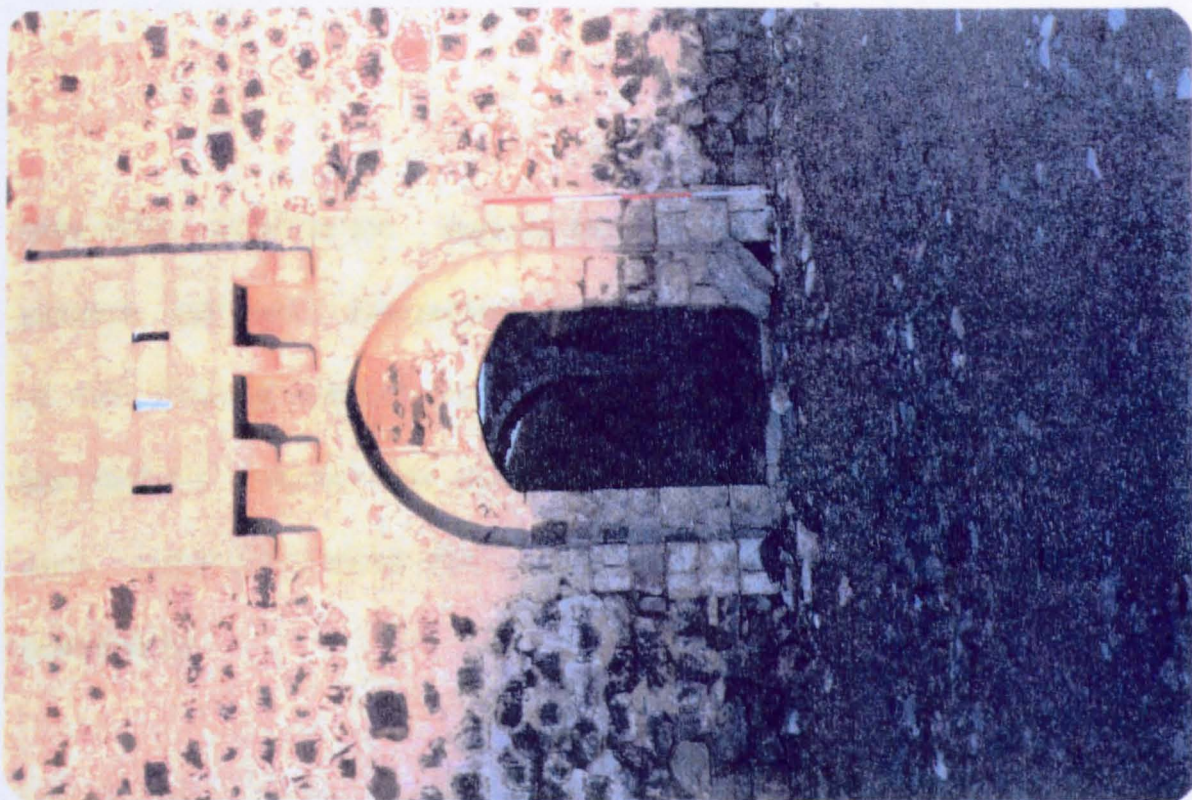
A2 Plate iib

The stone and plaster birkah in topographic context.

the collapsed castle

189b

Site: Zumurrud



A2 Plate iic

Castle entrance and peep-hole.



A2 Plate iid

The north side of the castle showing the bir and the collapsed castle wall.

therefore uninhabited. Despite this it was one of the most well known pilgrim stations. The railway station of Zumurrud lies about 4km south of the pilgrim station way.

The railway station like the others consists of stone buildings which were erected to serve the railway, to house officials, soldiers and passengers.

Site Number: 77

Route Identified: I2

Site Type: simple

The Station of Bir Jadid

The railway station is situated 3km west of Al-Surah and 18km north-west of Al-Tawayrah ($26^{\circ} 02'N$ and $38^{\circ} 33'E$) at wadi Abu Jadid.

The railway station, (dated 1908), consists of two traditional buildings. There is an ancient bir which is located about 14km west of the railway station, it is called bir abu Hadid (bir Da'aih). (Site number 78)

It is a dug well with a circular mouth opening 8m diameter. Al-bir is unlined, its depth is about 15m and it still contains water (see A2 plate iii). The well was dug in a sandy valley and is not far from the mountains, where jabal (mountain) Aba Abdud lies to the south-east. The area is barren and uninhabited.

Site: Bir Jadid



A2 Plate iii

The ancient, circular bir is located at a wadi and is called bir Daaih

Site Number: 76

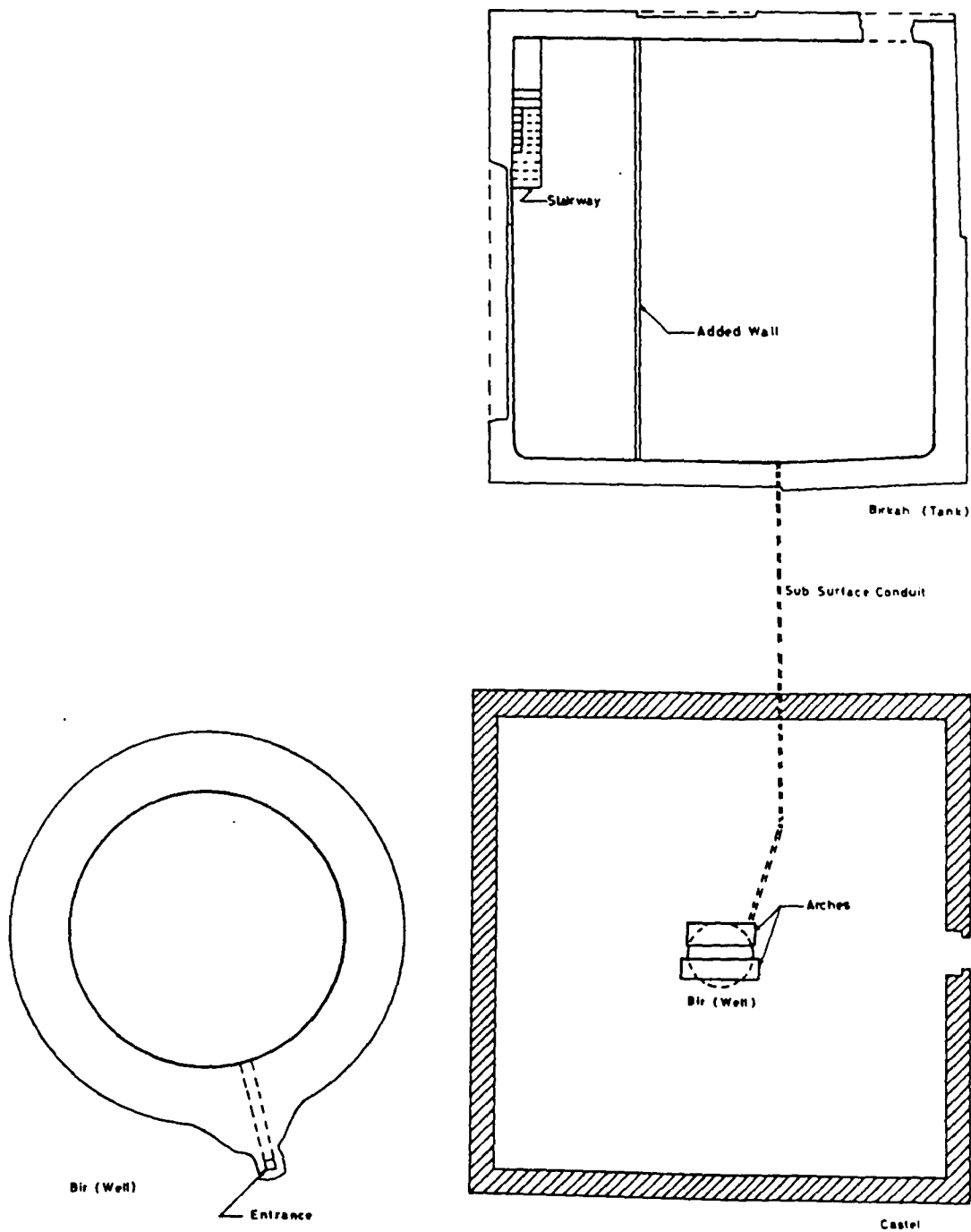
Route Identified: I2

Site Type: simple

Al Surah

This is a pilgrim station situated about 16km north of Al-Tawayrah railway station, to the north-west of Hadiyah and about 35km south-east of Zumurrud ($26^{\circ} 01'N$ and $38^{\circ} 06'E$). The pilgrim station lies on the Syrian and Egyptian pilgrim route which leads to Medinah. It consists of some major water resources, including birkah and bir as well as a castle with a bir inside it. (See A2 plan II & folder 16 and plate IVa). Al-Birkah is square in shape and measures approximately 17m x 17m. The thickness of its walls varies, in some parts they measure 1 meter, in others, about 1.30m. Al-Birkah was constructed with white granite stones and traces of plaster and gypsum are visible which have obviously come from the interior of Al-birkah (see A2 plate IVb & c).

Al-birkah has a stairway leading down to the ground situated in the north-west corner along the interior western wall. Its width is about 1.15m and is about 6m in length. Al-birkah is now filled with sand and earth, so that the remaining depth is about 3m. The walls rise about 80cm above ground level. A wall which is probably modern has been built on the northern and southern walls of Al-birkah and runs parallel to the western wall, leaving a distance between them of about 5m. The wall is



Directed by:	Ibrahim M. Al-Resseeni
Survey & Draft. by:	Salah M. Al-Hilwah
1989/1990	No.
	AL-ŞURAH
	Plan Map 1

Appendix 2 Plan II: Birkah, a bir and a castle at Al-Surah



A2 Plate iva

Birkah, bir and castle in close proximity built from cut stone.



A2 Plate ivb

The birkah interior showing some residual gypsum plaster and some indication of likely original depth.

constructed with stones and it is about 20cm thick and 1 meter high. Al-birkah is connected to a bir which is located in the castle which is situated about 8m south of Al-birkah. The connection is via a subsurface canal (conduit) which is circular and has a diameter of about 12cm. It is made of ceramic material. It is situated about 20cm lower than the level of the top of Al-birkah. This conduit possibly fed Al-birkah with water from Al-bir which is located inside the castle. The northern corner of Al-birkah has been destroyed so that there is no indication about where the inlet and outlet were situated (see A2 plate IVd).

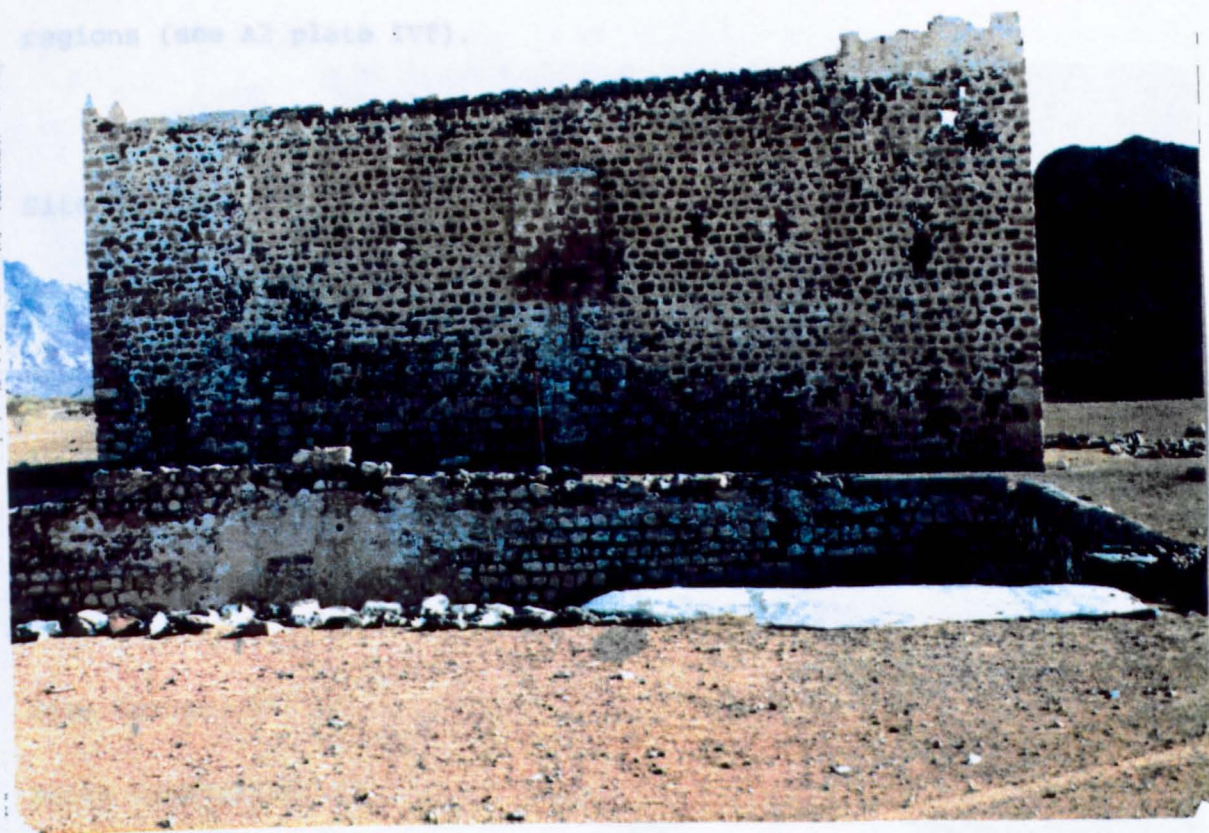
Al-Qalah (citadel) is situated at about 8m south of Al-birkah, it is square shaped and measures about 20m x 20m. It has been built with stones which are relatively small. Its main entrance is located in the middle of the eastern wall (see plate A2.IVa). A bir has been dug inside the middle of the open courtyard of the castle. It has a circular mouth opening of 2.5m. The dug well is lined with large, trimmed black stones. There are two arches at the mouth opening of Al-bir, above each one, there is a wall, one at the north and south side of Al-bir. The distance between them is about 70cm and they were probably used to lift water from the well (see A2 plate IVe). The second principal water resource is a remarkable bir (well), it is situated about 2.70m west of the castle.



A2 Plate ivc

This view emphasises the proximity of the castle and bir.

These architectural features can also be observed in the Tira and Al-Juf regions (see A2 plate IVT).



A2 Plate ivd

Al-birkah and the proximity to the castle showing a circular conduit at the southern wall of Al-birkah connecting it to a further bir, located in the courtyard of the castle.

Al-bir has a huge circular mouth opening with tremendous architectural features and constructional design. It has an internal diameter of about 11m. The width of the wall which surrounds the mouth opening of Al-bir is about 2.32m. The well is lined with black trimmed stones from top to bottom and the level of water is about 16m down. Al-bir has an opening on the south-eastern side which was probably used to descend to the bottom of the well. The opening is about 4m down from the level of the mouth opening and is connected to a number of other openings which are situated one above the other from the top to the bottom of the well. These architectural features can also be observed in the Tima and Al-Juf regions (see A2 plate IVf).

Site Number: 73

Route Identified: I2

Site Type: simple

Al-Tawayrah - Railway Station

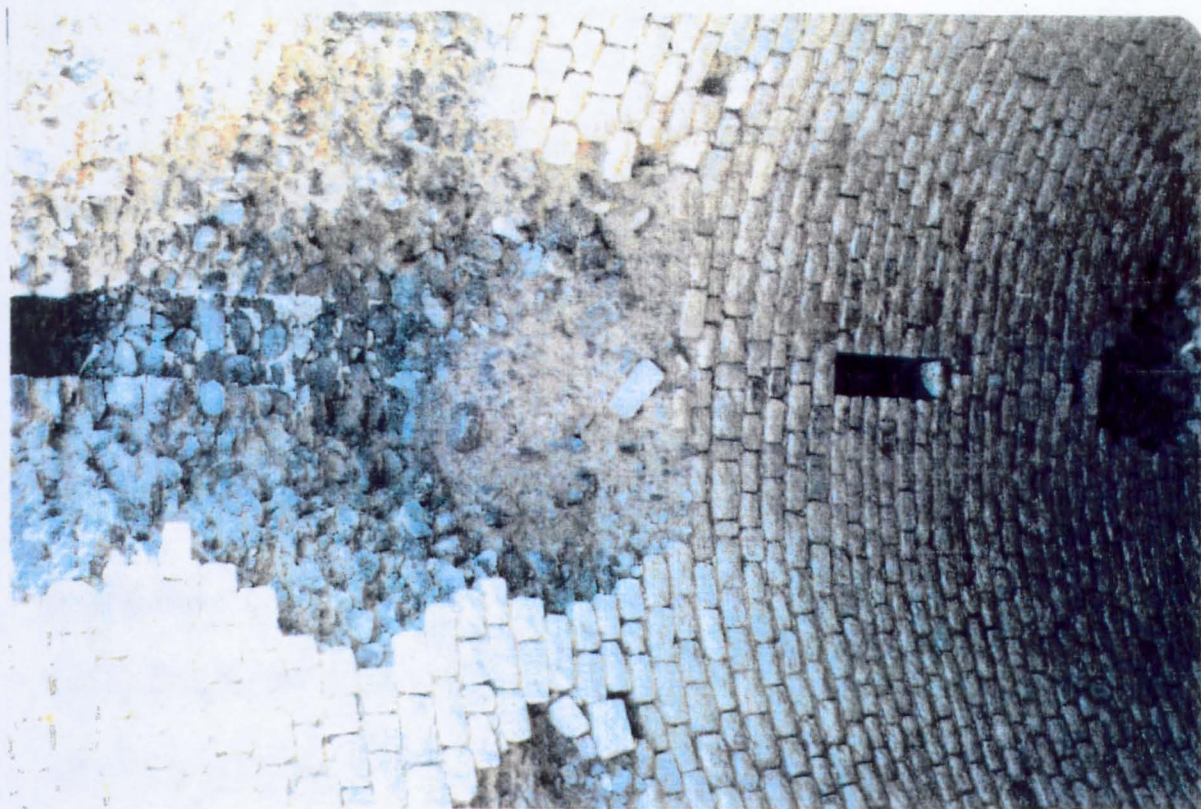
This site at 25° 53'N and 38° 37'E shows no water resource relics.

Site Number: 71

Route Identified: I2

Site Type: simple

Al Wabyan - Railway Station



A2 Plate ive

This view gives some impression of the scale of the interior of this well. It is well constructed and lined with trimmed stone from top to bottom. A number of openings of indeterminate purpose are on the southeast side of the wall.



A2 Plate ivf

A view from the castle interior showing the location of the well and the courtyard of the castle, lined with roughly cut stone.

This site is about 14km north of Al-Madraj railway station and about 15km west of Burmah, about $25^{\circ} 47'N$ and about $38^{\circ} 41'E$ west of wadi Baraqah. It comprises traditional buildings and has no water resources.

Site Number: 72

Route Identified: I2

Site Type: simple

Burmah

It is situated about 24km north-east of Al-Madraj railway station about $25^{\circ} 48'N$ and about $38^{\circ} 48'E$ at wadi Withiyan. Yaqut (1955, Vol. 1, p. 403) says Burmah is a dependency of Medinah near Balakith between Khibar and wadi Al-Qura. Al-Hamadani (1974, p. 334) states Burmah is a village above Hunin towards the Egyptian pilgrim route. Al-Isfahani (1968, p. 395) says beyond Khibar there is a village of Burmah which belongs to Quraish and Al-Ansar.

The station consists of three archaeological sites which include the remains of foundations of buildings and walls as well as some ancient wells.

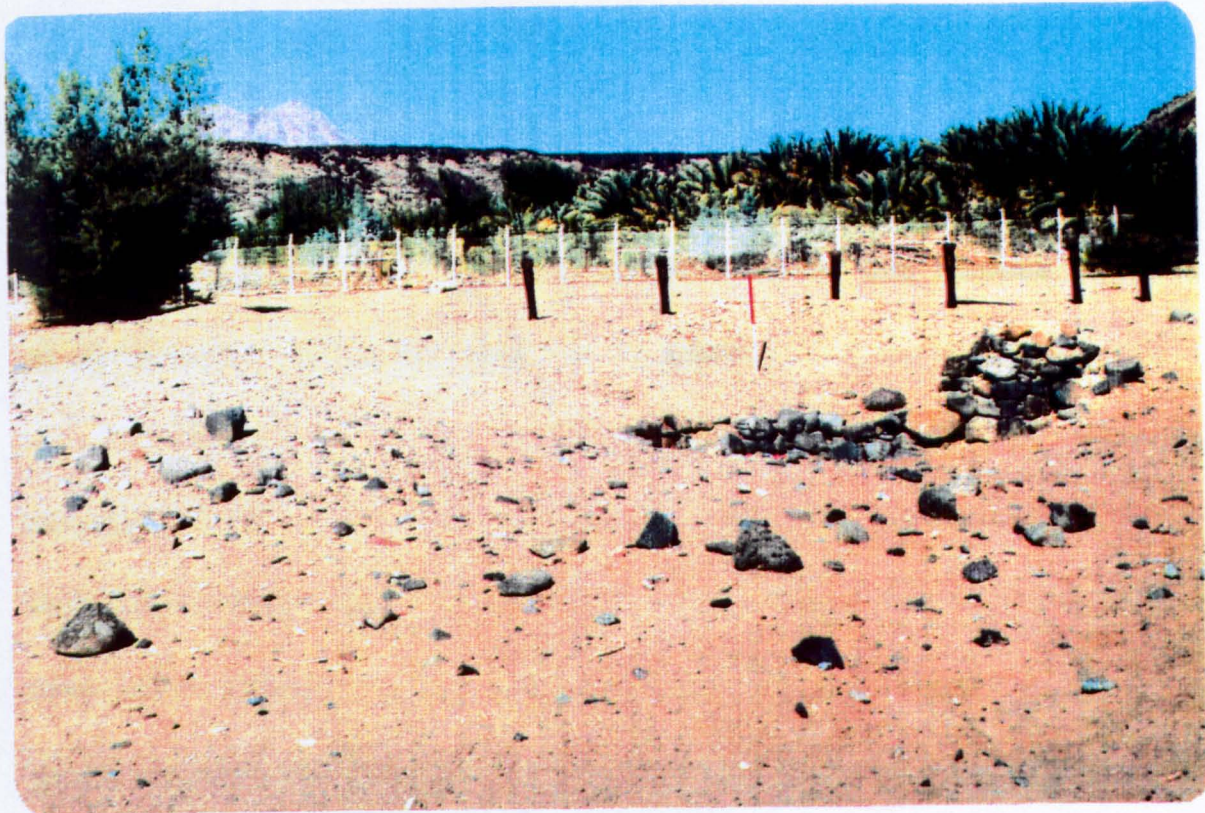
The first bir has a circular mouth opening with an internal diameter of about 3m. It is a hand dug well and lined with black stones. The remaining depth is about 4m and it is waterless. The width of its wall is about 60cm. There are two columns which have been erected opposite

to one another on the shaft of the well. The distance between them is about 80cm. These two columns are used to lift water by a water scoop from Al-bir. There is a water collection trough linked to the well (see A2 plate Va).

The second bir is located at about 100 meters east of the former. It has a circular mouth opening with an inside diameter of 2.90m. It is stone lined and the wall of the mouth opening is 60cm thick. The remainder of the depth of the well is about 4m and no water remains. There are four columns, two of which have been erected at the mouth opening on the east side and the other two, on the west side. Each column is about 60cm in width. The columns on the east side are 1.40m high and 1.40m apart. The columns on the west side are about 2m in height and 1.70m apart. The columns are built of stones and show evidence of being plastered. There are two water collection troughs, one placed on the eastern side and linked to the well, the other is on the western side of Al-bir (well) and also linked to it. (See A2 plate Vb)

The region has abundant water resources, particularly wells. The farms are dispersed around the area and cultivate different plants and crops including palm trees, fruit and vegetables. In addition, the area is rich in archaeological sites.

Burmah is surrounded by mountains and lies at the meeting point of wadis. It was connected to Hadiyah by a rough unpaved road. Burmah is



A2 Plate va

A view showing a bir built with local black volcanic stones. Remains of columns are visible.



A2 Plate vb

A view showing the second bir which has two water collection troughs and four columns.

situated quite far from the conventional route, but because of its abundant water, pilgrims prefer to go there.

Site Number:68

Route Identified: I2

Site Type: simple

Al-Madraj Railway Station

This railway station lies about 18km north of Hadiyah on about $25^{\circ} 41'N$ and about $38^{\circ} 42'E$.

There was no water resource structure at this site.

Site Number: 80

Route Identified: I3

Site Type: simple

Al Kutayfah (Al Rahbah)

This pilgrim station lies about 80km north-west of Umm Zarb (Al-Marwah) and about 30km south-east of Al-Khshaybah (Al-Suqya) about $26^{\circ} 08N$ and $38^{\circ} 05E$.

This pilgrim stopping place was enumerated by early writers and is on the Syrian and Egyptian pilgrim route which goes towards Medinah. Ibn Khurdadhabah (1889 p. 150) places it south of wadi Al-Qura and north of Thu Al-Marwah. Ibn Rostah (1892 p. 183) locates Al-Rahbah between Al-

Muhdihith on the north and Thu Al-Marwah on the south. However, it now no longer exists and the village of Al-Kutayfah grew up on its ruins. Al-Kutayfah is now quite a large village, populated by permanent inhabitants, living in modern houses. Because there are water resources available (particularly ground water) from pumped wells, the area has abundant farms which grow palm trees and a range of crops. A survey of the area showed that there are some archaeological sites which consist of the remains of walls and the foundations of buildings. The Department of Antiquities and Museums has protected these archaeological sites by erecting wire fences around them.

Site Number: 67

Route Identified: I3

Site Type: Simple

Umm Zarb (Al-Marwah)

This pilgrim station is 35km north-west of Al-Murr and 80km south-east of Al-Rahbah 25° 38'N and about 38° 26'E. It lies on the Syrian and Egyptian inland route which leads towards Medinah. It was a well known and documented site. It was a great village inhabited by common people and located on the Syrian and the Egyptian pilgrim route leading to Medinah and MAKKA. (Al-Isfahani 1968 pp 395-396). Al-Marwah no longer exists. Unfortunately, one cannot precisely determine the location of

al-Marwah, but some historians believe that Al-Marwah (sometimes known as Thu Al-Marwah) was replaced by the village of Umm Zarb (Al-Jasir N.D. p. 216-217). This village is now abandoned because the proportion of salt in the water increased and the soil became saline (see A2 plate VIa and b).

An inspection of the region of Umm Zarb showed that there were abundant water resources and farms. The area is mostly surrounded by Harrat (lava fields) and mountains. Al-Salilah is now quite a large village. Despite the written history only small wells of dubious quality remain.

Site Number:63

Route Identified: I3

Site Type: simple

Bir Aba Al-Hilu (Al-Murr)

This pilgrim station is situated about 11km west of Jadaah station and about 35km south of Al-Marwah (Umm Zarb) at wadi Al-Hamd (25° 24'N and about 38° 40'E). This site was also mentioned by a number of Arabic and Islamic geographers and travellers who numerated the stopping places between Ailah and Medinah on the Syrian and Egyptian pilgrim route, after Al-Marwah. The origin of this name is unknown even to the Bedouins.

The area has various water resources, particularly wells. Some of these wells are likely to be ancient and are used as watering places. I



A2 Plate via

One of several abyar scattered over the area. It is built of rough cut, black stone and shows a surface canal. There is evidence of growing soil salinity.



A2 Plate vib

A further bir built with roughly cut, black stones.

selected one of them as an example.

This bir has a circular mouth opening and has an inside diameter of about 2.70m, and it is lined with stones. The level of the water is about 2m. There are some small wells, all of which are located in the wadi (see A2 plate vii).

Ibn Khurdadhabah (1889 p. 150) locates Al-Murr between Thu Al-Marwah and Al-Suwaida. Ibn Rostat when he enumerated the pilgrim stations between Damascus and Medinah placed Al-Murr south of Thu Al-Marwah and north of Al-Suwaida (Ibn Rostah 1892, p. 183)

Site Number: 66

Route Identified: I2

Site Type: simple

Hadiyah

This pilgrim stopping place is situated about 6km east of Hrimil, 25km west of Jadaah about $25^{\circ} 33'N$ and about $38^{\circ} 44'E$.

Hadiyah was well known as a pilgrim station, it was mentioned by the Arabic and Islamic geographers and travellers when they enumerated the pilgrim haltings on the Syrian and Egyptian pilgrim routes which went to Medinah. It lies about 8km east of Hadiyah railway station.

The pilgrim station lacks water resources, but there is a castle and the

Site: Bir ~~A~~ba ~~A~~l-Hilu (Al-Murr)



A2 Plate vii

The ancient bir ~~A~~ba ~~A~~l Hilu lined with cut stone with a very low guard wall and entrance on the far side.

remains of other buildings. The castle was constructed at the western edge of Al-wadi (valley) at the foot of the mountains. It was built with stones but it has been repaired with wood in some parts (see A2 plate viiia). At the northern corner of the castle there is a stone lined dug well. It has a circular mouth opening with an interior diameter of about 3m. It is now filled with debris, its depth is about 2m (see A2 plate viiib).

About 200m east of the castle on the opposite side of Al-wadi there are some remains of walls and the foundation of buildings. The area is surrounded by the mountains and a well wooded valley runs from the north-east towards the south-west. The north-eastern corner of the castle has been destroyed.

Ibn Batutah (n.d. p. 131) describes Hadiyah as a wadi which consists of small wells with undrinkable water and Al Mawsawi (Kibrit)(1965 p. 239) describes a flowing ravine with bad water and groves.

Site Number: 62

Route Identified: I2

Site Type: simple

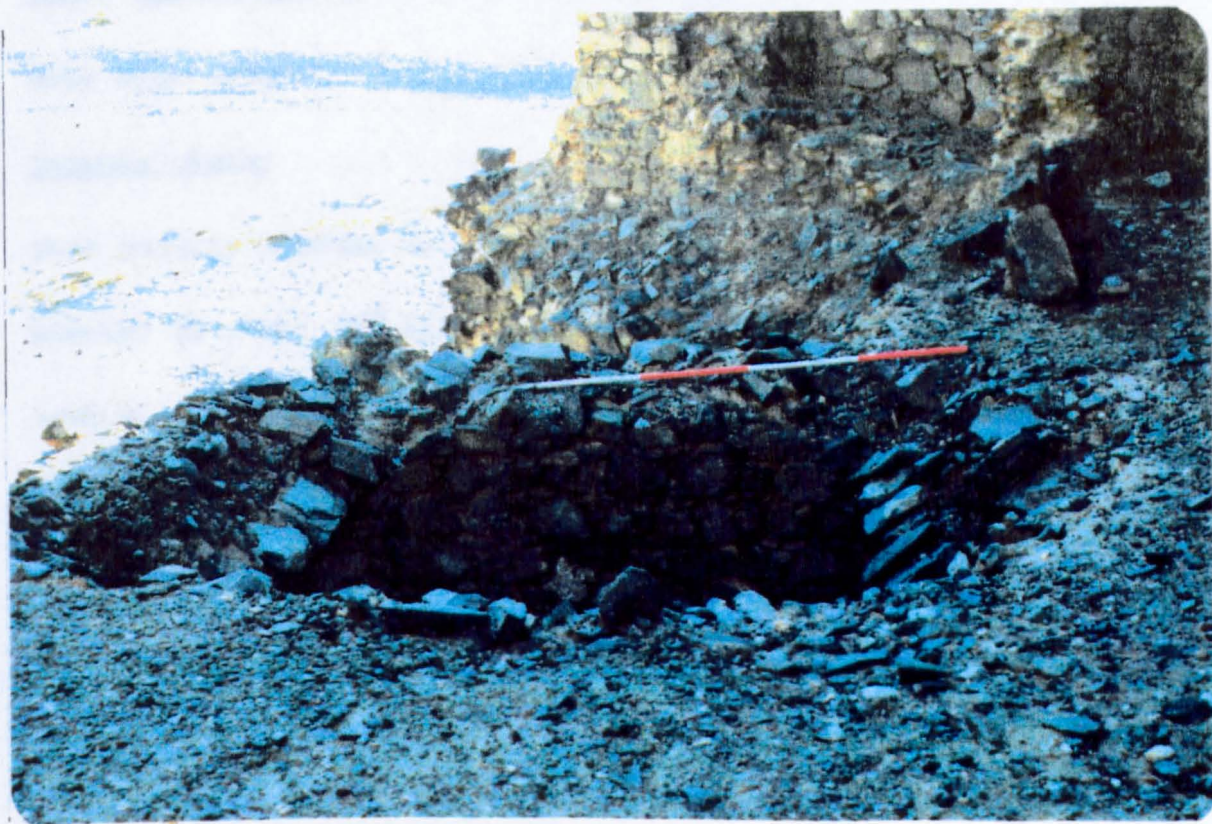
Jadaah Station (Railway Station)

This traditional railway station (1909) lies east of wadi Al-Hamd about 17.5km north of Abu Al-Naam. It too shows no resource development.



A2 Plate viiia

The southeast side of this defensively strong castle built at the foot of the mountain.



A2 Plate viiib

Circular well lined with roughly cut, black stone located at the northern corner of the castle.

Site Number: 61

Route Identified: I2

Site Type: Simple

Abu Al-Naam (railway station)

This traditional railway station dated 1905 is situated about 16.5km north of Istable `Antar about $25^{\circ} 15'N$ and about $38^{\circ} 46'E$ at wadi Al-Hamd. The uninhabited area shows no evidence of resource development.

Site Number: 57

Route Identified: I4

Site Type: simple

Istable `Antar

This pilgrim station is about 20km north-west of Al-Buwayr railway station at about $25^{\circ} 05'N$ and about $38^{\circ} 08'E$. It was mentioned in several sources as one of the pilgrim halting places on the Syrian and Egyptian pilgrim route, predates the railway.

The pilgrim station named after nearby mountains lacks water resources and therefore there are no settlements there. No water resource structures could be found.

Site Number: 53

Route Identified: I4

Site Type: simple

Al-Buwayr station

This railway station lies about 19km north-west of Abar Nasif (village of Al-Mulilih) about $24^{\circ} 07'N$ and about $39^{\circ} 03'E$.

The station is situated west of the modern paved road which is a branch of the paved road which lies between Medinah and Tabuk. This branch terminates at Shajwa. Al-Buwayr is now a village inhabited by permanent residents. The area seems to have plenty of water available and thus there are farms scattered around. The railway station has a well which the Ministry of Agriculture and Water uses to distribute water to the inhabitants. All the wells appear modern.

Site Number: 56

Route Identified: T4

Site Type: simple

Shajwa

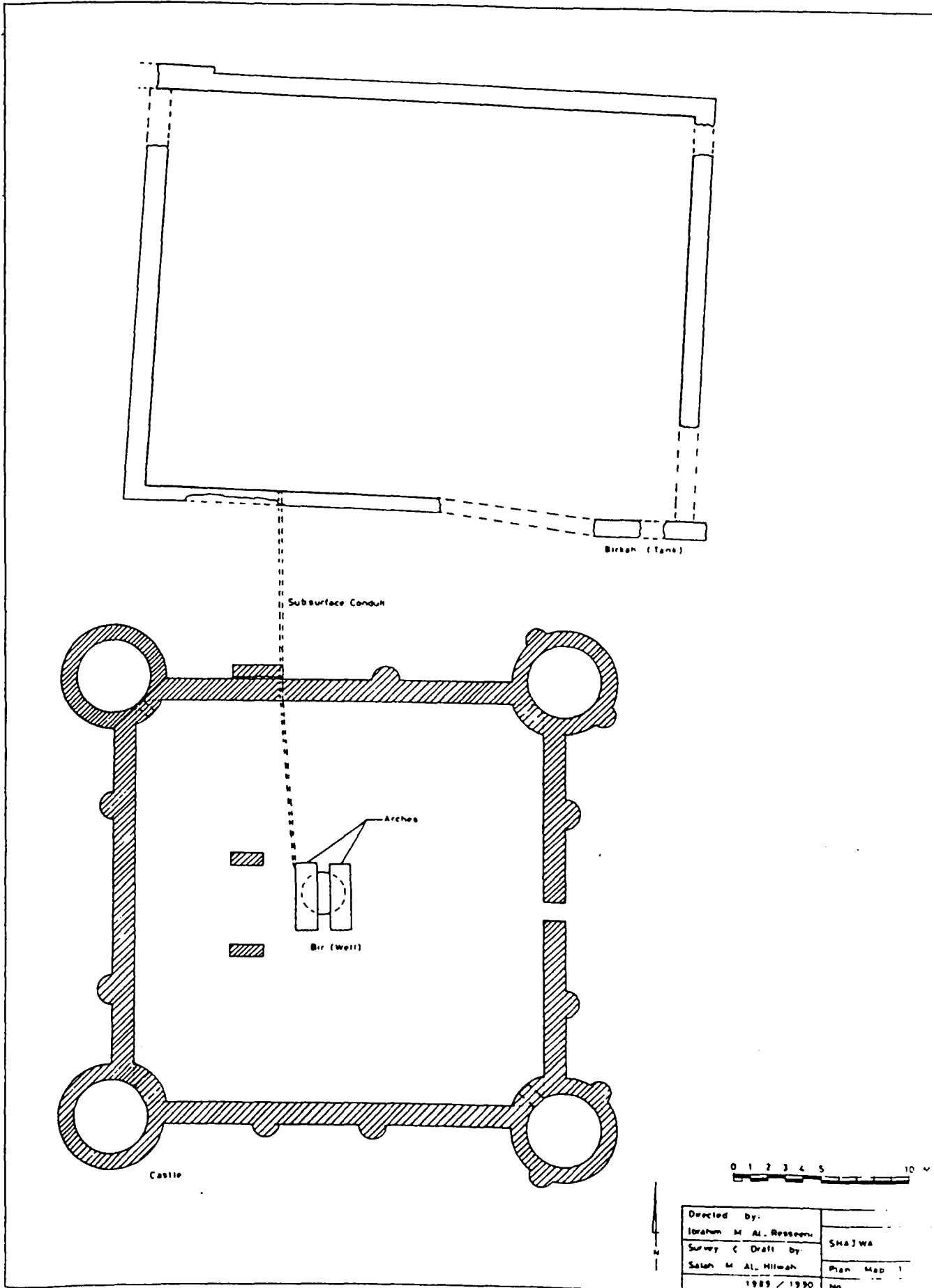
This pilgrim station is about 19km north of Al-Buwayr railway and about 6km east of Istable 'Antar on about $25^{\circ} 09'N$ and $38^{\circ} 59'E$. "It is one of the more important stations both for commercial and pilgrim caravans". (Al-Mughannam, Al-Hilwah and Morsi 1403 A.H. 1983 A.D. Vol. 7 p. 19).

Al-Batanuni (N.D. 3rd ed., p 301) describes Shajwa saying its water is abundant and was a meeting and interjunction place for the Syrian and the Egyptian pilgrim caravans in their travelling together inland. It has water resources which consist of a birkah and a bir which is situated within the confines of a castle (see A2 plan iii & folder 17). Al-birkah is rectangular and the internal measurement is 23m x 30.50m, the width of its wall is about 1.20m. It was constructed with black granite stones and the interior was plastered with gypsum.

Three of the corners of Al-birkah have been destroyed which makes it very difficult to determine exactly where its inlet and outlet were situated (only the south-west corner remains). Al-birkah is filled in with sand, trees and plants, so that while the foundations and lower parts are still in good condition, the upper parts are destroyed. The remaining depth is now about 1.50m (see A2 plate IXa).

Al-birkah connects with Al-bir which is located in the middle of the open courtyard of the castle, via a subsurface canal (conduit) in the southern wall of Al-birkah. This conduit goes through the southern wall of Al-birkah and continues underneath the wall of the castle until it reaches Al-bir (see A2 plate IXb).

The castle is 10m south and parallel to Al-birkah, it is square and measures about 20m x 20m. Each corner of the castle has a circular tower and each wall of Al-birkah has two buttresses placed on the exterior

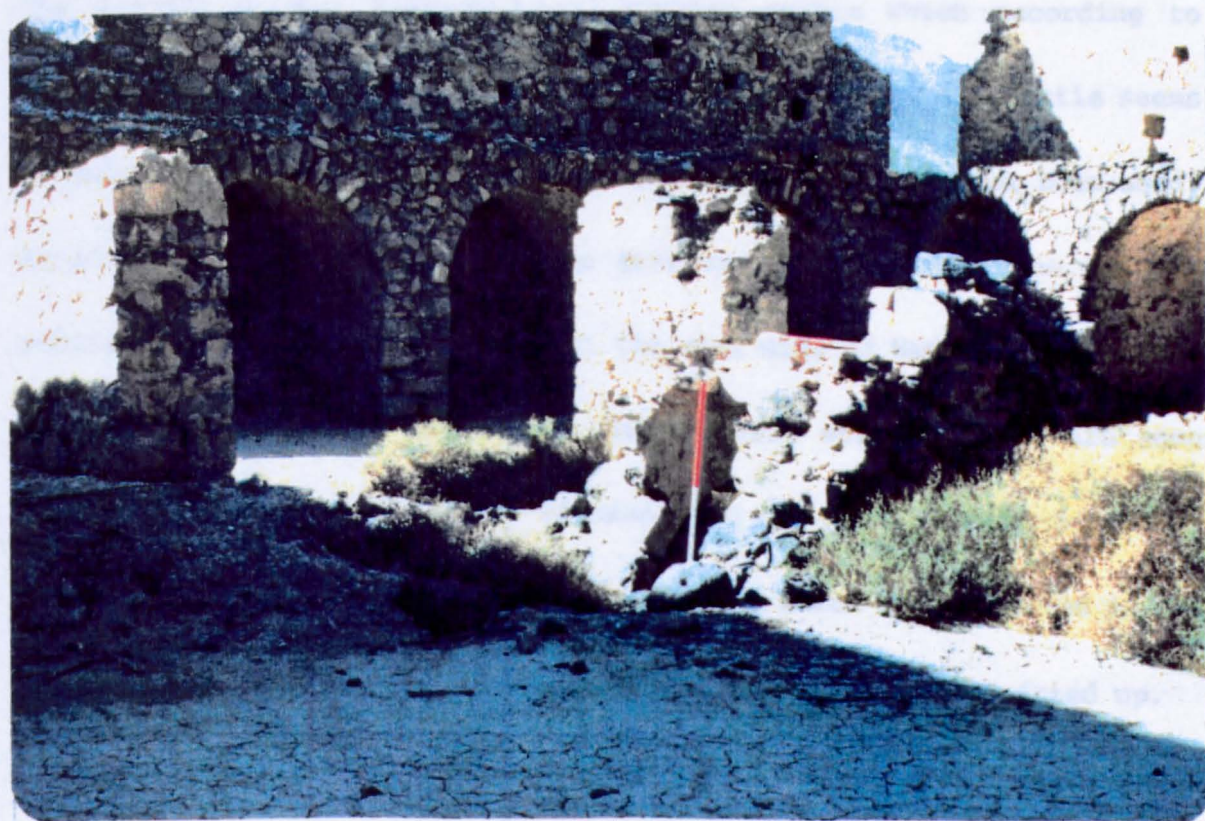


Appendix 2 Plan iii: Birkah and a castle at Shajwah



A2 Plate ixa

A birkah in topographic context north of the castle. Some indication of remaining depth can be seen.



A2 Plate ixb

The bir in the castle courtyard. Lined with cut stone and with arches to support water extraction from the shaft.

side. The buttresses are semi-circular in shape. The entrance to the castle is placed in the middle of the southern wall. The castle is built of stones and has an open courtyard in the middle of which is a dug well. This has a circular opening with an interior diameter of about 2.5m. It is lined with stones.

Two arches have been erected on the shaft of the well and above each arch a wall was constructed. These two walls run parallel to one another and are used to lift water from Al-bir. Al-bir within the castle was used to provide Al-birkah with water, particularly when there was no rain.

The castle is very similar to Al-Muazzam castle which according to historical sources, dates back to the Ayubites period. The castle seems to have been repaired because there is evidence that wood has been used. Al-birkah and the castle are now surrounded by farms. The pilgrim station is situated on flat land at the east side of Wadi Al-Hamd. The area is rich in water resources, particularly wells. There are some remains of ancient foundations of canals in the area, which, according to local residents brought water from springs which were located in the mountains in the region. However, these springs have now dried up.

Site Number: 54

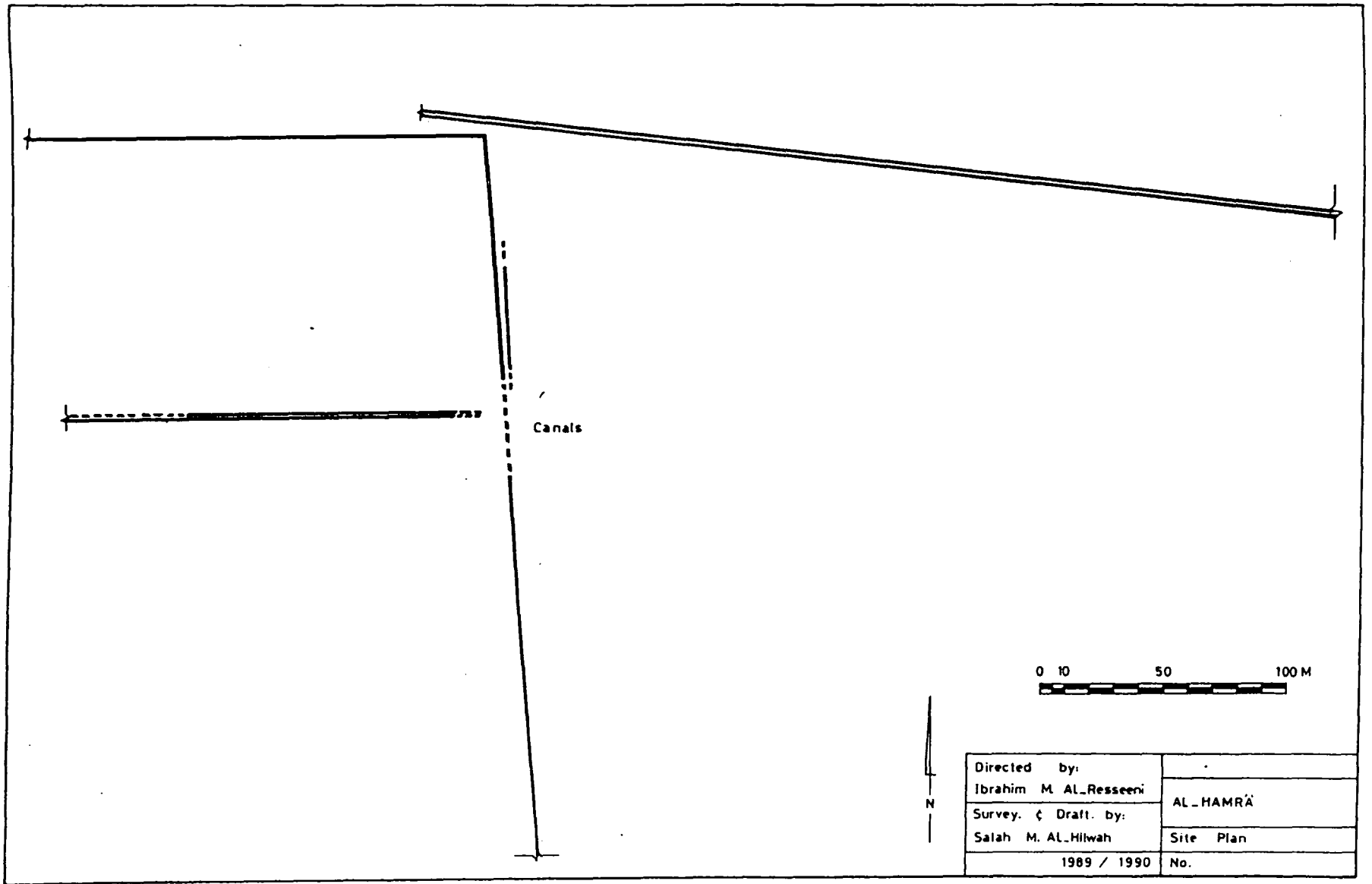
Route Identified: I4

Site Type: Simple

Al-Hamra

This site is about 15km north-west of Abar Nasif and about 4km east of the railway station at Al-Buwayr. The site consists of a network of surface canals constructed in brown sandy stone (see A2 plan iv & folder 18). These surface canals spread over a wide distance and according to the local residents they brought water from springs which were situated in the mountains. The canals fed farms and cultivated land en route but unfortunately they have now dried up and the farms have become fallow lands. The surface canals are very large, their width is about 1.40m and each wall of the canal is about 70cm wide (see A2 plate Xa and b).

At about 6km east of the site of Al-Hamra, there is a narrow mountainous way, called Al-Madraj (bleacher), it is paved with stones to facilitate the pilgrim caravans. It is quite usual to see these paved mountainous routes in this area. There are other similar routes at Riya Harsha; at Al-Rasifah; at Darb Zubaydah (between Iraq and MAKKA); at Al-Riqah and Al-Dharibah. According to the senior citizens who used to live in this area, the mountainous, paved way is shorter and easier than the road which passes through the valley and well used by the pilgrim caravans to avoid the rough and difficult terrain. The area is inhabited by



205a

A2 Plan IV: Network of subsurface canals at Al-Hamra



A2 Plate xa

One of the water gathering canals scattered over this area. Built with cut stone and apparently again plastered with gypsum.



A2 Plate xb

The remains of a large surface canal built with roughly cut, black stone. The wall width is approximately half that of the channel width. No indication of depth is available.

farmers, some cultivate the land, others raise camels and sheep. Curiously despite the extensive early route engineering there is no evidence of water resource development.

Site Number: 52

Route Identified: I4

Site Type: simple

Abar Nasif or Bir Nasif

This pilgrim station was mentioned by some Arabic and Islamic geographers and travellers who passed by it when they made a pilgrimage to MAKKA. It is situated about 16km north-west of Buwat and 3km north of the village of Al-Mililyh, about $24^{\circ} 52'N$ and about $39^{\circ} 12'E$. It is situated to the west of wadi Al-Hamd.

There is a castle which is named Qalat Tawfiq (castle of Tawfiq). The castle is square in shape, built of stones and appears to have been repaired because there is evidence of wood having been used in some parts, particularly the roof (see A2 plate XIa).

In the north-eastern corner of the castle there is a dug well, it has a small circular mouth opening with a diameter of about one meter. It is stone lined with relatively small stones. Its depth is about 6m and there is no water remaining in it (see A2 plate XIb).

There is also a railway station with some traditional buildings.



A2 Plate xia

The castle ruins at Qalat Tawfiq.



A2 Plate xib

Circular stone lined well, northern corner of the castle.

Al-Mililyh became quite a large village due to a modern paved road which runs through it; this road is a branch of the one which runs between Medinah and Tabuk. The village was extended to include the pilgrim station of Abar Nasif. There are many farms and water supplies are available from pumped wells. However, ancient water resources other than the castle well are no longer visible.

Site Number: 50

Route Identified: I4

Site Type: simple

Buwat - Railway Station

This railway station is situated about 20km north-west of Al-Hafirah at wadi Buwat (24° 43'N 39° 10'E). It consists of two traditional stone buildings

(used as residences for officials, soldiers and passengers). This barren uninhabited area had no remains of water resource structures.

Site Number: 49

Route Identified: I4

Site Type: simple

Al-Mindassih (Thu Khushub)

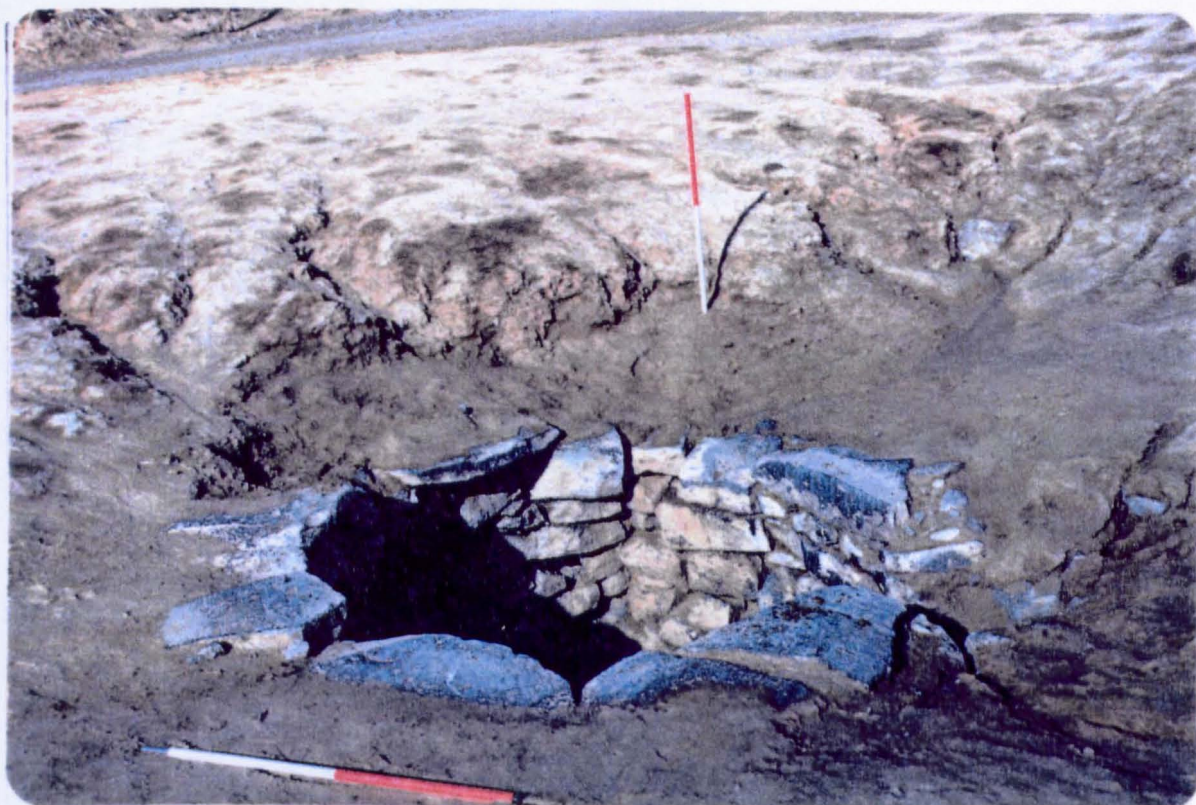
This pilgrim stopping place is situated about 40km north-west of Medinah

and about 12km south-east of Buwat on $24^{\circ} 38'N$ and about $39^{\circ} 20'E$ on the Syrian and Egyptian pilgrim route which leads to Medinah.

We were unable to find the pilgrim station, Thu Khushub, which was mentioned as the pilgrim station on the Syrian and Egyptian route. We asked some senior citizens who we thought would be familiar with the area if they knew of its whereabouts but they were unable to give us any information. However, intuitively, we placed Thu Khushub at Al-Mindassih in wadi Al-Hamd. The site extends for quite a distance along the valley, it has abundant ground water and there are wells and farms with a variety of crops and plenty of palm trees.

An inspection of the area showed that there are a number of ancient abyar (wells) scattered around and some are selected as examples and are described below.

