

# The Function of the Roman Army in Southern Arabia Petraea

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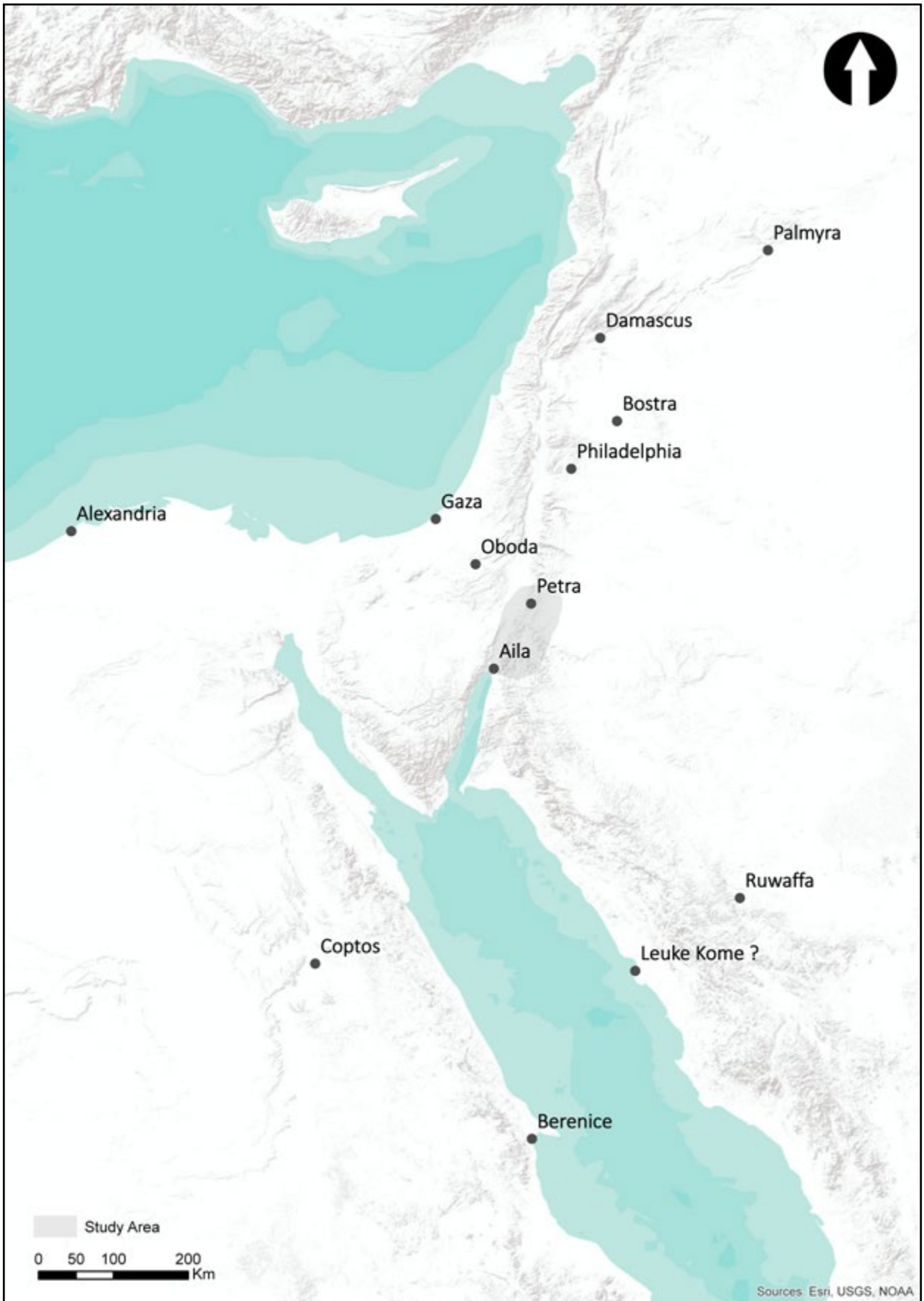


Figure 1. Main sites mentioned in the text, showing the study-area considered in this publication.

## Glossary

Ayn = spring.

Bir = well.

Birkeh = pool, cistern.

Jebel = mountain.

Khirbet = ruins.

Qasr = fort/castellum.

Rujm = tower.

Umm = mother.

Wadi = canyon/valley, water course.

## Archaeological periods and dates

Nabataean Period	63 BC–AD 106
Roman Period	AD 106–324
Late Roman	AD 284–324
Byzantine Period	AD 324–640

## Preface

The publication of a text initially conceived as a master's dissertation, such as the one being presented, must come with its own set of warnings and expectations. At the time of submission, I had to respect several formatting rules (including a word count) and a rigid time limit. As a result, many points were left implied, whereas others unstated. I did not alter a significant amount of the original version I delivered to the Examination Schools after a night of nervous sleep deprivation, but I tried to consider the comments made by my examiners, peers, and professors in the aftermath of my submission. I have added content to the discussion and have procured more recent literature on the topic, although this, I should say, was a challenge.

The topic at hand—the function of the Roman army in Arabia—was a boiling topic in the 1980s and 1990s, yet due to the lack of hard evidence, especially excavation data, archaeological inquiries in Roman Arabia were forced to change their focus. These days, most survey work in the region explores land use in ancient times, especially that related to settlements and military sites. Projects such as these are now producing great quantities of data and will certainly serve as invaluable platforms for the study of Roman Arabia in the near future. Using these contributions, my attempt was to revert attention to the important military aspect of Roman occupation in the region using computer techniques that were not applied in previous discussions. I have come to believe, after reading Appian's preface, that a better understanding of the military will shed light on the functioning and priorities of the Roman empire as a whole.

I hope my minor contribution is conceived in light of its original format and that any inaccuracies can be dutifully criticised in the name of academic progress. My main purpose has been to follow M. I. Finley's call to action concerning the use of analytical models in ancient history: 'The familiar fear of a *priorism* is misplaced: any hypothesis can be modified, adjusted or discarded when necessary. Without one, however, there can be no explanation.'<sup>1</sup>

I am most grateful to my mentors at the University of Oxford, Prof. Andrew Wilson and John Pouncett, for their unfailing support during my master's degree. I should also like to thank Professor David Kennedy and Dr. Robert Bewley at the APAAME and EAMENA projects, as their contributions were vital to the completion of this work. My dissertation also could not have been written without the generosity of Mica Ertegun and the people at the Ertegun Graduate Scholarship in the Humanities. Finally, I must thank all those who have charitably read and commented on earlier drafts of this text, particularly my family and peers.

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<sup>1</sup> Finley (1985), 66.



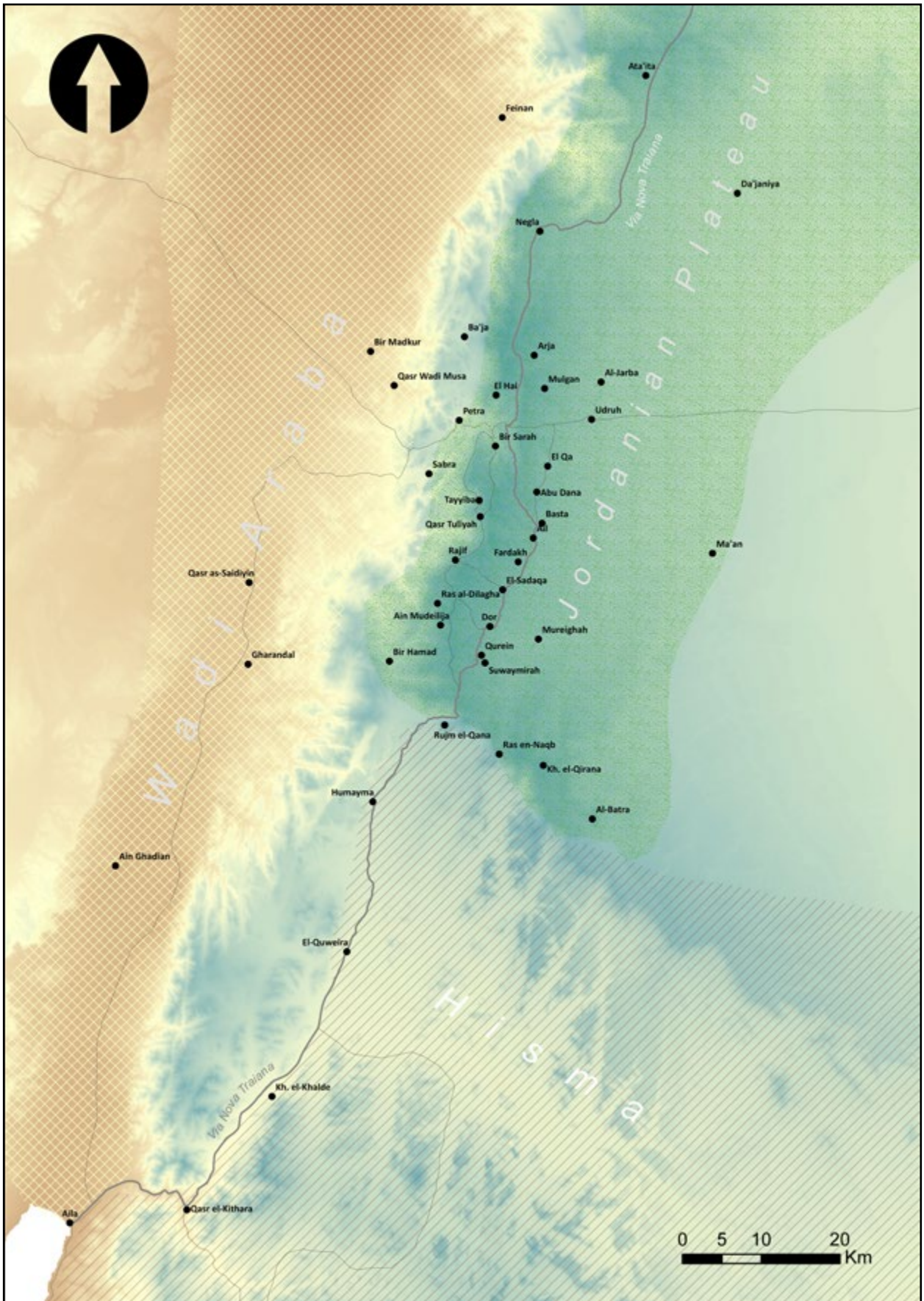


Figure 2. Study Area (southern Arabian frontier) considered in this publication, showing the main sites mentioned and geographical zones.



# I. Introduction: Aims and Scope

The purpose of this research is better to understand the role of the Roman army in the southernmost sector of the Arabian frontier of the Empire between Petra and Aila (Aqaba) from the creation of the province to the end of the Byzantine period (AD 106–640). The author attempts to balance the opposing arguments put forth by Roman scholars such as Benjamin Isaac, Charles R. Whittaker, David Graf, and Thomas Parker, whose views polarise the function of the army and fortified structures along the Arabian frontier. This work argues that there is enough evidence to suggest that the eastern Roman frontier was an open but not unguarded border, demarcated by a system of roads, forts, and posts built not only to defend the empire against inward and outward threats, but also to secure the province, provide shelter, and control movement and trade in the desert. This study also proposes—unlike other analyses of the Roman military in the region—that the functions of the army changed according to period and geographical location.

This research aims to understand the purpose of the Roman military presence in the area by developing a large-scale and *longue durée* perspective of the frontier system in the south (Figure 2). Compared with the northern sections, the southernmost part of Rome’s eastern frontier, extending from Petra to Aila, has only been analysed at a site or regional scale, and no serious attempts have been made to go past its typological and architectural dimensions before or since Al-Khouri’s *Il Limes Arabicus*.<sup>2</sup> A new evaluation of the debate from a landscape perspective is warranted, and so the approach used here is based on spatial analyses of visibility and distance, and supported by the extant archaeological and historical evidence in the Roman east.<sup>3</sup>

The arguments made here consider the most up-to-date survey and excavation data along the ancient roads connecting Petra and Aqaba. All pertinent archaeological sites from AD 106 to Justinian are considered, but it must be acknowledged that most concrete evidence is concentrated in the third and fourth centuries.<sup>4</sup> For the purpose of clarity, all dates are AD unless specified. The spelling of modern and ancient place names is consistent, as much as possible, with the most recent reports. Alternative spellings are given only when they are so different as to be potentially misleading (e.g. Ail/Ayyil, not to be confused with Aila).

This work can be an important contribution to the discussions about the Roman eastern frontier. First, it provides an unprecedented focus on the relationship between the Roman military and Arabian settlements in the region between Petra and Aqaba, including the Wadi Araba. Previous studies have only focused on limited sections of this region. Second, this is, to my knowledge, the first time anyone has applied a landscape analysis using Geographical Information Systems better to understand the dynamics of the whole region.<sup>5</sup> In the process, I have been working closely with two Oxford-based projects—the Aerial Photographic Archive for Archaeology in the Middle East (APAAME) and the Endangered Archaeology in the Middle East and North Africa project (EAMENA)—reporting on the condition of sites from aerial and satellite imagery. Since the reports of the later nineteenth- and early twentieth-century surveys, many sites have wholly or partially disappeared. This study can thus also be a useful tool for educators, heritage management, and conservation professionals who wish to know more about the classical landscape in southern Jordan.

Chapter Two of this study summarises previous archaeological research in southern Nabataea—especially that focused on Roman occupation, frontier studies, and military presence—and the ancient primary sources that discuss these same topics. The Roman and current meanings of ‘frontier’ (*limes*) and its relation to the Roman army are also discussed here. Some considerations about the geography, climate

<sup>2</sup> Al-Khouri (2003); Wheeler (2007), 236. See the ‘Methodology’ Section for an explanation of the choice of the study-area.

<sup>3</sup> Using ArcMap 10.5 (GIS); c.f. landscape approach used in Kouki (2012), 22.

<sup>4</sup> Parker (1991), 498; Gregory (1997), 2.

<sup>5</sup> At a smaller scale see: Findlater (2004) at Dana; Cook (2004) at Humayma; Ynnilä (2006) at Jabel Harun.

and topography of the *Limes Arabicus* are provided, followed by a summary of the military build-up in the region. The last section of Chapter Two discusses the deployment of legions in East, particularly in relation to the potential functions of the Roman military in the newly-established province of Arabia. Chapter Three offers a critical appraisal of each opposing view about the role of the Roman army in Arabia and the evidence supporting or refuting them. These are the defence of the frontier against the 'Nomadic threat;' the policing and administration of the province; and the maintenance of the incense trade routes. Chapter Four applies spatial analyses to the southern section of *Limes Arabicus* with the aim of revising the current debate in eastern frontier studies where 'there has never been enough evidence to prove conclusively or to disprove any of these theories.'<sup>6</sup>

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<sup>6</sup> Gregory (1997), 3.

## II. Contextualization: The Arabian Frontier and the Roman Army

### Previous archaeological research in the region

The first systematic archaeological surveys of the southern Transjordan region started during the last decade of the 19th century.<sup>7</sup> Inspired by the work of Melchior de Vogüé in the Syrian desert fringe, Rudolf Brünnow and Alfred von Domaszewski set out to discover the 'inner' and 'outer' *limes* of Roman Arabia, and paved the way for all subsequent frontier studies in the region, especially between Bostra and Petra.<sup>8</sup> *Die Provincia Arabia* (three volumes: 1904–1909) remained the only primary source of information available until the 1970s.<sup>9</sup> Brünnow and von Domaszewski were followed by Alois Musil, a historical geographer, who travelled on behalf of the American Geographical Society between 1908–1915 in the regions of Arabia, Syria and southern Mesopotamia.<sup>10</sup> Musil's surveys of the Moab, Edom, and Northern Hejaz were published in 1907 and 1908 in *Arabia Petraea* but unfortunately his inaccurate plans and descriptions have impaired the book's overall credibility.

In the 1930's, Fritz Frank and Albrecht Alt carried out joint surveys of potential Roman sites in the Wadi Araba region and subsequently published the first focused survey on the southernmost end of the frontier (*Aus der Araba*, vol.1, Frank 1934 and vol.2, Alt 1935). Soon after, Alt also examined the southeastern stretch of the *Via Nova Traiana* running south from Bostra to Aila.<sup>11</sup> Interest in the region was revived by Nelson Glueck during his 1934 and 1936–1938 expeditions (II and III), funded by the American Schools of Oriental Research.<sup>12</sup> Even though his work was patchy on the stretch between Petra and Aila, and although the pottery evidence is almost completely unreliable, Glueck describes in detail the natural topography and archaeology of the region and provides some of the first site photographs, which become increasingly valuable after modern urban development and continued conflict.<sup>13</sup>

Poidebard's *La Trace de Rome dans le Desert de Syrie* (1934) inspired a new form of research in the region between the world wars: aerial survey.<sup>14</sup> His success was particularly influential on the work of Sir Aurel Stein who, between 1938–1939, in cooperation with the Royal Air Force, conducted several aerial surveys of the Roman '*limes*' in the British mandate areas of Iraq and Jordan. Stein's full report was only published in 1985 by Gregory and Kennedy, but it is still one of the main sources for the study of the southern Arabian frontier and particularly valuable for the extreme southern stretch between Petra and Aqaba.<sup>15</sup> These early reports were described in the form of archaeological 'missions,' 'journeys,' and 'explorations,' and thus their scholarly value remains vastly debated. In their defence, these 'expeditions' remain some of our only sources on Roman presence in the eastern frontier of the empire, particularly in the area discussed in this paper.

Most Roman frontier research in the decades following the Second World War was concentrated in Palestine, whereas in Jordan archaeological projects mainly focused on the excavation of the large cities of Roman Arabia (Jerash, Amman, Madaba, Umm Qeis, Tell Hesban, etc.). Only in the early 1970s, stimulated by the urgent call of Glen Bowersock, did archaeologists renew their interest in the eastern Roman frontier system.<sup>16</sup> Ever since, this 'renaissance' has concentrated on the military fortifications

<sup>7</sup> For our purposes, the Transjordan region can be equated with the modern Hashemite Kingdom of Jordan.

<sup>8</sup> This was also the time when Howard Butler and the Princeton Expedition examined the Hawran in the northern region of Roman Arabia as part of their survey of southern Syria.

<sup>9</sup> Brünnow and Domaszewski (1904).

<sup>10</sup> Musil (1907) was followed, to a smaller extent, by A Jaussen and R. Savignac (1909–19) who surveyed the Nabataean region of Arabia. Their reports are not limited to Roman sites and only provide brief descriptions.

<sup>11</sup> Alt (1936).

<sup>12</sup> Glueck (1934). At around the same time, the first excavations in Petra and Jerash testified of the immense archaeological potential of the region.

<sup>13</sup> Glueck's photographs can be accessed through the collections at the American Schools of Oriental Research (Boston).

<sup>14</sup> Poidebard (1934). See Kennedy and Riley (1990, 50) for a summary of Poidebard's career.

<sup>15</sup> Stein, Gregory, and Kennedy (1985).

<sup>16</sup> Bowersock (1971) and (1976).

that constitute this frontier.<sup>17</sup> James Sauer created a refined ceramic typology based on coin-controlled pottery from Hesban that was subsequently used in the foundational survey led by S. Thomas Parker on the Arabian frontier between the Southern Hawran and Aqaba (1976).<sup>18</sup> Around the same time, Parr and others led the first systematic prospections of northwestern Saudi Arabia (the Hisma, the northern Hejaz, and Wadi Sirhan);<sup>19</sup> Rothenberg restarted work in the Wadi Araba;<sup>20</sup> and, soon afterwards, Parker launched the *Central Limes Arabicus Project* which, even though outside this paper's scope, is of paramount importance to the study of the eastern frontier.<sup>21</sup>

During the 1980s, Arabian frontier and military studies received a *nouvelle vague* of researchers. Reassessing the potential of aerial surveys, David Kennedy began photographing and documenting sites across the Middle East, particularly in Jordan. This allowed for the creation of better planimetric maps and the gathering of more information on particular sites. Yet Kennedy's most important publications for the study of the southern Arabian frontier were only published in the 1990s or later, in *Rome's Desert Frontier from the Air* (Kennedy and Riley 1990), *The Roman Army in the East* (1996), and *The Roman Army in Jordan* (2000; 2004).<sup>22</sup> Burton MacDonald initiated a series of improved and detailed surveys of the vast region between Wadi el-Hesa and Ail (1979–present) and established the new standard for survey techniques in the country.<sup>23</sup> His counterpart in the southernmost part of the frontier was David Graf, who also did some of the best work on Roman and Nabataean inscriptions and settlement patterns in the region (the latter particularly after the 1990s).<sup>24</sup>

John P. Oleson began surveying and then excavating the Humayma settlement and military post in 1986, and so far has produced some of the most detailed and complete reports of any Roman site along the *Via Nova Traiana* (1986–2008).<sup>25</sup> Oleson's publications have been particularly vital in our understanding of water management in the eastern frontier. At Udruh, Alistair Killick also led important excavations between 1980 and 1982 but unfortunately the material published is very limited.<sup>26</sup>

The past 30 years have been marked by three important and multi-season projects: The Roman Aqaba Project (Parker 1993–2003), the Wadi Faynan Geoarchaeological Survey (Barker, Gilbertson, and Mattingly 1997–2006), and the Wadi Araba Archaeological Research Project, including the Southeast and Central Araba Archaeological surveys (Andrew Smith II and others 1996–present). Zbigniew Fiema has also conducted important work in the southern Jordan, mapping the settlement patterns in the region between the Nabataean and Byzantine periods.<sup>27</sup> In Saudi Arabia, Fiema and Laila Nehmé have also explored the southernmost extent of Roman presence at Hegra.<sup>28</sup> In late 2017, Brown University Petra Archaeological Project published their first complete report on the Northern Hinterland of Petra survey.<sup>29</sup>

Along the *Via Nova Traiana*, the most important work being done now comes from local archaeologists, especially Fawzi Abudanah (University of Wadi Mousa). Based on Graf's 1995 surveys, Abudanah traced many of the waterpoints and stretches of road between Petra and Ayn al-Qana. He has also completed some important studies in the settlement patterns and land use in the region of Udruh and provided a 'clear understanding of the military organisation in the region and its relation to the broad system of the limes Arabicus.'<sup>30</sup> His final publication is awaited.

<sup>17</sup> Graf (1991), 152.

<sup>18</sup> Sauer (1973); Parker (1986).

<sup>19</sup> Parr, Harding and Dayton (1970); Ingraham, Johnson, Rihani, Shatla (1981).

<sup>20</sup> Rothenberg (1971).

<sup>21</sup> Parker and Betlyon (2006). In addition to field surveys, the project led the Lejjun legionary camp and Qasr Bshir excavations.

<sup>22</sup> Kennedy (1996), (2004); Kennedy and Riley (1990).

<sup>23</sup> MacDonald (1988), (1992), (2004), (2012), (2016); Banning (2017).

<sup>24</sup> Graf (1992), (1995), (1997a), (1997b), (2001).

<sup>25</sup> For a summary and complete bibliography see Oleson and Brown (2010).

<sup>26</sup> Killick (1986).

<sup>27</sup> Fiema (1991), 86–89, 116–18, 150–53, 217–35, (2002), 203–208.

<sup>28</sup> Fiema (1987), (1991), (1995), (2016); Nehmé (2011).

<sup>29</sup> Knodell et al. (2017).

<sup>30</sup> Abudanah (2005), (2006).

## Ancient sources

Only a few ancient literary sources refer to the eastern frontier of the Roman Empire and the military bodies guarding it, and almost nothing survives from an indigenous Nabataean perspective.<sup>31</sup> Besides short notes mentioning campaigns in 'Arabia,' ancient authors did not show much interest in, or profound knowledge about, the military situation in the eastern fringes of the empire.<sup>32</sup> Herodotus, Diodorus, Strabo, the Elder Pliny, and Josephus describe Arabia and the Nabataeans to a lesser or greater extent, and all are helpful in providing Roman or Greek perspectives on the land and its customs.<sup>33</sup> Most also mention the importance of the incense trade in Arabia and the Red Sea. The history of the *limes* in the second and third centuries is poorly attested except in Dio, and the *Historia Augusta* can be occasionally useful. The best accounts of the military are, in any case, after the fourth century.

Ammianus Marcellinus, a Syrian-born Roman military officer in the Eastern frontier, provides first-hand contemporary descriptions of the Roman army in the east.<sup>34</sup> In the sixth century, Procopius also offers eye-witness accounts on how the eastern Roman forts were used (as do the military records of Dura Europos and Nessana, and the Law codes of Theodosius and Justinian).<sup>35</sup> For place names, Ptolemy's *Towns of Arabia Petraea* (V), Eusebius' *The Onomasticon*, and the Beersheba Edict are the most useful sources. Additionally, the Peutinger Table also illustrates the direction and extent of the main road network connecting major towns and military sites. The *Notitia Dignitatum*, the most helpful record of military arrangements, offers a complete breakdown of the identity and disposition of all Roman army units of Arabia and Palestine ca. AD 400; the deployment dates to the time of Diocletian a century earlier.<sup>36</sup> Finally, milestones and the scatter of building inscriptions from some forts provide unique epigraphic evidence of the provincial road-system. The texts on them indicate original construction and periodic repair from Trajanic annexation until the fourth century.<sup>37</sup>

## The 'Limes Arabicus'

### *The Limes: concept and reality*

The writings of Ammianus Marcellinus and Malalas have inspired modern scholars to question what defined the frontiers of the Roman Empire.<sup>38</sup> The current consensus is that a frontier is 'the land that forms the furthest extent of a country's settled or inhabited region' and, in most modern cases, fronts another country's territory.<sup>39</sup> According to Friedrich Ratzel, a 19th-century German geographer, this extent is only a 'space-conception' of a state's territorial dominion, and it need not necessarily have any physical marks to establish it.<sup>40</sup> Several Roman sources saw frontier areas generally as an ideological and, often, tangible tool of separation between the civilised land settled by Romans and barbarians or, as Whittaker writes, the *orbis terrarum imperium*, the organized territory, and the *externae gentes*, who were subjects but not usually worth annexing.<sup>41</sup> Worth noting, we also learn from Augustus himself that the *orbis terrarum imperium* extended to countries governed by client kings (*socius et amicus populi Romani*), including Nabataea, even though these maintained a great deal of political and economic autonomy.<sup>42</sup>

<sup>31</sup> E.g. Glaukos (*Arabika*), Palaephatos of Abydos (*Incredibilia*), Teukros of Kyzikos (*Arabian History*).

<sup>32</sup> Fiema (1995), 261. But there are many sources describing internal disturbances within Palestine and the Sinai.

<sup>33</sup> Strabo, 16, 5.1-4, 18-19, 21-26 (c. AD 22). Herodotus, *Hist.* 3 (c. 430 BC). Diodorus, 19.94-100, 2.48; Pliny, *Nat. Hist.* 6, 32; Josephus, *Jew. Ant.* 1.22.

<sup>34</sup> Amma. Marc., 14.4.1-7, 14.8.13.

<sup>35</sup> *History of the Wars* 1.19.1-16, 23-26, 20.1-13. Gilliam (1959); Abinnaeus (1962); Fink (1971).

Pharr (2001).

<sup>36</sup> Oriens 34, 37. Seec (1872). The *Not. Dig.* dates between AD 395-423.

<sup>37</sup> Collected in Thomsen (1917), 1-103, Isaac and Roll (1983), Kennedy (1982), Graf (1995).

<sup>38</sup> Amma. Marc., 18, 16, 31; Malalas, *Chron.* 308.17. For a representative discussion of *limes* theory see Bowersock (1971), 237; Whittaker (1994), 59, 200, 206.

<sup>39</sup> Mayerson (1994), 6.

<sup>40</sup> Isaac (1993), 105; Trouset (1993), 115.

<sup>41</sup> Frontinus, *Stratagems* 1.3.10; Tacitus, *Agricola* 41, *Germania* 29. Gibbon (1880); Mattingly et al. (2013), 22; Poidebard (1934), 18; Briant (1982), 47. c.f. Whittaker (2004), 12.

<sup>42</sup> *Res Gestae*, 26-33; Whittaker (1994), 36, (2004), 165; Elton (1996), 11, 12, 29.

Roman travellers and historians writing itineraries and geographic descriptions, such as Pliny and Strabo, do not mention the existence of formal outer limits at the times they crossed them.<sup>43</sup> Perhaps the fact that good cartography was not available during Roman times, especially in remote desert areas, meant that it was—and remains—difficult to conceive and represent well-defined borders.<sup>44</sup> Roman maps that have survived certainly do not show built frontiers as the limits of the empire. On the Peutinger Table—a medieval document probably based on a Roman map showing routes used in administration during the imperial age—the region of *Gandari Indi* (India), for example, is not distinct from other parts of the Empire (Figure 3). The symbols representing the cities, the *cursus publicus*, and the topographical features appear to be the same, even if those in the Far East were not under the direct control of the Roman emperor. Poor geographical knowledge can also be inferred from the accounts of Aelius Gallus in southern Arabia,<sup>45</sup> Crassus and Marcus Antonius in Parthia,<sup>46</sup> Varian in Germania,<sup>47</sup> etc.

In the face of scant evidence, scholars disagree whether the outermost limits of the Roman Empire, the *limes*, were ideological or definite borders, and if definite, whether the army assisted in protecting them. Whittaker, heavily influenced by the 1980s anti-strategy school, referring to Hadrian's wall argues that the *limes* were 'bureaucratic in concept, not military.'<sup>48</sup> He adds that there can be no argument for fixed linear frontiers, and all *limites* must be understood in terms of ideas of space and power.<sup>49</sup> In the East, there is still little consensus as to the purpose of fortified structures along the *limes* or how they were related.

Isaac has convincingly shown that, except in the first century, the term '*limes*' is never applied to something made or constructed, and certainly not to a linear defended border, as had been traditionally accepted.<sup>50</sup> The term was first used to mean a road, and then came to be used to indicate a demarcated land border of the empire (first-third centuries).<sup>51</sup> Later, it came to mean a frontier district under the command of a *dux*



Figure 3. Section of the Peutinger Table. From: <http://peutinger.atlantides.org/map-a/>.

<sup>43</sup> Pliny, *Nat. Hist.* 4.78, 5.22; Strabo, 17.3.25; Whittaker (2004), 11, 79: 'The Dura Map from a soldier's shield includes the route crossing the Danube between Istropolis and Tyra, moving out of the Roman Empire into territory of the Costoboci, without showing any landmark to signify a frontier.'

<sup>44</sup> Whittaker (2004), 11; Luttwak (2016), xiii. This is not to say, as Luttwak argues, that Romans weren't capable of having accurate geographical knowledge. They used large-scale surveying techniques to mark out their territories for fiscal purposes and employed distance-measuring carts (odometers).

<sup>45</sup> Strabo, 16; Cassius Dio, 53.29; Pliny, *Nat. Hist.* 6.32.

<sup>46</sup> Plutarch, *Crassus* 29; Strabo, 11.13.3; Plutarch, *Antony* 39, 40, 49.5.

<sup>47</sup> Marcus Velleius Paterculus, *Roman History* 2:117–120.

<sup>48</sup> Whittaker (1994), 15.

<sup>49</sup> Rufinus, *Hist. Erem.* 2.6. Graf (1989), 343; Whittaker (2004), 9, 10.

<sup>50</sup> Piganiol (1963), 119–122; Bowersock (1976), 219; Isaac (1988), 146. Several first-century Latin sources refer to military roads as *limes*: Velleius, 2.120; Tacitus, *Ann.* 1.50, 2, 7, *Germania* 29.4; Frontinus, *Strat.* 1, 3, 10.

<sup>51</sup> Frontinus, *Strat.* 1, 3.10; Tacitus, *Agr.* 41, 2, *Germ.* 29; SHA, *Vita Hadr.* 1.2; *Itinerarium Antoni*; ILS 451, *Acta Arv.*, 11 August AD 213; *CIL* VIII, 22765 (ILS 8923), AD 262/3;

(fourth century onward),<sup>52</sup> or the eastern desert, without any association with institutions specifically Roman.<sup>53</sup> Isaac therefore established there is no correlation between the term ‘*limes*’ and the military.

Although erroneously, *Limes Arabicus* is a modern term used interchangeably to define a broad fortified zone along the eastern desert of Jordan.<sup>54</sup> It has been interpreted as a single or double line of forts and towers running the length of the *Via Nova Traiana* and the Hisma, or even a ‘frontier-in-depth.’<sup>55</sup> Because of persistently wrong interpretations of the meaning of *limes*, it has also been assumed that the Arabian frontier was, as many other frontier zones, an area of military intervention and, mainly, defence.

Some scholars have challenged this concept, not only because they correctly believe it is anachronistic, but also because they think that a reassessment of the meaning of ‘*limes*’ forces a re-examination of the purpose of military constructions in these areas.<sup>56</sup> According to these authors, if *limes* has no defensive or military connotations there is no reason to assume that the physical remains of the Roman army in frontier areas should be called *limes*, nor that these fortified structures served defensive purposes (as the term only means ‘border’). There is also no reason to assume that the highly debated *limitanei* (frontier soldiers) of the Late Empire served in frontier defence.<sup>57</sup> In fact, a Theodosian edict (ca. 409) shows that *limitanei milites* in the east sometimes served as far from the ‘fortified border’ as Palestine.<sup>58</sup>

This is an important distinction to make—considering that the understanding of the Arabian frontier has been heavily based on the concept of the *limes* as a military line of defence—but it also undermines several points.<sup>59</sup> First, if the original meaning of *limes* is unconnected to defence and the military, it does not follow, as it has been argued,<sup>60</sup> that because of this the military served no defensive purposes. Second, these scholars have failed to acknowledge that the use of the term ‘*limes*’ in Roman sources is in fact commonly associated with areas or episodes of direct military intervention, as well as with the main infrastructure zone built by the Roman army for penetrating and connecting conquered territories, including roads, forts, towers, and rest-stations.<sup>61</sup> As Hanson has explained, the *limes* were ‘undeniably military in character.’<sup>62</sup> It is also worth noting that the image of the empire as a fortress gained wide recognition in the second and third centuries; the Thirteenth Sibylline Oracle explicitly equates the borders of the empire with the ‘walls of Rome.’<sup>63</sup>

In fact, most borders had at least some posts or natural features signalling a transition into non-Roman territory, even if these zones were not seen as the frontiers *per se*.<sup>64</sup> The German frontier, for example, extended over 550 km and boasted at least 60 forts, 80 fortlets, and over 900 towers. Hadrian’s Wall, in Britannia, was certainly not merely bureaucratic or ideological. The wall was 117.5 km long, protected by forts and towers, and consisted of an intricate system of ditches, mounds, a military passage, as well as the wall itself (Figure 4).<sup>65</sup> Besides, it was built in a time of warfare and military retreat, probably with the intent to protect the south from the warring tribes of the north. The resources required for building these structures, as well as their interconnectivity and robustness, suggest that they were meant to be more than a propaganda tool or a ‘make-work scheme to keep soldiers’ hands from becoming idle.’<sup>66</sup>

<sup>52</sup> Pan. Lat. viii (v) 3, 3, vi (vii), 2, xii (ix); Ausonius, *Gratiarum Actio* II, 7; CIL III, 12483; ILS 724; Amma. Marc. 23.5.2, 31.3.5, 23.55, 14.8.5; Festus, *Breviarium* xiv; SHA, Tyr. *Trig.* 26; Rufinus, *Hist. Erem.* II, 6; Not. Dig. Or. xxviii; Malalas, 143, 426; Alexander Akoimetos, *Vita* (33–34).

<sup>53</sup> Isaac (1988), 146.

<sup>54</sup> Eadie (1985), 423.

<sup>55</sup> Single: Parker (1979), 184–185, 215, 218, (1987), 41; Double: Glueck (1934); Fiema (1987), 261. Frontier-in-Depth: Luttwak (2016). Bowersock (1976, 221).

<sup>56</sup> Mayerson (1986), 35–47; Fiema (1987), 261; Isaac (1988); Graf (1989), 343;

<sup>57</sup> *Limitanei* is a term first attested in AD 363 (CTh XII, I, 56); Isaac (1988), 146; Toplyn (1994); Casey (1996); Le Bohec (2007). Brogan (1955); Ward-Perkins and Goodchild (1949); Goodchild (1950). Correct meaning of *limitanei*: Jones (1964), 646–9; Isaac (1988).

<sup>58</sup> *Theodosian edict*, 7.4.30.

<sup>59</sup> Parker (1986), for example.

<sup>60</sup> c.f. footnote 50.

<sup>61</sup> Velleius Paterculus, *Roman History* II, 120: ‘*arma infert hosti quem arcuisse pater et patria contenti erant; penetrat interius, aperit limites, vastat agros, urit domos, fundit obvios maximaque cum gloria, incolumi omnium, quos transduxerat, numero in hiberna revertitur.*’

<sup>62</sup> Bowersock (1976), 119; Hanson (1989), 58.

<sup>63</sup> See *Il.* 9.103–12; 13.105; 14.165, 247. Potter (1990), 283–88.

<sup>64</sup> Whittaker (2004), 4.

<sup>65</sup> Breeze and Dobson (1978); Breeze (1982), (2014).

<sup>66</sup> Symonds (2017).

