

ARCHAEOLOGICAL SURVEY OF THE ZAHEDAN-ZABOL GAS TRANSMISSION ROUTE

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Abstract: The Sistan sedimentary plain has been the habitat of various human communities in the past due to its favorable environmental conditions. Therefore there are many ancient hills and historical monuments in this area. Although this area is one of the important and rich ancient areas in East Iran, there are still many issues and uncertainties about the history of this area, and each of the existing works can answer many of these questions. Therefore, protecting such works against natural and human destructive factors is inevitable. The archaeological survey of the Zahedan-Zabol gas transmission route was carried out to identify the ancient sites on this route and protect them against any damage and destruction. Along the route designed to install the gas pipe, there are many ancient sites and important historical centers such as Shileh, Ramroud, Roud-Biaban, and Shahr-i Sokhta. This survey was conducted with an intensive and step-by-step method to identify and investigate all the sites of this important cultural area and thereby protect them from possible future dangers. In sum, 38 ancient sites and mounds were identified, and surface movable and immovable works, belonging to prehistoric, historical, and Islamic eras, were collected and documented. These cultural materials included 322 pieces of pottery and 157 index objects, all of which were categorized and studied. In this article, the authors try to provide a brief report of this study along with a description of the findings and results.

Keywords: Archaeological survey, Sistan plain, Ancient site, Gas transmission.

چکیده: دشت رسوبی سیستان به دلیل برخورداری از شرایط مناسب طبیعی در گذشته، استقرار گروه‌های مختلف انسانی را به خود دیده که نتیجه آن وجود تپه‌های باستانی و بناهای متعدد تاریخی است. از این رو این منطقه از پهنه‌های مهم و غنی باستانی در شرق کشور به شمار می‌رود، با وجود این، اما همچنان مسائل و ابهامات فراوانی درباره پیشینه این منطقه به جای مانده است که هر کدام از آثار موجود می‌تواند پاسخگوی بسیاری از این سوالات باشد. بنابراین حفاظت از این قبیل آثار در مقابل عوامل تخریب طبیعی و انسانی امری اجتناب‌ناپذیر است. بررسی باستان‌شناختی مسیر خط لوله انتقال گاز زاهدان به زابل با هدف شناسایی محوطه‌های باستانی موجود در این مسیر و محافظت از آنها در برابر هر گونه تعرض و تخریب به انجام رسید. در طول مسیر طراحی شده جهت قرار دادن لوله گاز تعداد زیادی از محوطه‌های باستانی و مراکز مهم تاریخی چون شيله، رامرود، رود بیابان و شهرسوخته قرار دارد، بنابراین روش بررسی در این طرح به روش پیمایشی فشرده و گام به گام انتخاب گردید تا تمامی محوطه‌های این محدوده مهم فرهنگی شناسایی و مطالعه گردند و از خطرات احتمالی مصون نگاه داشته شوند. در این بررسی، تعداد ۳۸ محوطه و تپه باستانی شناسایی گردید و آثار منقول و گاه‌ها غیر منقول موجود بر سطح این محوطه‌ها که بیانگر دوره‌های فرهنگی پیش از تاریخ، تاریخی و اسلامی است برداشت و مستندنگاری گردید. این مواد فرهنگی شامل تعداد ۳۲۲ قطعه سفال و ۱۵۷ شیء شاخص بود که تمامی آنها برداشت، دسته‌بندی و مطالعه گردید. در این مقاله تلاش نگارندگان بر این است تا گزارش مختصری از این بررسی به همراه شرح یافته‌ها و نتایج حاصل از آن را ارائه دهند.

کلیدواژه: بررسی باستان‌شناسی، دشت سیستان، محوطه باستانی، انتقال گاز.

I. Introduction

Archaeological research in Sistan, Iran has led to the identification of more than 1700 ancient sites from the prehistoric era to late Islamic centuries, which is unique in terms of the density of sites compared to the study area. The prehistoric sites mainly belong to the Bronze Age, and the historical sites include the Achaemenid, Seleucid, Parthian, and Sasanian periods. In the Islamic era, except for the early centuries AH, from the fourth century AH until now, there has been a continuous settlement in Sistan, Iran. Therefore, this plain has many dense ancient sites. Considering this issue, before the implementation of national development and construction projects, regular archaeological surveys should be done. Zahedan-Zabol gas transmission project is one of the country's construction projects, according to the plan, the area of archaeological

research was provided to the General Directorate of Cultural Heritage, Tourism, and Handicrafts. Along the route of gas transmission, there are many ancient sites and important historical centers such as Shileh, Ramroud, Roud-Biaban, Shahr-i Sokhta, and its satellite sites, which cover the period from the Bronze Age to the Islamic era. Based on this, the authors and the accompanying archaeology team conducted a step-by-step survey of the area to identify, protect, and save the ancient sites on this route. This research project was carried out with the official permission of the Cultural Heritage Research Institute in the early fall of 2020 for 28 days.

The most important objective of the archaeological survey of the Zahedan-Zabol gas transmission route was to identify and study the existing works on the gas pipe installation route. After that, the primary

protection measures were conducted, including the determination of the core zone, the suggestion of a buffer zone, and the landscape of the ancient sites. However, part of the study area (Tasuki area) was not easily accessible and surveyed due to the presence of dunes. Further, because of the movement of the dunes and flowing sand and the possibility of some ancient sites being hidden under sands and not being identified in the previous archaeological surveys, in this project, an attempt was made to survey the entire study area on foot to identify all the sites, which resulted in the identification of three ancient sites for the first time.