The first bir has a circular mouth opening with a diameter of about 2m. It is a hand dug well, lined with stones from top to bottom. Its depth is about 7m and although it still has water in it, it is abandoned (see A2 plate Xiia). The second ancient bir is located about 50 meters to the west. It also has a circular mouth opening which has a diameter of about 2.50m, lined with stones with water at about 7m depth. It too has been abandoned (see A2 plate Xiib). The third well is called bir Al-Dhiaini, it is the remains of a bir which is now filled in with sand right to the top and only some parts of its mouth opening are clearly



A2 Plate xiia

An ancient, circular dug well, lined with rough cut stone.



A2 Plate xib

A further ancient circular well built with rough cut stone showing nearby farms.

visible. It seems to have a circular mouth opening with a diameter of about 0.7m. The shaft leading from the mouth opening is probably lined with stones, its width is about 50cm and it is plastered with gypsum. There are the remains of the foundations of a wall located at about 22m west of Al-bir, these form the shape of the letter U around the well, its eastern side is missing. The remaining part of the wall consists of stones and its width is about 50cm. It is probably the remains of a birkah (water tank)(see A2 plan V & folder 19). All the ancient wells are found among or near to the farms. The area consists of arable lands and the farmers cultivate a variety of crops as well as palm trees. According to the local residents the latter bir (well) was a watering place for the pilgrims.

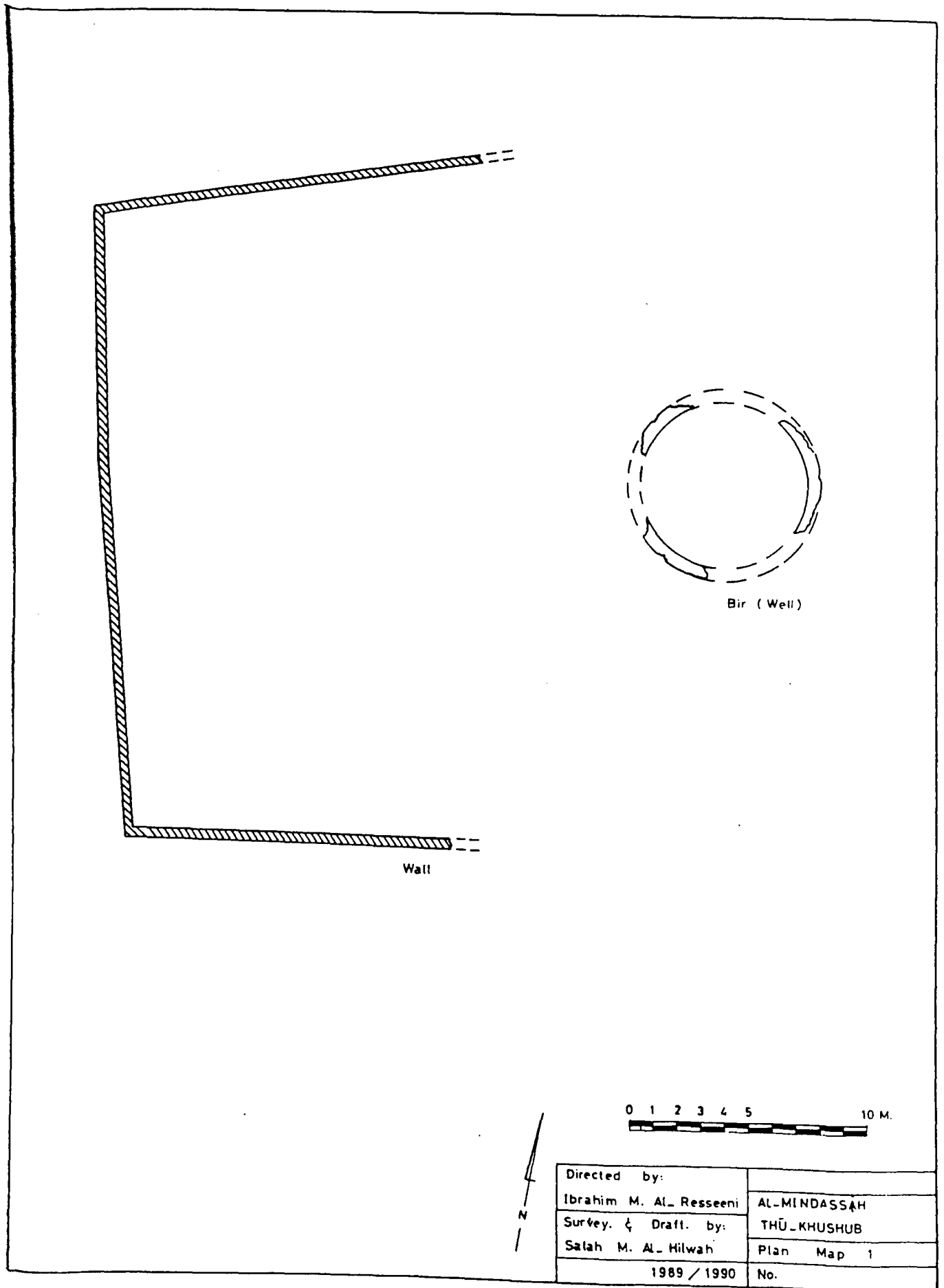
Thu-Khushub was mentioned by some early Islamic writers as a halting place on the pilgrim inland route. Ibn Khurdadhabah (1889 p150) mentioned Thu-Khushub when he enumerated the way stations on the inland route from Syria and Egypt to Medinah. He placed it south of Al-Suwaida and north of Medinah.

Site Number: 48

Route Identified: I4

Site Type: simple

Al-Hafirah - Railway Station



Appendix 2 Plan V: Bir and the remains of birkah at Al-Mindassih (Thu Khushub)

This railway station is situated about 19km north-west of Mukhit station on about $24^{\circ} 36'N$ and about $39^{\circ} 22'E$.

It consists of some traditional buildings which were built near the station for officials, soldiers and passengers. In contrast to the previous site near the station at wadi Al-Hamd there is a hand dug well, it has a circular mouth opening, the diameter of which is about 1.40m, it is now choked up with sand and the remainder of its depth is about 2m, of course it is dried up. The area is waste land and uninhabited (see A2 plate Xiii).

Site Number:47

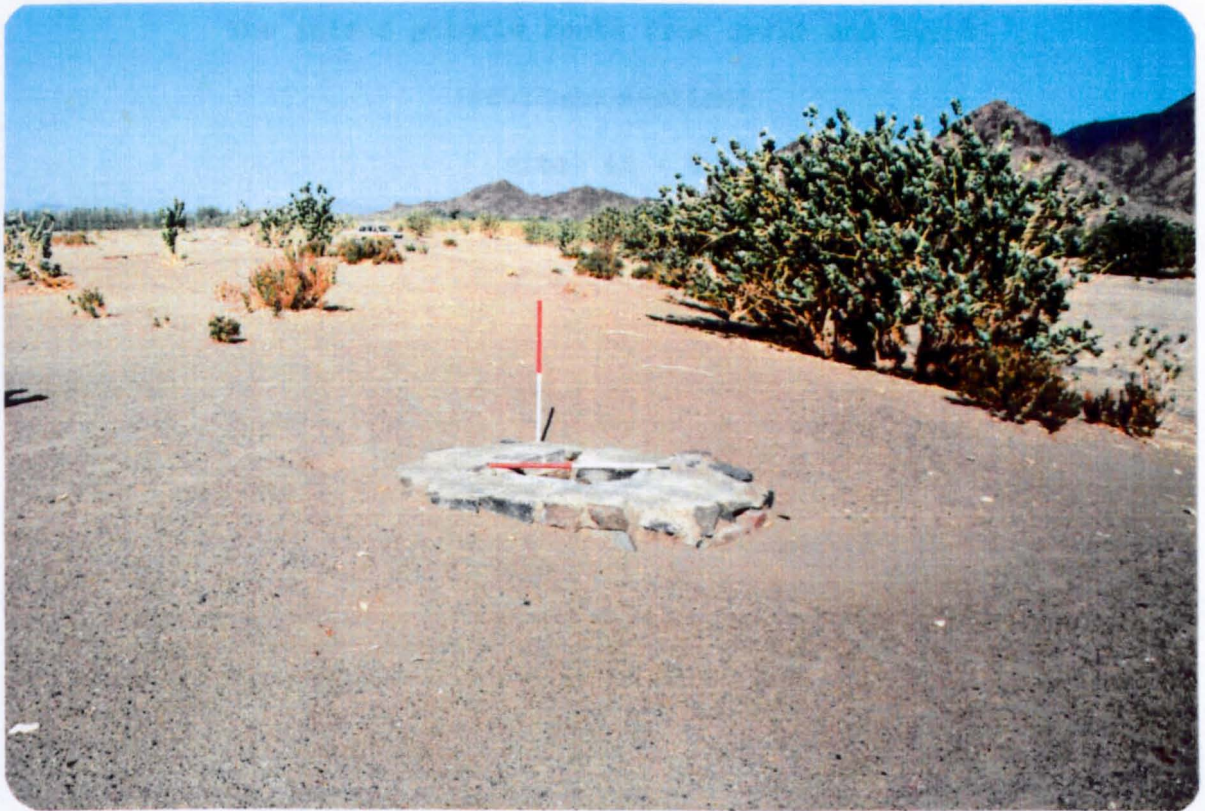
Route Identified: I4

Mukhit - A Railway Station

This railway station is located about 10km north-west of Medinah, about $24^{\circ} 30'N$. and about $39^{\circ} 28'E$.

Although well populated with ample housing and some industry our surveys of this area showed no evidence of significant past water resource development.

Site: Al-Hafirah (railway station)



A2 Plate xiii

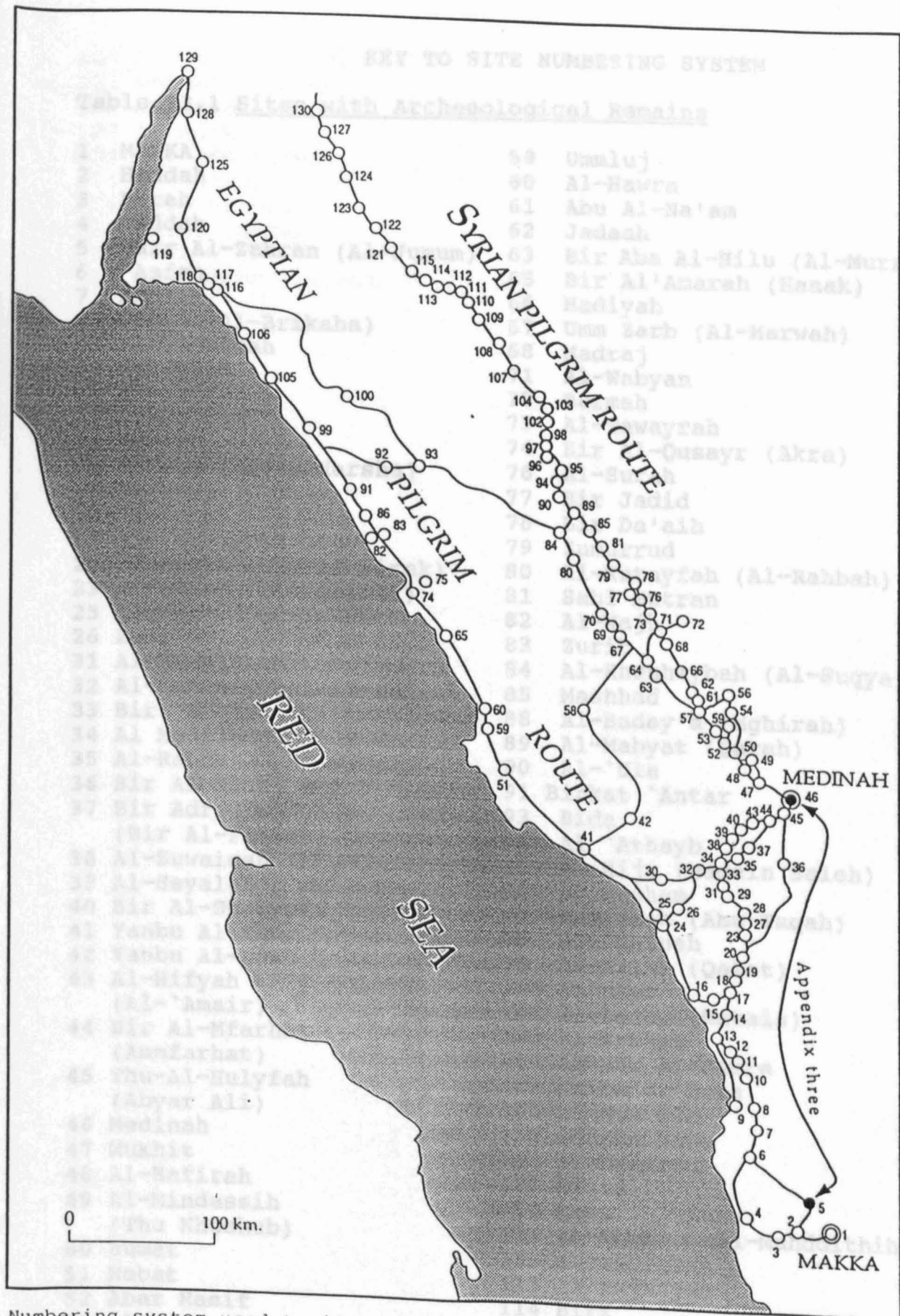
Ancient, circular well built of cut stone, located a wadi Al-Hamd.

A P P E N D I X 3

The inland pilgrim route from Syria and Egypt

(southern section)

sites 45 - 6



Numbering system used to identify sites for investigation

- 59 Al-Hawra
- 60 Al-Hawra
- 61 Al-Hawra
- 62 Al-Hawra
- 63 Al-Hawra
- 64 Al-Hawra
- 65 Al-Hawra
- 66 Al-Hawra
- 67 Al-Hawra
- 68 Al-Hawra
- 69 Al-Hawra
- 70 Al-Hawra
- 71 Al-Hawra
- 72 Al-Hawra
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- 110 Al-Hawra
- 111 Al-Hawra
- 112 Al-Hawra
- 113 Al-Hawra
- 114 Al-Hawra
- 115 Al-Hawra
- 116 Al-Hawra
- 117 Al-Khurybah
- 118 Al-Hawra ('Uyun al-Qasab)
- 119 Maqqa

KEY TO SITE NUMBERING SYSTEM

Table A3.1 Sites with Archaeological Remains

1	MAKKA	59	Ummluj
2	Haddah	60	Al-Hawra
3	Bhrah	61	Abu Al-Na'am
4	Jeddah	62	Jadaah
5	Marr Al-Zahran (Al-Jumum)	63	Bir Aba Al-Hilu (Al-Murr)
6	`Asfan	65	Bir Al'Amarah (Hanak)
7	Khulis	66	Hadiyah
8	Qudid (Al-Brikaha)	67	Umm Zarb (Al-Marwah)
9	Al-Qadhimah	68	Madraj
10	Kulayyah	71	Al-Wabyan
11	Al-Jujfah	72	Burmah
12	Al-Jujfah	73	Al-Tawayrah
13	Rabigh	74	Bir Al-Qusayr (Akra)
14	Harsha (Riy`a Harsha)	76	Al-Surah
15	Al-Abwa	77	Bir Jadid
16	Masturah	78	Bir Da'aih
17	Bir Mubayrik	79	Zumurrud
20	Al-Suqya (Umm Al Birak)	80	Al-Kutayfah (Al-Rahbah)
23	Al-Qahah (Bir Qaidhi)	81	Sahl Mutran
25	Al-Jar	82	Al-Wajh
26	Badr	83	Zurib
31	Al-Ruwaithah	84	Al-Khushaybah (Al-Suqya)
32	Al-Safra (Wadi Al-sufra)	85	Mashhad
33	Bir `Abbas	88	Al-Baday'a (Mghirah)
34	Al Misiheed	89	Al-Mabyat (Qarah)
35	Al-Rauha	90	Al-`Ula
36	Bir Al-Mashi	91	Birkat `Antar
37	Bir Adriwish (Bir Al-Fraish)	93	Bida
38	Al-Suwaiah	94	Al `Athayb
39	Al-Sayalah	95	Al-Hijr (Madain Saleh)
40	Bir Al-Sharyofi	96	Al-Mazham
41	Yanbu Al-Bahr	97	Buwijrah (Abu Taqah)
42	Yanbu Al-Nakh	98	Al-Juninah
43	Al-Hifyah (Al-`Amair)	99	Al-Azlam (Qalat)
44	Bir Al-Mfarhat (Ammfarhat)	100	Shaghab
45	Thu-Al-Hulyfah (Abyar Ali)	102	Al-Agray (Mutala)
46	Medinah	103	Al-Brikah
47	Mukhit	104	Al-Dar Al-Hamra
48	Al-Hafirah	105	Dhiba or Duba
49	Al-Mindassih (Thu Khushub)	106	Al-Muwelih
50	Buwat	107	Khashm Sana
51	Nabat	108	Al-Muazzam
52	Abar Nasif	109	Disad
53	Al-Buwayr	110	Hams
54	Al-Hamra	111	Al-Akhdhar (Al-Muhddithih)
56	Shajwa	112	Mustabighah
57	Istable `Antar	113	Al Awjaryah
		114	Birk
		115	Al-Uthayli
		117	Al-Khuraybah
		118	`Ainunah (`Uyun al-Qasab)
		119	Maqna

- 120 Madyan (Al-Bida)
- 121 Tabuk
- 122 Muhtaib
- 123 Al-Hazm
- 124 Bir Ibn Hirmas
- 125 Al-Sharaf
- 126 That Al-Hajj
- 127 Halat `Ammar
- 128 Haql
- 129 Al-`Aqaba (Ailah)

Table A3.2 Sites without Archaeological Remains

18	Bustan
19	Al-Thibrah
21	Bir Salih
22	Al-Sidr
24	Riyis
27	Bir Al-Hafat
28	Al-Watayah
29	Bir Al-Gnonom
30	Bir Al-Sayd
58	Alis
69	Al-Amair
70	Bir Al-`Am
86	Bir Haramil
87	Al-Shihiban Castole
92	Abu al-Qazaz
101	Shewaḡ
116	Shormah

Sites which are numbered on the map but are not named on this list do not have any evidence of ancient water resources or any mention in historic pilgrimage literature.

Site numbers 55, 64 and 75 were not used.

Site Number: 45

Route Identified I4

Site Type: Religious

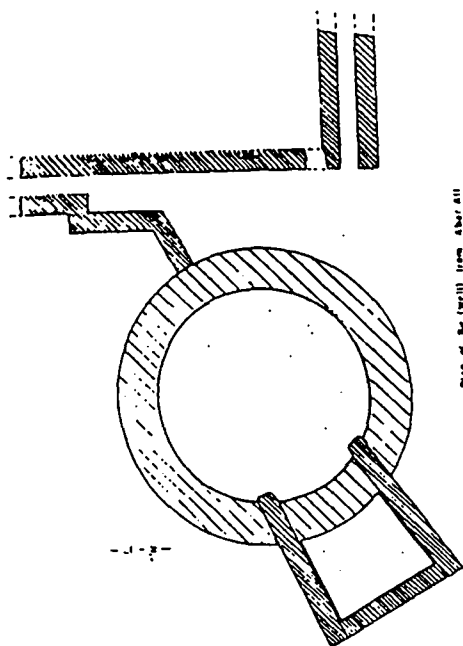
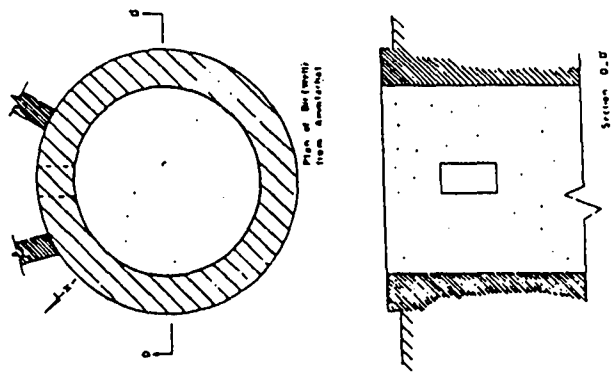
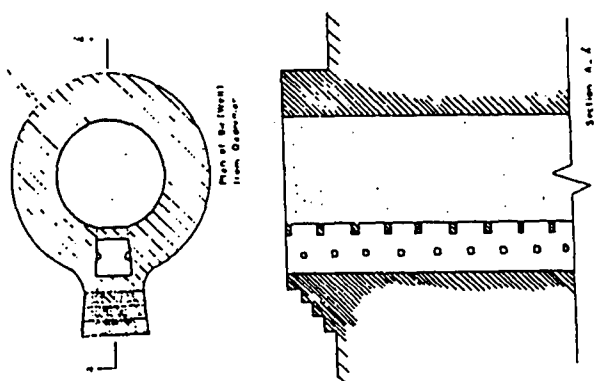
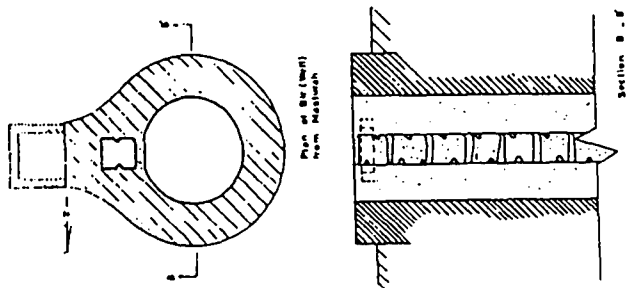
Thu Al-Hulyfah (Abyar Ali)(Al-Shajarah)

This site is situated about 7km south-west of Medinah, about 24° 25' North and about 39° 32' East. It is a Miqat (rendezvous) where the pilgrims who want to go to MAKKA perform Al-Hajj (pilgrimage) (Yaqut 1955 Vol. 2, P. 295). They must start the rites of the pilgrimage from there. It is also a village and an important pilgrim way station. Ibn Khurdadhabah (1889 p. 130) says from Medinah to Al-Shajarah is 6 miles and it is a Miqat for the inhabitants of Medinah. Qudamah (1889 p. 187) placed Al-Shajarah 6 miles from Medinah when he enumerated the way stations from Medinah to MAKKA. He also said that it consists of abyar and birak, and that it is not a halting place but a Miqat.

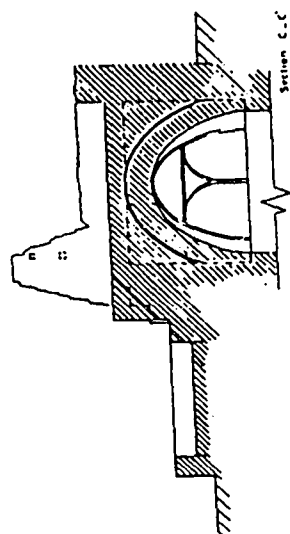
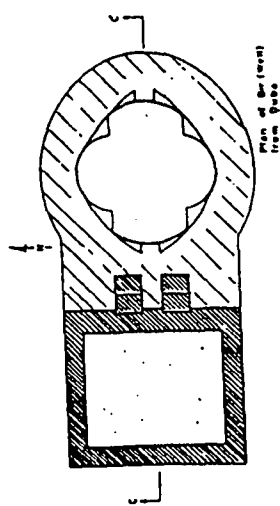
The pilgrim station lies at wadi Al-Aqiq, which runs from south to north and extends over a large area. It consists of a great number of ancient wells. Almost all these wells are similar in their architectural features and constructional style but different in width. The wells have been lined with various untrimmed black stones which are available from the surrounding mountains. The stones, with which the wells have been lined, differ in size. There are two columns which have been erected opposite to one another at the opening of the shaft of the well to lift water in a water scoop. They have circular mouth openings. These ancient wells at Thu Al-Hulyfah are connected with the water collection trough (see A3 plan I & folder 20 and plate I).

Site Number: 44

Route Identified: I4



plan I



Directed by
 Ibrahim M. al-Masri
 Survey & Draft by
 Salah M. al-Hamad
 The General Types of
 Abar (tonks)
 Plan (Section)
 1989 / 1990 No.

Appendix 3 Plan I: The different types of abyar (ton left)

Site: Thu-Al-Hulyfah (abyar Ali)



A3 Plate i

One of a number of abyars scattered throughout the area. It is built of untrimmed stone and has crude columns used to support apparatus to lift the water in a water scoop. A sloping channel leads from the far side and is presumed at one time to have lead to a water hold tank.

Site Type: simple

Bir Al-Mfarhat (Ammfarhat)

Bir Al-Mfarhat is situated about 22km SW of Abyar Ali Thu Al-Hulyfah and about 50m south of the paved road that goes between Medinah and MAKKA on about 24° 23'N and about 39° 21'E. The site is considered to be a way station lying on the road between Medinah and MAKKA. It has several wells, one of which is likely to be ancient.

Al-bir is quite a remarkable dug-well. It has a circular mouth opening which has an inside diameter measurement of about 5m. It is lined with stones which are available locally around the area where the well was dug. The depth of Al-bir is about 16m. About 11m from the top it is lined with stones and the rest is dug into the rock. It still has water remaining in it, but the water is brackish. The width of wall which forms the mouth opening is about one meter. There are the remains of a column which rises to the wall of the mouth opening at about 60cm. Al-bir lies on the northern bank of Al-wadi and is surrounded by mountains. (see A3 plan ii & folder 20)

There are two new basins, one is located about 2.70m north of Al-bir, the other is located at about the same distance but towards the north-west.

These two basins may have been used for animals to drink at. However, Al-bir is now abandoned (see A3 plate ii).

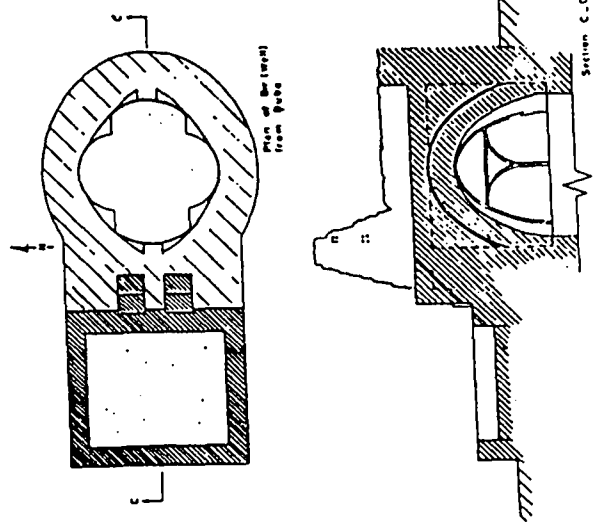
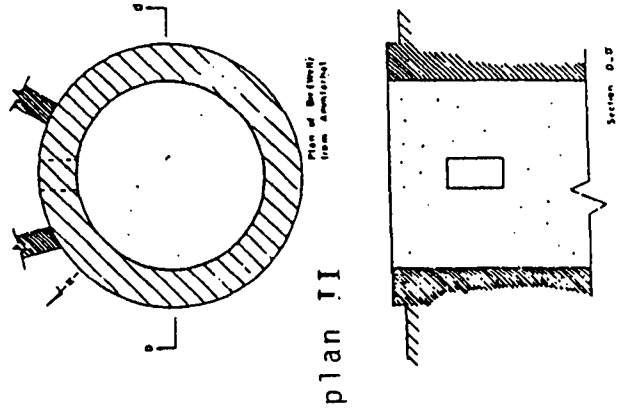
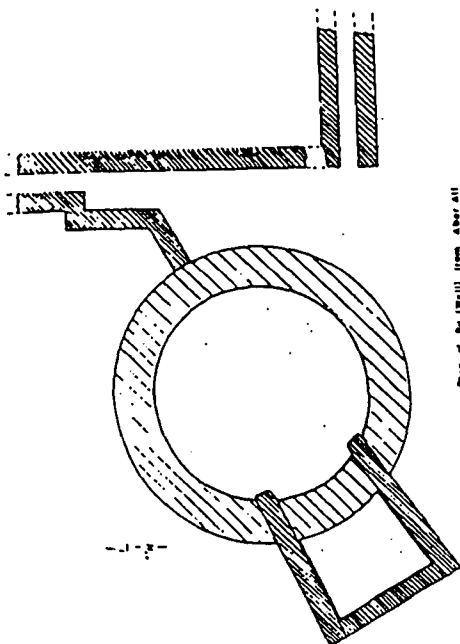
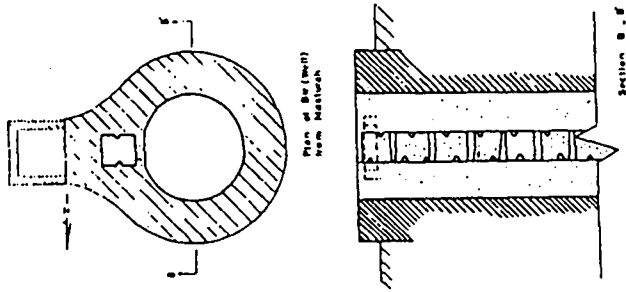
Site Number: 40

Route Identified: I4

Site Type: simple

Bir Al-Sharyofi

This bir is situated about 12km north of bir Adriwish, and about 2km west of the paved road that runs between Medinah and MAKKA. It lies about



Directed by	...
Drawn by	Yusef M. Al-Bakri
Survey (Drawn) by	Abur (West)
Scale	1:1000
Date	1983 / 1980
Page	1 of 1

Appendix 3 Plan ii: The different types of abvar (bottom right)

Site: Bir Al-Mfarhat (Ammfarhat)



A3 Plate ii

A well constructed ancient, circular dug well, lined with trimmed stones and plastered with gypsum.

24° 17'N and about 39° 16'E. Al-bir is located at wadi Malal. Basha (1983 Vol. 2 p. 218) says the pilgrim caravans travelling from Bir 'Abbas towards Medinah take 12 hours to arrive at Bir Al-Sharyofi. It is a well with fresh water. It is a notably, deep, circular dug-well, and has a mouth opening with an inside diameter which measures about three meters. The depth of Al-bir is about 40m, the top 34m is lined with stones, the remainder, is dug from the rock. The opening of Al-bir is surrounded by a heap of earth so it is raised above ground level (see A3 plate iiii).

A rough, deep cave has been cleaved into the east side of the well, it has a square section, its width is about 80cm and it sinks into the wall about 80cm. It goes to the bottom of the well. The deep cave serves as a stairway for going down to the bottom of the well, probably for cleaning purposes or to retrieve anything that may have fallen in (see A3 plate iiib). Al-bir still has water but nevertheless is has been abandoned because the surrounding area is uninhabited.

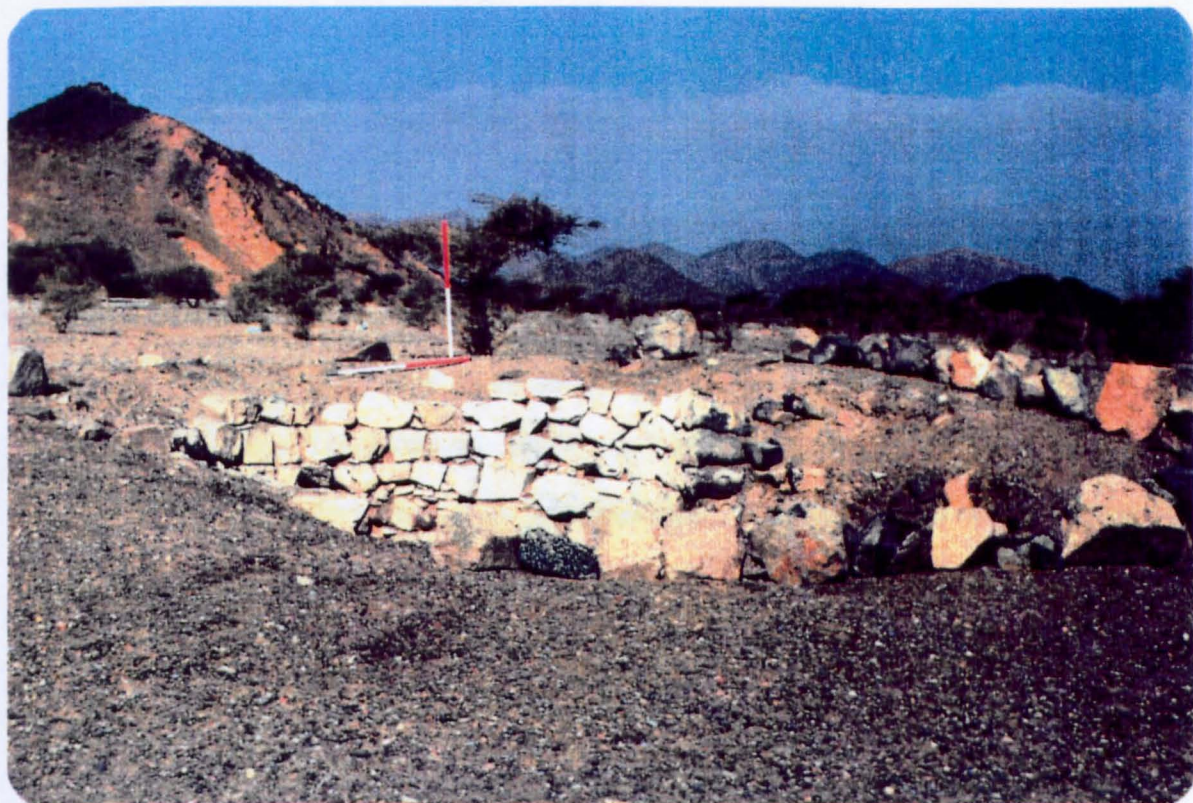
Site Number: 39

Route Identified: I4

Site Type: simple

Al-Sayalah

This is a pilgrim station which is mentioned by a number of Arabic and Islamic geographers and travellers. Ibn Khurdadhabah (1889 p. 130) when he listed the way stations between Medinah and MAKKA placed Al-Sayalah 19 miles from Malal. He also says it consists of abyar. Yaqut (1955 Vol 3 p. 292) says Al-Sayalah lies on the pilgrim route between Medinah and MAKKA. Al-Bakri (1983, Vol. 3 pp 769-770) describes Al-Sayalah as an important village 29 miles from Medinah and 12 miles from Al-Rauha. He



A3 Plate iiia

An ancient large circular dug well, located at the wadi Malal is lined with roughly cut stone from the top to about 34 m depth and the remaining depth about 6m, appears to be dug through the rock.



A3 Plate iiib

The interior of the well where a deep crack in the eastern side of the well is used as a stairway.

also says Al-Sayalah consists of abyar the largest of which is called Bir Al-Rashid, its opening is 9 cubits in diameter. Al Hamadani (1974 p 337) places Al-Sayalah 23 miles from Medinah and 24 miles from Al-Rauha. He also provides its latitude as $23^{\circ} 40'N$. Al-Harbi (1981, p 442-444) says there are a number of abyar at Al-Sayalah. He also adds that there is a spring located one mile from Al-Sayalah named Al-Suwaigah which has abundant fresh water. The area is inhabited, there are farms, houses and palm groves. It lies about $24^{\circ} 15'N$ and about $39^{\circ} 12'E$ about 3km north of Al-Suwaigah and about 13km SW of bir Sharyofi. It is located at wadi Al-Sharfah which runs from south to north between two ranges of mountains, Jebal (mountains) Al-Rrghaib to the east and Jebal Al-Zir to the west. This site is about one kilometer from a very small, new village (between 10-15 houses). The site comprises a number of Abyar (wells) and cisterns which are the water resources. I selected two birs, one is an ancient well and the other is relatively modern.

The ancient dug-well is quite large and remarkable in the quality of its design and construction. It has a circular mouth opening and has an internal diameter measurement of 5m. It is lined with granite stones from the top to about 8m down and about 4m has been dug into the rock. It is now dried up and abandoned. At about 20m south of the former bir there is a new bir, its depth is about 17m and it still has water in it. The water is used only for humans and animals. Comparing the depth of water between the two wells would suggest that the water level has decreased in the former bir by about 5m.

The second water resource is a cistern, it has been built at the foot of Jebal Al-Zir (mountain of Al-Zir) and is a rectangular shape. The outside measurement is about 7.65 x 4.45m and the inside measures 5.63 x 3.2 m. The cistern is made of small stones and plastered both inside

and out with gypsum. The width of the cistern's walls differs, the west and east walls are about 70cm wide, while the south and north walls are about 95cm wide. There are three openings in the eastern wall, each of them rectangular in shape, and about 18cm wide and 30cm in height. In the western wall there are two openings of dimensions similar to those on the eastern wall. In the middle of the cistern, there is an arch about 75cm wide and about 37cm thick. It rises about 1.20m above the floor of the cistern and carries the roof. The ceiling of the cistern has been constructed in the shape of a half upturned barrel, outside the roof is flat and surrounded by walls which rise about 50cm above the level of the flat roof. In the southwest corner of the cistern there is a structure which is shaped like a quarter circle. It has a radius of about 80cm and its height is about 50cm. The northern part of the cistern has been destroyed, so it is very difficult to tell exactly where the entrance to the cistern was located. However, the cistern is similar to those cisterns which have been found on Darb Zubaydah (see A3 plan iii & folder 21 and plate iv a, b). Since the cistern is elevated above the surrounding land it is well suited to the gravity feed of water from the cistern but we have no evidence to explain how the cistern was filled.

Site Number:38

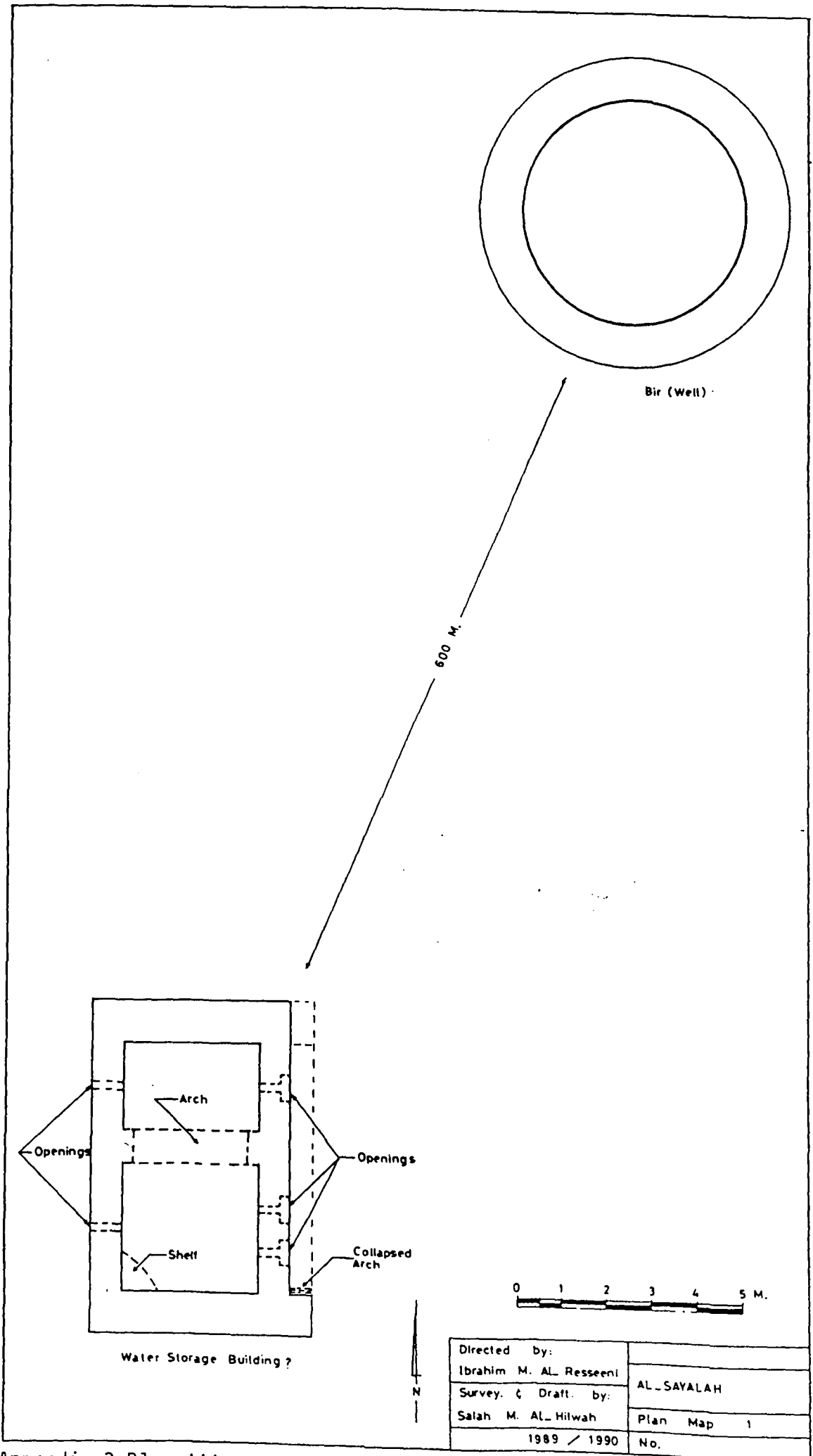
Route Identified: I4

Site Type: simple

Al-Suwaïqah

The site is situated about 21km north of Al-Rauha and about 3km south of Al-Sayalah, on about 24° 14'N and about 39° 11'E.

The site consists of the following major water resources (see A3 plan iv



Appendix 3 Plan iii: Bir and cistern at Al-Sayalah

Site: Al-Sayalah



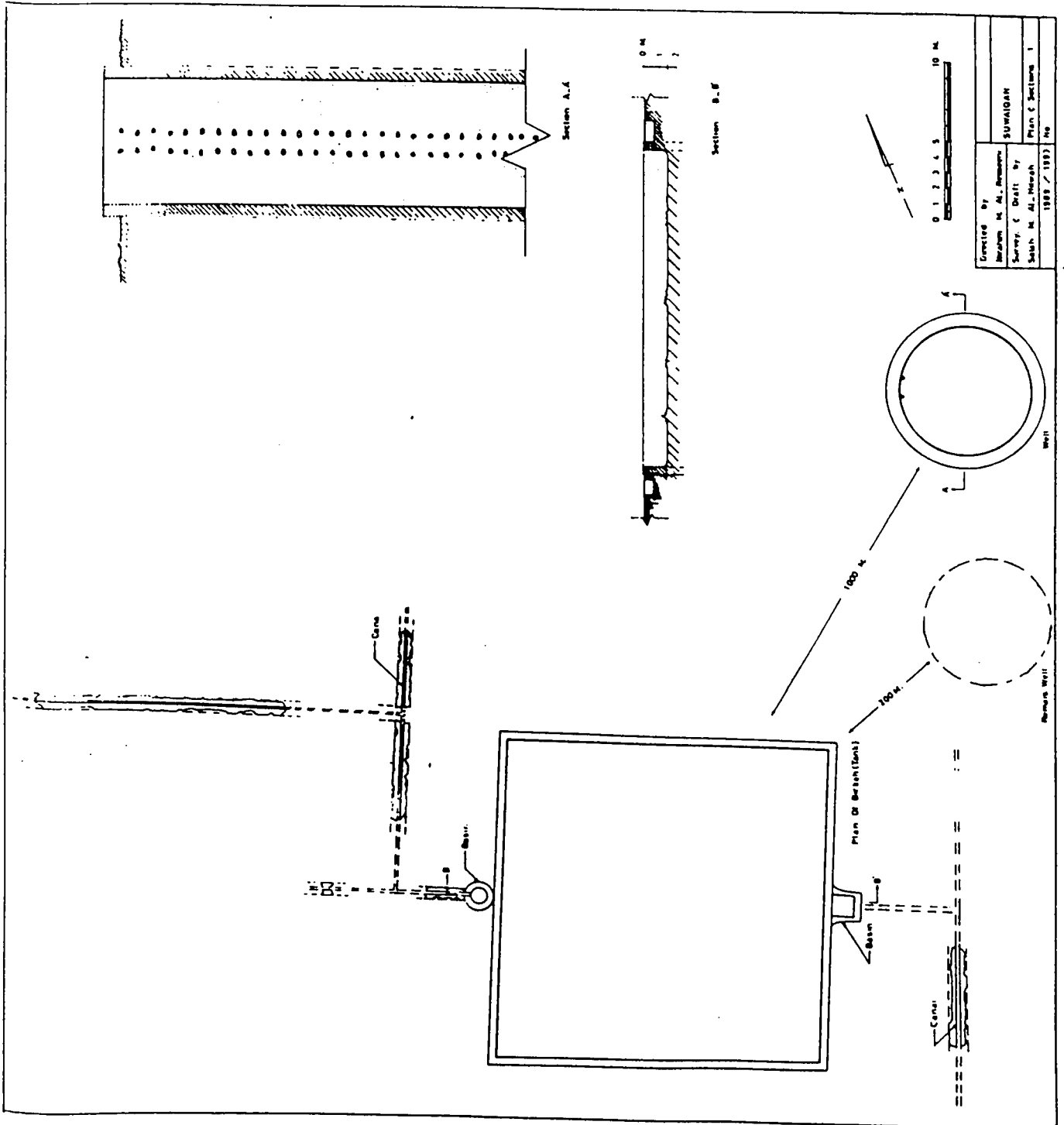
A3 Plate iva

A construction which may be a cistern is constructed with stones and is designed as a series of arches.



A3 Plate ivb

Openings are on the eastern wall which appears to have been at least partially plastered.



Appendix 3 Plan iv: Abyar, birkah and distribution system at ^{AL-}Suwaiah

& folder 22).

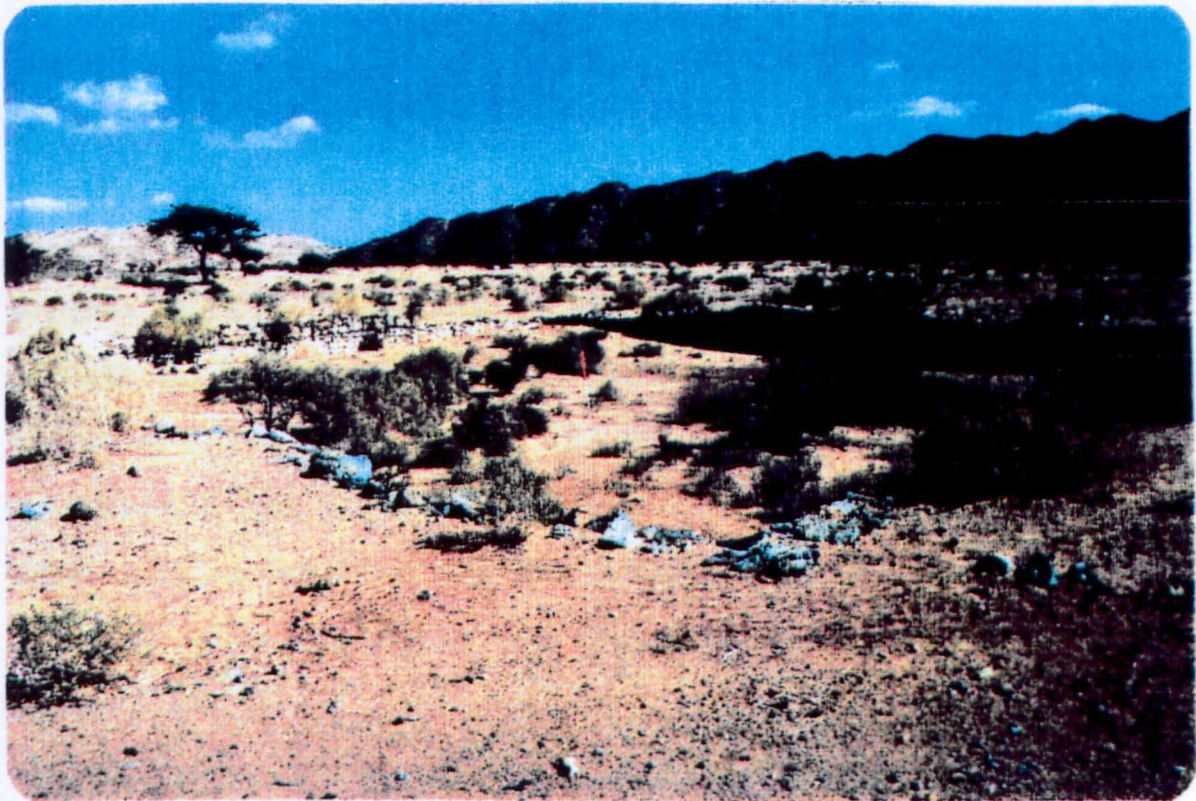
1. A birkah (water-tank) and canals.
2. A bir (well) and remains of a bir.

Al-birkah is a square about 20 x 20m, built of stones which are available locally from the mountains around the area. It is plastered with gypsum. Al-birkah is choked up with sand and has a remaining depth of about 1.50m (see A3 plate Va).

There is a square basin outside the eastern wall of Al-birkah, measuring about 1.35 x 1.35m and 80cm deep. Three of the walls are about 40cm in width, the east wall has been destroyed. There are the remains of a canal in the destroyed eastern wall of the basin. This runs to join up with another channel which runs parallel to the eastern wall of Al-birkah to a distance of about 7.50m. Most of the canal is in ruins, with only 6m remaining, it is about 20cm wide and about 20cm deep, it is built of local stones plastered with gypsum. (see A3 plate Vb)

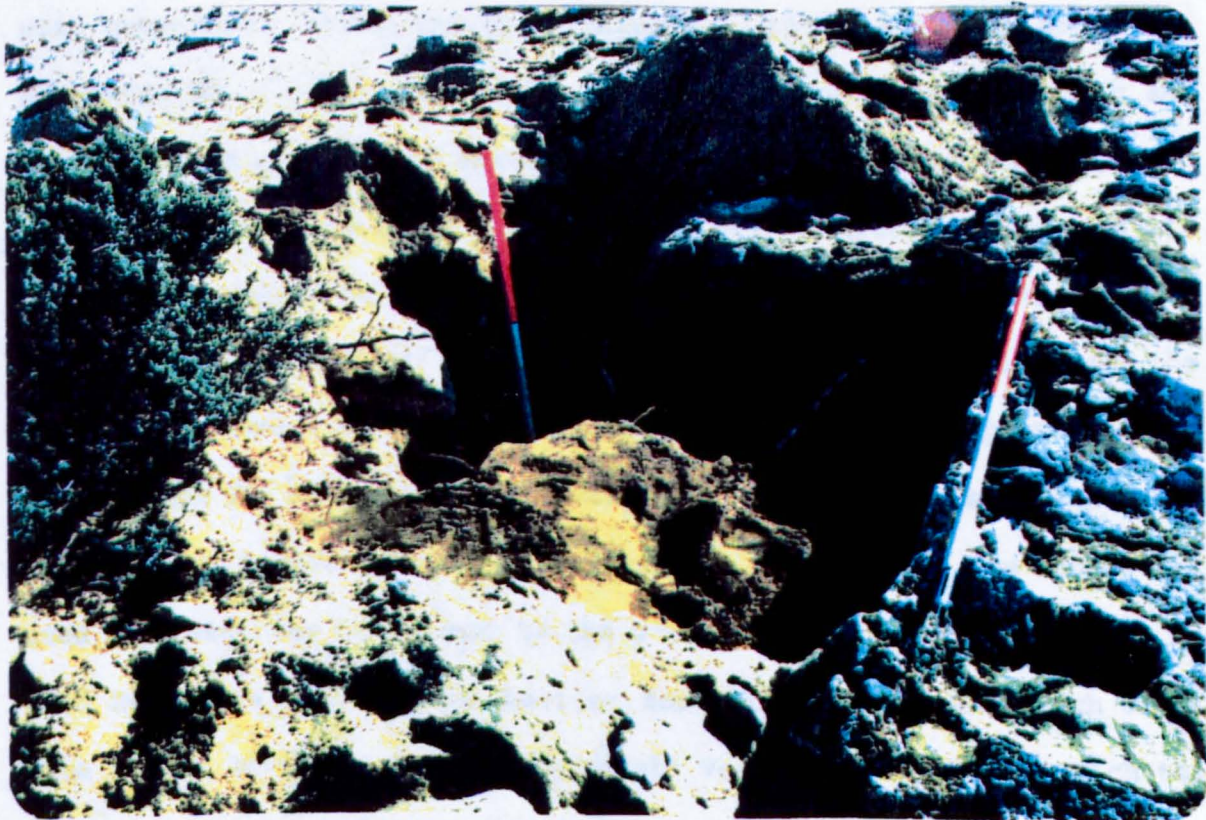
There is circular basin located outside the middle of the west wall of Al-birkah. It has an inside diameter of about one meter and is about 70cm deep. The basin is constructed of stones plastered with gypsum (see A3 plate Vc). Connected to the basin is a visible channel which runs westwards to join another canal, about 6m from the water tank. That canal runs northwards and parallel to the western wall of Al-birkah. Another canal joins up with it and runs westwards to join the main canal which runs alongside the foot of the mountains. This main canal running at the foot of the mountains, probably fed Al-birkah with water from a spring or springs which have now dried up.

Almost all the canals have been built at ground level and were constructed with stones plastered with gypsum. The two basins which were mentioned above have been cleaned up and are plastered with gypsum.



A3 Plate va

A general view of Al-birkah indicating its remaining depth.



A3 Plate vb

A small square basin linked to the eastern wall of Al-birkah which is built of cut stone and connects to a stone channel which links to the basin. It may have served as a sediment trap.

There is no indication that the basins connect to Al-birkah from the bottom; probably, the connection between Al-birkah and the basins was located at the top but the upper part has been destroyed. Usually, Al-birkah is constructed either at the bottom of a valley or low down so that it is very close to the stream, but birkah Al-Suwaigah has been built quite a long way from the valley. This means that Al-birkah received water from the springs located in the mountains via surface canals.

About 200 meters to the east of Al-birkah there is the remains of a well.

It has a circular mouth opening and has a diameter of about 8m. It is now choked up with sand and is shaped like a pit about 4m deep. People who are familiar with the area told us that it was a well called bir Suwaigah (see A3 plate Vd). The second bir is a really huge dug-well with remarkable architectural features. It is situated about one kilometer NE of birkah Suwaigah. It has a circular mouth opening and has an inside diameter of about 8m. It is lined systematically, with local stones from top to bottom, the depth of the water is approximately 35m and although water remains in there the well is now out of service. The thickness of the wall of the mouth opening is about 80cm and the level of the mouth opening is flush with the level of the ground around it. On the NW side of Al-bir there are alternate projecting stones. The distance between each of the stones is about 80cm. The stones are used as a stairway to descend to the bottom of the well and can also be used by people cleaning the well or for retrieving items which might have fallen into the well (see A3 plate Ve, f). The area in which the well and the water tank is situated is fertile and arable, with abundant plants and trees. According to the old citizens who know the area very well, it was once rich in cultivation with many springs, unfortunately,



A3 Plate vc

A small circular basin is linked to the birkah western wall, it and the connecting canal are built of stone plastered with gypsum.