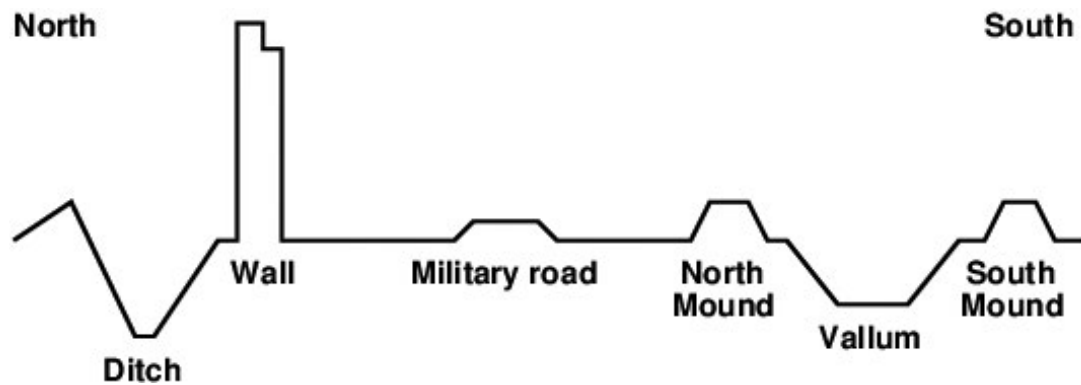


Figure 4. Cross section of Hadrian's Wall. From Burton 2012, 23.

It is a common misconception to assume that because Roman frontiers physically varied they must have served different purposes. It is plausible that each frontier system had its own set of functions and problems, but form must not be confused with function. The military organisation along frontiers was probably more determined by climate and topography than by a pre-defined, systematic frontier plan. Isaac has argued that because the expansion of the Empire was conceived—according to the ancient accounts—as an ethnical expansion rather than a territorial one, Roman imperialism was not primarily focused in establishing arbitrary physical boundaries but in conquering peoples and, by default, protecting their land.<sup>67</sup> In practical terms, however, it would have been much easier to organise the frontiers using the physical features already in place, even if, as in the northern frontier, this meant separating ethnic groups.

In Pannonia and much of Germania, the borders were marked by the rivers Danube and the Rhine, and flanked by tightly packed military posts and a military road.<sup>68</sup> River borders were common in the northern provinces, as they represented obstacles for moving armies and signified clear boundaries recognisable on both sides.<sup>69</sup> On the other hand, Dacia, which extended north of the Danube, was limited in part by the Meses Mountains and in part by the non-linear *Vallum Traiani* (a series of turf ramparts), watchtowers, and forts.<sup>70</sup> The *claustra Alpium Iuliarum*, connecting Italia and Pannonia, was another system of isolated ramparts, camps, watchtowers, and forts used to control mountain passes into Italy. Symonds and Breeze have suggested that Hadrian's Wall shows a 'skilful engagement with the local physical and—presumably—human geography' because the Romans understood that 'the small garrisons manning the milecastles and turrets were most effective at controlling movement when their installations were positioned so that the topography maximised rather than inhibited their impact.'<sup>71</sup>

Similarly, desert military frontier systems were more concerned with controlling client kings, waterpoints and wadi passages than with establishing a continuous system of forts and towers.<sup>72</sup> Thus, the system we would expect in such regions is neither linear nor tightly packed, but porous and broadly spaced, with several lines of fortifications positioned in strategic points protecting the settled areas (e.g. *Fossatum Africae*).<sup>73</sup> According to Gregory, 'garrisons in small widely-spaced forts could (augmented by watchtowers) observe and send warnings, protect water sources against sabotage (Tac. *Ann.* XV.3), as well as attack, deal with skirmishers, scouting parties and small-scale raids; they could also delay movement by imposing detours (Amm. Mar. XIV.3) or even by offering resistance.'<sup>74</sup> This point is often omitted when scholars argue that without a linear/packed system of fortifications a frontier was not defensible.

<sup>67</sup> Isaac (1992), 391–5; Cupcea (2015), 15.

<sup>68</sup> The Upper Germanic-Rhaetian *limes* was also marked by a solid palisade or wall, ditches and earthworks.

<sup>69</sup> Despite the fact that most scholars consider rivers as communication lines and not frontiers (Luttwak, Mann, Maxfield, Isaac, Whittaker), many ancient sources reveal that the Romans thought of rivers as defensible frontier lines: Josephus, *B. Jew.* 2.16.4; Statius, *Silv.* 5.1.89–90; Tacitus, *Ann.* 1.9, 4.5; CIL XIV 3608; Seneca, *QN* 6.7.1. Rankov (2005), 175–6; Cupcea (2015), 17.

<sup>70</sup> Cupcea (2015), 17.

<sup>71</sup> Symonds and Breeze (2016), 1, 12.

<sup>72</sup> Gregory (1997), 90.

<sup>73</sup> Luttwak (1976), 78; Austin and Rankov (1995), 183; Al Khouri (2003), 5; Cupcea (2015), 18;

<sup>74</sup> Gregory (1997), 89.



### *The southern Arabian frontier*

The area considered in this study is the southernmost section of the Roman eastern desert frontier, which in its totality stretched for 2000 km from the Black to the Red Sea. According to aerial surveys, this was a zone of military installations.<sup>75</sup> The section considered here extends for 125 km from Petra, located in the mountainous limestone plateau of Edom that separates the Rift Valley from the eastern desert, to Aqaba, in the southern extreme of the Wadi Araba. Parker named this area the ‘extreme southern end’ of the eastern frontier, and Parenti and Gilento the ‘south-easternmost boundary.’<sup>76</sup> Graf prefers to call it ‘southern Arabia Petraea.’<sup>77</sup>

The region is divided into three topographical sections (see Figure 2): the Edom highlands in the northeast (an area suitable for cereal cultivation or pasturage), dominated by the al-Shera mountain range (which determines the North-South axis of movement) and Petra;<sup>78</sup> the Wadi Araba to the west, separated from the highlands by dramatic cliffs and rugged mountains but still connected by wadi systems that transect the western edge of the plateau; and the Hisma Desert valley in the southeast, broken from the Jordanian plateau at Ras al-Qana and continuing south into Wadi Ramm, the Red Sea and the northernmost extent of the Hijaz Desert, or through Wadi Yutm and into Aqaba. In the first century AD, this region was populated by semi-sedentary pastoralists and ruled by the Nabataean kingdom.<sup>79</sup>

The main source of water in southern Jordan is provided by the run-off of winter floods, collected in cisterns and reservoirs, or by subterranean aquifers and springs. Most springs in Arabia occur along the mountains on the east side of the Rift Valley and along the al-Shera escarpment in the south, where steep cliffs provide access to the appropriate geological strata.<sup>80</sup> Several studies confirm that the end line of human occupation corresponds with the climatic map of the region between 50- and 100-millimetre isohyet lines, ‘on the edge of the zone, that is, where there was sufficient water to attract sedentary farming’ (Figure 5).<sup>81</sup>

Trousset’s studies of Roman Africa suggest that ‘frontiers were not to be seen as lines that were strategically determined but as broad zones where expansion stopped for lack of resources.’<sup>82</sup> Likewise, Bowersock notes that ‘the eastern boundary followed in effect the line at which the desert steppe begins.’<sup>83</sup> In Arabia, the number of sites decreases as we enter the Hisma and Wadi Araba and begin to encounter nomadic pastoralists. Here, the rainfall seldom exceeds 50 millimetres per year.<sup>84</sup> Strabo often stressed the value of water in ‘waterless and shadeless’ deserts.<sup>85</sup> These climatic conditions help explain the leading cause of the *razzia* (the ‘raid,’ expressed in pre-Islamic Arab poetry as the ultimate measure of a man’s courage) and why controlling waterpoints seems to have been the main incentive for constructing forts, roads, and towers in marginal environments.

Traditionally, the southern section of the frontier has been considered more inhospitable, and therefore of secondary status to the northern and central segments.<sup>86</sup> Although this bias is reflected in modern scholarship, this was *de facto* not the case, as demonstrated by the date of construction and the number of military stations along its path. Most of these follow the trail of the *Via Nova Traiana* (Figures 6 and 7), the main paved Roman road connecting Bostra and Aila that passed through the major habited areas of

<sup>75</sup> Kennedy and Riley (1990), 15; Gregory (1997), 3: The Eastern frontier broadly speaking—ran from Pityous in and south-south-westerly direction to Aila, with some fluctuations in the regions of Armenia and Mesopotamia. Wheeler (2007, 236) calls the section between southern Syria and Nabataean Arabia the ‘Southern Theatre.’

<sup>76</sup> Parenti and Gilento (2008), 111.

<sup>77</sup> Graf (1997a).

<sup>78</sup> Bender (1974), 189–90.

<sup>79</sup> Graf (1989), 371.

<sup>80</sup> Bender (1974), 177–81.

<sup>81</sup> Bowersock (1971), 230; Rothenberg (1971), 211; Whittaker (1994), 93–95; Macumber (2001), 2; Al Ayyash (2012), Figure 2.

<sup>82</sup> Trousset (1987), 29; Bowersock (1983), 103; Kennedy and Riley (1990), 26.

<sup>83</sup> Bowersock (1971), 230.

<sup>84</sup> Rothenberg (1971), 211.

<sup>85</sup> Strabo, 16.4.18, 24.

<sup>86</sup> Parker (1986), 1; Graf, (1995), 1.

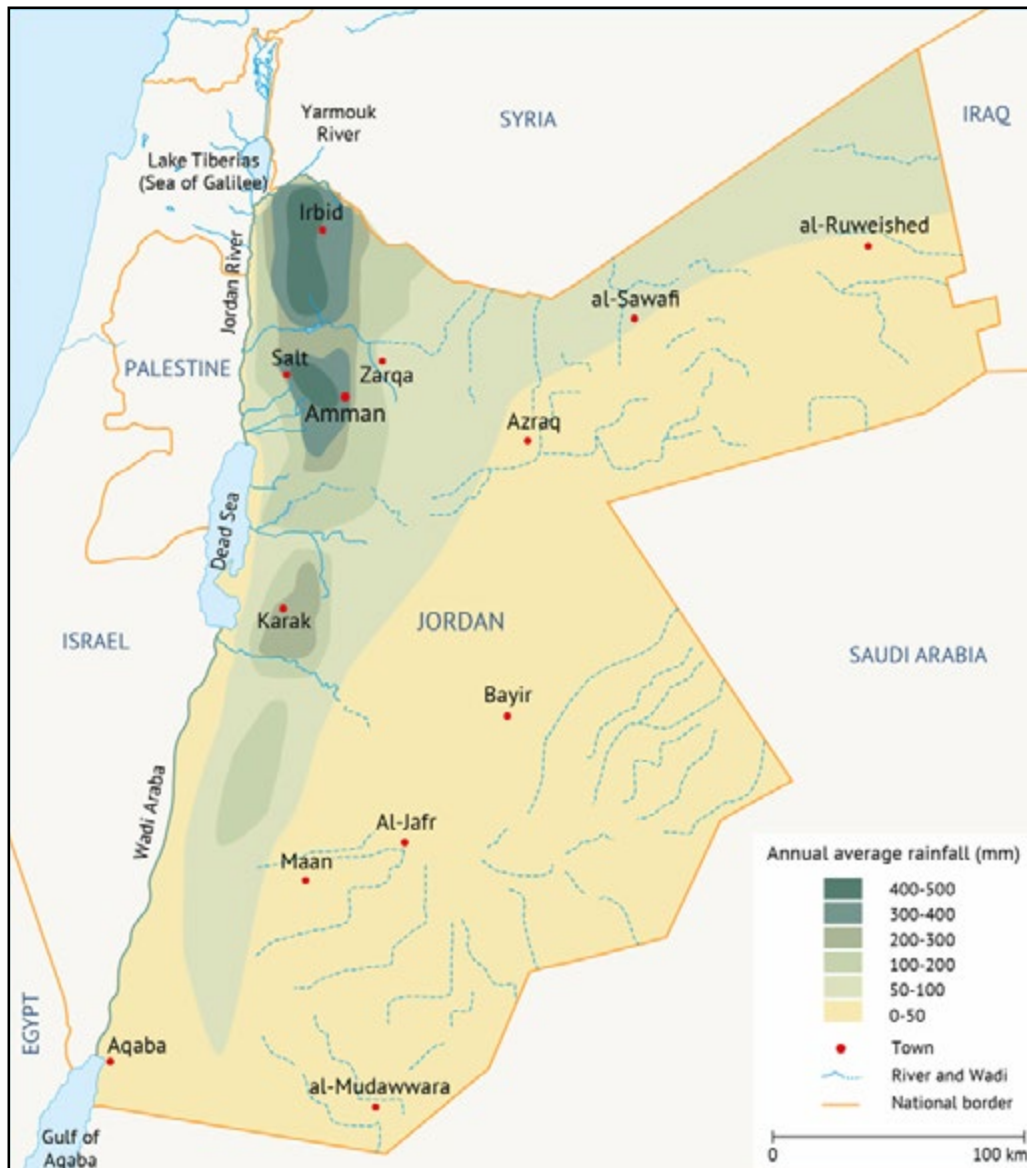


Figure 5. Annual average rainfall and precipitation. Fanack after MWI. Retrieved from: [www.water.fanack.com/jordan/geography-climate-population/](http://www.water.fanack.com/jordan/geography-climate-population/), May 2017.

Arabia Petraea. Many scholars agree that the *Via Traiana* acted as the recognisable border of the Roman empire in the area, but also maintain that its main purpose was communication rather than separation.<sup>87</sup> The road system, however, was more than just a straight line; there were many spurs and East-West routes that intersected the various North-South routes, including the *Via Traiana*.<sup>88</sup>

The Peutinger Table (*Tabula Peutingeriana*) has proven invaluable in the discussion of tracking the path and stations of the *Via Traiana*.<sup>89</sup> This itinerary portrays Petris (Petra), Zadaqatta (Sadaqa), Haurra (Humayma), Praesidio (Khirbet el-Khalde), and Aila (Aqaba), but ‘other intermediary posts existed between these major road stations for monitoring and surveillance of traffic, and communication with

<sup>87</sup> Especially Whittaker (1994), 55–58.

<sup>88</sup> Glueck and Stein found vestiges of a road west of Sadaqa and milestones east of Humayma. On the path of the *Via Traiana* see Graf, (1995), 5, (1997a), 1, (1997b), Borstad (2008), Abudanah (2016). On East-West spurs, see Worschech (1985), pls XXVI, XXVII; cf. Worschech (1992), 86.

<sup>89</sup> Eadie (1985), 414; Graf (1997b), 3; Talbert (2010).

the larger garrison centres on the route.<sup>90</sup> One might say that these features were located along the frontier (*limes*), but the most popular view is that these features *were* the frontier itself (*Limes Arabicus*). The common understanding is also that few forts and towers served as outposts east of the *Via Traiana* (Ma'an is exceptional in this sense), and those that did do not represent an outer line of defence.<sup>91</sup>

The *Via Traiana* and sites associated with it were set in relative isolation to the surrounding areas. To the east were the Arabian deserts and nomadic groups threading the landscape. The existence of the Thamudic confederation of tribes in northwestern Saudi Arabia, for example, indicates that some of these groups were capable of internal organisation and peace-keeping. To the west were Judaea, the Negev, and the Sinai. Petra and the Edom were connected to Avdat, Gaza, and the Mediterranean by passes leading into the Wadi Araba, but little is known about these connections.<sup>92</sup> The *Via Traiana* continued north passing to the west of el-Lejjun and Qasr Bshir, and through Philadelphia and Bostra, where it merged into other highways leading deeper into Syria. Besides those located in relation to the *Via Traiana*, sites do not show directionality or a 'line' formation.<sup>93</sup>

### The Roman army in Arabia

Although current knowledge about the transition from Nabataean to Roman rule is extremely thin, understanding this event—and the milieu surrounding it—is important to determine the role of the Roman army in Arabia, at least during the first years following annexation. The Nabataean Kingdom was inexplicably and suddenly incorporated in AD 106 after decades of acting as a cooperative client



Figure 6. Aerial Photo of the *Via Nova Traiana* (paved stretch running horizontally in the centre) near Umm Aljermal in Northern Jordan. Courtesy of APAAME.

<sup>90</sup> Graf (1995), 5; (1997a), 5.

<sup>91</sup> Parker (1986), 2.

<sup>92</sup> See forthcoming Will Kennedy, 'The Hinterland of Petra (Jordan): A Landscape Archaeological Approach,' PhD (Berlin).

<sup>93</sup> Bowersock (1976), 221.





Figure 7. Aerial photo of the *Via Nova Traiana* (cleared stretch running vertically in the centre) in the al-Bitahi area north-west of Basta. Courtesy of APAAME.

kingdom of the Roman Empire.<sup>94</sup> Most of what is known about the annexation of the Nabataea is told in one sentence in Cassius Dio's *Roman History*: 'About [the time of Dacia's subjugation], [A. Cornelius] Palma [Frontonianus], the governor of Syria, subdued the part of Arabia around Petra and made it subject to the Romans.'<sup>95</sup>

The most pressing question in connection with this event is whether the annexation was a premeditated plan or a mere reaction to internal changes. In both cases, it is suggested that annexation was prompted by the death of Rabbel II, the king of Nabataea. Rabbel (r. 71) was probably an old man in AD 106,<sup>96</sup> and we know of few client kings in the first century who had a successor.<sup>97</sup> Bowersock posits that army deployments in the east confirm a premeditated intervention in Arabia Petraea.<sup>98</sup> Mann, on the other hand, does not believe that the Romans had any long-term plan to incorporate Nabataea, and that annexation was merely a reaction to Rabbel's death.<sup>99</sup> Some have also suggested that Palma's invasion was both a reaction to Rabbel's sudden death and an intervention intended to stop an heir from ascending the throne and seizing the profitable markets of the east.<sup>100</sup>

The hypothesis of a premeditated annexation implies that during the years leading up to 106, 'Roman strategists' would have prepared for annexation knowing that Roman soldiers were occupied in Dacia and therefore that permanent and temporary forces must have been moved from existing eastern armies.<sup>101</sup> Egypt, the only eastern province with one legion to spare (either *III Cyrenaica* or *XXII Deiotoriana*), seems the reasonable choice.<sup>102</sup> *Legio III Cyrenaica* is later attested in Dura Europos, Arabia, and Judaea, making it the preferred candidate for the first Roman garrison at Bostra, the provincial capital of Nabataea.<sup>103</sup> Besides, inscriptions and coinage from Bostra confirm that *III Cyrenaica* was stationed there during the early organisation of the province.<sup>104</sup> In Table 1, note Kennedy's reconstruction of the eastern legion's movement in the first two decades after annexation. The fact that *III Cyrenaica* was chosen as the initial garrison has been interpreted as evidence that the annexation was premeditated.<sup>105</sup>

<sup>94</sup> Malichus II AD 40–70 in Josephus, *B. Jew.* 3.4.2. Tacitus, *Ann.* 2.56.3; 57.3 (submission while meeting Roman officials); Josephus, *B. Jew.* III.68 (providing troops); Josephus, *Jew. Ant.* 18.115, 120–24 (fear of military retaliation).

<sup>95</sup> Dio, 14 (in Dio, Cary, Earnest, & Foster, Herbert Baldwin, 1914). Xiph. 232, 28–234, 16 R. St.

<sup>96</sup> *CIS* II 161; Bowersock (1971), 228.

<sup>97</sup> Tacitus, *Ann.* XIV.31 (cf. Dio 62.1–12) for the Iceni on the death of Prasutagus; *Ann.* 2.42 for King Archelaus in Cappadocia; Josephus, *Wars* 7.7.1 the for annexation of Commagene in AD 17; cf. the treatment of Herod Agrippa's kingdom on his death (Josephus, *B. Jew.* 11.220).

<sup>98</sup> Ritterling (1924); Bowersock (1970), (1971); Kennedy (1980a); Kagan (2006), 357.

<sup>99</sup> Mann (1979), 180.

<sup>100</sup> Kennedy (1980a); Fiema (1987), 29. Rabbel could also have been perceived as unpredictable and dangerous in the years leading up to his death, when he exerted a great control over southern Syria and moved the capital from Petra to Bostra: Bowersock (1983), 53, 68; Eadie (1985).

<sup>101</sup> Kennedy (1980a), 287.

<sup>102</sup> Judaea had only one legion, and both Syria and Cappadocia needed their forces (probably already under stress because of vexillations sent to the Dacian war) to maintain security. Kennedy (1980), 284, 289.

<sup>103</sup> Rostovtzeff, Bellinger, Brown and Welles (1943), 56–65; Blackman (1973); *CIL* III, 13587.

<sup>104</sup> For the inscriptions see Sartre (2011), *IGLS* xiii, 1; See coinage in Kindler (1983).

<sup>105</sup> Kennedy (1980).

Another important question concerns the royal family. The Babatha archive indicates that Rabbel II had an heir-apparent; likewise, Nabataean coinage shows that Rabbel's two wives, Gamilat and Hagiru, survived their husband's death.<sup>106</sup> Yet no member of the royal family was involved in the type of imperial publicity typical of other provincial dynasts after Roman annexation.<sup>107</sup> Given the fact that Trajan was never honoured with the title of *Arabicus*—and considering that coins after 111 carry the term 'ARAB(ia) ADQVISIT(a)' rather than 'ARAB(ia) CAPTA' (Figures 8 and 9)—it is safe to assume that the transition of power was not carried through conquest or other violent means, and that the royal family simply faded away.<sup>108</sup>

Table 1. The Provincial garrisons, AD 106-132 (after Kennedy [1980], 309).

Province	106	106-114	114-116	116-117	117-118	118-119	119-123	123-132
Arabia	-	III Cyr.	III Cyr.	?	VI Ferr.	VI Ferr.	VI Ferr.	III Cyr.
Egypt	III Cyr. XXII Deiot.	XXII Deiot.	XXII Deiot.	XXII Deiot.	XXII Deiot. III Cyr.	XXII Deiot. III Cyr.	XXII Deiot. II Tr.	(XXII Deiot.?) II Tr.
Judaea	X Fr.	X Fr.	X Fr.	X Fr.	X Fr. II Tr.?	X Fr. II Tr.?	X Fr. II Tr.	VI Ferr.
Syria	III Gallica IV Scythi. VI Ferr.	III Gallica IV Scythi. VI Ferr.	III Gallica IV Scythi. VI Ferr.	III Gallica IV Scythi. VI Ferr.	III Gallica IV Scythi. ?	III Gallica IV Scythi. XVI Fl.	III Gallica IV Scythi. XVI Fl.	III Gallica IV Scythi. XVI Fl.
Cappadocia	XII Ful. XVI Fl.	XII Ful. XVI Fl.	XII Ful. XVI Fl.	XII Ful. XVI Fl.	XII Ful. ?	XII Ful. XV Ap.	XII Ful. XV Ap.	XII Ful. XV Ap.

Archaeological evidence also shows a smooth assimilation of Roman life and, for the most part, literary sources lack episodes of initial Nabataean ethnic assertion or internal dissent.<sup>109</sup> An exception is signalled by Dio, who says that Nabataeans participated in the fighting against the Romans in the Bar Kokhba revolt (132–136).<sup>110</sup> The majority of evidence suggests that, at least initially, the army fulfilled peace-keeping and building functions and primarily ensured a smooth transition of power.<sup>111</sup>

Beyond scattered inscriptions, little is certain about the first decades following annexation, including the activities and the position of the Roman army. A papyrus from Karanis in Egypt sent from a soldier in *Legio III Cyrenaica*, stationed at the time in Petra, attests that in the early years of the province the troops were engaged in construction and quarrying.<sup>112</sup> The date of this text coincides with the period when the *Via Traiana* was built.<sup>113</sup> This road was constructed, probably to facilitate military operations, from Bostra

<sup>106</sup> Greenfield et al. (1963); Meshorer (1975), 78–79.

<sup>107</sup> Bowersock (1982), 656; Graf (2001), 173; Roman sources do not reveal that senatorial status was ever granted to citizens of Nabataea.

<sup>108</sup> Graf (2001), 173. Cornelius Palma was, nonetheless, awarded with *ornamenta triumphalia* and a statue in the Forum of Augustus (Dio 68.16; *CIL* VI.1386 = *ILS* 1023).

<sup>109</sup> Wenning (1987), 305; Graf (2001), 180, 184. No extant evidence of destruction in towns but the Temple of the Winged Lions may have burned towards the end of Rabbel's reign: Hammond (1981), 34.

<sup>110</sup> Dio 69.13.2; Cotton (2003).

<sup>111</sup> This has been debated in Bowersock (1983) in 1996 ed. 79–82; Schmid (1997); Joukowsky (2003) 396–97.

<sup>112</sup> Kennedy (2000), 42.

<sup>113</sup> Kennedy (2000); Parker (1986), 5.





Figure 8. Coin RIC II Trajan 466 (sestertius), AD 103–111; Denomination: Sestertius; Mint: Rome; Obverse: IMP CAES NERVAE TRAIANO AVG GER DAC P M TR P COS V P P: Bust of Trajan, laureate, draped on left shoulder, right; Reverse: S P Q R OPTIMO PRINCIPI S C ARAB ADQVIS: Arabia, draped, standing front, head left, holding branch in right hand over camel, left, half hidden behind her and bundle of canes(?) over left arm in left. Retrieved from: numismatics.org, May 2017.



Figure 9. Coin RIC II Trajan 614 (sestertius), AD 112–114; Denomination: Sestertius; Mint: Rome; Obverse: IMP CAES NERVAE TRAIANO AVG GER DAC P M TR P COS VI P P: Head of Trajan, laureate, right; Reverse: S P Q R OPTIMO PRINCIPI S C ARAB ADQVIS: Arabia, draped, standing front, head left, holding branch in right hand over camel, left, half hidden behind her and bundle of canes(?) over left arm in left. Retrieved from: numismatics.org, May 2017.

to the Red Sea over an old Nabataean caravan route.<sup>114</sup> David Graf has convincingly shown that the first section of the road connected Philadelphia (Amman) to Petra, and was completed in 111; it was followed by the 125 km stretch leading from Petra to Aila (112). The northern sector connecting Philadelphia and Bostra was the last to be finished, in 114 (Figure 10).<sup>115</sup>

Despite its obvious importance, the southern sector connecting Petra to Aila is the one with the least evidence of a regular army presence; no inscriptions identify units permanently based in the south before Diocletian, even though it is plausible that either the Nabataean military or the Roman army itself occupied stations along the road.<sup>116</sup> According to multiple sources, the Roman army was stationed at forts along the eastern border by the time of Septimius Severus.<sup>117</sup> Elsewhere, the references are to single soldiers.<sup>118</sup>

<sup>114</sup> Isaac (1980), 889; Isaac (1989), 245. c.f. Strabo (16.4.24) describes how Aelius Gallus's mission failed in southern Arabia partially because of the poor road conditions.

<sup>115</sup> Graf (1997a), 31–32.

<sup>116</sup> Isaac (1990), 133.

<sup>117</sup> Humayma and Udruh forts. Kennedy (1980); Bowersock (1983), 118–20; Isaac (1989), 245; Gregory (1997), Figs 23–26; Isaac (1990), 131.

<sup>118</sup> An *equus* of the legion *III Cyr*. buried at Petra, probably early second century, Bennett and Kennedy (1978). An *equus* of the cohorts *I Augusta Thracum* buried at Mampsis (Kumub) in the Negev, probably beginning of the second century, Negev (1967) and Mann (1969). In Wadi Tuweiba near Elath an undated epitaph was found of a soldier of the legion *III Cyr*. *AÉ* 1972, 671; 1936.131.

We know more about the composition of the Roman army in Arabia than about its function or distribution. During the second and third centuries, Arabia was a *propraetorian* province with one legion of c. 5,000 men plus a roughly equal number of auxiliaries.<sup>119</sup> *Legio III Cyrenaica* was probably stationed in Bostra during most of that time, and could have reinforced garrisons in the forts, led patrols, and, according to Thomas Parker, ‘formed a strategic reserve behind the *limes*, as elsewhere in the Empire.’<sup>120</sup> *Legio X Fretensis* and *Legio VI Ferrata*, in Palestine, could have provided backup forces further west. After the fourth century, when the *Notitia Dignitatum* shows that the army in Syria and Jordan was mostly comprised of cavalry, the Romans probably also hired *foederati*—native officers who acted as mercenaries—to help guard posts or lead patrols.<sup>121</sup> These groups, although archaeologically undiscernible, are well attested in literary sources.<sup>122</sup>

Nabataean soldiers also became part of the Roman military garrison under the *cohorts Ulpiae Petraeorum*.<sup>123</sup> Trajan drafted six auxiliary units from the Nabataean army, consisting of *pedites* (infantry), *equites* (cavalry) and other contingents.<sup>124</sup> The appointment dates seem to coincide with the construction of the *Via Traiana* and Trajan’s preparations for the Parthian campaign of AD 114–116. Later diplomas suggest that Nabataean soldiers were drafted as replacements ‘for casualties suffered during conflicts, such as the Bar Kokhba revolt.’<sup>125</sup> Most *Petraeorum* units seem to disappear from Arabia after the second century but let us not forget that their archaeological imprint is indistinguishable from other Roman military units, and vice-versa. By the third and fourth centuries, some local Roman units were also manned by recruits from nomadic tribes.<sup>126</sup>

<sup>119</sup> Parker (1986), 9; Tacitus, *Ann* 4.5.6.

<sup>120</sup> Speidel (1977); Graf (1979); Parker (1986), 9. Units such as the *ala dromadatorum* in the northern Hejaz could have lead patrols.

<sup>121</sup> Poidebard (1934), 24; Parker (1986), 9.

<sup>122</sup> Jones (1964), 611–12; Graf (1978), 15–19; Shahid (1984), 498–510.

<sup>123</sup> Whittaker (1994), 58.

<sup>124</sup> Graf (2001), 176.

<sup>125</sup> Graf (2001), 176.

<sup>126</sup> Parker (1986), 9; Graf (1978), 15–19; *Not. Dig.* or. 28.17 *Equites Saraceni Thamudeni* at Scenas Veteranorum in Egypt, *Not. Dig.* or 32.27 *Equites Saraceni indigenae* at Betproclis in Phoenicia, *Not. Dig.* or. 32.28 *Equites Saraceni* at Thelsee in Phoenicia, *Not. Dig.* or. 34.22 *Equites Thamudeni Illyriciani* at Birsama in Palestine.



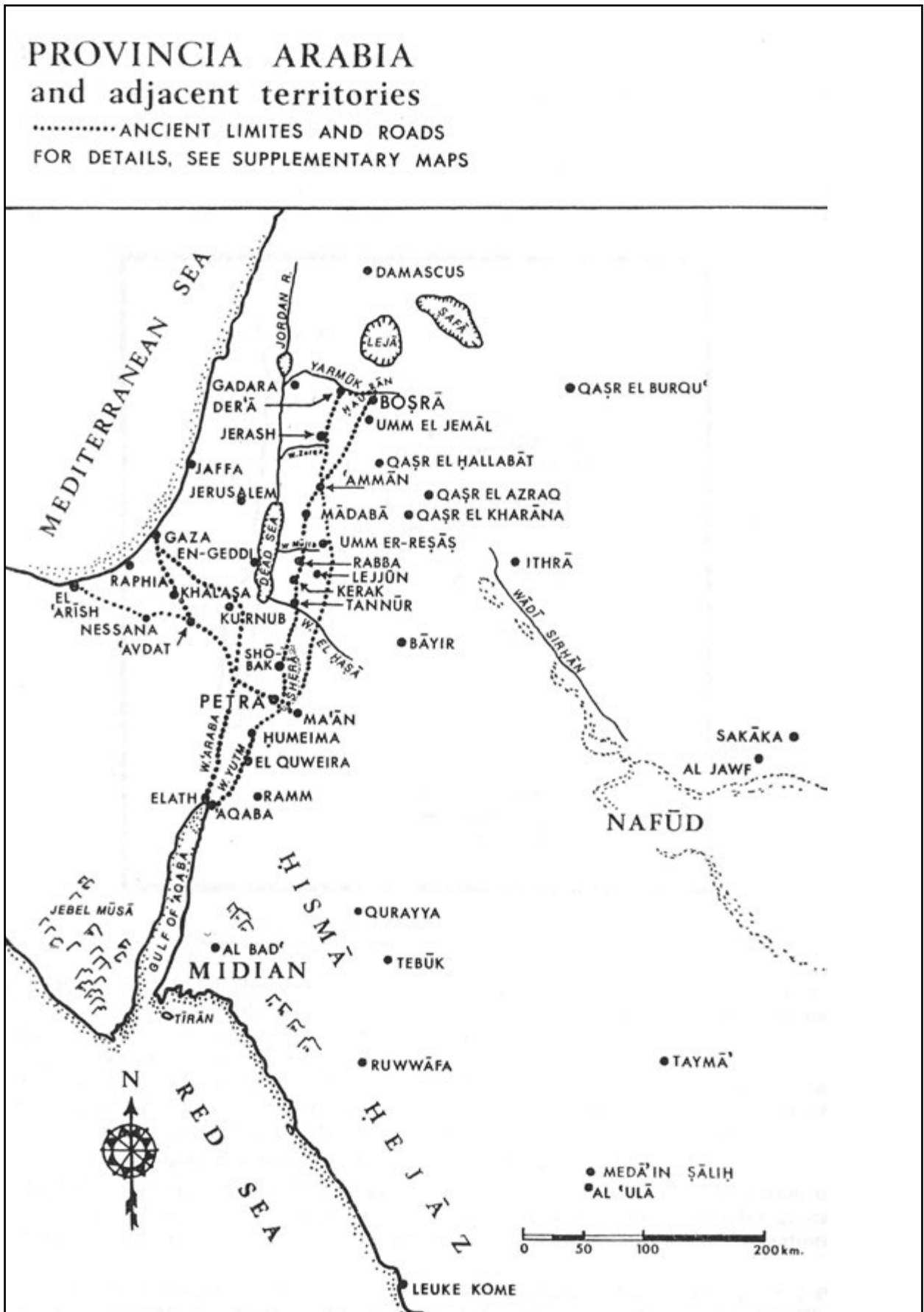


Figure 10. The Province of Arabia showing the *Via Nova Traiana*. From Bowersock 1971, Fig. 33.

### III. The Function of the Roman Army on the Arabian Frontier

The debate over the meaning of *limes* and the function of its associated structures is believed to be directly related to the role of the army in border zones, yet one should note that there is no absolute correlation between the three. Fortifications are normally thought to be the physical remains of military presence, but in truth their purpose is ambiguous. According to Gregory, the term ‘fort’ has been applied to structures ‘because they possess what are (in the opinion of the observers) various features of a fortification, such as hilltop sites, thick walls, projecting towers, slit windows’ or good road connections.<sup>127</sup>

Urice argues that the primary purposes of forts ‘is to defend a strategic position’ but, returning to Gregory’s point, buildings of ‘fortified appearance’ may have not functioned primarily as fortifications for the army, even when they seem defensible.<sup>128</sup> A building of ‘fortified appearance’ could also have served as a *caravansera*, residence, a church, or as any other building whose purpose includes ‘the protection of the occupants or goods within its walls.’<sup>129</sup> Adams has recently demonstrated the Tripolitanian *centenaria/qsur*—generally accepted as military structures—had nothing to do with the army.<sup>130</sup> *Centenarium* is a word associated with *centenum*, a kind of cereal. This considered, these structures were part of the agricultural system of the region and functioned as fortified granaries.

Then how can we distinguish the purpose of fortified structures or trace the presence of the Roman army? Fortifications can range from large cities to small towers. Their nature is to protect and defend the area enclosed but they can also function as part of larger schemes of frontier defence or internal security.<sup>131</sup> Legionary fortresses and large forts are known from historical sources and stamps, whereas the general military presence in an area can be inferred from tombstones of legionary soldiers, inscriptions, and coins. Archetypal military forts are more easily identifiable as they tend to have a small square enclosure with projecting towers.<sup>132</sup> Without the towers, their function as military forts is less certain.<sup>133</sup> Another underestimated method of differentiating the purpose of fortified structures is the analysis of their location and visibility. Chapter V considers this question.

In the east, the army is thought to have occupied existing infrastructure, particularly in cities and towns.<sup>134</sup> Purpose-built forts, on the other hand, were probably only constructed in remote desert areas, where they were needed. The use of towers has been questioned by Donaldson (1988) and Southern (1990), but studies in the Hawran confirm Butler’s suggestion that these fortifications probably ‘served as watchtowers and/or refuges against feuding neighbours and/or bands or raiding nomads.’<sup>135</sup> As most of the sites considered in this work have not been excavated, we must rely on surface collections, survey reports, and a landscape analysis of their strategic position to distinguish the purpose of fortified buildings.

Since most frontier areas have some sort of organised system of Roman fortifications, it is generally assumed that army deployments (or indigenous mercenaries under the Roman army’s control) occupied these structures and from there fulfilled their assigned roles. We have little literary evidence regarding the role of the army in Arabia during the Nabataean and Roman periods, but there is evidence of an extensive road network constructed by the Romans, a military presence at various points, and many fortifications

<sup>127</sup> Kennedy and Riley (1990), 163; Gregory (1997), 79.

<sup>128</sup> Urice (1987), 60–63; c.f. Isaac (1990), 172–173, 207.

<sup>129</sup> MacMullen (1966), 15; Urice (1987), 63; Gregory (1997), 79. Recent excavations at the fort of Ghandaral discovered a church (Robert Darby personal communication).

