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## RESEARCH ARTICLE

# A Study on the Functional Analysis of Achaemenid Sites along the Hirmand River in Eastern Ancient Sistan (Helmand and Nimruz Provinces, Afghanistan)

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### Abstract

The Hirmand River, as the largest river in the eastern Iranian Plateau, has played a significant role in the formation and expansion of civilizations and cultures in Greater Sistan in eastern ancient Iran. In the last century, limited surveys have been conducted in the eastern part of the Hirmand River basin (the ancient provinces of Helmand and Nimruz, Afghanistan), each covering a portion of this region and introducing sites from various historical periods. Unfortunately, due to the prevailing insecurity in Afghanistan, studies in the eastern Sistan region have remained incomplete, leaving many ambiguities regarding various historical periods, including the Achaemenid era in this area. Therefore, in this research, which was conducted with the aim of investigating the function of Achaemenid sites around the Hirmand River in eastern ancient Sistan, we first introduce and study the Achaemenid ancient sites along the banks of the Hirmand River based on archaeological reports and remote sensing via satellite imagery. Subsequently, by analyzing the obtained data, the Achaemenid sites along the banks of the Hirmand River are examined in terms of their function. The results indicate that across the five archaeological survey projects conducted in the eastern part of the Hirmand River basin, 19 sites contain evidence from the Achaemenid period. Based on the study of characteristics such as site area, geographical location, topographical condition, and architectural remains, it can be stated that a number of the Achaemenid sites along the banks of the Hirmand River are the remains of garrisons or waystations (a type of caravanserai) that guarded one of the ancient routes in the eastern Achaemenid Empire and the caravans that traversed it. The other Achaemenid sites in this region represent small villages that were established along the banks of the Hirmand River.

**Keywords:** Achaemenid Period, Sistan, Ancient Routes, Chapar-khaneh, waystations

## Introduction

The Hirmand is one of the most important rivers in the eastern Iranian Plateau, which, over thousands of years, has been instrumental in the growth and development of ancient Sistan. This river originates from the mountains of eastern Afghanistan and, after being joined by the Arghandab River in the Bost area, flows with greater force through the Hirmand Valley to reach the vast plain of Sistan. There, in the Band-e Kamal Khan area, it divides into two main southern (Biaban) and northern (border) branches, along with several secondary distributaries. Although according to conducted archaeological studies, the majority of ancient sites have been formed within the confines of these two main branches and their sub-channels, the western section of the Hirmand's course, due to its perennial flow and minimal channel shifting compared to the eastern section, also contains substantial evidence from the Prehistoric to the Islamic periods. Although, due to the division of Greater Sistan into Iranian and Afghan parts and the political and security problems of the last century in Afghanistan, conducting archaeological studies on the ancient sites of the eastern part of Sistan has been difficult for Iranian researchers, valuable information about the condition of many sites in eastern Sistan has been obtained through several archaeological survey and excavation projects (Fairservis, 1961; Hammond, 1970; Ghirshman, 1942; Abramiuk, 2017; Trousdale and Allen, 2022). This information can complement archaeological studies in Iranian Sistan. Among these, one of the historical periods of great significance pertains to the Achaemenid Empire. From this period, a large site with Achaemenid-era remains was identified in Iranian Sistan, representing a historical city with Achaemenid architecture (Scerato, 1962: 186-197). Furthermore, in the archaeological survey of the Sistan plain, more than 100 small Achaemenid sites were identified (Mousavi Haji & Mehr Afarin, 2008), which, based on conducted studies, are highly likely to be the remains of the people of Evergetáes (Alaie Moghaddam et al., 2016: 119). In Afghan Sistan as well, through the aforementioned surveys, a number of sites from the Achaemenid period were identified, most of which are situated along the banks of the Hirmand River. Although these sites are of great significance, studies concerning them are scarce. Therefore, this article, aiming for spatial and functional analyses, investigates these ancient sites and their role in the settlement structure of ancient Sistan during the Achaemenid period.

In this context, two main questions are considered:

- What was the settlement pattern in eastern Sistan during the Achaemenid period?
- What function did the Achaemenid sites along the Hirmand River in the eastern part of ancient Sistan serve?

## Research Method

This study is fundamentally basic research and methodologically descriptive-analytical. In this research, data obtained from archaeological surveys and excavations are first analyzed. Subsequently, utilizing satellite imagery and remote sensing, the form and layout of the sites are examined, while the relationship between their location, form, and function is investigated.

## The Hirmand River and Its Drainage Basin

The Hirmand River, with a drainage basin spanning 350,000 square kilometers, is the largest river on the Eastern Iranian Plateau and in Afghanistan. It is 1,400 kilometers long, originating at an altitude of 3,800 meters west of the Paghman Mountains, 60 kilometers west of Kabul, between the two Unai passes in the north and HajiGak. It forms a narrow valley stretching approximately 320 kilometers towards the west (Papoli Yazdi, 1995: 109-110). This river receives several important tributaries within Afghanistan's territory, the most significant of which are Musa Qala and Arghandab. After receiving the Arghandab near the city of Bost in the mountainous region, the Hirmand traverses 400 kilometers of desert and reaches Char Borjak (Mojtahedzadeh, 1995: 34). The boundary of ancient Sistan should be considered from the city of Bost and the confluence of the Arghandab with the Hirmand. This city is mentioned in some historical sources as the second city of Sistan. Below Bost, the main riverbed of the Hirmand is 250 to 300 meters wide, and the floodplain of the river in this gorge reaches a width of 800 to 1600 meters. Near the village of Khwajeh Ali Sofla (south of the Arghandab confluence), the river's elevation is 580 meters. At Band-e Kamal Khan, located approximately 112 kilometers downstream to the west, the elevation is 522 meters (Ahmadi, 2006: 24,36). At this location, the Hirmand divides into western and northern branches. The western branch, which is dry today, is called the Rud-e Biaban or Tarakhun. The southern banks of the Rud-e Biaban are broken up by ancient channels that once functioned primarily as spillways. Approximately 144 kilometers from Band-e Kamal Khan, the Rud-e Biaban disperses through several conduits into a large, sloping delta at an elevation of 418 meters at the Afghan border and 470 meters at the location of the Tasuki wells. This delta also slopes in a northwesterly direction up to Hozdar (elevation 468.5 meters), a feature which likely contributed to the formation of the Hamun in southern Sistan in the past (Ibid.: 24).