II. Methodology

Examining the sites can be done in different ways, depending on the research objectives, time, and research budget. Undoubtedly, the most effective archaeological surveys are those that are carried out systematically and with sufficient time on the ground surface. The surface survey is usually done by walking between lines or grids in the study area (Burke and Smith, 2004: 65). Archaeological survey, which is also called walking or visiting, refers to the detailed search of the ground in the study area, which is carried out methodically by several researchers (Renfrew and Bahn, 2010: 395).

Due to the landscape of the southern plain of Sistan and the large number of sites and ancient monuments in this area, the method of intensive and step-by-step survey was implemented. This route had a combination

of salt lands, dunes, sedimentary lands with clay structures, small Kaluts, and natural mounds. Based on the schedule and the number of survey team members, it was decided to survey a 200 m wide route step by step so that all man-made structures and ancient sites along the route are identified and protected from possible future dangers. Besides, all the identified ancient sites were mapped by the heli-shot photogrammetry and the visible core zone (according to the scattering of surface cultural materials) was laid out on it. This field survey was done with two teams, each consisting of 5 archaeologists. One team was responsible for participating in the field activity and the other team was responsible for recording information to speed up the report writing process. According to the width of the route, the distance of the archaeologists from each other was considered 40 m so that the survey could be carried out with high accuracy. By identifying each ancient site, the all members went to the site and described, photographed, collected surface cultural materials, and identified the area of distribution of the cultural materials, and investigated and recorded all correlations and dependencies of the site with other surrounding sites and natural features. The scope of this research project was from the Dashtak three-way area to Zabol County and the length of the route was about 100 km (Fig. 1). When necessary, the team members did not overlook the alternative routes, and every proposed route change in the gas transmission pipeline was made with the knowledge of the absence of cultural heritages in the new location.



Figure 1. Aerial image and survey route map (Authors).

III. Geographical and Historical Overview of the Region

Sistan and Baluchistan Province has an area of about 187,502 km², equivalent to 11.5% of the country's total area. According to the latest political divisions of the country, this province is known as the largest province of Iran (Official Statistics of Sistan and Baluchistan, 2017: 37). The Sistan region is located in the northern part of this province. The Sistan Plain is a vast land on the eastern border of Iran with an area of about 8117 km² (Khosravi, 1989: 163). The Sistan Region includes five cities: Zabol, Zahak, Hirmand, Hamoun, and Nimrouz. Hamoun County is located in the southern part of Sistan and its center is Mohammadabad City

(Saadatian, 2019: 13) (Fig. 2). The study area is mainly located in the desert part of Sistan and within Hamoun County, and no modern settlement can be seen around this route.

More than 1700 ancient sites have been identified in the Sistan Plain of Iran, about 8000 km². These settlements belong to prehistoric, historical, and Islamic eras. Almost all the prehistoric sites belong to the Bronze Age and are contemporary with Shahr-i Sokhta. The sites of the historical era also include the Achaemenid, Seleucid, Parthian, and Sasanian periods. In the Islamic era, except for the early centuries, since the 4th century AH, we witness the continuity of residence in Sistan.

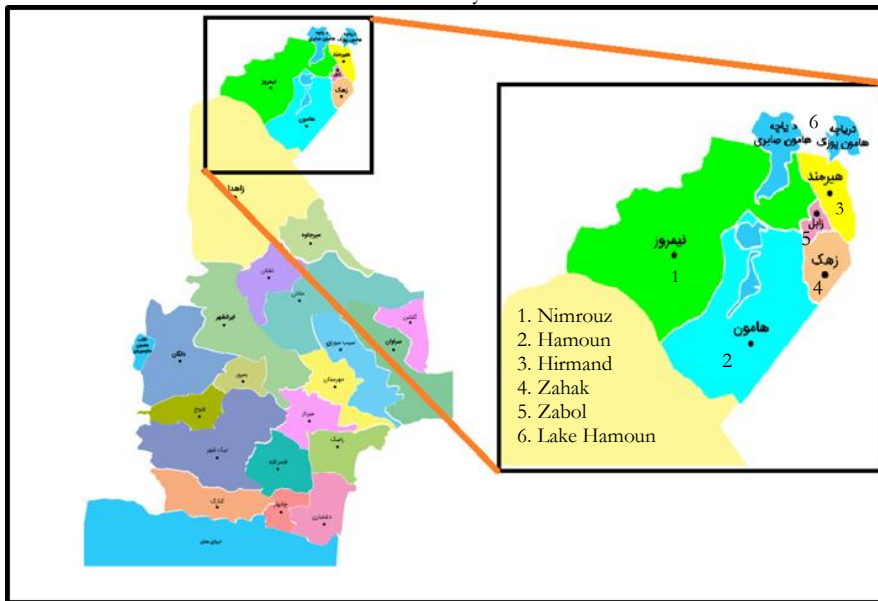


Figure 2. Map of Sistan and Baluchistan province, Sistan region (Authors).

IV. Background of Archaeological Surveys in Sistan

Like most regions of Iran, Sistan was also visited and studied by political and military advisors, orientalist, and tourists before it was studied archaeologically. Their reports contain valuable information, pictures, and maps of the region and its ancient artifacts, which are useful historical documents for the archaeological research of Sistan. Now more than a century has passed since the beginning of archaeological scientific activities in Sistan, Iran.