<sup>130</sup> Barker (1996); J. Adams (2007), 550–554; Munzi, Schirru, and Tantillo (2014).

<sup>131</sup> Gregory (1997), 79.

<sup>132</sup> Gregory (1997), 81.

<sup>133</sup> On Burqu fort: Betts et al. (1990), 4. See also Isaac (1993), 204.

<sup>134</sup> Confusion introduced by certain terms: *castellum* used in the *Not. Dig.* for almost every site, including cities, but also used by Caesar (*BG* II 29; III, 1) to describe native Gallic strongholds.

<sup>135</sup> Butler (1919), 126; Parker (1986), 145; Piacentini (1994), 124. See *contra* MacDonald (1993).

that seem to be part of an integrated system.<sup>136</sup> The purpose of the road system is also debated, but most scholars agree that the *Via Nova Traiana* was built to facilitate the movement of the army from Africa and Egypt into Arabia, Syria, and Palestine, and to connect the major administrative centres.<sup>137</sup> This is a reasonable explanation if we consider that Arabia was already lined with other unpaved roads efficiently serving the trade caravans and there was no indigenous need for a major paved road.

In the Eastern frontier of the Empire, scholars have understood fortified structures, namely forts and watchtowers, as (1) a tool of defence against nomadic incursions from the East (e.g. Parker), (2) an instrument of internal peace-keeping and control of local economy (e.g. Graf, Isaac, Whittaker),<sup>138</sup> (3) and/or as the official regulation posts of the incense trade routes (e.g. Young, Fiema, Fitzpatrick). Recent interpretations of the Roman frontier systems across the empire represent a shift from emphasis on the purely defensive role of the army and its structures to a focus on (4) the needs of 'internal security and the functioning of local administration and economy within the provinces,' prioritizing the latter two roles over the first.<sup>139</sup> This shift, as we have seen, ignores the overwhelming evidence of fortified and defensible systems along the frontiers and relies heavily on nuanced interpretations of literary sources. Whatever its role, it may be possible to quantify the relative success of the army in keeping the peace by measuring the growth of urbanisation and economic development along communication routes, especially in the transition from the Nabataean to the Roman and Byzantine periods.

### (1) The defensive system and the 'Nomadic menace'

In Arabia, the eastern frontier was delineated by a massive desert, and the only potential external danger lay in either the Parthian empire across the Anatolian and Northern Syrian border, or nomadic and semi-nomadic populations living in the Arabian Desert (later called 'Saracens').<sup>140</sup> Yet, according to several authors, Parthia did not actually pose a meaningful threat to the empire.<sup>141</sup> Whittaker argued that 'recorded Parthian attacks on Roman provinces over three centuries were only half the number of those launched by Romans on Parthia, and it is never proved that the Parthians took the initiative.'<sup>142</sup> Even when Romans reached thriving regions within the Parthian empire, normally not following a well-considered plan, they 'concluded that they could not incorporate it' due to its extent.<sup>143</sup>

On the other hand, and as far as we know, the eastern nomadic peoples did represent a menace, especially after the late third century. Episodes of sporadic and small-scale raiding by nomads, as well as robbing and smuggling, could have motivated the Romans to build and occupy forts, watch-towers, and road stations, more than Isaac, Millar, or Graf care to admit (see Descriptive Catalogue I).<sup>144</sup>

Millar has argued that the conflict between nomadic pastoralists and sedentary agriculturists was perceived as an endemic situation and that both worlds hardly ever met.<sup>145</sup> Isaac, Graf, and Klein also dismiss the 'Saracen' threat based on the stereotypical accounts of their lives, appearance, and activities.<sup>146</sup> These authors, on the other hand, have convincingly shown that some nomads became allies of Rome, either

<sup>136</sup> Isaac (1989), 245.

<sup>137</sup> Isaac (1990), 34, Borstad (2008).

<sup>138</sup> Judaeae parallels: Shatzman (1983).

<sup>139</sup> Fiema (1987), 261.

<sup>140</sup> Bowersock (1971), 227; Kennedy (1996), 9. Ammianus Marcellinus 22.15.2, 23.6.13. Graf (1977), 52–66; MacDonald (1995); Klein (2015), 15: 'Saracen' derives from the Arab word 'shirkat', which mean 'confederation.' The Saracens have been compared with modern Bedouin tribes (Parker 1986, 8–9), but, unlike these, the 'Saracens' (at least some of them) could write. Graf (1989), 359; MacDonald (1993): 140 tribal designations are attested to in the approximately 18,000 published Safaitic (Syria and NE Jordan) inscriptions alone, demonstrating that this was not a homogenous ethnic group. Likewise, there may have been many groups that lived in the same area and to the south that could not write, and therefore we have no trace of them. For the purposes of simplicity, I use the term 'Saracens' to refer to any nomadic group in Arabia living in the desert fringe that may have posed a threat to the Roman Empire.

<sup>141</sup> Kennedy and Riley (1990), 37; Millar (1993); Isaac (2000), 19–53, 161–218.

<sup>142</sup> Whittaker (1994).

<sup>143</sup> Kennedy (1996), 67–90; Isaac (1993), 108, (2000), Chapter I.

<sup>144</sup> Whittaker (1994), 137–138, 206; Isaac (1993), 109; (2000), 131, in opposition to Parker (1987a), 45; (1987b), 156; Brinnow and Von Domaszewski (1905), 1–176; Poidebard (1934), 197–201; Gichon (1986), 584–86; (2002), 185–96; see also Luttwak (1976). For North African parallel, see Speidel (1977), 724.

<sup>145</sup> Millar (1993), 435–436.

<sup>146</sup> Isaac (1984); Graf (1989); Klein (2015).

because their people were arbitrarily divided by the Roman frontier (e.g.: the Safaitic language group in Southern Syria and northeast Jordan, and the Thamudic language group in the Jordanian Plateau),<sup>147</sup> or because they were incorporated and/or coerced to do so. The extent to which nomadic people were affected by the annexation is debated, but I propose they must have been so to a considerable degree.<sup>148</sup>

The most popular view until the 1970s was that the Arabian frontier, misnamed '*Limes Arabicus*' at the time, was a double fortified system of defence for controlling and monitoring incursions by desert tribes passing through Arabia towards the Sinai and the Mediterranean basin.<sup>149</sup> In 1976, Bowersock argued that although there was no such thing as a 'fortified *line* of defence' (emphasis added), let alone an 'outer frontier,'<sup>150</sup> the *Limes Arabicus* could be interpreted as a whole region protected by a system that was adapted to the specific environmental and historical conditions of the province: 'The only through road in the whole area is the *Via Traiana*; fortifications and guard posts follow roads or wadis, exploit elevations, cluster round settlements, and protect unpaved tracks linking various sites.'<sup>151</sup> He still believed, however, that this system was essentially defensive.

Several scholars writing in the following decades, particularly Parker, continued to argue that the *raison d'être* for the construction of fortifications and army deployments, from the time of annexation until the end of the sixth century, was mainly defensive; i.e., meant to protect the sedentary population.<sup>152</sup> Parker maintained, more thoroughly than his predecessors, that the fortification and road systems—which were certainly linear—were meant to repel the 'Saracens' and to oversee the movements of tribes along the frontier, adding that military function was also closely linked to controlling natural resources and protecting trade routes.<sup>153</sup> This system, according to pottery collections from sites in Parker's survey area, reached its apex during the late third and early fourth centuries, after which it went into decline.

Parker's argument was received with criticism.<sup>154</sup> Anthropologist E. B. Banning argued, as Millar after him, for a social 'mutualism' between nomads and agriculturalists, saying that 'there was no ethnic conflict at all implying that all the Roman-Byzantine sites within the study area belong to a fairly homogeneous society with an agricultural base.'<sup>155</sup> Parker responded by restating that peaceful relationships existed precisely because the Roman government pursued an aggressive policy in 'monitoring and controlling the movement of Arab tribes' and repelling 'organized warfare against the settled population' (the latter firmly rejected by Banning and MacDonald in the 1990s).<sup>156</sup> Other reproaches, however, were not so easily refuted. Kennedy argued that the omission of certain military sites, particularly in the Wadi Araba, showed that Parker was willing to sacrifice data that did not function within his theory of a linear system of defence.<sup>157</sup>

Parker's suggestion of a defensive fortified system was particularly opposed by David Graf.<sup>158</sup> Graf stated that 'the conflicts with Rome were cases of *internal* strife, the product of inside resistance from subjects of the imperial realm,' and that 'the forts and garrisons strung throughout the province of Arabia are to be perceived as inward looking, not outward, monuments to the resistance of a rebellious citizenry to Roman imperial authority and administration.'<sup>159</sup> In numerous publications (c.f. Chapter III, Section 2), Graf uses historical and archaeological evidence to dismiss a 'Saracen threat' and, for the most part, his suggestions have been received with enthusiasm. Both Parker and Graf's views are rooted in the

<sup>147</sup> Whittaker (1994), 219.

<sup>148</sup> Isaac (1993), 110; Whittaker (1994), 214; Whittaker (2004), 182.

<sup>149</sup> Mainly Alt (1936), 37, 43–51; Gichon (1974); Gray (1973), 27; Speidel (1977), 688; Parker (1976), (1986).

<sup>150</sup> Bowersock (1976), 227–28; c.f. Mann (1979), 179.

<sup>151</sup> Bowersock (1976), 222.

<sup>152</sup> Parker (1976), (1986), 2, Parker (1991), 499. Parenti and Gilento (2008), 113. Scholars agree that the system was not meant to protect the province against large-scale invasions. c.f. Isaac (1989), 243.

<sup>153</sup> Parker (1986), 8–9.

<sup>154</sup> Supported in Isaac (1990), 68–77.

<sup>155</sup> Banning (1986), 44.

<sup>156</sup> Banning (1987), 53; Parker (1987a), 48; MacDonald (1993), 330–333.

<sup>157</sup> Kennedy (1992), 478.

<sup>158</sup> c.f. Isaac (1989), 243, (1990).

<sup>159</sup> Emphasis added. Graf (1989), 378–79, 400.

idea that the nomadic threat came from east of the frontier over the settled territory of the province. Their opposing arguments have frequently been seen in opposition: ‘the *external* threat’ and the ‘*internal* unrest.’

I would like to emphasise an alternative that was first upheld by MacDonald but seldomly recognised in the wider discussion about the Arabian frontier. If we accept that the *limites* of the empire were flexible, permeable, and open zones, then it is easier to understand that the nomadic tribes of the east were probably not a threat from the ‘outside’ but, instead, nomadic groups moving across the Roman and non-Roman Arabian landscape.<sup>160</sup> Perhaps, as Mayerson suggests, they were even an ‘integral part of the population that dwelt on the fringes of the *oikumene*.’<sup>161</sup>

This view is supported by several sources, such as the writings of Egeria, a peripatetic nun (ca. 385) who travelled through several Roman forts positioned in the land of the ‘Saracens;’<sup>162</sup> or the writer of the Nilus narrative, a Sinaitic hermit (ca. 400), who stated that the ‘Saracen nation’ ‘inhabits the desert from Arabia as far as Egypt’s Red Sea.’<sup>163</sup> MacDonald has also shown that nomads from the Safaitic language group had ‘considerable contact with the settled areas, and probably that some served in units of the Nabataean and/or Roman armies drawn from their tribes.’<sup>164</sup>

If the ‘Saracens’ were dwelling inside Roman-occupied land, as it seems they were at least occasionally, Parker may be correct in proposing a ‘Nomadic threat’ but wrong in their geographical setting. Also, Graf is wrong about what he primarily believes to be an ‘*internal*’ issue and therefore fails to dismiss Parker’s main hypothesis.<sup>165</sup> As Macdonald has pointed, ‘Graf has not proved that there was no ‘nomadic threat,’ he has merely transferred it a few kilometres to the west.’<sup>166</sup> We must establish at the forefront that the dichotomy present in both arguments is false and there is no such thing as an ‘external’ or ‘internal’ nomadic threat—nomads travel and therefore the threat they supposedly posed was both internal and external. It is possible, however, that this movement was limited to the fringes of the settled area, and that most of the nomadic life occurred in the desert.<sup>167</sup>

More importantly, in my opinion, Graf and others do not satisfactorily dismiss the extensive literary evidence supporting Parker’s argument (Descriptive Catalogue I).<sup>168</sup> First, Parker does not suggest that nomadic tribes ever intended to ‘invade’ the land, as Graf claims he does.<sup>169</sup> Instead, Parker clearly states that ‘the Roman frontier was not designed as a military barrier against the nomadic tribes... the objective was to monitor the movements and control the raids of tribes along the frontier.’<sup>170</sup> In fact, as suggested by the Tacfarinas revolt in AD 17, frontier systems often disrupted the pre-existing migration patterns and spatial organisation of nomadic groups. Also, the wall of Khatt Shebib in Arabia (discussed below) has been interpreted as a separation between the territory of the nomads and that of sedentary people.<sup>171</sup>

Second, raiding episodes of ‘local significance,’ dismissed by Graf and others but attested widely, could have impacted the functioning of the frontier and the role of the military.<sup>172</sup> It is important to note that in the 1990s much of the evidence about the nomadic-sedentary symbiosis was not available. As such, scholars such as Graf and Macdonald insisted on an interpretation of the frontier that was not focused on defensive purposes. More recently, Macdonald has written about nearly-fifty Safaitic inscriptions which

<sup>160</sup> c.f. Fentress and Wilson (2016).

<sup>161</sup> Mayerson (1986), 36, 39.

<sup>162</sup> CCSL 175.48: *fines Egypti intravimus, relinquentes iam terras Saracenorum*. Mayerson (1989), 72.

<sup>163</sup> Conca (1983), 12; CCSL 175.147 (Piacenza Pilgrim).

<sup>164</sup> MacDonald (2014), 145.

<sup>165</sup> c.f. Parker (1991), 499.

<sup>166</sup> MacDonald (1993), 338.

<sup>167</sup> As the epigraphic evidence for groups such as the Safaitics seems to suggest: Macdonald (1993).

<sup>168</sup> Which, ironically, he compiles attempting to dismiss them as episodes of local significance. Graf (1989). The same evidence is discussed in Isaac (1990). The limitations of archaeology for such historical reconstructions has frequently been emphasized (e.g. Shaw, 1980).

<sup>169</sup> Graf (1989).

<sup>170</sup> Parker (1986), 9.

<sup>171</sup> Kennedy and Banks (2015); Kennedy personal communication.

<sup>172</sup> Graf (1989), 350.

define the interactions between the nomadic and settled Roman populations of northern Jordan, some describing episodes of conflict, and many probably dated to first and second centuries.<sup>173</sup> Literary sources and epigraphic evidence record many episodes of high- and low-intensity warfare, as well as raids led by ‘Saracens’ along the eastern frontier from the pre-Classical period up to the Muslim conquest, but especially after the late third century.<sup>174</sup> While Graf also interprets these as periodic events or episodes of internal unrest, the written records assembled in Descriptive Catalogue I suggest a *milieu* in which the ‘Saracens’—either coming from the ‘inside’ or ‘outside’—represented a tangible threat to the security of local people, infrastructure, and trade.

Moreover, archaeological evidence displays dense concentrations of fortified posts, many built by the Nabataeans and re-occupied by Romans, overlooking—and in some cases within the entrances to—major wadi systems in Central Jordan.<sup>175</sup> The present study confirms a similar system in the south. This evidence pointing to a defensive system is denied by Isaac, who claims that forts, even those of the Nabataean period, tended to be badly sited for defence, and ‘their most obvious function is to serve as observation posts on supply lines for the maintenance of internal security.’<sup>176</sup> Graf also argues that there is no historical or archaeological evidence that the Nabataeans had significant confrontations with nomadic groups, and that the lack of such evidence makes it questionable that the location of Nabataean forts and watchtowers, later reoccupied by the Romans, were sited for defence. According to them, it would be a great coincidence if these fortifications were in positions suitable for that use during the Roman and Byzantine periods.<sup>177</sup> I would claim that the sparsity of epigraphic and literary evidence does not mean that the threat was not there during the Nabataean period, especially considering the number and genre of primary Nabataean sources, which were not particularly concerned with military topics.

Besides the debate about the validity of a defence system, the most debated premises of a frontier defensive system ‘hypothesis’ are those claiming a defence in-depth and a Diocletianic build-up. In these respects, Parker established several parallels with Edward Luttwak’s *The Grand Strategy of the Roman Empire*, mainly in agreeing that the Romans, as a direct response to constant external pressure, built linear and preclusive frontiers until the third century, and then built ‘in-depth’ frontier systems that aimed to neutralise enemy invasions on Roman soil after the third century.<sup>178</sup> Luttwak, as Parker, was severely criticised for his assumptions and generalisations, such as over-emphasising the forward defensive objectives of the frontiers (regardless of their location); the assumption that frontiers were fixed and identifiable; and that the Romans had a long-term expansionist plan for the whole empire.<sup>179</sup> Jill Mann, in the first influential response to Luttwak, argued that heavily patrolled linear defences, as theorised in *The Grand Strategy*, were not typical and could only have functioned for a brief period and in limited geographical areas (such as Britain, the Rhine, and the Danube). In the east and in North Africa, the widely-spaced system of forts or posts along the main routes of communication—a system surely incapable of opposing large forces—does not corroborate Luttwak’s proposition.<sup>180</sup>

Mann particularly questioned Luttwak’s idea of ‘defence-in-depth.’<sup>181</sup> According to her, a system ‘in-depth’ was only known in Arabia and no evidence suggested, as argued by Luttwak, that it evolved under Diocletian.<sup>182</sup> In truth, the theory of an Arabian ‘double *limes*’ or of a system ‘in-depth’ is still debated. Based on the observations of Poidebard, Brünnow, and von Domaszewski, twentieth-century reports described the Arabian frontier between Bostra and Ma’an as a double line of defence.<sup>183</sup> The inner line was

<sup>173</sup> MacDonald (2014).

<sup>174</sup> Parker (1987a), (1991), 503.

<sup>175</sup> MacDonald (1988); Parker (1986) 59, 135–143, (1987b), 43, 806–11, (1991), 530.

<sup>176</sup> Isaac (1993), 113, 120.

<sup>177</sup> Graf (1989); MacDonald (1993), 303, 313, 326–35.

<sup>178</sup> Both were inspired by Theodor Mommsen, who hypothesized that a frontier, as understood by Romans, would have had a dual structure consisting of two boundaries, one internal and one external. Parker (1986), 1; Mommsen (1888); Luttwak (1976), (2016).

<sup>179</sup> Mann (1974), 314; Luttwak (1976), 60. Millar (1993), 38–56, (1982); Potter (1996); Kagan (2006), 338.

<sup>180</sup> Luttwak (1976), 193; Isaac (1993); Whittaker (1994); Gregory (1997), 88.

<sup>181</sup> Mann (1979), 177.

<sup>182</sup> Mann (1979), 181.

<sup>183</sup> Brünnow and Von Domaszewski (1904–1906); Parker (1986); Poidebard (1934), 1–176; Bowersock (1971), 236–42.

formed by a chain of fortifications along the *Via Nova Traiana*, whereas the outer one ran 20–40 km east of the *Via Traiana* and was generally called the ‘*outer limes*.’ The last 100 km stretch of the southern frontier, entering the Hisma desert from Qana to Aqaba, differs from the other sections inasmuch as it was not guarded by a fortified zone but by a single line of forts.<sup>184</sup> Similarly, the work of Rothenberg appears to confirm that the Wadi Araba, to the east of the *Via Nova Traiana*, was not another line of defence but probably a Roman and Byzantine route sparsely dotted with forts and towers.<sup>185</sup> The results of this study suggest that, at least after the late third century, there were two lines of occupied fortifications: one running along the *Via Traiana* and, as observed in twentieth century by early explorers, another one to its east (see Chapter IV).

Gichon suggests that the depth of these fortified zones was limited by the harsh climate.<sup>186</sup> Alternatively, Parker explains the differences of depth in the south and north in relation to settlement patterns: the Hisma—comparatively lacking sedentary populations—did not require an in-depth system of defence but only a localised monitoring system of the caravan traffic.<sup>187</sup> Also, after successfully crossing these fortifications, raiders would be faced with either the Wadi Araba, the Northern Negev, or the southern Palestinian *limes*, all of which would limit their success. Graf, on the other hand, claims that there was no depth to the fortified frontier and that a double *limes* is an illusion. Instead, he argues that the single frontier line was supplemented by a peaceful alliance with the Thamudic tribal confederation at Hegra (Madi in Salih), in the Hisma desert.<sup>188</sup>

This alliance is confirmed by an inscription from the temple at Ruwaffa (to the northwest of Hegra), dated to the governor Claudius Modestus (AD 167–169) in honour of the Emperor Marcus Aurelius, which indicates that the Romans had entered an arrangement with this important confederation, perhaps in the form of the conventional client-treaty.<sup>189</sup> Graf again seems to mistakenly conclude that because there was no visible system in-depth, and because the Romans established a successful alliance with the Thamudic confederation, the Romans must have maintained peaceful relations with *all* nomadic tribes.<sup>190</sup> He ignores that there is no proof that all tribes were part of this confederation, nor any that the alliance actually employed native ‘Saracens’ to strengthen frontier defences.

We must accept, however, that client kings and tribal alliances, especially during the Republic and Early Principate, fulfilled an important role in defending the empire’s borders.<sup>191</sup> These were vassals who had ‘become ‘friends’ of Rome either of their own accord or by the use of force,’ and were considered an integral part of the empire.<sup>192</sup> It is well attested, for example, that during the sixth century the Jafnids supported the *limitanei* army against the attacks of other Arab tribes.<sup>193</sup> Some scholars even argue, including Eadie, that ‘a strategy based on traditional diplomacy, which the Romans had routinely employed in the East, would have provided all the security required at a much lower cost.’<sup>194</sup> In North Africa, this appears to be the case. The local African populations formed alliances and actively assisted in controlling borders, arguably in a more cooperative manner than in Arabia.<sup>195</sup>

In southwestern Cyrenaica, near Ghemines, several crudely-built forts were surrounded by autochthonous settlements and have been interpreted as checkpoints to protect the main roads.<sup>196</sup> Tripolitana lacked a distinct defensive system during the first and second centuries—although there were forts in the

<sup>184</sup> Parker (1986), 6.

<sup>185</sup> Rothenberg (1971), 220–21 *contra* Gichon (1980), 852.

<sup>186</sup> Gichon (1967), 50.

<sup>187</sup> Parker (1986), 6.

<sup>188</sup> Graf (1978), 10–12.

<sup>189</sup> Eadie (1985), 415; Isaac (1993), 111.

<sup>190</sup> Graf (1978), 20, (1989), 343.

<sup>191</sup> Mann (1979), 175.

<sup>192</sup> Isaac (1990), 26; Troussset (1993), 115;

<sup>193</sup> Lewin (2011), 260.

<sup>194</sup> Eadie (1985), 416.

<sup>195</sup> Wells (1991), 479; Parker (1986), 157.

<sup>196</sup> Goodchild (1951), 131–144.

region—possibly because Rome largely maintained good relations with the Garamantes to the south.<sup>197</sup> After that time, native fortified settlements and *limitanei* deployments seem to have constituted much of the defence.<sup>198</sup> Algeria, although protected by a line of fortifications, was also defended by nomadic Saharan tribes in the more peripheral zones.<sup>199</sup>

It is unlikely that all the nomads were persistently engaged in open conflict with the Romans. Macdonald has presented enough epigraphic evidence to support this claim, concluding that ‘the vast majority of the [nomads’] time and attention was spent in the concerns of the desert, stock-raising, the occasional raid on another tribe, seasonal migration, the search for water and pasture and their relationships with family and friends.’<sup>200</sup> Nevertheless, it is also important to remember that the concept of Roman frontier defence includes both archaeological evidence and enduring alliances, pacts, and spheres of influence. This does not mean, of course, that all peoples in the fringes of the Empire maintained peaceful interactions with the Romans within.

## (2) ‘Internal’ control, protection and administration

Documentary finds from Vindolanda, Egypt, and Dura-Europos in the last fifty years have refined our assumptions that fortifications were exclusively used as defensive outposts.<sup>201</sup> These documents reveal the everyday administrative and policing functions of the army across Roman frontiers and attests the existence of various types of soldier-police, most officiating under the authority of the local governor.<sup>202</sup> These extraordinary sources have been embraced by a branch of the anti-strategy school who do not see the ‘Nomadic menace,’ nor the Parthian threat, as an acceptable explanation for the location and dispositions of forts along the eastern frontier.<sup>203</sup> In the most famous review of Parker’s work, Graf criticises the ‘Saracen theory’ as a modern construct, obscuring the possibility that internal factors—mainly indigenous opposition to Roman rule—account for the build-up of fortifications in central and southern Jordan.<sup>204</sup> However, according to Wheeler, this ‘view assumes that maintenance of internal security did not involve strategy, that an army cannot serve two functions, and that offensive operations in non-Roman territory must be solely adventurism devoid of any strategic or rational function.’<sup>205</sup>

The proposal made by Graf had also been argued by Shatzman and, forcefully, by Isaac. They refuse the idea of an in-depth defensive system—especially in the southernmost end of the frontier—or even that the Romans were capable of thinking defensively. Instead, they focus on the internal peace-keeping functions of the Roman army.<sup>206</sup> Roman ideology, according to Isaac, though based on limited intelligence, was more about the business of securing occupation and furthering expansion than about defence.<sup>207</sup> The army in Judaea and Arabia was mainly one of occupation (i.e., tasked with maintaining the conquered territory and ensuring authority and prosperity), different in form and function from those of expansion based on the Euphrates.<sup>208</sup> Neither, claims Isaac, was particularly concerned with frontier defence.<sup>209</sup> Important to his argument is that the choice of military frontiers was never dictated by the desire to establish a rational frontier system. Rather, frontiers were frozen forward lines of advance that could be held peacefully after a region’s subjugation.<sup>210</sup> Accordingly, military structures cannot be interpreted in terms of strategy and tactics, and the functions of the military must have been influenced more by times of peace than of war.<sup>211</sup>

<sup>197</sup> Mann (1979), 180; for a synthesis see Mattingly (1995).

<sup>198</sup> Goodchild and Ward-Perkins (1949), 81–95; c.f. footnote 57.

<sup>199</sup> Baradez (1949), 130–149.

<sup>200</sup> MacDonald (1993), 346.

<sup>201</sup> Rostovtzeff (1943); Welles (1959); Abinnaeus (1962); Fink (1971); Bowmann and Thomas (1983).

<sup>202</sup> Fuhrmann (2014), 202.

<sup>203</sup> See Banning (1987), 52; Isaac (1984), 185–91; (2000), 173–75, 408–9; Mayerson (1986), 43; Graf (1989), 392–400; (1978), 19; Whittaker (1994), 121; Harper (1995), 115; Fiema (1995), 267; Magness (1999), 204; Ball (2000), 32.

<sup>204</sup> Graf (1991), 153–4.

<sup>205</sup> Wheeler (2007), 237.

<sup>206</sup> Shatzman (1983); Isaac (1980), (1984), (1989), (2000), 170–1; *contra* Wheeler (2007), 237.

<sup>207</sup> Isaac (1990), 19–53, 377–87.

<sup>208</sup> Isaac (1990), 101, 103.

<sup>209</sup> Isaac (1990), 387–94.

<sup>210</sup> Isaac (1990), 418.

<sup>211</sup> Isaac (1990), 418.



According to these authors, the first immediate function of the army after annexations was probably to assure a smooth transition of power. Literary evidence hints (although vaguely) that several internal problems arose after the annexation of Arabia, perhaps also indicating why the former Nabataean kingdom was not reorganised as *redacta in formam provinciae* until AD 111–112.<sup>212</sup> Ammianus mentions that Arabia ‘was given the name of a province, assigned a governor, and compelled to obey our laws by the emperor Trajan, who, by frequent victories, crushed the arrogance of its inhabitants.’<sup>213</sup> The language implies that, as understood by Ammianus in the fourth century, Nabataea was forcefully annexed after considerable resistance.

Some scholars suppose that Roman relations with local Arab peoples were ‘less than amicable’ during imperial occupation.<sup>214</sup> Undated Safaitic graffiti from the Hawran mention the ‘rebellion of Muharib against the emperor,’<sup>215</sup> as well as several pre- and post- annexation tribal encounters where tribesmen and their chiefs refused to recognise what appears to be ‘Roman’ authority.<sup>216</sup> Taken together with the inscription citing ‘the year when the Nabataeans revolted against the people of Rome,’<sup>217</sup> it appears that internal resistance and violence could justify the army’s presence and intervention, particularly considering how the Romans reacted to similar events in Judaea and Egypt.<sup>218</sup> Graf proposes that the reason for brigandage and rebellion must have been, as it was in Lebanon, Judaea, and southern Syria, about ‘the burdens of taxation, forcible military conscription, extortion, and requisitioning without compensation.’<sup>219</sup> Similarly, Talmudic sources also portray the Romans as greedy exploiters, but it is hard to say how much of the turbulent Judaeen relationship with Rome can be extrapolated into Arabian-Roman contacts.<sup>220</sup>

Presumably, the Roman army helped prevent and subdue these revolts in Arabia, as it did in other parts of the Empire. It also provided protection, shelter, and escorts against robbers, bandits, and smugglers.<sup>221</sup> These policing functions of the imperial army are well attested in primary sources. Fuhrmann and others have written at length about detached soldiers sent to the provinces to defend the strategic interests of the Empire, which involved protecting state property, collecting taxes, and controlling warring regions.<sup>222</sup> The detached military-police included several designations: the *beneficiarius* (regulated traffic on roads, collected taxes, and served as custom officers from *stationes*, their policing functions were secondary to their administrative purpose);<sup>223</sup> the *stationarius* (surveillance of movement and resources, guarantee security, generally used as a term to denote guard duty);<sup>224</sup> and the *regionarius* (essentially, they performed the same functions as *stationarii* but *regionarii* were centurions and not regular *milites*).<sup>225</sup>

<sup>212</sup> CIL III 14176.2–3; CIS V 4866; Safaitic inscription reported on by H. Zeinaddin in an unpublished paper entitled ‘Al-‘alāqāt al-ṣafā’ iyyah al-nabaṭiyyah min hilāl al-kitābāt al-ṣafā’ iyyah wa-ḍikr al-malik malik al-ṭāliḥ malik al-anbāt’ given at a conference in Petra 29–31 October 2002. Graf (1978); Eadie (1985); Fiema (1987), 107; c.f. Numismatic evidence of ‘Arabia Capta’ could have served as propaganda. Eadie (1985), 411.

<sup>213</sup> Amma. Marc. XIV, 8.13.

<sup>214</sup> Eadie (1985), 107.

<sup>215</sup> Winnett (1957), no 281, 287. Probably during the ascension of Rabbel II, before annexation.

<sup>216</sup> CIS 5.1 (1950), nos 1292, 4438 (‘Awidh’); 1952 (Da’fa’); 2802 (Qamar); cf 3064, 3688, 3721. See MacDonald (1993), 330–333 for the problematic translation of ‘Roman’ from these sources.

<sup>217</sup> WH 2815.

<sup>218</sup> About ethnic violence in Alexandria see Josephus, *B. Jew.* 2.487–498.

<sup>219</sup> Graf (1989), 380–40 *contra* Parker (1991), 499, 502. For general discussion and bibliography see Campbell (1984), 246–254.

<sup>220</sup> Avodah Zarah v.6; Eruvin, III 5; c.f. Deuteronomy, 32:14.

<sup>221</sup> Escorts: Egeria, *It. Eg.* 6.1–2, 9.3; Coptos Tariff (Egypt); Gichon (1974), 135. Newly acquired territory: Tac. *Ann.* XI, 17. After rebellion: Josephus *B. Jew.* IV, 444–449. Bandits: Isaac (1984), Blumell (2007); Apuleius’ *Metamorphoses* 7.4, 12, 13, 8.15; Suetonius, *Nero* 30; Seneca, *Epistulae* 87.1–4; 123.7; Luke 10. Shelter/*Mansiones*: IGLS v, 2704 from Khan el-Abyad; Ad Dianam see Isaac (1989); Egeria, *It. Eg.* 7.2

<sup>222</sup> Fuhrmann (2014).

<sup>223</sup> Fuhrman points that ‘the *stationes* they typically served were not imposing fortresses and were not necessarily fortified at all or even fixed in one recognizable and specialized building. *Statio* need not refer to a particular structure where outposted *beneficiarii* did their work; it could just as well denote the general presence of a *beneficiarius consularis*, with whom certain travellers and traders would need to check in’ (2014), 205. Von Domaszewski (1967); Rankov (1987); Schallmayer et al. (1993); Aubert (1995); Nelis-Clément (2000). On tax collecting in Egypt see: *P. Petaus* 34.7; SB 6.9409.3; *P. Oxy.* 14.1651.13, 20.2286.2, 36.2794.4, and 36.2797.2.

<sup>224</sup> Pliny, *Ep.* X. 19–22; Suetonius *Aug.* 32; Isaac (1990), 113; SB 6146, 6147, 7979; SB 6143; SB 1584; Pselchis = BATlas 81 C2; Amm. Marc. 18.5.3, describing guards on the eastern frontier; cf. O.BuNjem 2, 7–10, 25–26, 28 (AD 253–259). *Milites stationarii* in late antiquity: Lucernoni (2001), 79–120; Hirschfeld (1891), 598; Jones (1964), index; and MacMullen, *Soldier and Civilian* (1963), 55–65.

<sup>225</sup> They were also the receipt of petitions from villagers, for example: SB 6.9238 (Arsinoite, between 198–211); *P. Harr.* 2.200 (Philadelphia, AD 236). On the control of movement see: O. *Claud.* 50–73, 80–82; C.Th. 8.5.1; C.Th. 4.13.2; C.Th. 8.4.2. Kaper (1998); Bülow-Jacobsen (1998), 69–72; Peachin (2007); Fuhrmann (2014), 215.

<sup>225</sup> *BGU* 2.522; *P.Gen.* 16 (= *Sel.Pap.* 2.289); *P. Tebt.* 2.333; Eusebius *Hist. eccl.* 6.41.21.

In Egypt, Judaea, and Arabia we find physical evidence to suggest a well-structured system of garrisoned posts and watchtowers along the major highways, seemingly for regional policing purposes.<sup>226</sup> Especially after the late first century, the number of military watchposts increased on the frontiers, near cities, and in rural regions, as well as in private estates.<sup>227</sup> Antoninus Pius, in the mid-second century, boasted of building twelve watchtowers, four military encampments, and 109 guard posts in order to protect the province of Thrace alone.<sup>228</sup> Often, soldiers occupied these structures and from them performed their duties, but many times they seem to have been manned by drafts of impressed civilians, all, in any case, under the supervision of centurions.<sup>229</sup> Their main duties are briefly expanded in the following paragraphs.

In 200, Tertullian noted that *stationarii* were distributed throughout all provinces for the searching out of bandits,<sup>230</sup> and a third-century papyrus from Bacchias in the Fayum mentions army officials called ‘bandit-catchers;’ Libanius, in the fourth century, corroborates their existence.<sup>231</sup> Dio confirms that soldiers in Germany in the first century were employed in guarding roads, escorting provisions, and arresting bandits.<sup>232</sup> Civilians on whom guard duty was imposed as a *corvee*, such as the *skopelarioi*, also manned small forts and served similar functions.<sup>233</sup>

Another important part of policing the Arabian landscape must have been controlling the waterpoints. Making an analogy between the Eastern desert of Egypt and Arabian desert, in the former, watchtowers and signal stations were often used to protect water points and oversee water consumption.<sup>234</sup> Occasionally, we find water holes that were themselves fortified, again demonstrating the importance Romans bestowed on water in arid regions. In Arabia, the evidence for a direct correlation between the military and water security is thinner: a fourth-century inscription records a Saracen ambush on the soldiers protecting the area while they were fetching water and, afterwards, the Romans built a water supply system for an *agraria statio* along the Roman road from Salkhad to Azraq.<sup>235</sup> Common sense dictates that to fulfil these policing roles, the army had to be stationed near waterpoints or at *praesidia/phrouria* (police stations) whence it could have deployed regular mobile patrols, as attested at Qasr al-Uweinid in northern Jordan.<sup>236</sup>

Graf, Isaac, and others have also emphasised that, beyond peace-keeping, the Roman army also served administrative and taxation functions for ‘the local economy and socio-political affairs of indigenous populations living under Roman rule.’<sup>237</sup> Some of these roles included laying down new roads, regulating traffic, and helping to settle boundary disputes.<sup>238</sup> Generally, these functions were probably carried out from cities, but military structures were also known centres of civilian administration.<sup>239</sup>

Nomadic seasonal migrations, in particular, could have been an excellent opportunity to tax the non-sedentary population, and another reason to control the movement of nomads.<sup>240</sup> Recent analyses of the Wadi el-Hasa and the region of the Humayma—located on hilltops in the vicinity of roads and along

<sup>226</sup> Tertullian, *Apol.* 2.18; MacMullen (1966), 259; Gichon (1974), 527; Isaac (1984); Blumell (2007), 12.