The northern branch of the Hirmand River, from Band-e Kamal Khan to its entry point into Lake Hamun, has several subsidiary branches, the most important of which are the Sanarud and the Rud-e Sistan. The Sanarud channel diverges from the Hirmand in the region of Dikeh Dileh and flows towards the northwest. The Sanarud channel likely dates back to an era when humans had not yet settled in Sistan. Another channel branches off from the Hirmand at a place called Jarikeh, which is named the Rud-e Sistan. The Rud-e Sistan flows in a northwesterly direction and, after irrigating the lands of the Sistan plain, empties into Lake Hamun via two distributaries. The main branch of the Hirmand also heads north, forms the Iran-Afghanistan border for a length of 60 kilometers, then re-enters Afghan territory and flows into Hamun-e Puzak (Figure 1), (Papoli Yazdi, 1995: 112).

The Hirmand River is the most important factor in the formation of settlements in Greater Sistan. Throughout different historical periods, the influence of this river on human societies has been immense, to the extent that shifts in the river's course caused central cities and human communities in Sistan to relocate. On the other hand, given the geographical situation of Sistan (eastern Iran and southern Afghanistan), throughout history, the course of the Hirmand River has been the most important and suitable route for travel from the western to the eastern regions of ancient Sistan and Kandahar.



Figure 1. The geographical extent of Greater Sistan and the course of the Hirmand River (Hirmand River Basin).

### **Sistan in the Achaemenid Period Based on Historical Sources**

Historical sources concerning Sistan during the Achaemenid period are scarce, and the limited available information addresses only general subjects. According to historical sources, Sistan during the Achaemenid period was one of the important eastern satrapies, which was incorporated into the Persian Empire during the time of Cyrus the Achaemenid. In the Bisotun Inscription, this satrapy is referred to as Zranka (Toynbee, 1999: 209). The name of this Achaemenid satrapy is also mentioned in other Achaemenid inscriptions, such as the DPe, DSe, DNa, DSaa, and XPH inscriptions, and in the depictions of the various nations of the empire at the tomb of Darius I and Artaxerxes II (Sharpe, 2004: 33). No precise information is available regarding the extent and boundaries of the Zranka satrapy, and it can only be stated that its main part corresponded to Greater Sistan and the Hirmand River region. On the other hand, based on the approximate geographical positioning of the eastern satrapies of the Achaemenid Empire, it can be stated that the Zranka satrapy was located between the satrapies of Harauvatis (Kandahar) or Arachosia in the east, Haraiva (Herat) in the north, Karmania (Kerman) in the west, and Maka (Gedrosia: Balochistan) in the south (Daffina, 1967: V); (Bryant, 1999: 1057).

Dandamayev (1994: 138) believes that Cyrus brought the Zrangians under the suzerainty of the Achaemenid Empire between 545 and 539 BC. According to Herodotus, during the battle of Cyrus the Achaemenid with the Scythians, the Zrangians aided his army by sending 30,000 loads of grain, and the Achaemenid king, in gratitude for this act, exempted them from taxation (Herodotus, 1806: 8).

The first historical source that mentions the existence of a city in Sistan during the Achaemenid period belongs to Ctesias, the physician of Artaxerxes II. He refers to a city called Zarin located by Lake Hamun (Ctesias, 2004), which was built by the order of Darius the Achaemenid (Gnoli, 1993: 585). A century later, during the reign of Darius II, this city rebelled

against the central government and operated independently for a period until it was suppressed by the army of Darius II (Azarnewsheh, 1991: 189).

Around the time of Alexander the Great's invasion, while Darius III was in the eastern regions of the Achaemenid Empire, rebuilding his army to battle the Greeks once more, Barzaentes, the governor of the Zranka satrapy, along with Bessus and Satibarzanes from other eastern satrapies, conspired and assassinated the Achaemenid king (Hamilton, 1974: 94). These rebels were killed by him after Alexander's victory, in such a way that Barzaentes was captured in India and killed by Alexander (Arrian, 1884, Book 3, Chapter XXV). Based on the research he has conducted in this field, Mehr Afarin states that Alexander secured provisions and fodder in southern Sistan, which was called Agriaspae, and thereafter, via the Great Bend of the Hirmand, reached the Arghandab and Arachosia (Mehr Afarin, 2012: 125). According to the above, after his victory over the eastern Achaemenid province, Alexander launched his campaign to India via Zranka. This itself indicates the existence of a known ancient route from Zranka to the land of India, which had been used for centuries.

In subsequent centuries, historians and geographers made brief and scarce references to Sistan during the Achaemenid period and thereafter. Among these, one can mention Ptolemy. He refers to three major peoples in the Sistan region: the Drangae in the northern parts, the Batrians in the western parts, and the Tatakene in the southern parts (Schmitt, 1995: 534-537).

### **Background of Archaeological Studies on the Achaemenid Period in Eastern Ancient Sistan (Nimruz and Helmand Provinces, Afghanistan)**

Unfortunately, political instability and insecurity in Afghanistan during the past century have resulted in limited archaeological research being conducted. This issue is more pronounced in the southern regions of Afghanistan, where the eastern territories of ancient Sistan are located today, compared to other areas. Furthermore, most archaeological projects in southern Afghanistan have been left incomplete due to the impact of internal conflicts or invasions by foreign nations.