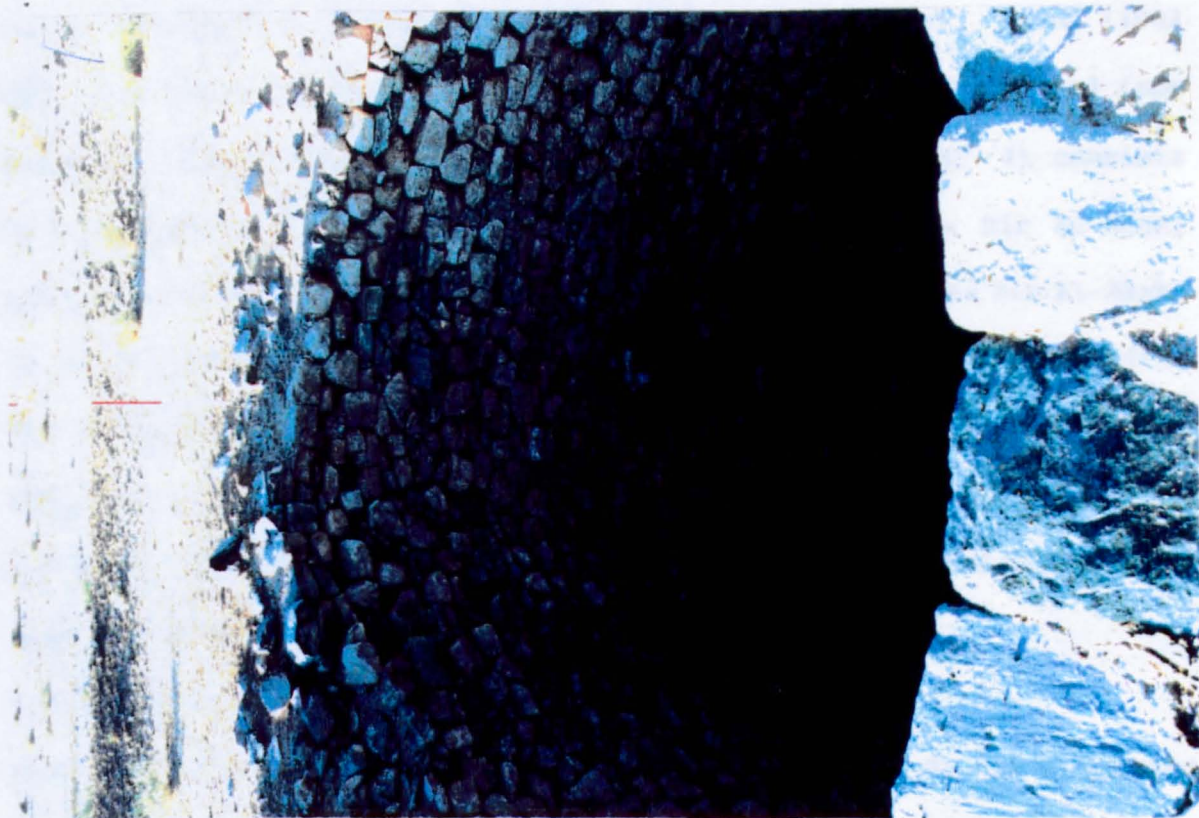
A3 Plate vd

The large pit is the remains of bir called bir Al-Suwaiqah. It is now filled with sand and only a few stones are visible from its shaft.



A3 Plate ve

A large ancient well about 1 km northeast of Al-birkah.



A3 Plate vf

The interior of the well showing the facing stones, some of which project for use as a stairway to descend into the bottom of the well.

it is now empty.

Al-Bakri (1983, Vol. 3 pp. 767, 768) says it is a place near Medinah and was populated then destroyed. Al-Harbi (1981 p. 443) says that about a mile from Al-Sayalah there is a spring known as Al-Suwaiqah with fresh water, houses and palm-groves.

Site Number: 36

Route Identified: I5

Site Type: simple

Bir Al-Mashi

Bir Al-Mashi lies about $24^{\circ} 05'N$ and about $39^{\circ} 32'E$ about 33km south of Abyar Ali or thu Al-Hulyfah. Bir Al-Mashi is a small village and has been mentioned as a pilgrim halting place (way station). Basha (1983 Vol. 2 p 220) mentions Bir Al-Mashi as being on the Al Fara road from Rabigh to Medinah, about 8 hours travelling from Medinah. It consists of a fresh water well. Al-Batanuni (N.D. p 211) says Bir Al-Mashi possesses fresh water. Al-Biladi (N.D. pp 103-104) locates Bir Al-Mashi 38 miles south of Medinah. He says it was the first way station after Thu Al-Hulyfah for travellers on the Al-Fara road to MAKKA. It has wells and canals as its main water resources. There are several wells but I selected the wells which have distinctive architectural characteristics that indicated age. (See A3 Plan V & folder 23).

The northern bir

This is a tremendous and remarkable, circular dug-well. It has an opening mouth of about 5m diameter. Al-bir seems to be old and is lined with black volcanic stones from the top to about 10m down, the rest of its depth, about 4m, has been dug from the rock. There is still water in

it. Al-bir has recently been restored with new modern building materials, particularly cement and there is a machine to raise the water from the well to irrigate the nearby plantations. (See A3 Plate VIa)

Some 10m away there is a canal about 20 meters long, 20cm wide and about 20cm deep. It is built of stones plastered with gypsum. About 70m south of this well there is a second well. It is a large dug-well and has a circular mouth opening with an inside diameter of about 3.5m. It is choked with debris so that the remaining depth is now about 9m. There is no water. Al-bir is lined with stones similar to those used for the northern well. On the north side of Al-bir and about 2m below the mouth opening of the well there is an opening, about 8cm wide and about 1.50m high. This may have been used as a place where a machine was kept for raising water from Al-bir, but Al-bir is now abandoned (see A3 plate VIb). The way station is at wadi Al-'Aqiq, where there is plenty of water available and consequently there are a lot of farms. There are the remains of a citadel (A3 Plan V & folder 23).

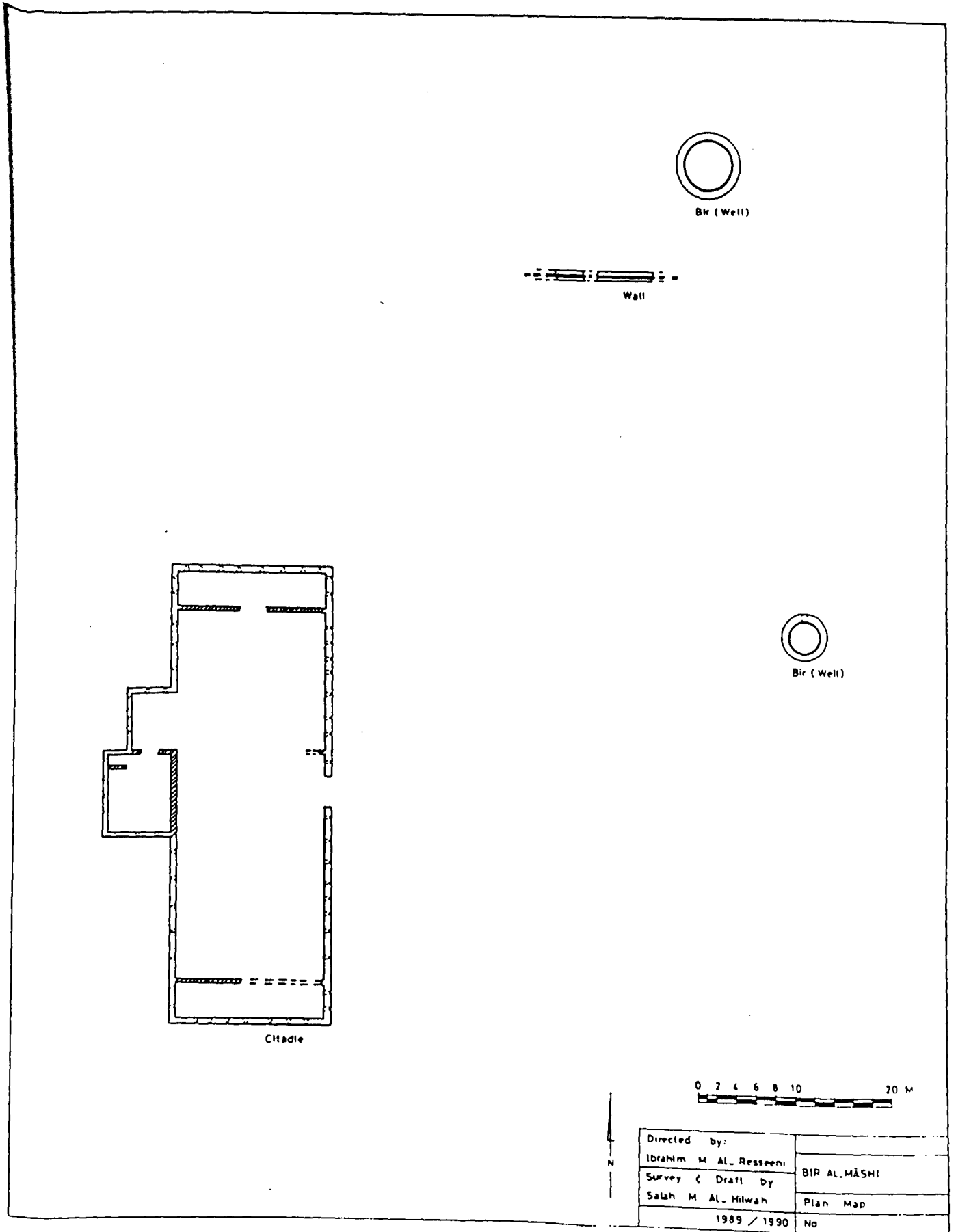
Site Number: 37

Route Identified: I4

Site Type: simple

Bir Adriwish (Bir Al-Fraish)

It lies about 24km NE of bir Al-Rauha and about 40km SW of Abyar Ali (Thu Al-Hulyfah) on about 24° 13'N and about 39° 15'E. Basha (1926, Vol. 2 pp. 23-24) when he mentions the pilgrim caravan route from Yanbu to Medinah, place Bir Adriwish at the fifth stage after Bir Al-Rauhah towards Medinah. He describes Bir Adriwish as widely located with a circular opening of 8 meters diameter and with a depth of 25m. It is built with

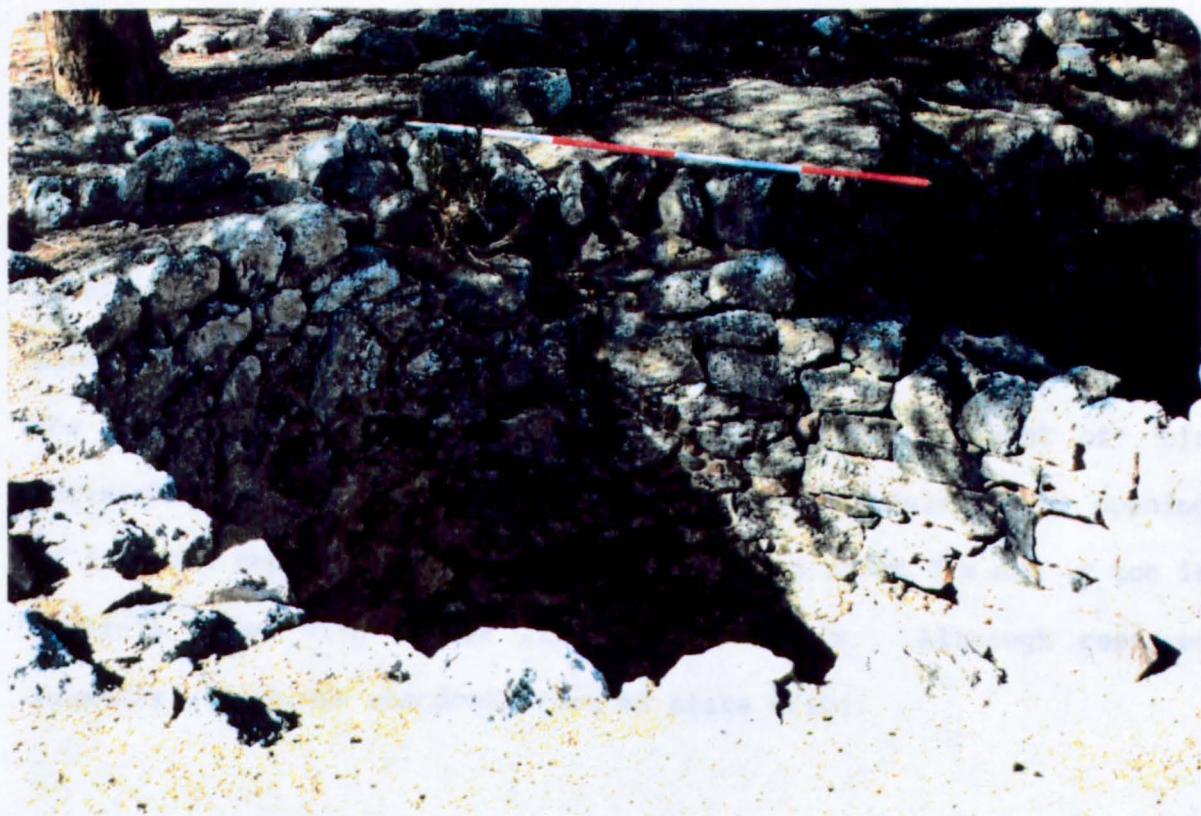


Appendix 3 Plan V: Abyar and remains of a castle at bir Al-Mashi



A3 Plate via

An ancient stone lined well now adapted to raise water for irrigation.

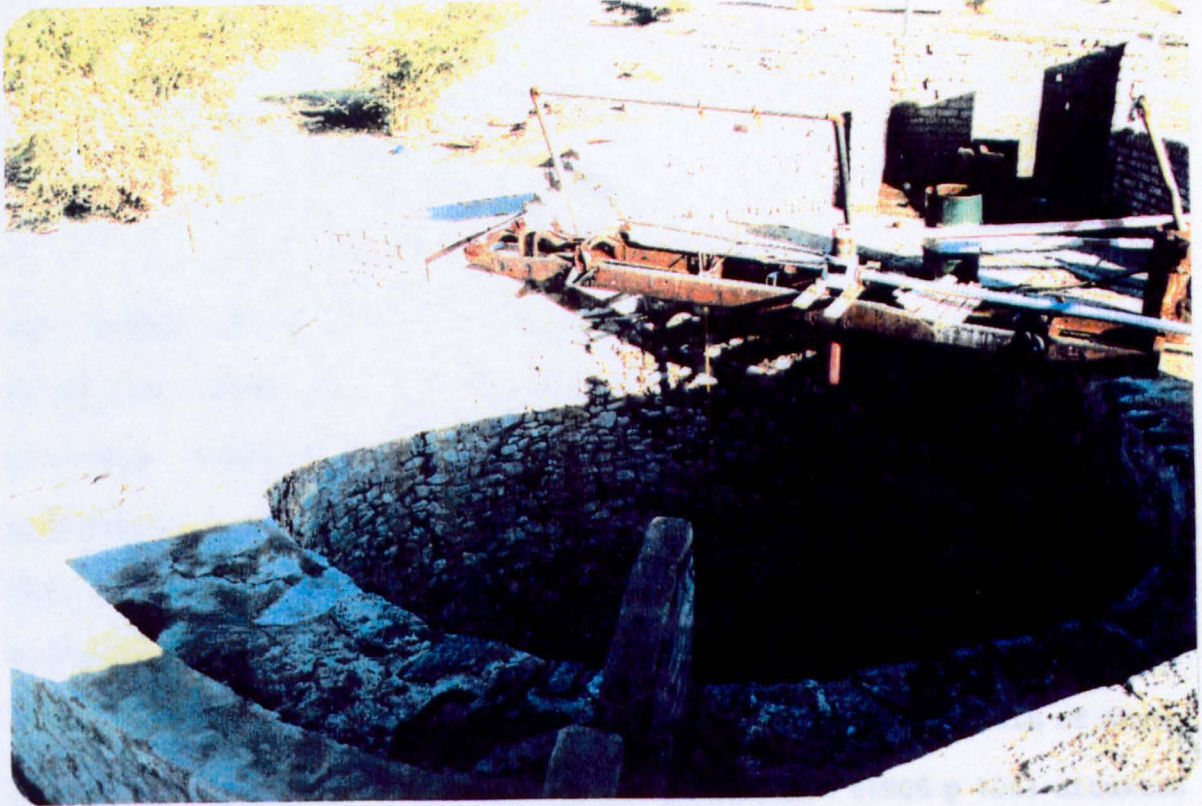


A3 Plate vib

A further ancient well located about 70 m south of the former. It is circular, lined with stone.

stones and mortar. The walls are about 3m wide and the water is fresh and plentiful. Al-Biladi (ND pp. 128, 186) describes Al-Fraish as a wadi located 48km S.W. of Medinah. There is a bir which has abundant water called Bir Adriwish around which a station grew, this became a village but in recent years has begun to decline due to the modern road from Medinah to MAKKA. Bir Adriwish is located at a village called Al-Fraish. The village was a way station of the pilgrims when the old route from Medinah. Nowadays, the road which runs between Medinah and MAKKA is about one kilometer away to the south. The way station consists of two old wells which are the principal water resources. The first one is called Bir Adriwish, it is situated at wadi Al-Fraish. This wadi runs from South to North to flow into wadi Malal. Al-bir is a large dug-well. It has a circular mouth opening with an inside diameter of 6.50m. It is lined with stones from top to bottom and its depth is about 21m. This bir has recently been restored with modern building materials such as cement and sun-dried bricks. There is a pump to raise the water and fill a new cistern and because the water at Al-bir is drinkable, it is distributed for use by both humans and animals (see A3 plate VIIa).

The second bir, bir Al-Qulity, is situated about 75m east of bir Adriwish. It is quite a large dug-well, having a circular mouth opening of 4m. The depth of the water in this bir is about 21m and it too is entirely lined with stones from top to bottom. Although restored recently, it is now abandoned (see A3 plate VIIb).



A3 Plate viia

A large, ancient, circular bir built with stone plastered with gypsum. There is now a power pump to raise the water into a modern cistern from the well which has been recently repaired with modern materials.



A3 Plate viib

An ancient and un-modernised circular bir lined with cut stones now abandoned.

Site Number: 35

Route Identified: I4

Site Type: simple

Al-Rauha

This was one of the important pilgrim stations lying about 8 km east of Al-Misijeed about $24^{\circ} 05'N$ and about $39^{\circ} 10' E$. It is mentioned by early writers. Ibn Rostah (1892 p 178) locates Al-Rauha 31 miles south of Abyar Ali and 34 miles north of Al-Ruwaithah. Al-Maqdisi (1906 p 106) situates it after Al-'Araj and before Al-Ruwaithah. He adds that the distance between Al-Rauha and Al-'Araj is the same as from Al-Rauha to Al-Ruwaithah - a days journey). Al-Hamadani (1974 pp 337, 724) places it 24 miles south of Al-Sayalah and 13 miles north of Al-Ruwaithah. He also gives its latitude as $23^{\circ} 20'N$. Al Bakri (1983 Vol 2 pp 681-683) describes Al-Rauha as a principal village two nights from Medinah. He also says that there is a mosque and a well named Sijsaj. Al-Harbi (1981 2nd ed pp. 444, 445) describes Al-Rauha as having wells, cisterns, two palaces and two water-tanks. Al-Fairuzbadi (1969, p. 160) says Al-Rauha is a village about 40 miles from Medinah. The station consists of several principal water resources which include a birkah (water-tank) and several wells of different ages. Al-birkah is rectangular measuring about 27.95 x 18.55m, and is constructed of sandstones. The width of the wall is about 1.30m, and is plastered internally with gypsum. Al-birkah is choked up with debris, sand and water, so it is difficult to tell exactly the real depth, however, the remaining depth now is about 1.60m. On the eastern wall of Al-birkah, near its south-eastern corner there is a canal almost linked to Al-birkah, it runs towards the east for about 12m and then disappears. The canal is

about 38cm wide. The channel is built between two walls, each about 70cm wide, which are built of stones plastered with gypsum. In fact, this canal could possibly have been the inlet of Al-birkah and could have supplied Al-birkah with water, because the area which the canal runs through is higher than the land on which Al-birkah has been located. This evidence supports the idea that Al-birkah was fed by this canal (see A3 plate VIIIa and b).

The second water resource of antiquity is a bir about 40m east of Al-birkah. This is an impressive dug-well, of distinctive construction and is quite different from other wells. It has a circular mouth opening and its depth is nearly 40m. About 4m were dug into rock and about 2m above the rock the walls are lined with red baked bricks and above this Al-bir is lined with volcanic stones which are plastered. The mouth opening of Al-bir is surrounded by a wall which has recently been restored with cement. Al-bir still has fresh water and there is now modern machinery to raise the water and fill the new cistern which has been built near the well. Al-birkah and Al-bir are located at wadi bir Al-Rauha. There is a small mosque; the foundations seem to be old but it has been rebuilt (see A3 plan VI & folder 24). Also there are the remains of foundations of buildings scattered around the region. The old road between Medinah and MAKKA passed through this area, but it is now about 500m from bir Al-Rauha.

Site Number: 33

Route Identified: I5

Site Type: simple

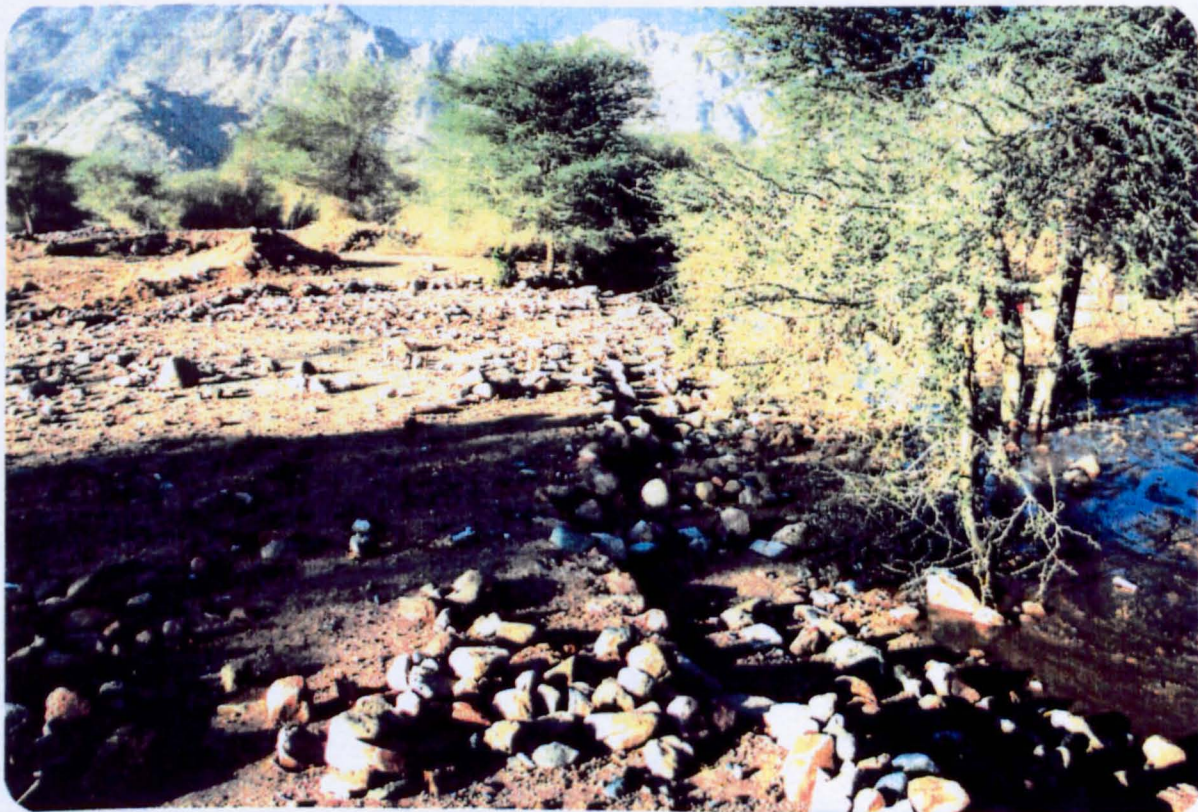
Bir 'Abbas

Basha (1983 Vol. 2 p. 218) mentions Bir 'Abbas as a halting place on Al-

Site: Al-Rauha¹

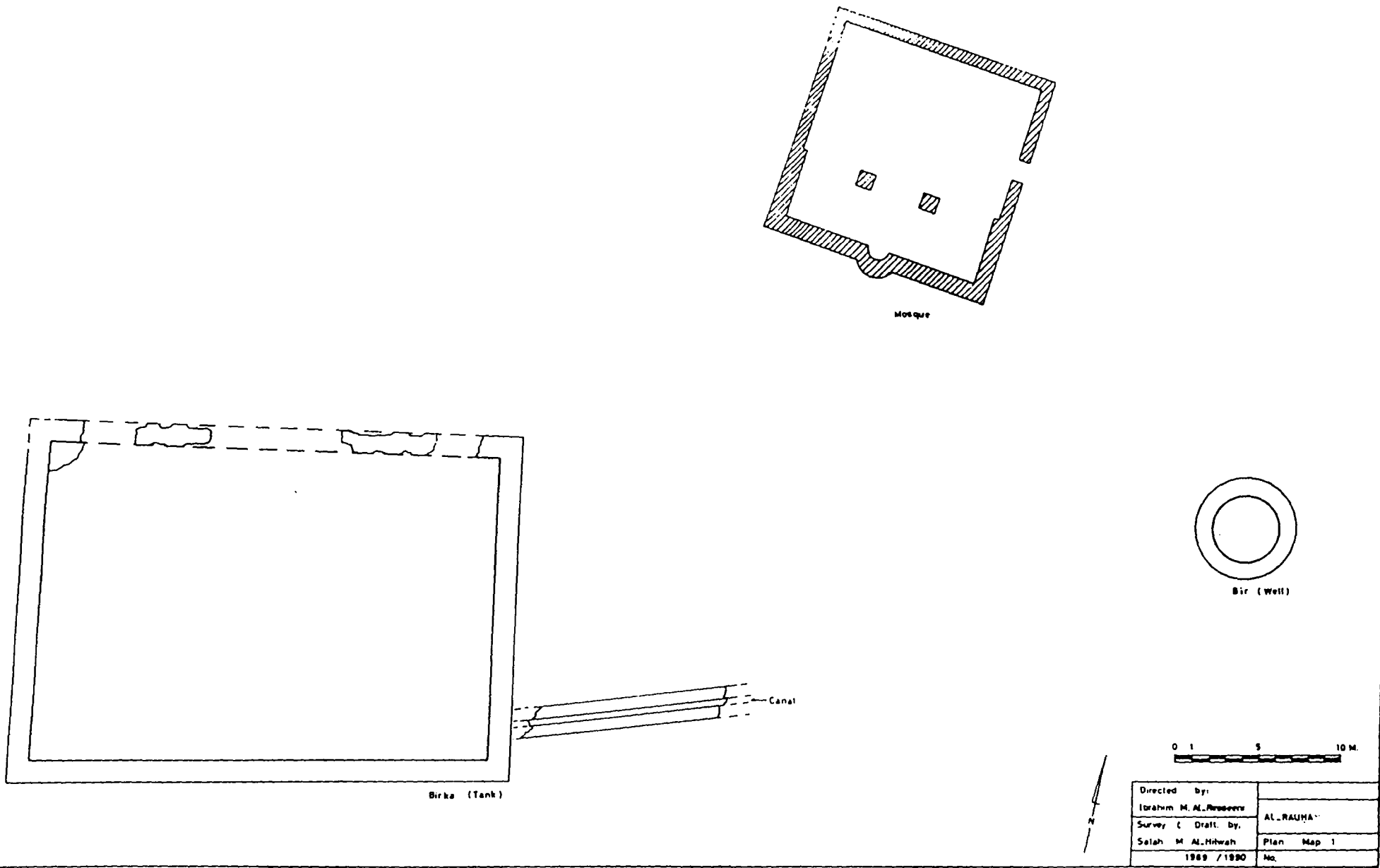
A3 Plate viiia

Al-birkah is built of cut stones plastered with gypsum and indicates the remaining depth.



A3 Plte viiib

A channel runs towards the bir. The channel is built from cut stones plastered with gypsum.



Appendix 3 Plan VI: Mosque, birkah and distribution system at Al-Rauha :

Sultani road between MAKKA and Medinah (about 5 hours from Medinah) Basha (1926 Vol. 2. p22) describes Bir 'Abbas as having the remains of a stone castle, a circular bir with a diameter of 4.50m and a depth of 15m and a wall thickness of 80cm. There are round basins made from sheeps skin placed near the bir for animals to drink from.

This lies at about 5Km south of Al-Misijeed and at about 13 km south-west of Al-Rauha, on about 24° 02 N and about 39° 04 E. Al-bir is an impressive, circular dug-well, lined with regular volcanic stones from top to bottom. The mouth opening is about 4.60m in diameter, measured from inside. It still contains water. The level of the water from the top is about 26m, however, the water is brackish, so the well is now abandoned. Around the mouth opening a parapet rises to about 90cm above the level of the ground. The wall of the opening mouth is about 90cm wide. At the eastern side of the well there are openings above one another. These openings disappear at about 11m from the mouth of the well. These architectural features are also seen in northern Arabia, they probably have two purposes, to bring water into the well and also to distribute water to other wells at times when the well was full. The well seems to have been restored because there is evidence of new and modern building materials like cement (see A3 plate IX). There are the remains of a fortress about 25m north of Al-bir, square in shape; the perimeter measures about 50 x 50m, but is almost destroyed. The paved road is about 50m from the well (see A3 plan VII & folder 25).

Site Number: 31

Route Identified: I5

Site Type: simple

Al-Ruwaithah

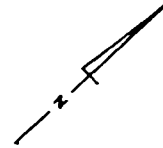
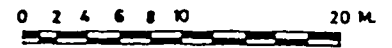
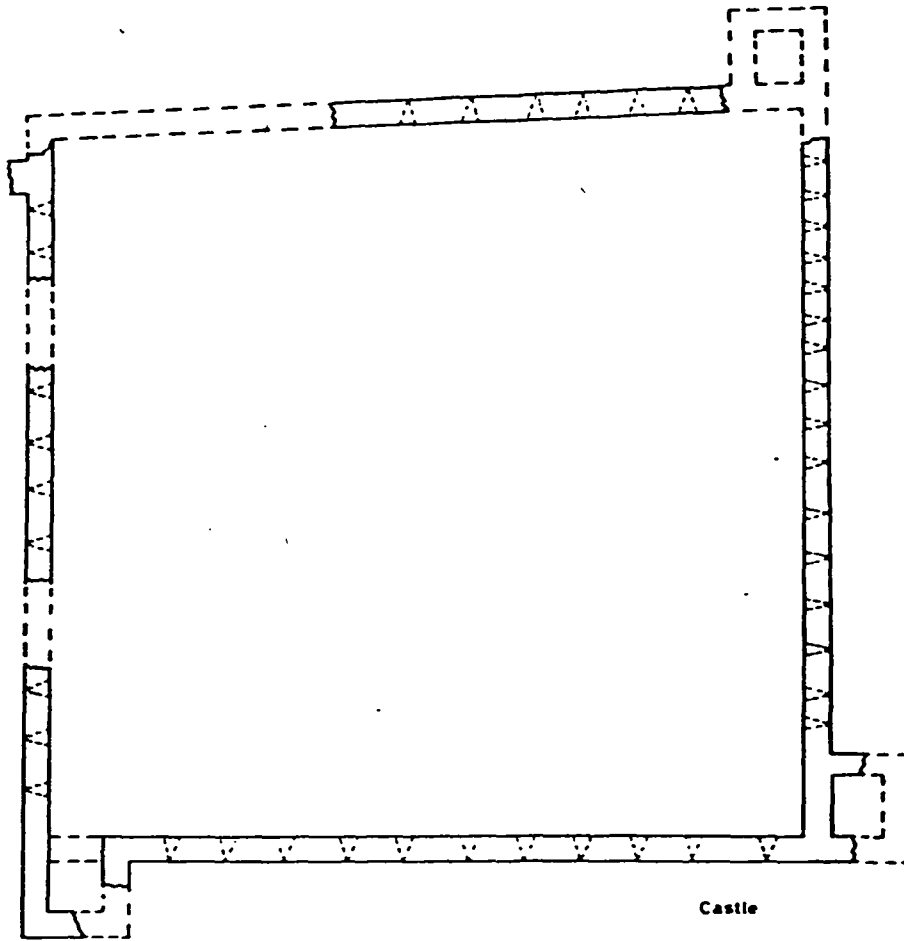
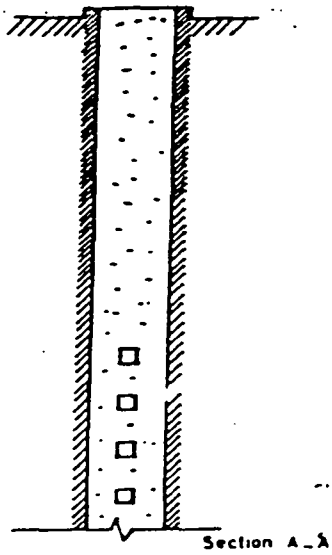
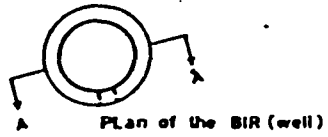
Site: Bir 'Abbas



A3 Plate ix

A large ancient well lined with cut stone about 5 km south of the village of al-Misejeed.

Appendix 2 Plan VII: Bir and the remains of a castle at Bir 'Abbas



Directed by:	
Ibrahim M. AL-Resseeni	BIR - ÁBBAS
Survey & Draft. by:	
Salah M. AL-Hilwah	Plan Map 1
1989 / 1990	No

Appendix 3 Plan VII: Bir and the remains of a castle at Bir 'Abbas

This pilgrim station is situated 23km S.W. of Al-Rauha, 75km N.W. of Al-Suqya-Umm Al-Birak and about 50km N.W. of Bir Qidhi ($23^{\circ} 58'N$, $39^{\circ} 03'E$). It was mentioned by a number of Arabic and Islamic geographers as a pilgrim way station on the conventional route between Medinah and MAKKA. Ibn Khurdadhabah (1889, p. 130) said that Al-Ruwaithah consists of a birkah.

Ibn Rostah (1892, p. 178) suggests that Al-Ruwaithah is a watering place located 34 miles from Al-Sayalah. It contains a birkah and well. It is also inhabited during the Al-Hajj seasons. Al-Harbi (1981, pp. 445, 446, 447) places Al-Ruwaithah 13 miles from Al-Rauha. Our survey failed to identify any water resources.

Site Number: 23

Route Identified: I5

Site Type: simple

Al-Qahah (Bir Qaidhi)

Al Bakri (1983 3rd ed., Vol 3 p 1040) says Al-Qahah is 3 days journey from Medinah. Al-Biladi (N.D. pp. 238, 239) says Bir Qaidhi is located at the right side of wadi Al-Qahah. It was a pilgrim caravan station but when cars replaced animals as a means of transportation it was abandoned. The prophet Mohammad, peace be upon him, passed by Al-Qahah on his way from MAKKA to Medinah. Al-Qahah is the name of a town about 3 days journey from Medinah before Al-Suqya (Umm Al-birak) (Al Fairuzbadi, 1969, p. 322)

It is a village and a way station on the road between Medinah and MAKKA.

It lies about 27km north of Al-Suqya (Umm Al-birak) about $23^{\circ} 38'N$ and about $39^{\circ} 17'E$, at wadi Al-Qahah.

The village consists of some small wells, most of which are choked up

with sand and have been abandoned.

The well-known bir is situated east of wadi Al-Qahah. The village of Al-Qahah lies west of bir Qaidhi at the foot of a mountain. The ancient well has recently been repaired and a new basin built nearby. (see A3 plate Xa)

An ancient bir is located about 50m north of bir Qaidhi, it has a circular mouth opening 1m in diameter. It is lined with stones and its depth is about 6m. It has no water and the mouth opening is level with the ground around it (see A3 plate Xb)

Site Number: 17

Route Identified: I5

Site Type: simple

Bir Mubayrik

Basha (1983 Vol 2 p 221) says from Rabigh to Bir Mubayrik is about 12 hours journey. Bir Mubayrik is large but its water is slightly brackish. Al-Biladi (N.D. pp 78, 79) locates Bir Mubayrik at the upper part of wadi Al-Abwa. It was a pilgrim station on the route between MAKKA and Medinah, the area is uninhabited.

This well lies about 15 km North of Riya Harsha and about 6 km east of Al-Abwa on about 23° N and 39° 09'E. The well is located at a junction of three wadis: Wadi Al-Qahah lies to the north, wadi Nahdi, to the south-west and wadi Al-Nakhil to the south-east. Al-bir is of tremendous size and is characterized by distinctive architectural design. It is a circular dug-well and has an opening which is about 5.4m. It is lined with evenly-coursed stones from the top to the bottom. There is a parapet around the mouth of the well to protect it, this rises to about 80cm above ground level. The wall of the mouth



A3 Plate xa

An ancient circular well called bir Qaidhi lined with stone and recently repaired with modern materials. Water is now pumped to a modern collecting basin nearby.



A3 Plate xb

A small circular well some 50 m north of bir Qaidhi is lined with stone.

opening is about 2.50m wide. The depth of Al-bir at the level of the water is about 17.5m. It still has water remaining in it and has two vertical columns which are probably used to raise water from the well (see A3 plate XI)

Waddan

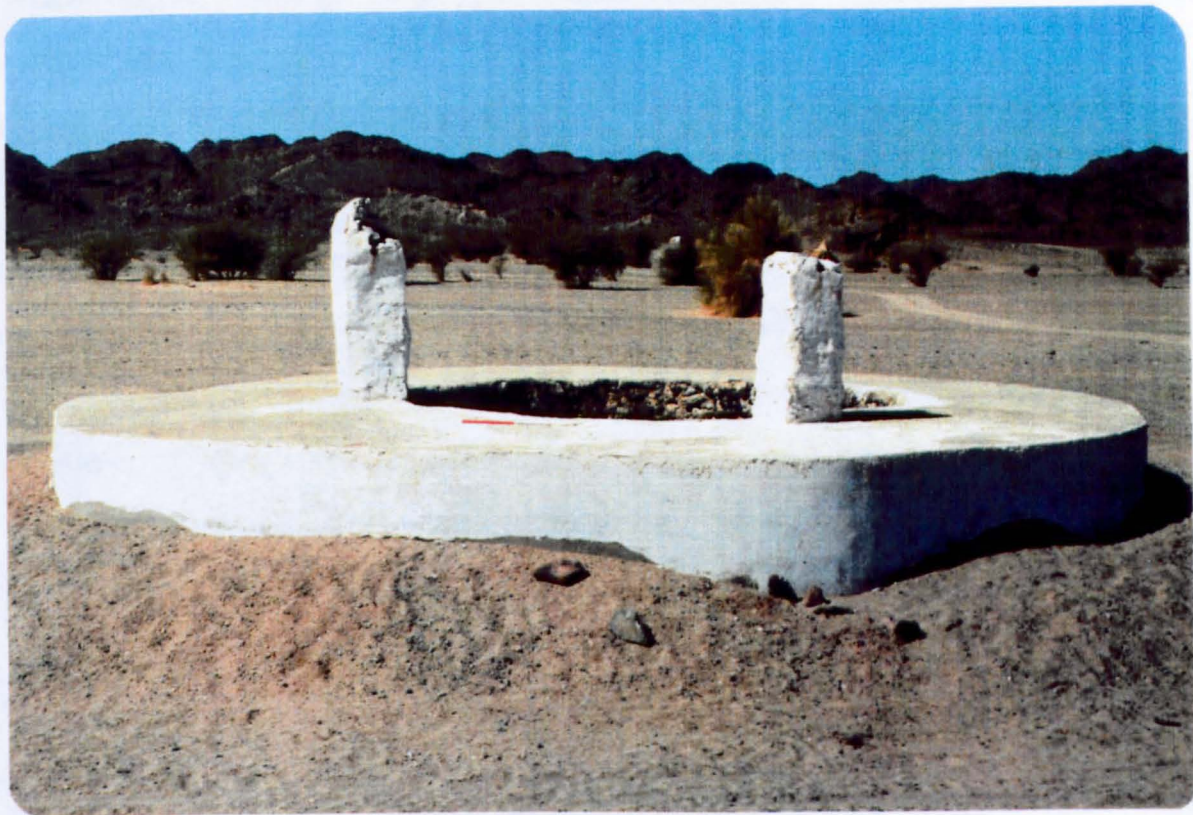
This site was mentioned by early Islamic geographers. Yaqut (1955, Vol. 5, p. 365) identified three places called Waddan, one of them located between MAKKA and Medinah. It lies within Al-Far'a area, at about 6 miles from Harsha and about 8 miles from Al-Abwa near Al-Juhfah. Al-Isfahani (1950 Vol 4 p 282)

He quotes Abu Zaid saying that Waddan is about a days journey from Al-Juhfa on the pilgrimage road between it and Al-Abwa.

Al-Bakri listed Waddan as a halting place on the conventional route between Medinah and MAKKA, he says the distance between Al-Suqya to Al-Abwa is 19 miles and from Al-Abwa to Al-Juhfah, 23 miles, but it may be some people on their way from Al-Suqya leave Al-Abwa and go straight from Al-Suqya to Al-Juhfah through Waddan. He adds that Waddan is the principal village. (Al-Bakri 1983, Vol 3 pp. 954, 1052).

Al-Hamadani (1974 p.331)says that Waddan is a village in Hijaz province. 'Arram (N.D. p 21) considers that Waddan was the principal village in pre-Islamic times and early Islamic times (Al-Biladi N.D. p.74). It started losing its position after the rising of Masturah as a pilgrim station and thereafter completely disappeared. According to some native seniors, Waddan was a spring located about 13 kilometers S.E. of Masturah.

Site: Bir-Mubayrik



A3 Plate xi

Although recently repaired with modern materials this view shows the thickness of the walls and the residuals of the columns designed to support water scoops. Internally the well is lined with cut stone.

Site Number: 15

Route Identified: I6

Site Type: simple

Al-Abwa

This pilgrim station is situated about 10km north-west of Riya Harsha about $23^{\circ} 07'N$ and about $39^{\circ} 06'E$ at wadi Al-Abwa. Ibn Khurdadhabah (1889 p. 130) describes Al-Abwa as abundant of wells. He gives the distance between Al-Abwa and Al-Suqya (Umm Al-birak) as 29 miles and the distance between Al-Abwa and Al-Juhfah as 27 miles. Ibn Rostah (1892, p. 197) describes al Abwa as a large village about a day and night from the sea which obtains its water from wells. Wadi Al-Abwa extends from the east into the Red Sea near Masturah. Al-Hamadani 1974, p. 337 mentions Al-Abwa when he enumerates the stopping places on the conventional route between Medinah and MAKKA saying the distance from Al-Suqya-Umm Al-Birak to Al-Abwa is 19 miles and from Al-Abwa to Al-Juhfa 23 miles, he gives its degree of latitude as $22^{\circ} 50'$.

Al-Abwa is a village and dependency of Al-Fara, the distance between Al-Abwa and Al-Juhfah is 23 miles and it is about 5 days journey from Medinah. (Al-Fairuzbadi, 1969, p. 5) Despite an extensive survey of the area no water resource structures were found and all water is taken from pumped wells.

Site Number: 14

Route Identified: I5

Site Type: simple

Harsha (Riya Harsha)

This site is about 28km north-east of Rabigh $23^{\circ} 02'N$ and $39^{\circ} 08'E$. Harsha was mentioned by Arabic and Islamic geographers and travellers,

not as a pilgrim station, but as a narrow mountainous path - mountain trail- located on the Egyptian and Syrian pilgrim route between Medinah and MAKKA. Yaqut (1955, Vol 5 pp. 397, 398, 399) says Harsha is Thaniya (mountain trail) on the road from MAKKA to Medinah near Al-Juhfah. It is a flat hill and meeting place where the Syrian and Medinah routes to MAKKA intersect. It is near Al-Juhfah and uncultivated land (Al-Himyari (1975 p. 592). Al-Harbi (1981, p. 456) says 8 miles from Al-Abwa there is the steep of Harsha, a difficult and sloping road. The trail has been paved to make it easier for passing pilgrim caravans to use and also for cars. It slopes sharply towards the south. The area which surrounds the mountain trail in the west and east is harrat (rough terrain of lava field), while in the north the land is flat plateau. The region is rugged, very rough, barren and uninhabited. North of the mountain trail there are the remains of foundations beside which there are the remains of a small rectangular basin which measures about 1.60 x 5.4m (see A3 plate XIIa, b)

Site Number: 11 & 12

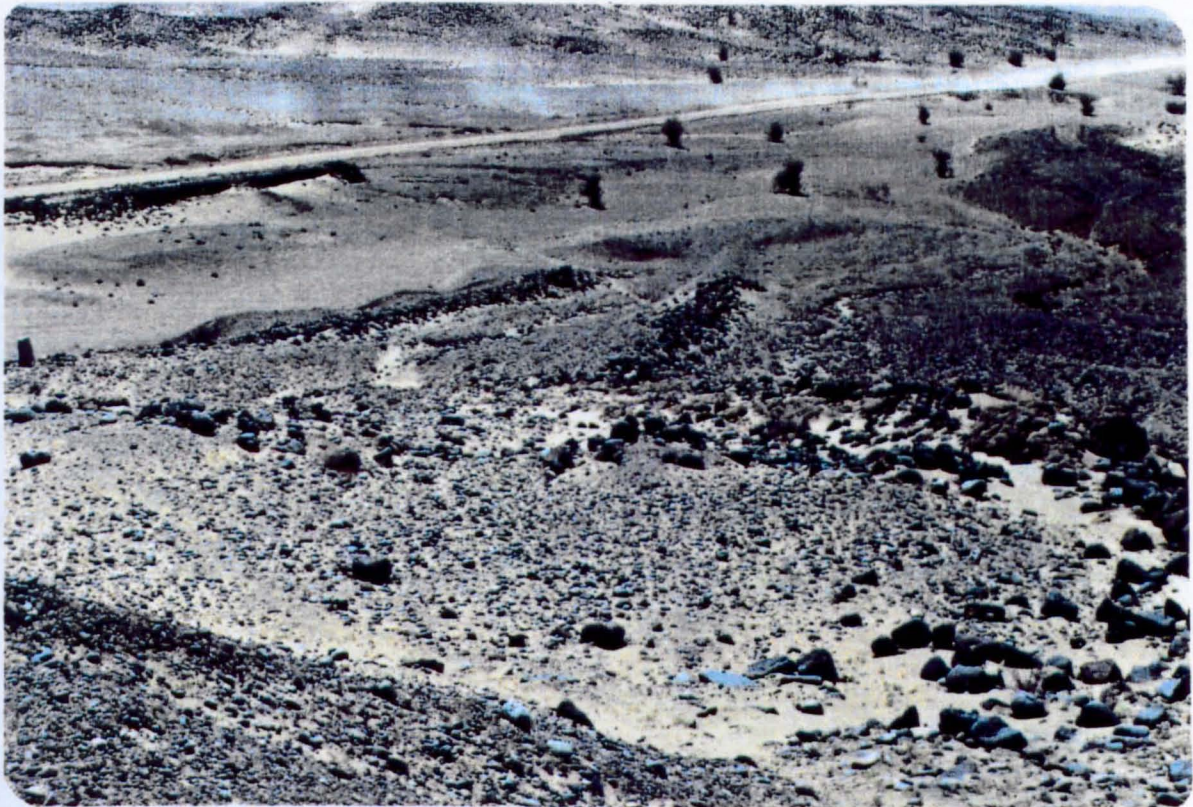
Route Identified: I6

Site Type: Religious

Al-Juhfah

This site is at about 16km south-west of Rabigh, about 22° 42'N and about 39° 08'E. It is a Miqat (rendezvous) meeting place for the Egyptian and the Syrian pilgrims whether or not they will subsequently pass through Medinah (Yaqut 1955, Vol. 2, P. 111). It was also a major pilgrim stopping place on the Egyptian and the Syrian pilgrim route between Medinah and MAKKA. Al-Juhfah was quite a big village located on the old caravan road, later the pilgrim route (Al-Biladi 1985, p. 55). It was

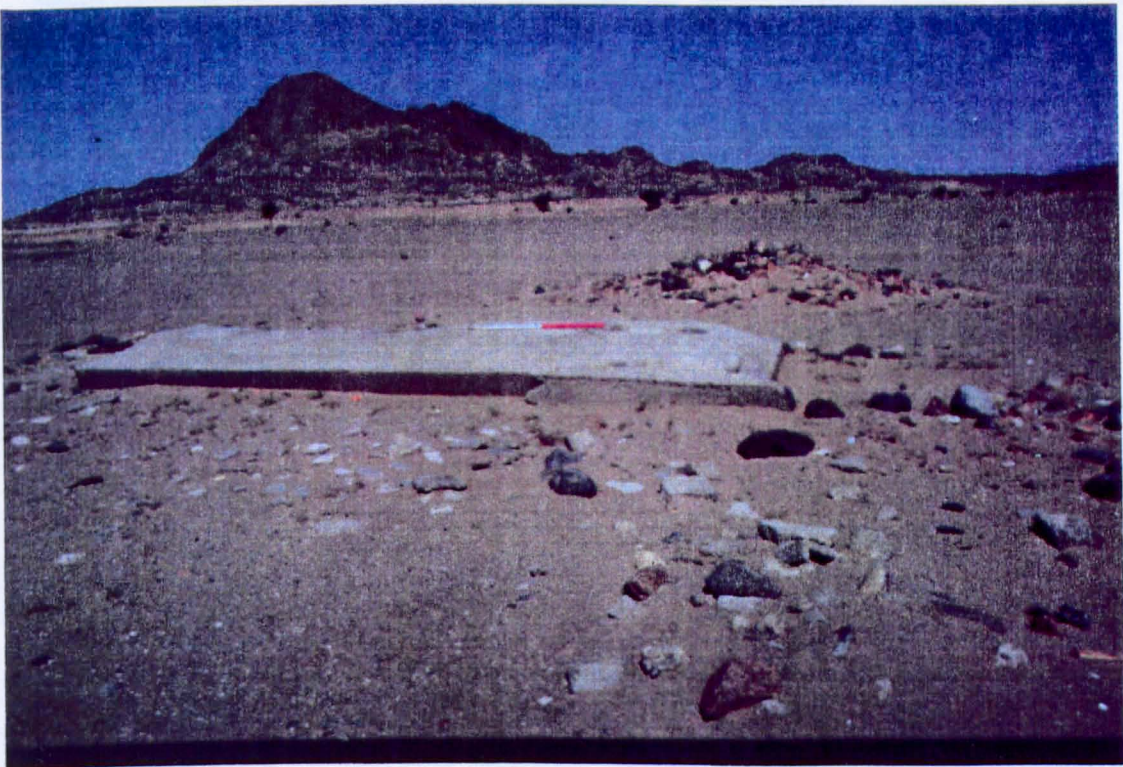
Site: Riya Harsha



A3 Plate xiia

A general view showing the area of Riya Harsha where the mountain pilgrim trail is paved.

Site: Riya Harsha



A3 Plate xiib

An ancient small basin, recently repaired with modern materials.

inhabited and had various water resources, particularly wells. Unfortunately, Al-Juhfah (Al-Miqat) is in ruins except for some houses scattered around the new mosque. Al-Juhfah consists of some ancient abar (wells). These wells are small, the average diameter of the opening shafts is about one meter.

Bir Al-Juhfah has a circular opening shaft of 90cm diameter. It is a hand dug-well excavated by hand. It is lined with stones and still has water remaining in it. It is a watering place where the local inhabitants bring their camels and sheep (see A3 plate XIIIa).

The ancient remains of a castle or citadel are located at about 4km north-west and they probably date back to the Abbasid period. The castle was constructed with small trimmed stones and its condition is good, although some of its sides have been destroyed. It is named Qasr 'Alya.

The remains of an ancient hand dug well is situated at wadi Al-Juhfah about 50m east of the castle. It is stone lined with a circular mouth about 3.70m in diameter and is choked with sand so that only its mouth opening is visible (see A3 plate XIIIb). Also in the valley to the east of castle are the remains of the foundations of ancient buildings.

Site Number: 10

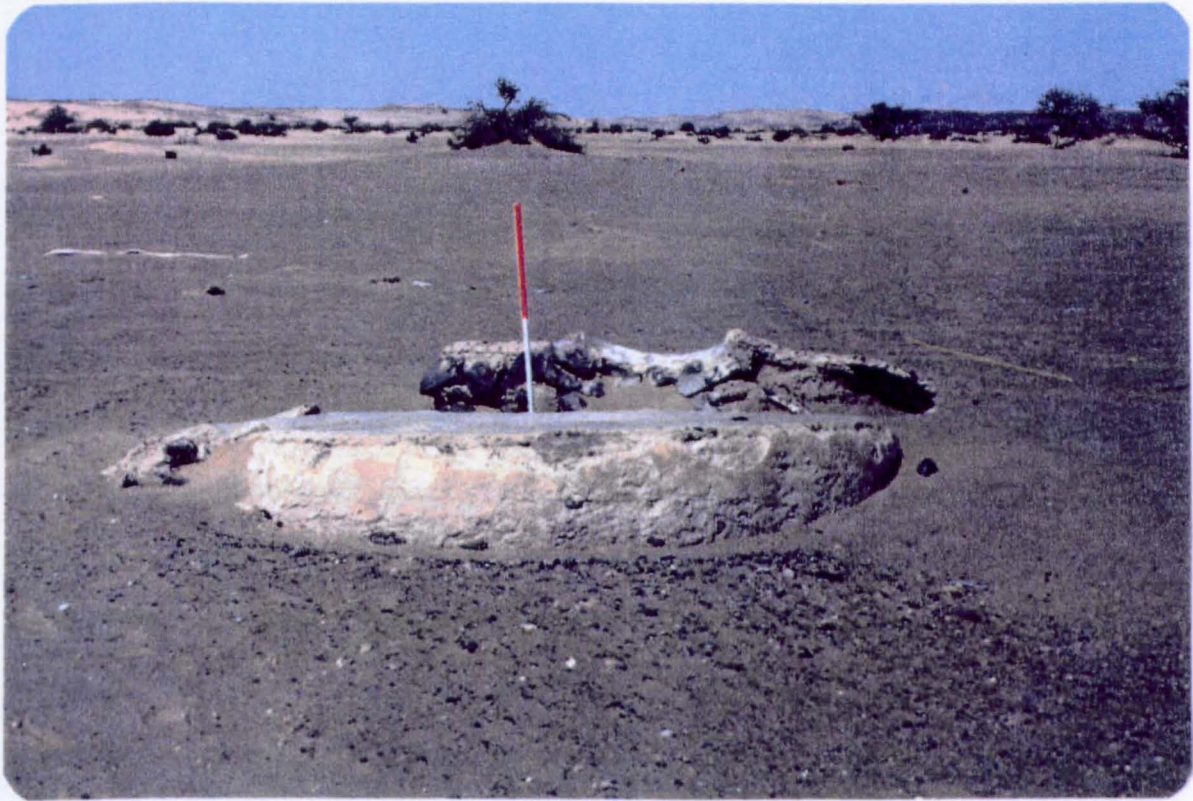
Route Identified: I6

Site Type: simple

Kulayyah

This is was a pilgrim way station situated at about 28km north of Qudid and about 22km south-east of Al-Juhfah about 22° 31'N and about 39° 16'E. It is now a small village lying in wadi Kulayyah, Al-wadi lies

Site: Al-Juhfah



A3 Plate xiiia

One of many *Al-abyar* scattered over the *Al-Juhfah* area is circular and lined with stone.