<sup>227</sup> See MacMullen (1963), 37–42; Isaac (2000), 136, 178–86; Austin and Rankov (1995), 66; Sperber (1998), 121, 126–27, 154–55. On precedents from ancient Judaea, see Williams (1997), 17–18. Although they were exceptional, note the fascinating fortified water holes, watchtowers, and signal stations that the Romans constructed in Egypt’s eastern desert from the late first century on, discussed by Zitterkopf and Sidebotham (1989) and Bagnall, Bülow-Jacobsen, and Cuvigny (2001).

<sup>228</sup> *ILBulg.* 211 (= AE 1957, 279): *ob tutelam provinci(ae) Thraciae*; see also the very similar AE 1927, 168, and cf. *CIL* 3.3385; *RIU* 5.1127–37; *CIL* 8.2494–95, all from the mid-second to early-third centuries. Talbert (2004), 28.

<sup>229</sup> Bagnall (1976), 23–27; (1977); *P.Fay.* 38; *ILS* 8909; *IGBulg.* 3.1690; *IGBulg.* 3.1690e; *O.Amst.* 8–15.

<sup>230</sup> Tertullian, *Apol.* 2.8.

<sup>231</sup> *BGU* 1325= Königliche Museen (1895), 317; Libanius *Orationes* 25.43.

<sup>232</sup> Dio 56.19.1–2.

<sup>233</sup> Lewis (1968); Isaac (1990), 113.

<sup>234</sup> Zitterkopf and Sidebotham (1989); Bagnall, Bülow-Jacobsen, and Cuvigny (2001).

<sup>235</sup> Iliffe (1942), 62–4. See Kennedy (1984) for the site.

<sup>236</sup> Isaac (1989), 252. At Qasr al-Uweinid an inscription has been found which records the construction of a ‘*castellum et praesidium Severianum*’ and a bath house (Kennedy 1982, 125, no. 20).

<sup>237</sup> Graf 1989; Isaac 1990; Wells (1991), 478.

<sup>238</sup> On boundary disputes, see, *CIL* 8.23910; on military surveyors, see Campbell (2000).

<sup>239</sup> Isaac (1990), 101–160, 269–310; Gregory (1997), 91.

<sup>240</sup> *CIL* 8.4508, c.f. 18643; Wells (1991), 478.

the ecological boundary—suggests that the fortifications were there to control movement.<sup>241</sup> The same concern is observed in several documentary sources, including a fragmentary tax document from Zarai (Afixa) which shows the standard taxation rates applied to those entering or leaving the area.<sup>242</sup> In relation to local tribes, in particular, the army probably acted as a liaison between parties, and monitored, controlled, and maintained the regular transhumance routes.<sup>243</sup> The construction of towers along the Jerusalem-Jaffa road dates to periods of relative peace, perhaps indicating that these were built with the specific intention of policing the roads for pilgrims and other travellers on their way to Jerusalem.<sup>244</sup>

Rushworth argues for the view of desert barriers as part of a strategy to control nomadic movements, emphasising the African examples.<sup>245</sup> His views are in line to those of Isaac and Graf, who claim that frontiers were part of a system of surveillance of travellers and merchants, and that towers and forts were meant to provide shelter or detect small groups passing across the line of the roads. Rushworth's proposition is based on the observation that although towers and forts in the African frontier were not closely spaced or aligned, they did not have to be so, as their functions were modulated by topography and routes rather than by a grand strategy. In Arabia, both the topography and routes are aligned along a North-South axis emphasised by the path of the *Via Nova Traiana*, so the linearity of the system seems to be mainly a product of functionality.

It is important to note that the provincial governors were generally responsible for tax collection and public order, not the army. Outside cities, they officiated from the *praetoria*, fortified buildings used on official journeys that were guarded and administered by soldiers.<sup>246</sup> In Egypt, tax collection did indeed fall to civilian administrators, such as the governors, but in other places, far from cities, the Roman military seems to have officiated these tasks.<sup>247</sup> The fort of Qasr Bashir, for example, is identified by an inscription of AD 293/305 as a '*castra praetorii Mobeni*,' a fortified *praetorium*.<sup>248</sup> According to Isaac, 'where a *praetorium* is found on a road, we must expect the full organisation of the *cursus publicus*, which included *stationes*, *mansiones* and *mutationes*, familiar from the *itineraria* in East and West and from the *Theodosian code*.'<sup>249</sup> The implication is that the army could have provided occasional shelter along with its administrative facilities. In this sense, the *praetoria*, such as the one at Humayma (Figure 11), were important checkpoints along busy roads and built with the intention of collecting taxes (perhaps seasonally).

As for other administrative roles, Strabo's friend Athenodorus of Tarsus reported that the Nabataeans were extremely well-governed by the local elite and, supposedly, tribal organizations and assemblies.<sup>250</sup> Strabo does not, however, mention the role of military in most other legal issues. As shown by Terpestra, the military intervention in such matters would have been 'random and arbitrary,' and trade and other contracts must have been guaranteed by personalized networks.<sup>251</sup>

The spatial analysis discussed in Chapter IV shows that perhaps the arguments for and against an internal unrest 'hypothesis' are more complicated than Parker '*et al.*' or Graf '*et al.*' care to admit. Parker has argued that because the army was not spread out in the landscape, it could not have controlled the sedentary population. Yet native Arabians—former Nabataean subjects—were, for the most part, not dispersed across the Transjordan. Most sites (either military or not) are concentrated on a thin corridor highlighted by the path of the *Via Traiana* and the frontier system of forts and watchtowers. Thus, once again, it is difficult to distinguish between *internal* or *external* functions of the Roman army. Occasionally, there are sites to the east of this corridor, but these are relatively rare. To the west, the Wadi Araba

<sup>241</sup> Cook (2004), 159–160; Clark, Koucky, and Parker (2006).

<sup>242</sup> *CIL* 8.4508; c.f. *OCIS* 11.3, 391 3; *IGRR* 3, 1056; *P. Tebt.* 703, ll. 165–74; *Monumentum Ephesinum* (SEG 39, 1180); Mathews (1984); Millar (1993), 325.

<sup>243</sup> Sartre (1982), 126–131.

<sup>244</sup> Isaac (1990), 107.

<sup>245</sup> Rushworth (1992), (2000).

<sup>246</sup> The connection with Roman military roads is particularly clear in an inscription of AD 61 from Thrace: *CIL* iii 6123 (14207.34); Pflaum (1940), 354–362.

<sup>247</sup> Cherry (1998), 55, 66.

<sup>248</sup> *CIL* iii.14149; Brünnow and Domaszewski (1905), 58; Isaac (1989), 251. Chronology: Barnes (1982), 4.

<sup>249</sup> Pflaum (1940), Chapter 7; Pekáry (1968), 164–167; Fuhrmann (2014).

<sup>250</sup> Strabo, 16.4.21. Tr.; Wenning (2007), 34; Terpestra (2011), 105.

<sup>251</sup> Terpestra (2011).

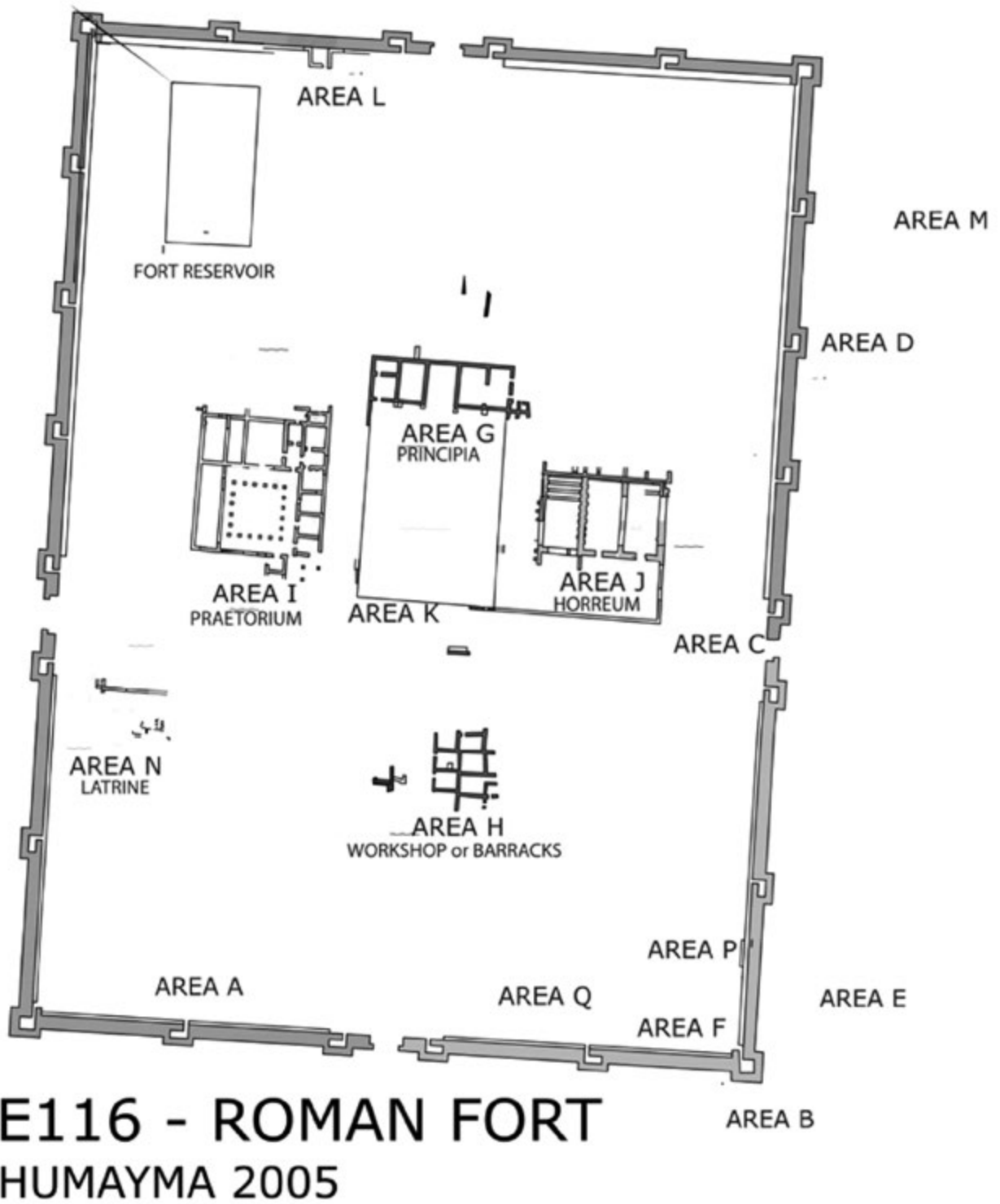


Figure 11. Plan of the Humayma fort and its internal buildings. From Oleson et al. 2008.

sometimes yields military posts and smaller settlements but, until reaching Judaea, Arabia was mostly devoid of permanent settlements. Strabo described a parallel scenario in relation to the nomadic tribes, confirming that the nomads lived in remote areas from the settled regions. Procopius confirms this statement six centuries later, saying that ‘A wholly empty and sterile land forms the boundary between the Romans and the Persians’ and they did not fight each other because neither had something that the other might have wanted.<sup>252</sup>

The ‘internal unrest’ view dismisses the plethora of literary sources describing the nomadic threat and uses negative evidence to argue that the military were not stationed in the desert (i.e., in areas away from internal unrest).<sup>253</sup> It also offers a simplified interpretation of the complicated reality of the Arabian frontier and most of the evidence supporting its arguments either comes from Judaea or Egypt. On the other hand, this view provides sufficient reason to believe that the army also functioned in a capacity of internal policing, administration, and tax collecting. At the very least, Fuhrmann preposition becomes decidedly believable:

The very fact that soldiers were assigned to these various administrative tasks may imply imperial concern to protect Roman interests in the provinces with military authority and certainly indicates the possibility of direct coercion in the enforcement of state regulations.<sup>254</sup>

### (3) The incense and Red Sea trade routes

All the arguments presented so far recognise the importance of the incense trade routes in Arabia and the role of the army in safeguarding them.<sup>255</sup> Yet the control of these trade routes and the profits they generated are hardly acknowledged as the primary reasons for the supposed continued military intervention along the eastern frontier, especially in the southern sector between Aila and Petra. This is worth considering, particularly if trade was a major sector of Rome’s economic activity and if the trade of aromatics and other *luxuria* was indeed the primary appeal of the East.<sup>256</sup>

Frankincense and myrrh, which made up the bulk of cargoes travelling across Arabia, were produced in the regions surrounding the Gulf of Aden.<sup>257</sup> Both substances—used as offerings to the gods, medical treatments, and perfumes—were highly prized and afforded a value similar to precious metals and gemstones.<sup>258</sup> A typical cargo travelling across Arabia and into Nabataea would also have carried spices, ‘ud, and other aromatics. Simultaneously, sailors from India delivered metals, corals, wine, glass, frankincense (a native product of India), Chinese silks, bdellium, and nard.<sup>259</sup> In the sixth century, Tomotheos of Gaza wrote that elephants and giraffes were also transported from Aila to Gaza across the Nabataean Negev, but this may not be representative of early or middle imperial shipments crossing Arabia.<sup>260</sup>

Commercial routes in the east were part of a highly organised and interconnected network.<sup>261</sup> The Egyptian Nicanor Archive mentions twenty trade firms, at least twenty-five businessmen, and nearly thirty commercial agents operating in Coptos alone between AD 6–62.<sup>262</sup> Along the maritime routes, small vessels sailed from Yemen (Arabia Felix) in the direction of the Red Sea or the Persian Gulf, destined for the large urban markets of the Mediterranean and Mesopotamia.<sup>263</sup> At the same time, camel caravans

<sup>252</sup> Strabo, 6.4.2 (288); Procopius, *De Aed.* 2.8.4–6.

<sup>253</sup> Isaac (1990), 131–132.

<sup>254</sup> Fuhrmann (2014), 206.

<sup>255</sup> Parker (1986), 2.

<sup>256</sup> For an extensive analysis of current scholarship and bibliography on Roman trade, see Wilson (2018).

<sup>257</sup> Aromatic trees grow in Hadramawt, eastern Dhufar, and in the province of Mahra. Zayadine (2001), 201.

<sup>258</sup> McLaughlin (2010), 61.

<sup>259</sup> Zayadine (2001), 212; Van der Veenn and Morales (2014).

<sup>260</sup> Timotheos of Gaza, *On Animals* 24.2.

<sup>261</sup> Markets and suppliers included the Axumite Kingdom in Ethiopia, the Somali markets (Far-side ports according to Periplus), the Homerite kingdom (Arabian coast of the Red Sea), the Homerites and the Sabaeans in Aden, Hadhramaut kingdom (controlling the port of Qana and the best frankincense producing territories of Arabia). For a detailed description see Zayadine (2001), 210.

<sup>262</sup> See also *Periplus Maris Erythraei* 15–16. Discussed in Casson, (1989) 134–6.

<sup>263</sup> McLaughlin (2010), 61.

crossed the Arabian desert to converge on the same regions. According to Pliny, merchants departed from Timna, in southern Arabia, and travelled during the night for about 2200 km until they reached Gaza on the Mediterranean coast.<sup>264</sup> He also noted that this road included 65 stations which provided caravans with shelter, water, food, and other amenities.<sup>265</sup> Modern estimates suggest that the journey took seventy to ninety days, provided the caravans met with no serious delays or detours.<sup>266</sup>

Large trade hubs, such as Petra, were in a good position to control and tax these trade routes.<sup>267</sup> The Nabataeans, after taking over the spice trade from the Minaeans in as early as the fourth century BC, became the middlemen of this lucrative commerce and grew rich by facilitating traffic through Petra (Figure 12).<sup>268</sup> They controlled the caravan routes from south Arabia—including those passing through Wadi Sirhan and those leading to Damascus—and the sea-borne trade to ports of the eastern Red Sea.<sup>269</sup> Diodorus writes:

While there are many Arabian tribes who use the desert as pasture, the Nabataeans far surpass the others in wealth [...] for not a few of them are accustomed to bring down to the sea frankincense and myrrh and the most valuable kinds of spices, which they procure from those who convey them from what is called Arabia Eudaemon. (Diodorus XIX.94.5–6)

Accessible by land and sea, Leuke Kome was the major Nabataean *emporium* on the Red Sea connecting the routes from al-Jawf in Yemen, northern Arabia, and the Mediterranean.<sup>270</sup> Strabo reports that ‘camel-traders travel[ed] back and forth from Petra to this place in safety and ease, and in such numbers of men and camels that they differ[ed] in no respect from an army.’<sup>271</sup> He continues to say that from Petra, the route turned west to Rhinocolura (el-Arish), in Phoenicia, and thence to ‘other peoples.’ Other ships, probably smaller and fewer, unloaded their cargo at the port of Aila, and from there merchants continued to Petra along the eastern route, and/or Gaza, passing through the Wadi Araba.<sup>272</sup> This meant that the Nabataeans controlled the trade in oriental spices, aromatics, and precious stones from southern Arabia, India and Taprobane (Sri Lanka), and the profitable trade of silk from China.<sup>273</sup> Their importance and lasting prosperity set them on course for direct collision with Rome’s economic ambitions.<sup>274</sup>

Here, it is worth considering the question posed by Fitzpatrick: ‘To what extent was Roman imperialism responsive to eastern trade and economics?’<sup>275</sup> Firstly, eastern commerce and trade were never absent from Roman politics, even during the Republic.<sup>276</sup> With the expansion of the empire, the appeal of the east was further stimulated by state and private economic interests to control the rich trade in spices and perfumes, ‘despite its putative effects on Rome’s moral fibre.’<sup>277</sup> According to Alston, the desire to facilitate and control the terms of eastern trade greatly influenced Roman expansionist policy and forced the creation of porous borders for traders, travellers, and caravans.<sup>278</sup> The conquest of Egypt and

<sup>264</sup> Travel during the night: Pliny, *Nat. Hist.* 6.26.102–4; Strabo, 17.1.45. Details: Sidebotham (1986), 60–1.

<sup>265</sup> Pliny, *Nat. Hist.* 12.32.63–65, 6.28.32. On Gaza see Gluecker (1987).

<sup>266</sup> Groom, (1981) 213; Millar, (1998) 123–4; McLaughlin (2010), 182.

<sup>267</sup> Diodorus, *Hist.* II.48.1–2; Strabo, 16.4.23, 26 and 4.24 (781); Josephus, *Jew. Ant.* XIV 2,3 (31).

<sup>268</sup> Pliny, *Nat. Hist.* VI, XXXII.162; Fiema (1987), 25. See Strabo’s description of Petra: 16.4.21; Graf and Sidebotham (2003); Zayadine (2007).

<sup>269</sup> Diodorus, III.43.4–5; Strabo, 16.4.18.

<sup>270</sup> Strabo, 16.4.23; Ingraham et al. (1981), 76; Kirwan (1979); Sidebotham (1986) 3, 120–6; Zayadine (2001), 201; Nappo (2010).

<sup>271</sup> Strabo, 16.4.23.

<sup>272</sup> Strabo, 16.30; Herodotus, 1.183. Babylonian talents: over 30 tons. Also see Pliny, *Nat. Hist.* 12.80. Port of Aqaba: Strabo, 16.4.4. Information possibly derived from Eratosthenes (c. 275–194 BC). See Crone, (1987) 18.

<sup>273</sup> Isaac (1980), 892.

<sup>274</sup> The Nabataeans were active traders at least until the fourth century, although it has been argued otherwise (based on Strabo, 16.4.24). See Apollinarius to Sabinus, P. Mich. 8.466, 36–4; *Periplus Maris Erythraei* 19; Apuleius, *Florida* 6; Dioscourides *De Materia Medica*, 1:80. Also see Pliny, *Nat. Hist.* 26–8; Josephus, *B. Jew.* 2.16.4 (385); the Piacenza Pilgrim (‘From Mount Sinai to Arabia, and to the city called Abila, there are eight lodging-posts. Ships from India dock in Abila, with various spices’). See in general: Delbrueck (1955), 8–58; Miller (1969); Jones (1974), Chapter 7; Warmington (1974); Sidebotham (1986); Graf (2001), Terpstra (2015), 76. Fitzpatrick argues that the economic importance of classical-era Arabia and its African periphery requires urgent revision (2011), 51.

<sup>275</sup> Fitzpatrick (2011), 30: a detailed review of current perception of eastern trade and imperial policies.

<sup>276</sup> Livy, *Histories* 21.63.

<sup>277</sup> Seneca, *Epistles* 87, *De Beneficiis* 7.9; Pliny, *Nat. Hist.* 7, 12.41, 84; Tacitus, *Annals* 2.53, 11.31; Amma. Marc., 12.4.

<sup>278</sup> Alston (2007), 28. c.f. Horace, *Odes*, 1.29. Strabo, 16.4.22; 1.2.39; Pliny *Nat. Hist.* 6.30; Diodorus *Arabia* 3.46–47; Whittaker (1994), 227; Bowersock (1971); Troussset (1993), 119; Isaac (1993), 112; Fitzpatrick (2011); Wilson (2015).

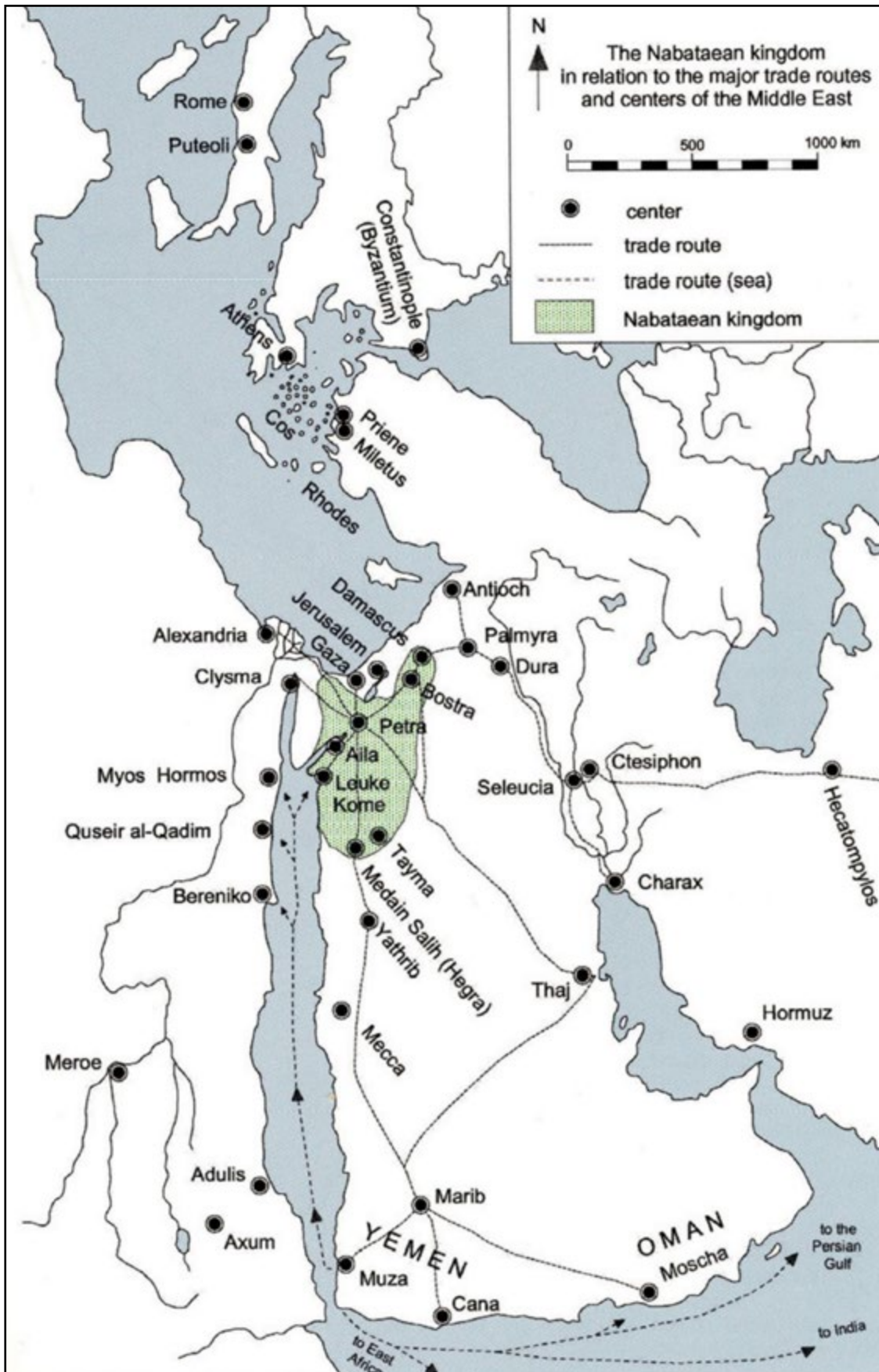


Figure 12. The Nabataean kingdom and the major trade routes and trade centres of the Near East. From Frösén and Fiema 2002, 259.



Syria, the annexation of Nabataea,<sup>279</sup> and Nero's southern expedition in the Red Sea (not to mention Trajan's explicit military ambitions in the Persian Gulf and India), confirm the desire that existed to secure economic links in the east.<sup>280</sup> The envoys sent from India and Taprobane to Augustus and Claudius perhaps indicate that this interest was mutual.<sup>281</sup> On the other hand, many wealthy aristocrats were involved in financing trade in the east and, realistically, their policy decisions safeguarded their personal investments.<sup>282</sup> Recent studies even corroborate the existence of a variety of market mechanisms—such as loans, banks, and investors—that heavily relied on the fluctuation of trade economy.<sup>283</sup> Fitzpatrick argues that:

Rome consistently followed an Eastern policy that made good economic sense from both an abstract 'imperial' perspective and a private wealth perspective... it was consistent with a policy that sought to both facilitate trade and investment in these regions for Roman subjects and to incrementally take possession of those trading centres that were within reach.<sup>284</sup>

The most obvious contribution of long-distance trade to the Roman economy was taxation.<sup>285</sup> McLaughlin notes that since 'the Julio-Claudian era the Roman government amassed vast amounts of Eastern produce from the quarter-tax imposed on imports, these stocks rapidly accumulated.'<sup>286</sup> The bulk of all eastern taxation was charged (in most cases by an army official) on goods coming through Egyptian and Nabataean Red Sea ports, such as Leuke Kome.<sup>287</sup> The *Periplus* says 'a centurion [was] stationed there as a collector of one-fourth (*tetarte*) of the merchandise imported, with an armed force, as a garrison.'<sup>288</sup> This seems to be the same import tax known from Coptos, in Egypt. Here, in return for the tax, merchants received a travel permit that would be inspected at military installations along the route.<sup>289</sup> The Muziris Papyrus presents further details about this taxation system. It describes a cargo valued at almost seven million sesterces (seven times the amount of wealth required to qualify as a senator) from which two million were owed to the Roman government.<sup>290</sup> Other sites on the Eastern frontier, such as Palmyra, have also yielded tariff and tax information on urban markets and, clearly, regions under Roman control always owed to the central government a large percentage of the custom charges they required from the caravans entering the Empire.<sup>291</sup>

Beyond taxing and manning official checkpoints for traders, the army occasionally granted caravans and travellers the protection of military escorts. Strabo says that bandits used to attack and rob merchants from Arabia Felix on their way to Damascus until the Roman army established good government and security.<sup>292</sup> Desert patrols also existed along known caravan routes moving across the Hijaz. At Hegra (Madi in Salih), graffiti confirm the presence of an *ala Gaetulorum* and, along the road to Deda (al-Ula) further south, another inscription shows the presence of an *ala Dromedariorum*.<sup>293</sup> Isaac believes these to be part of the army expansion into the desert under Septimius Severus during the late second and early third centuries.<sup>294</sup>

<sup>279</sup> Bowersock (1975), 518–519; *Arabia Provincia* included all the Nabataean littoral on the Red Sea.

<sup>280</sup> Expedition to Axumite Africa: Pliny, *Nat. Hist.* 6.181. Conquest of Syria because of its riches and trade route connections: Tacitus, *Historiae* 11.81. Trajan's ambitions: Dio 68.28–29. Eutropius, *Breviarum* VIII.3: 'In mari Rubro classem instituit, ut per earn Indiae fines vastaret.'

<sup>281</sup> Eastern envoys: Pliny *Nat. Hist.* 6.24 (84). Augustus *Res Gestae*, 26–33; c.f. Ferguson and Keynes (1978), 586.

<sup>282</sup> Adams (2007), 232–234; Fitzpatrick (2011), 66.

<sup>283</sup> Temin (2001); Bang (2008); Galli (2017).

<sup>284</sup> Fitzpatrick (2011), 41.

<sup>285</sup> This was also the case in other parts of the empire, as described by Strabo (2.5.8, 4.5.3).

<sup>286</sup> McLaughlin (2010), 158.

<sup>287</sup> Liberati et al. (1986), 104.

<sup>288</sup> *Periplus Maris Erythraei* 19. Sidebotham (1986) and Young (1997, 266–8) argue that the centurion is a Roman officer sent to prevent traders from avoiding Roman tariffs by traveling through the Nabataean kingdom. Bowersock (1983, 70–1), Casson (1989, 145), and Graf (1994, 289) convincingly demonstrate that the officer was Nabataean.

<sup>289</sup> *Periplus Maris Erythraei* 4.

<sup>290</sup> Vindob. G 40822, verso 29; Rathbone (2001), 158; McLaughlin (2010), 16.

<sup>291</sup> Pliny, *Nat. Hist.* 12.32. McLaughlin (2010), 17.

<sup>292</sup> Strabo, 16.2.20 (756).

<sup>293</sup> Seyring (1941), 218–223.

<sup>294</sup> Isaac (1989), 247.

Roman soldiers worked side-by-side with paid mercenaries hired by people such as the synodiarchs (caravan leaders), but the extent to which the Roman army actively helped protect the caravans *en route* is debated.<sup>295</sup> Several inscriptions from Palmyra show that a combination of city-run armed forces, mercenaries, and Roman soldiers were probably responsible for protecting the caravans.<sup>296</sup> The latter are referred to in Palmyrene inscriptions dedicated by merchants honouring legions of the Roman army,<sup>297</sup> such as the one dedicated by the members of a caravan from Spasinou Charax which honoured a 'Julius Maximus, centurion of the legion.'<sup>298</sup> For the most part, however, the operation of the trade routes was probably ensured by diplomacy and cooperation with the long-established powers in the region and their elites, whereas the Roman (and Parthian) army fulfilled the essential need for protection and security against those who were hostile to these ventures.<sup>299</sup>

Before annexation, the Nabataean state had already established a large system of sedentary outposts, caravanserais, watchtowers and fortifications that could supply the passing caravans with provisions and security.<sup>300</sup> The Nabataean and Palmyrene *strategoi*, for example, oversaw security and collected taxes along the routes; the same system probably persisted under Roman rule.<sup>301</sup> Fiema agrees that Trajan's intentions were to 'strengthen and re-organise the existing order' and not to replace it.<sup>302</sup> Fitzpatrick adds that 'as with Arabian incense, Indian spices, or Chinese silk, the trade in African ivory was one that Rome could only tax, not control through direct military or political means, despite the efforts [to do so].'<sup>303</sup> The same attitude towards strengthening and repairing the existing trade infrastructure has also been suggested in Egypt.<sup>304</sup>

In the Wadi Sirhan, still known as the Darb el-Gazawat ('The Way of Raids'), an inscription by a centurion of *III Cyrenaica* shows that the Romans were stationed as far as Jawf, near the entrance to the wadi, perhaps as part of the efforts to 'strengthen' the frontier.<sup>305</sup> It is difficult to justify the positioning of the army in this strategic location if not primarily for the regulation and protection of the trade routes (even if it was there for 'internal' and 'external' security as well). From an economic perspective, Rome had everything to gain and little to lose by tapping into the already-established prosperous trade network; the required infrastructure was in place and the government only had to control a few customs points to gather enormous revenues.<sup>306</sup>

Millar's suggestion that Roman infrastructure projects after the Nabataean annexation served for the military control and the invigoration of trade is—under the view that the Romans improved the system already in place—an appealing one.<sup>307</sup> The fact remains that the Romans not only improved but also added to the already-successful Nabataean system numerous fortified buildings along the main caravan networks—including forts, towers and caravanserais—and linked the east with a new improved system of paved roads. Why? The *Via Traiana* linking Bostra to the Gulf of Aqaba has frequently been seen as more than a military road built in preparation for a Parthian invasion, and in fact as a specific attempt to divert trade towards northern Arabia and Syria.<sup>308</sup> More than anything, the *Via Traiana* was probably a way to connect the administrative centres of Arabia and facilitate the movement of troops. This is not to say, however, that guaranteeing these conditions did not improve trade, military advancements, and overall security.

<sup>295</sup> Rostovtzeff (1932) *contra* Young (2001).

<sup>296</sup> Drexhage (1988), 105–119.

<sup>297</sup> Drexhage (1988) 26; Seland (2014), 199.

<sup>298</sup> PAT 1397; Seland (2014), 207.

<sup>299</sup> PAT 1378; JSS S4, 34–36; Rostovtzeff (1932), 807; Will (1957), 270–71; Young (2001), 157–58; Borstad (2008), 62; Seland (2014), 206.

<sup>300</sup> Muaikel (1994).

<sup>301</sup> DNWSI, 92; Sartre (2005), 238.

<sup>302</sup> Fiema (1987), 35.

<sup>303</sup> Fitzpatrick (2011), 51.

<sup>304</sup> Sidebotham (1996), 290.

<sup>305</sup> Kennedy (1982) 190, no 39, (2000), 52; Bowersock (1983), 118.

<sup>306</sup> McLaughlin (2010), 172.

<sup>307</sup> Millar (1993), 86–88; c.f. Fiema (1987), 30.

<sup>308</sup> c.f. Ptolemy *Geog.* IV 5.54; Eutropius VIII 3; Eusebius, *Chron.* II.220; Fiema (1987), 30; in opposition to this view see Freeman (1996), 108; Borstad (2008), 68–69.

Fitzpatrick argues that even the Parthian campaigns were meant to push Roman control over the eastern markets, further combining military and commercial ambitions.<sup>309</sup> The relocation of *Legio III Cyrenaica* to Arabia could also be interpreted from an economic or military perspective. Whatever the intention, after annexation there was—through the existing and improved Nabataean and new Roman infrastructure—a rapid increase of Nabataean trade, and rise in importance of Aila, Bostra, and Arabia. This created a more balanced way into ports of the eastern and western Red Sea littoral.<sup>310</sup>

All of this considered, the annexation of the east seems to have been part of an attempt to control oriental trade and expand the commercial power of the empire.<sup>311</sup> The economic restructuring of the Ptolemaic monopoly and the immense investment in public works, such as the Trajanic Canal, may, for the most part, be associated with the expansion of the Roman economy.<sup>312</sup> In fact, Sidebotham's words about the importance of trade in the Eastern Desert of Egypt to Rome's economy could just as well be applied to Arabia: 'The expression of Roman governmental and private entrepreneurial interest in the region is clear from port, road, canal construction, enlargement and repair, from the establishment of a military, administrative and fiscal apparatus to protect, monitor and profit from commercial contacts... the existence of 'Roman' commercial trade centre's/stations abroad and establishment of commercial and diplomatic contacts with Arabian, Indian and other Eastern states.'<sup>313</sup>

Lattimore argues that the expansion in the East only ceased because the Romans 'learned by experiment to discriminate between those territories, recourses, and peoples which could be profitably included within their imperial expansion, and those which it was better to exclude because military action, administration, and the collection of revenue cost more than they were worth.'<sup>314</sup> Subsequent army presence ensured the continuation of the original economic objectives of the annexation by securing the routes and taxing the caravans.

#### (4) Current perspective: an open economic zone

Current interpretations of the Roman frontiers are more flexible about the nature and number and nature of military functions in border zones. These perspectives have been based on comparative approaches which emphasise the social, ethnic, and economic aspects of military distribution, including the integration of soldiers and fortifications in the indigenous landscape. Likewise, these perspectives are more interested in the borderlands of the Roman Empire than in the borders and frontiers themselves.<sup>315</sup> The most impactful studies on this topic were written by Whittaker in *Frontiers of the Roman Empire* (1994) and *Rome and its Frontiers* (2004). Whittaker's view is that the Roman frontiers were permeable zones of cultural and economic interchange rather than linear barriers, which he maintains is a modern construct based on the misinterpretations of the word '*limes*'.<sup>316</sup> These frontier areas are characterised, according to him, by hybrid, distinct, and mostly autonomous cultures.<sup>317</sup>

As we have already discussed, Whittaker argues that the location of the frontiers was dictated by the economic and geographical limits of the terrain rather than by a grand strategy.<sup>318</sup> He agrees with Parker that the frontiers were primarily meant to control movement and maximise the economic impact of transhumant movement through the frontier,<sup>319</sup> but he severely underplays the role of the military and its defensive function. Instead, Whittaker emphasises the connecting—not divisive—character of frontier

<sup>309</sup> Fitzpatrick (2011), 42.

<sup>310</sup> Isaac (1980), 893; Fiema (1987), 34. On the importance of Aila see Rothenberg (1970), 21.

<sup>311</sup> Bowersock believed that 'there is simply no reason to believe that the annexation was 'part of Trajan's master plan for conquest of the Parthians.' Bowersock (1983), 84 *contra* e.g. Eadie (1985), 416.

<sup>312</sup> Raschke (1978), 650.

<sup>313</sup> Sidebotham (1996), 290.

<sup>314</sup> Lattimore (1962), 503; Luttwak (2016), xiv.