The first archaeological study of sites in eastern Sistan within Afghan territory can be attributed to the archaeological excavations by Ghirshman. In 1936, he began excavations at Sorkh Dagh Nad-i Ali in Afghanistan and identified two distinct construction phases. He dated Phase 2 to the 9th and 8th centuries BC and considered Phase 1 to belong to the Achaemenid period (Ghirshman, 1942: 20-22). Walter Fairservis, in his 1961 survey of the Sistan region in Afghanistan, refers to two sites in Nad-i Ali (Sorkh Dagh and Sefid Dagh) concerning the Achaemenid period (Fairservis, 1961: 45-46). Similarly, Klaus Fischer, during the 1960s, provides scant information about Achaemenid sites in northern Sistan (Fischer, 1971). Hammond, in the survey he conducted along the course of the Hirmand River within Afghan territory, identified and sampled 45 sites (Hammond, 1970: 440). He identified 8 Achaemenid sites and 10 Hellenistic sites, 3 of which had overlapping periods of occupation (Hammond, 1970: 440-449). Dales resumed excavations at Sorkh Dagh in 1968 (Dales, 1977: 13). He believes that the large platform discovered at Sorkh Dagh dates back to the pre-Achaemenid period, was used during the Achaemenid era, and was expanded upon with their own mudbricks

(Ibid: 39). Furthermore, Dales also identified pottery from more recent periods, including Hellenistic, Parthian, and likely Sasanian (Ibid: 101).

Other surveys in eastern Greater Sistan (the Afghan part) include the studies and site visits conducted by Marc Abramiuk in 2011 (Abramiuk, 2017). In intermittent surveys initiated by the Smithsonian Institution of the United States and the Institute of Archaeology of Afghanistan starting in 1970 and continuing until 1979, a joint American-Afghan archaeological team, led by William B. Trousdale, conducted a survey of Afghan Sistan and test-trenched at several ancient sites. Based on this work, they successfully identified 9 sites containing evidence from the Achaemenid period (Trousdale & Allen, 2022). This survey represents the most recent and final archaeological studies in eastern Sistan that have provided researchers with information about ancient sites.

- **Achaemenid Sites in Eastern Ancient Sistan (Nimruz and Helmand Provinces, Afghanistan)**

Based on the archaeological surveys and excavations conducted in past decades, in eastern ancient Sistan which encompasses the eastern part of the Hirmand River basin, 19 sites with evidence from the Achaemenid period have been identified. In the following section, based on existing reports and through the examination and study of satellite imagery, each of these sites will be described and explained:

**1. Bost site:** This site is in the upper reaches of the Hirmand River, north of the confluence of the Arghandab River with the Hirmand, in Helmand Province, Afghanistan. Bost is a very large site where numerous artifacts and remains from various historical periods have been identified. Topographically, the site consists of an extensive and interconnected complex of mounds and hillock covering an area of approximately 70 hectares. A walled sharestan from the Islamic period is situated within a part of it, enclosing an area of about 24 hectares (Figure 2). The Encyclopedia of the Islamic World, based on archaeological excavations, dates this site to 500 BC (Haddad Adel, 1999: 380). Tomaschek (1883: 207-208) and Gnoli point to the existence of Zoroastrian remains in the Bost region (Gnoli, 1967: 47, 80). In archaeological studies conducted in the latter half of the 20th century, Hammond and Ball refer to various historical period artifacts dating from 500 BC to 500 AD found across a series of mounds north and south of Bost, including pottery, terracotta statues, engraved seals, and coins (Hammond, 1970; Ball, 1982).

Although, at present and without extensive archaeological excavation, it is not possible to comment on the actual extent of this site during the Achaemenid period, citing the highly favorable environmental position of this area—the confluence of the Arghandab and Hirmand rivers and the most suitable and widest section of the Helmand Valley—as well as its location at the entrance to the satrapy of Harauvatiš (Arachosia / Kandahar), the existence of a large settlement in the Post-Achaemenid and Achaemenid periods at Bost, which could be considered a city of sorts, is not far-fetched. As has been the case from the Parthian and Sasanian periods up to the present, this region has contained one of the principal cities of Great Sistan.

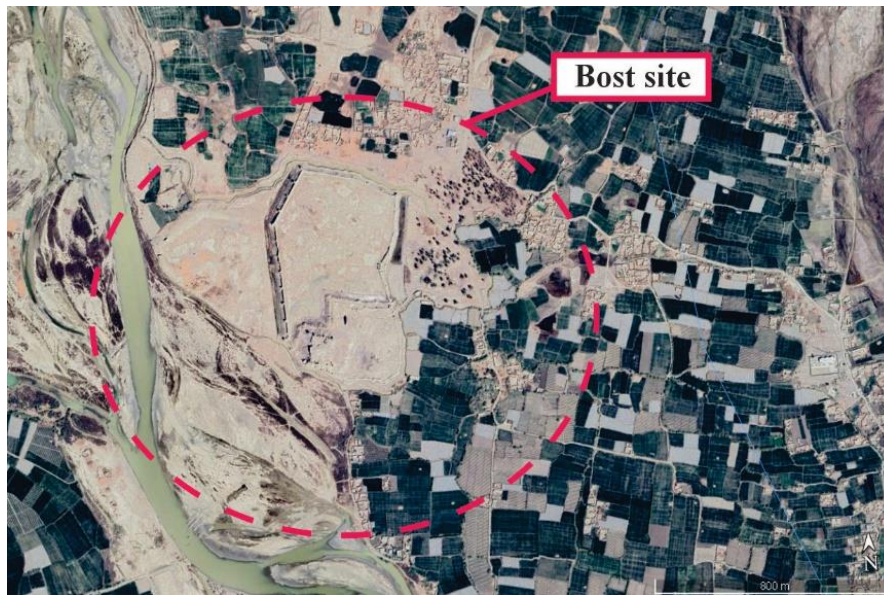


Figure 2. The Bost site and the Islamic castle atop it (Drawn by the author, adapted from Google Earth).