A3 Plate xiiib

The castle of *Qasr 'Alya* showing the remains of the ancient dug well east of the castle.

north-east of Kulayyah towards the west and flows into the Red Sea after Kulayyah. Al-wadi has plenty of trees as well as some small farms and houses scattered here and there. The inhabitants obtain their water from pumped wells. The region of Kulayyah is devoid of any other sort of water resource structures.

The roads which lead to Kulayyah are dusty and unpaved.

Arram (N.D. p. 32) describes Kulayyah as a village with wells situated on the road between Medinah and MAKKA. Al-Bakri (1983 Vol. 3 p. 956) says the distance from Al-Juhfah to Kulayyah is 12 miles to the north and from Al-Juhfah to Qudid, 12 miles to the south. Al-Isfahani (1952, Vol. 1 p. 325) says Kulayyah is a village between Medinah and MAKKA. Al-Zamakhshari (1855 p. 141) describes Kulayyah as a watering place. Al-Wohaihi (1973 p. 131) "Kulayyah a rural community, is still known in that area south Al-Juhfah".

Site Number: 8

Route Identified: I6

Site Type: simple

Qudid (Brikah)

This pilgrim station is situated about 18km east of Al-Qadhimah and about 22km north of Khulis on about 22° 21'N and about 39° 20'E.

Qudid was mentioned as a large pilgrim station lying on the Egyptian and Syrian pilgrim route between Medinah and MAKKA. Qudid is a wadi running from east to west towards the Red Sea. Ibn Khurdadhabah (1889 p. 130) mentions Qudid as a way-station on the road between Medinah and MAKKA. He sites it 27 miles south of Al-Juhfah and 24 miles north of 'Asfan, he also says it possesses wells. Ibn Rostah (1892 p. 177) sites Qudid in the same place as Ibn Khurdadhabah but says it is 39 miles from Al-Juhfah

to Qudid not 27 miles. He also refers to Qudid' as a large village with fertile land, the water supply coming from wells. Al-Bakri (1983, Vol. 3 p. 1054) describes Qudid as an important village with abundant water and many farms. Al-Harbi (1981, p.459-461) describes Qudid as a village with a number of wells and a water tank, about 1 mile from the village there are four wells lined with wood. Yaqut (1955 p 311-314) says Qudid is a place near MAKKA.

The Qudid valley is an extensive area of small scattered settlements. Qudid was noted as being abundant with springs and wells (see A3 plate XIVa, b). Unfortunately, most of these water resources have now dried up.

We inspected the location of an ancient spring which is called Al-Brikah, according to the local residents. Al-Brikah still flowed until about twenty years ago but now it has dried up. However, the residents use new modern drilled pumped wells to obtain their water.

Site Number: 7

Site Identified: I6

Site Type: simple

Khulis

This pilgrim station lies at about 22km south of Qudid and about 30km north of 'Asfan, (22°09'N 39°20'E).

This pilgrim station is mentioned by many Arabic geographers as a pilgrim halting place on the conventional inland pilgrim road between Medinah and MAKKA. Most cite specific water resources. Ibn Batutah described it saying it is located at a flat land and consists of plenty of palm-trees. It also has a fortress built on top of a mountain. There is a



A3 Plate xiva

An ancient abyar many of which are scattered over the Qudid area. It is lined with roughly cut stone.



A3 Plate xivb

A stone lined spring which is still flowing.

fountainhead flowing through canals constructed of earth and connected to the farms. (Ibn Batutah N.D. p. 148) Al-Jasir described it saying that Khulis comprises a spring, buildings, rest-houses and market. The water of the spring runs through well constructed channels linked to a large water-tank. There are some places set aside for watering and ablution. The farms which are located near the town are irrigated from the water-tank. (Al-Jasir, 1984, P43)

Khulis seems to have been very rich in water resources and farms, when you consider the many remains of farms and water structures particularly canals and cisterns. (See A3 plate XV)

Although Khulis had abundant water supplies almost all the ancient water resources have now disappeared.

Site Number: 6

Route Identified: I6

Site Type: simple

'Asfan

'Asfan is an important pilgrim station located on the inland pilgrim route between Medinah and MAKKA. 'Asfan lies about $21^{\circ} 56'N$ and $39^{\circ} 21'E$, 52 km NW of Al-Jumum. Ibn Khurdadhabah (1889, p. 130) when he listed the way-stations between Medinah and MAKKA placed 'Asfan 24 miles south of Qudid and 33 miles north of Batn Marr. He says the site consisted of a well. Ibn Rostah (1892 p 177) enumerated the pilgrim stations on the route from Medinah to MAKKA said that the distance between Qudid and 'Asfan was 24 miles and from 'Asfan to Batn Marr 34 miles. He also said that 'Asfan was a large, populated village with fertile land and wells. Yaqut (1955, vol 4, p 121-122) described 'Asfan as a village and watering place with farms and palm groves on the road between Medinah and MAKKA.

Site: Khulis



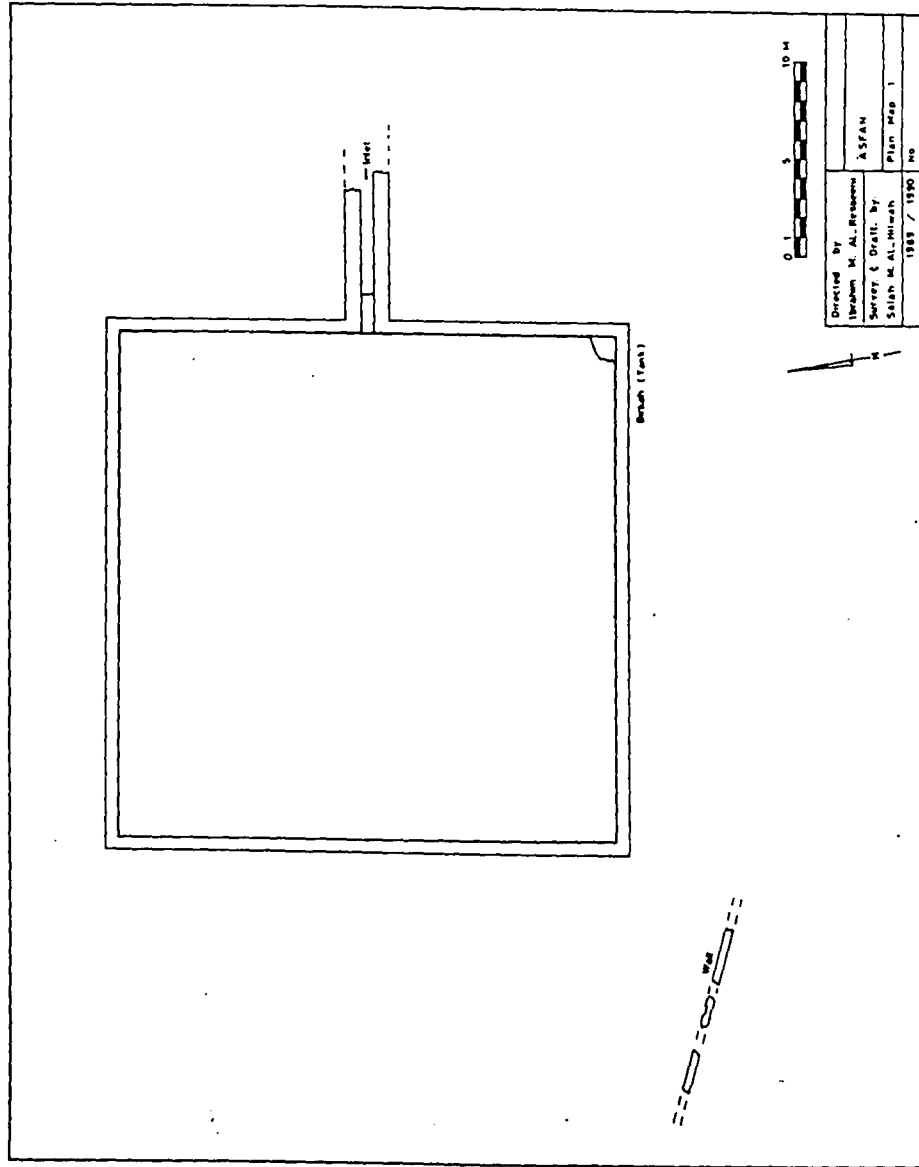
A3 Plate xv

A stone built channel links to a small birkah constructed of roughly cut stone.

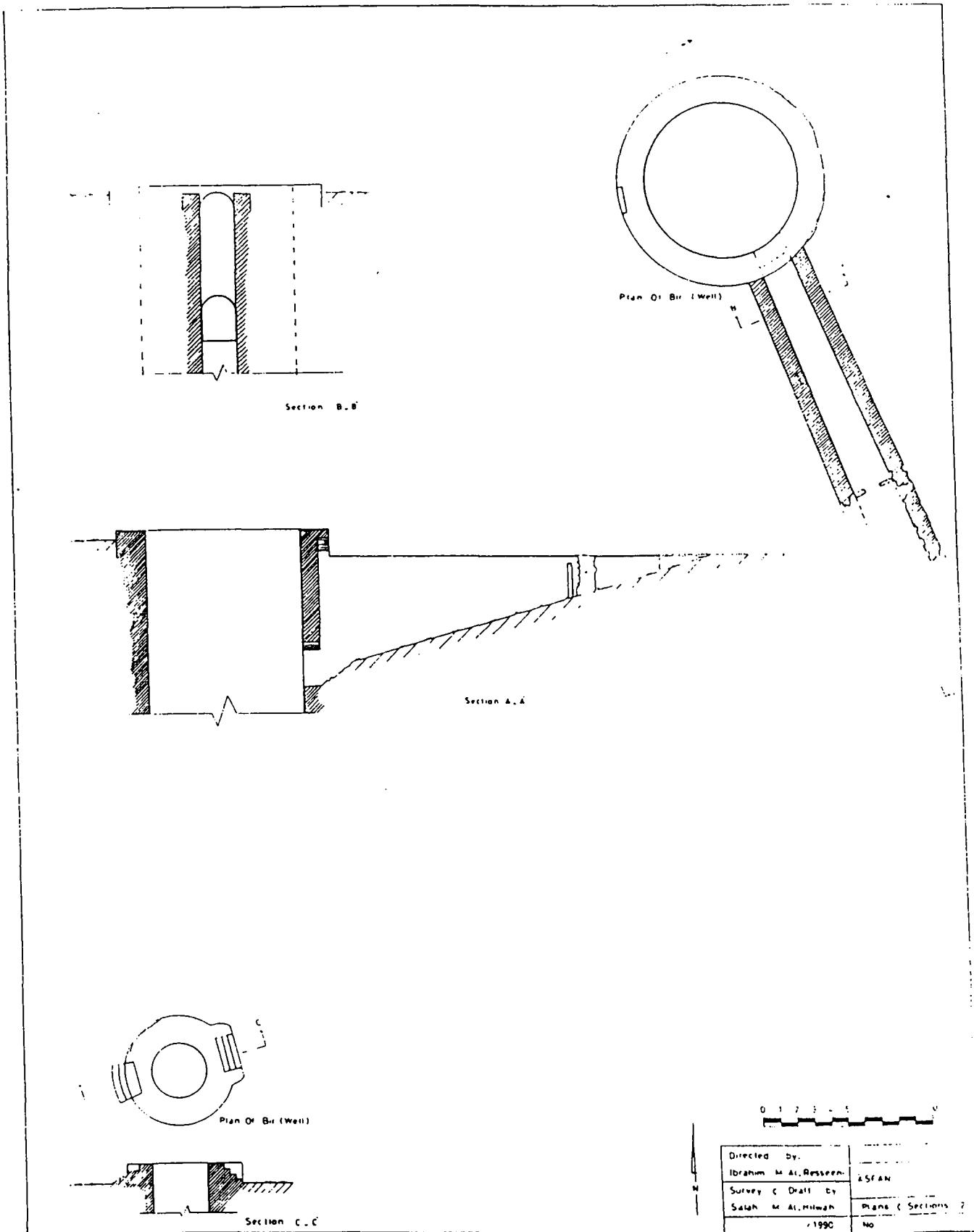
Ibn Batutah (N.D. p. 148) refers to 'Asfan as flat land between mountains with wells and springs. Al-Harbi (1981 p. 465) says 'Asfan possesses many wells, springs and water tanks. Al-Biladi (1985, pp. 29-35) describes 'Asfan as an ancient town 80km from MAKKA and the second stop from MAKKA on the caravan route. It consists of a number of wells. The halting place has major water resources which include a birkah (water-tank), a number of abyar (wells) and qanats (canals) (see A3 plan VIII 7 folder 26). Al-birkah is square roughly 25.80 x 25.80m in size. Its walls are about 65cm thick and it is built of volcanic stone the average size of which is about 60 x 40cm. There are some remains of plaster on the walls. In the south-eastern internal corner of Al-birkah, there are the remains of what appears to be a stairway.

Because Al-birkah nowadays lies within a residential region it is filled with rubbish, dirt and sand, and the remaining depth is about 1.20m. Al-birkah has a canal which serves as the inlet which is located in the middle of the eastern wall. Its dimensions are about 46cm in width and 30cm in depth. The canal now is uncovered and is built of black volcanic stones plastered with gypsum from inside. It runs towards the east for about 6m and then disappears among the houses. The canal fed Al-birkah with water from a spring called Ain Umm Al-Rain, so Al-birkah carries the same name birkat Umm Al-Rain. Of course, the spring which provided Al-birkah with water has now dried up (see A3 plate XVIa).

The second main water resource is Abyar (wells). There are a number of old and ancient Abyar. I selected for survey only the wells which are large and have distinctive characteristics (see plan IX & folder 27). The first bir (well) is located about 2km NW of Al-birkah, and about 300m west of the old paved road between MAKKA and Medinah. It is well known as bir Al-Taflah. It has a circular opening with an internal



Appendix 3 Plan VIII: Birkah at 'Asfan



Appendix 3 Plan IX: Abyar at 'Asfan

diameter of about 3.15m. It is a dug-well lined with black volcanic stones, painted with white gypsum both inside and outside. The well is about 11m deep and still contains water. The mouth opening of Al-bir is protected by a circular parapet 11.70cm wide, which rises about one meter from ground level. There are two stairs which pass through this wall and go down to the open mouth of the well. One stairway is situated on the west side and other is placed on the east side of the well. Each stairway has three steps. Al-bir (the well) was used as a resource of drinkable water, but because the level of the water sank it was abandoned (see A3 plate XVIb).

The second bir (well) is situated at about 52m NE of bir Al-Taflah. It is called bir Al-Jinaniyah. It is a circular opening with an internal diameter of about 8.9m. It is a very large well. The dug-well is lined with stones from top to bottom, but is choked up with rubbish and earth and is now about 11m deep. It still contains some water which is brackish. The opening mouth of Al-bir rises above the level of the ground. The thickness of the wall of the opening mouth of the well is about 1.70m. There are two parallel walls linked to the well from the south-eastern side. The distance between them ranges between 1.90m near the well and gradually increases where they go away from the well to 2.20m at 13m distance. In fact, those two parallel walls built of stones have between them a path which was probably used as a stairway for descending and ascending to the well to get water. The fact that the sloping path connects to an opening placed at the south-eastern side of the well at about 6m down from the opening mouth of the well is evidence of this. It indicates that the level of the water in the well was higher in the past than today and Al-bir is now abandoned (see A3 plate XVIc).

Site: 'Asfan



A3 Plate xvia

A channel flows into Al-birkah both of which are built of stone and plastered with gypsum.



A3 Plate xvib

An ancient large circular well named bir Al-Taflih. It is lined with stones and its shaft is surrounded by a round parapet about 1m high. Two columns support pulleys to raise the water.

The region of 'Asfan had abundant and varied water resources, such as wells, springs, basins and cisterns. Site: 'Asfan. Unusually, all the springs which supplied the region have dried up. The only thing which remains and which gives evidence of the ancient system are the basins and cisterns. Contemporary wells are completely different.



A3 Plate xvic

A second ancient large dug well lined with stones, plastered with gypsum is approached via a sloping tunnel which leads to the base of the well.

The region of 'Asfan had abundant and varied water resources, such as wells, springs, basins and canals. Unfortunately, all the springs which supplied water have dried up, the only thing which remains and which gives evidence of those water resources are the canals, basins and cisterns (see plate XVIIId). With regard to the wells as contemporary water resources, they still exist, but some of them have completely dried up and, in others the level of the water has decreased.

Site: 'Asfan



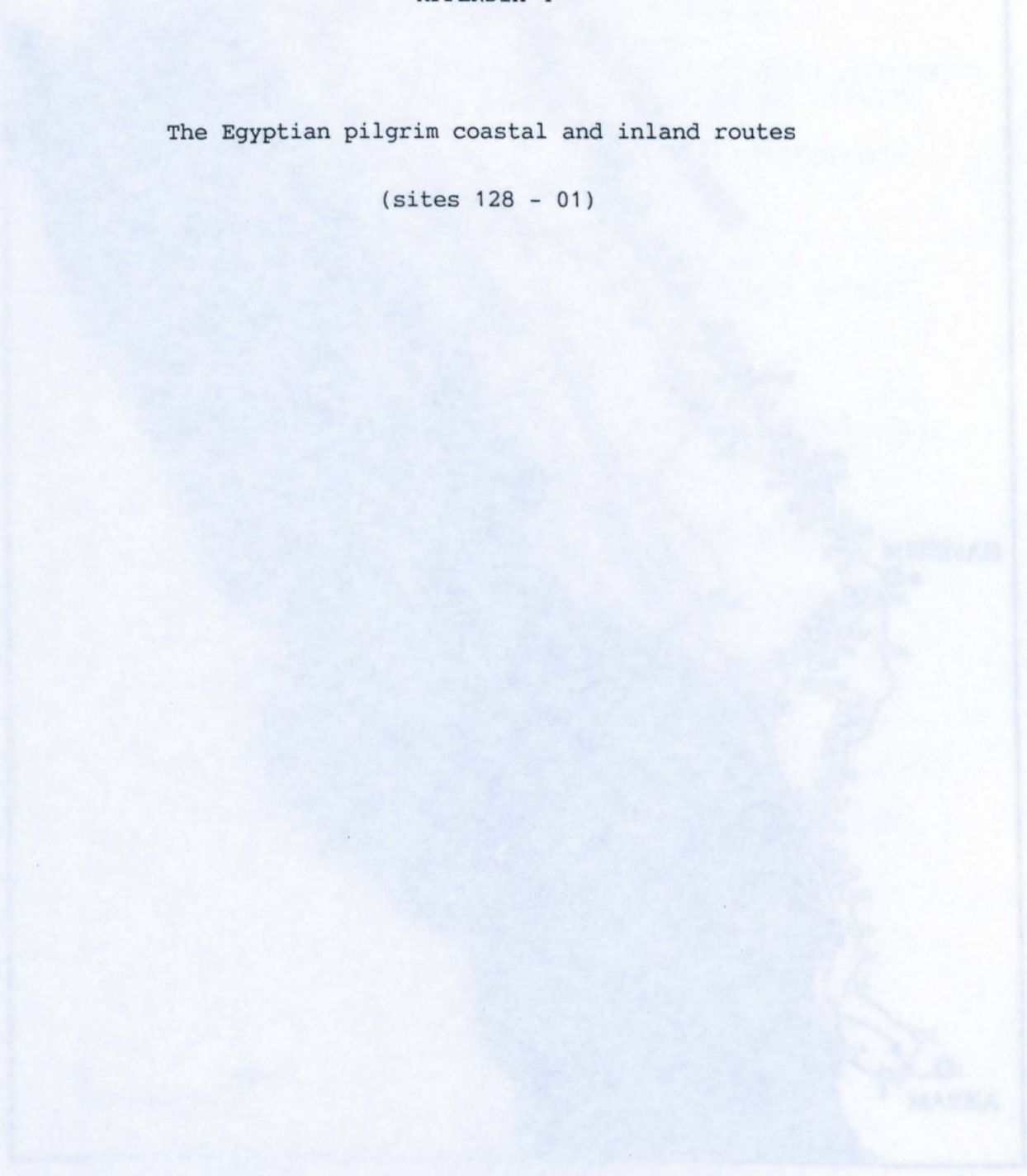
A3 Plate xvid

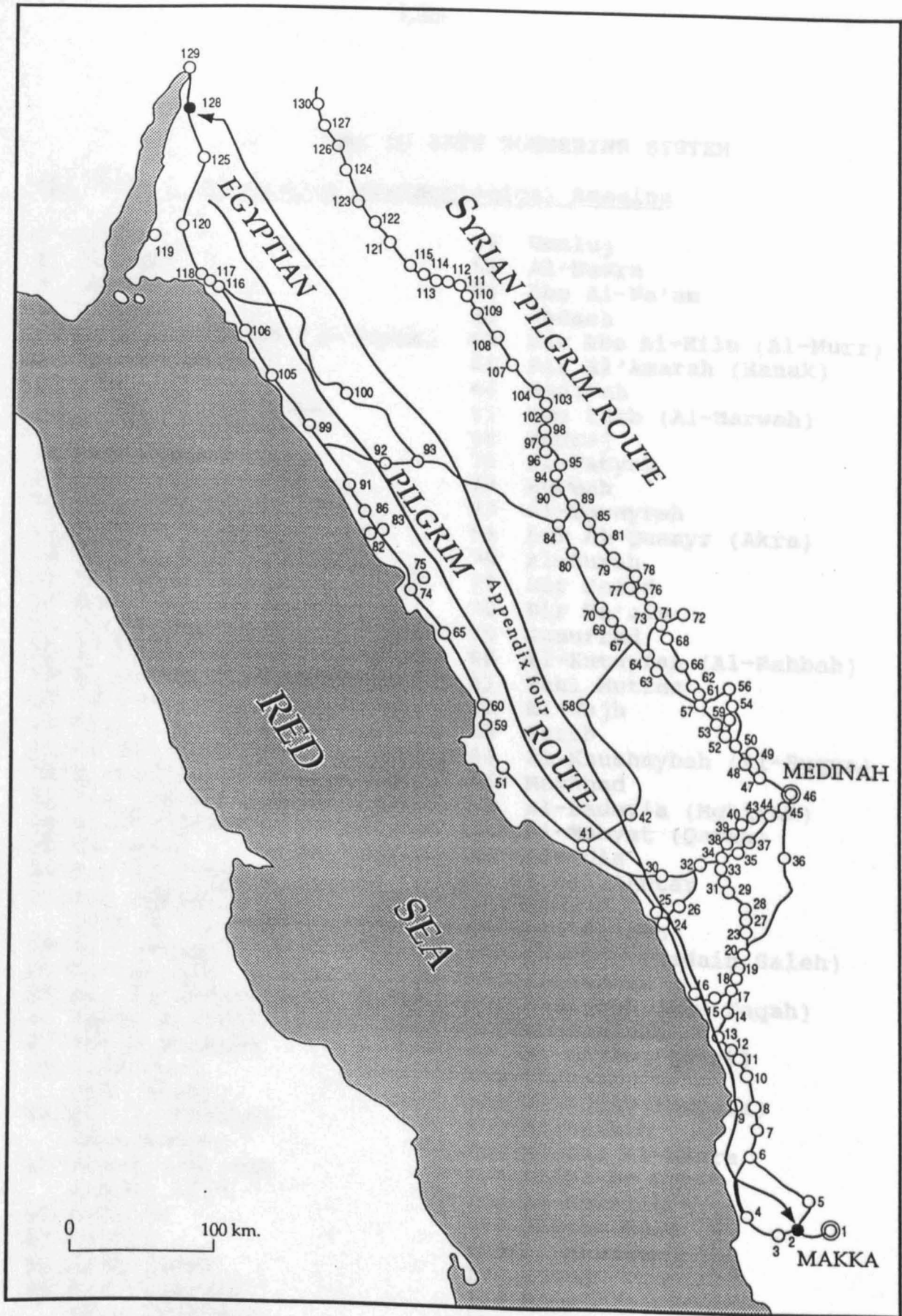
A stone surface channel built of stone and plastered with gypsum. For the most part it is covered with a stone ceiling.

APPENDIX 4

The Egyptian pilgrim coastal and inland routes

(sites 128 - 01)





Numbering system used to identify sites for investigation

- 113 Al Awjaryah
- 114 Pirk
- 115 Al-Uthayli
- 117 Al-Khurybah
- 118 'Alunah ('Uyus al-Qasab)
- 119 Naqna

KEY TO SITE NUMBERING SYSTEM

Table A4.1 Sites with Archaeological Remains

1	MAKKA	59	Ummluj
2	Haddah	60	Al-Hawra
3	Bhrah	61	Abu Al-Na'am
4	Jeddah	62	Jadaah
5	Marr Al-Zahran (Al-Jumum)	63	Bir Aba Al-Hilu (Al-Murr)
6	`Asfan	65	Bir Al'Amarah (Hanak)
7	Khulis	66	Hadiyah
8	Qudid (Al-Brikaha)	67	Umm Zarb (Al-Marwah)
9	Al-Qadhimah	68	Madraj
10	Kulayyah	71	Al-Wabyan
11	Al-Jujfah	72	Burmah
12	Al-Jujfah	73	Al-Tawayrah
13	Rabigh	74	Bir Al-Qusayr (Akra)
14	Harsha (Riy`a Harsha)	76	Al-Surah
15	Al-Abwa	77	Bir Jadid
16	Masturah	78	Bir Da'aih
17	Bir Mubayrik	79	Zumurrud
20	Al-Suqya (Umm Al Birak)	80	Al-Kutayfah (Al-Rahbah)
23	Al-Qahah (Bir Qaidhi)	81	Sahl Mutran
25	Al-Jar	82	Al-Wajh
26	Badr	83	Zurib
31	Al-Ruwaithah	84	Al-Khushaybah (Al-Suqya)
32	Al-Safra (Wadi Al-sufra)	85	Mashhad
33	Bir `Abbas	88	Al-Baday'a (Mghirah)
34	Al Misijeed	89	Al-Mabyat (Qarah)
35	Al-Rauha	90	Al-`Ula
36	Bir Al-Mashi	91	Birkat `Antar
37	Bir Adriwish (Bir Al-Fraish)	93	Bida
38	Al-Suwaiqah	94	Al `Athayb
39	Al-Sayalah	95	Al-Hijr (Madain Saleh)
40	Bir Al-Sharyofi	96	Al-Mazham
41	Yanbu Al-Bahr	97	Buwijrah (Abu Taqah)
42	Yanbu Al-Nakh	98	Al-Juninah
43	Al-Hifyah (Al-`Amair)	99	Al-Azlam (Qalat)
44	Bir Al-Mfarhat (Ammfarhat)	100	Shaghab
45	Thu-Al-Hulyfah (Abyar Ali)	102	Al-Agray (Mutala)
46	Medinah	103	Al-Brikah
47	Mukhit	104	Al-Dar Al-Hamra
48	Al-Hafirah	105	Dhiba or Duba
49	Al-Mindassih (Thu Khushub)	106	Al-Muwelih
50	Buwat	107	Khashm Sana
51	Nabat	108	Al-Muazzam
52	Abar Nasif	109	Disad
53	Al-Buwayr	110	Hams
54	Al-Hamra	111	Al-Akhdhar (Al-Muhddithih)
56	Shajwa	112	Mustabighah
57	Istable `Antar	113	Al Awjaryah
		114	Birk
		115	Al-Uthayli
		117	Al-Khuraybah
		118	`Ainunah (`Uyun al-Qasab)
		119	Maqna

- 120 Madyan (Al-Bida)
- 121 Tabuk
- 122 Muhtaib
- 123 Al-Hazm
- 124 Bir Ibn Hirmas
- 125 Al-Sharaf
- 126 That Al-Hajj
- 127 Halat `Ammar
- 128 Haql
- 129 Al-`Aqaba (Ailah)

Table A4.2 Sites without Archaeological Remains

18	Bustan
19	Al-Thibrah
21	Bir Salih
22	Al-Sidr
24	Riyis
27	Bir Al-Hafat
28	Al-Watiyah
29	Bir Al-Gnomom
30	Bir Al-Sayd
58	Alis
69	Al-Amair
70	Bir Al-`Am
86	Bir Haramil
87	Al-Shihiban Castole
92	Abu al-Qazaz
101	Shewaq
116	Shormah

Sites which are numbered on the map but are not named on this list do not have any evidence of ancient water resources or any mention in historic pilgrimage literature.

Site numbers 55, 64 and 75 were not used.

Site Number: 128

Route Identified: C1

Site Type: Sea port

Haql

This pilgrim station is situated 27km south-west of Ailah (Al'Aqaba) (29°18'N and 34°57'E) on the eastern coast of Al-'Aqaba Gulf.

This pilgrim station was mentioned by early pilgrim writers journeys to MAKKA from Egypt. They placed it after Ailah on the Egyptian pilgrim coastal route. Haql is situated about 16 miles south of Ailah (Al-'Aqaba). Musil (1926, Vol. 1 pp. 88-94) describes the road from Al-'Aqaba to Haql, he refers to Haql as a small oasis consisting of palm groves and springs which are either salty or brackish. Ibn Khurdadhabah (1889, p. 149) refers to Haql as a pilgrim station on the Egyptian pilgrim route from Egypt to MAKKA sited between Ailah and Madyan. Ibn Alkalbi says Haql is on the shore and is the property of Tima quite a large town located in the north-western province of Saudi Arabia. Abu Said says Haql is a village near Ailah on the sea (Yaqut 1955, vol 2, p.278). Al-Hamadani (1974, p. 321) also refers to Haql as a seaport of Tima.

Haql is regarded as the major town in the region. In the past, Haql was well known and important as a way station for the pilgrims as well as travellers who came from Egypt and North Africa to the holy cities of MAKKA and Medinah. They stopped at Haql to rest and refresh themselves

before continuing on their journey (Al-Qithami 1985 Vol. 1, pp. 186-189).

In contradiction Al-Jaziri (1983, Vol 2, p. 1250) says that Haql is a village near Ailah, a day's journey from the sea.

An inspection which was made of the area showed that there are some water resources that include springs and wells. These water resources are located very close to the sea. One of these springs is located about 4m east of the sea, its water is drinkable. Sometimes the sea water covers it, particularly in the winter (see A4 plate i). There are also some Abyar (wells) situated very close to the sea and their water is fresh and drinkable. About 3km from ancient Haql there is a spring, its water is not suitable for human consumption but it is adequate for animals and plants. It also is located near the sea. Haql is now quite a large town with more facilities.

Site Number: 125

Route Identified: C1

Site Type: simple

Al-Sharaf

This pilgrim station is situated 50km south-east of Haql, (28°55'N and 35°10'E). This pilgrim station is recorded as a stopping place on the conventional, inland, Egyptian pilgrim route between Ailah-Al-'Aqaba and

Site: Haql



A4 Plate i

The remains of a seasonal fresh water spring near the sea at Haql.

and Africa. It is located about 700 miles of Al-Bahari at the mouth of the Red Sea. It is situated about 100 miles from the coast. The well and the sea around it are very shallow. The water is very fresh and clear. It is a very good source of water for the people of the area. It is a very important source of water for the people of the area. It is a very important source of water for the people of the area. It is a very important source of water for the people of the area.

MAKKA. They placed it after Ailah in the north and before Madyan in the south. For instance Ibn Rostah (1892, p. 183) mentions it calling it Sharaf Al-Nam'l, Qudamah (1889, p. 130) mentions it as Sharaf Al-Bal, so does Al-Yaqubi (1892) all these Islamic writers place it on the Egyptian pilgrim inland route from Ailah to Medinah and MAKKA. Al-Harbi (1981 p. 649) mentions it as a pilgrim station on the Egyptian inland route. Al-Sharaf is considered as a halting place on the Egyptian pilgrim route and has abundant water particularly during the rains (Al-Qithami 1985, vol 1 p.248). The area is mountainous and very rough. The pilgrim caravans face difficulties passing through the area both going and returning from MAKKA. The ancient water resources consisted of springs which were located in the mountains and some ancient wells which once existed at the foot of the mountains.

Bir Mjifil was a watering place which was visited by pilgrims from Egypt and Africa. It is located about 10km north of Al-Sharaf at wadi Mjifil. (Al-Qithami 1985, vol 2, p.127-129). Unfortunately, the well and the area around it no longer exist, because a modern paved road which runs between Tabuk and Haql has changed the area. There is a bir located nearby which is situated about 80m, above the base of the water level.

It is a dug well or possibly a spring. It has been dug into the rock and has a circular mouth opening with an interior diameter of 1.50m. The visible depth of the well is about one meter and there is no water

in it (see A4 plate ii). It is situated about 6km north of the new village of Al-Sharaf and about 600m west of the paved road.

The modern village of Al-Sharaf is now located at the junction of the roads which run between bir ben Hirmas on the south-east and Haql on the north-west and the paved road which goes southwards to Al-Bid'a-Madyan.

Site Number: 119

Route Identified: C1

Site Type: Sea port

Maqna

This village is situated on the east coast of Al'Aqaba Gulf about 29km north of Al-Bid'a-Madyan or Maghair Shu'aib about 28°24'N and 34°44'E.

The village has abundant water resources, particularly springs which flow among the palm groves (see A4 plate iii). Maqna is an ancient village which grew up in early Islamic times (Al Qithami 1985, Vol 2, p.365). Al-Jasir also refers to Maqna as a village on the eastern shore of the Gulf of Al 'Aqaba between Al-Muwelih ancient (Al-Nabak) and Al-'Aqaba (Al-Jasir 1981, p 435). Today it is a small seaport with modern houses, paved roads and ample facilities. Because of the spring water, storage facilities are unimportant.

Site Number: 118 and 117

Site: Al-Sharaf



A4 Plate ii

A view showing the remains of an ancient bir which is dug into the rock near the mountain top. It is now filled with earth.

Site: Maqna



A4 Plate iii

A general view showing a spring in the Maqna area which is still flowing through a forest of palm-groves and trees.

Route Identified: C1

Site Type: Junction

'Ainunah ('Uyun Al-qasab) and Al-Khuraybah

This pilgrim station is located 50km south-east of Al-bid`a-Madyan, (28°03'N and about 35°20'E). It too was mentioned by early Arabic and Islamic writers. Al Yaqubi (1892, p 341) placed it between Madyan in the north and Al-'Uwainid in the south-east.

It lies at wadi 'Ainunah; it is a sedimentary basin with abundant spring water which runs from east to west and leads to the Red Sea at Al-Khuraybah (see A4 plate IV).

The pilgrim station consists of two sites, one, Al-Khuraybah, is located on the Red Sea. Al-Khuraybah has many palm trees and agricultural settlements, but most houses have been abandoned.

The second, 'Ainunah, is located about 2km east of Al-Khuraybah in wadi 'Ainunah. This wadi has supplies of spring water. The valley has many palm groves and other trees with water running freely among them (Al-Jasir 1984 p. 26). Al-wadi is inhabited and the area is rich in archaeological sites, there are a lot of remains of foundations and walls scattered around and the remains of a canal which ran between 'Ainunah and Al-Khuraybah. 'Ainunah was a crossroads, where pilgrims who wished to visit Medinah first went. They could then continue towards the south-east to meet the Syrian pilgrims at Al-Suqya (Al-Khushaybah)

which is located at the meeting point of wadi Al-Jazil with wadi Al-'Ula and then join the Syrian pilgrim caravan heading towards Medinah. The Egyptian pilgrims who preferred to go to MAKKA to make Al- Hajj pilgrimage followed the coastal route.

Al-Mawsawi (Kibrit 1985 pp. 1819) called this site 'Uyun Al-Qasab and says that there is a spring running through a forest of groves. He also said that the pilgrims only stayed there one night before continuing their journey.

Site Number: 110

Route Identified: T1

Site Type: simple

Shaghab

This pilgrim station mentioned by early writers is located on the inland pilgrim route about 75km north-west of Bida about 27°10'N and about 36°E. Ibn Khurdadhabah (1889, p. 149), Qudamah (1889, p. 190) and Al-Yaqubi (1892, p. 341) all mention Shaghab as a pilgrim station on the Egyptian pilgrim inland route between Ailah and Medinah. That route branches off from 'Ainunah towards Shaghab and Bida until it reaches Al-Khushaybah (Al'suqya) where the Syrian and Egyptian pilgrims gathered before continuing their pilgrimage to Medinah and MAKKA. Shaghab has abundant water resources, particularly dug wells. Unfortunately, the ancient abyar do not survive because Shaghab is located in wadi Shaghab the area is very rich in water resources. Farms and gardens spread along both sides of Al-wadi and most of the inhabitants grow crops including wheat and palm trees (see A4 plate V). However, the area is lacking in modern paved roads, all the roads that reach Shaghab are rough dusty and unpaved.

Site Number: 93

Route Identified T1



A4 Plate iv

A view showing wadi 'Ainunah where a spring is still running between the mountains through the palm-groves.

Site: Shaqhab



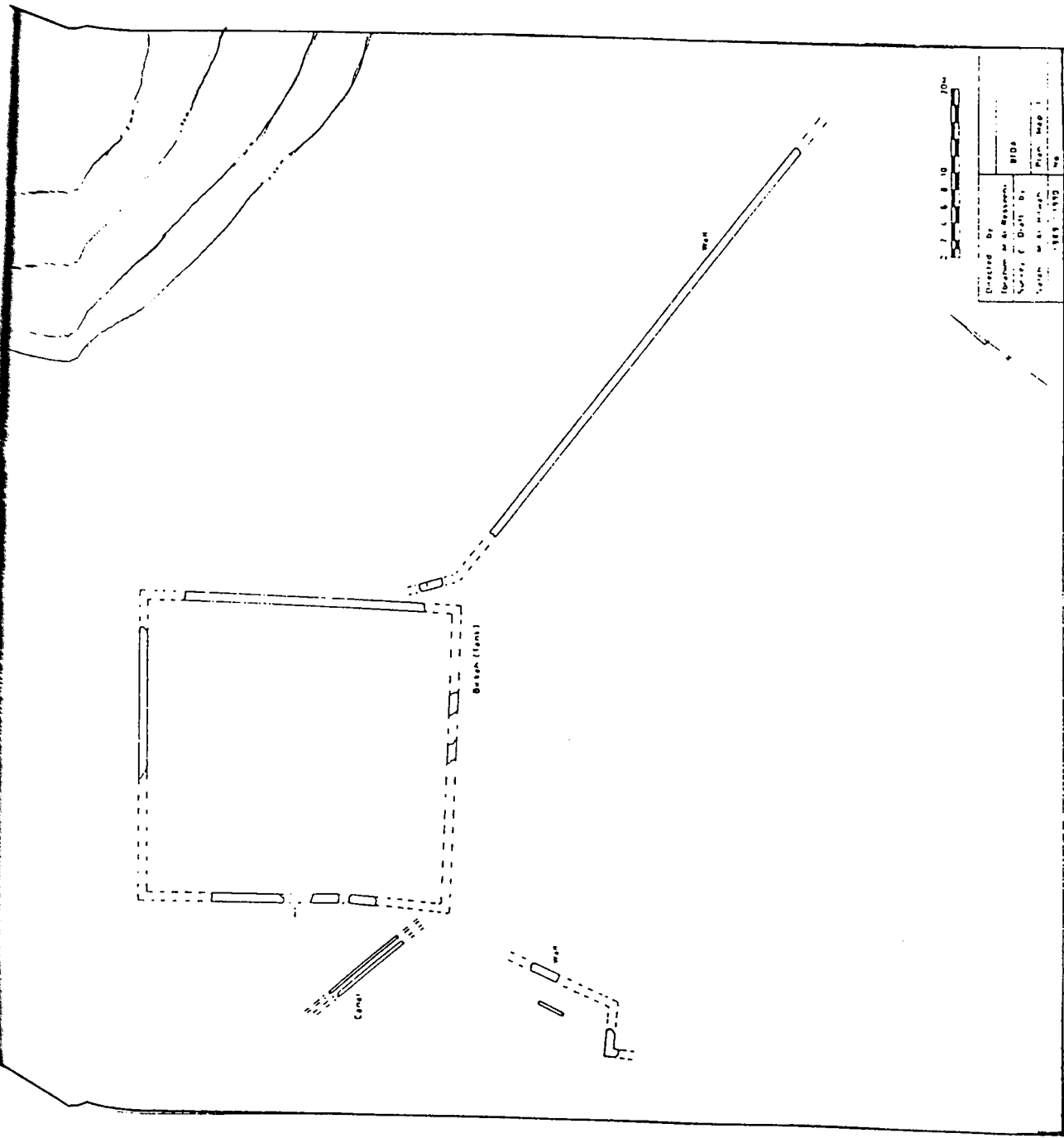
A4 Plate v

A general view showing scattered farms and gardens in the Shaqhab area.

Site Type: simple

Bida

This pilgrim station is a stopping place on the inland route and is situated 73km south-east of Shaghab and 120km north-west of Al-Khushaybah (Al-Suqya) ($26^{\circ}51'N$ and about $36^{\circ}55'E$). Ibn Khurdadhabah (1889, p. 149), Qudamah (1889, p. 190) and Ibn Rostah (1892 p. 183) mention Bida as a halting place and site it south of Shaghab north of Al-Sarhatain. Al-Yaqubi (1892, p. 341) sites it south of Shaghab and north of Al-Suqya. Al Maqdisi (1906, p. 84) names it Bida Yaaqub and describes it as a halting place on the Egyptian pilgrim route. He says it is well populated and flourishing. Bida is now quite a large village with agricultural settlements scattered around and there are modern houses interspersed with traditional ones. The pilgrim station consists of a watertank and remains of channels, foundations and the walls of buildings. The tank is approximately square in shape (see A4 plan 1 & folder 28), with an internal measurement of about 34m x 34m. The wall are about 1m thick and were constructed with sedimentary stones, plastered with gypsum on the inside. The walls have nearly all been destroyed and it is mostly choked up with sand, earth and small trees and plants. The visible depth is about 80cm. The corners of Al-birkah have collapsed and consequently there is no indication of where the inlet and outlet of Al-birkah was situated. However, there is a wall adjacent to



Appendix 4 Plan I: Biiyah and distribution system at Bida

the south corner, its length is about 3m and its width is about 1m. The wall rises about 1 metre above ground level. There is another wall which runs towards the east about 8m from the first mentioned wall, its length is about 60m, its width 1m and it runs along the south side of Al-wadi. This wall was constructed with stones and there are the remains of some gypsum plaster to be seen. There are also two parallel walls, the thickness of both of them is about 35cm and their length is about 10m. They end about 5m before they reach the south corner of Al-birkah. Between the parallel walls there is a channel which is about 50cm in width and about 15cm deep, the inside of which has been plastered. The residents who used to live there say that the channel brought water to Al-birkah from a spring situated in the mountains to the west of Al-birkah. Some parts of this channel are visible and can be seen about 200m and 500m away from Al-birkah (see A4 plate VIa,b). Unfortunately, the spring has now dried up and no longer exists.

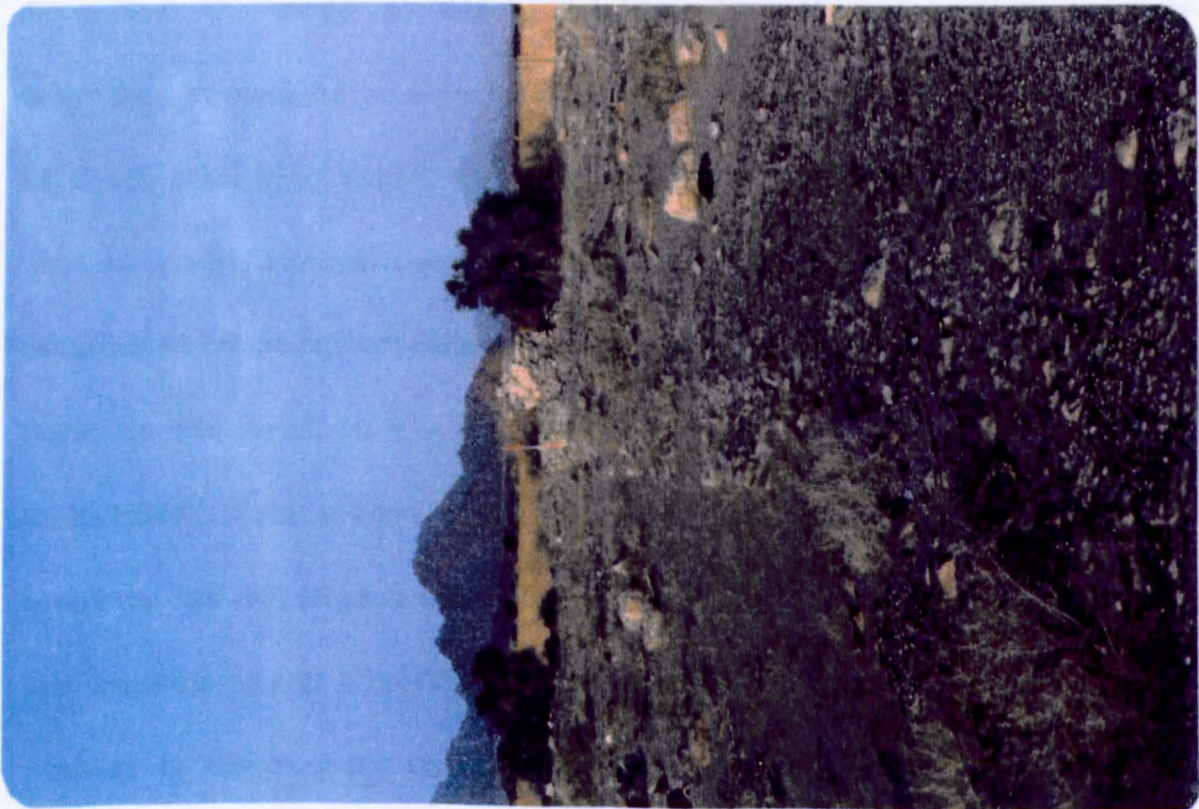
Wadi Bida passes near to the north corner of Al-birkah at a distance of about 10m. Al-wadi is narrow near Al-birkah, it is about 40m in width. Al-birkah and the remains of the channel are now in the grounds of a cemetery which is enclosed by a wall which was constructed with bricks and cement.

The village of Bida has abundant supplies of water particularly from pumped wells and because of this the area has many farms and gardens.



A4 Plate via

A view showing remains of a birkah located inside a cemetery. It is built with cut stones plastered with gypsum. The remainder of its depth is clearly shown.



A4 Plate vib

A view showing a stone channel which connects to A1-birkah. It also shows the width of its walls.

Site Number: 106

Route Identified C2

Site Type: Sea port

Al-Muwelih

This pilgrim station on the coastal route is situated 60km south-east of Ainunah and 33km NW of Dhiba ($27^{\circ}41'N$ and $35^{\circ}29'E$) on the Red Sea. Qudamah (1889, p190) locates Al-Nabak south of Al-Sila and north of Dhiba. According to Al-Jaziri (1983, Vol 2, p. 1250) the name of Al-Nabak changes to Al-Muwelih. He places it on the shore of Bahr Al-Qulzum, and describes its water as brackish and bad. Al-Jasir (1983, p. 75) describes Al-Muwelih as a fortified seaport consisting of many abyar some of which have good water, there are also some palm groves. It lies in wadi Al-Muwelih which runs from east to west to the Red Sea. It was pinpointed by early writers as being between 'Ainunah in the north and Dhiba to the south on the Red Sea.

Al-Muwelih is now a town which consists of both modern and traditional housing. It contains a number of ancient abyar. There are some farms and gardens which consist of palm trees and plants. Al-Abyar are similar to one another in their architectural style and design and the materials in which they were built. All of them are lined with stones and have circular mouth openings which measure about 4.50m in diameter.

Some of them have a water level of about 5.50m (see A4 plate viia,b).

The water is unsuitable for human consumption but suitable for animals and for the cultivation of crops.

Wallin, (1979, pp 298 - 299) describes Al-Muwelih as dependent upon the Egyptian government, and one of the more important places on the Egyptian pilgrim caravan routes to Al-Hijaz. Like other principal stations on the pilgrim caravan routes, it contains a castle and a few stone houses. Wallin also says that the water at Al-Muwelih though not always good is abundantly supplied by numerous shallow wells in and around the town. Springs yielding tepid and brackish water occur along the whole of this coast not far below ground level and sometimes quite close to the high watermark.

Site Number: 105

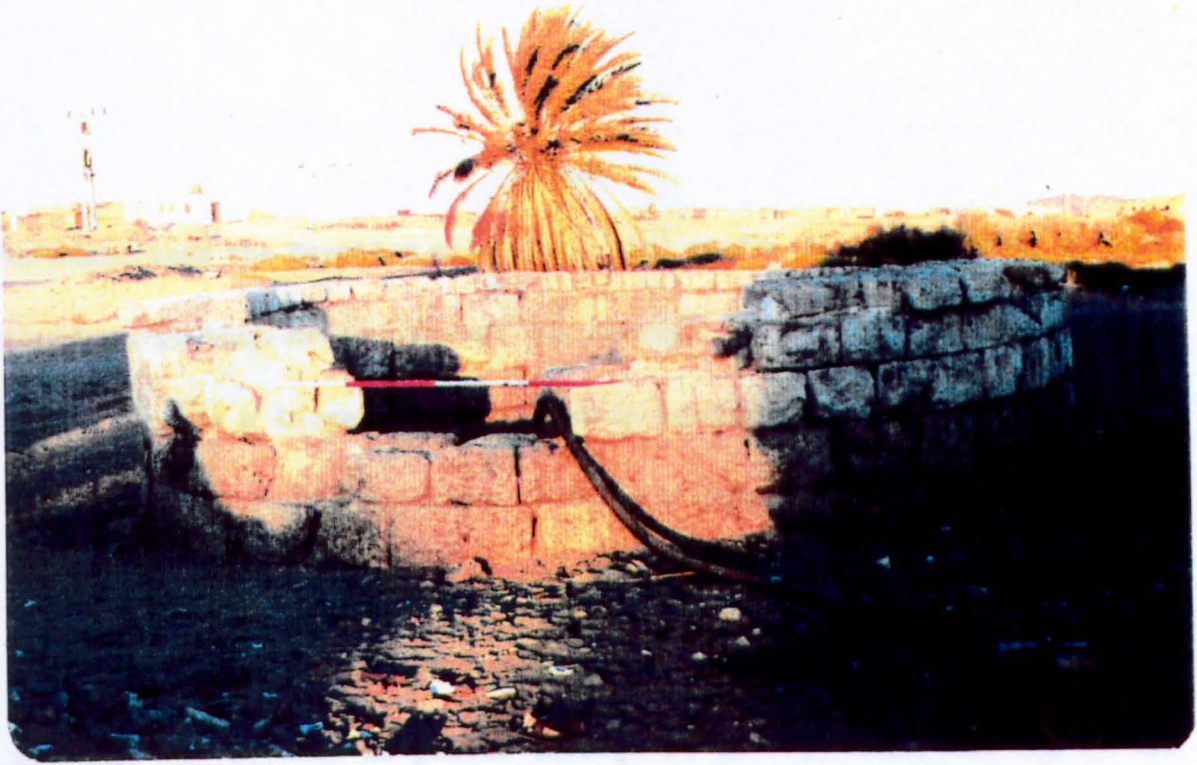
Route Identified: C2

Site Type: Sea port

Dhiba or Duba

This pilgrim station is situated 35km south-east of Al-Muwelih and north-west of Al-Azlam (27°21'N and 35°42'E) on the east coast of the Red Sea.

Early writers sited it after Al-Nabak (Al-Muwelih) in the north and before Al-Azlam in the south. Al-Harbi (1981 p. 651) mentions it when



A4 Plate viia

This ancient circular well is lined with trimmed stone plastered with gypsum. It extends about 1/2 m above ground level.



A4 Plate viib

A further well in this area shows the internal trimmed stone and an inscription stone placed on the south side.

he enumerates the Egyptian pilgrim coastal route. Al-Yaqubi 1892, p. 341) mentions it when he enumerated the coastal route. This pilgrim station became quite a large town with modern houses, shops and markets. Al-Himyari (1975, p. 376) mentions Dhiba as a dependency of Medinah, he also says Dhiba has a safe seaport with fresh water and abundant trees. He also says there are high mountains between Dhiba and Madyan. Sadiq (1313 A.H. pp. 17-18) when he passed through it in 1227 A.H./1880 AD) on his way to MAKKA said "We stayed at the station of Dhiba that is named (Salma and Kifafah) it is a wide place surrounded by mountains very close to the sea. It possesses houses, storehouses, mosques and small towers". The ancient water resources (a number of wells) are located east of the town and about 20m east of the modern paved road. I selected two birs as examples. One of these abyar has very distinctive architectural features. Al-bir has quite a large circular mouth opening with a diameter of about 3.80m, the thickness of its walls is about 50cm and it is lined with tufa. The visible depth of the well is about 3m. It is not used any more even though there is still water in it. There are some arches and curves on the shaft of Al-bir. There is also a small basin (trough) and two pillars situated opposite to one another at each side of this trough. They were used for lifting water from Al-bir and the trough was used for collecting the water (see A4 plate viiia and plan A4.ii & folder 20).

Site: Dhiba



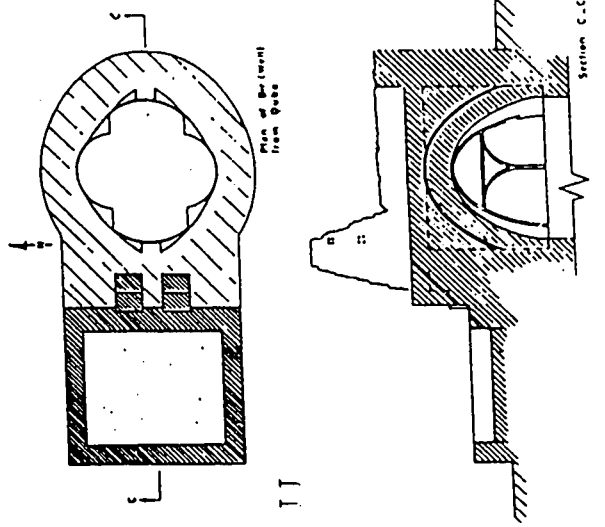
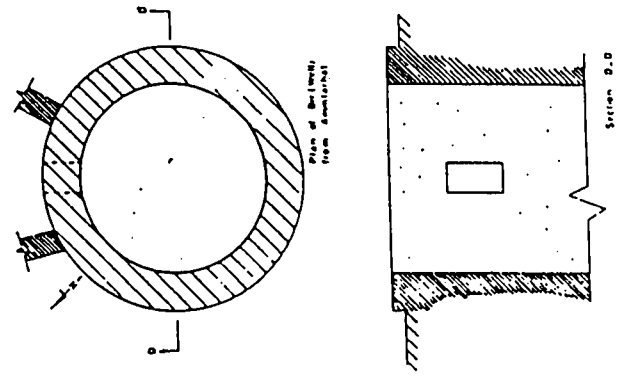
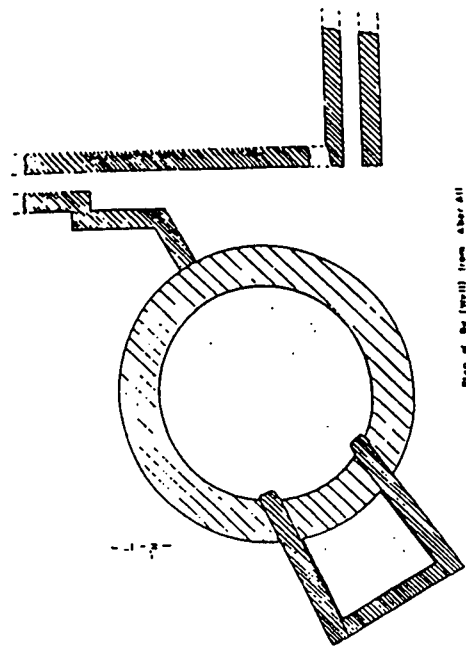
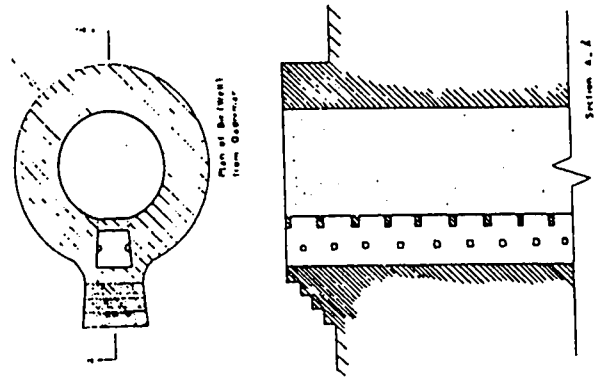
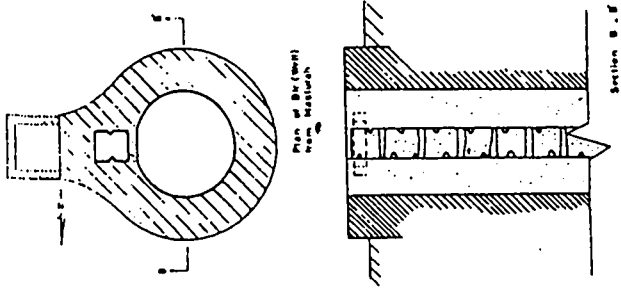
A4 Plate viiia

An ancient bir built with distinctive architectural style in which arches are built on its shaft. Some of the columns would be used to support a water scoop.