<sup>315</sup> On the distinction see Reger (2014), 115.

<sup>316</sup> c.f. Chapter 1. Whittaker (1994), 1–9.

<sup>317</sup> Whittaker (1994), 113, 130–31; c.f. Dio 56.18.2.

<sup>318</sup> Whitaker (1994), 62–70, 85–97.

<sup>319</sup> Whitaker (1994), 79–84.

zones, ‘bustling with activities in all directions’ stimulated by military presence.<sup>320</sup> Even in the case of natural borders or well-established lines of control, such as Hadrian’s Wall, Whittaker rejects the idea that these served as barriers, but argues they were instead prime communication lines on both sides. In Arabia, the *Via Traiana* is also interpreted as a line of communication and not as a line of defence. The North African *fossata* and *clausurae* are paralleled with the Arabian frontier, as both systems are composed of long but intermittent barriers designed to control movement and unfit for anything but defence against small-scale raids.<sup>321</sup>

At a theoretical level, this view was sustained, at least in part, by the anthropological views of human ethnicity at borderland zones described in Frederik Barth’s *Ethnic Groups and Boundaries*.<sup>322</sup> He also argued for a common ‘cultural ecology’ in which a dialogue, movement, and hybridity between people could succeed.<sup>323</sup> In this sense, the ‘*pax Romana*’ described by Banning in 1986 and 1987, in response to Parker’s more divisive approach to the Eastern frontier, can be also positioned as this new approach to frontier studies in the Roman east.

<sup>320</sup> Mathisen (1995), 130.

<sup>321</sup> Rushworth (1996).

<sup>322</sup> Barth (1969).

<sup>323</sup> See also Lightfoot and Martinez 1995: 474; Dijkstra 2005: 10–11; Reger (2014), 115.

## IV. Spatial Analysis

This spatial analysis aims to illuminate the function of the military system along the Arabian frontier, considering the historical and archaeological information discussed above. The principal goal is to explore the spatial relationships during the Nabataean, Roman, and Late Roman/Byzantine (hereafter LR/B) periods between military sites themselves, and between these sites, settlements, waterpoints, and the road system.<sup>324</sup> It is assumed that analysing the location of these fortifications and testing their integration into a larger system helps to determine their function.

Spatial analyses 'examine the locations, attributes, and relationships of features in spatial data,' and therefore differ from past approaches led in the region of Roman Arabia, which mostly have focused on ground-level survey and aerial reconnaissance.<sup>325</sup> A landscape interpretation of a controlled section of the eastern frontier allows us to discuss the military frontier system from a purely geographical and strategic perspective. In other words, it allows us to discern a 'pattern' and highlight connections.<sup>326</sup> Using a Geographical Information System we can determine the precise distances, visibility radius, and cost-distances between military and non-military sites, and thus evaluate their fitness for defence, internal control, and trade regulation. An analysis such as this is lacking for the southeastern frontier, although a similar approach is already developing in the Syrian desert and, on a smaller scale, in Judaea.<sup>327</sup> Summing up, the questions considered in this analysis to interpret the function of the military are:

1. To what extent were the military sites in visual control of settlements, waterpoints, wadi passages, and roads?
2. Was there a system of visually-connected military sites able to communicate between themselves? Can we suppose there existed a communication system at all?
3. How long did it take to reach any of these points from a military site?
4. Were the military sites located near each other and/or settlements, waterpoints, wadi passages, and roads? Is there any apparent pattern of distribution in relation to non-military sites? What are these in relation to each other?
5. Are there substantial differences between time periods? If the Nabataean system was significantly modified during the Roman and LR/B periods, did the function of military structures also change?

This approach is not without setbacks and pitfalls. Contrary to the Roman frontiers of Britain and the Rhine, the site information along the eastern frontier is almost purely dictated by land prospection and surface pottery sampling.<sup>328</sup> These normally fail to provide precise dating of construction and abandonment or the occupation sequence of the site. As a result, it is difficult to tell with absolute confidence that the sites under consideration were occupied (or existed) contemporaneously. The term 'Roman,' for example, is often employed indiscriminately for Early, Middle, or Late Roman features.<sup>329</sup> Besides, Sauer's ceramic chronology was developed based on the 1973 Hisban excavation and, although it has been tested against the material from the fort at Lejjun, it remains uncertain how accurately it can be applied to the material from southern Jordan.<sup>330</sup>

<sup>324</sup> Some sites can be precisely dated to the Late Roman period. When this is the case, they are considered in the same analysis as the Byzantine sites. This is justified because considerable military changes in the eastern frontier started after Diocletian and not after Constantine.

<sup>325</sup> [www.support.esri.com/other-resources/gis-dictionary/term/spatial%20analysis](http://www.support.esri.com/other-resources/gis-dictionary/term/spatial%20analysis), May 2017. Parker (1986); Kennedy and Riley (1990); Graf (1997a).

<sup>326</sup> Wheatley and Gillings (2002), 126; Conolly and Lake (2006), 149.

<sup>327</sup> Syria: Meyer (2016). Judaea: Pažout (2015).

<sup>328</sup> Fiema (1987), 261, 264; Gregory (1997), 10. Frontier studies began in the western part of the empire and the eastern borders are still, comparatively, not as well understood. Besides, the harsh climate and topography of the region, combined in more recent years with threats of terrorism, has delayed the advancement of eastern frontier studies. On the other hand, Parker has noted that 'the results produced by excavations generally support the conclusions drawn from surface surveys regarding the history of occupation of individual sites.' Parker (1991), 498.

<sup>329</sup> Bowersock (1976), 221.

<sup>330</sup> Fiema (1987), 264.

Another difficulty is discerning whether these sites were occupied by the Roman army. Again, without inscriptions or excavation, and since the pottery is the same, it is almost impossible to distinguish between the Roman military and the indigenous occupation.<sup>331</sup> Pottery can reveal whether these sites were occupied during a certain period, but little about the identity of its occupants or their relationship with others. Architecture can be a better indicator of military presence but, historically, it is easy to equate ‘squareness’ with Roman forts—as happened with the Islamic forts of al-Her Sharqui, and al-Her Gharbi—or fortifications with the military.<sup>332</sup> Considered the limitations of this study, we must accept Fiema’s conclusion that even in face of these limitations, architectural features and ceramic material are the ‘safest method of dating [and identifying] military structures.’<sup>333</sup>

## Methodology

The sites considered here are in modern southern Jordan, predominantly in the section connecting Petra (and hinterland) and Aqaba. The reasons for this are two-fold. First, relative to the northern sections of the Roman eastern frontier, the area under discussion is the least studied of the Transjordan border landscape. Previous work has focused on widespread surveys in the hinterland of Petra and the Wadi Araba, but these have never been put together to form a clearer view of the Roman landscape. Second, the area between Petra and Aqaba, limited to the east by the Wadi Araba and to the west by Ma’an, provides a controlled and manageable case study for a work of this kind (approximately 658,000 ha).

Arguably, the geographic unit of the southernmost frontier extends from the Wadi el-Hasa southwards, but the inconsistency of survey work between el-Hasa and Petra makes it difficult to provide an accurate picture of this section of the frontier. Petra and Aila, on the other hand, can be taken as the terminus points of the southernmost section, as they were two major urban stops along the Roman frontier and trade routes, and the region between them has been, for the most part, thoroughly surveyed. This provides a unique opportunity to contribute to the study of the Roman eastern frontier system in a detailed fashion without compromising the bigger picture.

The first step in collecting the sites considered in this analysis was to read the main bibliography, particularly the survey and excavation reports.<sup>334</sup> These allowed for the compilation of the major settlements and fortifications in the area between Petra and Aila, and for the inclusion of descriptions, associated features, and related bibliography. The *Barrington Atlas* (maps 70, 71, 76, and 83) and the Pleiades Online Database provided the coordinates of sites mentioned by the authors of regional surveys.<sup>335</sup> This work was facilitated by other online sources such as the Digital Map of the Roman Empire and Google Maps.<sup>336</sup>

The GeoNames geographical database gave useful information on the location of springs and wadis.<sup>337</sup> The most important contribution, however, came from Mega-Jordan, a ‘purpose-built geographic information system (GIS) to inventory and manage archaeology sites’ in Jordan.<sup>338</sup> Comparing the Mega-Jordan coordinates with other sources revealed that the locations of many major and minor sites in the *Barrington Atlas*, the Pleiades database, and even Mega-Jordan itself are inaccurate and require serious

<sup>331</sup> Fiema (1987), 264; Freeman (1990), 186.

<sup>332</sup> Brünnow and Domaszewski based much of their interpretations on the ‘squareness theory.’ Fiema (1987), 264; (Gichon 1990), 205–206; Isaac (1990), 101; Gregory (1997) 12, 29. For more chronological issues see Gregory (1997), Chap. 8.

<sup>333</sup> Fiema (1987), 264.

<sup>334</sup> The works used here to compile the dataset are Alt (1936); Glueck (1935); Stein, Gregory, Kennedy (1985); Gregory (1997); Graf (1983), (1995), (1997a); Kennedy and Riley (1990); Al-Khouri (2000); Abudanah (2016); MacDonald (2012), (2016); Parker (1976), (1986); Parker and Smith (2014); Smith (2010).

<sup>335</sup> Talbert (2000); [www.pleiades.stoa.org/](http://www.pleiades.stoa.org/), May 2017,

<sup>336</sup> [www.pelagios.org/maps/greco-roman/](http://www.pelagios.org/maps/greco-roman/), May 2017; [www.maps.google.com](http://www.maps.google.com), May 2017.

<sup>337</sup> [www.Geonames.org](http://www.Geonames.org), May 2017.

<sup>338</sup> [www.megajordan.org](http://www.megajordan.org), May 2017.

revision.<sup>339</sup> The true position of some of these sites was ultimately confirmed by the geotagged aerial photographs of APAAME and satellite imagery.<sup>340</sup>

Functionality guided decisions about what to include in the database. For example, since all settlements have a water source of some kind, it became unnecessary to map waterpoints inside villages and towns. All waterpoints included in the database are therefore either outside settlements or in isolated military sites. Small farmsteads, single structures, agrarian towers (when specified), millstones, watermills, camps, and other agricultural features such as terraces and water channels were also not mapped, as they mostly follow the same distribution as larger settlements (mostly agricultural villages). Sites outside the research area (Petra–Aqaba) were not mapped unless they served as other terminus points along roads passing inside the study area.

It is also important to clarify that the data presented are not a result of survey biases, as I was able to confirm from a systematic examination of the study area on Google Earth (Figure 13). This covered an area of 175 x 175 km and was done using a grid resolution of 1.75x1.75 km. Eye altitude was set at 1000–1500 m, depending on the elevation of the terrain and the resolution of the imagery (the resolution varies between 15–30 m per pixel). Each row was surveyed from W–E. This survey revealed that the areas to the south and west of Petra, like the ones along Wadi Araba, are comparatively devoid of settlements and fortifications. The dating of sites is specified only as Nabataean, Roman, and/or LR/B. One should note that according to pottery collections, the great majority of sites appears to have Iron Age II (1000–539 BC) origins and many continue into the Late Islamic period.



Figure 13. The systematic satellite imagery survey of sites within the study area conducted in Google Earth.

<sup>339</sup> As already argued in detail in Hanson (2016), 43. The errors are particularly obvious when the coordinates to sites in Pleiades are linked to areas without visible sites or several kilometres away from the visible site marked by Mega-Jordan. On the other hand, Mega-Jordan tends to group site elements into one point, independently of their size or the true location. As a result, frequently site elements are located as far as two kilometres from their marked location. This inconsistency also extends to dating. Frequently sites dated to the Nabataean and Roman periods in Mega-Jordan are dated in the surveys (e.g. ARNAS, MacDonald 2012) as Roman and Byzantine. Other useful online sources include: [www.darmc.harvard.edu/maps](http://www.darmc.harvard.edu/maps); [www.daahl.ucsd.edu/DAAHL/](http://www.daahl.ucsd.edu/DAAHL/); [www.awmc.unc.edu/wordpress/](http://www.awmc.unc.edu/wordpress/), May 2017.

<sup>340</sup> [www.flickr.com/photos/apaame/](http://www.flickr.com/photos/apaame/), May 2017. El Mutrab and Hamman forts, near Ma'an, are georeferenced incorrectly in every source. APAAME, however, has photographed these sites and made it easier to find them using satellite imagery.



## Dataset

The database created for this study includes 624 sites, of which 64 are fortifications (forts and fortlets); 129 are towers; 31 are road stations (caravanserai); 204 are settlements (agricultural villages, hamlets, and towns); 96 are waterpoints (cisterns, reservoirs, lakes, dams); and 77 are Roman road sections and milestones.<sup>341</sup> Two are temporary military camps and 21 are unidentified structures, thought to have had administrative purposes (see Descriptive Catalogue II).

The **fortifications** vary in size but most share the layout of a small enclosure with or without projecting corner towers (the *tetrapyrion/quadrivurgium*, Figure 14).<sup>342</sup> According to Gregory, forts generally measure somewhere between 25–100 m in diameter, whereas fortlets range between 15–25 m.<sup>343</sup> One should also note that the size of fortifications changed with time, according to reduced manning of legions.<sup>344</sup> Although this is consistent in some publications (e.g. Gregory and Kennedy & Riley), reports often do not specify site dimensions. This study is, as much as possible, consistent with this categorisation.

**Towers** have dimensions less than 15 m and are at least two stories high. Small towers, as the ones typical of the basalt villages of the Hawran, are four to five stories high.<sup>345</sup> According to the surveys led by Burton MacDonald (2012–2016), towers are frequently sited near enclosures (perhaps corrals) and water sources. A preliminary report on the typology of towers can be found in Clark and Parker (1987).

The small courtyard buildings related to forts or positioned along major roads have been called **mansiones, caravanserai, or simply road-stations**. There is little evidence supporting this function other than their ground plans and the literary sources that prove their existence (Figure 15).<sup>346</sup>

**Roman paved roads and milestones** were typically built on top of old Arabian caravan routes connecting southern Arabia and the Mediterranean Sea, although this was probably not the case of the *Via Nova Traiana*.<sup>347</sup> The Romans also improved existing roads and developed their overall organisation, which entailed maintenance and security.<sup>348</sup> Paved roads crossing steep passages are unsuitable for camels and less than ideal for donkeys.<sup>349</sup> For this reason, paved roads were originally organised for wheeled vehicles; probably by the military for their own use. The *Via Traiana* has been traced and it is 5–6 m wide for most of its course and flanked by curbs. Mapping the roads was an arduous process, and the reader should note that although the general path is accurate, some stretches are merely based on my guesswork (especially when they have been overbuilt by modern roads).

**Waterpoints**—including cisterns, dams, reservoirs, springs, and lakes—are considered in all time periods, regardless of pottery dating. These water sources, even when not maintained regularly, could hold water and provide stopping points for travellers and caravans. In the region, we can confidently assume that fresh water sources, limited to springs, were in the same positions as they are today. The location of springs is based on the configuration of geological strata below the earth's surface and, as a result, the location of these water sources only changes on a geological timescale.<sup>350</sup>

<sup>341</sup> 'Milestones are the first characteristic of Roman roads all over the Empire,' Isaac (1980), 892.

<sup>342</sup> Gregory (1997), 80. For General books on Roman fortifications see Pringle (1981), Lander (1984), Gregory (1997), Collins (2015).

<sup>343</sup> Gregory (1997), 8.

<sup>344</sup> Kennedy and Riley (1990), 19.

<sup>345</sup> Gregory (1997), 146.

<sup>346</sup> Gregory (1997), 95.

<sup>347</sup> Isaac (1990), 108; Borstad (2008).

<sup>348</sup> Josephus, *B. Jew.* III 7.3; 6.2.

<sup>349</sup> Borstad (2008), 61, 63; Sidebotham (2011), 136.

<sup>350</sup> Waller (1994); Moss (2015), 42.

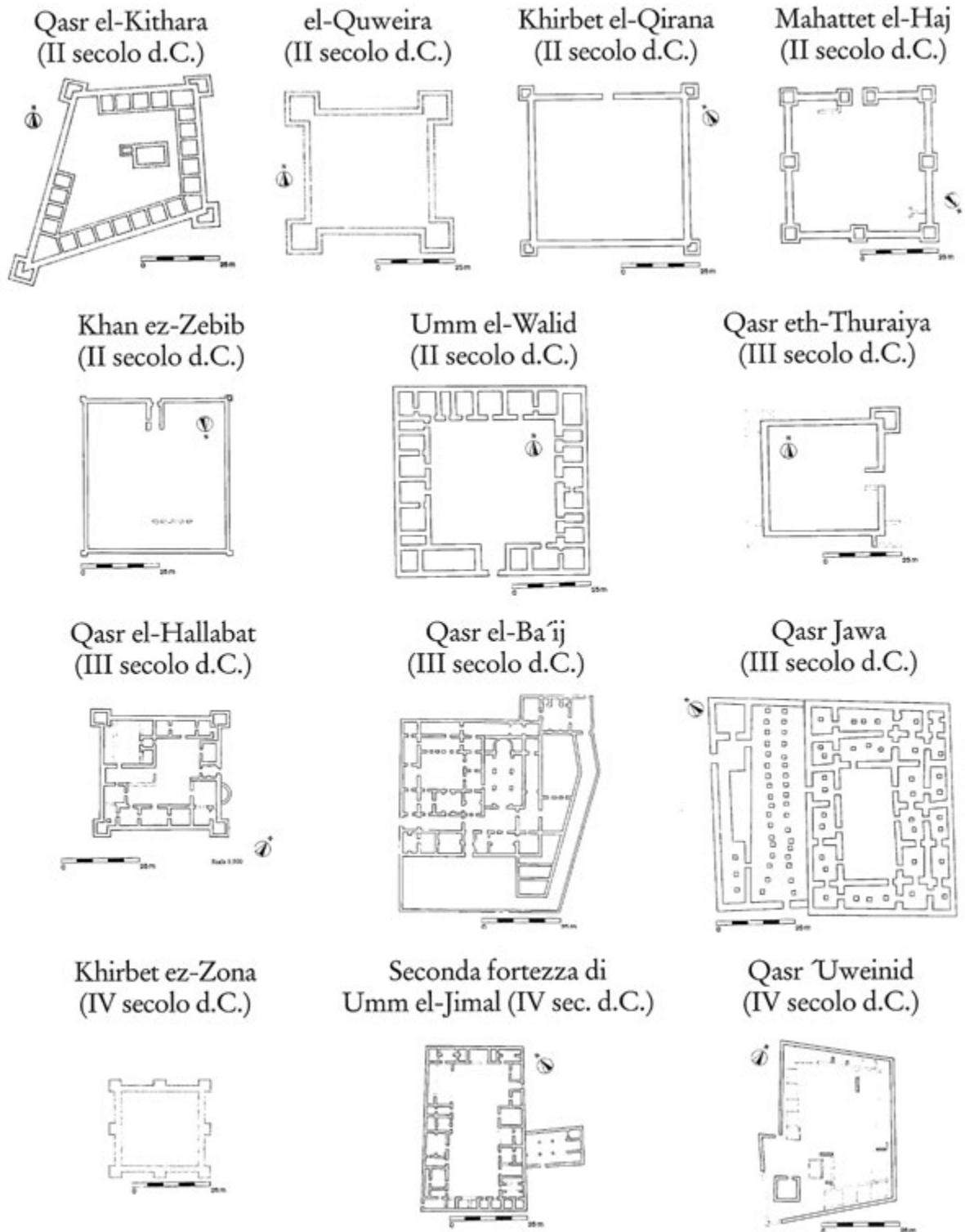


Figure 14. Forts in Arabia. From Al Khouri 2003, Fig.10.

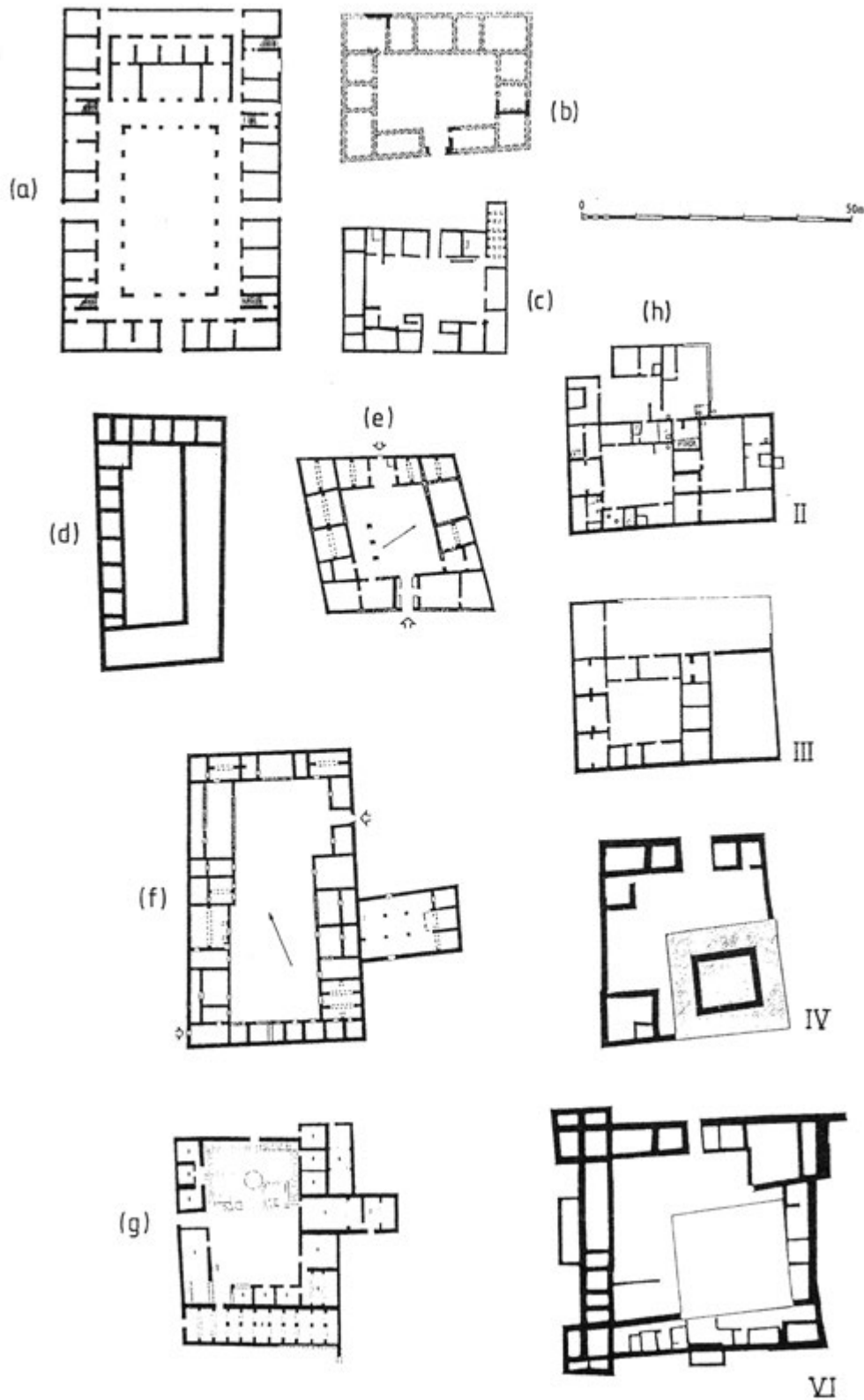


Figure 15. Courtyard buildings, certainly or probably Roman, with earlier and later phases at Arad: a) the barracks of the *vigiles* at Ostia, mid-second century, b) 'Mansio' at Lejjun, c) 'Caravanserai' at Avdat, d) 'Caravanserai' at Memphis, e) 'Fort' at Tel Beersheba, f) 'Barracks' at Jimal, g) 'Monastery' at Fa'aran in the Golan, h) Arad citadel structural evolution. From Gregory 1997, Fig. 4.5.

The distribution of these features according to period can be observed here:

	Nabataean	Roman	LR/Byzantine
Forts	2		
	14		
		10	
	10		
		24	
			4
Towers	11		
	23		
		15	
	28		
		43	
			9
Settlements	5		
	49		
		10	
	70		
		55	
			15
Administrative Building?	2		
		2	
	11		
		4	
			2
Caravanserai	4		
	10		
		3	
	11		
		3	

This spatial study is divided into visibility and distance analyses performed in ArcGIS 10.4.1, which considers the geography and topography of the study region. The SRTM (Shuttle Radar Topography Mission) data was downloaded from CGIAR-CSI GeoPortal (NASA); the cell size is 3 arc seconds (equivalent to approximately 90 m at the equator).<sup>351</sup> The DEM was projected onto a WGS (World Geodetic System) 1984 spheroid (GCS\_WGS\_1984), and it is measured in degrees, minutes, and seconds.

**Visibility analysis**

Analyses of visibility, including the issues of intervisibility, were applied before the invention of GIS. In fact, visual impressions of certain sites have been noted since the advent of archaeological science. Military sites have been particularly prone to these types of questions, as attested to by several foundational works that, despite not using GIS, contributed to visibility studies in both methodology and theory.<sup>352</sup> The visibility analyses performed in this chapter use two GIS functions: **viewshed analysis** and **line of**

<sup>351</sup> Retrieved from: [www.srtm.csi.cgiar.org/Index.asp](http://www.srtm.csi.cgiar.org/Index.asp), May 2017.

<sup>352</sup> Parker (1987b), 161-181; Loots et al. (1999); Topouzi et al. (2000); Pažout (2015), 76.

**sight analysis.** Both tools are based on (and limited by) the resolution of the digital elevation model, but results may also vary according to the height of the observer, weather, times of the day, distance, comprehension, and vegetation parameters.<sup>353</sup>

The **viewshed analysis** calculates the raster surface locations visible to a set of observer features. According to the tool description, 'the visibility of each cell centre is determined by comparing the altitude angle to the cell centre with the altitude angle to the local horizon; the local horizon is computed by considering the intervening terrain between the point of observation and the current cell centre; if the point lies above the local horizon, it is considered visible.'<sup>354</sup> A cumulative viewshed (the sum of all the viewsheds of individual sites) was made for the entirety of the military landscape and for each time period. Additionally, the **line of sight analysis** of military sites determines the visibility of sight lines against potential obstructions defined by any combination of 3D features and surfaces.<sup>355</sup> This is a useful tool to establish the level of interconnectivity between military sites and, perhaps, the existence of a communication system.

Viewsheds were programmed to a specific set of parameters. An OFFSETA was added to set the height of observer above surface and an OFFSETB to determine the height of observed features above the surface. This is a useful specification because it allows for an analysis based on precise archaeological data, such as the height of towers and other fortifications. In both viewshed and intervisibility analyses, the OFFSETA for military sites is set at a height of 9.75 m (a human observer measuring 1.75 m tall standing on top of an eight-metre wall or tower). This number is based on the average height of known Nabataean and Roman military sites in the region: Qasr Bashir's towers, Deir al-Kahf tower (ca. AD 348–9, six meters high),<sup>356</sup> the Qasr Burqu tower (12 m high),<sup>357</sup> as well as the height of Arabian towers and fortifications considered in other GIS analyses (Figure 16).<sup>358</sup> The OFFSETB is 0 m in the viewshed analysis (surface level) and again 9.75 m in the intervisibility one. These parameters were taken into account in the line of sight analysis, where 3D features were used.

Another important parameter is the visual range separating visible, non-visible, and recognisable landscape zones. Ogburn developed an approach to determine these visual zones based on ideal conditions of contrast and lighting.<sup>359</sup> According to him, under these circumstances the limit of human recognition acuity and resolution acuity stretches to 6880 m, whereas the limit of normal 20/20 vision does not go beyond 3440 m. To these, I added two additional buffer zones. Based on modern experiments in the region, the maximum distance that allows the exchange of smoke signals is 10,000 m (although this distance varies according to weather conditions or according to the size of the smoke column).<sup>360</sup> Ancient sources attest to this practice in Nabataea, as well as to the communication between sites during the night using fire and light.<sup>361</sup> The extent to which this was possible was 20,000 m. The distances proposed here should be more-or-less accurate, considering that the southernmost section of the frontier is in a semi-arid region without continuous forestation, and the climate is clear and dry for most of the year.<sup>362</sup> Other parameters are noted in Table 2.

<sup>353</sup> For the limitations and potentials : Wheatley and Gillings (2000); Lake and Woodman (2003).

<sup>354</sup> ArcGIS Tool Reference: Viewshed (3D Analyst), retrieved from: [www.pro.arcgis.com/en/pro-app/tool-reference/3d-analyst/viewshed.htm](http://www.pro.arcgis.com/en/pro-app/tool-reference/3d-analyst/viewshed.htm), May 2017.

<sup>355</sup> ArcGIS Tool Reference: Line of Sight, retrieved from: [www.pro.arcgis.com/en/pro-app/tool-reference/3d-analyst/line-of-sight.htm](http://www.pro.arcgis.com/en/pro-app/tool-reference/3d-analyst/line-of-sight.htm), May 2017.

<sup>356</sup> PES 111.A.2: no. 224; Kennedy (2000) 70, Fig. 8.10.

<sup>357</sup> Kennedy (2000), 74–5.

<sup>358</sup> Unfortunately, most reports do not specify the height of towers or forts. See Pérez (2014).

<sup>359</sup> Ogburn (2006).

<sup>360</sup> In total 14 Byzantine sites were included in the experiment and members of the team managed to transfer messages over distances of 4–8 km in case of smoke signal and up to 20 km for fire signals at night. However, it is important to note that the experiment was conducted from ground surface not from original height of the towers/forts, therefore results show lower estimates for visibility (Parker 1987b, 165–181).

<sup>361</sup> Diodorus, 19.96.3, 97.1; Frontinus, *Stratagemis* II.5.16; Vegetius, *Onasander* 6.8; c.f. Cook (2004).

<sup>362</sup> For a critical approach about signalling and the Roman military see Donaldson (1988).

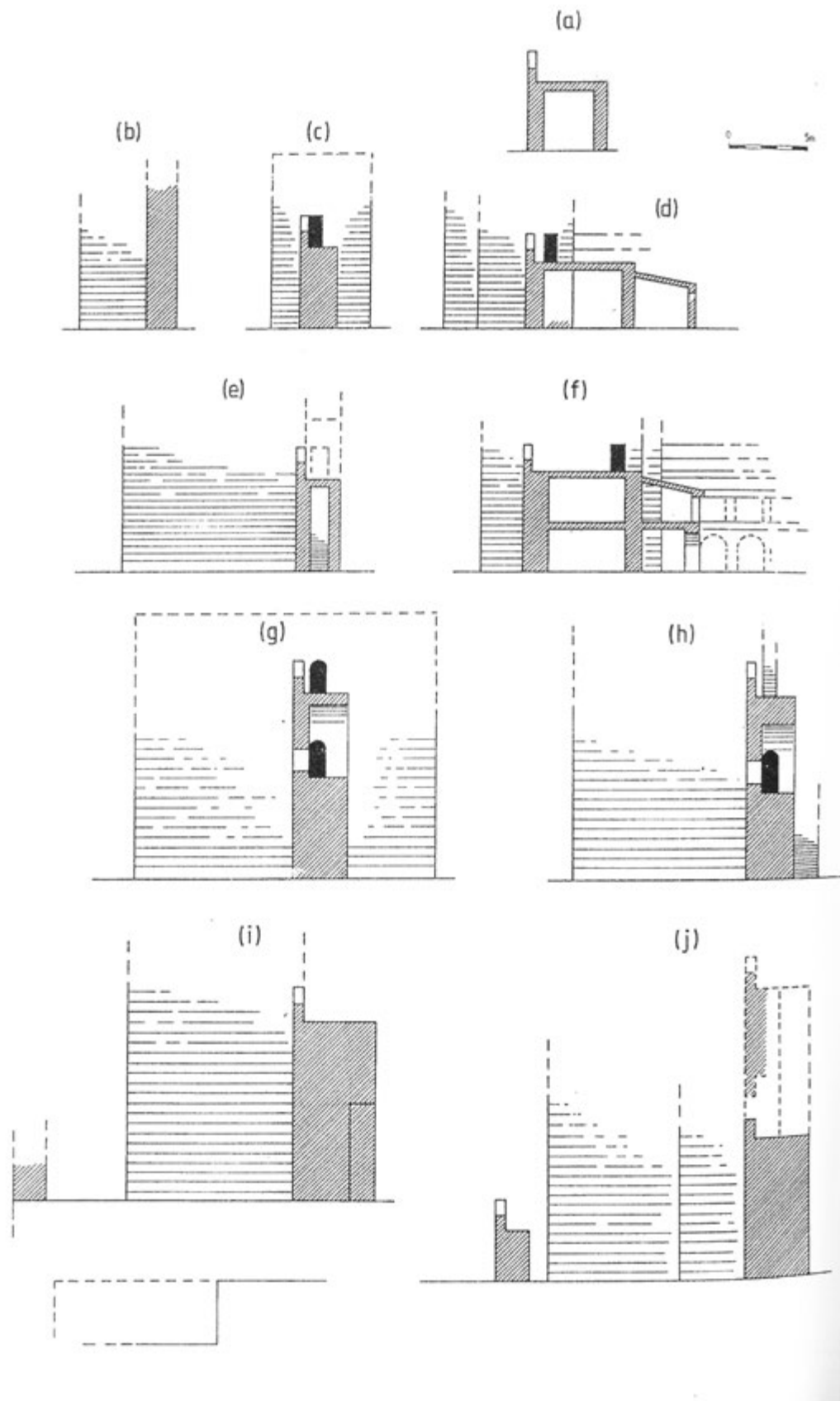


Figure 16. Schematic sections through walls, showing relationship to towers if any (in background): a) Aseikhin, b) En Boqeq, c) Dajaniya, d) Mezzad Tamar, e) Lejjun/Udruh, f) Bshir, g) Zenobia, h) Resafa, i) Martyropolis, j) Dara. (Gregory 1997, Fig. 6.5).

Table 2. The parameters of visibility analyses conducted in this study.

	Viewshed	Intervisibility
OFFSETA/Height of Observer	9.75	9.75
OFFSETB/Height of Target	0	9.75
Azimuth 1	0	0
Azimuth 2	360	360
Vertical Angle 1	+ 90	+ 90
Vertical Angle 2	- 90	- 90
Radius Buffer Zones	0-3440 = 1	0-3440 = 1
	3441-6880 = 2	3441-6880 = 2
	6881-10,000 = 3	6881-10,000 = 3
	10,001-20,000 = 4	10,001-20,000 = 4

### *Distance analysis*

Movement and distance analyses have received more criticism than GIS analyses regarding visibility.<sup>363</sup> In part, this is explained by the number of assumptions about past landscape conditions and the variability of algorithms required to model cost-surface and cost-paths analyses. Least cost-path analyses have been particularly used to reconstruct road systems and migration routes. The main road system in southern Arabia is known from recent surveys so there is no need to reconstruct its course.<sup>364</sup> In this study, I use cost surface analysis to determine four travel time buffer zones from every military site (isochrones). The results are compared with the distribution of settlements and other features in the landscape to determine whether these were located within one (60 min), four (240 min), eight (480 min), or twenty-four (1440 min) hours of any given military point. The travel time/accessibility between sites helps differentiate between those areas that are supported by a system of mutually dependent forts (perhaps more focused on peace-keeping and defence), and those that are not.

In ArcGIS 10.4.1 the tool used for this analysis was path distance: ‘The path distance tool is used to create the least-cost path between a source and a destination, while accounting for the surface distance and the horizontal and vertical factors.’<sup>365</sup> These factors were calculated by the slope degrees, flow direction (aspect), and friction. The formula for surface friction is taken from Tobler’s hiking function, which determines the hiking speed according to the slope angle:<sup>366</sup>

$$W=6e^{-3.5|\tan\theta+0.05|}$$

where: W = walking velocity (km/hr) and

S = slope of the terrain (dh/dx)

<sup>363</sup> Conolly and Lake (2006), 214–225, 252–6: for overview of methods and their limitations; Gietl, Doneus, and Fera (2008): for comparison of principal GIS toolkits.

<sup>364</sup> Graf (1995), (1997b); Ben David (2007), (2012); Abudanah (2016), personal communication.

<sup>365</sup> ArcGIS Tool Reference: Path Distance, retrieved from: [www.desktop.arcgis.com/en/arcmap/10.3/tools/spatial-analyst-toolbox/understanding-path-distance-analysis.htm](http://www.desktop.arcgis.com/en/arcmap/10.3/tools/spatial-analyst-toolbox/understanding-path-distance-analysis.htm), May 2017.

<sup>366</sup> Tobler (1993). Ancient camel caravans travelled about 40 miles a day (ten hours/day at four miles/hour).



I also conduct several near analyses (Select by Location tool) to determine which fortifications are within a ten- to fifteen-minute walk from settlements, waterpoints, main roads, and/or wadi passages (5 km/h average human speed in flat terrain).<sup>367</sup> As Tobler argued, ‘Everything is related to everything else, but near things are more related than distant things.’<sup>368</sup> Based on this statement, the fortifications that are not ‘close’ to any of these points are the ones that require a more pressing re-interpretation of their function. There is no open online database that has mapped the wadi system in southern Jordan, so I used the Flow Accumulation tool in ArcGIS to create the water-paths in the region and reconstruct the wadi network.<sup>369</sup> This was done with the intention of mapping the potential ‘entry’ passages into the study region from the east, where scholars have placed the ‘Nomadic menace.’ Although the idea of nomadic incursions from the eastern desert is, to some extent, anachronistic, it is possible—and even probable—that the fortification system in the east was directed towards the open desert and oversaw the main wadi entrances. One should note that people do not move as water does, as the latter’s movement is only determined by slope.