**2. Tappeh Khwaja Hasan:** This site is situated around and atop isolated natural elevations composed of sandstone on the eastern bank of the Hirmand River in Helmand Province, Afghanistan. It was first identified and introduced during Bellew's survey (Bellew, 1874: 185). In the cliffs of these sandstone heights, the remains of five rock-cut chambers are observable. Although the existing reports do not mention the dimensions of all of them, each one averages about 9 square meters in area. One part of this location contains an Islamic shrine, and another part contains a cemetery where pre-Islamic pottery (Achaemenid, Hellenistic, Parthian, and Sasanian) is also found. The shrine is built upon a platform that belongs to earlier periods (Trousdale and Allen, 2022: 245).

**3. Tappeh Ghabrestan:** This site is a roughly rectangular hillock measuring 100 × 70 meters, with raised edges and a structural orientation from northwest to southeast. It is located 10 kilometers west of the Hirmand River, near one of the seasonal tributaries that flows into the river. The site was recorded as number 38 in Hammond's survey, and evidence from the Achaemenid period was identified there (Hammond, 1970: 448).

**4. Tappeh Zindān:** A roughly square mound, 100 meters per side and 4 meters high, located east of the Hirmand River. On its surface, remains of several walls from the Islamic period are visible. Unfortunately, in recent years, the encroachment of agricultural lands has disrupted the integrity of its northeastern and southeastern slopes. Hammond states that the Achaemenid period is one of the settlement phases at this site (Hammond, 1970: 448).

**5. Tappeh Darwish Anwar khān:** A small mound with an east-west structural orientation, measuring 80 × 50 meters and reaching a maximum height of 5 meters, situated on the eastern bank of the Hirmand River in the center of Helmand Province, Afghanistan. The site was more extensive in the past, but its area has been reduced due to the encroachment of agricultural lands. Hammond identifies the Achaemenid period as one of the settlement phases at this site (Hammond, 1970: 448).

**6. Tappeh Gurgak:** A small, roughly square mound measuring 75 meters per side and 5 meters in height, located three kilometers east of the Hirmand River and southeast of Abbasabad. The study of pottery from this location indicates that it was also utilized during the Achaemenid period (Hammond, 1970: 448).

**7. Unnamed Riverside Site:** In his survey, Hammond refers to an Achaemenid site east of the Hirmand River in the Sarbandar area and marks its approximate location on the map with number 37 (Hammond, 1970: 448). Unfortunately, this mentioned site was not found in subsequent surveys or in the studies conducted by the authors of this article. However, given that its approximate location is known, it is mentioned in this article

**8. Tappeh Malā Khān:** At the point where the Hirmand River enters the plain in the southwestern part of Helmand Province, Afghanistan, on a low-lying mound measuring 40×42 meters with a maximum height of 4 meters within the riverside lands, are the remains of a rectangular structure. This structure has a north-south orientation and measures 21×27 meters. The walls of this building are between 1 and 2.5 meters thick, and today, the remains of two towers are discernible within it. The southwestern tower has a diameter of approximately 6 meters. One of the settlement periods at this location corresponds to the Achaemenid period (Trousdale & Allen, 2022: 260).

**9. Qala-i Sīrak:** Near the Sistan plain, north of the Hirmand River bed in southwestern Helmand Province, Afghanistan, there is a large, enclosed castle from the Islamic period, constructed on a low hillock. The castle measures approximately 210×250 meters, roughly matching the area of the underlying elevation. The highest part of this mound is located in its southern section, upon which the citadel of the castle was built. According to the report by Trousdale and Allen, pottery sherds from the Achaemenid, Hellenistic, Parthian-Sasanian, and Islamic periods are observable on this mound (Trousdale & Allen, 2022: 287). However, the area likely associated with settlements older than the Islamic and Parthian-Sasanian periods probably pertains to the citadel mound of the castle (Figure 3).

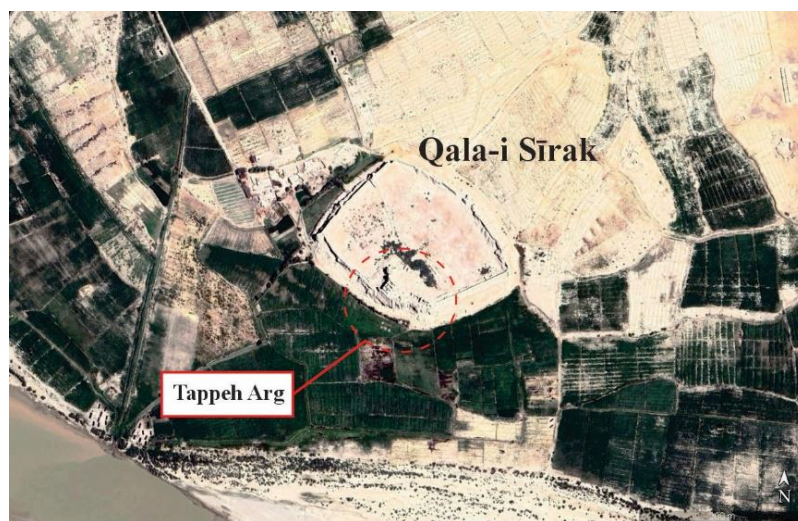


Figure 3. The location of the historical Tappeh Arg in the southern part of the Islamic Qala-i Sīrak (Drawn by the author, adapted from Google Earth).

**10. Tappeh Deshū:** A regular, nearly square mound measuring 40 meters per side, located in the southwestern part of Helmand Province, Afghanistan. It is situated on the southeastern bank of the Hirmand River at the beginning of the southern Sistan plain. The maximum height of the mound is 4 meters. The topographic state suggests a square castle, with each corner aligned with one of the main directions. Trousdale and Allen propose Achaemenid, Parthian, and Sasanian periods for this site (Trousdale & Allen, 2022: 325).