A4 Plate viiib

A view from the cross perspective showing a water collection trough adjacent to the well, it also emphasises the use of the columns to support water gathering apparatus.



plan II



Directed by	...
Designed by	William M. Al. Bassett
Checked by	Wm. C. Dell, Jr.
Drawn by	Edgar (Went)
Section	Plan & Section
Date	1917 / 1920

The second bir is located about 50m from the first one. It is quite large with a circular mouth opening with a diameter of about 4.50m. Its remaining depth is about 3m. It is lined with tufa and the thickness of the wall of the shaft is about 1m (see A4 plate Viiiib).

There are some wells located within the farm. These ancient water resources were used by Egyptian pilgrims and pilgrims from other African countries.

There is a castle located in the old part of Dhiba, some inhabitants say that it was built in the time of King Abudullaziz Ibn Saud about 1930. Some say it was constructed before this but repaired in 1930.

Site Number: 99

Route Identified: C2

Site type: simple

Al-Azlam (Qalat)

This pilgrim station lies on the coastal route 47km south-east of Dhiba (27°03'N and 36°02'E) on the eastern coast of the Red Sea. Al-Mawsawi (1965 p 17) mentions it as a way-station on the Egyptian pilgrim coastal route between Egypt and MAKKA. He also says that there is a castle in which the pilgrims could put their luggage till they returned from MAKKA. Its water is brackish. Al-Jasir (1977 p. 83) says Al-Azlam was one of the halting places on the Egyptian pilgrim coastal route. Its water is

undrinkable but despite this it is well known in the travellers books. It has a castle which was built before the 10th century of Al-Hijra (16th AD) to protect the pilgrims.

This pilgrim station lies in wadi Al-Azlam that goes down to the Red Sea.

The station is located east of the Red Sea and east of the modern paved road. The site consists of the remains of a bir. It is an ancient, circular bir at the base of the wadi but unfortunately it is completely choked up with sand. It is lined with stones and its shaft measures about 3.5m (see A4 plate ixa). It also has the remains of a castle (see A4 plate IXb)

Site Number: 91

Route Identified: C2

Site Type: simple

Birkat 'Antar

This pilgrim station is situated 55km south-east of Al-Azlam and 50km north-west of Al-Wajh, (26°37'N and 36°17'E), in wadi 'Antar which runs from east to west and enters the Red Sea at Sharm 'Antar (bay of 'Antar).

Early writers placed this site on the coastal Egyptian pilgrim caravan route between Egypt and MAKKA between Al-Azlam in the north and Al-Wajh in the south on the Red Sea. Al-Zayani (1967, p. 223) mentions Birkat

Site: Al-Azlam (Qalat)



A4 Plate ixa

Built from trimmed brown stones this ancient well is visible above ground. It is located at the base of a wadi.

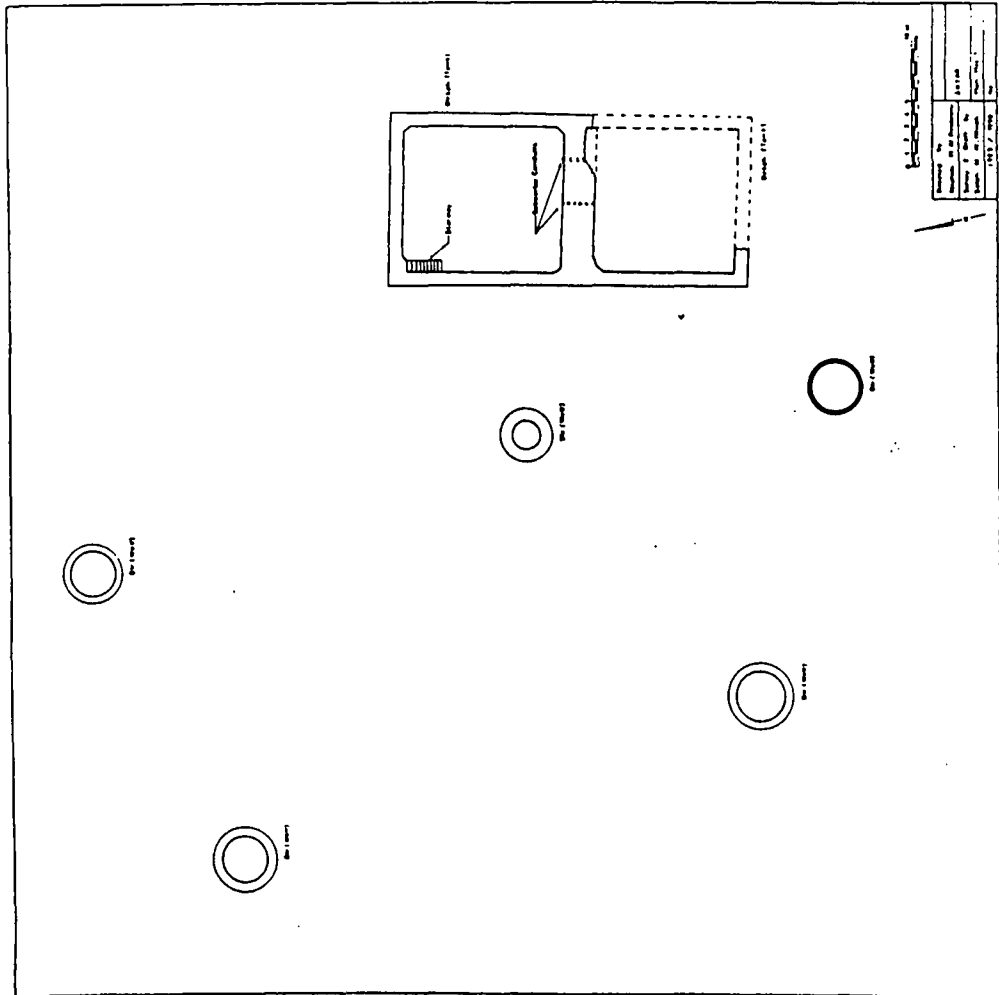
The northern birkah is roughly rectangular in shape and it measures about 12.25m x 11.15m. The walls are about 1/2m thick. There is a stairway on the inside of the north-west corner, its width is about 95cm and it leads down to the ground. Al-birkah is constructed with red and black granite stone which can be seen in the mountains nearby. It is plastered



A4 Plate ixb

To the west of the well lie the remains of a castle, there appears no above ground connection between the castle and the well. and is about

Antar as a way-station on the Egyptian pilgrim coastal route. Al-Jasir (1983, p. 78) describes it as a round harbour consisting of three trimmed stone wells. Its water is fresh. Al-Jasir (1977, p. 93) refers to birkat 'Antar as one of the Egyptian pilgrim stations on the coastal route. The area in which the site is located is mountainous and very rough. The pilgrim station is located at wadi 'Antar 3km east of the Red Sea. There are some principal ancient water resources. These include two birak and about 5 abyar (see A4 plan iii & folder 29). The northern birkah is roughly rectangular in shape and it measures about 12.25m x 11.15m. The walls are about 1m thick. There is a stairway on the inside of the north-west corner, its width is about 95cm and it leads down to the ground. Al-birkah is constructed with red and black granite stone which came from the mountains nearby, it is plastered inside with gypsum. There are buttresses that have triangular sections, at each corner of Al-birkah, in order to strengthen the walls. Earth and sand has been blown and washed into Al-birkah so that the visible depth is only 3.5m. The northern birkah is adjacent to and connects up with the southern birkah via a small narrow canal built on the upper part of the dividing wall. The southern birkah is square in shape, its dimensions are 11m x 11m and the western wall is 1.30m thick. Both the east and south wall have been destroyed and are covered with debris. The north wall is the dividing wall between the two birak and is about



A4 Plan iii: Birak and abyar at Birkat 'Antar site

42cm in width. The visible depth is about the same as that of the northern birkah. The materials used for the construction of the two birkak are the same and interiors of both are lined with symmetrical trimmed stones painted with gypsum (see A4 plate Xa). There is no evidence of an inlet or outlet to Al-birkah so perhaps supplies of water were obtained from wells which were found nearby or collected in periods of heavy rainfall. There are five abyar located to the west of Al-birkah about 30-70m away. All the abyar have similar architectural features. They have circular mouth openings and are lined with stones.

The diameters of the mouth openings range between 2m and 3.70m and the water level is about 4m from the surface of the ground. Some of the abyar have water in them and are used as the water is drinkable, but others are choked up with earth and sand whilst in others the water is brackish. One of the abyar has fresh drinking water which is drawn by a modern pump and distributed via tank cars to the inhabitants (see plate A4.Xb). Al birkah and Al-abyar are located in wadi 'Antar which is a narrow valley bordered by mountains to the north and south.

Site Number: 82 & 83

Route Identified: C2

Site Type: Sea port

Site: Birkat Antar



A4 Plate xa

Two ancient birak are built with trimmed stones plastered with gypsum. They are separated by a wall but connected by a surface channel at the top of the wall.



A4 Plate xb

One of the abyar located west of Al-birak. It is lined with cut stones and the shaft rises above ground.

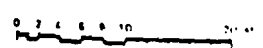
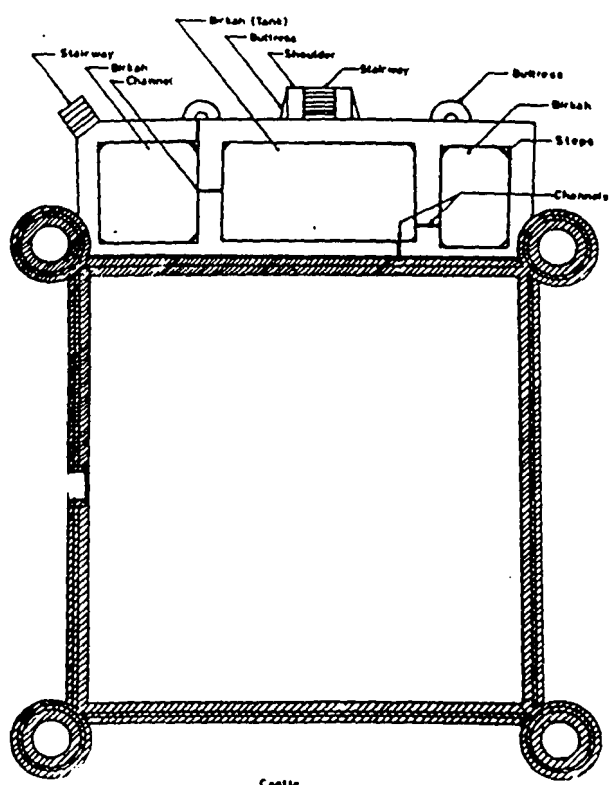
Al-Wajh and Zurib

This pilgrim station mentioned by early writers on the coastal route lies about 50km south-east of birkah 'Antar, ($26^{\circ}14'N$ and $36^{\circ}28'E$) on the eastern coast of the Red Sea. They sited it after Birkat 'Antar and before Ummluj. Al-Yaqubi (1892, p 341) sites it on the Egyptian pilgrim coastal route from Egypt to MAKKA as a way-station. Qudamah (1889, p. 191) located it south of Diba and north of Mankhus when he enumerated the Egyptian pilgrim coastal way stations. It is situated at wadi Zurib which runs from east to west to the Red Sea. The route of the pilgrim caravans passed east of the seaport of Al-Wajh about 8km from wadi Zurib, an area with abundant water resources, particularly wells. It consists of three birak, a number of Abyar and a castle (see A4 plan IV & folder 30). The three birak are linked to the north-west wall of the castle (see A4 plate xia). The central birkah is the largest one of the three and approximately rectangular in shape, it measures about 18.50 x 9.50m on the inside. The second birkah is square shaped and measures about 9.50m x 9.50m. It is linked to the south-west wall of the central birkah. The third birkah is linked to the north-east wall of the central birkah and is roughly rectangular in shape and measures about 6.50m x 9.80m. The three birak are separated by two walls, each wall being 2.25m wide. One wall separated the central birkah and the south-west birkah, the other separates the central birkah and north-east birkah.

⊙
Bir (Well)

⊙
Bir (Well)

⊙
Bir (Well)



Directed by:	
Ibrahim M. Al. Hussein	ZUMRIN
Survey & Draft by:	Plan Map
Salah M. Al. Hussein	1989 1990

Plan A4: iv, Birak, abyar and a castle at Al-Wajh (Zur ib)

The three birak are surrounded by a further wall which is about 2.20m in width and they are connected to each other by two uncovered surface channels. One channel connects the central birkah to the south-west birkah and runs along the top of the wall separating the two birak. The other channel connects the central birkah and north-east birkah and is similarly placed on top of the separating wall.

The central birkah may be connected with Al-bir which is located in the castle as there is an uncovered surface canal situated above the surface of the south-east wall of the central birkah. This canal runs underneath the north-west wall of the castle. Because the castle is closed and the entrance has been blocked up with cement and bricks it is difficult to tell how the canal was constructed. According to people who lived in the area, the bir is located inside the castle and probably provided water for Al-birkah together with rain water. The three birak were constructed with various materials. The interiors were mostly built with baked bricks although some of the stories were constructed with tufa. Outside, tufa was the only building material used and it was available from areas near the sea. The three birak are plastered inside and out with gypsum, their depth is about 3.30m and they rise about 1.6m above ground level. There is an external stairway which connects the western wall with the central birkah, its length is about 3.15m. The stairway has two shoulders which are about 1.60m wide. These shoulders

are sited on either side of the stairway and support triangular buttresses. There is another stairway which is sited outside, on the west corner of the south-west birkah and is about 3m wide. There are two half conical, external buttresses supporting the wall which surrounds the three birak each has a base diameter of about 4m. Outside each corner of the three birak there is a step (see A4 plate XIb).

The castle which is linked up to Al-birkah via its north-west wall, is square in shape and measures 41.60m x 41.60m. There are four circular towers at each corner of the castle. The entrance faces south-west but is now blocked up with bricks and cement. There is an inscription above the entrance dated 968h (1560). The castle is built with tufa (see A4 plate XIc).

There are many building remnants around the castle and over the area nearby associated with a number of abyar at different locations in the valley. They are all very similar in both their design and construction. All of them have circular mouth openings (between 2m and 4m) and are lined with stones. The water level in the wells is about 4m. (see A4 plate XIId) The area in general has abundant water resources despite the fact that the area is mountainous and rocky.



A4 Plate xia

A general view of three birak and an adjacent castle. All are built of stone plastered with gypsum and in the foreground some indication of the thickness of the plaster may be gained.



A4 Plate xib

A stairway leads to Al-birak and several buttress supports are visible. Beyond is one of the castle's former towers.



A4 Plate xiC

The castle named Qualat Zurib is built of stone and is relatively well preserved as this view of the main entrance and towers testifies.



A4 Plate xid

One of several abyar scattered over wadi Zurib, it is circular and lined with cut stones.

Route Identified: C2

Site Type: simple

Bir Al-Qusayr (Akra)

This site is located 52km south-east of Al-wajh about (25°53'N and 36°46'E.) The site consists of a bir and a small basin. The site is mentioned by Al-Mawsawi (1965 p. 15) as the next pilgrim halt to Al-Hawra. The site was mentioned as a watering place. Al-Jasir (1984, p. 31) states Akra is a large valley receiving river waters from as far a field as Medinah. It consists of some wells but the water is not good. Unfortunately Al-bir and the basin are in ruins and so measurement is impossible.

Site Number:65

Route Identified: C2

Site Type: Sea port

Bir Al-'Amarah (Al-Hanak)

Bir Al-'Amarah is situated about 52km south-east of bir Al-Qsayr (Akra) (25°30'N and 37°01'E.) The site is probably the pilgrim station of Al-Hanak mentioned by early Islamic and Arabic geographers and travellers.

Al-Batanuni (N.D. p. 36) refers to Al-Hanak as a way-station on the Egyptian pilgrim coastal route, south of Akra and north of Al-Hawra. He

says that it has no water. Al-Jasir (1977, p. 461) refers to Al-Hanak as a village located north of Ummluj on the shore of the Red Sea through which the coastal route passes. It has been mentioned in the pilgrim journeys because the pilgrims who came from the north following the coastal route, passed through it.

There is a bir located in a sandy area, it has a circular mouth opening with a diameter of about 2.5m. It is lined with stone and the level of the water is about 20m. Although repaired recently it has been abandoned and there are no signs of habitation in the area.

Site Number: 60

Route Identified: C2

Site Type: Sea port

Al-Hawra

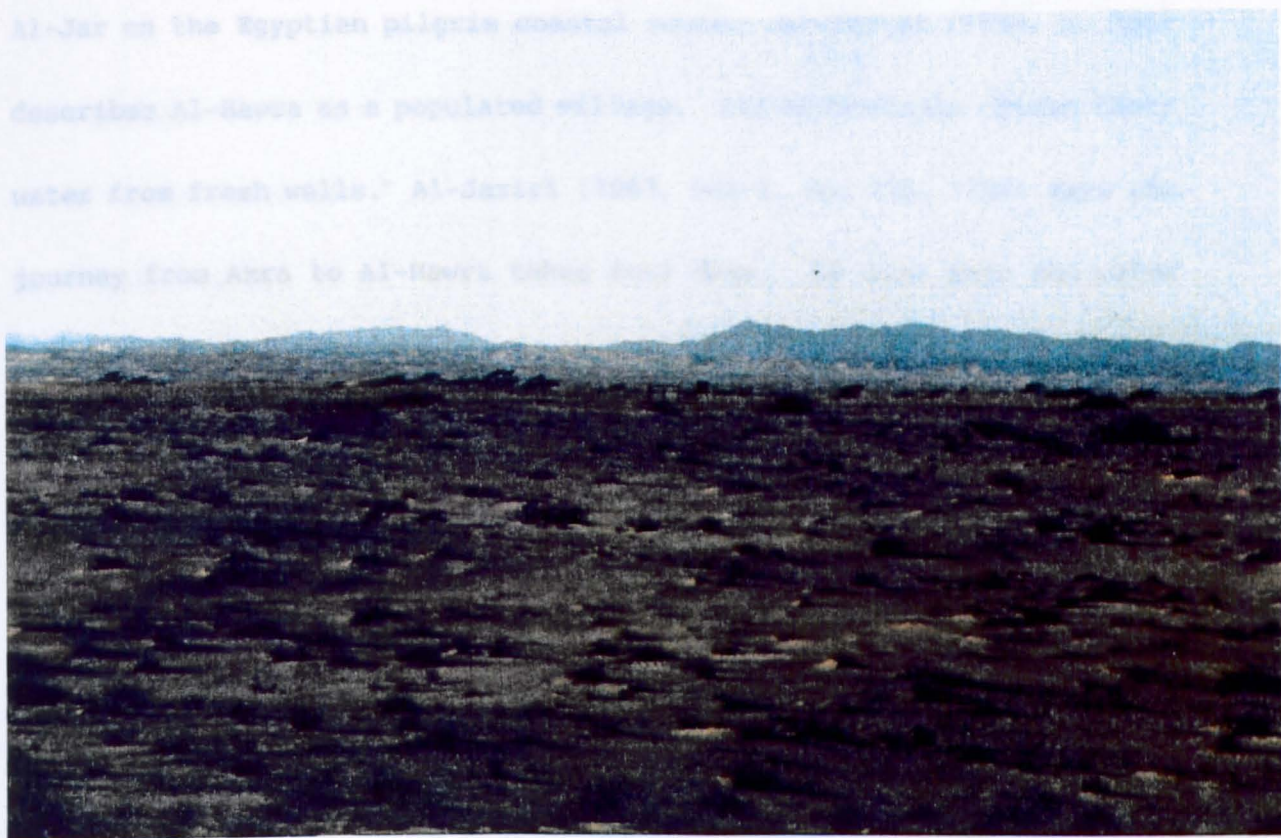
This pilgrim station is situated 50km south-east of Al-Hanak and 8km north of Ummluj', (25°7'N and 37°18'E) on the east coast of the Red Sea.

Al-Hawra is an ancient seaport on the eastern coast of the Red Sea. It is now in ruins. There is an archaeological site surrounded by a wire fence erected by the Department of Antiquities and Museums. The area consists of sandy hills and dunes, there are no signs of any remains of ancient water resources or buildings (see A4 plate XII). When Al-Hawra declined in importance its inhabitants moved out and went to live at

258

Al-Jar on the Egyptian pilgrim coastal route. Al-Jar is described as a populated village, water from fresh wells. Al-Jar is a journey from Agra to Al-Hawra.

Site: Al-Hawra



wadi Al-Qura. It consists of A4 Plate xii

A general view showing the archaeological site at Al-Hawra.

Site Number: 59

Route Identified: C2

Site Type: Sea port

Notes:

This pilgrim station is located (the ruins of Al-Hawra, 27°16'N and 27°16'E) on the eastern coast of the Red Sea. Although it was mentioned by early writers as a stopping place on the coastal Egyptian pilgrim

Ummluj .

Al-Yaqubi (1892, p. 341) locates Al-Hawra south of Mankhus and north of Al-Jar on the Egyptian pilgrim coastal route. Al-Idrisi (1878, p. 350) describes Al-Hawra as a populated village. Its inhabitants obtain their water from fresh wells. Al-Jaziri (1983, vol 2, pp. 125, 1404) says the journey from Akra to Al-Hawra takes four days. He also says the water is unfit for human consumption but safe for animals. In another passage he describes Al-Hawra as a village of Al-Hijaz. Sadiq (1313 A.H., p. 27) describes Al-Hawra as a station located over a wide area with fresh springs and a forest of palm-groves. He says the distance between Al-Hawra and Nabat is 15 hours journeying by camel.

Al-Himyari, 1975, p. 205 states that Al-Hawra is a town at the coast of wadi Al-Qura. It consists of a mosque, palm groves and eight fresh wells.

Site Number: 59

Route Identified: C2

Site Type: Sea port

Ummluj

This pilgrim station is located 10km south of Al-Hawra (25°01'N and 27°16'E) on the eastern coast of the Red Sea. Although it was mentioned by early writers as a stopping place on the coastal Egyptian pilgrim

route between Egypt and MAKKA (Bakr 1981, p. 138) and is a crossroads there is no evidence of ancient water resources.

Site Number: 51

Route Identified: C2

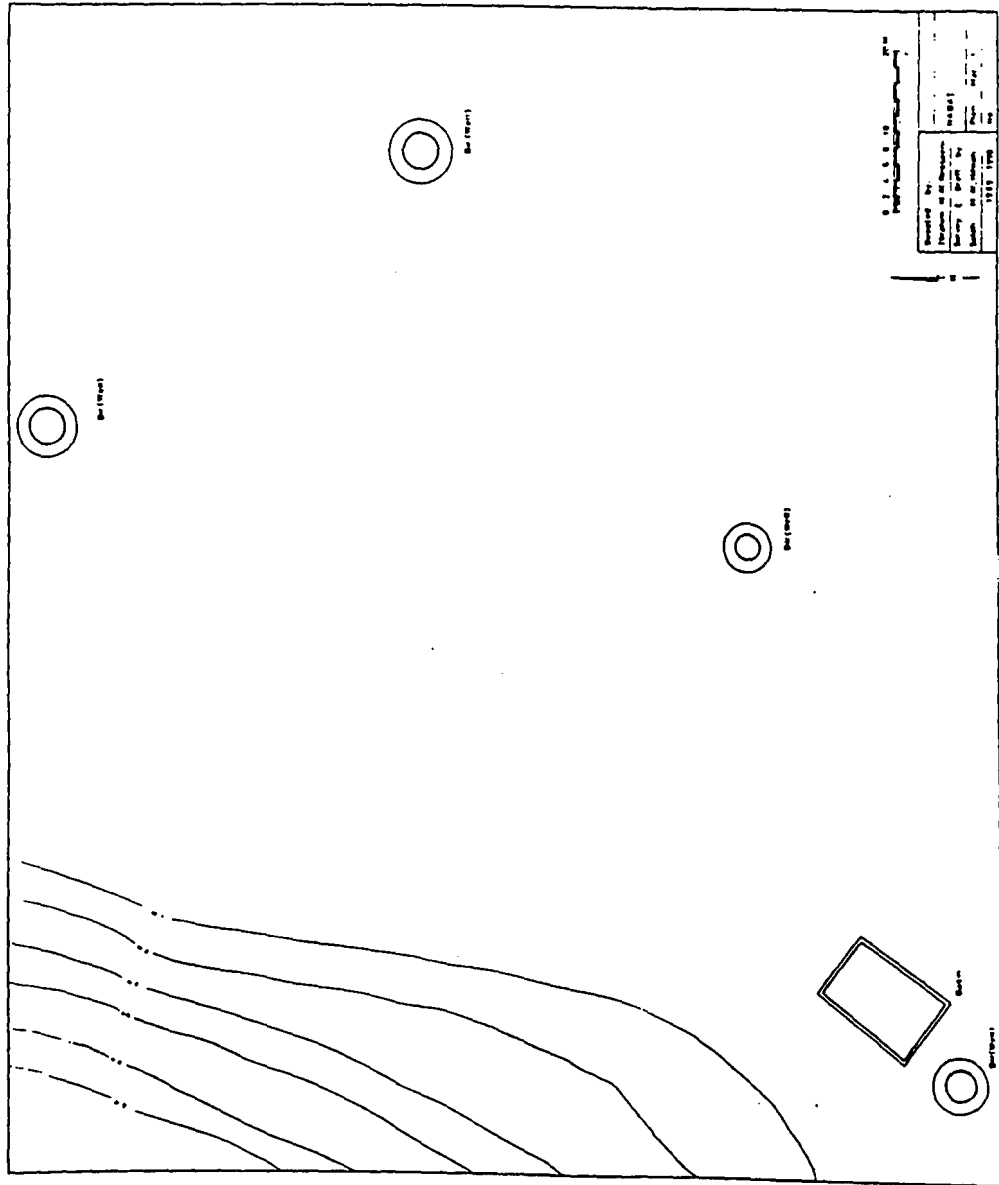
Site Type: Simple

Nabat

This pilgrim station is situated 50km south east of Ummluj, about 100km north-west of Yanbu and about 25km east of the Red Sea ($24^{\circ}42'N$ and $37^{\circ}31'E$) on the inland Egyptian pilgrim route at wadi Nabat. Al-Hijri (N.D. p. 372) says Nabat is a wadi. Al-Mawsawi (1965, p. 12) refers to Nabat as a way station north of Yanbu Al-Nakhl on the inland route from Medinah to Egypt. Al-Jasir (1984, p. 33) describes wadi Nabat as having four abyar built with trimmed stones containing abundant fresh water. Bakr (1981, pp 372) says the road from Al-Hawra to Ummluj goes inland towards the south east to Bir Nabat via Medinah passing through Yanbu al Nakhl. A second road follows the coast towards Yanbu Al-Bahr.

It has abundant water resources, particularly dug wells (see A4 plan V & folder 31). Al-Abyar are all similar in their construction and architectural features and four Abyar have been selected for investigation.

All four Abyar are hand dug wells with circular mouth openings, lined



A4 Plan V: Abyar and a small basin at Nabat

with granite stones available locally. The stone lining reaches to about 9m down, the rest of the well was formed by being dug into the solid rock. Their diameters range between 3.20m and 4.50m. The level of the water is about 11m in each. All four Abyar have had parts of their shafts repaired recently with modern building materials (cement). Al-Abyar are still used, there are diesel powered pumps at each well to draw the water. (See A4 plate XIII a,b) The water is fresh and drinkable and used for humans and animals although there is no sign that it is used for the cultivation of crops. There is a small settlement located about 1km east of Al-Abyar and there are some farms scattered around Al-wadi. Al-wadi has plenty of trees and plants and is rich in ground water.

There is a small rectangular basin nearby Al-Abyar, it measures about 8.70m x 13m. The thickness of its wall is about 50cm and it is built of stone and plastered inside with gypsum. Its condition is poor and it is choked up with debris and it is only about 50cm deep.

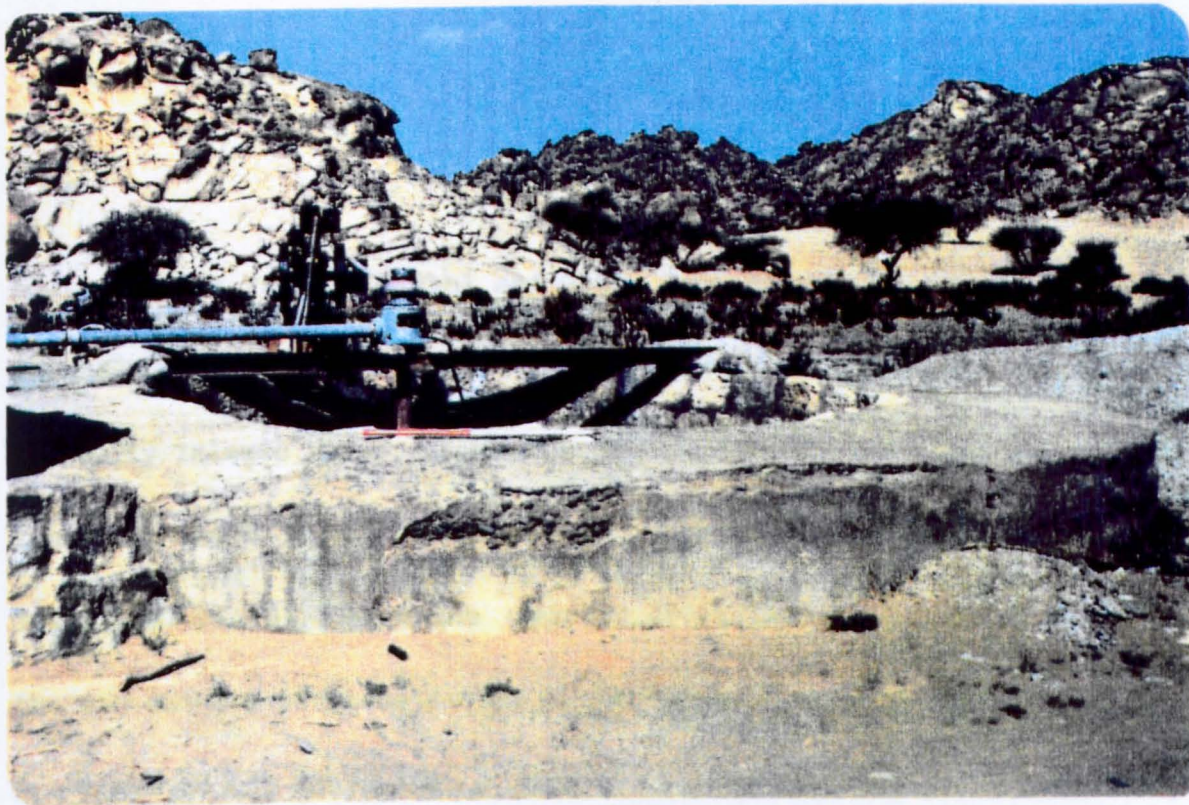
Site Number: 41

Route Identified: C2

Site Type: Sea port

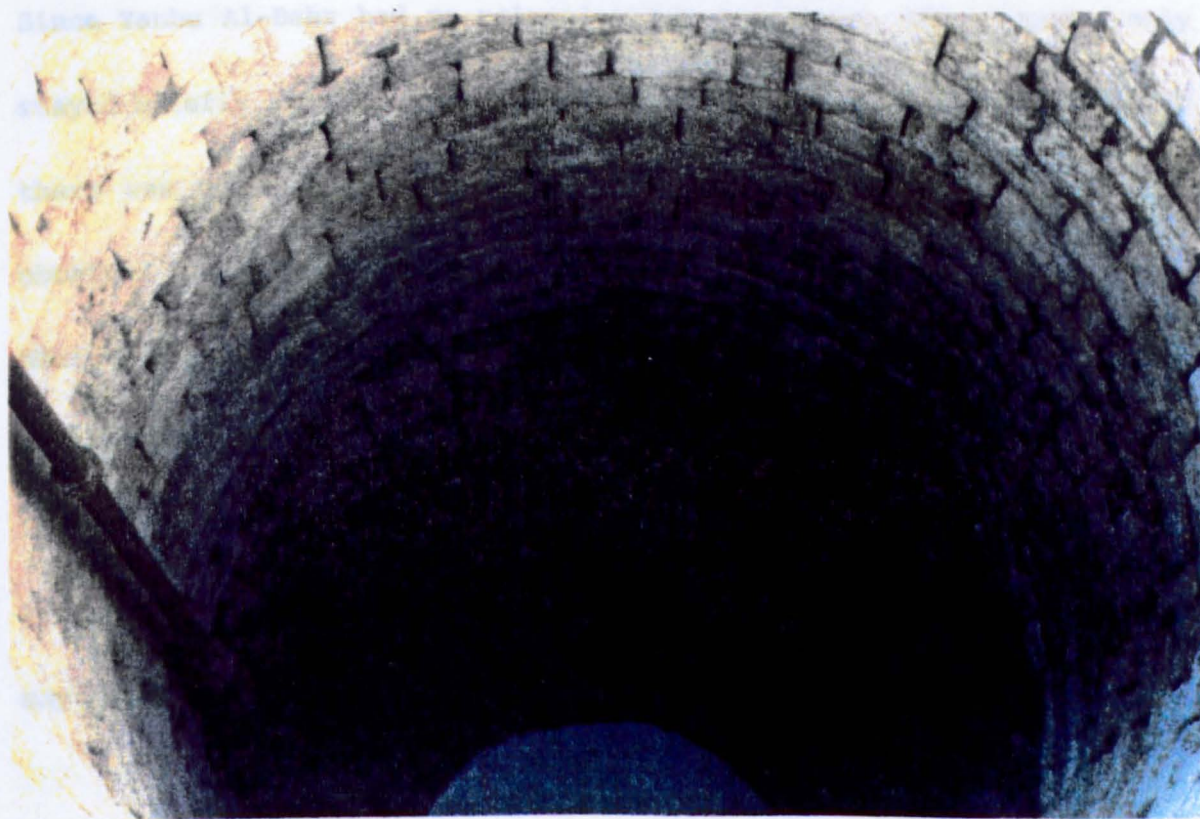
Yanbu Al-Bahr

This pilgrim stopping place lies 140km south-east of Ummluj; 55km



A4 Plate xiiia

A powered pump draws water from this modernised well, but it is an ancient circular dug well lined with trimmed stones and plastered with gypsum. The shaft rises above the ground.



A4 Plate xiiib

The interior of the well shows that it is constructed to a high standard with trimmed stones. These stones extend to the base of the well.

south-west of Yanbu Al-Nakhl and 200km west of Medinah about (24°05'N and 38°04'E) on the east coast of the Red Sea.

In early Islamic times, when Yanbu was mentioned, the name referred to Yanbu Al-Nakhl because Yanbu Al-Bahr was not an important place (Al-Jasir N.D. p. 12). When the seaport of Al-Jar started to decline, in the 4th century of Al-Hejra the pilgrim caravans which came by land or sea began to use Yanbu and it started to flourish, and grow (Bakr 1981, p. 142). Yanbu Al-Bahr lacked in water resources so that "the water is brought from wells three miles east, on camel back and from others (brackish) in the town; also from rain-cisterns". (Hogarth, 1917 p.26) Since Yanbu Al-Bahr had no natural water resources, the pilgrims only stayed briefly and then continued their journey to Yanbu Al-Nakhl where there was an abundance of water. The inhabitants of Yanbu Al-Bahr obtained their water either by bringing it from the village of Al-Misihti which lies about 10km to the east or by building rain cisterns. (Basha 1926, vol 2, p.13).

Nowadays Yanbu is a very important port and new industrial city.

For more information about Yanbu Al-Nakhl and Yanbu Al-Bahr the reader may consult Al-Jasir (N.D).

Site Number: 42

Route Identified: T2

Site Type: simple

Yanbu Al-Nakhl

This pilgrim station lies 55km north-east of Yanbu Al-Bahr and 70km north-west of wadi Al-Safra (24°24'N and 38°38'E.) The area of Yanbu Al-Nakhl covers a large wadi which runs from north-east to south-west for a distance of about 60km until it reaches the Red Sea at Yanbu Al-Bahr. It is mentioned frequently in history books recording early Islamic events because of its location on the trade caravan route between Al-Hijaz and Bilad Al-Sham (Al-Jasir N.D. p.10).

Al-wadi has a number of tributaries so that wadi Yanbu is a large catchment basin where there is an abundance of ground water. Al-wadi has many water resources, springs and wells, but despite the abundance of its water supply, it is not as rich in water as before as many of the springs have dried up (see A4 plate XIV). Al-wadi contains a chain of villages all connected to one another and stretching for a distance of about 35km (Basha 1983, vol 1, p.195). Al wadi also has many farms and gardens with palm groves and many types of plants and crops and the people who live there are permanent residents.

Site: Yanbu Al-Nakhl



A4 Plate xiv

A view of one of the ancient springs of Yanbu still running with water.

Site Number: 32

Route Identified: I4

Site Type: simple

Al-Safra (wadi Al-Safra)

This pilgrim station is situated 70km south-east of Yanbu Al-Nakhl (by dusty unpaved road) (24°03'N and 38°56'E.) Al-Safra described as a village supplied by springs and with farms and palm groves (Arram N.D. p.9) is a wadi valley with several tributaries, it extends for more than 50km and runs from the north-east roughly towards the south-west. Al-wadi has abundant water resources and many palm groves and gardens. It contains a number of agricultural settlements and villages which nearly all connect to one another (Ibn Batutah N.D p. 88). Al Isfahani (1968, p. 410) describes Al-Safra as a wadi with many palm-trees, about two nights journey from Medinah. Al-Himyari 1975, p. 362 describes Al-Safra as a village six day's journey from Medinah. It consists of plenty of springs, farms and palmgroves. Unfortunately most of these villages are now in ruins and only a few people remain. The modern paved road which connects Medinah and Yanbu Al-Bahr passes through there.

There is a village called Al-Wasita, it was called Al-Safra and wadi Al-Safra was probably named after it (Al-Biladi N.D. p. 162). The area is now covered with a forest of palm trees and has abundant water which is obtained from pumped wells. (See A3 plate XV) There is no evidence of

Site: Al-Safra



A4 Plate XV

A forest of palm-groves at Al-Safra indicating the abundant water resources.

tanks and wells. All sites are supported by springs.

Site Number: 26

Route Identified: T4

Site Type: simple

Badr

This village is situated 90km south-east of Yanbu' and 30km north-east of Al-Jar (23° 46'N and 38° 47'E) at the bottom of wadi Al-Safra. The valley is agriculturally very rich. Badr was mentioned by Arabic and Islamic travellers and geographers as a pilgrim station and watering place. It became well known after the battle of Badr that was fought between the Muslims and the Polytheists. The Muslims gained a victory over the Polytheists. Yaqut (1955 Vol. 1, p. 357) refers to Badr as a well known watering place located between MAKKA and Medinah. Ibn Batutah (N.D p. 147) describes Badr as a village with palm-groves, a well fortified citadel and a fountain. Al-Zamakhshari (1855 p. 20) refers to Badr as a watering place located between MAKKA and Medinah. Al-Harbi (1981, pp. 418-20) says the distance from Badr to Al-Jar on the Red Sea is 16 miles, he also says that Badr possesses two springs and various fruits grow there; bananas, grapes and dates. Goods are brought from the sea port of Al-Jar and its people are of mixed race. The springs which once flowed at Badr are now dried up and the farmers use pumped wells

for their water supply.

Site Number: 25

Route Identified: C3

Site Type: Sea port

Al-Jar

This pilgrim station lies (23° 36'N 38° 33'E) on the Red Sea Coast. It is about 10km north west of the village of Al-Rayyis. It is mentioned by the early Arabic geographers as an important seaport and pilgrim station.

Yagut says Al-Jar is a town located on the coast of Bahr Al-Qulzum - the Red Sea - "about a day and night distance" between it and Medinah (Yagut 1955 Vol. 2 p.92). Al-Jasir says Al-Jar was well known in pre-Islamic times and continued to prosper during the early Islamic period when it became the most famous seaport in Al-Hijaz (Al-Jasir N.D. p. 47).

Arram identifies Al-Jar as on the coast transshipping goods from Abyssinia, Ethiopia, Egypt, Al-Bahrain and China. It is quite a large populated village (N.D. p.9). Nasir (1983 p. 86) says that Al-Jar is a small town on the coast of the sea three days from Medinah. Al-Hamadani says Al-Jar is the seaport of Medinah. (Al-Hamadani 1974, p. 58)

The rise of Yanbu Al-Bahr also gave cause to the decline of Al-Jar and

subsequent extinction.

Our surveys yielded no remains, due in part perhaps to the high humidity causing the decay of ancient structures. (See A4 plate XVI)

Site Number: 16

Route Identified: C3

Site type: Sea port

Masturah

Nowadays, there are two places called Masturah. The old, ancient Masturah and new Masturah. The new Masturah lies on the east shore of the Red Sea, while the old Masturah is situated about 10 km east of the Red Sea. They are separated by the old paved road that leads between MAKKA and Medinah. Masturah lies about 75 km south of Badr and about 65 km south-east of the port of Al-Jar, at about 23° 07'N and about 38° 50'E. The old Masturah is mentioned as a pilgrim station by a number of Arabic and Islamic geographers and travellers. Al-Jasir (1983, p. 106) describes it as a village with a large dug well lined with trimmed stones.

The Egyptian pilgrims passed through this site when they came to the holy cities of MAKKA and Medinah to perform Al-Hajj (pilgrimage). Basha (1926, vol 2, p.203) says that Masturah consists of huts and a well 8m in depth with walls 1 metre thick. The well shaft rises about 2 metres

Site: Al-Jar

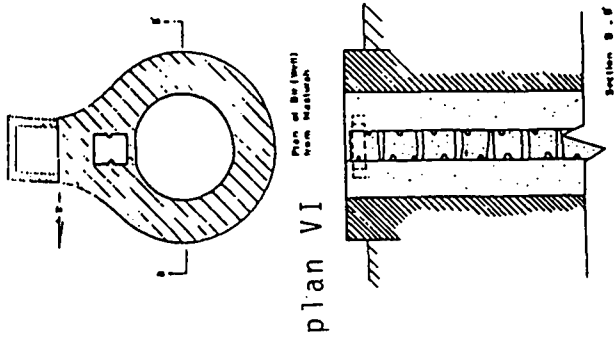


A4 Plate xvi

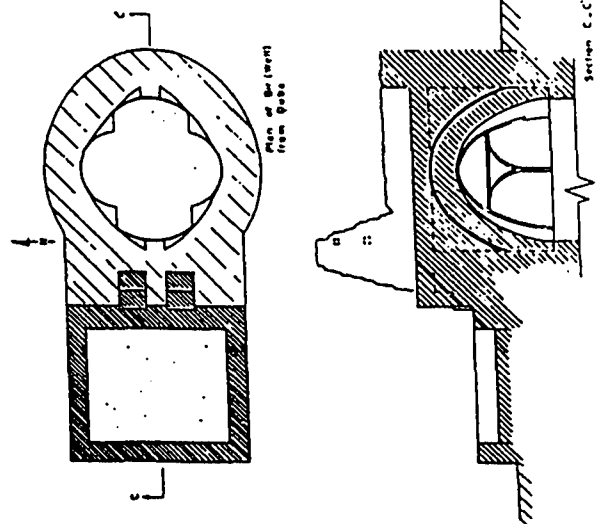
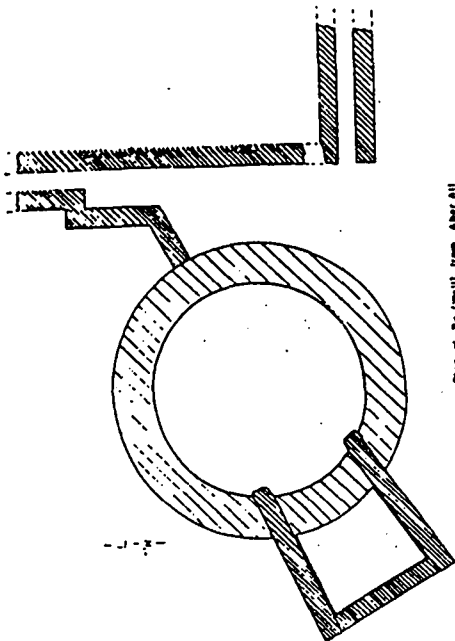
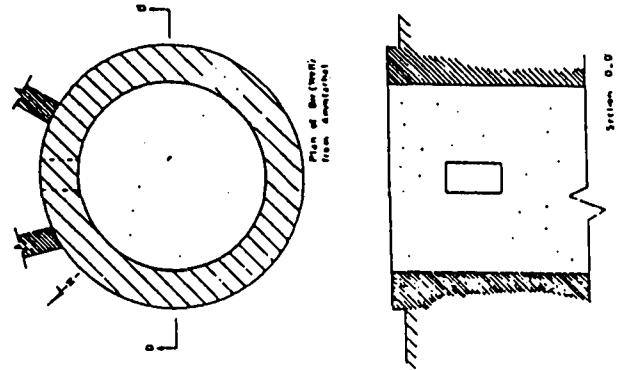
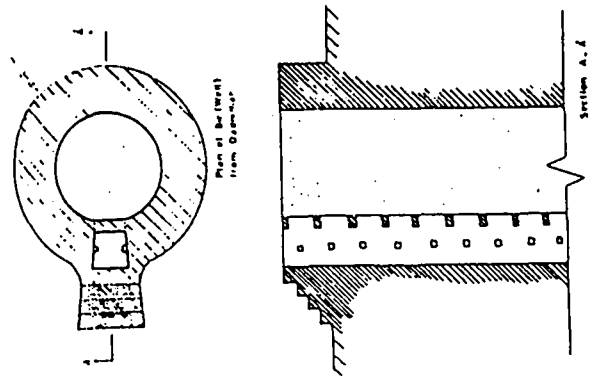
Now a protected but undeveloped archaeological site this general view shows the general location of the ancient sea port of Al-Jar.

above ground level. Al-bir has an interior stairway with 5 steps, its water is fresh and clean. He also says that there is another bir about half an hour's journey away. Al-Batanuni (N.D. p 36) mentions Masturah as a halting place on the road to Al-Haramain (MAKKA and Medinah) and that it has fresh water. Masturah was a meeting point where the pilgrims converged. The pilgrims who wished to go to MAKKA go towards the south-west through Rabigh, while the pilgrims to Medinah go towards the east to Al-Abwa and from Al-Abwa to Bir Mubayrik. The pilgrim station consists of a number of Abyar (wells) as a water resource. Three wells are selected as examples because they are old wells and have distinctive aspects. They are quite big and have been constructed with outstanding architectural design (see A4 plan VI & folder 20).

The first one is bir Al-Mahdaliyah. It has a circular opening with internal diameter of about 2.80m. It is a dug-well lined with basalt stones from top to bottom. The thickness of the wall of the mouth opening is about 1.10m. The depth of the well at the point where the water reaches is 6m. Al-bir has a deep cleft, similar to that seen at Al-Qadhibah well (see also site 40) although in the case of bir Al-Mahdaliyah, in addition to the projecting stones, there are rafters, the edges of which are fixed into the opposite side of the cleft. The purpose of that cleft was as a stairway to reach the bottom of the well (see A4 plate XVII a, b). There is a small rectangular basin, about 1.30



plan VI

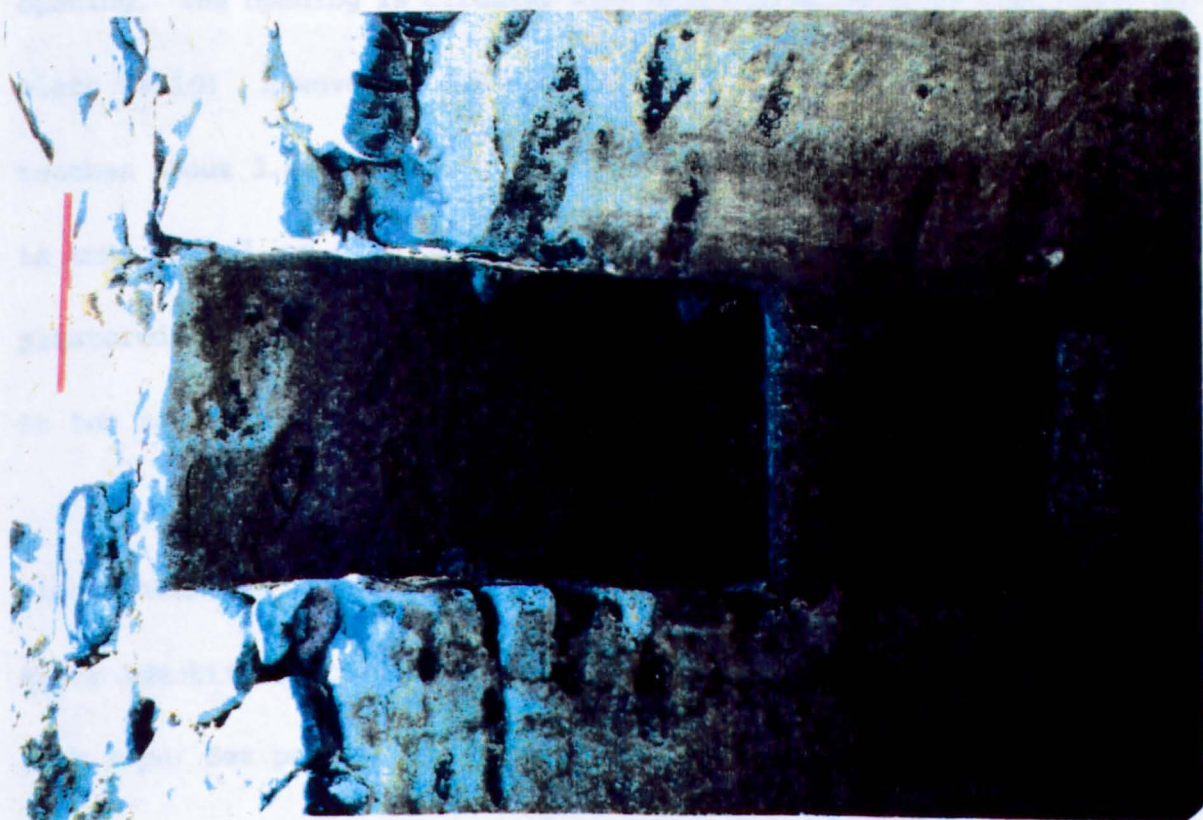


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London N. W. England	Paris (France)
Survey & Draft. by	Plan & Section
Smith, H. H. Ince	1887 / 1890



A4 Plate xviiia

Very roughly cut stones have been plastered with gypsum to give support to the shaft of this ancient well.



A4 Plate xviiib

A deep cleft with projecting stones and girders (in the same style as the well at Qadhimah) which is used as a stairway to gain access to the water.

x 1.10m internally and it is built of stones plastered with gypsum. Al-bir seems to have been restored recently. Al-bir is situated within agricultural lands.

The second bir Al-Masnua is located at about 1.50Km east of bir Al-Mahdaliyah, it has a circular mouth opening, only half of which remains today. The diameter of the opening is about 2.8m. It is a dug-well, lined with stones and plastered. Unfortunately, it is now choked up with sand and a tree is growing in its mouth (see A4 plate XVIIc).

The third bir is bir Al-Hafir is situated at about 3Km south-east of Masturah. The mouth of Al-bir is covered except for a very narrow opening. The opening is circular with a diameter of about 55cm. (see A4 plate XVIId) However, the opening becomes wider as it descends and reaches about 3.6m diameter. It is a dug-well, lined with stones, but is now filled in with sand, its current depth is about 2m. It is plastered from the inside as is the opening. Al-bir has now dried up. It too is located in an agricultural area.

Site Number: 13

Route Identified: C3

Site Type: Sea port

Rabigh

This town is situated 40km south-east of Masturah on the Red Sea about



A4 Plate xviic

Showing signs of considerable decay a second ancient well lined with cut stones has been plastered with gypsum.



A4 Plate xviid

A third well at this site called Al-Hafir is lined with stone. The shaft is covered except for a small hole and only a small part of the shaft is visible..

22° 48'N and 39° 02'E. It was and still is a pilgrim station on the Egyptian pilgrim coastal route. Al-Bakri (1983, vol 2, p.635) refers to Rabigh as a place between Medinah and Al-Juhfah. Al-Jaziri (1983, vol 2, p.1252) when mentioning the way stations between Medinah and Makka says that from Al-Jar to Rabigh on the coast towards the south is five days journey. Its water is sometimes fresh and drinkable particularly during periods of rain, but most times it is brackish. He also refers to Rabigh as a village with watering places, huts and farms. Al-Batanuni (N.D. p. 36) describes Rabigh as a village about half an hour from the sea with a castle and storage places where provisions for the travellers could be kept. There are cisterns filled with fresh water. Basha (1926, vol 2, pp 202, 203) refers to Rabigh as a village about 30 hours from Al-Juhfah. From Rabigh the road branches into three. The southern road subdivides into two, one branch going to MAKKA, the second to Jeddah. The eastern route goes to Medinah. The northern road goes to Masturah and then to Medinah. He also adds that Rabigh consists of houses, shops, cisterns, a market and a castle built with stone which has seven doors. Water is obtained from pits. Al-Biladi (1985, pp. 99, 100) refers to Rabigh as the main town between Medinah and MAKKA, located at the mouth of wadi Marr which flows into the Red Sea. It replaced Al-Juhfah as a pilgrim station. Rabigh was a meeting place where the pilgrims gathered. Those pilgrims who preferred to pay a visit to Medinah took the way

towards the north-east to Riya Harsha, bir Mubayrik and then on to Medinah. The pilgrims who wanted to go directly to MAKKA took the road towards the south east, passing through Al-Juhfah and then on until they reached MAKKA. There is also another road, it is a coastal road going to Al- Qadhimah. It runs along the Red Sea coast from Al-Qadhimah to Jeddah and then on to MAKKA.