## Results

### Visibility

The viewshed analysis suggests that during the Nabataean period most settlements, waterpoints, and roads (not paved at that time) were within the visible range of forts and towers (Figure 17). The constant monitoring of the Hisma routes directly from forts did not seem to be a priority during this period, although the desert could have been patrolled by mobile forces and, to a limited extent, secured by the Kharaz tower. The Wadi Araba route was also not consistently monitored during this period from fortifications, as several stretches were invisible from these points. There was a tightly-packed line of fortifications east of what came to be the *Via Traiana*, and they seemed to establish a linear and defensible visible zone, perhaps shielding the western plateau and the sedentary population living there.

During the Roman period, the Nabataean system expanded and the zones previously not-visible from forts and towers became so (Figure 18). The Wadi Araba road was then almost entirely visible (or at least easily accessible) from several military stations. The same happened in the Hisma with the development of Humayma, where the visibility was directed towards the *Via Traiana*. The military installations on the plateau also seem to have been more concerned with the *Via Traiana* and its monitorisation than with threats from the east. All the settlements, which increased in number in the southwest of the plateau during this period, fell under Roman army surveillance.

The army of the LR/B period reoccupied many of the forts and towers east of the *Via Traiana*, and some new fortifications were built here as well (e.g. at Ma’an) (Figure 19).<sup>370</sup> It is important to note that almost none of the settlements was located east of this eastern ‘fortification line.’ The Hisma continued to have the same system as that of the Roman period, whereas the Wadi Araba was apparently almost completely abandoned. The number of settlements increased in the north of the plateau, but the south continued to be more populated. The *Via Traiana* remained a dominant feature. In general, there is an evident eastern shift.

<sup>367</sup> ArcGIS Tool Reference: Select by Location, retrieved from: [www.desktop.arcgis.com/en/arcmap/10.3/map/working-with-layers/using-select-by-location.htm](http://www.desktop.arcgis.com/en/arcmap/10.3/map/working-with-layers/using-select-by-location.htm), May 2017.

<sup>368</sup> Tobler (1970), 234–240.

<sup>369</sup> Hydrology tools: Fill > Flow Direction > Flow Accumulation > Set Null (Threshold mean) > Stream Link.

<sup>370</sup> On Byzantine reoccupation of Nabataean forts: Glueck (1934-1951); Gichon (1967), 35-64; Parker (1986).

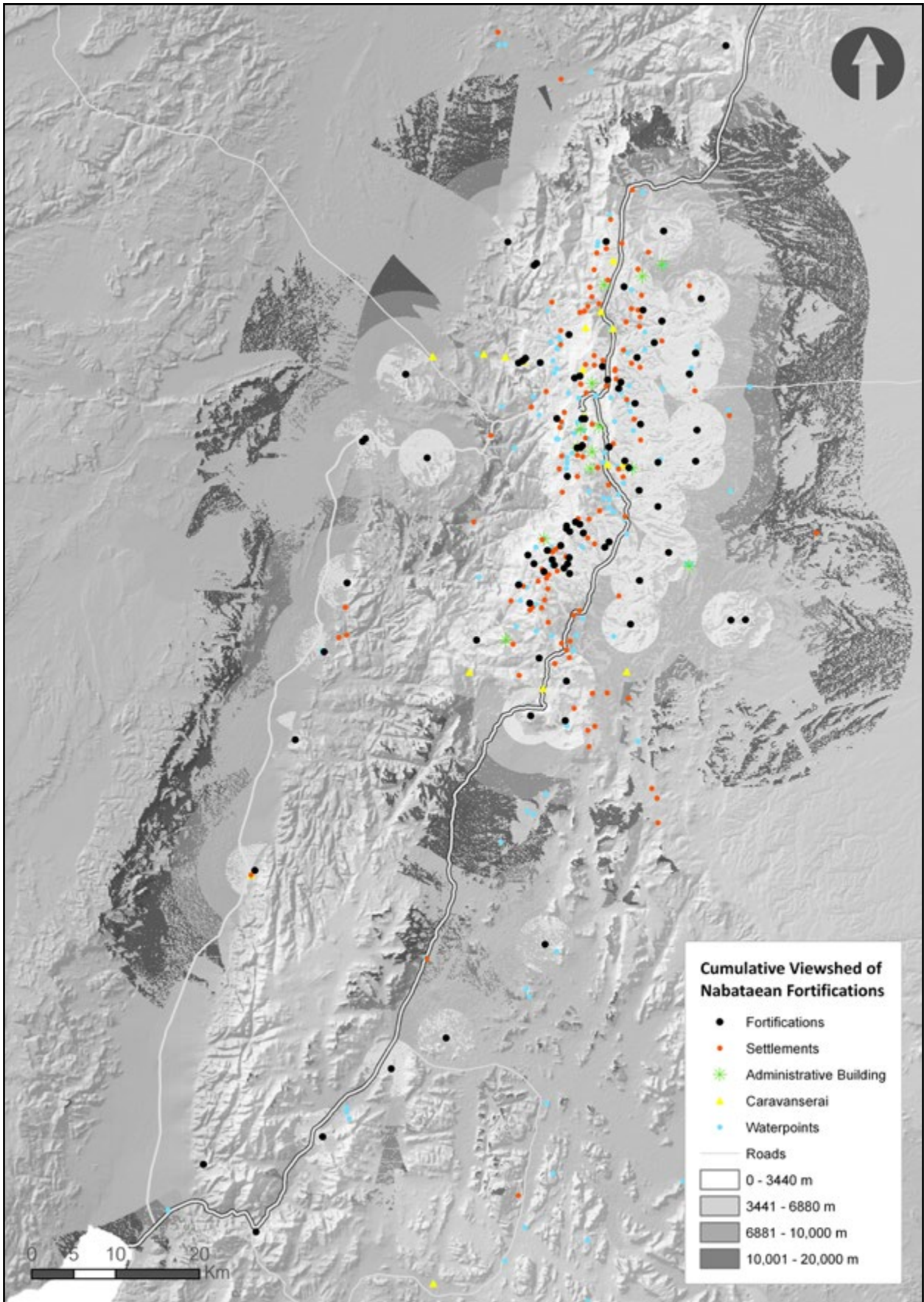


Figure 17. Cumulative viewshed of Nabataean fortifications.



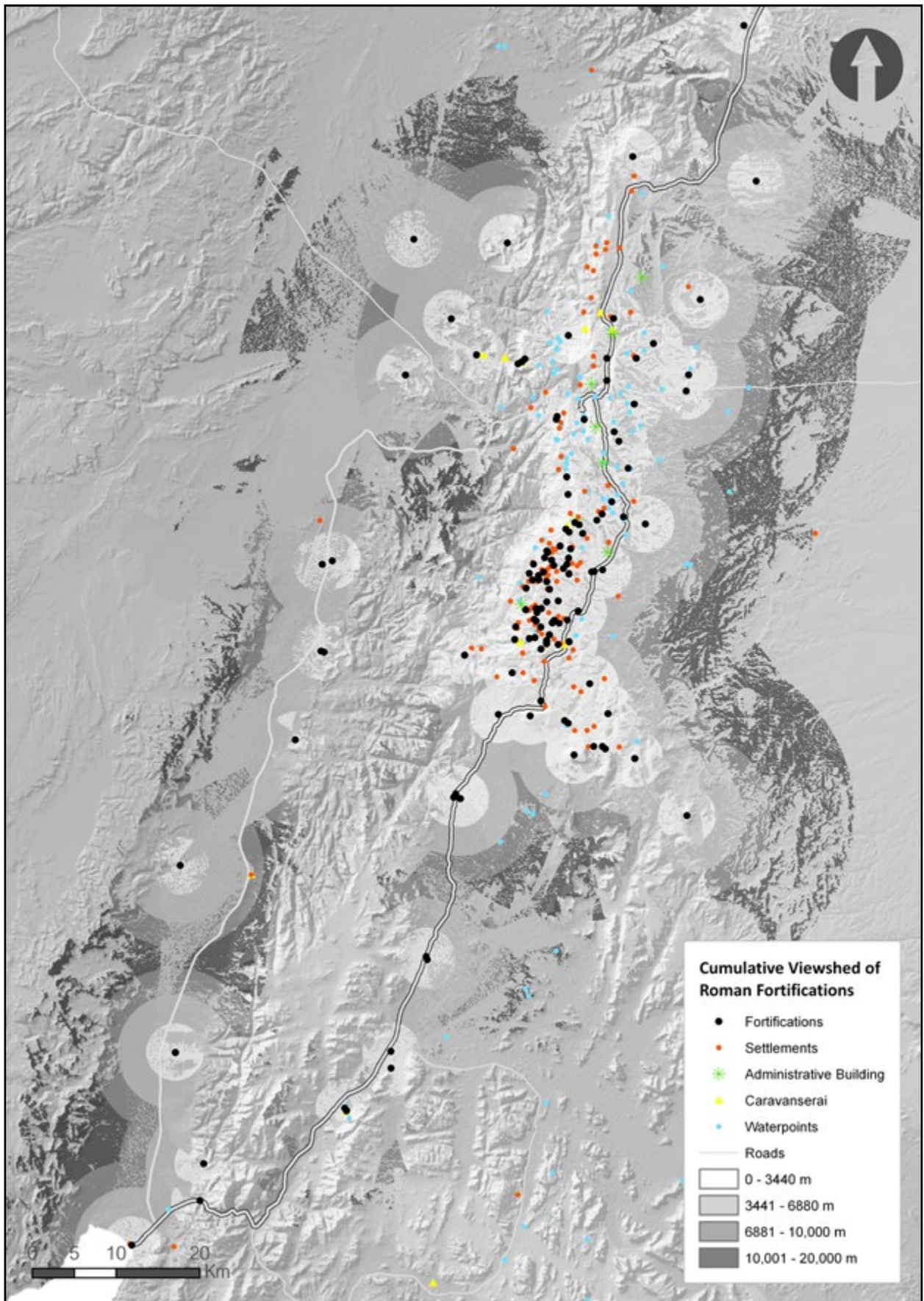


Figure 18. Cumulative viewshed of Roman fortifications.

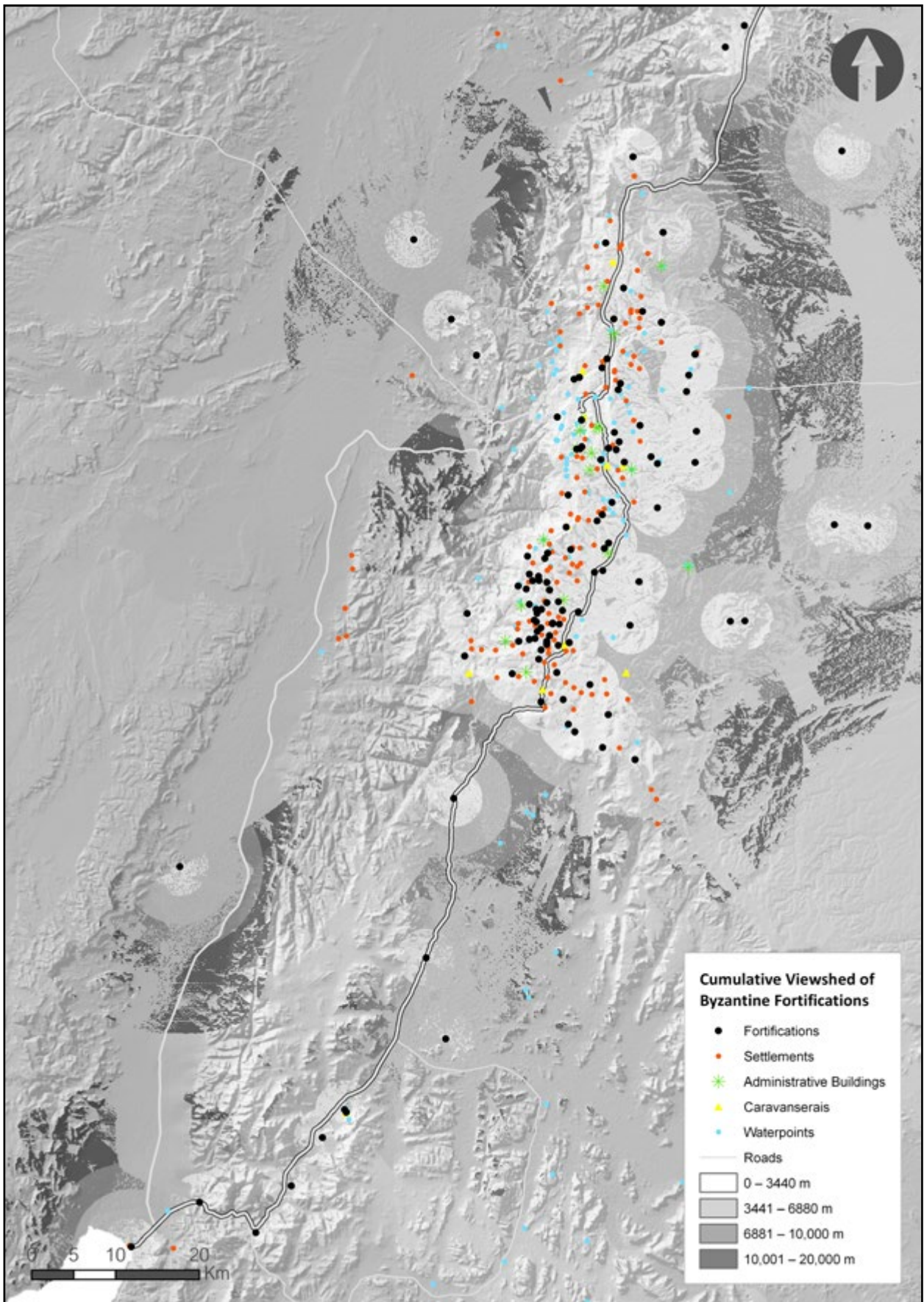


Figure 19. Cumulative viewshed of LR/B fortifications.



The intervisibility analysis was only applied to forts and towers. During the Nabataean period, there was no visual interconnection between the forts of the Wadi Araba and the Hisma (Figure 20). The exception to this scenario was set on the plateau, starting at the Mureighah fort—12 km north of the southern edge of the Jordanian plateau—and continuing north for about 45 km until reaching the settlement of Negla. In this stretch, forts and towers could see each other or, at least, could communicate through smoke signals. Two unnamed towers at the eastern edge of this system seem to be particularly well-located for transmitting light messages to almost every other fort to their west on the plateau. This network was centred around Petra and could more effectively protect against threats from the east. It is important to note that the plateau was naturally protected by the dramatic cliffs of the Araba to the west, and thus supposedly there was no need to build forts guarding the western flank.

The Roman annexation changed the visual connectivity of the region (Figure 21). Although the fortifications along the Wadi Araba continued to exist in relative isolation from each other, the Hisma became populated with strategically-located forts and towers. This resulted in a more integrated and continuous system of fortifications connecting Aqaba and Petra. The system was only interrupted along the Wadi Yutm, a narrow and winding canyon that prevented all lines of visibility. Other fortifications in the north were also integrated in this interconnected network of fortifications, namely those north of Udruh as far as Ata'ita (beyond our study region). Curiously, the region immediately surrounding Petra lost many of its fortifications, whereas to the south—near Sadaqa, Qurein, and Dor—the landscape became dotted with numerous mutually-visible fortifications, isolated from those in north. This was also an agricultural area with many agricultural villages, so perhaps these fortifications might have been used as granaries and not by the military. The Nabataean posts to the east of the *Via Traiana* disappear during the Roman period, and what we see instead is the fortification of the path along the *Via Nova Traiana*, especially in the south.

The LR/B fortifications expanded the visibility network to the east of the *Via Traiana* (Figure 22), and in general there was an eastward movement of about 20 km into the desert. A few outposts of forts (but mostly towers), oriented approximately on the same northeast-southwest alignment as Ma'an, provided direct light communication lines to almost every part of the plateau to the west. The system also became more evenly distributed and better visually-connected between Udruh and el-Qana at the southern edge of the plateau (rather than focused on the south of the plateau). There were at that time considerably more direct lines of sight and a much larger number of potential smoke-signalling lines of sight. This system of intervisible fortifications closely followed the road network of the region, although it often spread beyond it. The Wadi Araba was practically abandoned by the military at that time.

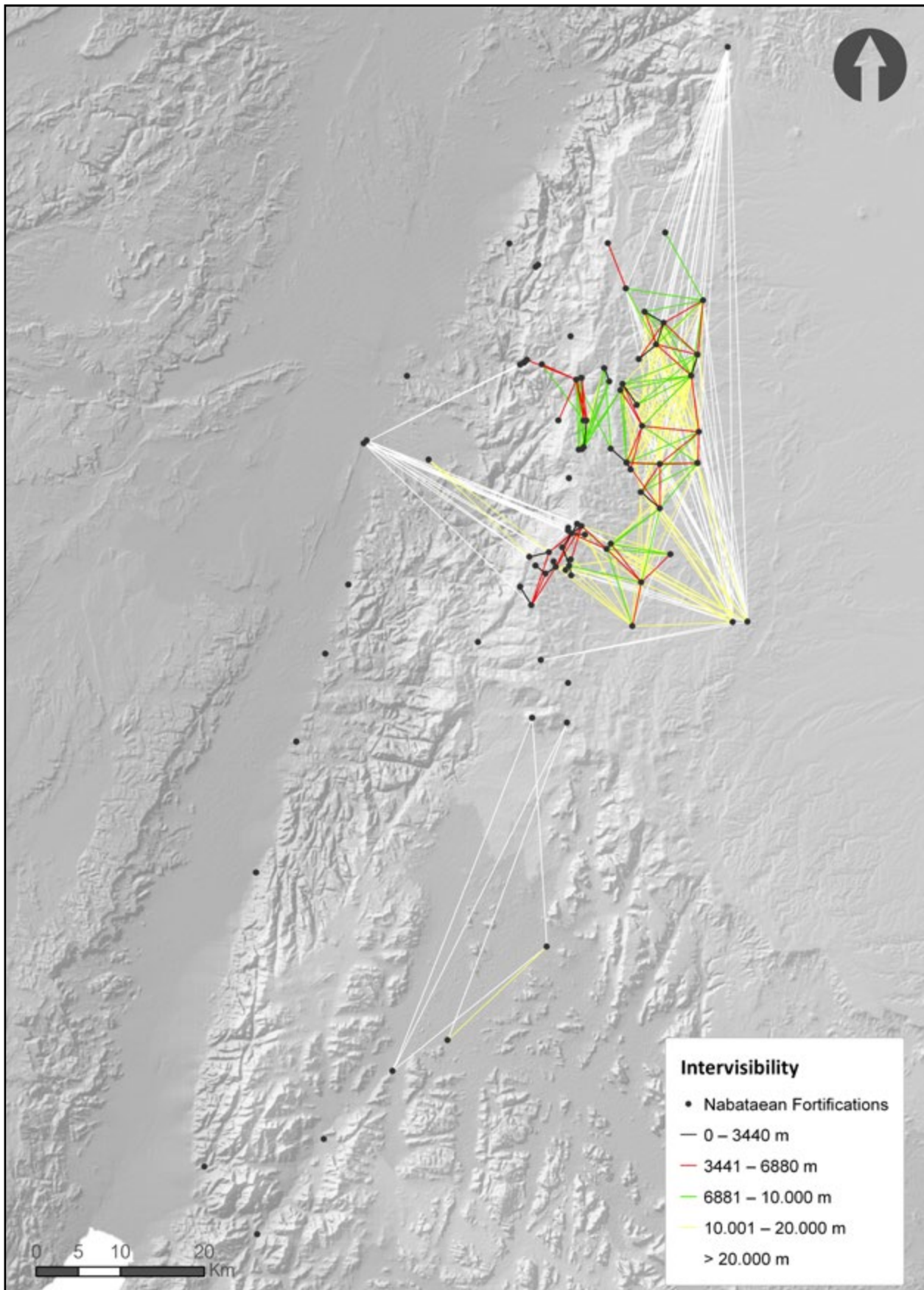


Figure 20. Intervisibility network of Nabataean Fortifications, showing the limit of normal 20/20 vision (black), the limit of human recognition acuity (red), the limit of smoke signal visibility (green), the limit of light signal visibility (yellow), and all possible lines of sight of sites more than 20 km apart (grey).

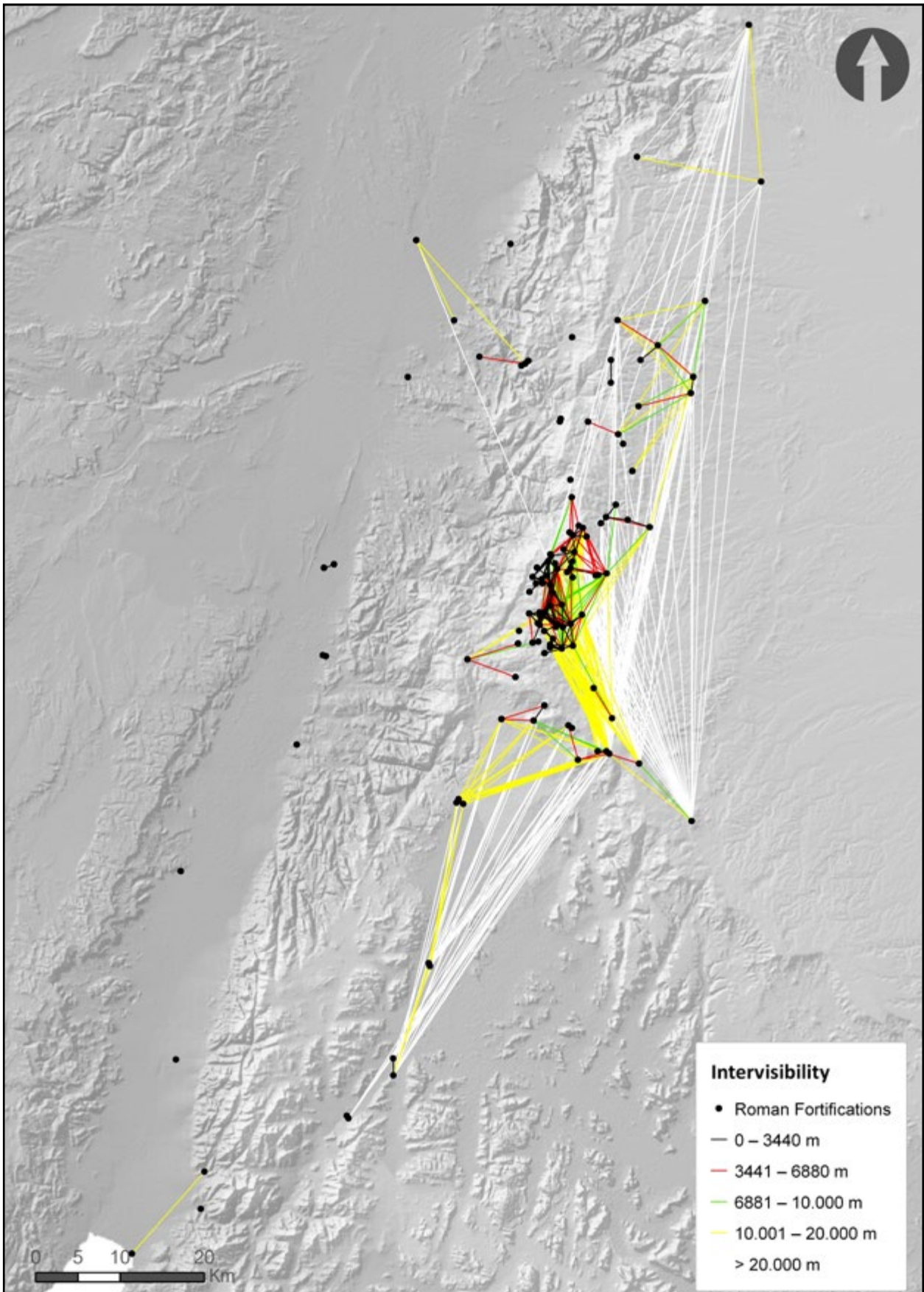


Figure 21. Intervisibility network of Roman Fortifications, showing the limit of normal 20/20 vision (black), the limit of human recognition acuity (red), the limit of smoke signal visibility (green), the limit of light signal visibility (yellow), and all possible lines of sight of sites more than 20 km apart (grey).



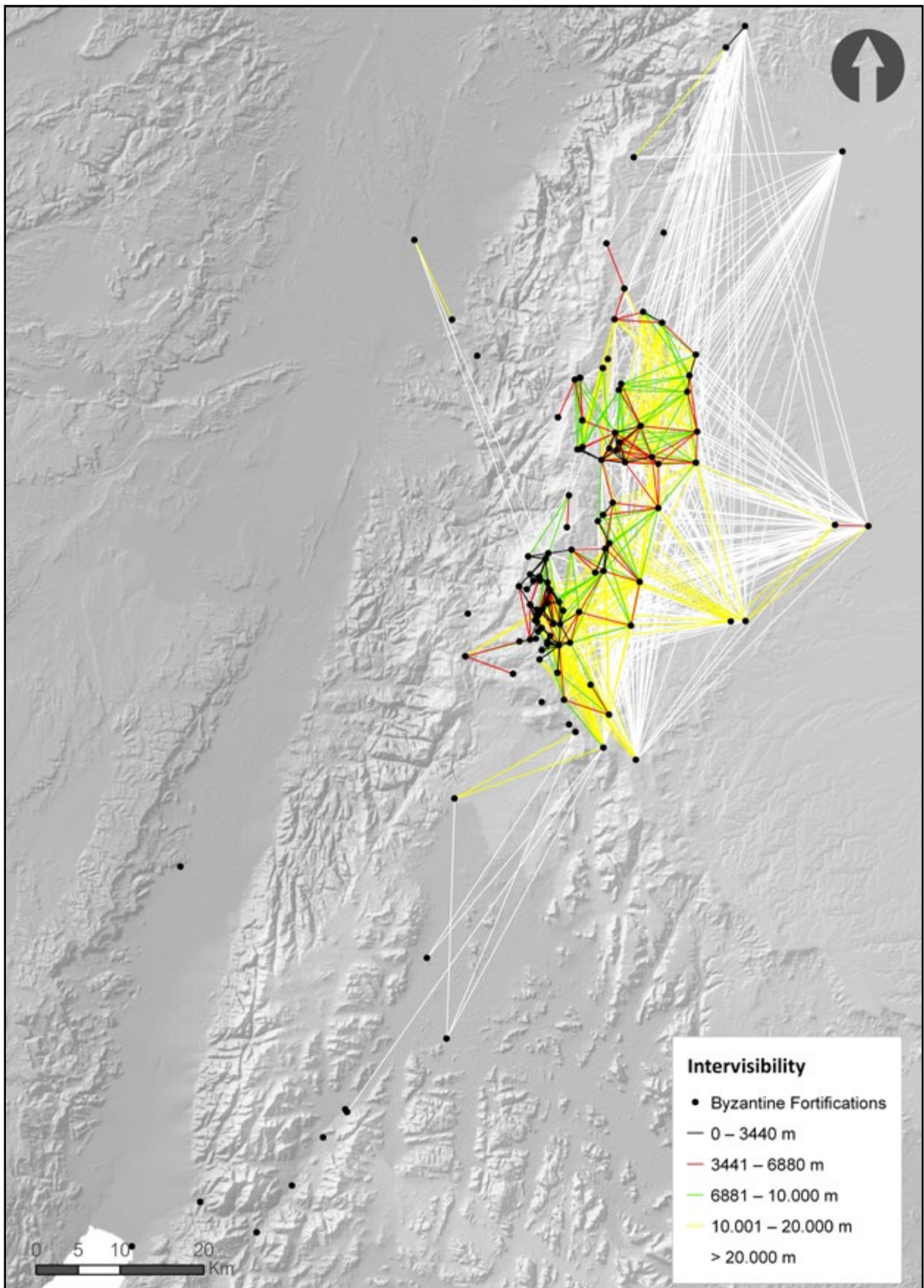


Figure 22. Intervisibility network of LR/B Fortifications, showing the limit of normal 20/20 vision (black), the limit of human recognition acuity (red), the limit of smoke signal visibility (green), the limit of light signal visibility (yellow), and all possible lines of sight of sites more than 20 km apart (grey).

### Distance

Despite the changes in visibility, the travel distance between military points remained constant throughout the Nabataean (Figure 23) and Roman (Figure 24) periods but decreased in the east during the LR/B period (Figure 25). The Wadi Araba, during the former two periods, was connected by a system of forts and towers within a 4–8 hours' walk of each other. The forts, including Bir Madkhur, Ghandaral, and Ain Ghadian (Yotvata), were roughly 20 km apart, but towers were found along the stretches between them.<sup>371</sup> The Hisma section to the east of the Araba presented a similar picture. This is the case even during the LR/B period, when the Wadi Araba lost most of its previous military presence (except along the Petra-Gaza route).

The Roman fortification system expanded along the *Via Traiana*. The number of settlements increased, especially on the plateau, but most remained within a one-hour walk from any military point. During the LR/B period, the Hisma trade route continued to be well-connected by fortifications located 1–4 hours from each other but, even then, springs and other water sources in the Hisma east of the *Via Traiana* do not seem to be the focus of military concern. On the plateau, there is an increased focus was the east, around Ma'an, which became accessible from the sites along the *Via Traiana* within a four-hour walk. Not far to the east of the *Via Traiana* was also a well-defined and closely-spaced line of fortifications, a pattern that had already been emerging during the Roman period. This analysis shows an increased military focus around the *Via Traiana*, particularly on the plateau. There was also a gradual attempt to populate points deeper into the eastern desert and a military decentralisation of the Araba.

The near analysis determined whether fortifications were within 1000 m of a settlement, main road, waterpoint, or wadi. The results can be seen in Figures 26, 27, and 28, and, in more detail, in Table 3. The Nabataean fortifications on the plateau were mostly near settlements and waterpoints, although several seem to have been directly connected to roads. The fortifications east of the *Via Traiana*, on the other hand, do not seem to be directly associated with either of these features but, instead, with wadis and, more interestingly, wadi entrances. The fortifications along the Wadi Yutm and the Wadi Araba were also placed along wadi connections and crossings.

The location of Roman military structures seems to have been based on their proximity to settlements, waterpoints, and roads, but not along or at the mouth of wadis (unless the wadi crossed the road system). There was a relatively greater proximity to roads in the Hisma and the Araba. During the LR/B period, the system reverted to one focusing on wadi entrances and passages that rested east of the *Via Traiana*. Similarly, to the Nabataean fortifications, the LR/B military points to this day appear to form a line flanking the eastern fringe of the settled area of the plateau and overlooking wadi passages (Figure 29). There were few forts—regardless of period—away (>1000 m) from water, settlements, roads, or wadis. The function of these forts and towers can be understood in terms of their visibility from other fortifications (intervisibility) and to their surrounding areas (viewshed).

Table 3. Percentage of fortifications less than 1000 m away from waterpoints, settlements, roads, wadis.

Period	Water	Settlements	Roads	Wadis
Nabataean (n=89)	33.7% (n=30)	40.5% (n=36)	38.2% (n=34)	47% (n=42)
Roman (n=125)	32.8% (n=41)	52% (n=65)	52% (n=65)	35% (n=44)
LR/B (n=117)	35% (n=41)	42.7% (n=50)	48.7% (n=57)	37% (n=44)

<sup>371</sup> c.f. Isaac (1989), 245.

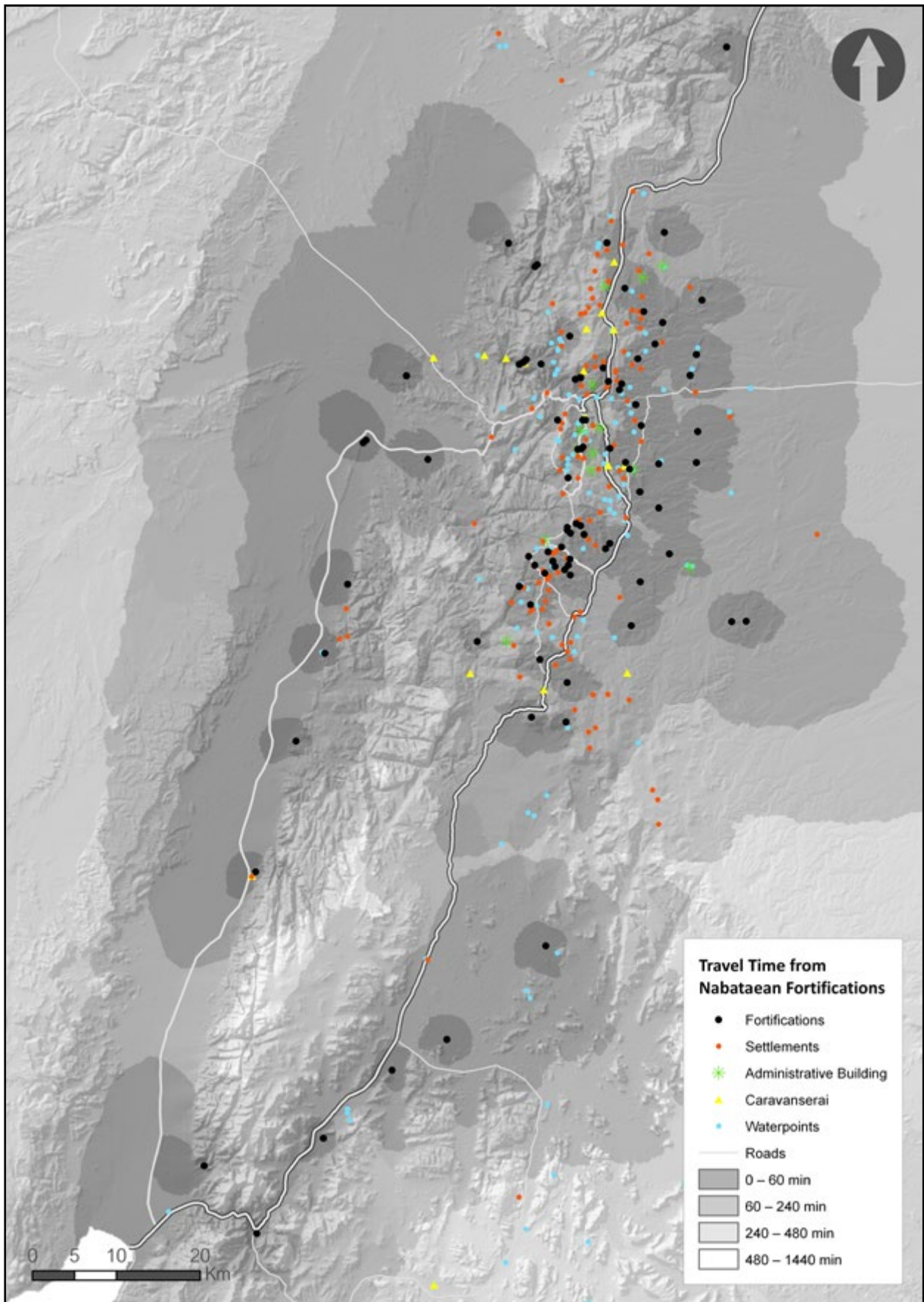


Figure 23. Travel time from Nabataean Fortifications using Tobler's Hiking function.