**11. Qala-i Kuhna:** This site is a mound with a height of 14 meters, located near the village of Dahmardeh, south of the Hirmand River (in Nimruz Province, Afghanistan). Based on satellite imagery, the perimeter of its slopes is roughly square, measuring 70× 74 meters. The upper surface of this site is relatively flat with raised edges, forming an approximately quadrilateral enclosure about 70 meters in length. In the southern part of the mound's upper surface, there are remains of a small Islamic castle measuring 15×11 meters. Qala-i Kuhna was excavated in 1975, with two trenches dug in its northwestern (A) and eastern (B) sections. Trench A, measuring 20× 4 meters, revealed a mudbrick platform 4 meters wide, constructed with bricks measuring 47-50 × 29-30 × 8-10 cm. Other findings in this trench included a kiln, remains of several walls with bricks measuring 37×37×9 cm, and remains of a brick floor with bricks measuring 51×47×7 cm. In layers which the excavator attributes to the Hellenistic and Achaemenid periods, remains of a peripheral defensive wall were identified (Figure 4).

Regarding this site, the excavator believes the primary structure consisted of a massive platform from the Bronze Age, which underwent repairs during the Achaemenid period, and defensive walls were added that remained in use until the Sasanian period (Trousdale & Allen, 2022: 435-449).



Figure 4. The Qala-i Kuhna site in Afghanistan and the location of the archaeological excavations (Drawn by the author, adapted from Google Earth).

**12. Qala-i Bāghak:** In the southern part of Nimruz Province, Afghanistan, on the southern bank of the Hirmand River, lie the remains of a large, enclosed castle covering an area of approximately 7 hectares. In Hammond's studies, it was identified as one of the sites with evidence of Achaemenid-period settlement (Hammond, 1970: 448). However, in the Helmand Archaeology Project, no Achaemenid evidence was reported at this site (Trousdale & Allen, 2022: 222).

Based on aerial imagery, this site is a sturdy, polygonal castle whose enclosure wall features 28 circular towers. The site has three gateways located on the northern, southwestern, and southeastern sides. The interior of the site is divided into eastern and western sections by a wide pathway, and in the northwestern part of the western section, atop a high mound, lies the enclosed alcove of this castle. It is highly probable that this site was one of the smaller Achaemenid settlements that expanded in a later period. The low percentage of Achaemenid surface pottery observed during Hammond's survey supports this conclusion. In other words, the extent of the historical-period settlement at this site is smaller. Based on its topographical condition and satellite imagery, it likely does not exceed 3 hectares.

**13. Tappeh Mādar:** This site is one of the regular mounds along the banks of the Hirmand River in southern Nimruz Province, Afghanistan. Unfortunately, due to a shift in the river's course, approximately half of it has been eroded and washed away. According to satellite imagery, the remaining portion of the site currently measures about 50 by 30 meters. However, it is clearly evident that the site originally consisted of the remains of a square structure, 50 meters per side, with clearly defined, regular perimeter walls indicating considerable thickness. Based on the opinion of Trousdale and Allen, the settlement periods at this site belong to the Iron Age, Achaemenid, and Parthian eras (Trousdale & Allen, 2022: 284).

**14. Tappeh Gīnā Kuhna:** This site, which unfortunately has been largely destroyed today due to the construction of a very wide dirt road, contains the remains of an ancient castle with multiple settlement periods. It is located at the beginning of the middle section of the Rud-e Biaban in Nimruz Province, Afghanistan. The report by Trousdale and Allen includes an aerial photograph of this site, mentions its dimensions as 35×35 meters, and attributes settlement periods to the Bronze Age, Achaemenid, Hellenistic, Parthian-Sasanian, and Islamic eras for it (Trousdale & Allen, 2022: 335). It should be noted that based on the scale within the image provided in the report, as well as the current remaining condition visible in satellite imagery, the dimensions of the surrounding enclosure wall of this castle are approximately 100 meters per side. Within the center of this perimeter enclosure, there was a square area measuring 80 by 55 meters, which belonged to older structures. In a later period, mudbrick structures contemporary with the enclosure wall were built over it.

**15. Godārshāh Site:** This site consists of a roughly circular ancient mound, 60 meters in diameter and 5 meters in height, located in the southernmost part of the Rud-e Biaban drainage basin, near the entry point of the Shela Rud (the river draining Lake Hamun into the Gaud-i Zirreh). On top of this mound are the remains of a structure from the Islamic period. Studies conducted by the survey team of the Helmand Project in Afghanistan indicate settlement

periods from the Bronze Age, Achaemenid, Hellenistic, Parthian, and Islamic eras (Trousdale & Allen, 2022: 336).

**16. The Central Mound of Qala-i Fath:** The Islamic citadel of Qala-i Fath is constructed on an oval-shaped mound with a north-south structural orientation, a maximum length of 180 meters, and a maximum width of 120 meters. This mound contains evidence and cultural layers from the pre-Islamic period. The approximate area of this mound is about 1.6 hectares, and its height at the highest point is approximately 10 meters.

Based on the pottery samples discovered at this location, one of the settlement periods identified for this site is the Achaemenid period (Trousdale & Allen, 2022: 275).

**17. Damb-i Rustam:** This site consists of an enclosed area with a continuous ridge, standing 5 to 6 meters high and 5 to 9 meters thick, encompassing an area of approximately 1.5 hectares. It is highly likely the remains of an ancient castle, which was polygonal in layout and featured a tower at one corner. One of the settlement periods identified for this site is the Achaemenid period (Trousdale & Allen, 2022: 239).