Despite the clear importance of this site no water resource structures could be found today nor does the castle survive.

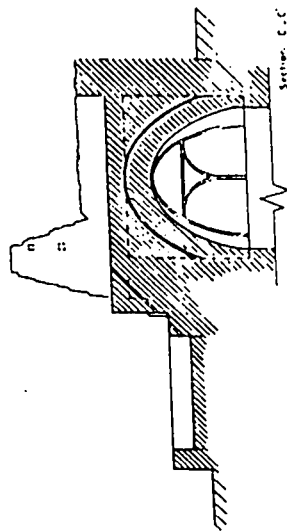
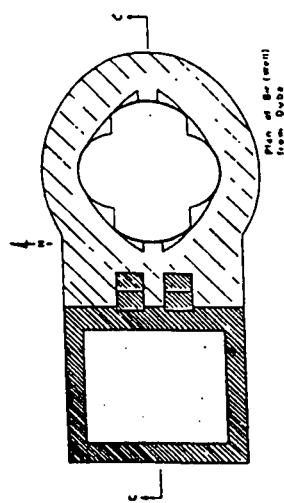
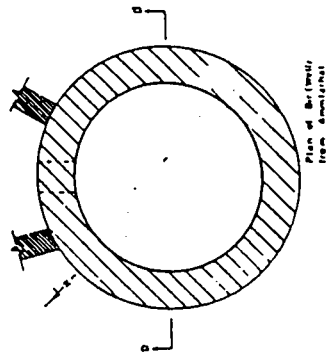
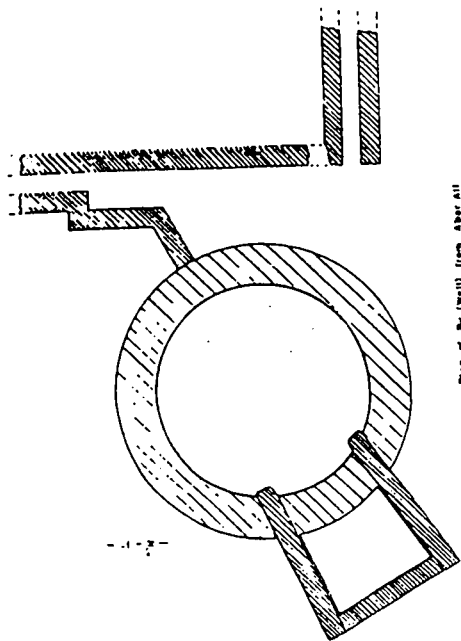
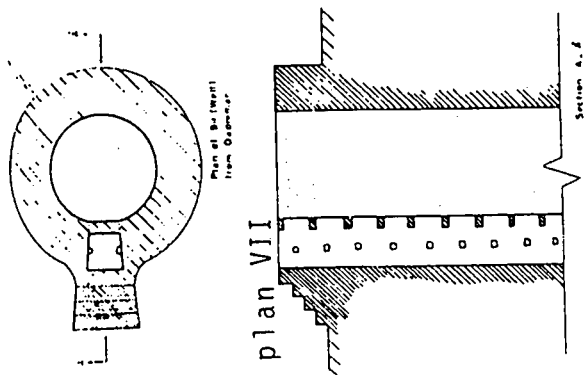
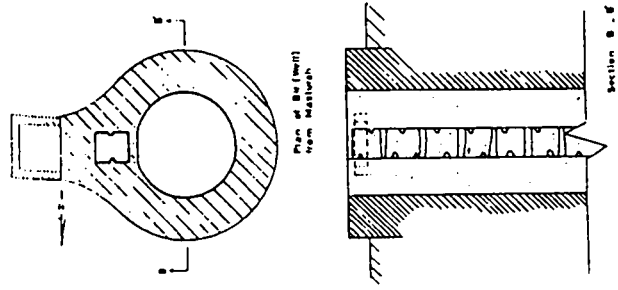
Site Number: 9

Route Identified: C3

Site Type: Sea port

Al-Qadhimah

Al-Qadhimah is a small village which lies about 22 km west of Qudid, at about $22^{\circ} 20' N$ and about $39^{\circ} 09' E$. The pilgrim station consists of three Abyar (wells). For a detailed survey, I selected the ancient and largest one, which has remarkable architectural design (see A4 plan VII & folder 20). Al-bir is a dug-well, lined with black stones from top to bottom. It has a circular mouth opening which has an internal diameter of about 2.85m. The open mouth of the well is surrounded by a parapet which rises about one meter above the ground to protect Al-bir. The thickness of the parapet is about 1.25m. The depth of the well is about 7m and



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Inspected by	Mr. Hassan
Surveyed by	Mr. (Name)
Drawn by	Mr. (Name)
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Date	1930

Appendix 4 Plan VII: The different types of abyār (top centre)

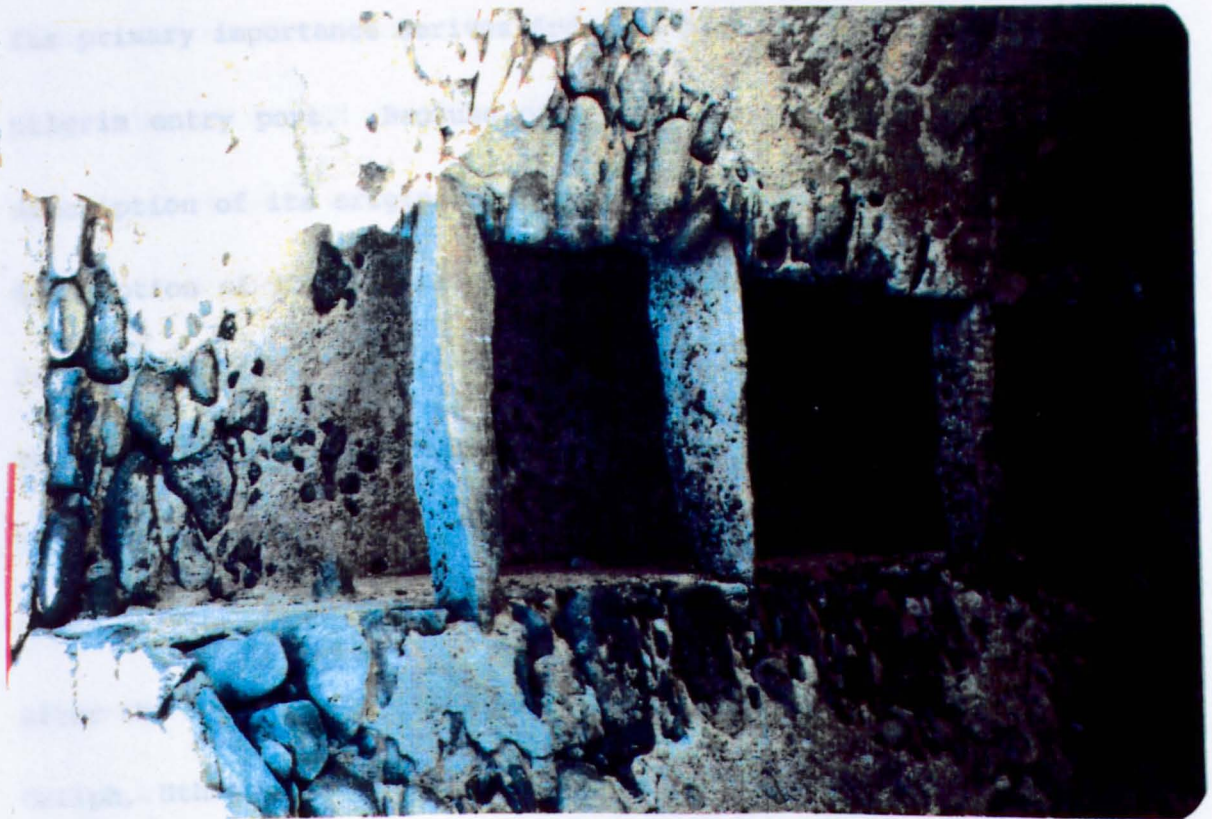
still has water in it. Inside Al-bir at the west side there is a deep cleft sunk into the wall. Its depth is about 95cm, it descends until it reaches the water. There are projecting stones (about 10) placed in the opposite sides of the cleft which serve as a stairway which descends to the bottom of Al-bir (see A4 plate XIIIa, b). Al-bir is plastered with gypsum as is the mouth opening. There is a stairway outside which links up to the mouth opening. It is about 3m long and is about 1.80m wide. This stairway used to reach to the mouth of Al-bir. Al-bir which is now abandoned is located to the west of the old village and near to the old paved road.

Al-Batanuni (N.D. p. 209) referred to Al-Qadhimah when he enumerated the stations on the caravan route between MAKKA and Medinah. He described Al-Qadhimah as a village on the Red Sea with small houses. Water was obtained from pits that filled with water during periods of heavy rain. Basha (1983, vol 2, p.216) says the caravans that frequently travel between MAKKA and Medinah leave Khulis and arrive at Qadhimah 12 hours later. He also says that Al-Qadhimah is the fourth stage from MAKKA to Medinah. It possesses three Abyar but because they are located near the sea the water is brackish. Basha (1926, Vol. 2, p. 202) refers to Al-Qadhimah as the next halting place to Khulis going towards Medinah. It consists of a market and a well built with stone which has two stairways, one which is internal with nine steps, the other exterior with six steps.



A4 Plate xviiiia

An ancient large circular well built of cut stones. The shaft rises above ground and a stairway links to it and leads to an opening of the well.



A4 Plate xviiiib

A deep cleft on the west side of the well interior goes from top to bottom. It has girders of stones which can be used as a stairway. Plaster is still visible on the internal walls of the well.

Al-Biladi (1985, p. 77) says Al-Qadhimah is a populated coastal town. The road between Jeddah and Medinah passes by before connecting with the MAKKA road. It is about 98km north of Jeddah and 57km south of Rabigh.

Site Number: 4

Route Identified: I7

Site Type: Sea port

Jeddah

Jeddah lies on the eastern coast of the Red Sea some 74 kilometres west of MAKKA. It is the most important coastal city in Al-Hijaz province. Its primary importance derives from its past function as the principal pilgrim entry port. Because of its importance I give here a fuller description of its origins and water resources. There is then a brief description of the two stopping points which exist on the route from Jeddah to MAKKA.

The city of Jeddah is ancient and probably predates the Christian era. It was a small village inhabited by the Qudhah, an arabic tribe prior to Islam. (Al-Batanuni N.D. p. 5) However, Jeddah increased in importance after the expansion of Islam particularly during the period of the third Caliph, Uthman, Ibn 'Afan, in 26 AH (646). Prior to the expansion of Jeddah as a sea port MAKKA had been served by the small port of Al-Shu'abah. (Al-Fasi N.D. vol 1 pp.87,88) Jeddah is not without some

religious significance for according to Islamic tradition, when God sent Adam and Eve from heaven, Adam descended in India, while Eve descended at Jeddah. (Al-Azraqi N.D. vol 1, p.39 and Al-Fasi N.D. op cit)

As Jeddah expanded, particularly as Islam spread beyond the Arabian peninsula, water resources became critical and early Islamic writers observed the shortage of fresh water. Al-Maqdisi, for example, visited Jeddah in the fourth century. He notes that although Jeddah had many water tanks, the inhabitants suffered shortages of water supply and as a result of that, water was brought in from springs some distance outside the city. (Al-Maqdisi, 1906, p. 79) Other writers, for example, Nasir Khisro, notes that there is insufficient water for tree growth or vegetation in Jeddah and its timber and vegetables have to be brought from other villages. (Nasir 1983, p. 120) Despite this lack of resources, Jeddah is a flourishing town with a strong financial and commercial sector. Within the province it is second only to MAKKA in prosperity. (Al-Istakhri, 1870, vol 1 p.27)

Throughout Jeddah there is evidence of ancient cisterns developed as part of most houses to collect water from the roof during rain storms. However as these rains are not substantial or regular, the flow to cisterns is augmented with water from rainfall or springs located outside the city. (Burckhardt, 1968, pp. 11, 12) Some of these cisterns hold brackish water, particularly where the springs are located close to sea

level. (Al-Batanuni, N.D. p. 8) Outside Jeddah further tanks provide water for the pilgrims. Successive governments have recognised the water resource problems of Jeddah and have expanded the water resource infrastructure. Today the Saudi government brings water to Jeddah from wadi Fatimah and from Khulis by pipeline.

The journey from Jeddah to MAKKA takes two/three days requiring one/two nights of rest. The caravans are protected by fortresses at various points on the route. The two stopping places on the route are Bahrah and Haddah.

Site Number: 3

Route Identified: I7

Site Type: simple

Bahrah

The small village of Bahrah consists of a few huts and small houses. A castle is located about a mile from the village. It is mentioned by several writers, for instance Burckhardt, (1968, p. 54), describes Bahrah "as a cluster of about twenty huts, situated upon a plain extending eastward. At Bahrah there is plenty of water in wells, some sweet and some brackish".

Arsalan, (1350 A.H., p. 13) described Bahrah as a halting place between Jeddah and MAKKA consisting of poor quality huts, shanties and houses but

no explicit mention was made of water resources. "This village, in reality is nothing but a double line of shacks, coffee shops, a few huts of palm fronds and a very small mosque - was the traditional halting place for caravans half-way between Jeddah and MAKKA" (Asad, 1954, p. 363).

Our Surveys both in the village itself and at the castle showed no sign of ancient water resources structures.

Site Number 2

Site Identified: I7

Site Type: simple

HADDAH

At this site there is four or five miles of cultivated ground, various houses and huts and a mosque. There are springs and some fresh water wells and a stream of brackish water which rises to the northeast and flows approximately two miles, partially over stone built water courses, before draining into the desert. (Keane, 1887, p. 6) However, there are few signs of substantial ancient water resource structures.

Because of the assured water supplies at Jeddah and MAKKA it may well be that it was unnecessary in such a relatively short route to establish storage devices for water supply. Pilgrims could presumably have carried sufficient water for the journey and were assured at Haddah of some water.

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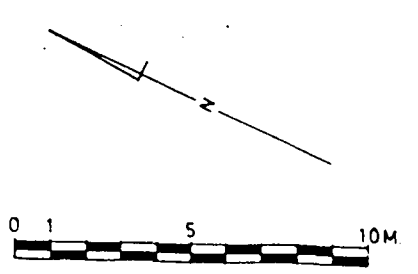
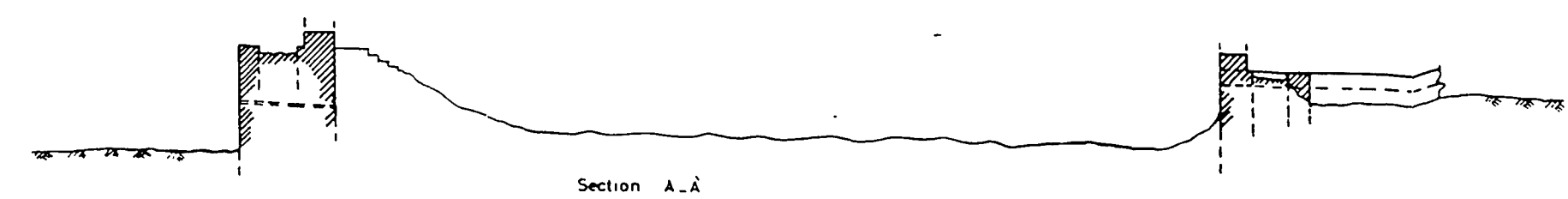
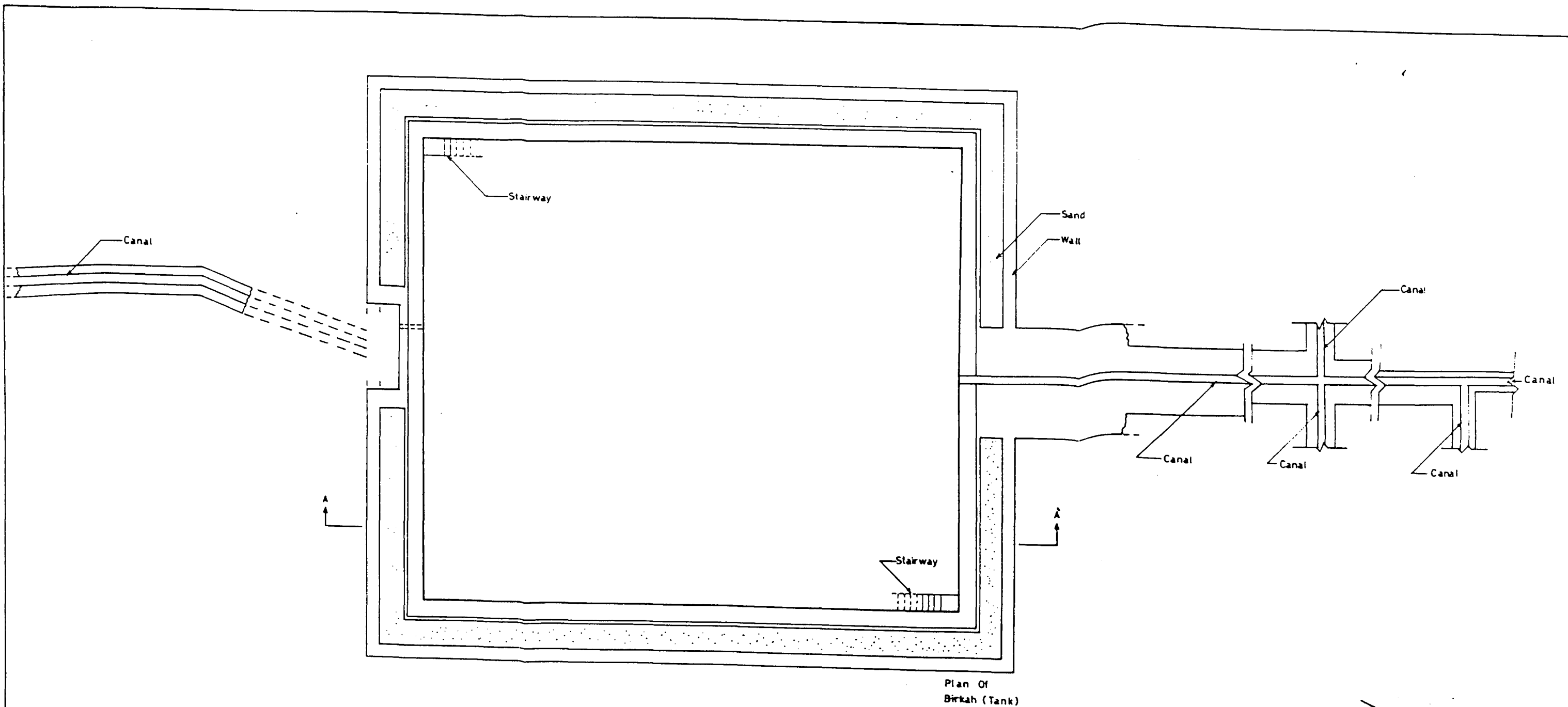
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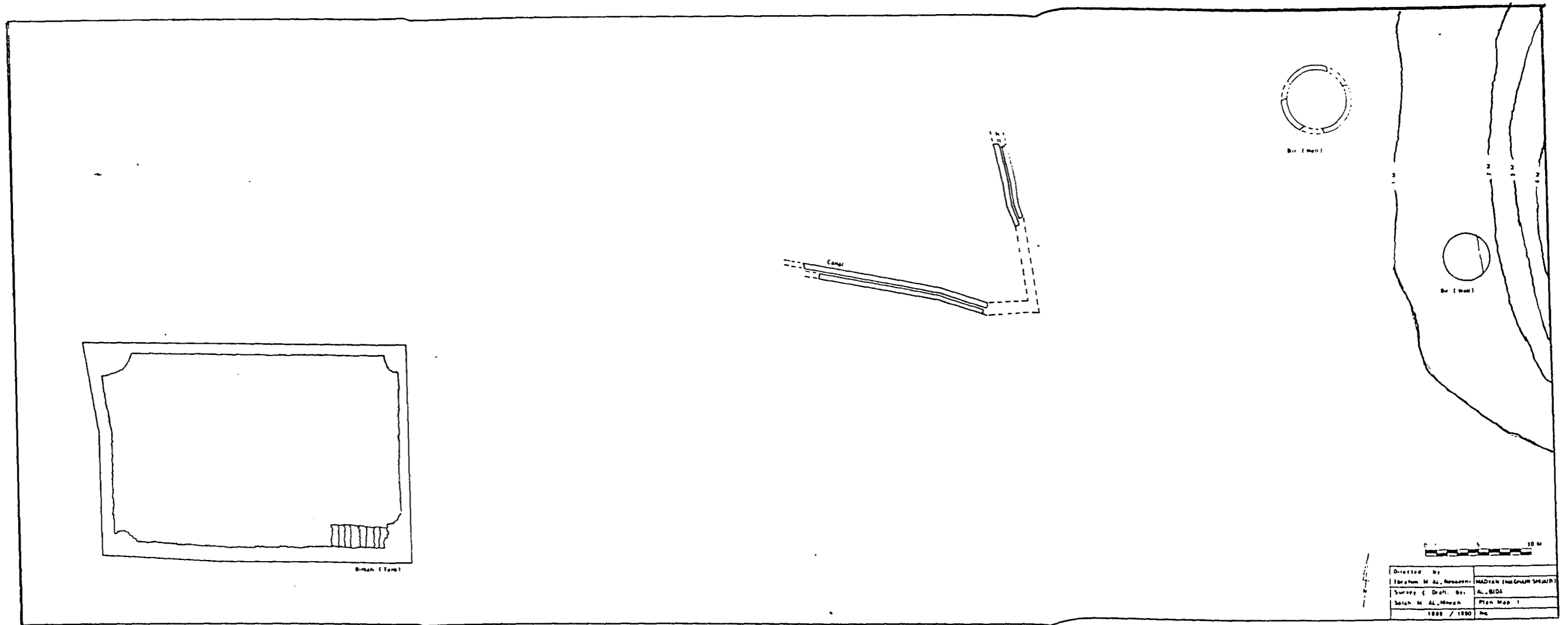
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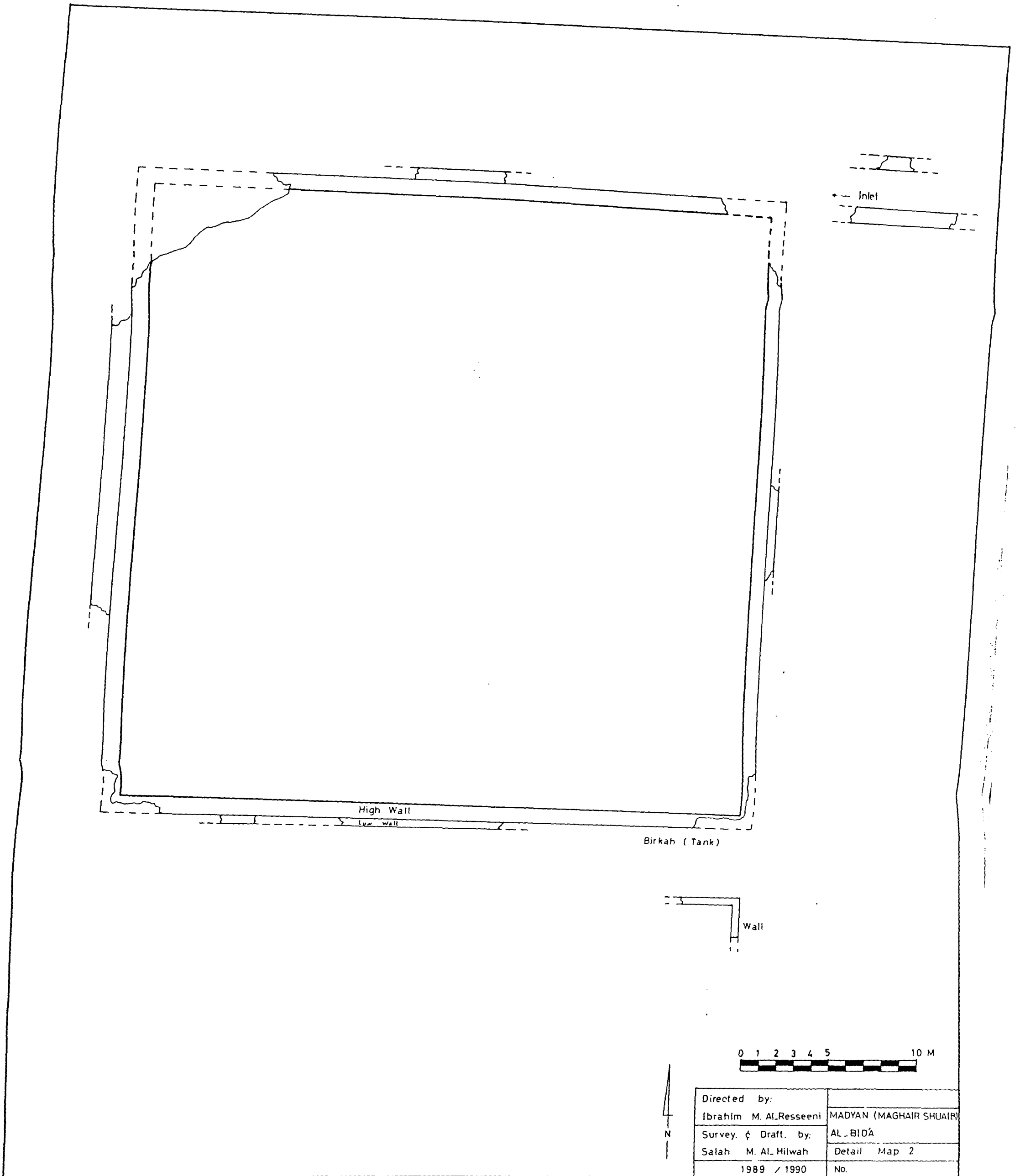


Directed by:	Scale 1:
Ibrahim M. AL. Resseeni	AL-HAFIYAH (AL-AMAIR)
Survey & Draft. by:	Plan & Section
Salah M. AL-Hilwah	No.
1989 / 1990	

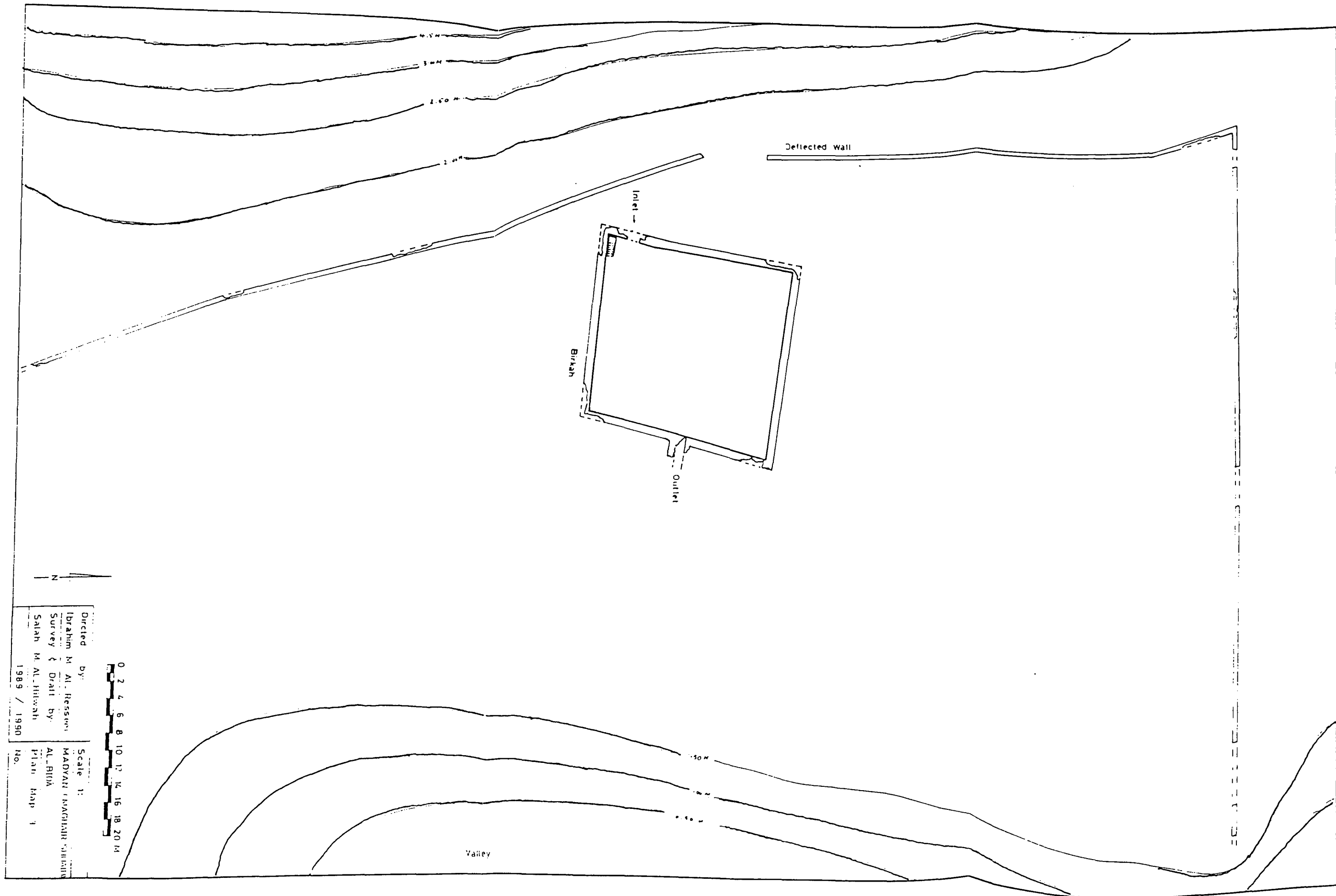
Folder 1: Birkah and distribution system at Al-Hafiyah (Al-'Amair)



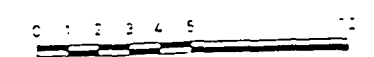
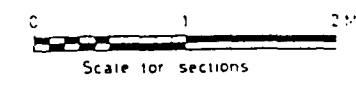
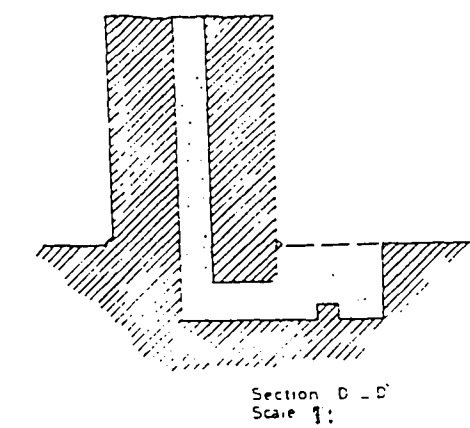
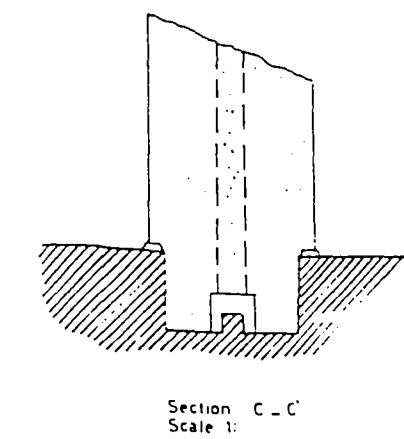
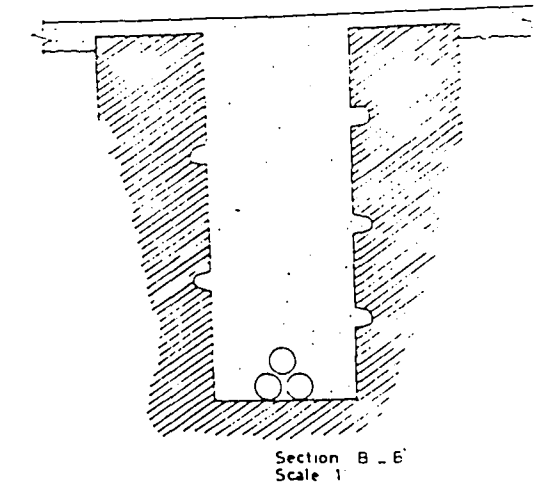
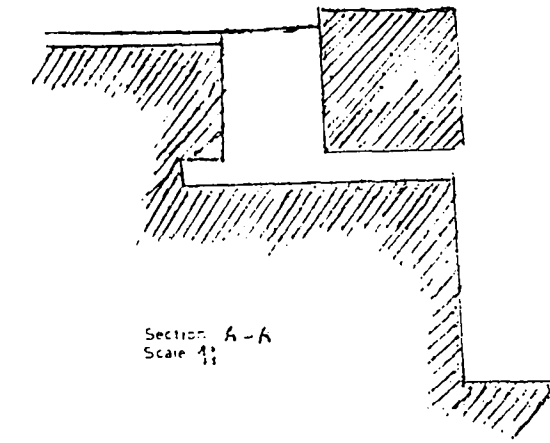
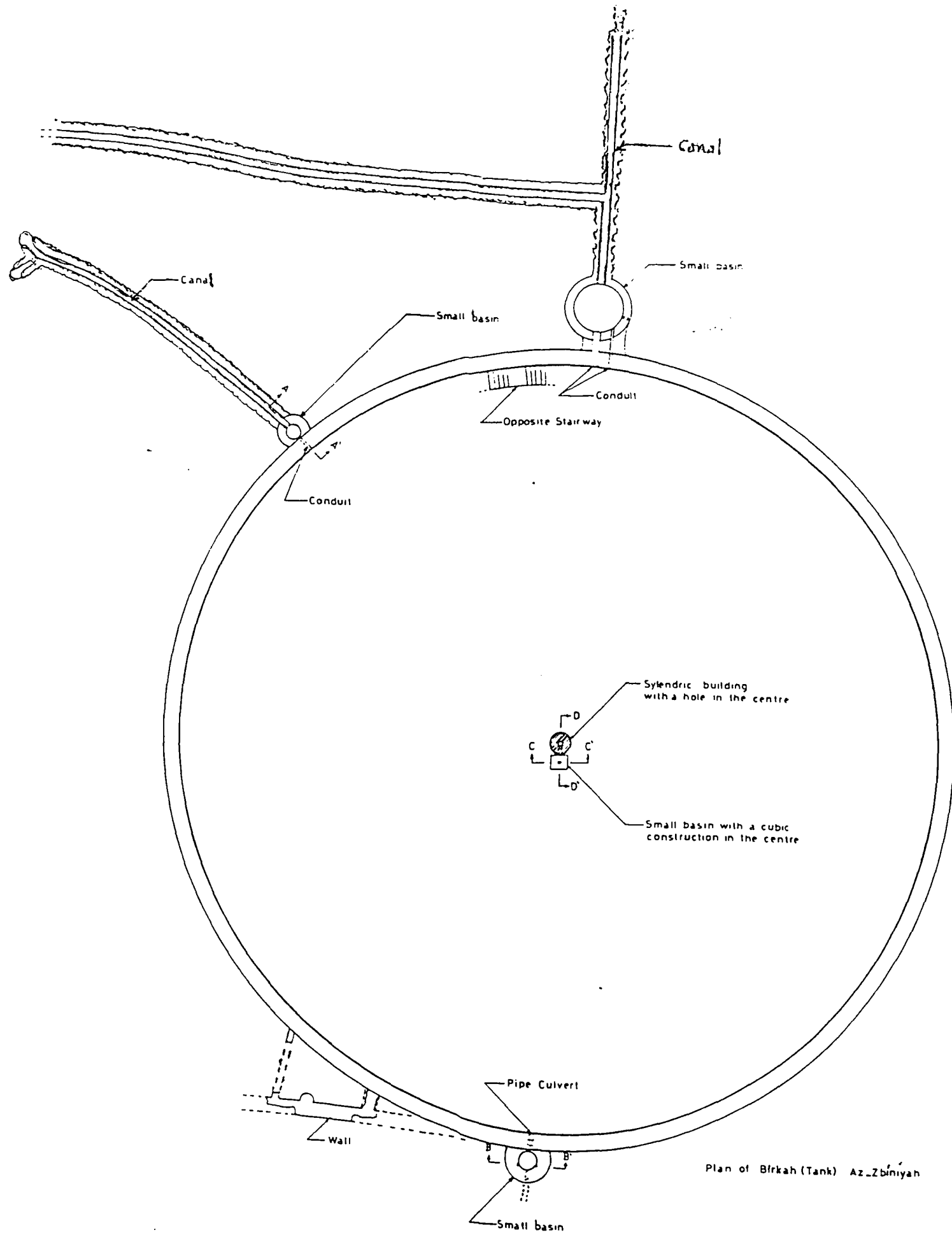
Folder 2: Birkah and abyar at Bir Al-S'aidini



Folder 3: Birkah at Al-Malqatah - the Islamic site

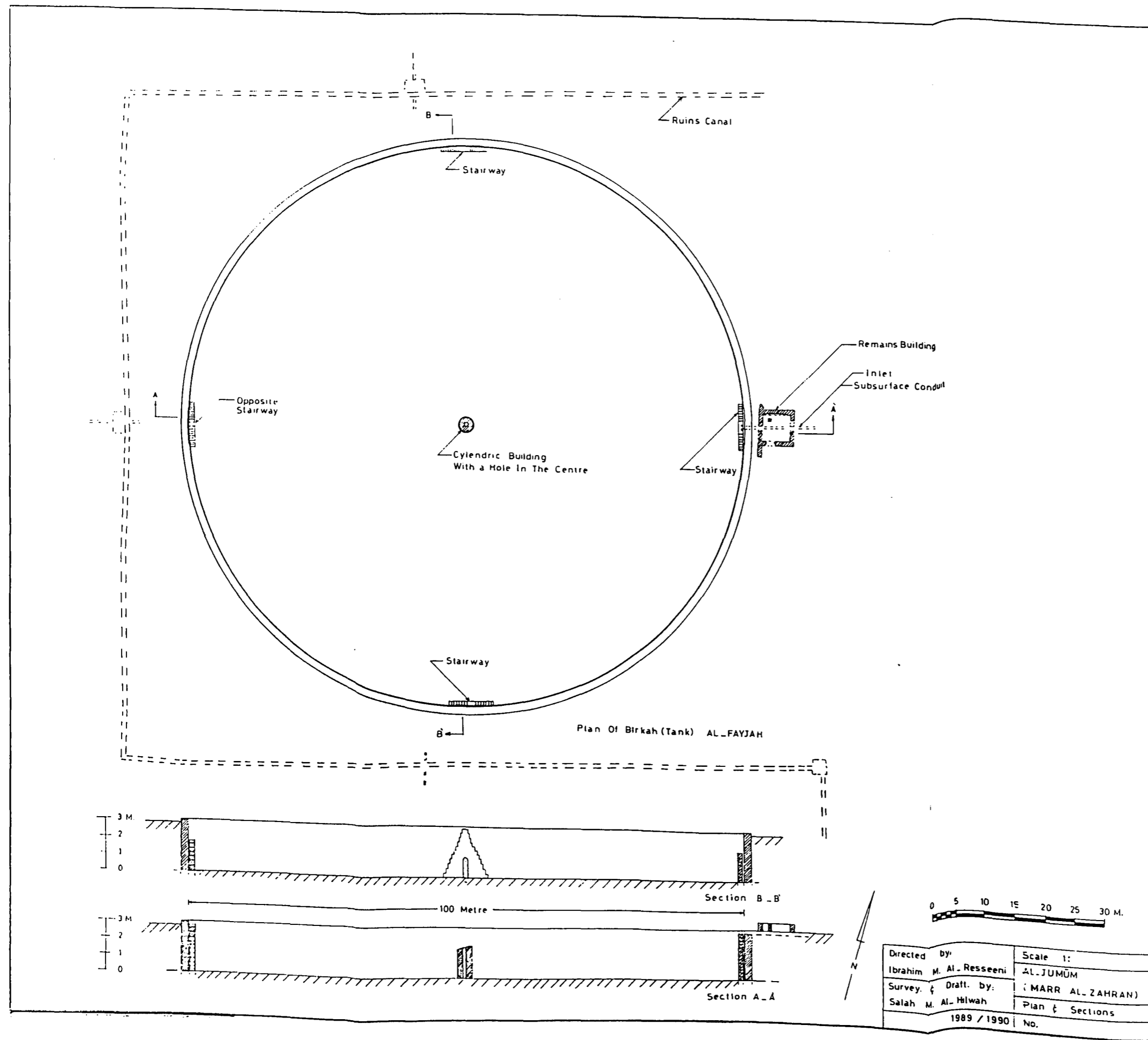


Folder 4: Birkah and deflected wall at Al-Malhah site

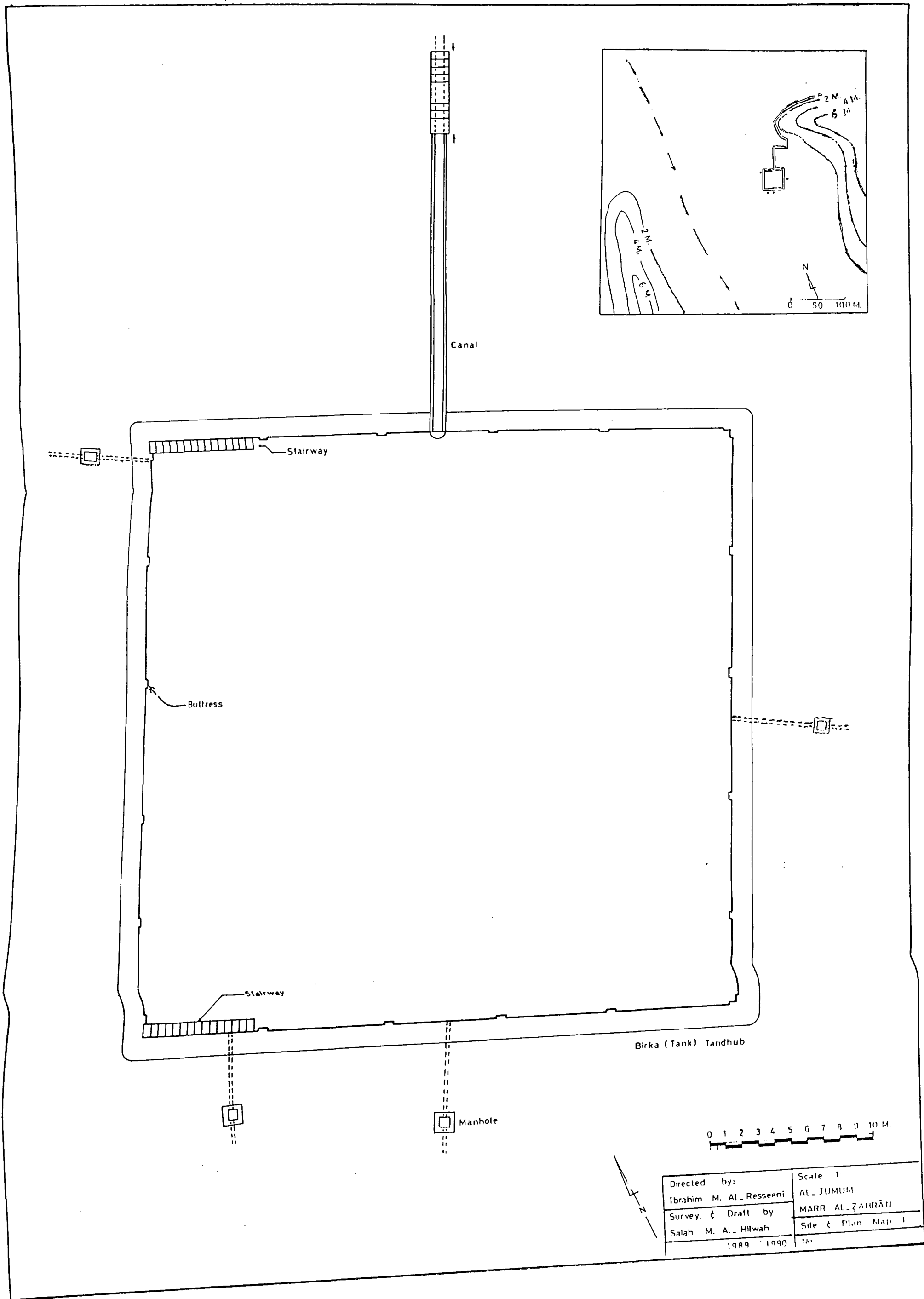


Directed by:	D. I.
Illustrated by:	M. A. Resseini
Surveyed & Drawn by:	AL-JUHAYM
Checked by:	Salah M. Al-Hilwan
Plan & Section:	MARR AJ-ZIBINIYAH
Date:	1985 / 1990

Folder 5: Birkah and distribution system at Az-Zibiniyah

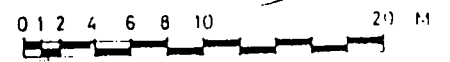
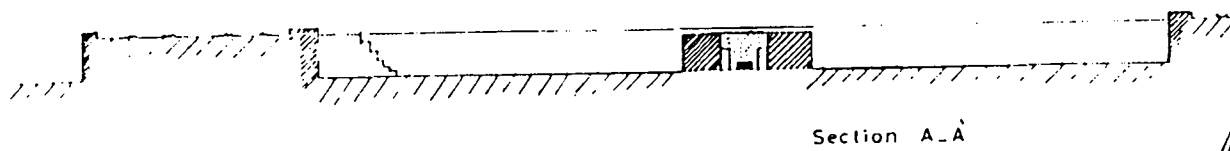
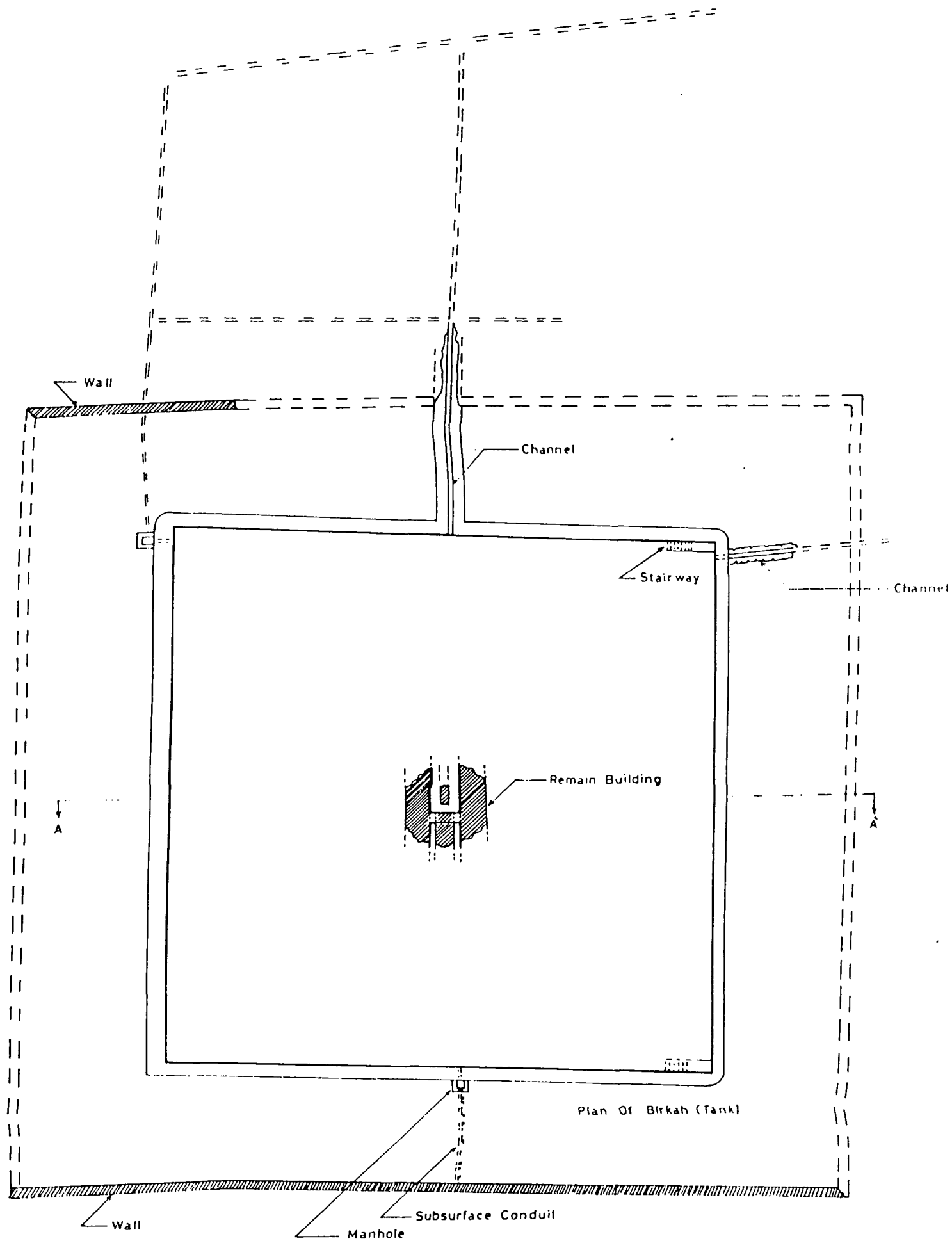


Folder 6: Birkah and distribution system at Al-Fayjah

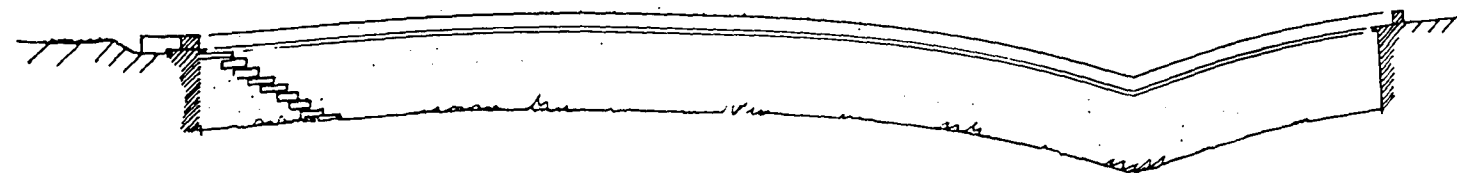
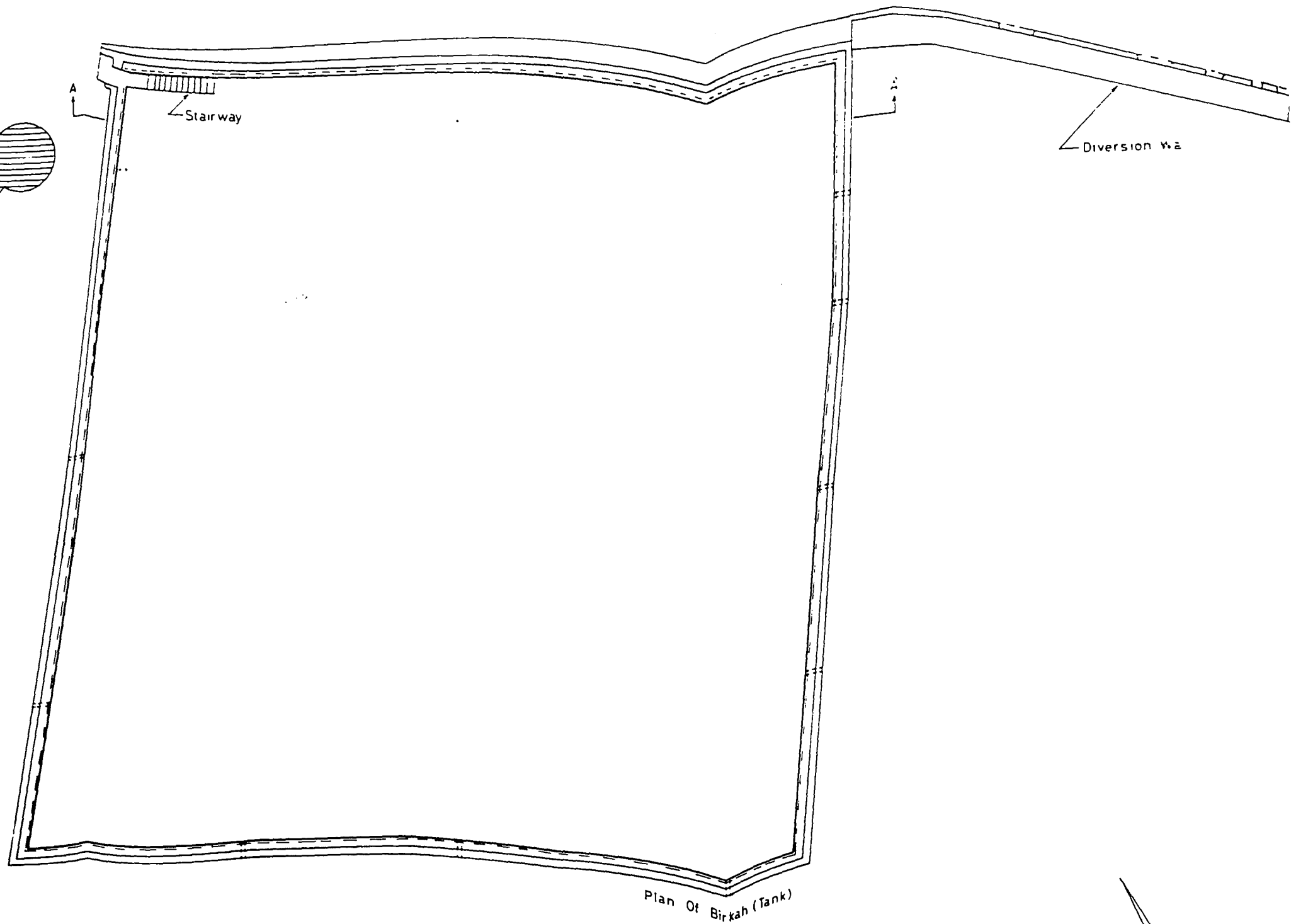
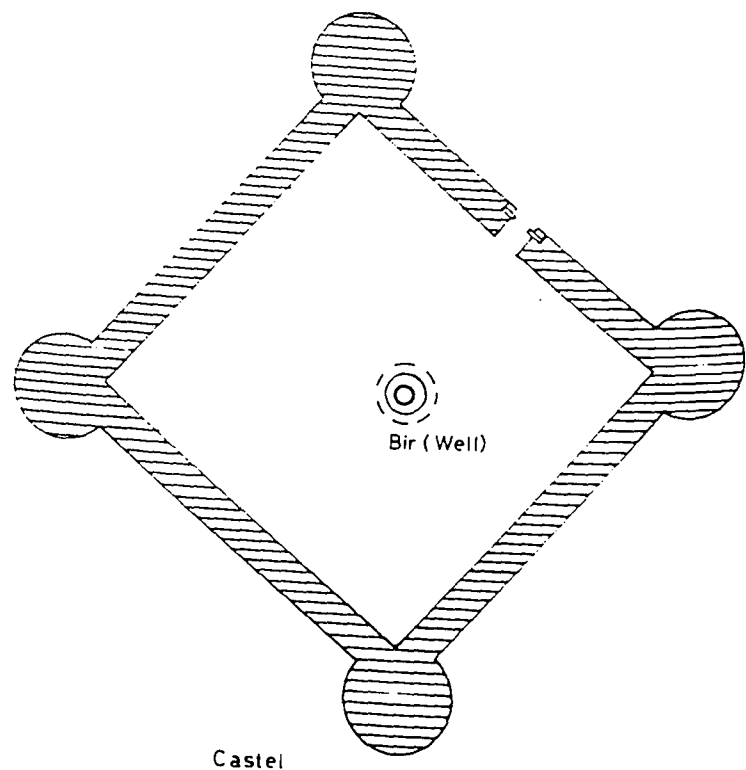