The first scientific survey of the Sistan Plain that led to the introduction of the valuable antiquities of the region was conducted by Sir Aurel Stein in 1915 and 1916 (Stein, 1928). In 1960, the Italian archaeological team headed by Umberto Cerato started an archaeological investigation in Sistan, which led to the identification of sites such as Dahan-e Gholaman, Qal-e Tepe, and Qal-e Sam (Mousavi Haji, 2002: 196). In 2004, Mousavi Haji carried out a methodical archaeological survey in the large site of Zahedan

Kohneh, during which he was able to determine the identity of this great city belonging to the middle Islamic centuries (Mousavi Haji, 2009). The survey of Zahak, one of the 22 districts of Sistan, in 2004 by Mehrafarin led to the identification of a large number of ancient sites belonging to the historical and Islamic eras (Mehrafarin, 2004). In 2007, the first phase of the archaeological survey of the landscape of Sistan was conducted under the supervision of Mousavi Haji and Mehrafarin in 11 geographical areas of Sistan, and as a result, 809 ancient sites were identified (Mousavi Haji and Mehrafarin, 2008: Vol. 1: 5-1). In 2008, the second phase of the survey was carried out in the remaining 11 geographical areas, and as a result, 854 ancient sites were identified and recorded (Mehrafarin and Mousavi Haji, 2018: Vol. 16: 2-5). In the end, it should be mentioned Sarhadi Dadian's archaeological surveys in the second phase of the Zahedan-Zabol Water Transmission Route (Sarhadi Dadian, 2018) and the survey and exploration of the water transmission route in the area of Zahedan Kohneh (Sarhadi Dadian, 2018).

V. Identified Sites

During this survey, 38 ancient sites were identified, and recorded, and their surface cultural materials were collected and documented (Fig. 3). As it was mentioned, these sites are located in the route of the gas pipeline with a width of 200 m and a length of 100 km, and they include different periods. According to the relative chronology obtained from the comparative typology of the surface data, especially the potsherds, the earliest findings belong to the third millennium BC, and the latest ones belong to the late Islamic centuries. 27 sites

were single period and 9 sites had data belonging to more than one cultural period. Two sites yielded no evidence of cultural indicators, so their chronology was not possible - there was non-indicative ancient evidence on the surface of these sites. In the following, based on the studies, the chronological table of the cultural and historical findings of the survey area is presented (Table 1). Based on relative chronology, the identified sites are divided into three groups: Bronze Age, historical, and Islamic eras, and will be evaluated and analyzed.

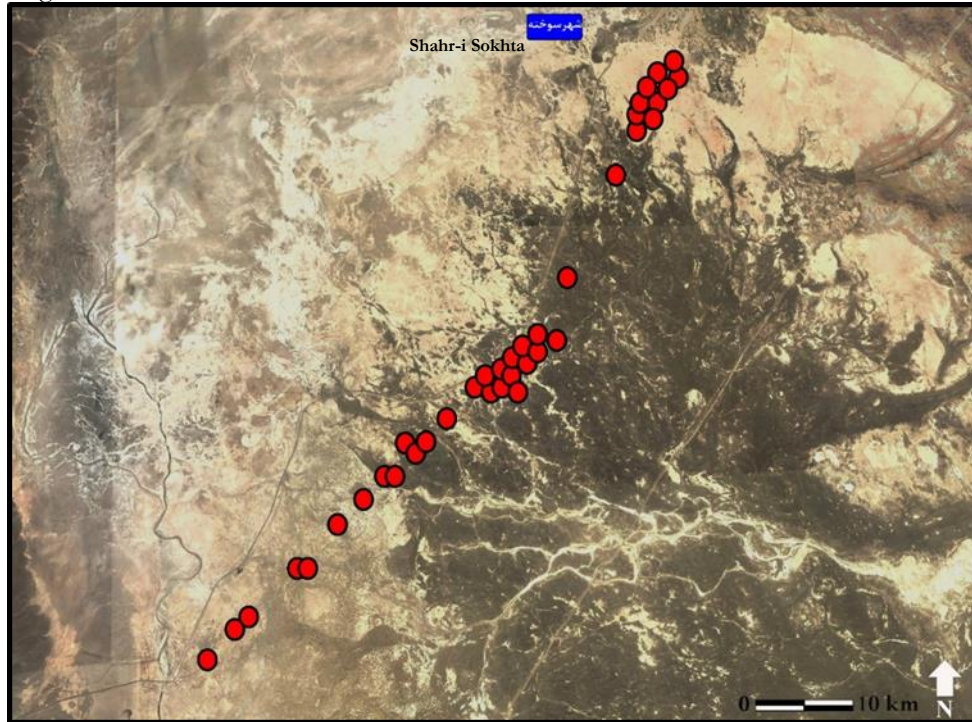


Figure 3. Distribution map of the sites identified in the survey of the gas transmission route (Authors).

Table 1- The relative chronology of the sites identified in the survey of the gas transmission route (Authors).

Chronology	Number of sites
Prehistoric era (Bronze Age)	17
Historical era	4
Islamic era	6
Prehistoric & Historical era	3
Prehistoric & Islamic era	1
Historical & Islamic era	4
Prehistoric & Historical & Islamic era	1
Without indicative cultural data	2

V.I. Bronze Age sites

South Sistan, or the desert part of Sistan, was prosperous from the mid-fourth millennium BC to the early second millennium BC due to various natural (proper environmental conditions) and cultural (being located on trade routes) reasons. The Shahr-i Sokhta site and the identification of more than 900 contemporary sites in this area confirm this claim. In the survey of the gas pipeline route, most of the identified sites belong to

the Bronze Age. Out of a total of 38 sites, 22 sites have settlement evidence of the Bronze Age, of which 17 single-period sites, three prehistoric and historical sites, one prehistoric and Islamic site, and one site also has evidence of all three eras, prehistoric, historical, and Islamic (Fig. 4). Four sites (no. 4, 15, 28, and 29) are important in terms of size, dispersion of cultural materials and variety of findings. In the following, the details of some of these sites are provided.