**18. Tappeh Sorkh Dagh Nad-i Ali:** East of the Islamic city of Nad-i Ali lies an oval-shaped mound, approximately 39.5 meters high with maximum dimensions of 140×160 meters. It is known as the "Red Mound" due to a layer of red soil covering its surface (figure 5). This site was first excavated in 1936 by Ghirshman and later in 1968 by Dales (Dales, 1977: 20-21). Ghirshman excavated a trench measuring 10×15 meters, reaching a depth of 12.5 meters. He identified two periods for this site: Period I, which started from the mound's surface and included two pavements made of well-formed square bricks and mudbrick platforms at a depth of 7.7 meters, which the excavator attributes to the Achaemenid period; and Period II, which he believes belongs to the pre-Achaemenid era, specifically the 9th and 6th centuries BC (Ghirshman, 1939: 10-22). Dales opened three trenches on the mound's surface. In one of them, continuing Ghirshman's excavation, he proceeded to a depth of 27.5 meters and reported that the mudbrick structure continued to that depth. Dales believes the mudbrick structure extends 3.7 meters below the plain's level (making a total of 35.72 meters) (Dales, 1977: 33). Dales attributes the major construction phases at this site to the pre-Achaemenid and Achaemenid periods, which were subsequently reused during the Seleucid, Kushan/Parthian, and likely Sasanian periods (Dales, 1977: 112). Besenval and Francfort, based on their study of artifacts found at Nad-i Ali, believe that the Bronze Age is also observable at this site. The dimensions of the mudbricks are 32×32×13 cm and 56×24-27×6-8 cm. At a depth of 7.7 meters, a large platform made of mudbrick and baked brick was revealed (Besenval & Francfort, 1994: 5). Dales states that rectangular bricks were used in the construction of the platform's core, while square bricks were used for the walls or an outer facing (Dales, 1977:32).

**19. Sefid Dagh Nad-i Ali:** Located 750 meters south of Sorkh Dagh, there is another mound with a height of 34 meters and dimensions of 100×85 meters. Its surface is covered with white soil, which is why it is known as Sefid Dagh (White Mound) (figure 5). Although Fairservis briefly mentioned this site in his survey, no information regarding its settlement periods has been published. He only noted that the pottery from this site is similar to that of Sorkh Dagh (Fairservis, 1961: 45-46). Therefore, it can be concluded that evidence from the Achaemenid

period likely exists at this site. Allchin and Hammond also referred to Sorkh Dagh and Sefid Dagh as Nad-i Ali I and Nad-i Ali II, respectively, and stated that these sites contain Achaemenid evidence (Allchin & Hammond, 1978: 217).

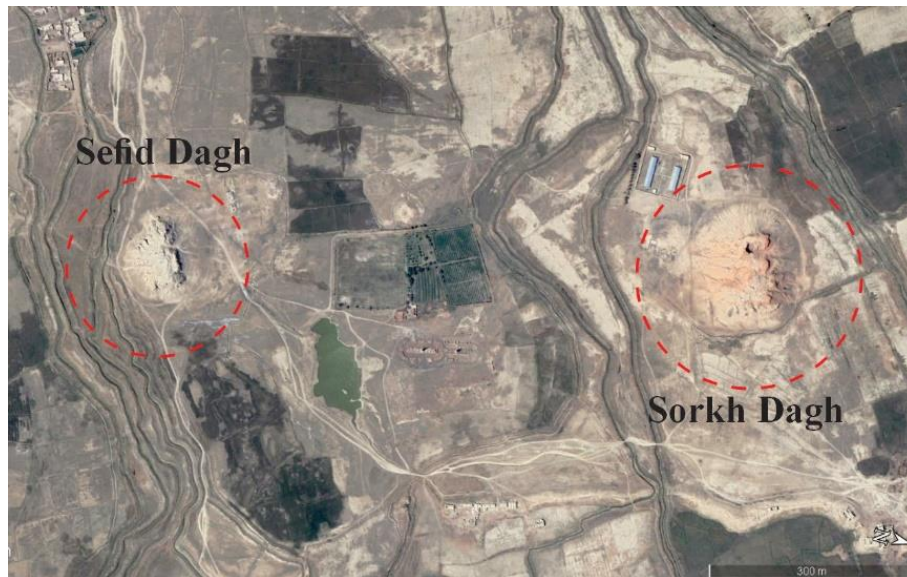


Figure 5. The Sorkh Dagh and Sefid Dagh sites in Nimruz Province, Afghanistan (Drawn by the author, adapted from Google Earth).

### Functional Survey and Analysis of the Achaemenid Sites along the Hirmand River Banks (Eastern Ancient Sistan)




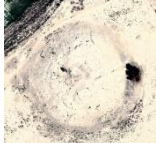

Most of the Achaemenid sites along the banks of the Hirmand River in Afghanistan are small settlements, covering an area of less than three hectares (Table 1). The only ancient site with Achaemenid-period evidence in eastern ancient Sistan that covers a large area is the Bost site. This site consists of interconnected elevated areas covering approximately 70 hectares, part of which contains a walled sharestan from the Islamic period that encloses an area of about 24 hectares.




Table 1. Frequency of Achaemenid Sites along the Hirmand River in Eastern Ancient Sistan (Nimruz and Helmand Provinces, Afghanistan).

Extent	Sites under 1000 square meters	1000 square meters to 0.5 hectares	0.5 to 1 hectare	1 to 2 hectares	2 to 3 hectares	3 to 5 hectares	5 to 10 hectares	More than 10 hectares	summation
Number of Sites	1	5	7	2	2	-	1	1	19

In understanding the function and nature of a settlement, in addition to its size, other variables must also be examined. The most important of these include the site's geographical location, topographic condition, and architectural remains. The sites along the banks of the Hirmand River in ancient eastern Sistan can be divided into two categories based on their external form and topographical condition. The first category includes sites with irregular topography and an undefined structure. The second category comprises sites that have an orderly topography and a clearly observable, regular geometric structure with a quadrilateral plan (square, rectangular, and rarely trapezoidal). Among the Achaemenid sites along the Hirmand River in the eastern part of ancient Sistan, eight sites have a regular, quadrilateral-based topography and structure, as can be seen in Table 2. These sites contain a single building with a rectangular, orthogonal plan—a style of construction not found in older sites in the Sistan region. This architectural style first became observable in Sistan during the Achaemenid period (at Dahaneh-i Gholaman). A noteworthy point regarding these sites is their geographical arrangement in relation to one another. Specifically, these eight sites are situated along the course of the Hirmand River, from the Hamun-e Puzak in northern Sistan to Lashkargah.