Folder 7: Birkah and distribution system at Tandhub

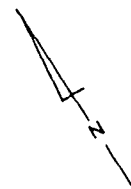
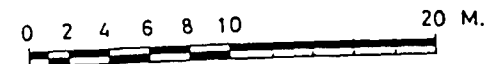
Directed by:	Scale 1:
Ibrahim M. Al-Resseeni	AL-JUMUMI
Survey & Draft by:	MARR AL-ZAHIRAH
Salah M. Al-Hilwah	Site & Plan Map 1
1989 - 1990	1/1



Directed by:	Ibrahim M. Al-Resseent	RIA QIRIYAH
Survey. & Draft. by	Salah M. AL-Hilwah	Plan & Section 1
	1989 / 1990	No

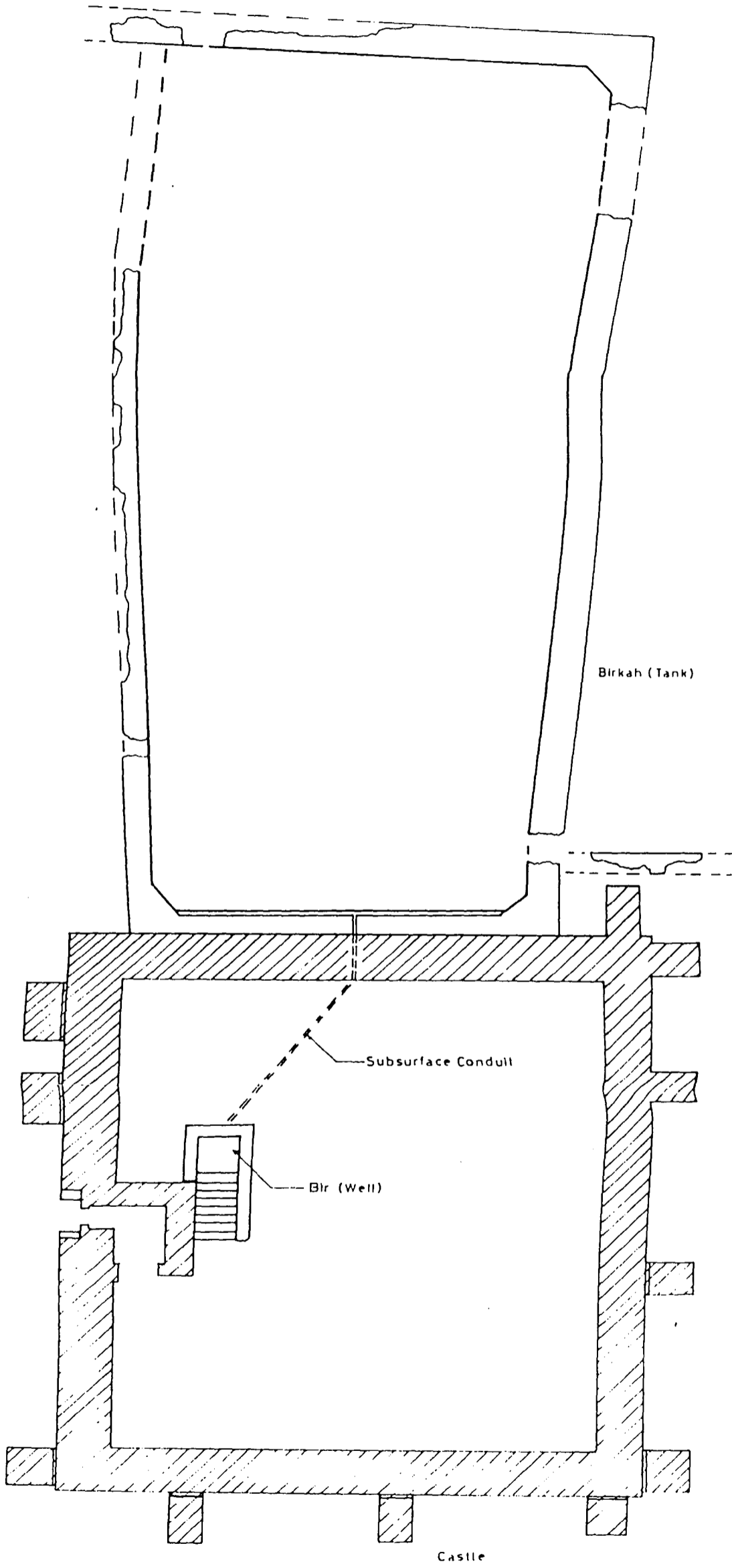


SECTION A-A



Folder 9: Birkah, deflected wall and a castle at Al-Muazzam

Directed by:	Scale 1:
Ibrahim M. Al-Resseeni	AL-MUÁZAM
Survey. & Draf. by:	Plan & Section 1
Salah M. Al-Hilwah	

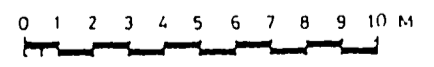


Birkah (Tank)

Subsurface Conduit

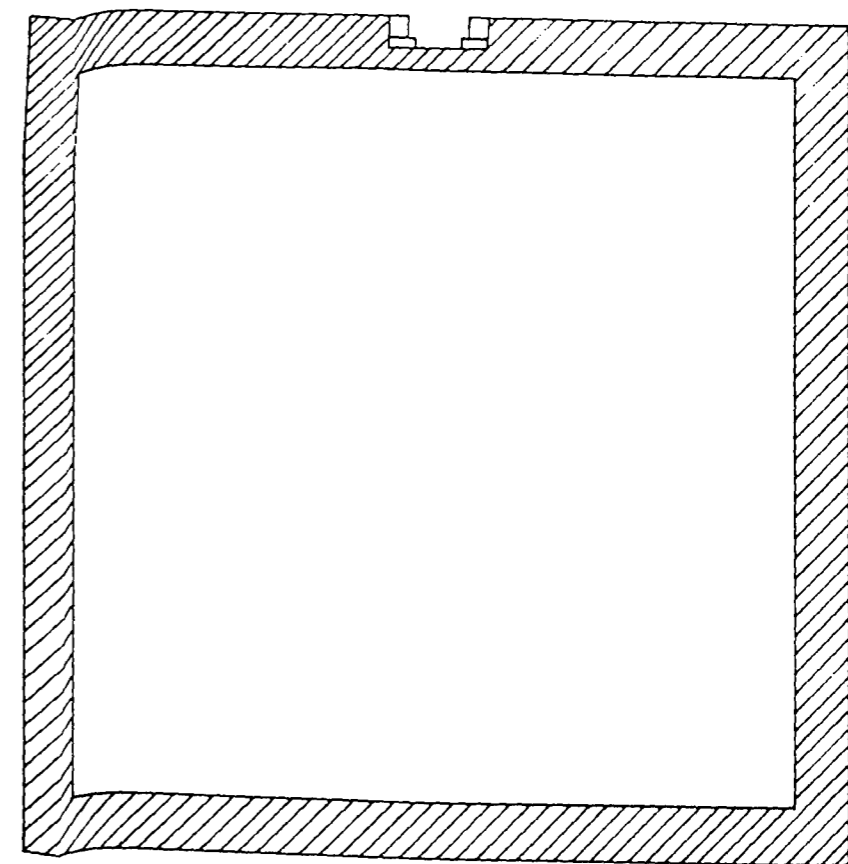
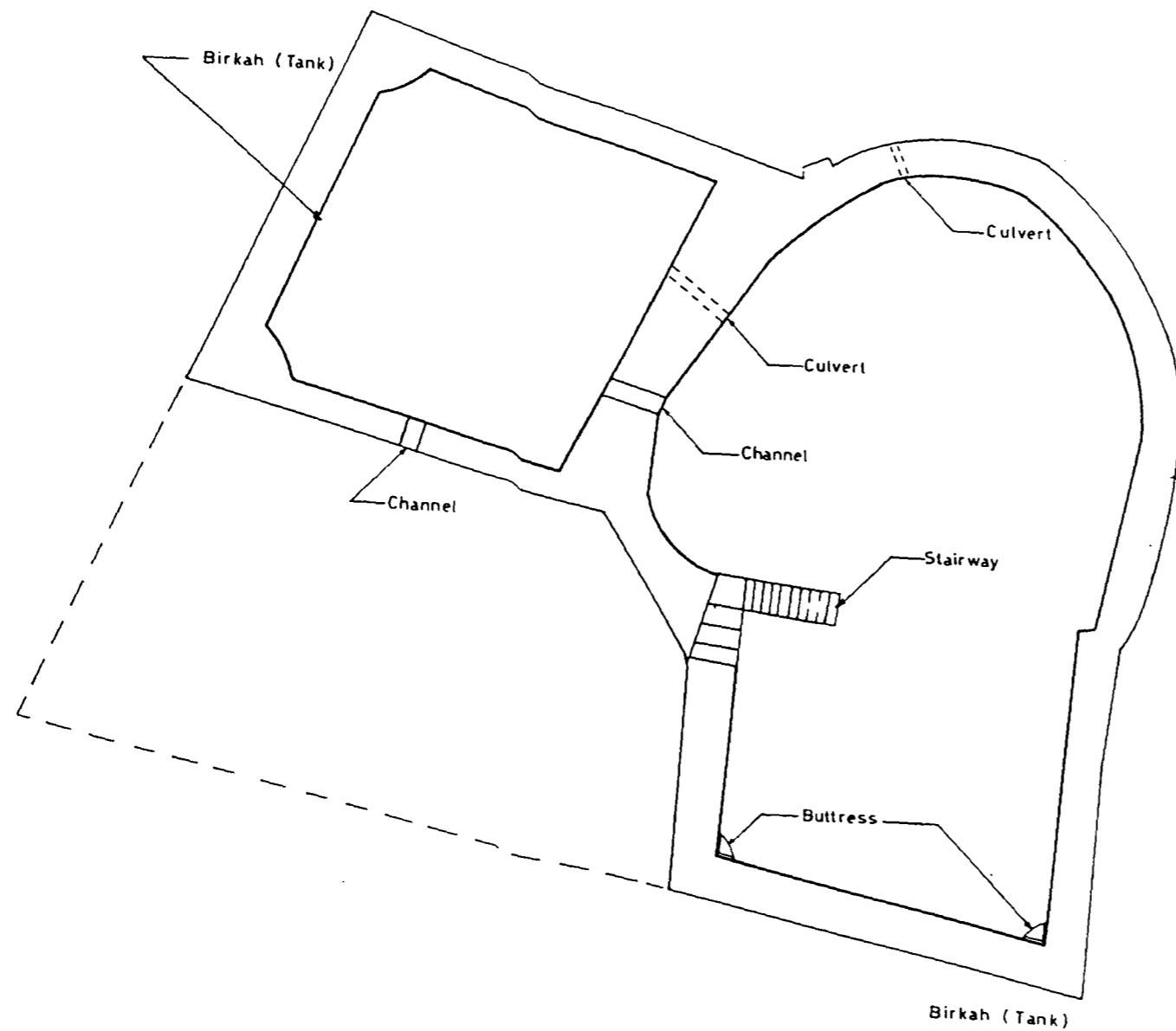
Blr (Well)

Castle



Directed by:	Scale 1:
Ibrahim M. Al-Resseent	THAT AL-HAJJ
Survey. & Draft. by:	Plan Map 1
Salah M. Al-Hilwan	No.
1989/1990	

Folder 10: Birkah and a castle at That Al-Hajj



Castel

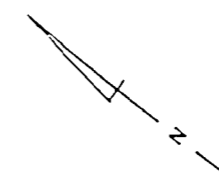
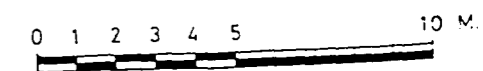
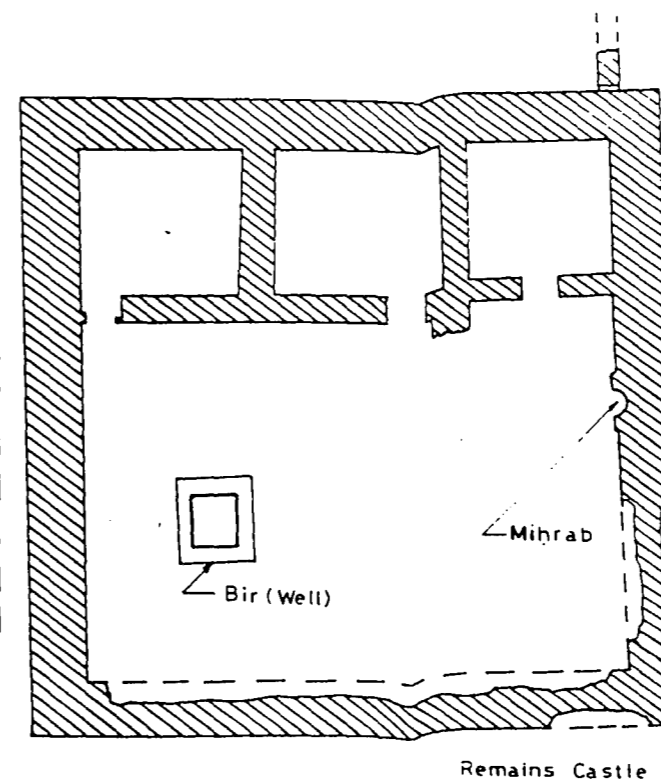
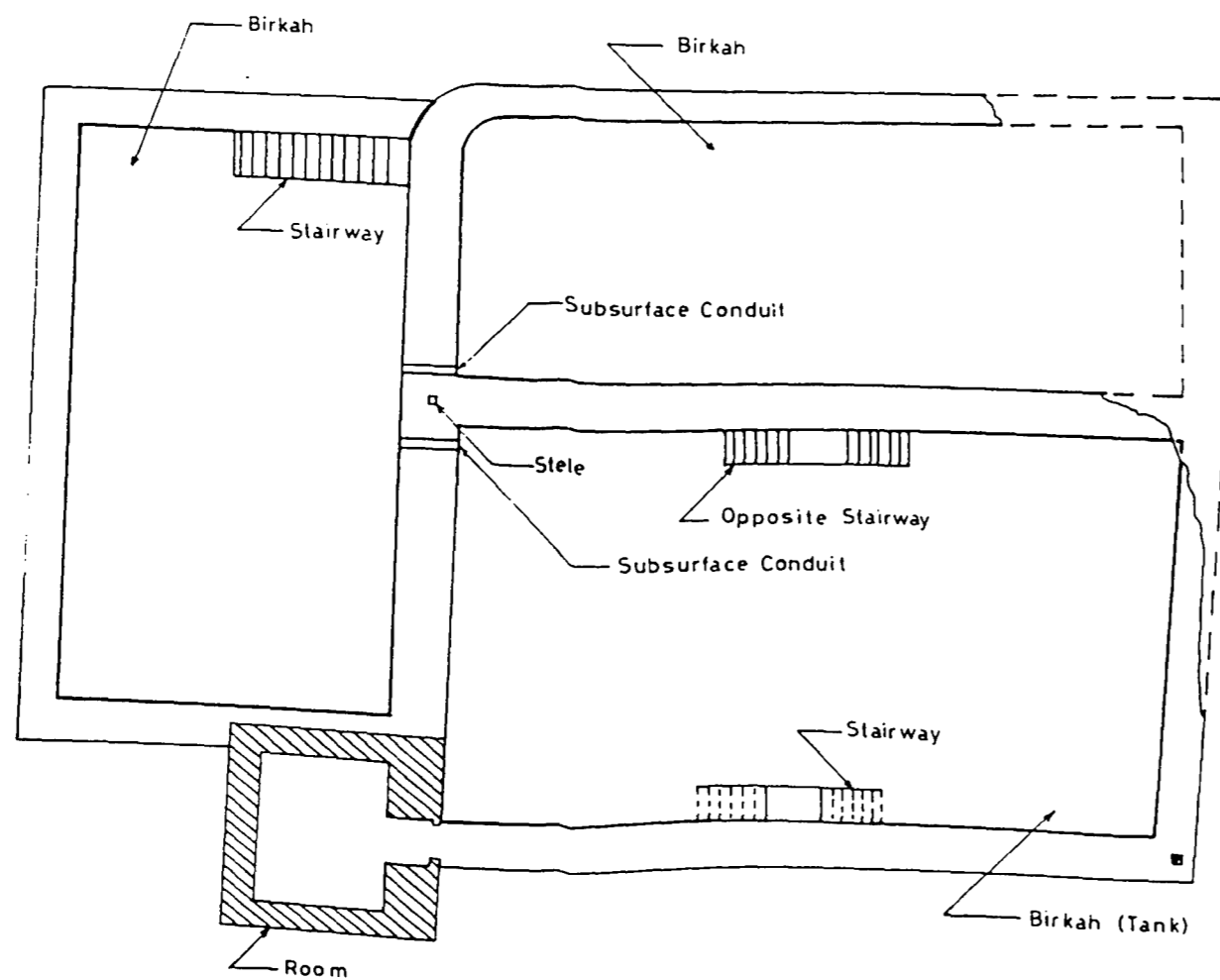
Remains Bir (Well)

0 1 5 10M.

N

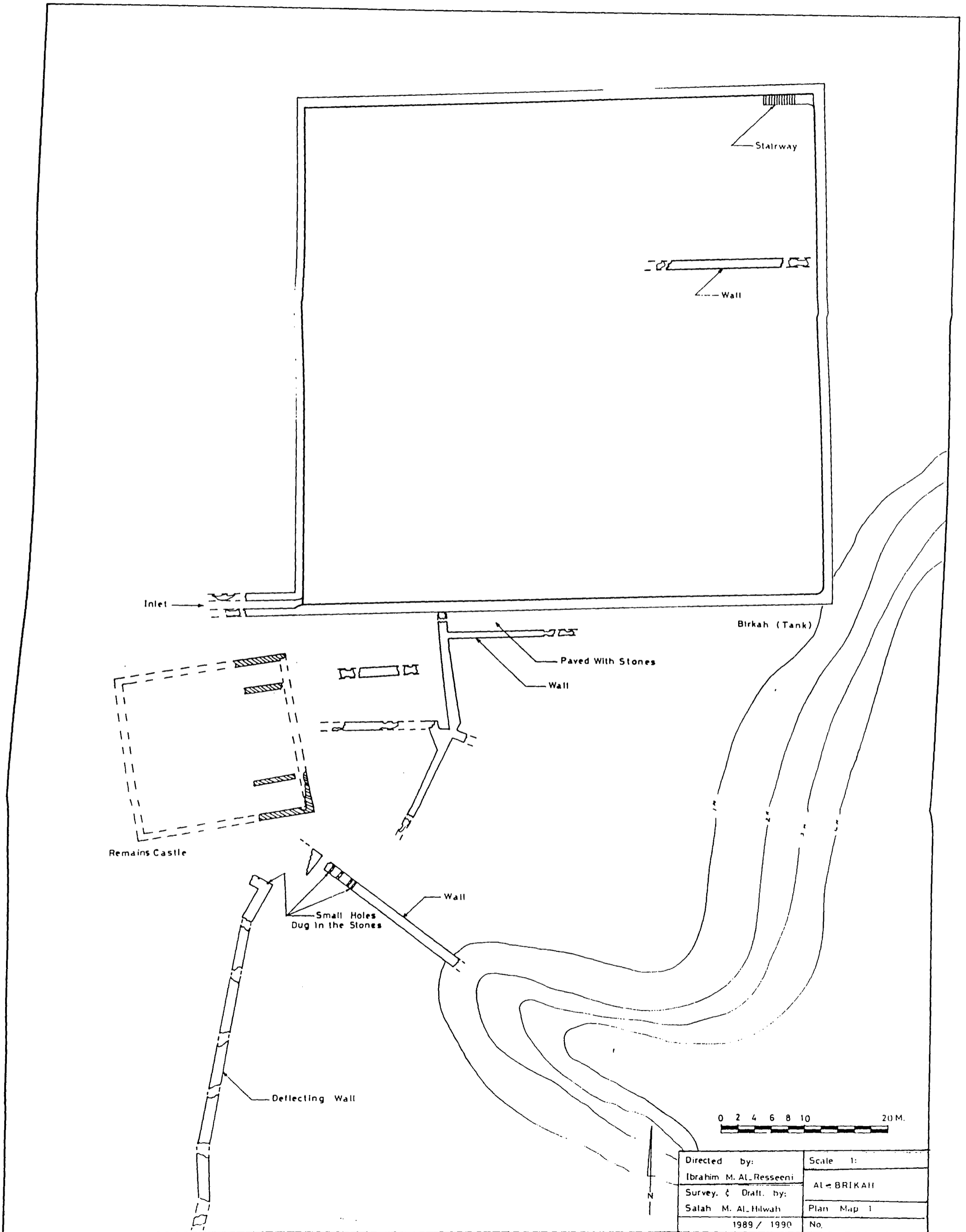
Directed by:	
Ibrahim M. AL-Resseeni	TABÜK
Survey. & Draft. by:	Plan Map 1
Salah M. Al-Hilwah	No.
1989 / 1990	

Folder 11: Birkah, bir and a castle at Tabuk



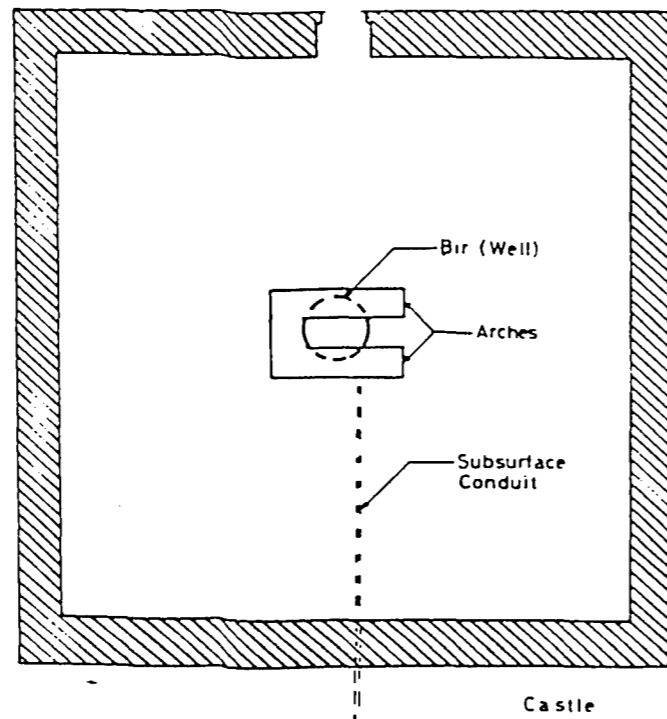
Directed by:	Scale :
Ibrahim M. AL_Resseeni	AL_AKHDHAR
Survey. & Draft. by:	Plan Map :
Salah M. AL_Hilwan	No.
1989 / 1990	

Folder 12: Birkah and the remains of a castle at Al-Akhdhar

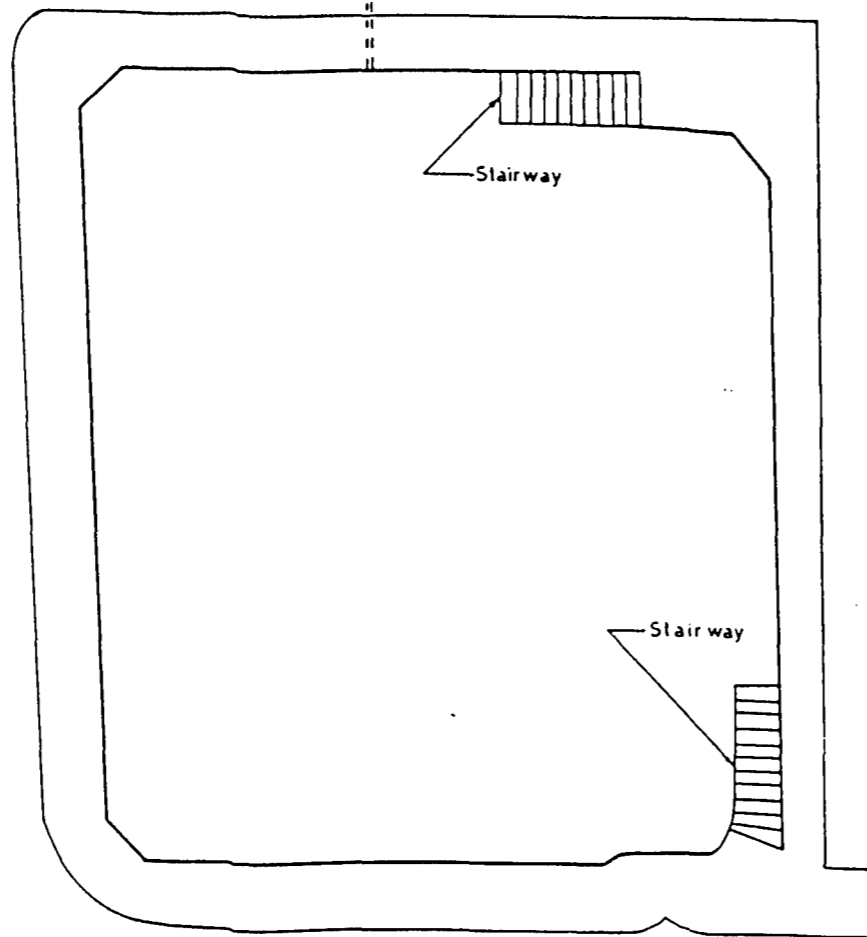


Directed by:	Scale 1:
Ibrahim M. AL Resseeni	AL-BRIKAH
Survey & Draft. by:	Plan Map 1
Salah M. AL-Hilwah	No.
1989 / 1990	

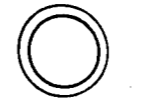
Folder 13: The remains of castle, birkah and distribution system at Al-Dar Al-Hamra (Al-Brikah)



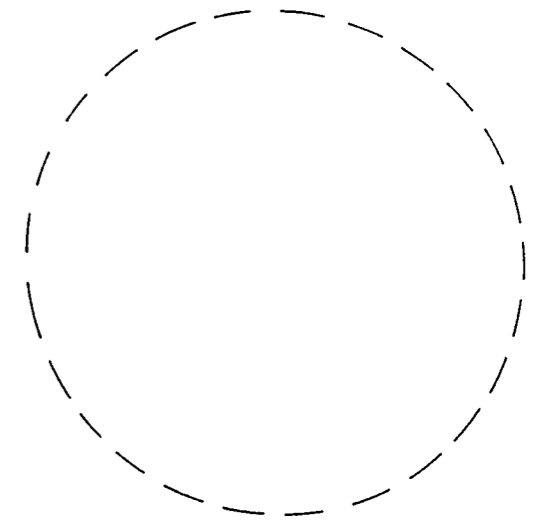
Castle



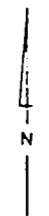
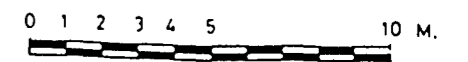
Birkah (Tank)



Bir (Well)

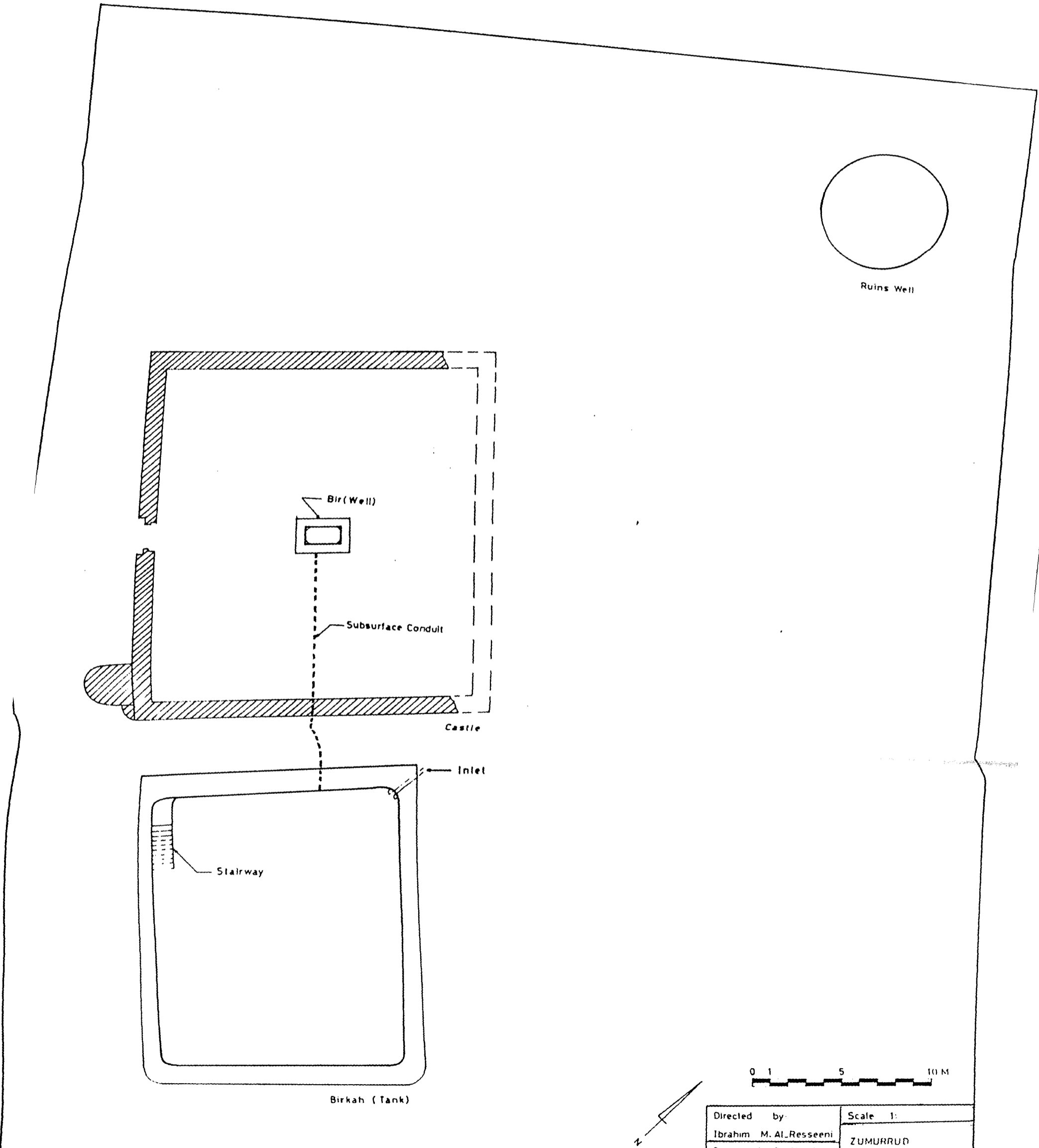


Ruins Well



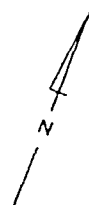
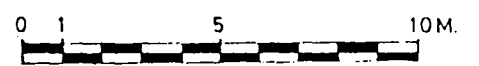
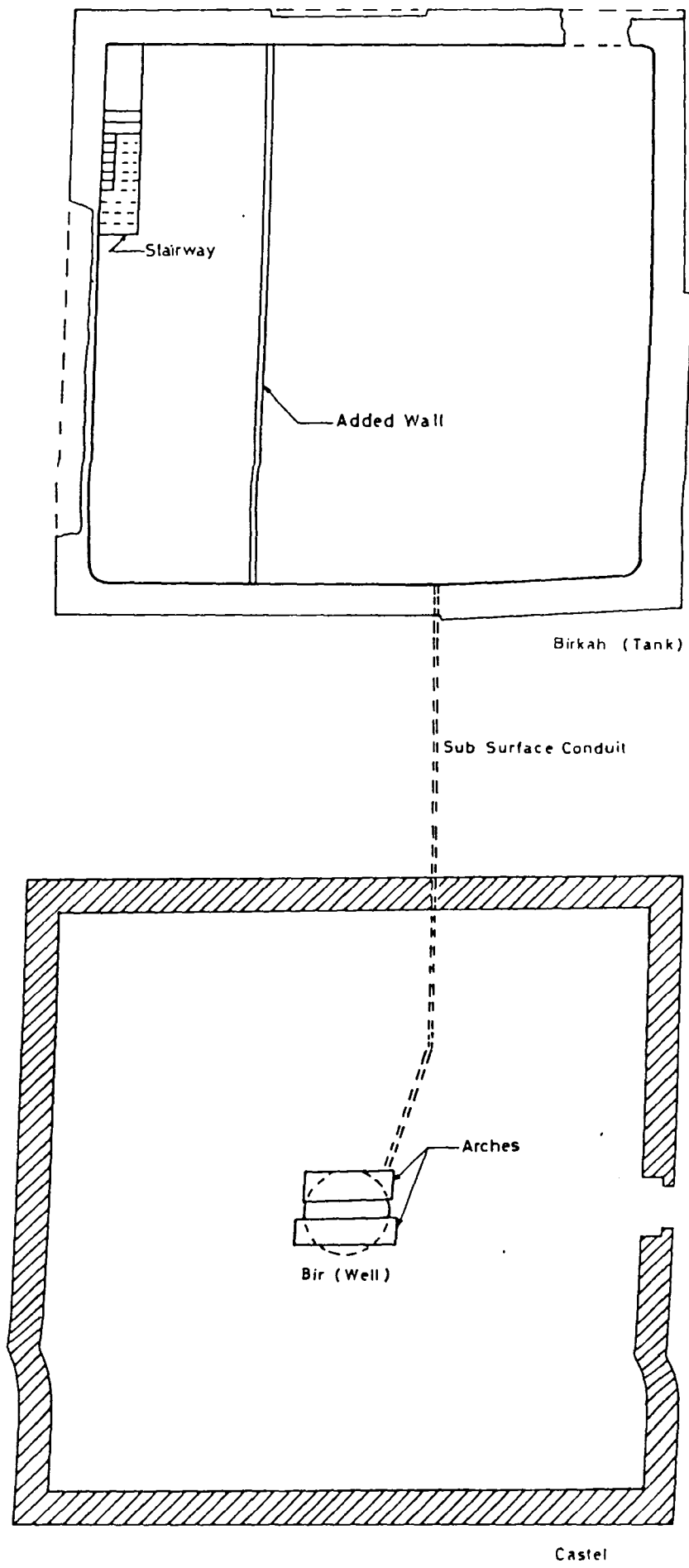
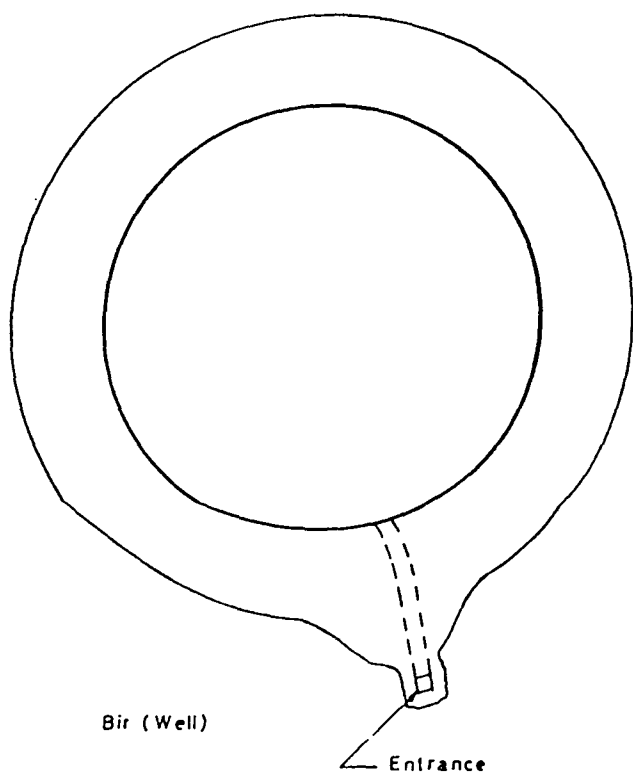
Directed by:	Scale 1:
Ibrahim M. AL Resseeni	AL-HIJR
Survey. & Draft. by:	Plan Map 1
Salah M. AL Hilwah	No.
1989 / 1990	

Folder 14: Castle, abyar and a birkah at Al-Hijr (Madain Saleh)

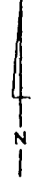
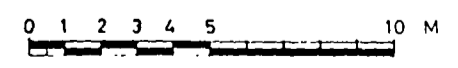
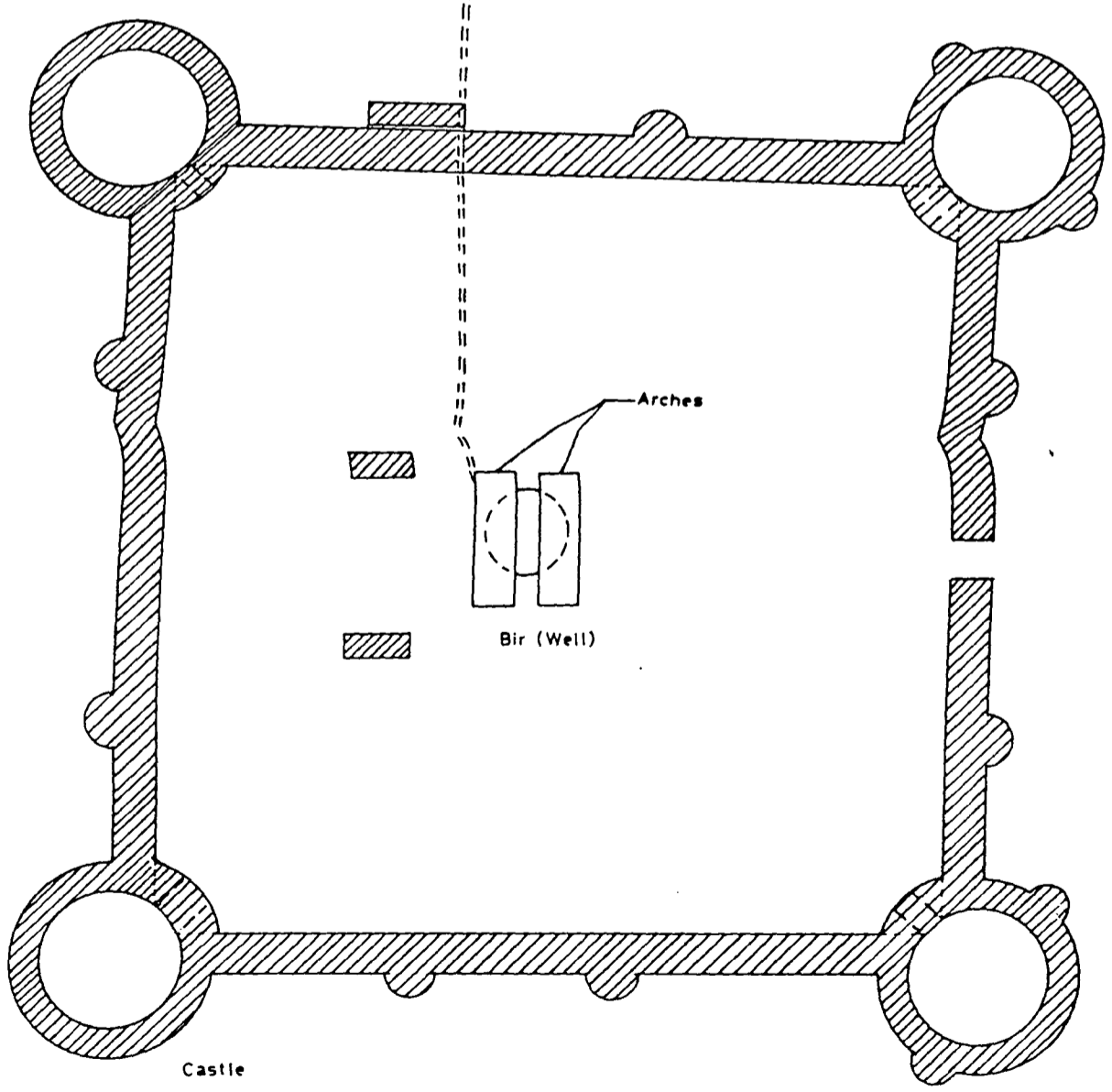
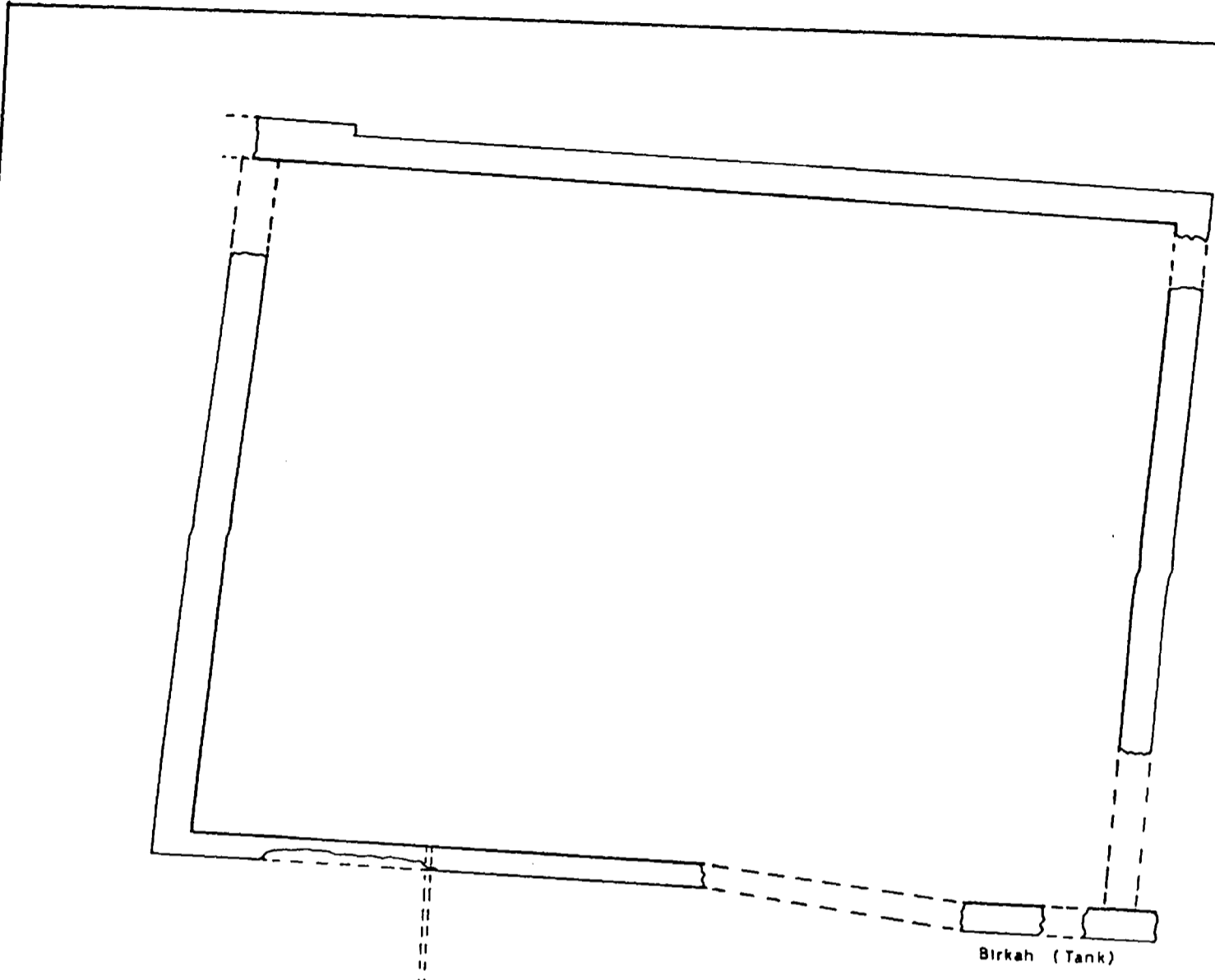


Folder 15: Birkah, a bir and a castle at Zumurrud

Directed by:	Scale 1:
Ibrahim M. Al-Resseeni	ZUMURRUD
Survey & Draft. by:	Plan Map 1
Salah M. Al-Hilwah	No.
1989/1990	

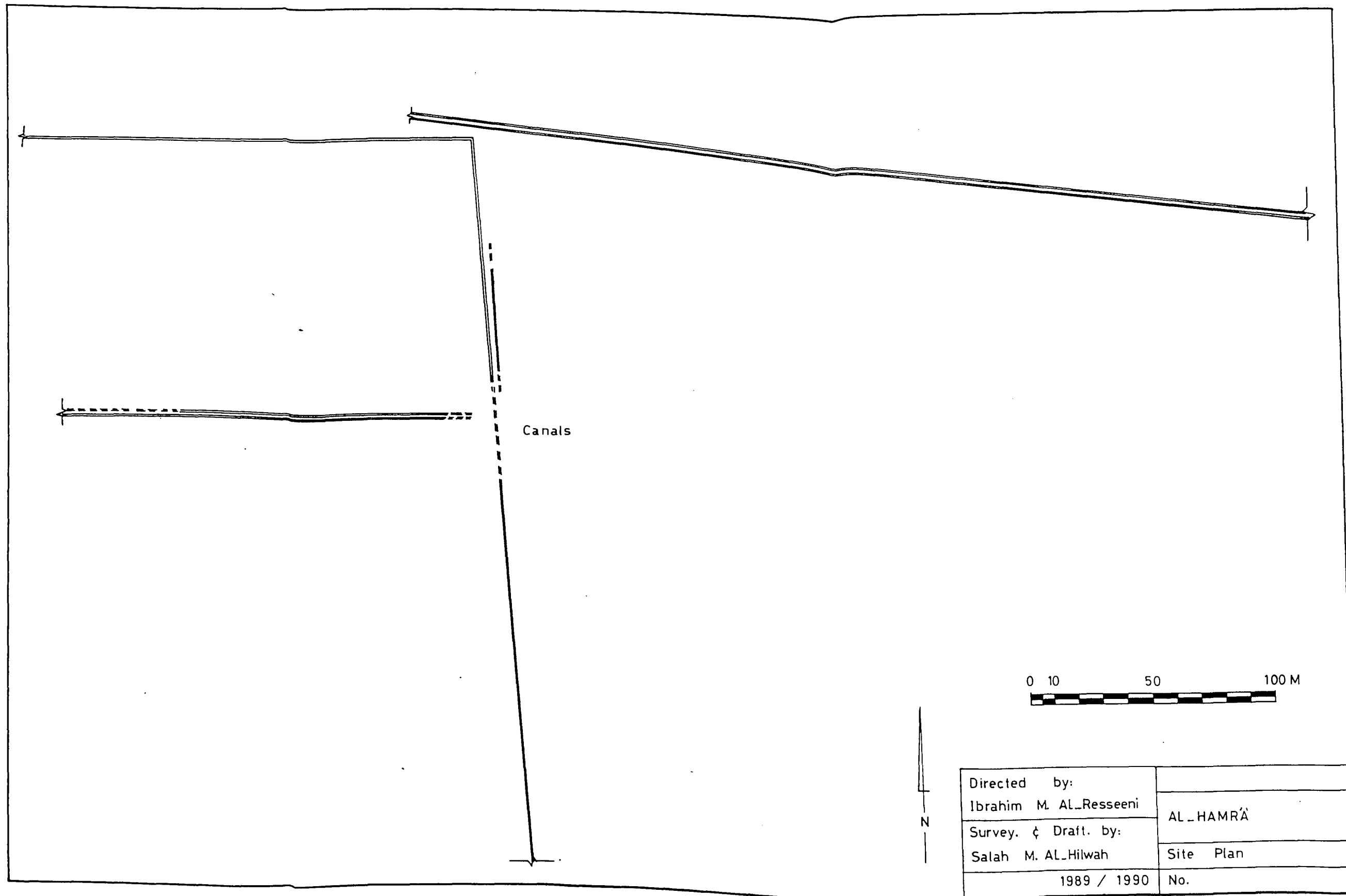


Directed by: Ibrahim M. Al-Resseeni	Scale 1: AL-ŞURAH
Survey. & Draft. by: Salah M. Al-Hilwah	Plan Map 1
1989/1990	No.

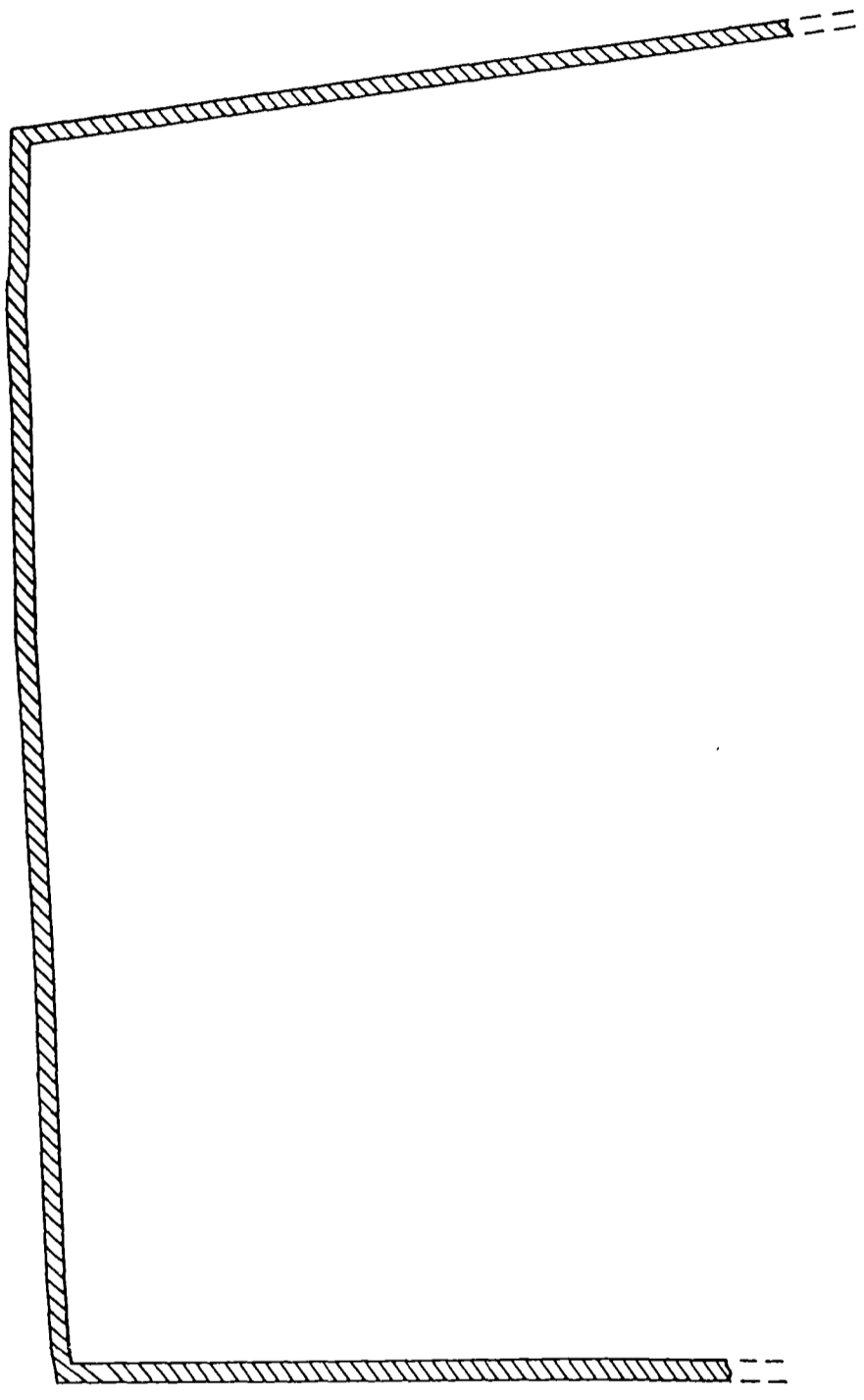


Directed by:	
Ibrahim M. AL-Resseeni	SHAJWA
Survey. & Draft. by:	
Salah M. AL-Hilwah	Plan Map 1
1989 / 1990	No.

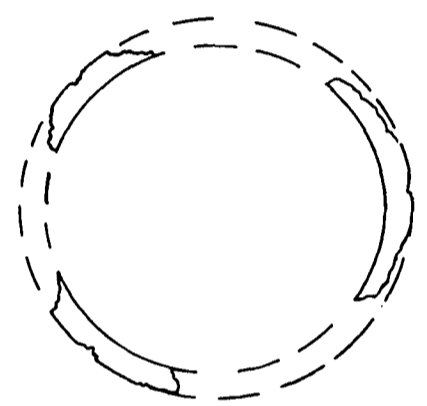
Folder 17: Birkah and a castle at Shajwa



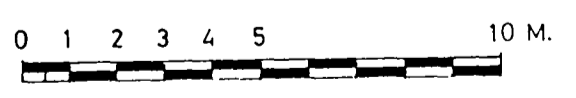
Folder 18: Network of subsurface canals at Al-Hamra



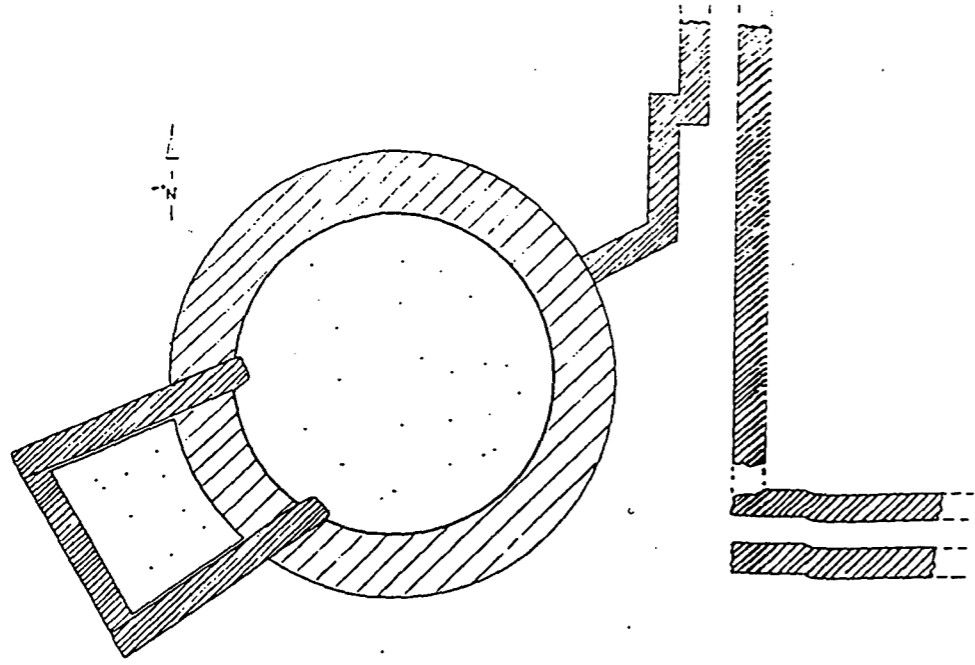
Wall



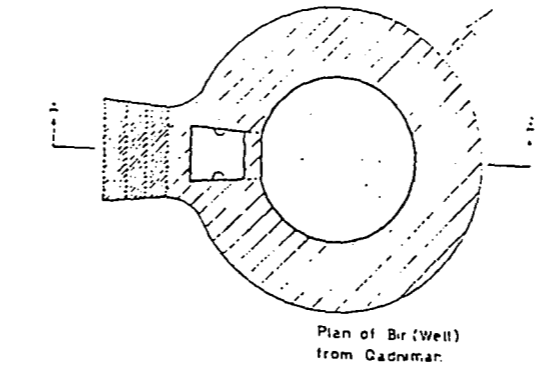
Bir (Well)



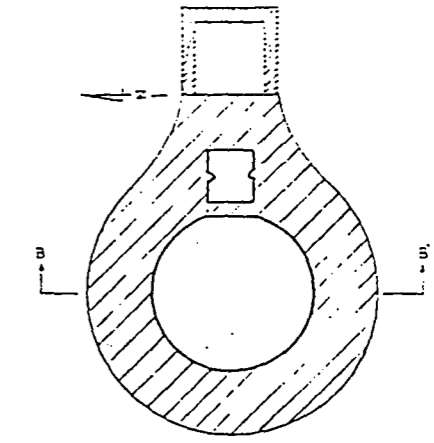
Directed by:	
Ibrahim M. Al-Resseeni	AL-MINDASSIH
Survey. & Draft. by:	THÜ-KHUSHUB
Salah M. Al-Hilwah	Plan Map 1
1989 / 1990	No.