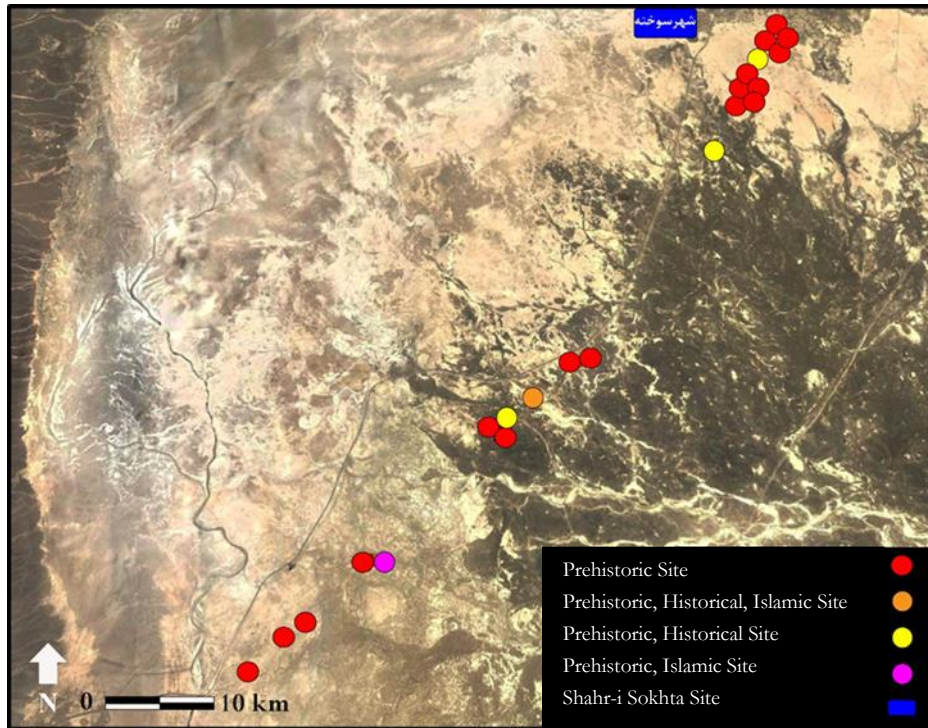


Figure 4. Distribution map of prehistoric sites identified in the survey of the gas transmission route (Authors).

Site no. 4, with an area of about 3.5 hectares and a maximum height of 5 m, is located about 50 m east of the gas pipeline (Figs. 5 and 6). The site is surrounded by low dunes, and on it, the bushes of Tamarix and Haloxylon have grown with a relatively low density, which has caused minor damage to the site. The density

and diversity of cultural materials on the surface of the site are very high and include simple and painted potsherds (Figs. 7 and 8), stoneware pieces (Fig. 9), stone objects and tools, stoneware, metal objects, metal smelting furnace slag, unspecified bone evidence, and evidence of several furnaces.



Figure 5. Site no. 4 and the density of surface cultural materials (Saadatian, 2020).

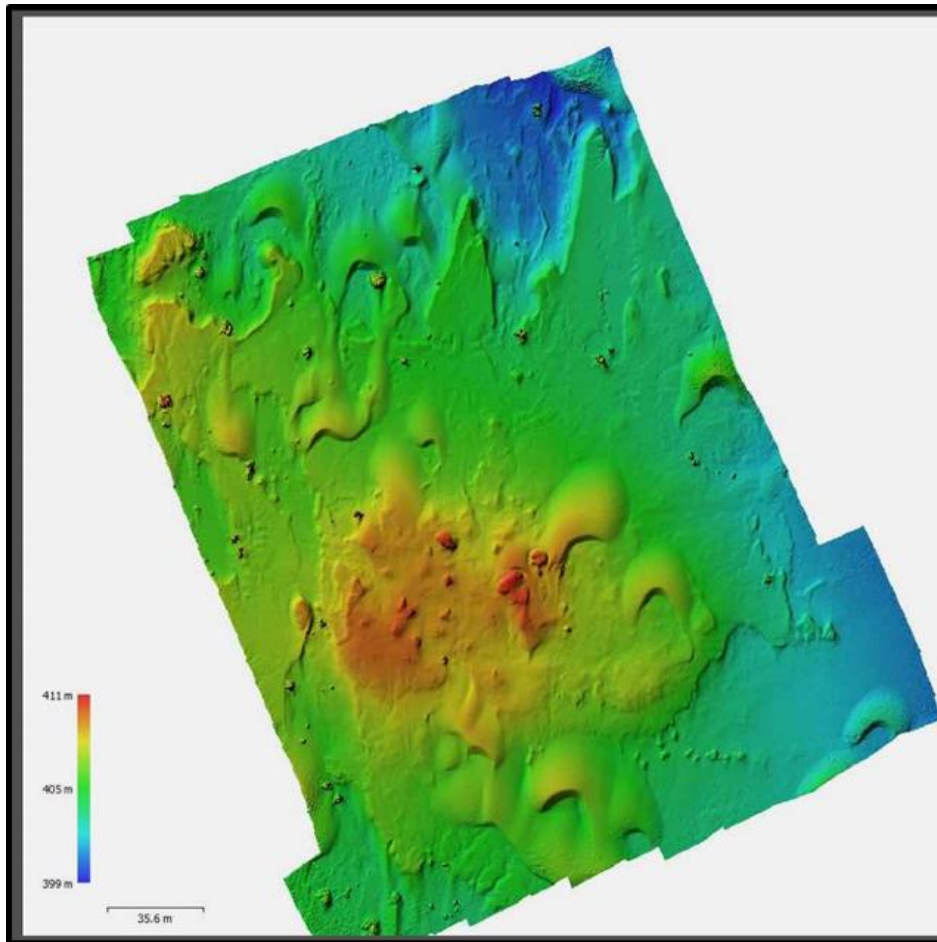


Figure 6. Photogrammetric map of site no. 4 (Saadatian, 2020).