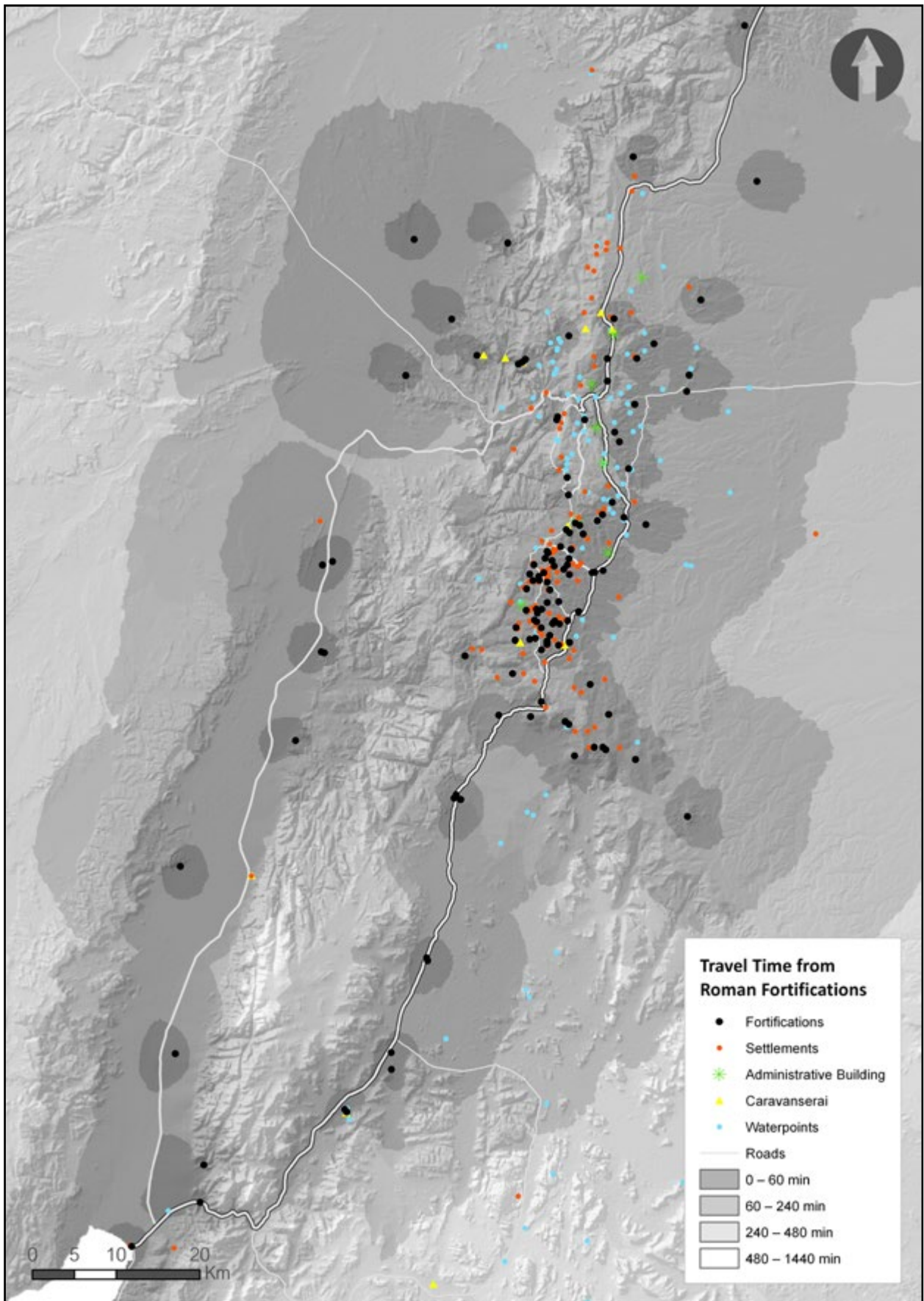


Figure 24. Travel time from Roman Fortifications using Tobler's Hiking function.

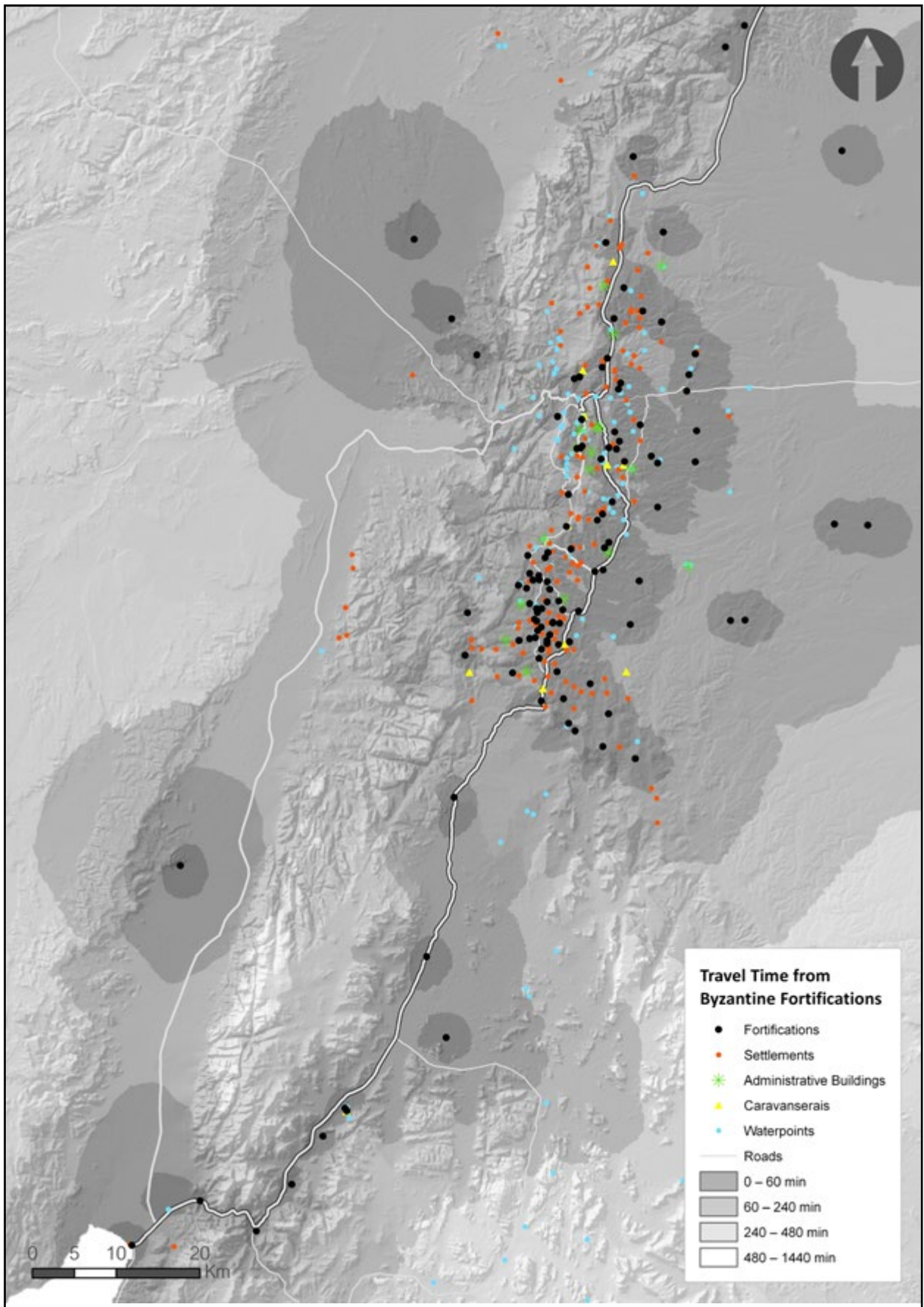


Figure 25. Travel time from LR/B Fortifications using Tobler's Hiking function.



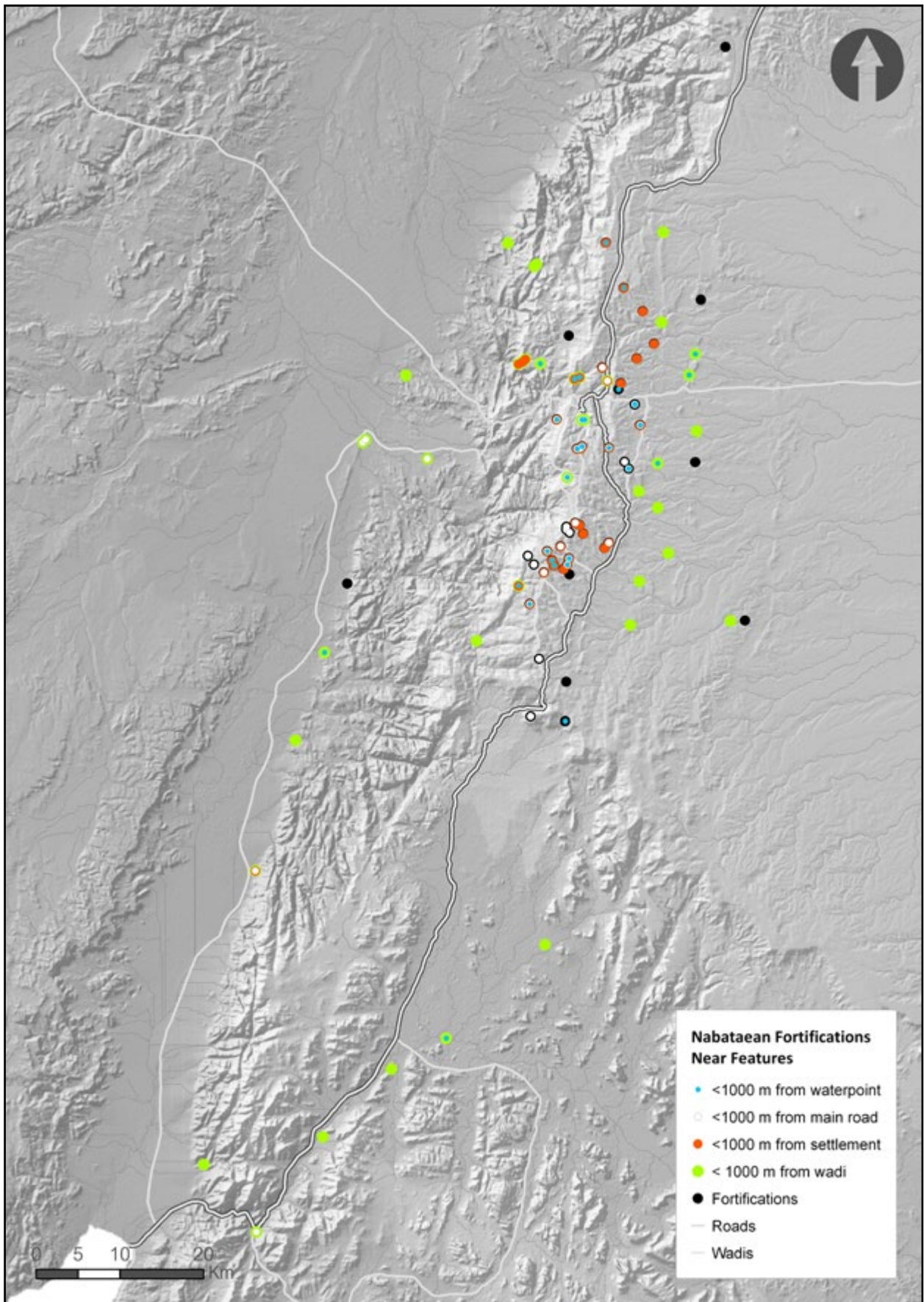


Figure 26. Features near (<1000 m) Nabataean fortifications.

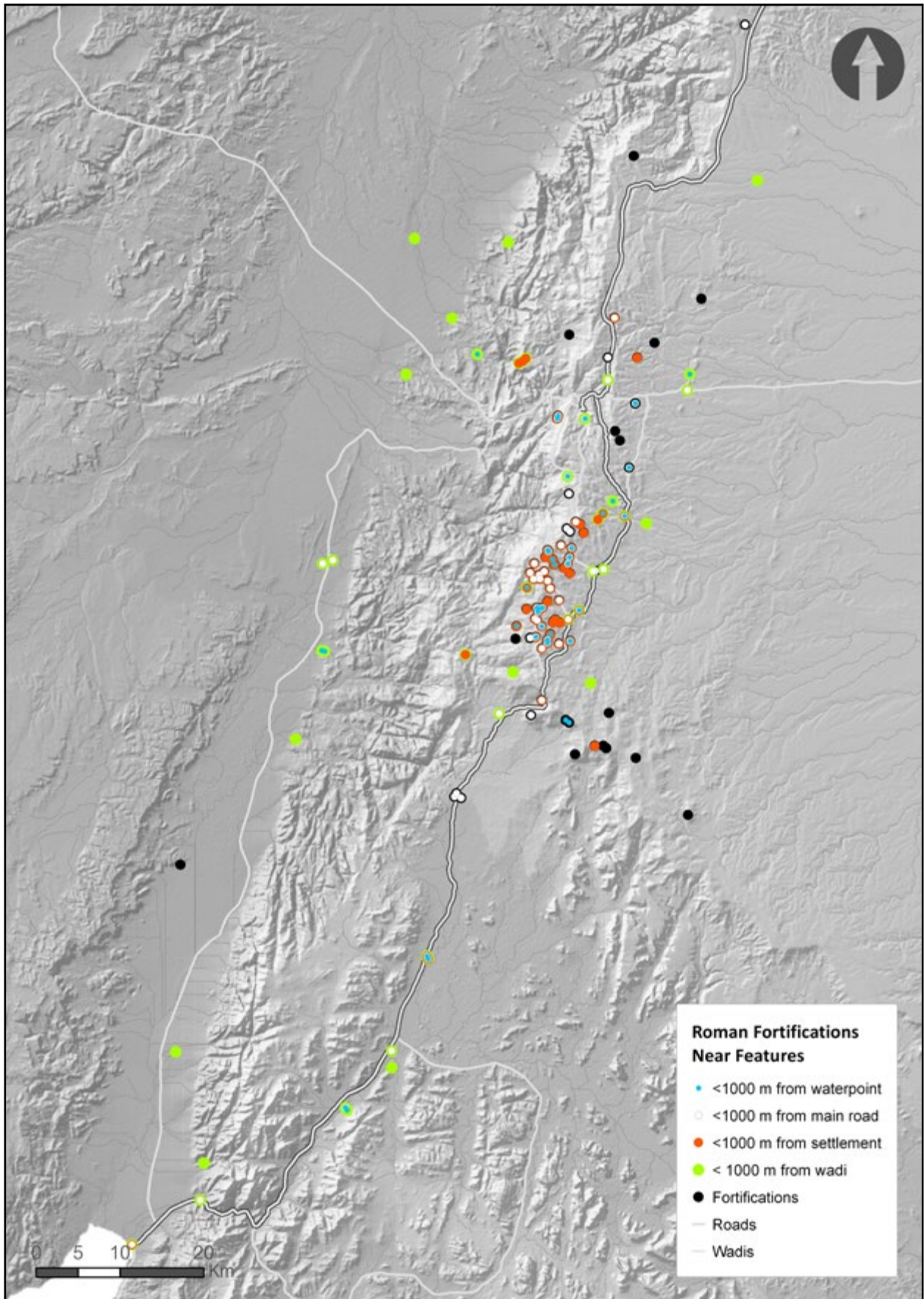


Figure 27. Features near (<1000 m) Roman fortifications.



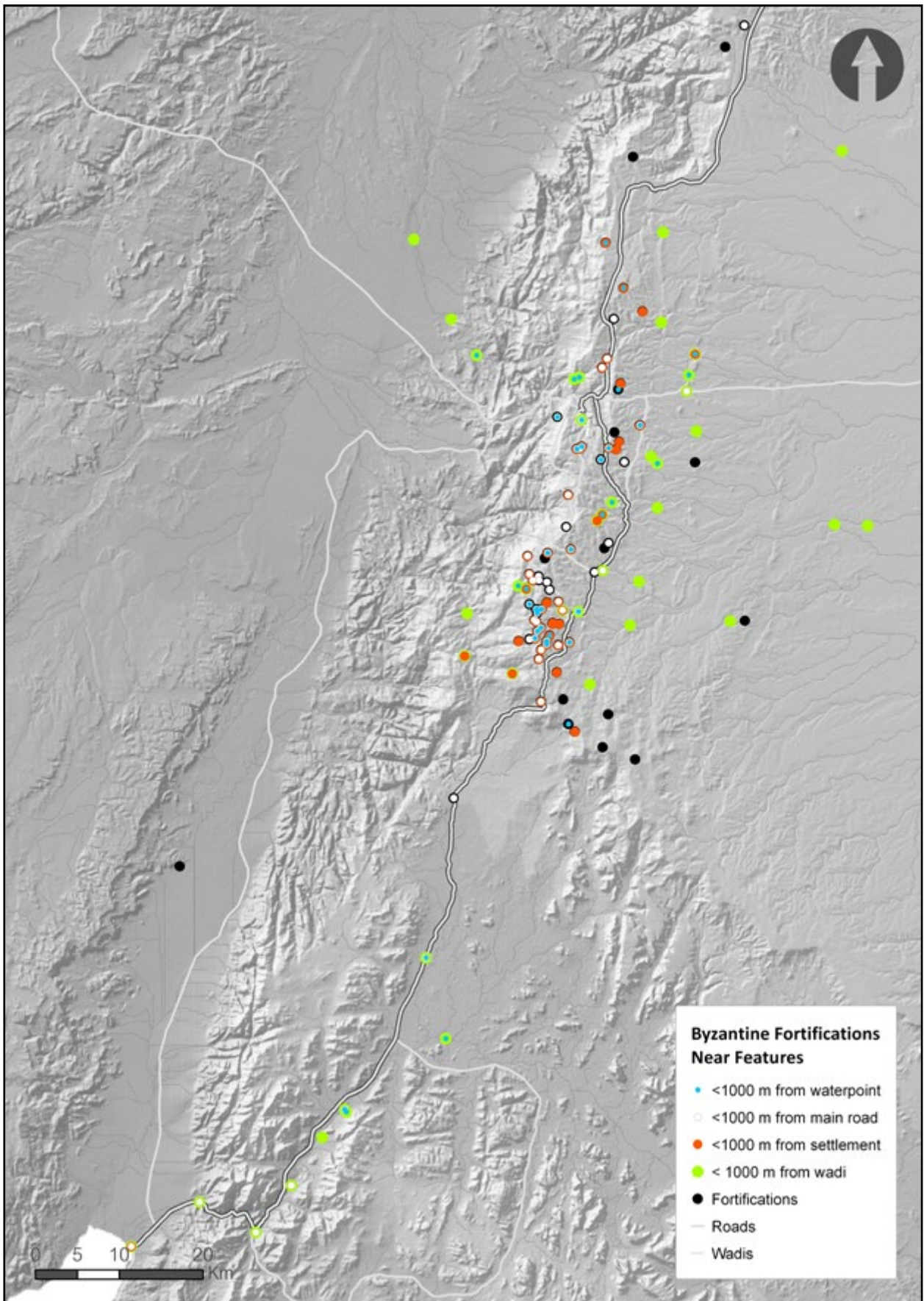


Figure 28. Features near (<1000 m) LR/B fortifications.

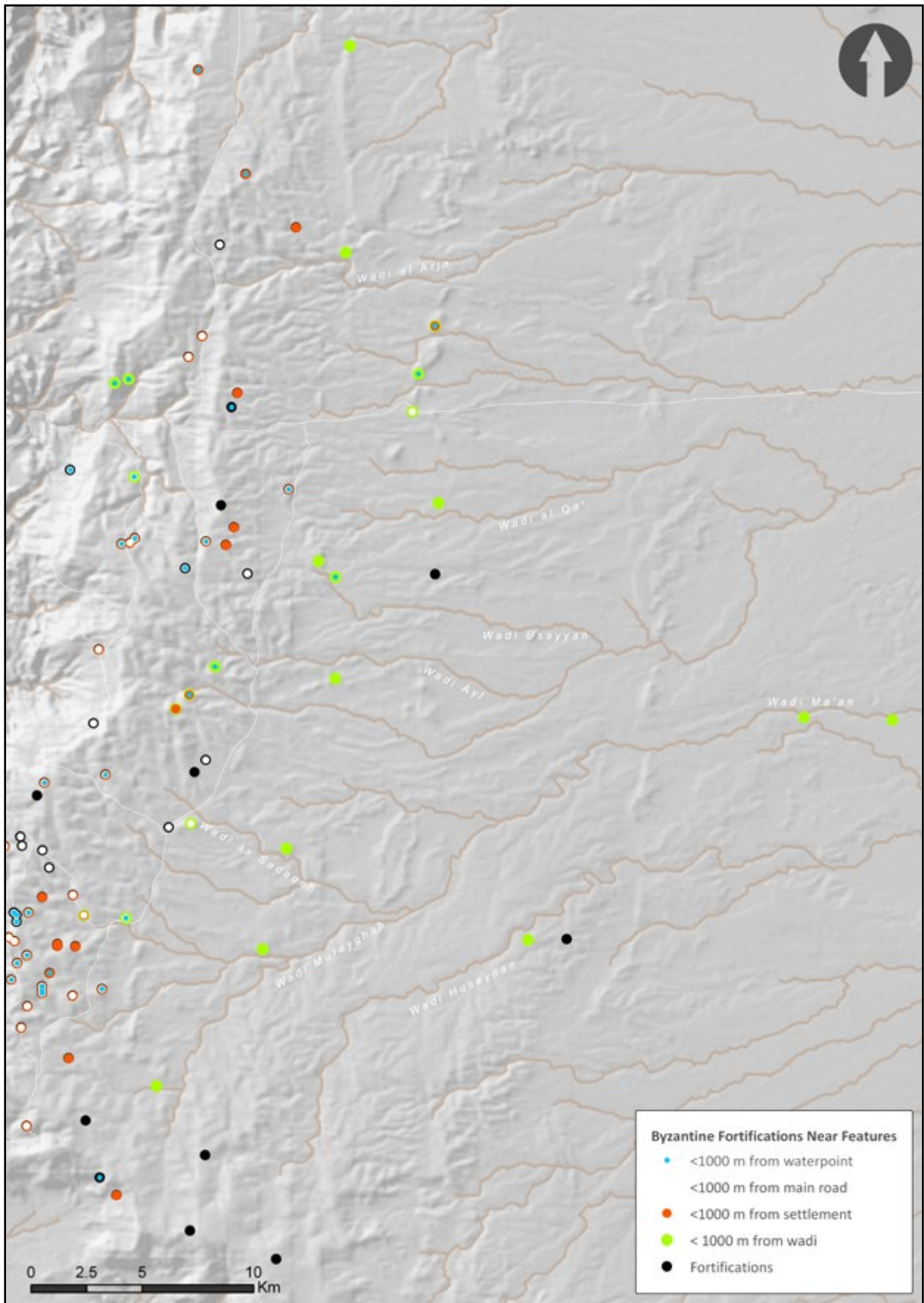


Figure 29. LR/B fortifications on the Jordanian Plateau and their location in relation to main wadi passages connecting the plateau with the eastern desert.

## V. Discussion

The historical and spatial analyses presented here refute the idea that the army served only one purpose across time and space. The historical evidence offered in Chapter III suggests that the Roman army in Arabia, as well in other eastern provinces, maintained the important responsibilities of defending the populace and the territory against nomadic incursions; ensuring the peace, taxation and the surveillance of settlements and transhumance routes; and monitoring and taxing the incense trade roads passing through Aila and Petra. The historical evidence, however, does not provide a nuanced, accurate, or balanced view of which forts fulfilled one or all these responsibilities, or for how long. The lack of excavation reports forces us to look at the landscape settings of Nabataean, Roman, and LR/B fortifications to determine their purpose.

The results of the spatial analysis shown in the previous chapter assume that the variations in the function of fortifications in southern Arabia depended on their geographical location and on the location of forts and towers in relation to each other and other features. A more detailed description of these fortifications' function can only be offered by a project that exceeds this one in length and scale, or after considering future excavation data for all the fortified sites in the region. In the scope of this study, the primary functions of forts in the study region can be separated the following way (c.f. Figures 30, 31, 32).

The forts and towers along the *Via Traiana* in the Hisma and those along the desert route of the Wadi Araba were generally built to oversee the important trade routes crossing these regions. In both instances, there was only one line of fortifications, which closely followed the main road. The fortifications along these routes were also closely associated with water sources and were specifically located where the wadi entrances crossed the road. In the case of the Wadi Araba, these entrances connected the valley with the plateau above. The travel time between these points rarely exceeded four to eight hours (one day's journey), which seems ideal to provide resting points along caravan routes.

During the Roman and LR/B periods, the forts in the Hisma and the Wadi Araba were built beyond the limit of visibility of their nearest neighbour. Likewise, intervisibility is very low or inexistent between fortifications in these regions, suggesting that this was not a system built for long-distance communication (smoke or light). The system did become more integrated during the Roman period, when Humayma, Quweira, and other Hisma forts could theoretically communicate via light signals. On the other hand, the fortifications in the Wadi Araba were almost completely abandoned by the military during the LR/B period.

The spatial analysis also exposes that although the *Via Nova Traiana* was the main North-South axis of the region the Roman and LR/B fortifications positioned directly on it, compared to the total number, were not many.<sup>372</sup> Neither were these sites intervisible during the Roman period. This could potentially be compensated by the number of 'administrative buildings' along the road, especially during that period. The *Via Traiana* was initially built to move troops from the Red Sea to the northeastern provinces and was not used by traders nor as an attempt to master the desert.<sup>373</sup> The camel caravans in the Hisma probably travelled beside the *Via Traiana*, whereas on the plateau they moved along the King's highway (also called the Scenic Route), to the west of the *Via Traiana*. There are many settlements, waterpoints, and several caravanserais along this western route which could have easily provided shelter and provisions for travellers and merchants. Also, the King's Highway appears to have had more fortifications along its path than the *Via Traiana*. Could this indicate that the Romans were closely monitoring trade?

<sup>372</sup> Also noted by Fiema (1987), 265.

<sup>373</sup> Eadie (1985), 414; Zayadine (1985), 160; Schmid (2004), 416; Borstad (2008).



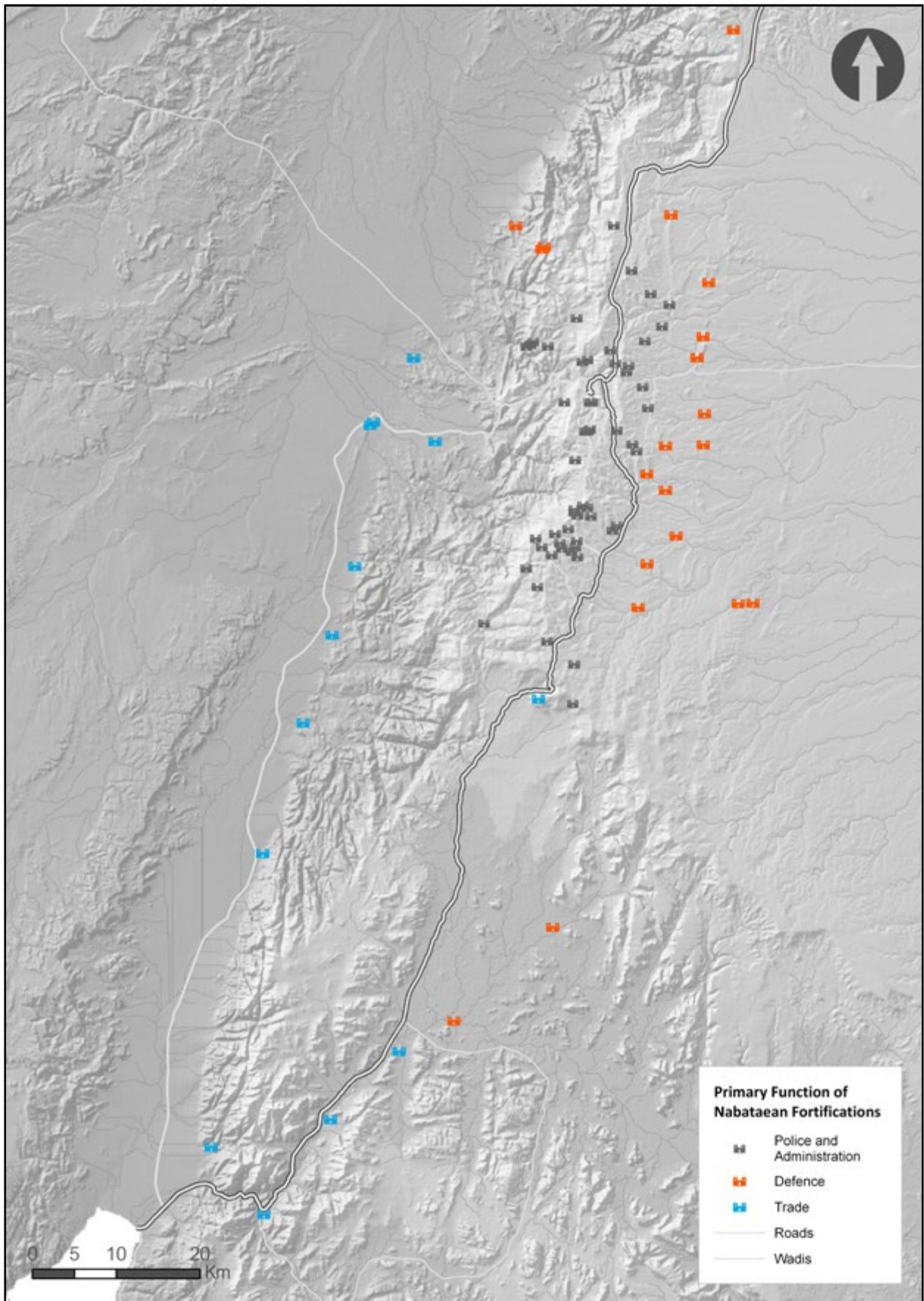


Figure 30. The distribution of Nabataean fortifications according to their primary function.

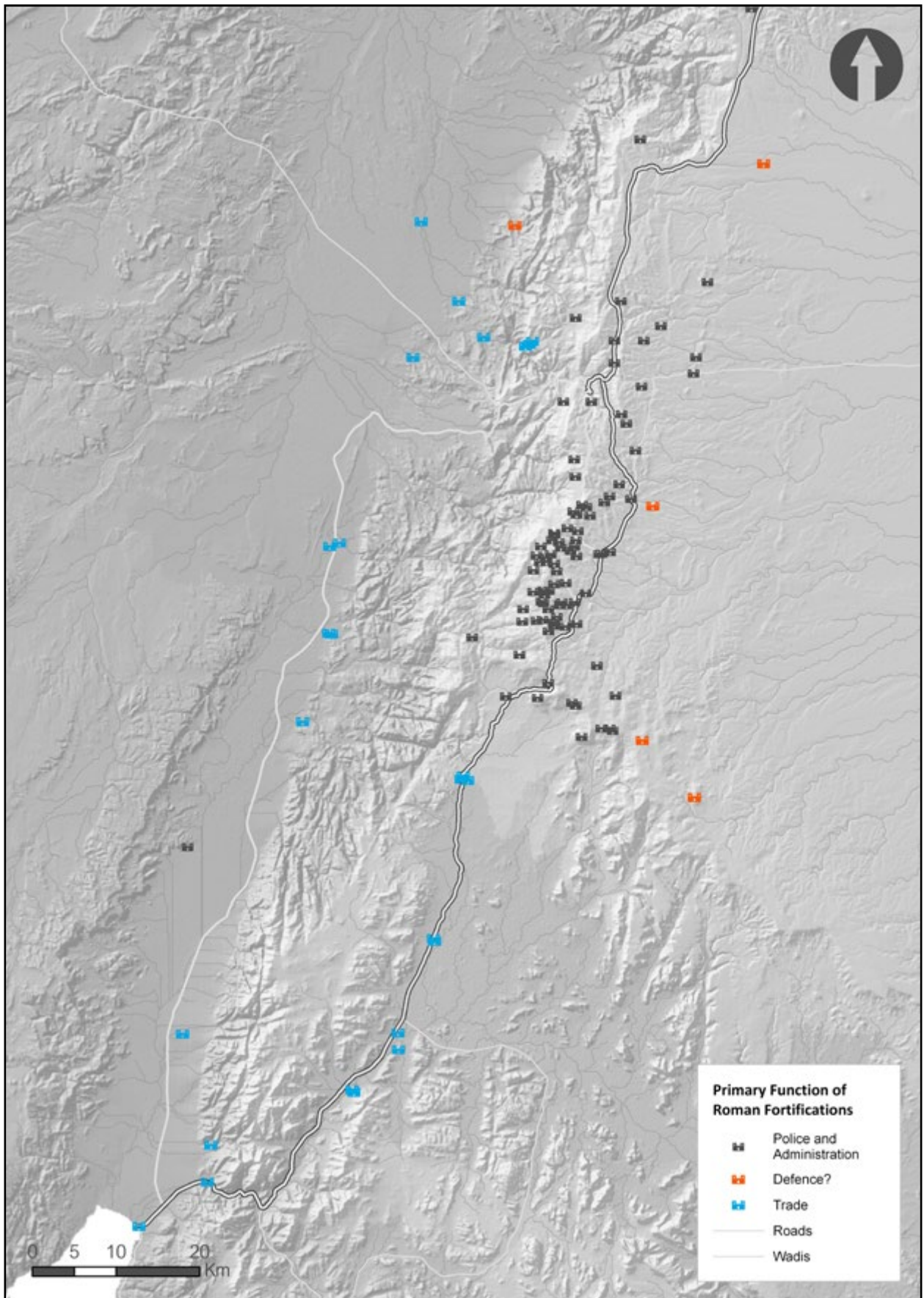


Figure 31. The distribution of Roman fortifications according to their primary function.



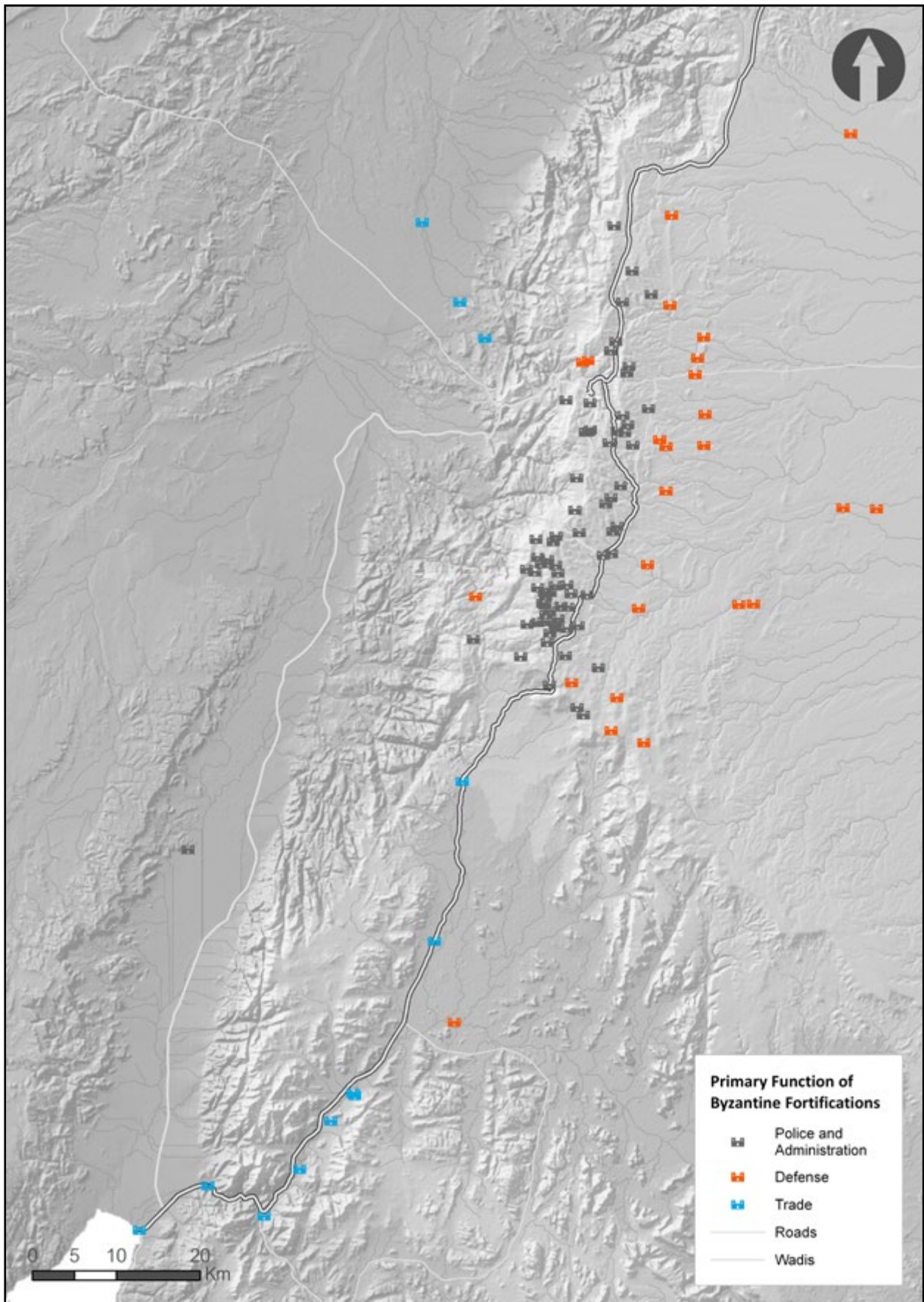


Figure 32. The distribution of LR/B fortifications according to their primary function.

Although it is outside of the scope of this work, the number of rest-points greatly determines the trade volumes carried by caravans; a system that provides food and shelter allows merchants to travel with more animals and transport more trade goods. It should also be mentioned that even though the *Via Traiana* was obviously not a line of defence, the forts along it and to its east (during the LR/B period) might have been.

The fortifications on the plateau west of the *Via Traiana*, or at least those occupied by the military, were in adequate locations to survey, control, and tax the local agricultural population. Some of the roads crossing the plateau were probably used by travellers and merchants as well—who were probably also taxed and monitored *en route*—but it is uncertain which ones. These forts and towers are very close (or even within) settlements, and most oversee waterpoints and one or more road tracks. They are mostly within a one-hour walk from each other and in close proximity to roads, waterpoints, and settlements. In all time periods considered here, but especially during the Roman and LR/B stages, the fortifications are within the visible 20/20 range of each other (< 3440 m). They are also deeply interconnected in terms of visibility and accessibility, particularly in the southwest of the plateau. The areas around them are also visible, suggesting that most of these forts and towers were built in prominent locations overseeing the surrounding agricultural landscape. As Clark has observed, most towers situated in the Arabian ‘*limes*’ are to the west of the *Via Traiana* (and modern desert highway), and therefore probably served ‘internal’ functions.<sup>374</sup> This should not dismiss, however, that they could also have been arranged in a defence formation.