Table 2. Sites along the Hirmand River course with regular structure and topography.

Site Image	Next Site - Distance	Previous Site - Distance	Dimensions (m)	Site Name
	Tappeh Gurgak -43 kilometer	Bost – 42 kilometer	100× 100	Zindān Tappeh
	Tappeh Deshū - 92 kilometer	Tappeh Zindān -43 kilometer	75× 75	Tappeh Gurgak
	Kuhna Qala-i - 60 kilometer	Tappeh Gurgak -92 kilometer	40×40	Tappeh Deshū
	Tappeh-ye Mādar- 37 kilometer	Tappeh Deshū - 60 kilometer	70×74	Qala-i Kuhna
	Band-e Kamal Khan - 42 kilometer	Kuhna Qala-i -37 kilometer	50×50	Tappeh-ye Mādar

	Damb-i Rustam - 30 kilometer	Band-e Kamal Khan - 42 kilometer	100×100	Gīnā Kuhna
	Sorkh Dagh - 42 kilometer	Band-e Kamal Khan - 30 kilometer	100×140	Damb-i Rustam
	Dahaneh-i Gholaman -40 kilometer	Damb-i Rustam - 42 kilometer	140×160	Sorkh Dagh

From a natural perspective, the most important and optimal communication route from the northwestern and western regions of Greater Sistan to the eastern regions and Kandahar (the satrapy of Harauvatiš / Arachosia) is the one that runs along the Hirmand River to the Bost region. This route, which remains the most important in the mentioned area today, was also utilized during various historical and Islamic periods. Given the great importance that the Achaemenids placed on communication and trade routes, and their establishment of a new communication system based on road construction, *chapar khaneh* (courier house), and waystations, there is no doubt that this was a significant consideration in ancient Sistan. As one of the most important routes for accessing the eastern regions and the Indus region, it undoubtedly received attention. As indicated in Table 2, the sites along the Hirmand route that have a regular structure are mostly distance at intervals of approximately 42 kilometers, with only two instances where the distances are about 92 and 60 kilometers. Regarding the distance between the Gurgak site and Tappeh Deshū, which is approximately 92 kilometers, it should be noted that according to Hammond's report, there was an Achaemenid site along this route whose exact location is now unknown. However, based on its approximate location marked on Hammond's maps, its distance can be estimated as about 40 kilometers from Gurgak to the north and about 52 kilometers from Tappeh-ye Deshū to the west. Based on this, the distance between the Achaemenid sites in question is approximately between 40 and 60 kilometers. The conventional route from the Dahaneh-i Gholaman area towards Nad-i Ali is also less than 40 kilometers. Since, according to the *Periplus*, the speed of commercial caravans and wagons in the 1st century AD within the Indian subcontinent was 300 stadion, approximately 55 kilometers per day (DeRomanis, 2020: 152), the role of garrisons and waystations can be considered for this group of Achaemenid sites along the banks of the Hirmand River (figure 6).

In other words, a number of the sites along the banks of the Hirmand River in eastern ancient Sistan are the remains of garrisons and waystations (perhaps a type of government caravanserai). These were constructed at suitable geographical locations and at approximate intervals of 40 to 60 kilometers. These waystations guarded an important communication route that connected the northwestern regions of Sistan (the Nad-i Ali area) and the city of Dahaneh-i Gholaman in western Sistan to the eastern regions, namely the Bost area and the satrapy of Harauvatiš (Arachosia – Kandahar). This is the same route that Alexander the Macedonian used

during his conquest of the eastern territories of the Achaemenid Empire to campaign in Arachosia (figure 7), (English, 2009: 182-184).

The other sites located along this route were most likely settlements and villages inhabited by the indigenous population living along the banks of the Hirmand River. These sites have irregular perimeters in terms of topography, and no regular structure is discernible on their surface.