Figure 7. Surface pottery collected from site no. 4 (Saadatian, 2020).

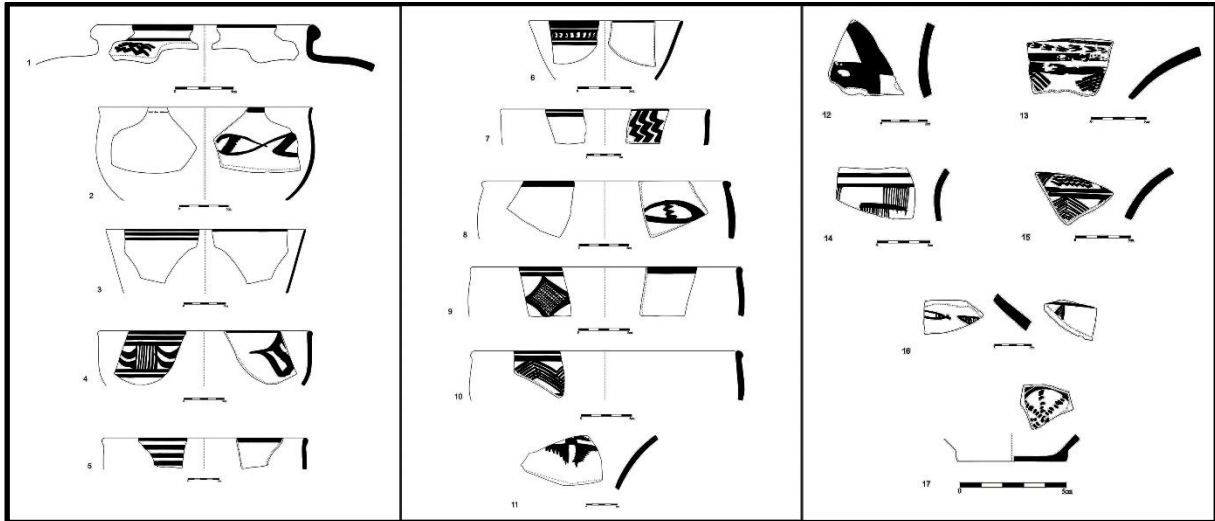


Figure 8. Designs of surface potsherds collected from site no. 4 (Saadatian, 2020).



Figure 9. Fragments of a stone vessel found at site no. 4 (Saadatian, 2020).

Site no. 15, with an area of about 2.5 hectares and a maximum height of 3.5 m, is located 50 m east of the gas pipeline (Fig. 10). In addition to the main mound, there are several mounds on its eastern side. Architectural remains (probably furnaces) are visible in

the northeastern part of the site. The density of cultural materials on the surface of the site is very high and includes simple and painted potsherds (Figs. 11 and 12), stone vessels (Fig. 13), stone objects and tools, semi-precious stones, and metal slag.



Figure 10. Site no. 15 (Saadatian, 2020).



Figure 11. Surface potsherds collected from site no. 15 (Saadatian, 2020).

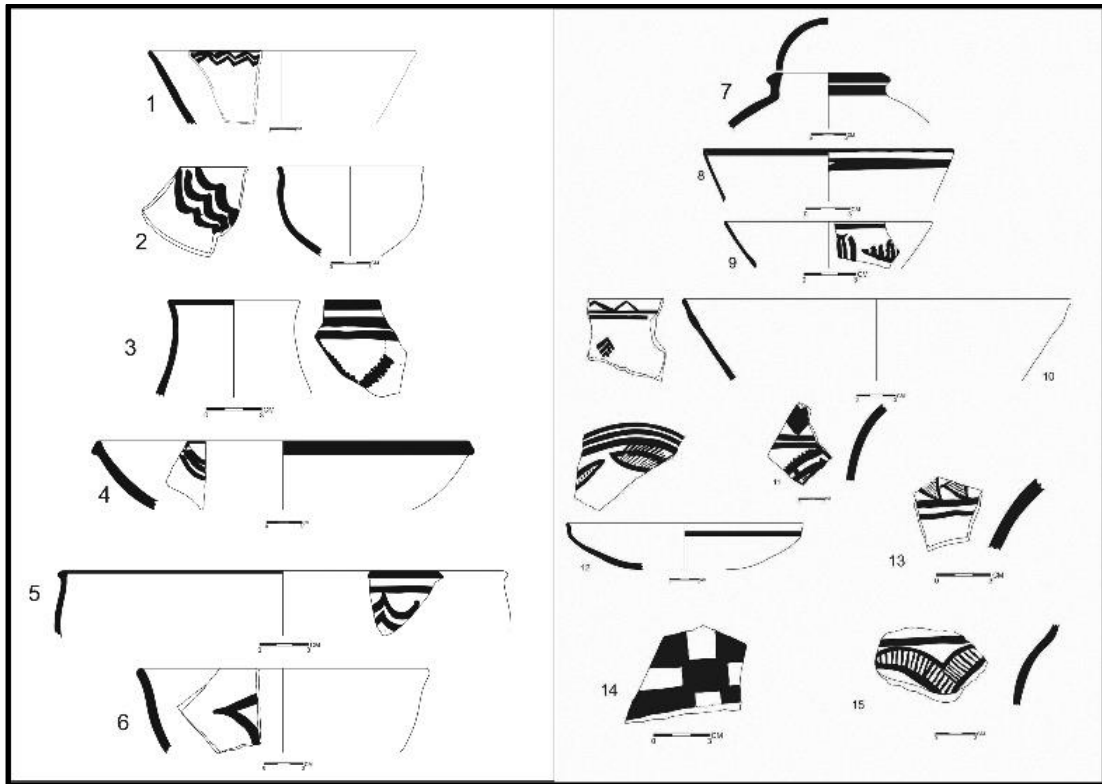


Figure 12. Designs of surface potsherds collected from site no. 15 (Saadatian, 2020).