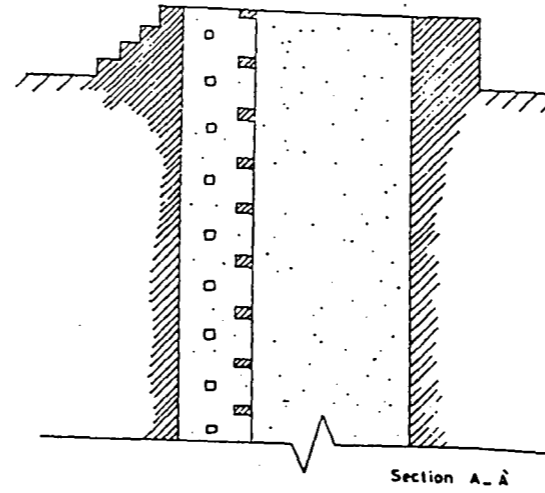
Plan of Bir (Well) from Abar Ali



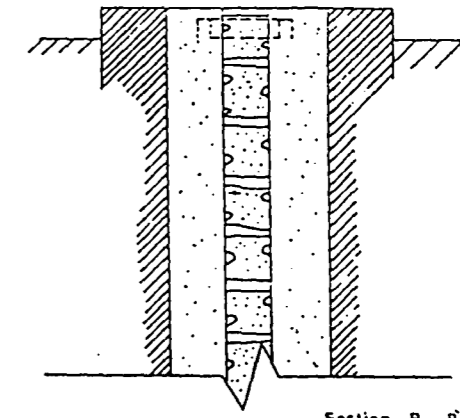
Plan of Bir (Well) from Qadman



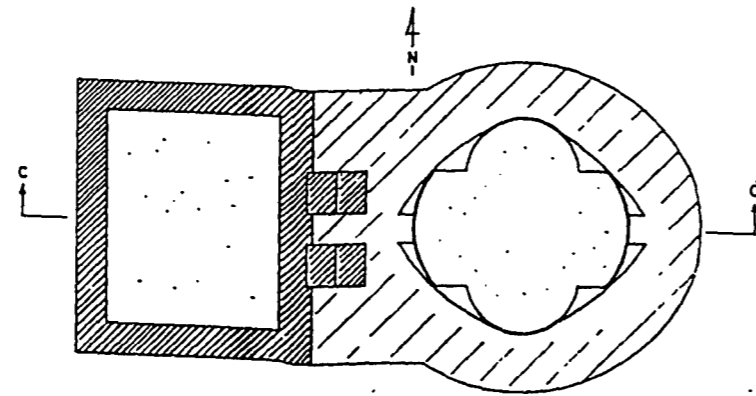
Plan of Bir (Well) from Masturah



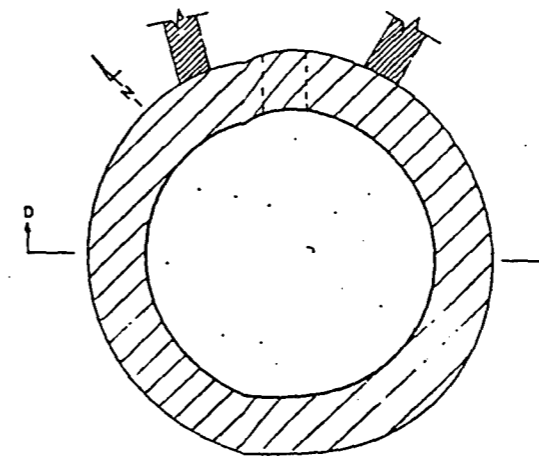
Section A-A



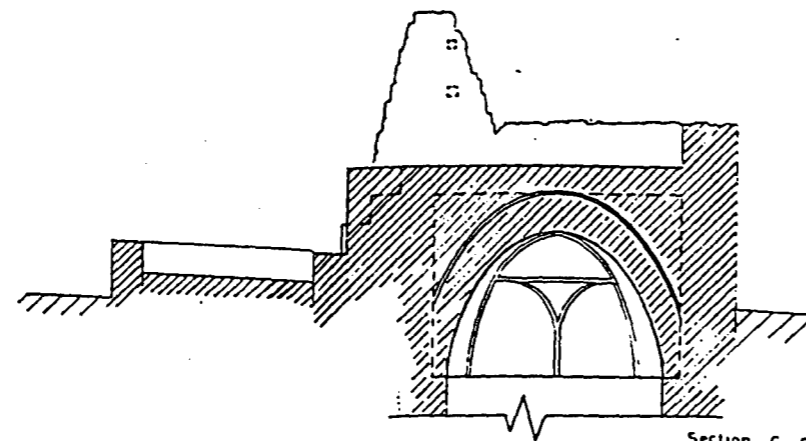
Section B-B



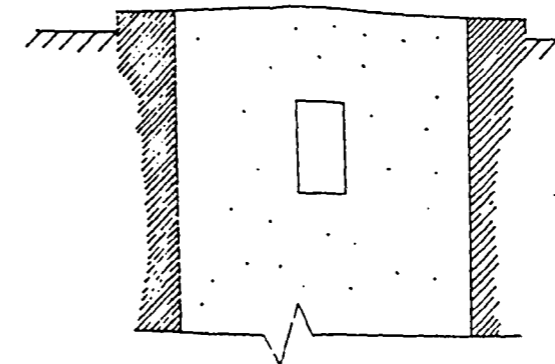
Plan of Bir (Well) from Daba



Plan of Bir (Well) from Ammarhat



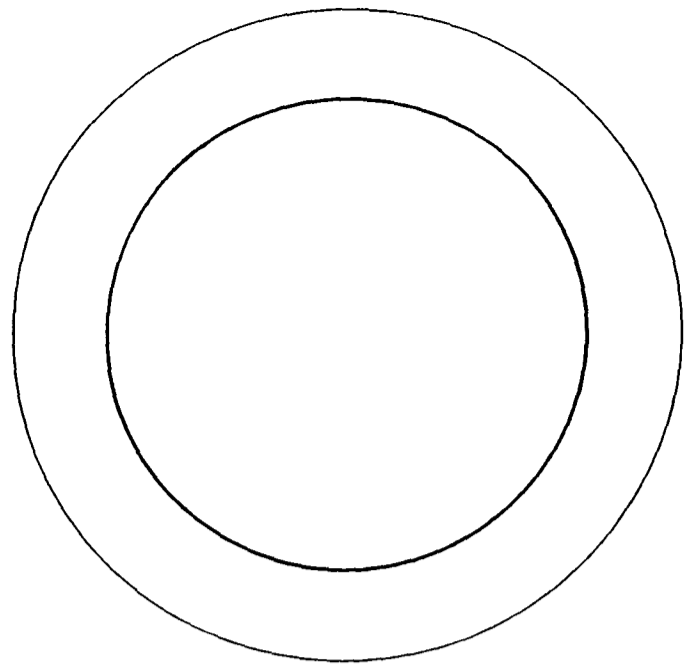
Section C-C



Section D-D

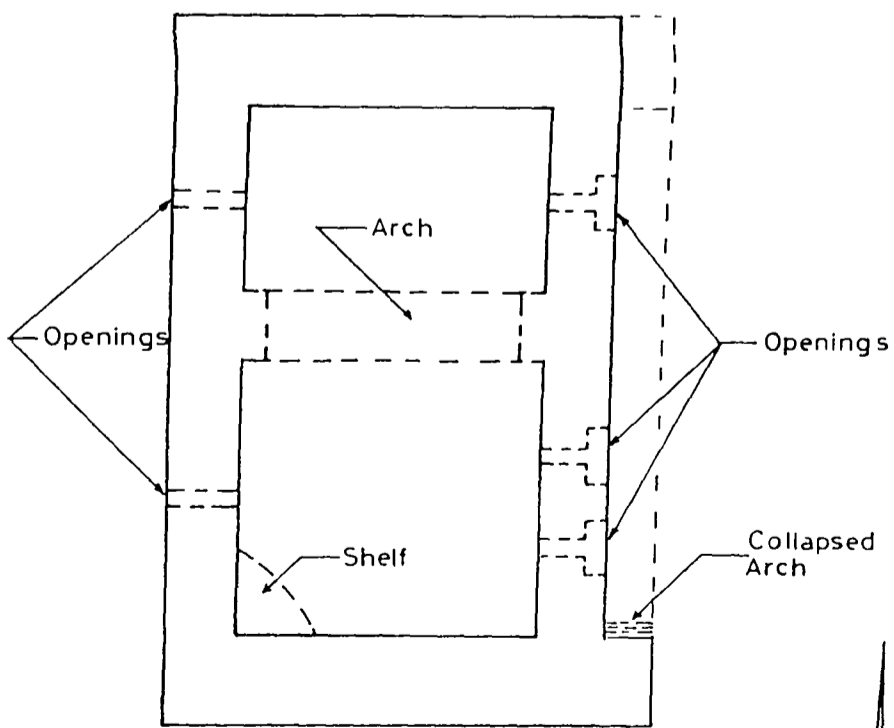


Directed by:	
Ibrahim M. AL. Resseeni	The Different Types of
Survey & Draft. by:	Äbar (Wells)
Salah M. AL. Hilwan	Plan & Section
1989 / 1990	No

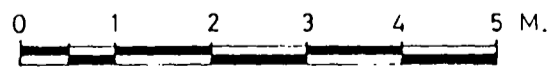


Bir (Well)

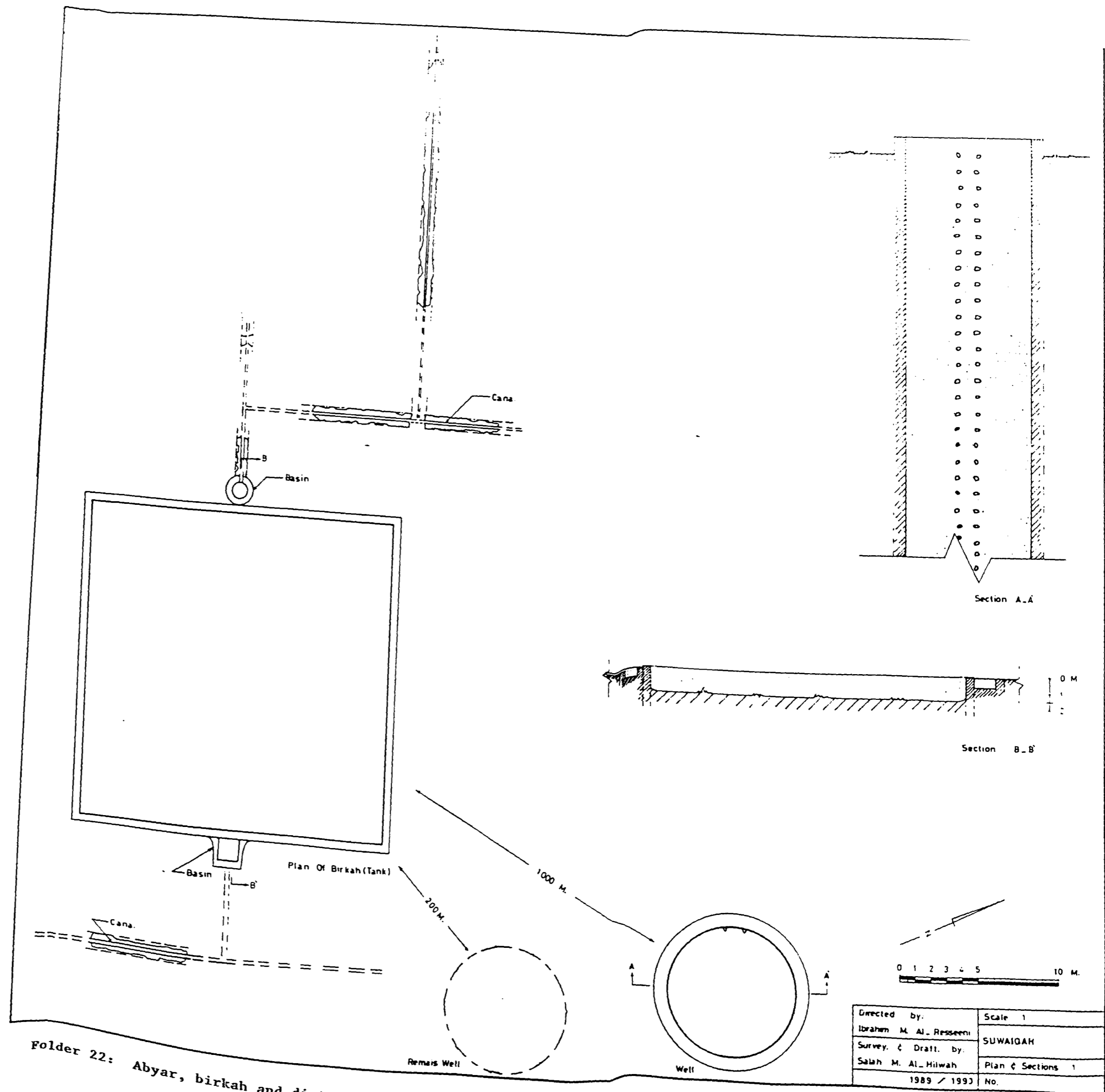
600 M.



Water Storage Building ?

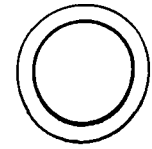


Directed by:	Scale 1:
Ibrahim M. AL-Resseeni	AL-SAYALAH
Survey. & Draft. by:	Plan Map 1
Salah M. AL-Hilwah	No.
1989 / 1990	

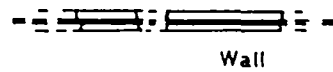


Directed by:	Scale 1
Ibrahim M. Al. Resseem	SUWAIAH
Survey & Draft. by:	Plan & Sections 1
Salah M. Al. Hiiwah	No.
1989 / 1993	

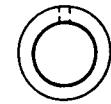
Folder 22: Abyar, birkah and distribution system at Al-Suwaiah



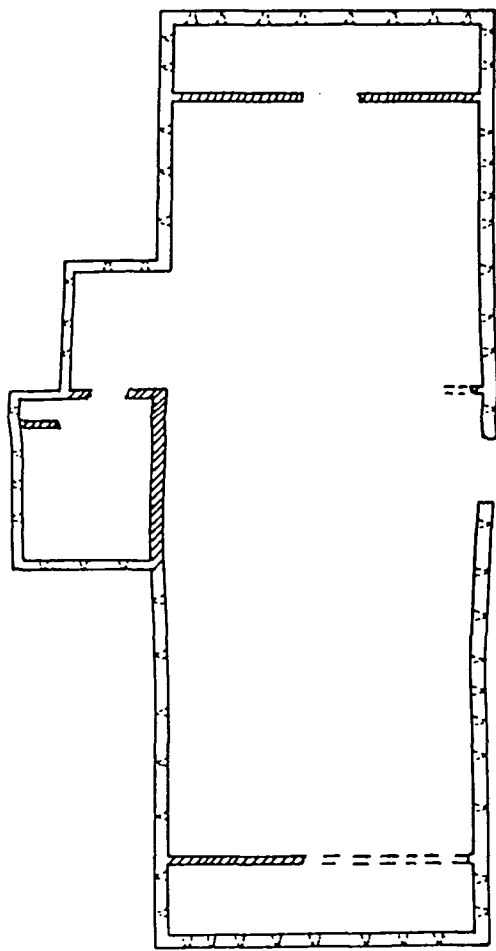
Bir (Well)



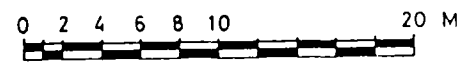
Wall



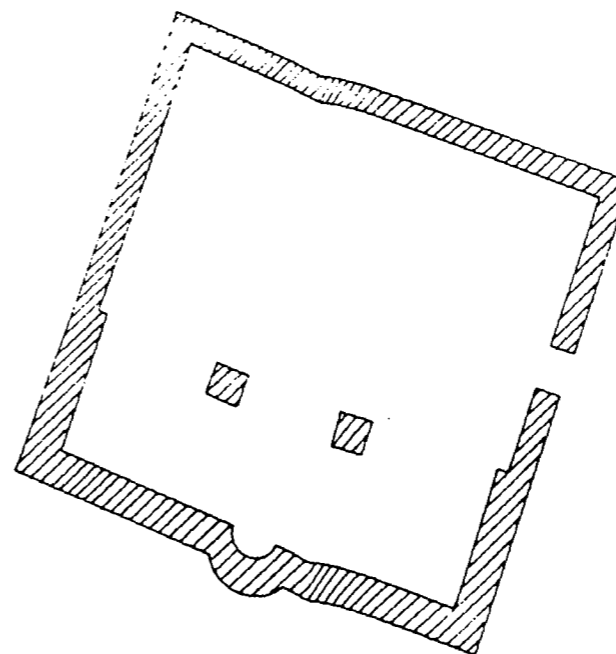
Bir (Well)



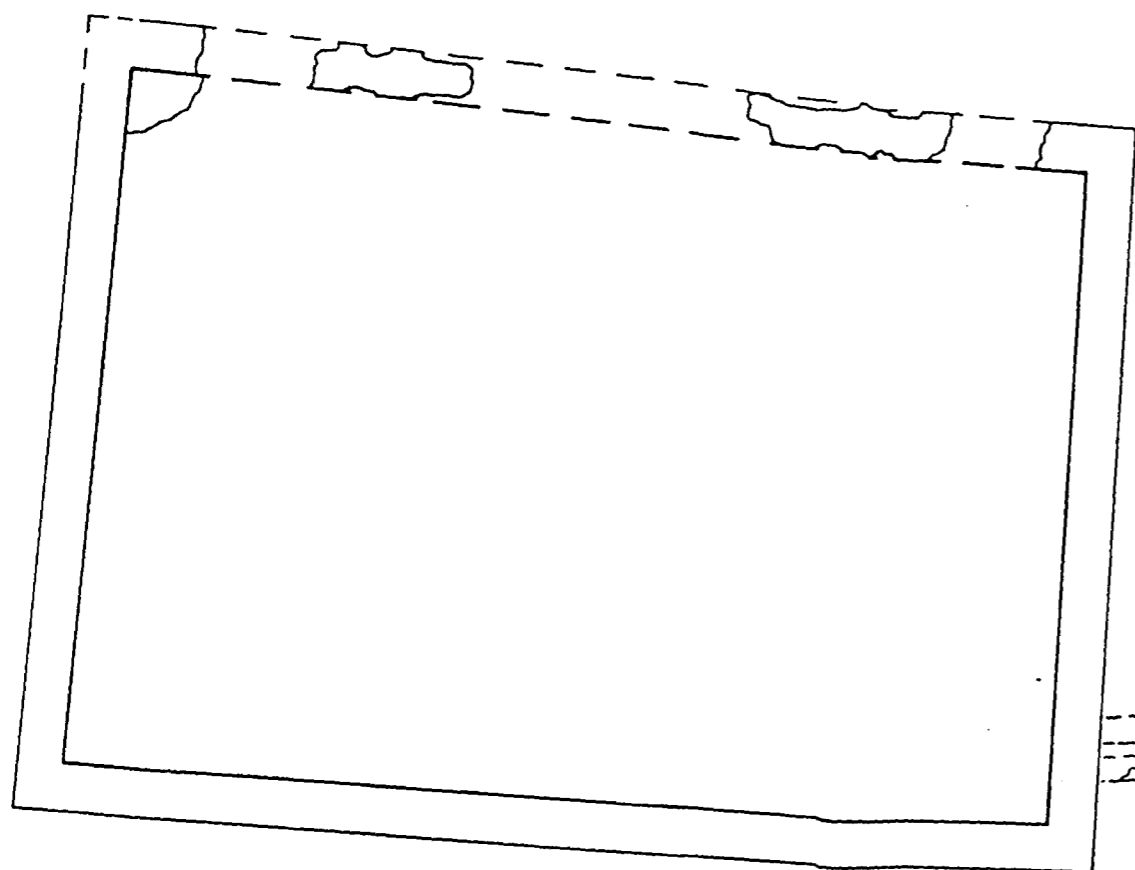
Citadle



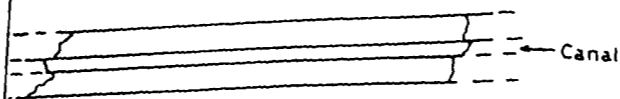
Directed by:	
Ibrahim M. AL-Resseeni	BIR AL-MĀSHI
Survey. & Draft. by:	
Salah M. AL-Hilwah	Plan Map
1989 / 1990	No.



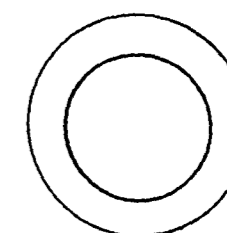
Mosque



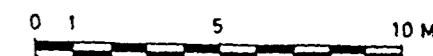
Birka (Tank)



Canal

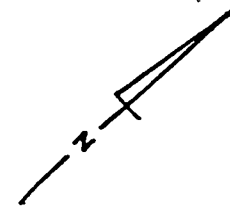
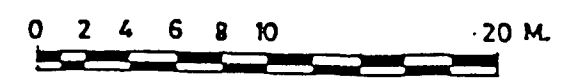
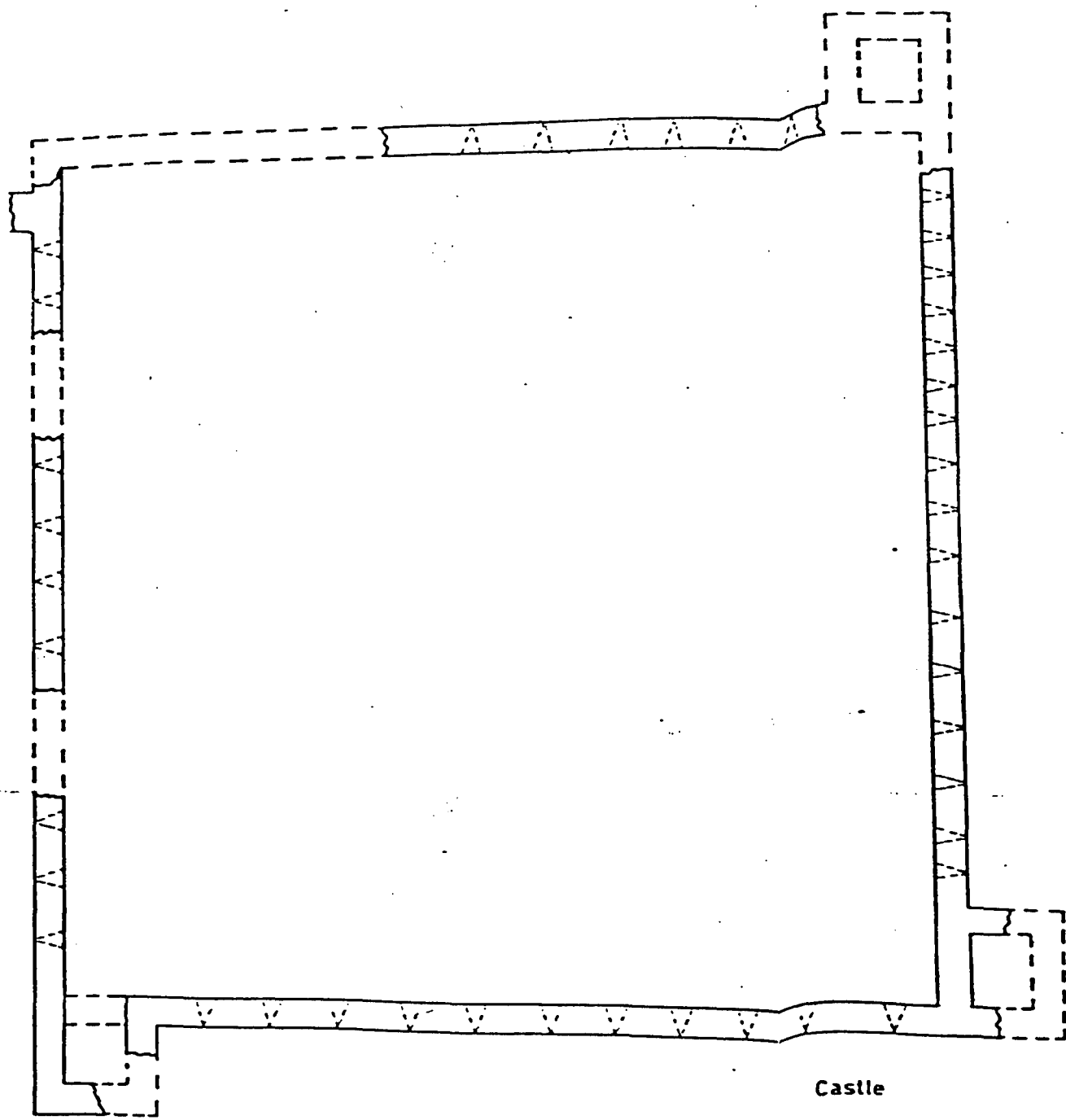
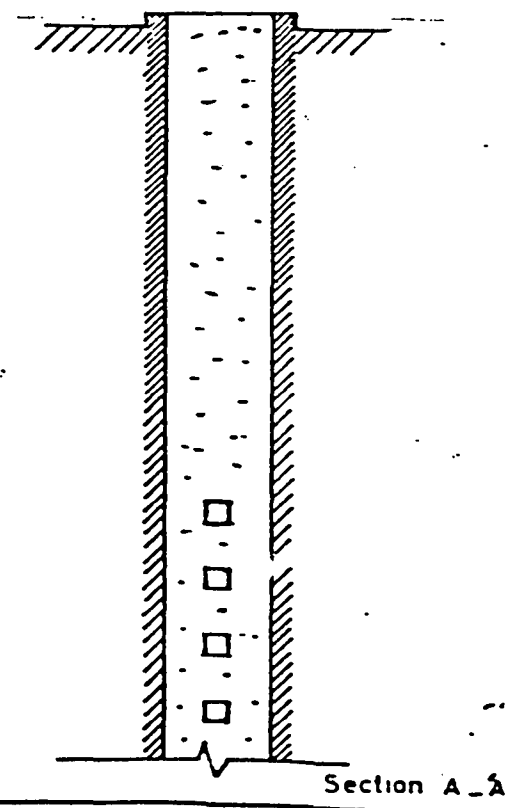
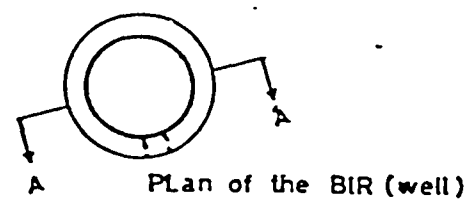


Bir (Well)



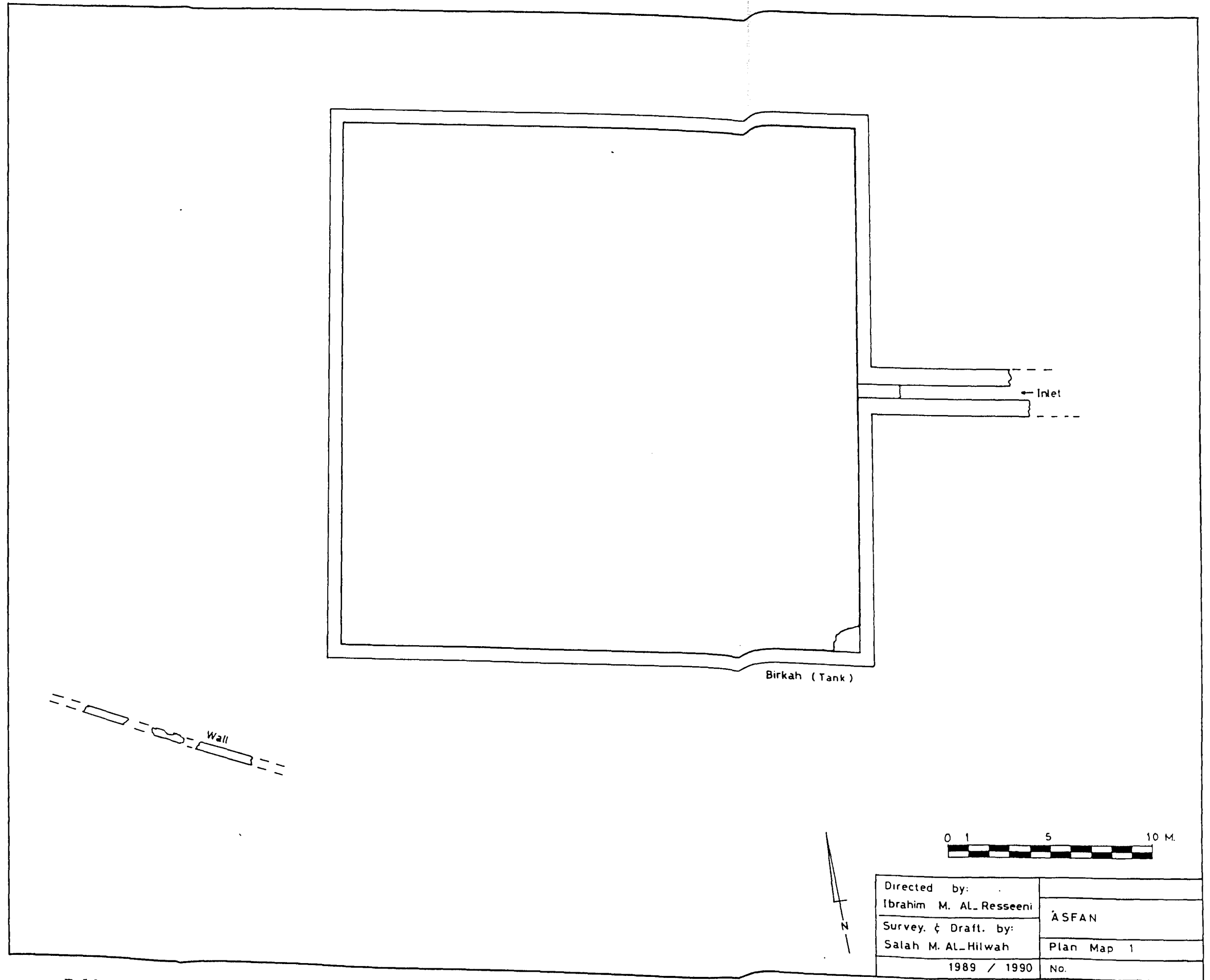
Directed by:	
Ibrahim M. Al-Resseeni	AL-RAUHA
Survey. & Draft. by:	
Salah M. Al-Hilwah	Plan Map 1
1989 / 1990	No.

Folder 24: Mosque, birkah and distribution system at Al-Rauha

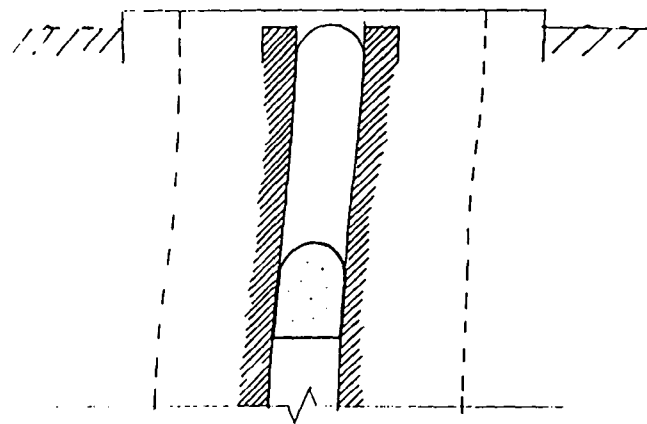


Directed by:	Scale 1:
Ibrahim M.AL-Resseeni	BIR - ÁBBAS
Survey. & Draft. by:	Plan Map 1
Salah M. AL-Hilwah	1989 / 1990 No

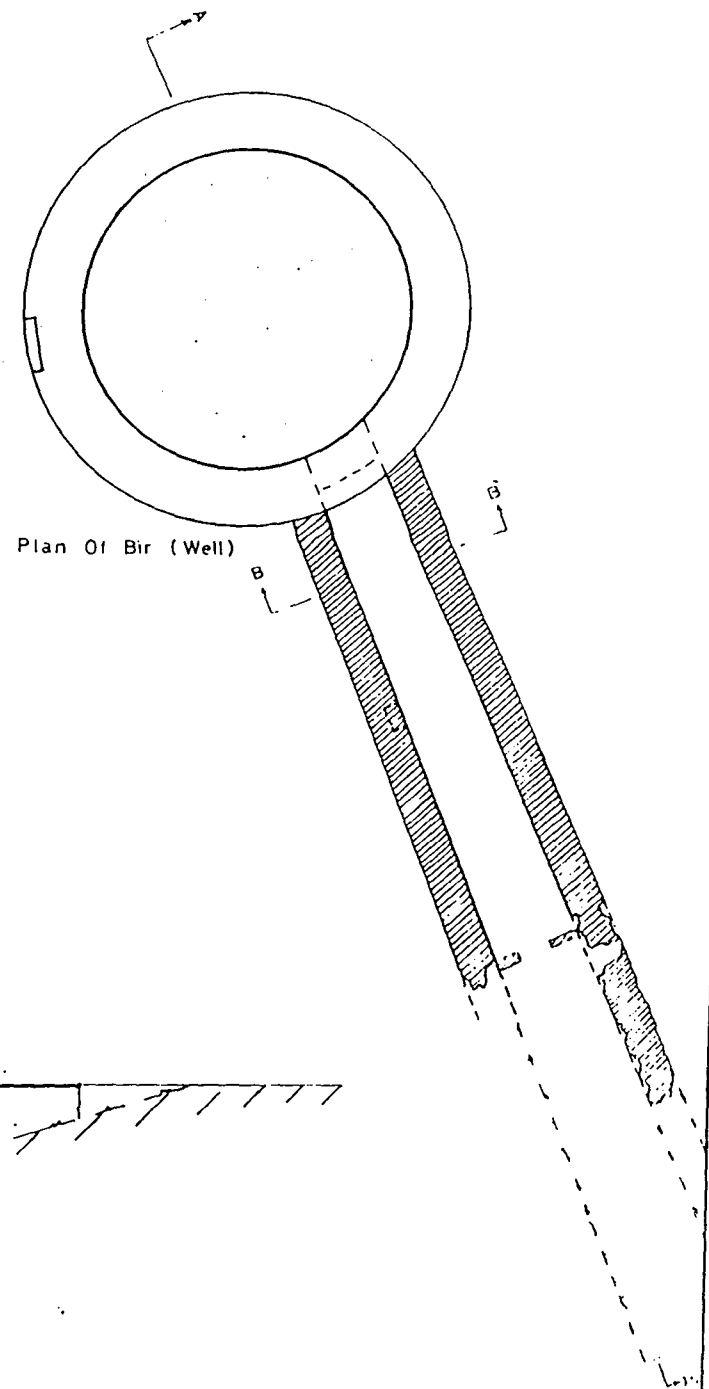
Folder 25: Bir and the remains of a castle at Bir-Abbas



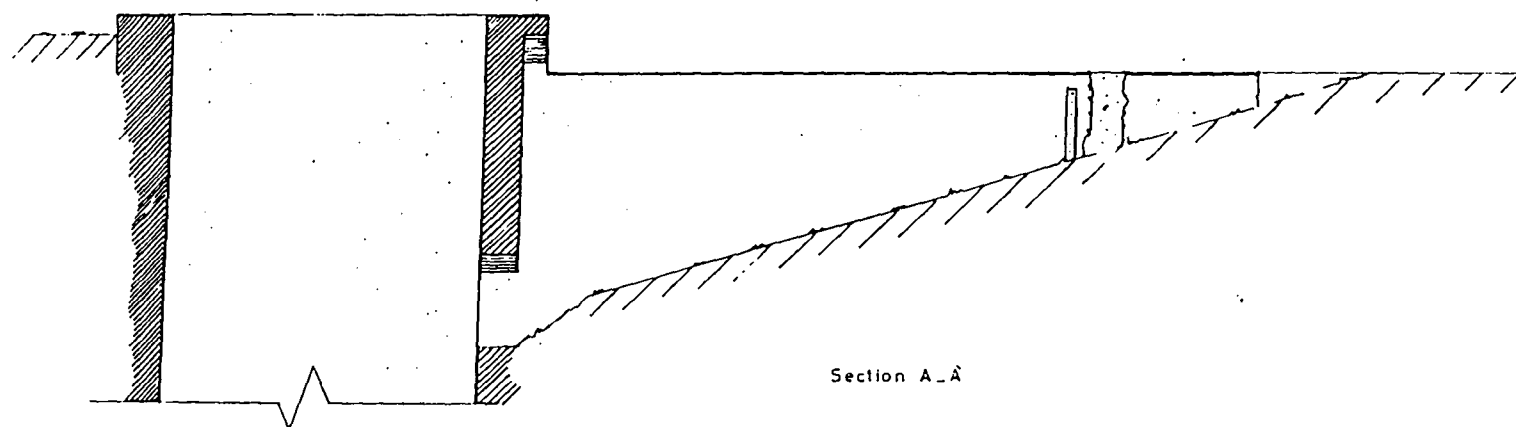
Folder 26: Birkah at Asfan



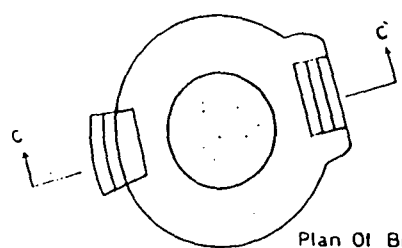
Section B-B



Plan Of Bir (Well)



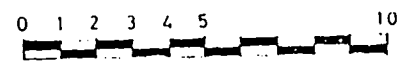
Section A-A



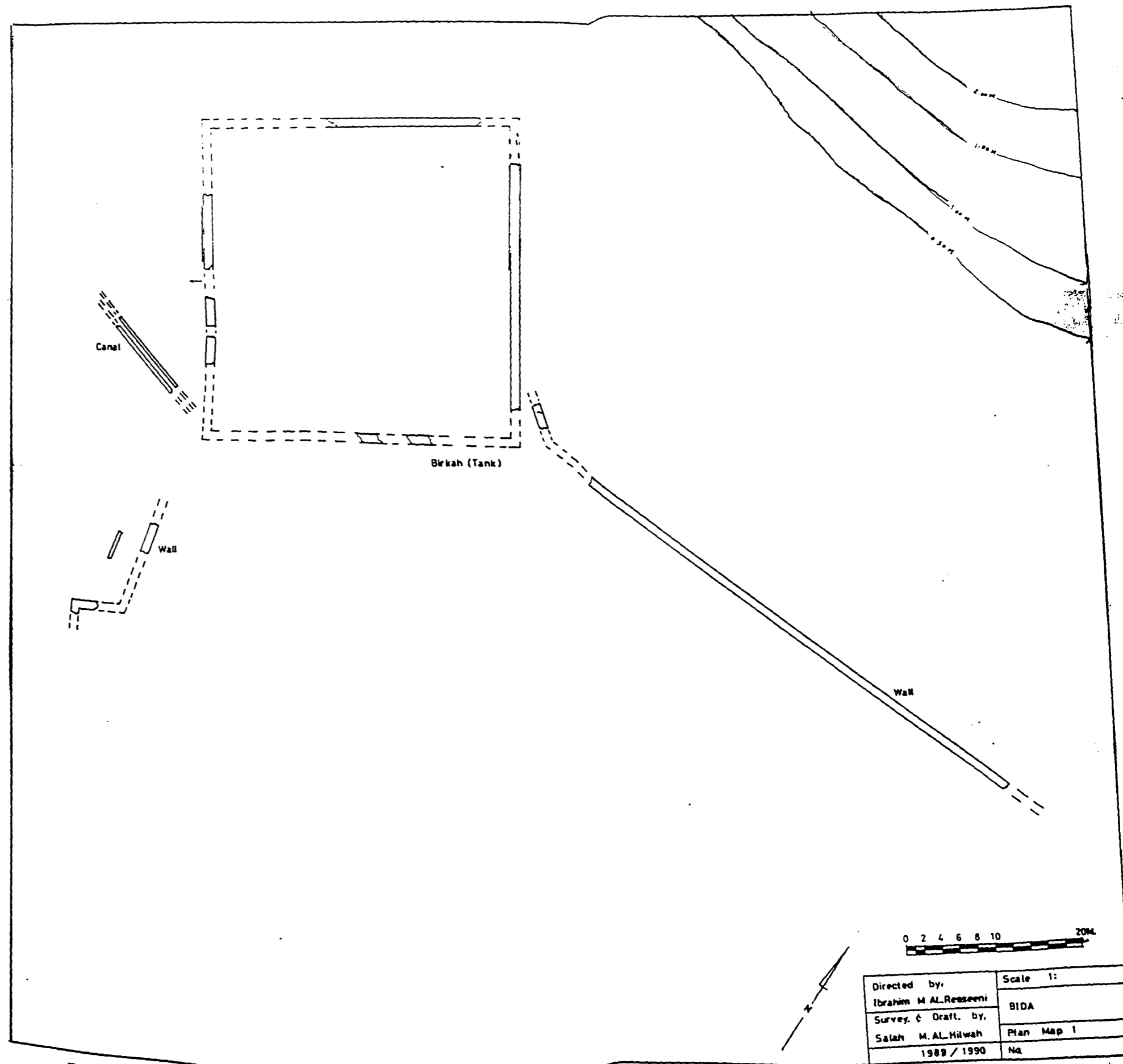
Plan Of Bir (Well)



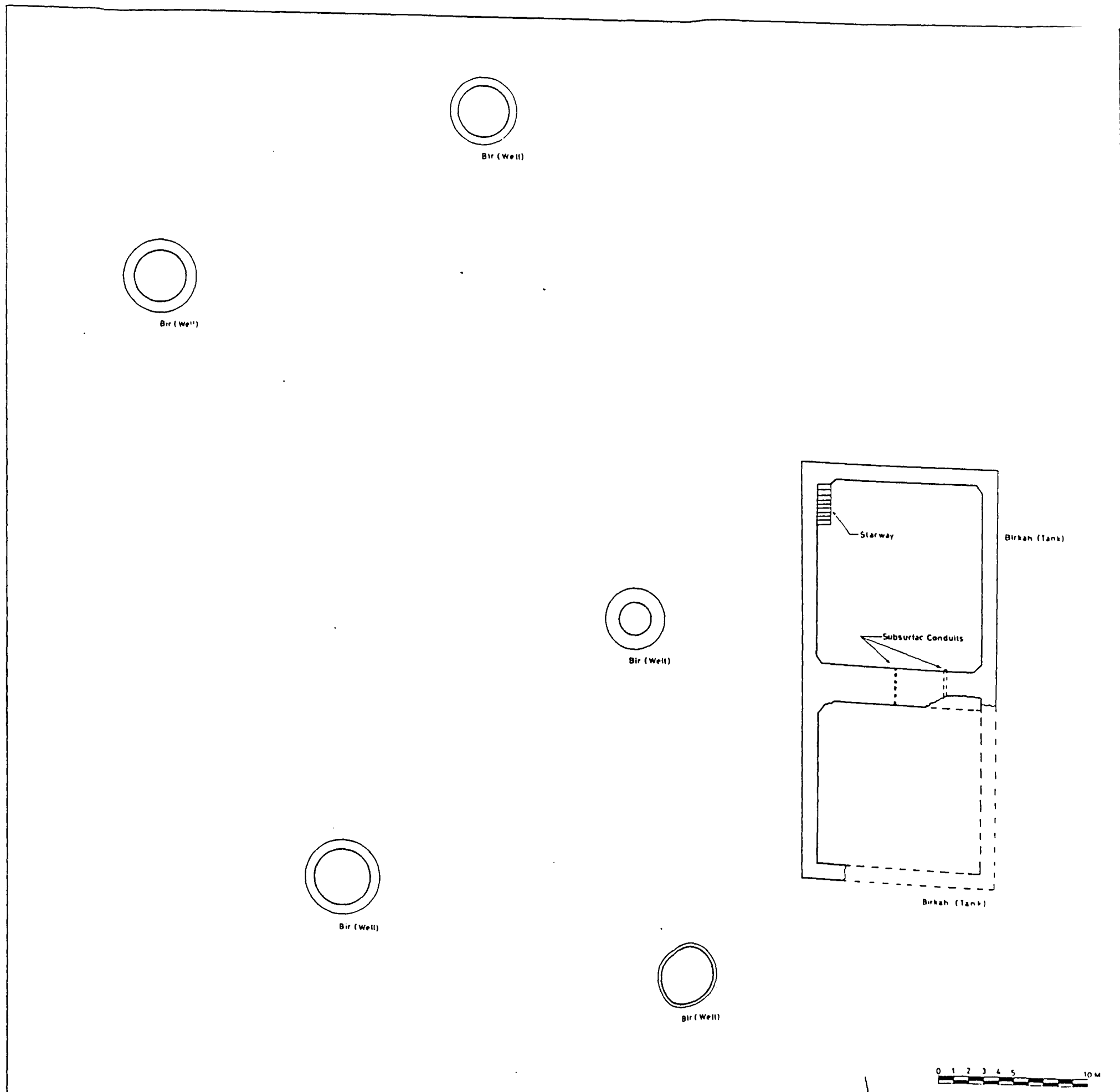
Section C-C



Directed by:	
Ibrahim M. Al-Resseeni	ASFAN
Survey & Draft by:	
Salah M. Al-Hilwah	Plans & Sections 2
/ / 1990	No.



Folder 28: Birkah and distribution system at Bida

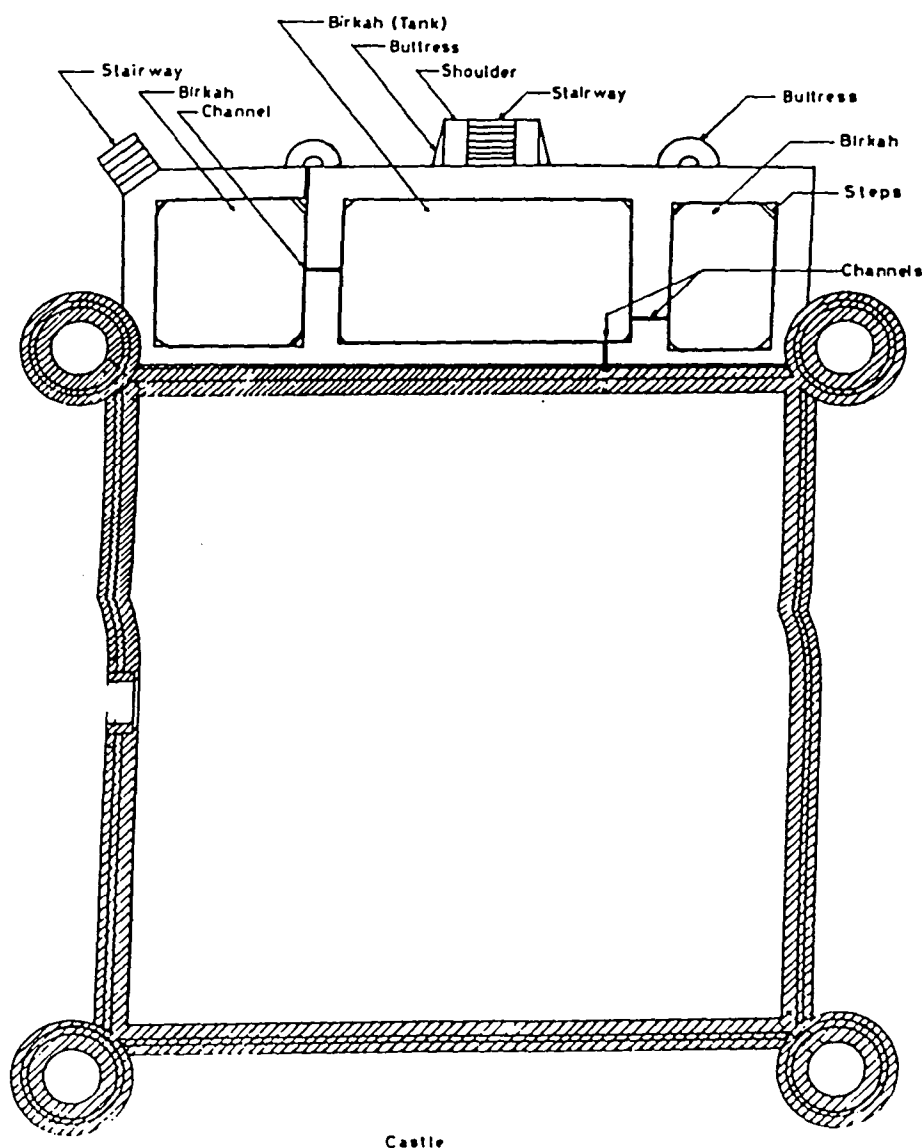


Folder 29: Birkah and abyar at Birkat Antar site

0 1 2 3 4 5 10 M	
Directed by Ibrahim M Al-Resseni	Scale 1
Survey & Draft. by Salah M Al-Hawah	ANTAR
1989 / 1990	Plan Map 1
	No

○
Bir (Well)

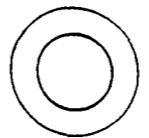
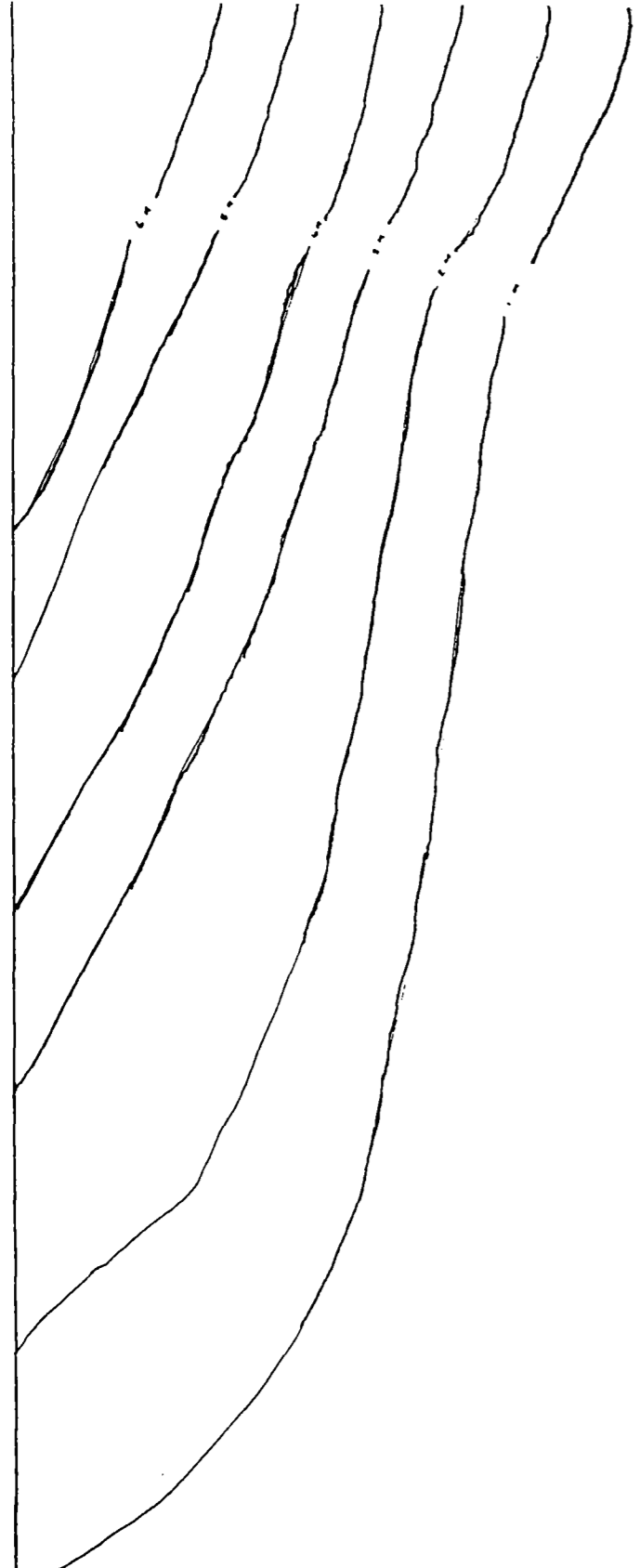
○
Bir (Well)



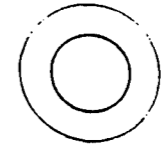
○
Bir (Well)

0 2 4 6 8 10 20 11

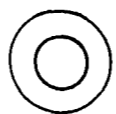
Directed by:	Scale 1
Ibrahim M. Al. Hesseini	ZURIB
Survey & Draft by:	Plan Map 1
Salah M. Al. Huseini	1989 1990



Bir (Well)



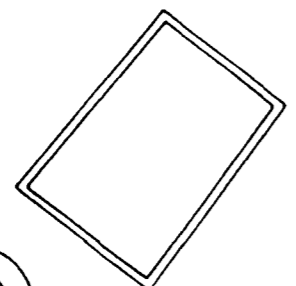
Bir (Well)



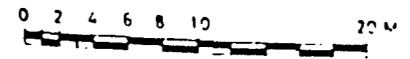
Bir (Well)



Bir(Well)



Basin



Directed by: Ibrahim M Al. Resseeni	Scale 1:
Survey. & Draft. by: Salah M Al. Hilwah	NABA
1989 1990	Plan Mar
	No.

Folder 31: Abyar and a small basin at Nabat