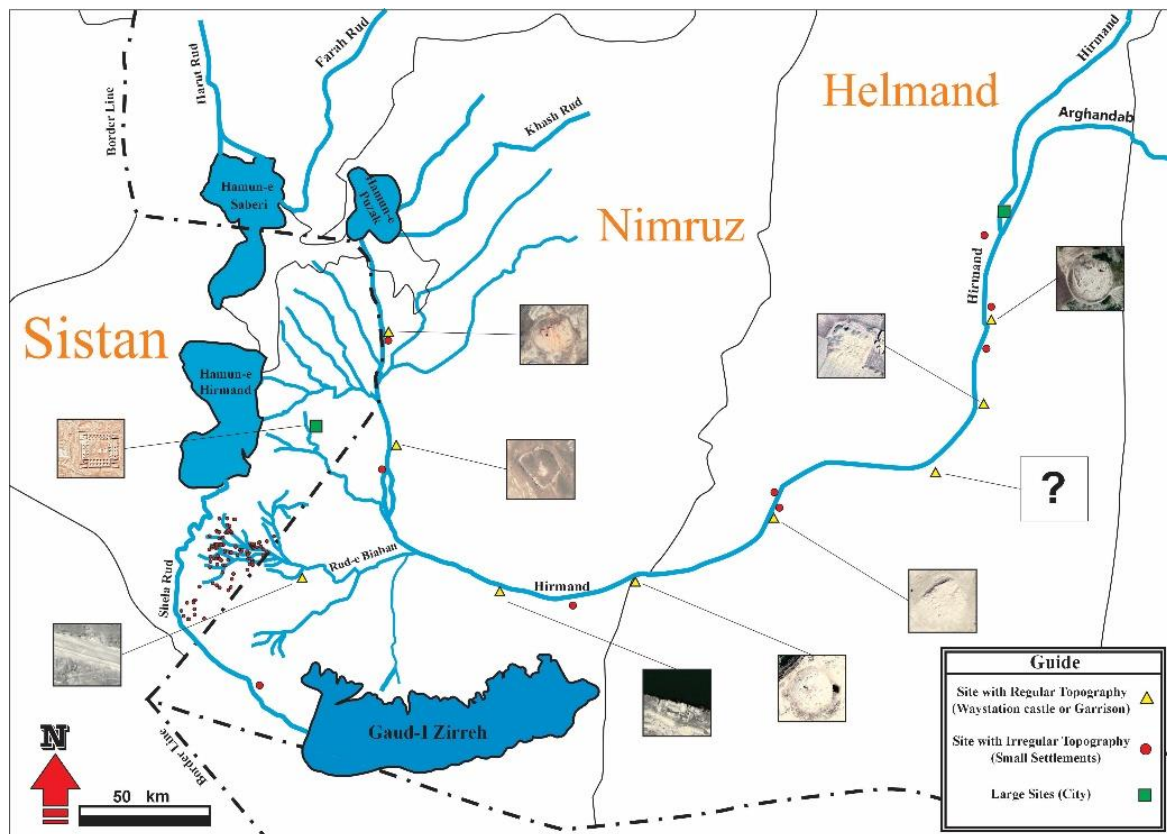


Figure 6. Location of Achaemenid sites with regular topography (likely waystations) in Greater Sistan (Author).

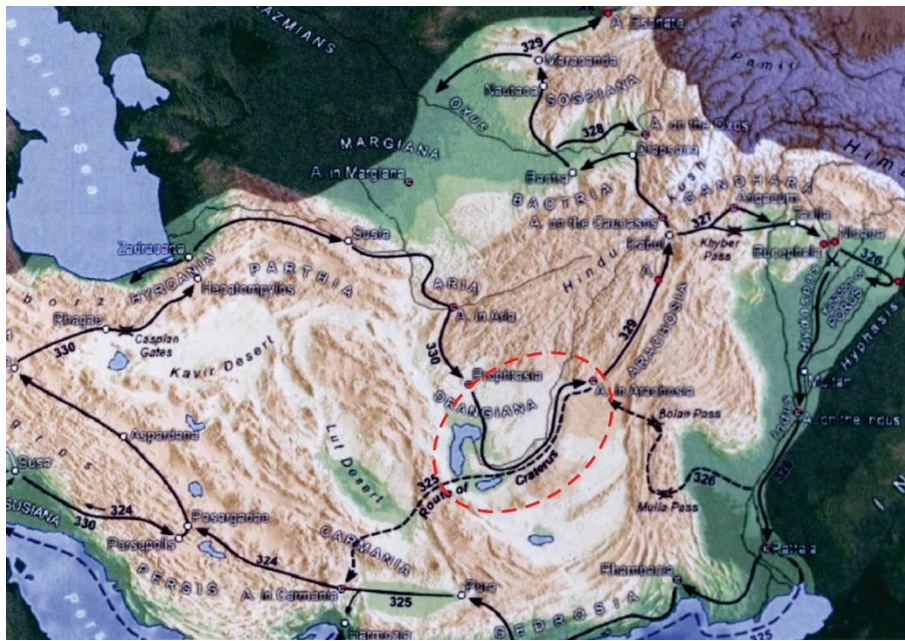


Figure 7. The extent of Alexander's movement in the eastern Achaemenid Empire and the route within the satrapy of Zranka (English, 2009: 182).

## Conclusion

Greater Sistan, referred to in Achaemenid sources as Zranka (*Zarneka / derangiyâ*), is a vast territory encompassing Iranian Sistan and the southern and southwestern regions of Afghanistan, namely the two provinces of Nimruz and Helmand. This expansive land consists of two parts: the western part (the fertile delta of the Hirmand and Lake Hamun) and the eastern part (the Hirmand River valley and the lands surrounding the river). In the limited studies conducted over the past few decades in the eastern part of ancient Sistan—the two provinces of Nimruz and Helmand in Afghanistan—19 sites with evidence from the Achaemenid period were identified (figure 8). These sites are located along the banks of the Hirmand River and can be divided into two categories based on their external form and topography: The first category includes sites with irregular topography and undefined structure. The irregular sites, in terms of size, comprise two groups: small (covering less than 3 hectares) and large. The only large site with Achaemenid evidence in eastern Sistan is the Bost site, which spans approximately 70 hectares. Although it is not possible to comment on the nature of this site in its current state, given its extensive area, the likelihood of there being urban remains from the Achaemenid period at this site is high. The Achaemenid sites with irregular topography are most likely the remains of villages established by the indigenous inhabitants living along the banks of the Hirmand River in the Sistan region.

The second category of known Achaemenid sites along the banks of the Hirmand River in the eastern part of ancient Sistan consists of sites with regular topography and a roughly quadrilateral perimeter (square, rectangular, and rarely trapezoidal) on the surface. These sites contain buildings with a regular, rectangular plan, reminiscent of the architectural style of the

Achaemenid buildings at Dahaneh-i Gholaman in western Sistan. On the other hand, these sites were established at distances of 40 to 60 kilometers from each other, which, according to historical sources, is approximately equal to the distance a caravan would cover in one day. Given this evidence, these sites are likely the remains of Achaemenid-period garrisons and waystations constructed along the banks of the Hirmand River. These garrisons and waystations were responsible for safeguarding one of the most important ancient routes in the eastern Achaemenid Empire, which connected the western regions of Zranka to the satrapy of Harauvatiš (Arachosia).



Figure 8. Map showing the location of Achaemenid Sites along the Hirmand River in Eastern Ancient Sistan.

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