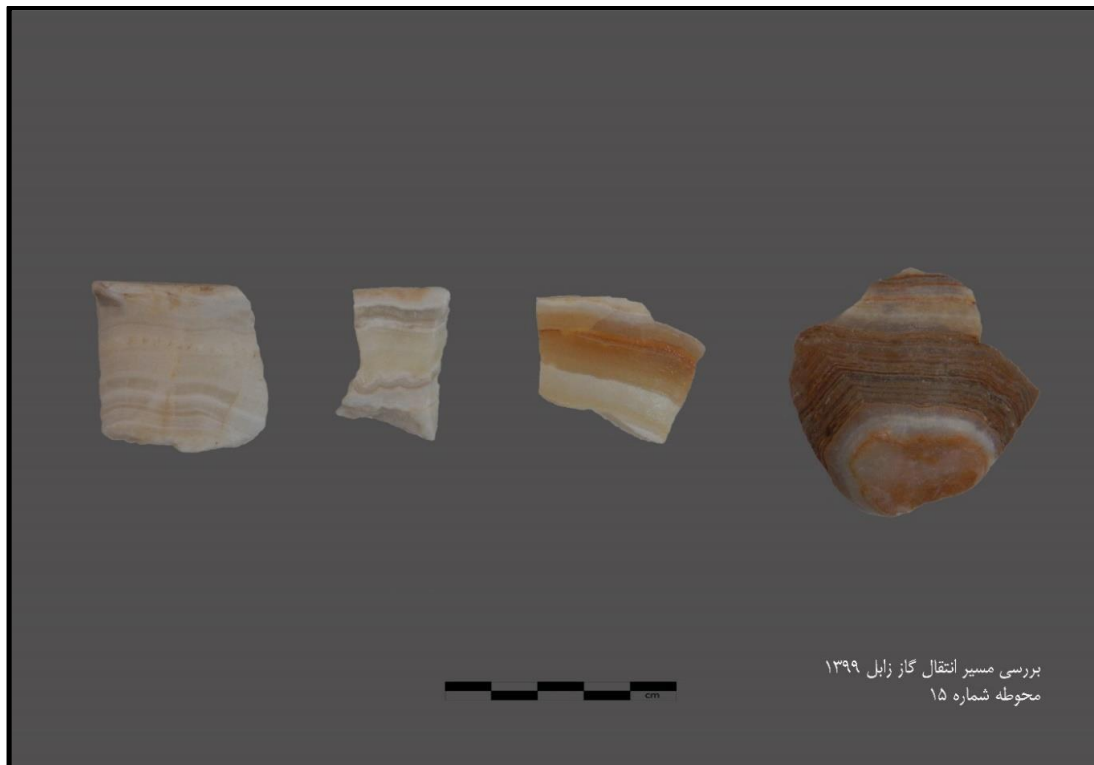


Figure 13. Fragments of a stone vessel found at site no. 15 (Saadatian, 2020).

V. II. Historical Sites

The sites belonging to the historical era are not very significant compared to the sites belonging to the Bronze Age and the Islamic era of the area. Due to the change of the Hirmand River to the north of Sistan during the historical era, important settlements such as the Dahan-e Gholaman, Qal-e Sam, and the complex of Khajeh mountain sites are concentrated in the northern Sistan region. Although the number of sites related to the historical era, especially the Parthian sites, is high in South Sistan, considering the size of the sites as well as the distribution and variety of surface data, these sites

are probably related to the nomadic subsistence system. Settlement evidence related to the historical era was found from 12 sites, of which four single-period sites, three prehistoric and historical sites, four historical and Islamic sites, and one site also has evidence of all three eras, prehistoric, historical, and Islamic (Fig. 14). All historical sites were related to the Parthian period and no other evidence from other historical periods were identified. The distribution of the surface cultural materials of these sites was not much, and therefore, many indicative samples for design, typology, and chronology were not collected (Fig. 15).

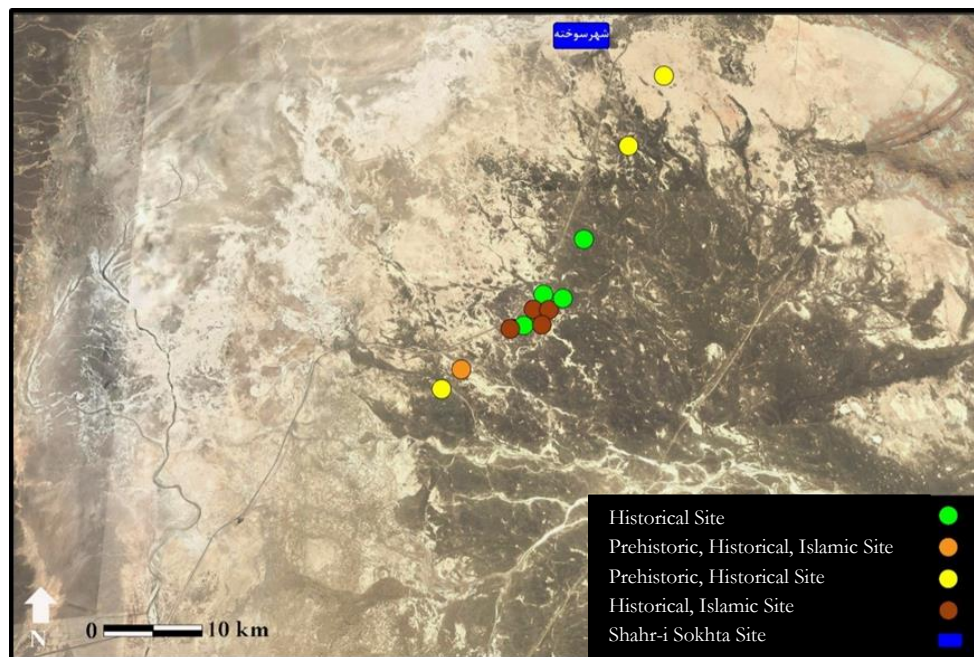


Figure 14. Distribution map of historical sites identified along the gas transmission route (Authors).

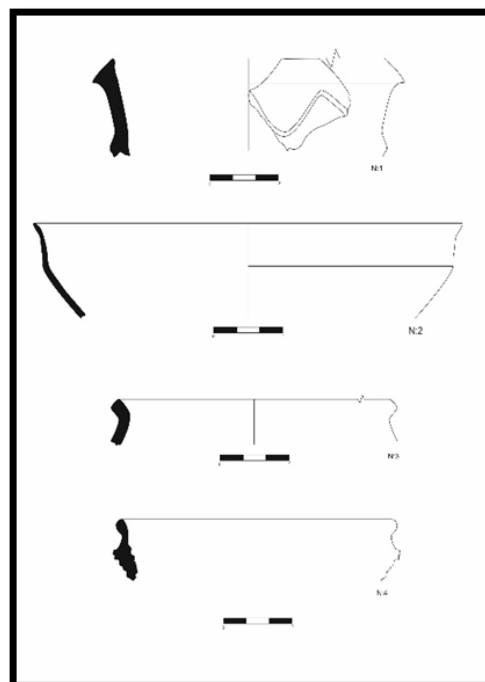


Figure 15. Designs of surface potsherds collected from the survey of the gas transmission route (Authors).

V. III. Islamic Sites

Since most of the sites identified in this survey are located in the geographic areas of Girdi and Shileh in South Sistan, and based on historical sources and archaeological research, this part of Sistan in the middle Islamic centuries (6th to 10th centuries AH) has been very important and prosperous, the chronology of the Islamic sites identified in this survey did not face any particular problem. The presence of prominent castles such as Girdi Castle and Ramroud Castle, not too far from the Islamic sites, shows the connection and interconnectedness of these works. Among the 38 sites

identified, 12 sites have settlement evidence related to the Islamic era, out of which 6 single-period sites, one prehistoric and Islamic site, 4 historical and Islamic sites, and one site also has settlement evidence of all three periods (Fig. 16). Among the important sites, it can be mentioned site no. 8, which is very rich in terms of distribution and variety of cultural materials. This site with an area of more than four hectares is located 6 km east of the Zabol-Zahedan road, and the proposed route of the gas pipeline passes exactly through its center. The remains of several furnaces can be seen in the eastern part of this site (Fig. 17).

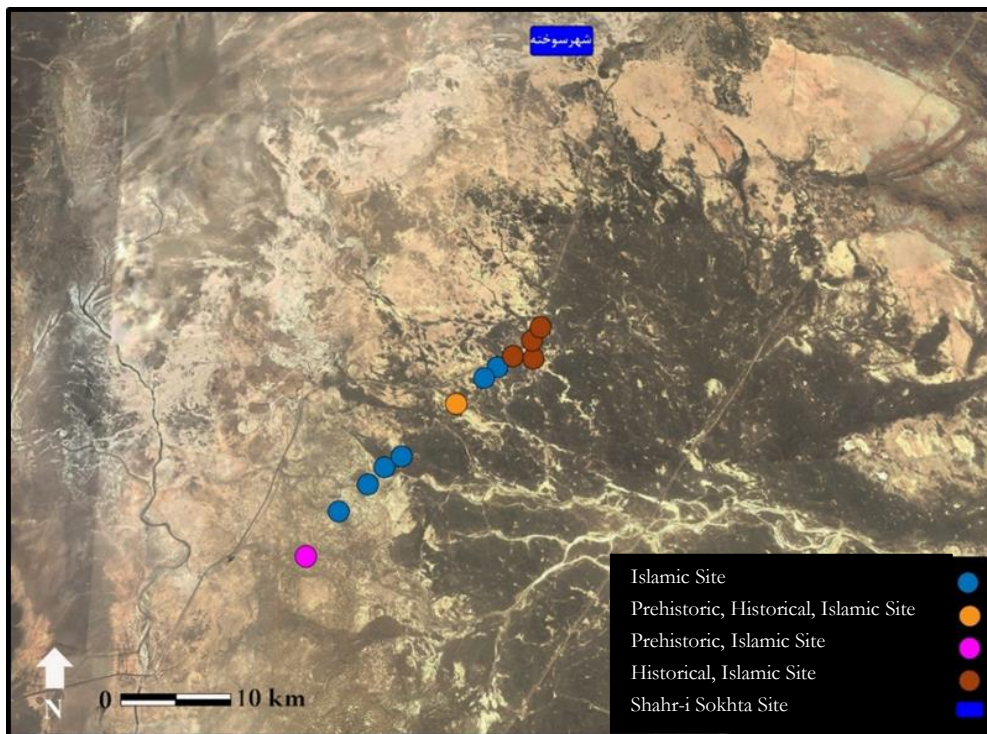


Figure 16. Distribution map of the Islamic sites identified in the survey of the gas transmission route (Authors).



Figure 17. Furnace remains; Site no. 8 (Saadatian, 2020).

The surface findings of this site include simple, painted, glazed, and unglazed potsherds (Fig. 18), copper coins (Fig. 19), a brick with a human hand pattern (Fig. 20), glass vessels (Fig. 21), and stone tools. According to the distribution of Islamic buildings

around the site, there was probably an important urban settlement belonging to the middle Islamic centuries in this area. It should be noted that Girdi Castle is located about 4 km south of this site and Ramroud Castle is located 3 km west of it.



Figure 18. Painted glazed potsherds; Site no. 8 (Saadatian, 2020).

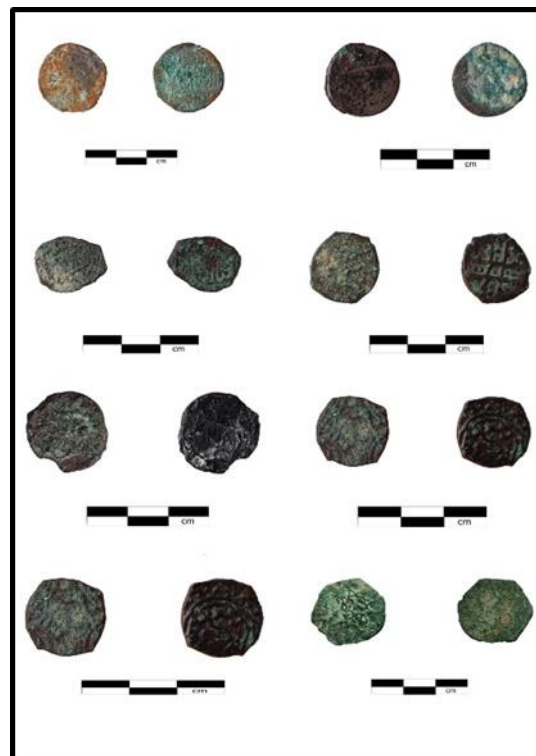


Figure 19. Copper coins identified from the survey; Site no. 8 (Authors).



Figure 20. A brick with a human hand pattern; Site no. 8 (Saadatian, 2020).



Figure 21. Glass vessels and objects obtained from the survey; Site no. 8 (Saadatian, 2020).

VI. Conclusion

In the archaeological survey of the Zahedan-Zabol gas transmission route, 38 ancient sites were identified with evidence of settlements from the Bronze Age, the historical era (Parthian period), and the Islamic era (6th to 10th centuries AH). Due to the nature of this investigation, it is not possible to analyze the distribution of the identified sites in different periods without paying attention to the results of previous archaeological research in this area. Out of 38 sites identified, 27 have evidence of the Bronze Age and are contemporary with Shahr-i Sokhta. Sites 4 and 15 are very important in terms of distribution and variety of surface data. The favorable environmental conditions of this part of Sistan in the Bronze Age caused the formation of many settlements due to the presence of water resources, especially the Roud-Biabab River as one of the main branches of the Hirmand River and Lake Hamoun. In the survey of Sistan's landscape, about 900 contemporary sites with Shahr-i Sokhta have been identified in South Sistan. So far, no settlement

from the Bronze Age to the beginning of the Achaemenid period has been identified in Sistan, Iran. This era is known as a historical gap in Sistan. In this survey, there was no evidence of settlement in this period. It seems that with the change in the environmental conditions of the region, i.e. the change of the direction of the Hirmand River and the drying up of its main branches, especially the Roud-Biabab River, this area has been abandoned.

From the middle of the first millennium BC and with the domination of the Achaemenids to the end of the Sassanid period, the conditions for the settlement of human societies in Iran's Sistan (North and South Sistan) became favorable again. The identification of more than 700 sites belonging to this era confirms it. In the survey of the pipeline route, 12 sites had historical settlement evidence. By carrying out a comparative typology of pottery samples, it was determined that all the historical sites belonged to the Parthian period. Sistan had a special importance and position, and a large population in the Parthian period, so that more than 400

sites belonging to this period have been identified in the Sistan region of Iran. In terms of the size of the sites as well as movable and immovable findings, the Parthian sites of the desert part of Sistan are not very significant. Important settlements such as cities and castles, of which there are several instances in North Sistan, have not been identified in South Sistan. Not many significant findings were obtained from the Parthian sites identified in this survey. It seems that according to the environmental conditions of this period in South Sistan, a nomadic subsistence system was going on.

The second important historical gap of Iran's Sistan is related to the early Islamic centuries. In previous surveys, no settlement related to the 1st to 4th centuries AH was identified. In this survey, 12 sites with settlement evidence of the middle Islamic era (6th to 10th centuries AD) were found. The chronology of the sites is based on comparative typology. The existence of

castles such as Girdi and Ramroud in this part of Sistan, along with tombs and industrial spaces that all belong to the middle Islamic centuries, strengthens the possibility of the existence of large and densely populated cities and settlements on the banks of the Roud-Biaban River.

An important point to be noted is the large number of settlements and the concentration of cultural and historical findings in this area. 38 ancient sites identified with the implementation of the Zahedan-Zabol gas transmission project are under threat and destruction. This shows the necessity of conducting archaeological research before the implementation of construction and infrastructure projects in the country. Protection and study of these ancient sites and monuments can be very useful in understanding the cultural and historical evolution of the Sistan region.

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