Responding to Cook’s warning that current scholarship does not discuss the non-military functions of fortifications, it is worth making the point that many of the ‘towers’ and ‘forts’ discussed in this study, particularly those close to settlements and in the agricultural zones of the plateau, could have been granaries or dwellings with built-in towers.<sup>375</sup> In the southern and eastern Hauran, as well in north Africa, the ruins of such buildings have been interpreted in association with their surrounding agricultural land, as well as the presence of irrigation systems that included springs, wells, cisterns and storage pools.<sup>376</sup> The Edom plateau, as we have discussed in previous chapters, offers the characteristics fit for intensive agriculture, and tower-granaries would not be misplaced there. On the other hand, their prominent location on top of hills does not explain this function, nor can we conclude that all fortifications on the plateau were granaries; for example, it is hard to justify the presence of large forts along major roads, such as Qasr Tulyah, solely for storing grain.

One idea to consider for further study would be to combine Kouki’s study of Petra’s hinterland with this analysis of fortifications and their location (Table 4).<sup>377</sup> Kouki shows that many rural sites and agricultural estates in the hinterland of Petra were abandoned in the early third century. We also observe a general decrease in number, and slight move south-westwards, of fortified buildings on the plateau between the Roman and LR/B periods. Although the chronology in this study does not precisely match Kouki’s timeline (mainly due to survey imprecisions) and spatial conclusions (Kouki was looking only at Petra’s immediate hinterland and the shift of rural sites towards Udruh and the east), this observation could help distinguish between those fortified sites used for agriculture and storage of grain, which would have disappeared during the agricultural collapse of the late third century, and those that fulfilled a military purpose, and supposedly remained to realise their military purposes. One has to consider, however, that it is also plausible that without land or people to protect, military fortifications could have naturally fallen into disuse.

<sup>374</sup> Clark (1987a), 133.

<sup>375</sup> Cook (2004), 51–52. The study led by Gaffney and Stancic (1991) using GIS in the island of Hvar (Croatia) to establish the relationship between forts and land with agricultural potential is foundational in this type of reinterpretations.

<sup>376</sup> Piacentini (1984), 124.

<sup>377</sup> Kouki (2012), Chapter 8 and 10 especially.



Table 4. A reconstruction of the climatic history and rural settlement in the Petra region. From Kouki 2012, Table 3.

Time	Climate	Settlement in Petra Region
AD 800	climate very arid	concentration of rural settlement into a few large sites
AD 700		end of Petra as city?
AD 600	gradually increasing aridity through the 6th and 7th centuries	abandonment of many rural sites in the late 6th–7th centuries increase of rural settlement in the Eastern Highlands during the 6th century
AD 500	aridification of climate starts in the 5th century	first agricultural sites established on the eastern margin of the Eastern Highlands
AD 400	possible drop in rainfall around AD 400	in the 5th century
AD 300		discontinuity of settlement
AD 200	a return to more humid conditions in the 3rd century	drop in the number of rural sites widespread abandonment of rural settlements by the early 3d century
AD 100		
0	a possible drop in rainfall around AD 100	proliferation of rural settlement and intensification of land use in the centuries
100 BC	the humid climatic phase culminates around the turn of the era climate more humid than at present	first rural settlements elsewhere in the Petra region
200 BC		first rural settlements in the Jabal ash-Shera area
300 BC	Climate becomes more humid, possibly cooling	settlement at Petra
Before	an arid climate phase	no permanent settlement

The ‘Nomadic menace’ preposition has been mostly rejected by modern scholarship, but this study re-opens the possibility that the army also served as part of frontier defence, especially in the forts to the east of the *Via Traiana* and particularly during the LR/B period. The personal perception of ancient authors included in the Descriptive Catalogue I is that the nomads of the east were raiders, dangerous

and violent.<sup>378</sup> Although this may be considered a stereotypical representation (and therefore not worth considering), I argue that it is unreasonable to dismiss the overwhelming ancient view that there was a ‘Saracen menace’ in Arabia. The sources mostly date to the LR/B period, which coincides with the restructuring of the military system in southern Arabia and the date of reoccupation of forts along the eastern desert fringe. Perhaps a shift in awareness, and not a shift in reality, led to the increase of such descriptions.

The spatial analysis of these easternmost fortifications—which interestingly were not occupied during the Roman period—suggests once again that an eastern threat was imminent, particularly during the Nabataean and LR/B.<sup>379</sup> First, their visibility range is excellent, reaching far to the east and west. Second, they are not located near settlements or roads (as far as we know there is no road running North-South in this location, although this looks like a strong possibility),<sup>380</sup> but rather near wadi entrances and passages running East-West. Koucky has noted that towers in the Late Roman/Early Byzantine periods were constructed at wadi crossing points and at important roads to control the movement of people, and this seems to be confirmed here.<sup>381</sup> These forts also create a robust intervisibility line between each other, as well with other forts on the plateau west of the *Via Traiana*, perhaps suggesting that the idea of a defence in-depth or ‘double *limes*’ during the LR/Byzantine period, suggested by twentieth-century reports, is not that far-fetched after all.<sup>382</sup> Besides, they are within one- to two-hour walking distance from each other, although a rider could travel much faster. Their location—to the east of the populated area of the plateau and at the mouth of major wadi passages from the east—strongly suggests that these forts were primarily meant for defensive purposes and the control of movement from the east. It is difficult to interpret, then, what some authors mean by the ‘poorly defensible positions’ of forts in Arabia, as being located to *control* lines of communication should already imply a certain degree of defensibility (otherwise what actual control could these fortifications exert?).<sup>383</sup>

Curiously, these eastern fortifications run almost exactly along the famous ‘wall’ known as Khatt Shebib. This is in fact a system of interconnected walls, one meter high and half a meter wide, running for 106 km from north-northeast to south-southwest across the Jordanian plateau (Figures 33 and 34).<sup>384</sup> Kennedy has suggested the Nabataean/Roman date of this feature and the evidence here further supports his claim. He also proposes that this wall was probably not meant to stop the movement of nomads, but to delineate their territory as opposed to that of the sedentary population.<sup>385</sup>

Finally, it is also important to consider that even though the location of forts and towers suggests they had a primary purpose, it does not follow that that was their only function. Propaganda, for example, could be an implicit function of all eastern fortifications.<sup>386</sup> Or, for example, the fortifications in the Hisma could have also served to protect the road against nomad raiders, or perhaps the fortifications on the plateau served as a ‘secondary line of defence,’ if circumstances required. As Gregory explains:<sup>387</sup>

Strategic points on long-distance routes, such as mountain passes, river crossings, or waterpoints in deserts are just as likely to be on the routes of traders as of invaders and the supervision of these, the collection of dues on entering Roman territory, the protection of caravans, and the prevention of smuggling may have been just as important as defence.

<sup>378</sup> Klein (2015), 19.

<sup>379</sup> Note that we do not have personal accounts of travellers or pilgrims during the Nabataean period (as we do for the Byzantine), so the apparent silence may actually be a matter of literary genre. C.f. Parker (1986), 2.

<sup>380</sup> *Via militaris* Already argued in Parker (1986), 91; Graf (1997b); Isaac (1992), 128; Fiema (1991), (1995).

<sup>381</sup> Koucky (1987), 66.

<sup>382</sup> Bowersock (1976), 227–28 and Mann (1979), 179. Considering, naturally, that these fortified structures were not merely granaries.

<sup>383</sup> Fisher (2004), 54.

<sup>384</sup> First reported in 1948, by Sir Alec Kirkbride, a British diplomat in Jordan. Kennedy (2004), 190.

<sup>385</sup> Kennedy (2017), personal communication.

<sup>386</sup> On propaganda: Shatzman (1983), 145; Isaac (1993), 304–9; Gregory (1997), 80.

<sup>387</sup> Gregory (1997), 90.

Gregory glosses over an important point that is at the heart of all disagreements about the function of the Roman army in Arabia. The issue, in most cases, appears to be semantics. The debate of whether the nomads are an ‘external’ or ‘internal’ threat has already been discussed in previous chapters (although in this case the threat to the Edom plateau does seem to be coming from the east), but I should add that the same principle can be applied to the idea of ‘defence.’ The control of movement and the surveillance of roads, argued by Graf and others as the opposite of a ‘defensive system,’ can plausibly be seen as a Roman attempt to *defend* their own resources by monitoring their use.<sup>388</sup> Even Whittaker recognises, writing about Hadrian’s wall, that ‘to some extent, the dispute is semantic ... it is not a question of the wall’s never serving any military purpose in time of emergency.’<sup>389</sup>

In this sense, regional security, the protection of the caravan routes, and the defence against nomadic threats (either by diplomatic or direct means) are all part of a system put in place to defend the Roman territory and its resources against others. It is curious, after all, that we have no declaration by the Roman state indicating that it was responsible for the security of its inhabitants, but one can infer from archaeology and primary sources that they must have been extremely concerned about the security of their resources and economy.<sup>390</sup> As Cupcea clarifies, the *limes* were meant ‘to provide security to a developing area that ha[d] to generate economic growth, surplus, develop, urbanize and Romanize.’<sup>391</sup> If so, Kennedy and Riley rightly argue that ‘security was always the primary consideration for the rulers of the empire.’<sup>392</sup>

The seemingly prevalent function that underlines all others is the protecting and maintenance of the caravan routes, the major source of wealth in the east. As it has already been discussed, the treatment of the Eastern trade centres and routes—including their physical expansion and increased security—demonstrates that the ‘desire for control over the lucrative trade in commodities coming from the East was not disconnected from the military and political practices.’<sup>393</sup> Naturally, the forts and towers were also absorbed in functions not directly related to trade routes or caravanserais, but if we consider that the commerce of spices and other precious goods was the primary reason to annex and retain the region of Arabia, then it seems that the fundamental function of the army was to ensure the continuous flow of trade by controlling the local population and defending the territory against nomads, robbers, and smugglers.

In other words, economic motivations seem to explain the need for internal and external security and peace. A system such as this required good communications, secure strongpoints, and extremely mobile forces. Arguably, the army could also have functioned as a force to ensure that all the resources of the region, including commerce, were under the control of the Roman Empire. Findlater has argued that in the region of Dana, and in southern Jordan in general, ‘there is a spatial correlation between the existence of imperial estates, industrial centres and military sites,’ particularly if we consider that most fortified towers and small fortlets on the plateau were actually granaries.<sup>394</sup>

The chronological implications of this study are discussed in the following paragraphs. The Roman period clearly improved and expanded the fortified system of the Nabataeans, particularly along the *Via Nova Traiana* and in the Wadi Araba. This system, however, seems to focus primarily on the settled region of the plateau and on the main communication routes. The new fortifications, or those adopted into the second century, seem to indicate that, at least initially, the Romans improved on the Nabataean system in terms of organisation and connectivity.<sup>395</sup> Also, subsequent army presence ensured the continuation of the original economic objectives of the annexation by securing the routes and taxing the caravans.

<sup>388</sup> Mathisen (1995), 130.

<sup>389</sup> Whittaker (2004), 83.

<sup>390</sup> Cupcea (2015), 15.

<sup>391</sup> Cupcea (2015), 16.

<sup>392</sup> Kennedy and Riley (1990), 13.

<sup>393</sup> Fitzpatrick (2011), 42.

<sup>394</sup> This point is discussed at length in Findlater (2004).

<sup>395</sup> Fiema (1987), 35



Figure 33. Close-up of the Khatt Shebib near Petra. Courtesy of Robert Bewley, APAAME.



Figure 34. Aerial view of Khatt Shebib in Jordan. Courtesy of Robert Bewley, APAAME.

Besides, if most of the fortifications of the plateau were granaries, then the Roman network of forts and towers in southern Arabia must have been relatively modest and placed mainly to monitor essential roads and checkpoints. It has been established that in Africa Tripolitania, fortified farms fulfilled the needs for defense until defensive garrisons were built under Commodus and Septimius Severus.<sup>396</sup> It has already been suggested that the army did not occupy the desert during the Roman period, but that its whereabouts lies in the cities.<sup>397</sup> This sounds like a strong possibility in Arabia. At that time, Rome could have easily employed the Nabataeans to continue their previous functions, while improving the communication system and enforcing an increased attention on trade routes and settlements.<sup>398</sup> After all, the wadi forts of the east were not occupied during this period, and direct evidence for Roman army presence outside cities is sparse during the second and third centuries.<sup>399</sup>

It is worth mentioning that during the late-second and early-third centuries—and probably as a response to continued tribal raids in the Sinai (191) and other tribal unrest in Arabia (195-199)—the Severan dynasty begun a large-scale fort construction and repairing programme.<sup>400</sup> Most of these forts and towers, including Qasr al ‘Uweinid, were built in the Azraq Oasis at this time, along and near the northwestern end of the Wadi Sirhan. Their function has been interpreted as that of guarding the settled areas to the west, the salt-extraction areas of central Jordan, and the travellers and merchants passing along the wadi.<sup>401</sup> On the other hand, the prosperity of caravan-cities like Philadelphia and Petra shows that these cities remained unaffected, probably because, as Isaac suggests, ‘eastern commerce as a whole was much more regular in the second century than in the first.’<sup>402</sup>

The Persian campaigns against the Romans in the third century, including those of Shapur I in the 250–260s, as well as Queen Zenobia’s revolt (AD 269–274), directly disrupted the eastern provinces.<sup>403</sup> Some have added to these that the economic deterioration after the second century, and a series of civil wars, prevented emperors from compensating the military.<sup>404</sup> As a result, many soldiers, especially those on the frontier areas, were forced to adopt more oppressive measures to extract supplies from local communities, which led to further internal unrest.<sup>405</sup> The disturbances in the north were surely felt in Arabia, which was temporarily under Palmyrene control during Zenobia’s revolt. Moreover, during the second half of the third century, a considerable number of troops was withdrawn to serve in Syria and Anatolia,<sup>406</sup> and inscriptions from Adraa and texts from Bostra and Doda attest to the strengthening of cities in Arabia between AD 259/60–278/9.<sup>407</sup> After the peace of 287, Diocletian reassessed the defensive needs of the area and begun building the *Strata Diocletiana* (and associated fortifications) between Damascus, Palmyra, and Sura.<sup>408</sup>

During the same period and in the decades following Diocletian, Arabia was reinforced with new (e.g. Lejjun, el-Hammam) or restored Nabataean forts and towers (e.g. Kithara); vexillations were actively re-involved in road-building; legions were transferred to the region (*X Fretensis* from Jerusalem to Aila and perhaps *VI Ferrata* from Galilee to Udruh); cities were fortified (e.g. Nessana); and a grand-scale administrative reorganisation took place (the province was enlarged to include parts of modern-day Israel).<sup>409</sup> The impression among certain scholars is that Diocletian and his successors concentrated on building a strongly-held frontier line along the desert borders and that this was part of a strategic gradual

<sup>396</sup> Mann (1979), 179.

<sup>397</sup> Eadie (1985), 414; Whittaker (1994), 207; Gregory (1996), 177; Isaac (2000), 164-165.

<sup>398</sup> Isaac (2000), 215.

<sup>399</sup> Negev (1967); Gichon (1980); Shatzman (1983); Parker (1986), 125–129.

<sup>400</sup> Kennedy (1982), 39–40, 50, 75, 88–90, 124–125, 171–175, 190, 308–309.

<sup>401</sup> Sidebotham (1986), 167; Parker (1986), 129–31; Al Khouri (2003), 12.

<sup>402</sup> Rostovtzeff (1957), 604; Isaac (1980), 893.

<sup>403</sup> Millard (1993).

<sup>404</sup> On economic deterioration see Dio, 72.36.

<sup>405</sup> McLaughlin (2010), 176.

<sup>406</sup> Lieu (1986).

<sup>407</sup> IGLS xiii no. 9105 (Bostra); IGLS xxi J 79 (Dhiban, AD 245–6); Pflaum (1952); Sartre (1985), 88–90. Isaac (1990), 133.

<sup>408</sup> Millard (1993), 174–91.

<sup>409</sup> Graf (1989), 342; Sipilä (2004), 2009.

advance into desert and increased militarisation.<sup>410</sup> This fact can no longer be disputed, neither can its impact be seriously debated. In my view, this was not only an attempt to repel future Persian threats but also, and perhaps more importantly, a way of responding to the feeling of internal mistrust initiated by Zenobia's ambitions. Note that the Romans responded to the revolt by crushing Palmyra and greatly diminishing its role as a trade centre, despite the services that it had rendered for centuries.<sup>411</sup>

Constantine considerably changed the situation of Palestine and Arabia (307–337). During this time, the population was introduced to Christianity and the social and political influence of Rome significantly increased.<sup>412</sup> After Constantine, the responsibility for civic affairs was assumed by the church and the defence of the borders was entrusted to Arab confederates, such as the Salihids and Ghassanids.<sup>413</sup> The eventual decrease, and even abandonment, of military personnel in the Arabian frontier during the fourth and fifth centuries—observable in several forts including Lejjun, Avdat, Qasr Bshir, Humayma, among others—can be explained by several factors, above all the stress of Constantinople's fiscal and military resources and its general disregard for Arabia after Petra lost its position as a major trade centre.<sup>414</sup> According to Al Khouri, the military, although still focused on the roads, also changed their outward defensive system to one concentrated on cities and their fortification.<sup>415</sup> During the fourth and fifth centuries, Arabian defences were tested by large-scale federate revolts, as the one led by Mavia.<sup>416</sup>

The Germanic invasions in the west overwhelmed the central system, and the commercial routes deviated from Arabia. Nevertheless, urban prosperity peaked in the fifth and sixth centuries, with fluctuations, as did agricultural production.<sup>417</sup> This period of prosperity ended in the late sixth century, when the wars between the Byzantines and the Sassanids began. Both empires were left susceptible to third-party attacks and, arguably, this opened the way for Islam.<sup>418</sup> During this time Udruh became the main urban centre, supplanting Petra as the capital.<sup>419</sup> The fortifications of the Arabian frontier were completely abandoned during the sixth and seventh centuries, after successfully maintaining the border for over three centuries.<sup>420</sup>

The spatial analysis presented here could possibly be interpreted as part of the Late Roman Diocletianic eastward move into the desert and increased militarisation, showing both the reoccupation of Nabataean forts and towers and construction of new ones along the eastern ridge of the settled plateau. This has interesting implications for the purposes of Nabataean fortifications, which have not been interpreted in terms of defence.<sup>421</sup> This study also indicates that settlements and fortifications between Petra and Sadaqa increased throughout the LR/B period, perhaps due to the success of this forward-based defensive zone and, as Isaac postulates, of the alliances with 'Saracen' tribes which brought 'unprecedented security for trade and agriculture.'<sup>422</sup>

<sup>410</sup> Bowersock (1971), 236–42; Mann (1979), 181; Parker (1986), 13, 1–33; Konrad (1992), 400–404. Sartre (2007), 313–318; Kennedy and Falahat (2008), 150–169; Lewin (2011), 235. For example, several military units at Bostra, the construction of a tower at Dhiban (245), the fortification of 'Adraa in the Hawran, the castra nova at Teima in Syria built in 296, the Udruh inscription revealing that the fort for the legio VI Ferrata was built around 303, and so on.

<sup>411</sup> Isaac (1993), 112.

<sup>412</sup> Although the Nabataeans continued to worship pagan gods to some extent. Kouki (2012), 42.

<sup>413</sup> Walmsley (1996), 129; Shahid (1989), 95; Ball (2000), 101; Fisher (2004), 51, 54–56.

<sup>414</sup> Isaac (1998); Fisher (2004), 50; Fiema (2006), 73; Erickson-Gini (2010), 191–94.

<sup>415</sup> Al Khouri (2003), 18.

<sup>416</sup> Theophanes 5990, 5994, 5995; Blockley (1992), 87.

<sup>417</sup> Walmsley (1996), 126; Ward-Perkins (2000); Kingsley (2001), 8–9; Lewin (2007), (2011), 325.

<sup>418</sup> Liska (1998); Berkey (2003), 47; Kouki (2012), 43–44.

<sup>419</sup> Schick (1997), 75; Kouki (2012), 43–44.

<sup>420</sup> Shahid (1984), 477; Al Khouri (2003), 6; Fisher (2004), 57.

<sup>421</sup> Graf (1989); MacDonald (1993), 3, 13, 326–35

<sup>422</sup> Isaac (1990), 215; c.f. Parker (1987a), 48.

## VI. Conclusion

Given the analyses presented here, it is possible to claim that the Roman army in southern Arabia was actively involved in defending the territory, controlling the local population, and securing the trade routes passing through southern Jordan. Particularly, it is argued that the taxation of trade and of nomadic groups, as well as the maintenance of internal and external security for the purpose of economic stability, were the main motivators for army presence and activity. The extent and priority of each function was, in great part, determined by the geographical location of fortifications and their spatial relation to other features, such as settlements, water sources, and wadi entrances. The conclusions drawn are, of course, limited by the nature and amount of field data and the modern and medieval Arab destruction of ancient sites, but greatly emphasise the particular nature of desert frontiers.<sup>423</sup>

The results presented here approximate those of Parker in 1986, but a more thorough consideration of the army's function is offered, particularly in relation to location and period. Reaching beyond the polarising ideas of the authors discussed here, a more accurate interpretation of the Arabian frontier, in the long durée, should describe it as a transitory area occupied by fortified buildings that served a number of purposes.<sup>424</sup> This should not dismiss, however, a Diocletianic build-up and a refocus of the frontier military along the eastern settled border after the third century.

In short, it is possible to propose an outline of the historical development of the southeastern Arabian frontier. During the Roman period, the fortified system in the south was highly conservative and seems to have been focused on the main routes of communication, particularly if we accept that many of these towers and small forts on the plateau were fortified granaries (c.f. North African *centenaria*).<sup>425</sup> In fact, it is clear that, at least during the early Roman period, there is little evidence to support that the Romans were preoccupied with threats from the east. This is in accordance with the highly critical review of Parker written by Macdonald in 1993.

After the unrest of the third century, however, many forts and towers of the Nabataean period were reoccupied, and several new ones built. Several of these were located on wadi entrances and passages running from the east into the western plateau, and therefore they seem to have been placed to control and monitor movement (note that the Severan and Diocletianic build-ups follow known periods of nomadic and internal instability). Moreover, most of the written records describing a nomadic menace coincide with the period of occupation of these eastern fringe forts. This seems like a strong case for an increased instability and danger from populations to the east and northeast. Also worth considering, the fact that some of these forts were originally Nabataean forces us to reconsider their initial purpose and Nabataean-tribal relations.

These forts and towers form a line east of the *Via Nova Traiana*, are within the visible range of the settlements on the plateau, and were certainly defensible. Documentary sources confirm that *Legio X Fretensis* moved to Aila in the early fourth century and *III Cyrenaica* to Bostra, which demonstrate an attempt to install a better strategic distribution of troops in Arabia. They also confirm the repairing work and construction of many forts along the eastern edge of the settled territory (Descriptive Catalogue II). Outside of our study area, many major forts and towers were also reoccupied or built during the late third- and early fourth-centuries, including el-Lejjun (AD 284), Khirbet el-Fityan (AD 300) and Qasr Bshir (AD 306).

During the Late Roman and Byzantine periods, the Wadi Araba trade route was no longer overseen by the military but, instead of its complete abandonment, this could indicate that the Wadi Araba was a

<sup>423</sup> Bowersock (1971), 242.

<sup>424</sup> Speidel (1977), 726; Banning (1986), 25-50; Mayerson (1986), 38-39; Isaac (1993); Whittaker (1994), 66; Fisher (2004).

<sup>425</sup> c.f. Findlater (2004), 169.



prosperous agricultural zone during this period and did not require the monitorisation of the military, especially since Aila was still a vigorous trade centre. The continuous focus on roads confirms the importance of controlling movement and trade probably for the purposes of taxation and economic security. Along with the military abandonment of the Wadi Araba, this seems to be a period of a significant eastward shift of about 20 km into the eastern desert, perhaps indicating an increased preoccupation with the eastern border, the settled agricultural region of the Jordanian plateau, and the security of the main routes connecting the Red Sea to the northeastern provinces. This study also reopens the view of an in-depth frontier system, particularly after the Diocletianic makeover.

The work presented here can act as a future departing point for a better understanding of the Roman military in southern Jordan. The catalogue of sites included in this analysis should be used to improve databases of archaeological sites in the region, such as the ones already built by EAMENA and Mega-Jordan, and to provide a more complete view of the ancient Roman-occupied landscape. It thus offers more quantitative and qualitative data for further research, hopefully facilitating the work of academics, students, and other entities curious about the presence of the Roman army in Arabia.

## **Descriptive Catalogue I**

### **The 'Saracen' Menace in Literary and Epigraphic sources**



**The Wadi Mukkateb Inscription (Euting 1891, 61–62, no. 463)**

Date: Nabataean (?). See Graf 1989

Description: This inscription mentions a year that was particularly remarkable for the destruction provoked by the ‘Arabs.’ The reconstruction of the term ‘Arab’ is debated but even Graf admits this was probably the name of a local tribe.<sup>1</sup> Macdonald has pointed that this reading is impossible and that it remains uncertain whether the reference actually mentions any type of conflict (Macdonald 1993, 325).

Blessed be Wa’ilu son of Sa’ad-allahi. This [was written] in the year 85 of the Eparchy in whi[ch] the A[rabs] destroyed the land.

**Chronicon Paschale (Dindorf, 271)**

Date: AD 249–251.

Description: Graf dismisses this passage because he cannot believe that the Emperor Decius (AD 249–251) transported lions from Africa to the eastern frontier and unleashed them against the ‘Saracens.’ First, this is not completely unthinkable, but also more recent interpretations suggest that Decius sent the German cavalry guards of Caracalla, the Gothic Lions, not the beasts.<sup>2</sup> In any case, Decius sent forces during his reign against the ‘Saracens.’

King Decius led terrible lions and lionesses from Africa, and released (them) to the border of Anatolia, from Arabia and Palestine up to the fort Kirkesios, to produce a generation, among the Saracen barbarians.

**Latin inscription in Azraq (Speidel 1987)**

Date: ca. 273.

Description: Tetrarchic text mentions a group of six legions, including five drawn from other provinces, to work in the region of Bostra through the length of Wadi Sirhan. The only threat to the commercial routes in this desert region was the nomadic tribes (c.f. Parker 1991, 501). The date is still debated but should 273 be accepted, it would imply a much more aggressive response to the threat of the ‘Saracens’ after the fall of Palmyra in this same year.

[...] by his very brave soldiers of the legions XI  
Cl(audia) and VII Cl(audia) and I Ital(ica) and IV  
Fl(avia) and III(yricorum) linked by manned posts  
to his soldiers from the legion  
III Cyr(enaica). From Bostra to Basicnis(?) 66 miles,  
from Basienis to Amat(a) 70(?), and from Amata to  
Dumata 208 miles.

**Texts about the Rebellion of the Medes and other local revolts against Rome (SIJ 78, 39; C 4448; C 1292; SIJ 88; WH 1698; NSIJ 424; LP 435)**

Date: 3rd century (?). See Graf 1989 and MacDonald 1993.

The year the Medes came to Bosra (SIJ 78).

The year the Roman army delivered the city (SIJ 88).

The year the Roman army ejected the Mede (WH 1698).

<sup>1</sup> Graf (1989), 355.

<sup>2</sup> Birley (1990/98, 77).

**Latin Panegyrics (3[11].5.4; Barnes 1982, 51)**

Date: AD 291-297

Description: An orator speaks about a campaign led by the emperor Diocletian against the 'Saracens.' Why would Diocletian himself come to the east to fight the 'Saracens' if their threat was a minor one?

Emperor ... I (even) neglect the destruction of the Sarmatians and the Saracens oppressed by the chains of captivity...

**Eusebius (HE 6.42.4; Cushman 2016)**

Date: ca. AD 324.

Description: Bishop of Alexandria, Dionysius, mentioned that Christians refugees during the time of Decius fled to Arabia and were enslaved by the barbarian 'Saracens.'

And many who fled to the same Arabian mountain were carried into slavery by the barbarian Saracens. Some of them were ransomed with difficulty and at a large price; others have not been to the present time. I have related these things, my brother, not without an object, but that you may understand how many and great distresses came upon us. Those indeed will understand them the best who have had the largest experience of them.

**Eusebius (Onomasticon, Section A; Wolf 2006)**

Date: c. 324.

Description: Eusebius describes the Arnon River and the Wadi Mujib Fortifications.

[A high cliff] which extends from the territory of the Amorrites' situated between 'Moab and the Amorrites' it is also the 'border of Moab.' Which is Areopolis in Arabic. Today a place called Arnon is pointed out by the nearby inhabitants extending north to Areopolis. Units of soldiers are spread out there to guard it because of the dangers in that place (soldiers from many forts are spread out because of the many bloody and formidable invasions).

**Latin Inscription (Iliffe 1942)**

Date: AD 334.

Description: Found at a road station (Basiensa, ancient name) between Umm al-Quttein and Azraq, records Saracen ambush of soldiers. It happened while members of the detachment were drawing water from nearby cisterns or pools.

When Vincentius, the protector agens in Basia, saw that many among the agrarienses died because they were ambushed by the Saracens while they were fetching water for their own use, he made a reservoir for the waters from the foundations under the consulate of Optatus and Paulinus.

**Rufinus (PL 21: col. 515; Graf 1989)**

Date: AD 340/345-410

Description: In his account of the Saracen queen Mavia during the reign of Valens (AD 364-378), Rufinus tells of her 'harassing the frontier (*limes*) cities of Palestine and Arabia and at the same time laying waste the neighbouring provinces.' It is Generally agreed that Mavia was the leader of a confederation of Arabs who were previously allies to Rome.<sup>3</sup>

Mavia, queen of the Saracens, had begun to convulse the villages and towns on the border of Palestine and Arabia with a violent war and to ravage the neighbouring provinces. After she had

<sup>3</sup> Graf (1989), 348.



worn down the Roman army in several battles, had felled a great many, and had put the remainder to flight, she was asked to make peace, which she did on the condition already declared: that a certain monk Moses be ordained bishop for her people.

### **Ammianus Marcellinus (14.4.1–7; Delphi 2016)**

Date: AD 353–378.

Description: Ammaianus describes the ‘Saracens,’ who roam the land, have no affiliations, and are dangerous. Parker suggests that one compares this description with Arabic graffiti (especially the accompanying drawings) and ethnographic studies of modern Bedouin. There are striking similarities among these: swift raids on camels and horses, relative political and social egalitarianism, no experience of agriculture, wide-ranging movements, etc.<sup>4</sup>

The Saracens, however, whom we never found desirable either as friends or as enemies, ranging up and down the country, in a brief space of time laid waste whatever they could find, like rapacious kites which, whenever they have caught sight of any prey from on high, seize it with swift swoop, and directly they have seized it make off. Among those tribes whose original abode extends from the Assyrians to the cataracts of the Nile and the frontiers of the Blemmyae all alike are warriors of equal rank, half-nude, clad in dyed cloaks as far as the loins, ranging widely with the help of swift horses and slender camels in times of peace or of disorder. No man ever grasps a plough-handle or cultivates a tree, none seeks a living by tilling the soil, but they rove continually over wide and extensive tracts without a home, without fixed abodes or laws; they cannot long endure the same sky, nor does the sun of a single district ever content them. Their life is always on the move, and they have mercenary wives, hired under a temporary contract. But in order that there may be some semblance of matrimony, the future wife, by way of dower, offers her husband a spear and a tent, with the right to leave him after a stipulated time, if she so elect: and it is unbelievable with what ardour both sexes give themselves up to passion. Moreover, they wander so widely as long as they live, that a woman marries in one place, gives birth in another, and rears her children far away, without being allowed an opportunity for rest. They all feed upon game and an abundance of milk, which is their main sustenance, on a variety of plants, as well as on such birds as they are able to take by fowling; and I have seen many of them who were wholly unacquainted with grain and wine. So much for this dangerous tribe. Let us now return to our original theme.

### **Ammianus Marcellinus (14.8.13; Delphi 2016)**

Date: AD 353–378.

Description: The fortresses in Nabataea were originally built to ‘check the inroads of neighbouring tribes.’

Adjacent to this region is Arabia, which on one side adjoins the country of the Nabataei, a land producing a rich variety of wares and studded with strong castles and fortresses, which the watchful care of the early inhabitants reared in suitable and readily defended defiles, to check the inroads of neighbouring tribes. This region also has, in addition to some towns, great cities, Bostra, Gerasa and Philadelphia, all strongly defended by mighty walls. It was given the name of a province, assigned a governor, and compelled to obey our laws by the emperor Trajan, In AD 105. who, by frequent victories crushed the arrogance of its inhabitants when he was waging glorious war with Media and the Parthians.

<sup>4</sup> Parker (1991), 501.

**Ammianus Marcellinus (18.9.1; Delphi 2016)**

Date: AD 353–378.

Description: Amida was founded to serve as a refuge for the local population against, assumedly, the nomadic tribes.

This city was once very small, but Constantius, when he was still a Caesar, in order that the neighbours might have a secure place of refuge, at the same time that he built another city called Antoninopolis, surrounded Amida with strong walls and towers; and by establishing there an armoury of mural artillery, he made it a terror to the enemy and wished it to be called after his own name. Now, on the south side it is washed by the winding course of the Tigris, which rises near-by; where it faces the blasts of Eurus it looks down on Mesopotamia's plains; where it is exposed to the north wind it is close to the river Nymphaeus and lies under the shadow of the peaks of Taurus, which separate the peoples beyond the Tigris from Armenia; opposite the breath of Zephyrus it borders on Gumathena, a region rich alike in fertility and in tillage, in which is the village called Abarne, famed for its warm baths of healing waters. Moreover, in the very heart of Amida, at the foot of the citadel, a bountiful spring gushes forth, drinkable indeed, but sometimes malodorous from hot vapours. Of this town the regular garrison was formed by the Fifth Legion, Parthica, along with a force of no mean size of natives. But at that time six additional legions, having outstripped the advancing horde of Persians by rapid marches, were drawn up upon its very strong walls. These were the soldiers of Magnentius and Decentius, whom, after finishing the campaigns of the civil wars, the emperor had forced, as being untrustworthy and turbulent, to come to the Orient, where none but foreign wars are to be feared; also the soldiers of the Thirtieth, and the Tenth, also called Fortenses, and the Superventores and Praeventores with Aelianus, who was then a count; these troops, when still raw recruits, at the urging of the same Aelianus, then one of the guard, had made a sally from Singara (as I have said) and slain great numbers of the Persians while they were buried in sleep. There were also in the town the greater part of the *comites sagittarii* (household archers), that is to say, a squadron of horsemen so-named, in which all the freeborn foreigners serve who are conspicuous above the rest for their prowess in arms and their bodily strength.

**Egeria (*It. Eg.* VII.6; McClure 1919)**

Date: early AD 380s.

Description: Egeria climbs to a mountain and is shown by her guide the surrounding lands, including the 'boundless territories of the Saracens.'

From thence we saw Egypt and Palestine, and the Red Sea and the Parthenian Sea, which leads to Alexandria and the boundless territories of the Saracens, all so much below us as to be scarcely credible, but the holy men pointed out each one of them to us.

**Jerome (PL 23: cols. 55-56 = *The Life of Malchus, the Captive Monk*; Fremantle 1989)**

Date: AD 391.

Description: Jerome writes about the capture of the monk Malchus, who was traveling in a convoy close by a public road that led from Beroea (Aleppo) to Edessa. He was seized by marauding 'Saracens' and enslaved.

On the road from Beroa to Edessa adjoining the high-way is a waste over which the Saracens roam to and fro without having any fixed abode. Through fear of them travellers in those parts assemble in numbers, so that by mutual assistance they may escape impending danger. There were in my company men, women, old men, youths, children, altogether about seventy persons. All of a sudden, the Ishmaelites on horses and camels made an assault upon us, with their flowing hair bound with fillets, their bodies half-naked, with their broad military boots, their cloaks streaming behind them, and their quivers slung upon the shoulders. They carried their bows unstrung and

brandished their long spears; for they had come not to fight, but to plunder. We were seized, dispersed, and carried in different directions. I, meanwhile, repenting too late of the step I had taken, and far indeed from gaining possession of my inheritance, was assigned, along with another poor sufferer, a woman, to the service of one and the same owner. We were led, or rather carried, high upon the camel's back through a desert waste, every moment expecting destruction, and suspended, I may say, rather than seated. Flesh half raw was our food, camel's milk our drink.

**Jerome (PL 22: col. 1086 = Letter 126, Chapter 2 = From Jerome to Marcellinus and Anapsychia; Fremantle 1989)**

Date: ca. AD 410

Description: in a letter Jerome reports that 'a sudden attack by barbarians ran through the frontiers (limites) of Egypt, Palestine, Phoenicia, and Syria like a torrent carrying everything before it.'

Moreover when I had, in the course of this year, prepared three books of the Commentary, a sudden furious invasion of the barbarous tribes mentioned by your Virgil as the widely roaming Barcaeï, and by sacred Scripture in the words concerning Ishmael, He shall dwell in the presence of his brethren, swept over the whole of Egypt, Palestine, Phenice, and Syria, carrying all before them with the vehemence of a mighty torrent, so that it was only with the greatest difficulty that we were enabled, by the mercy of Christ, to escape their hands.

**Letter from a Bishop Nisibis in Mesopotamia (Parker 1986, 150)**

Date: ca. 485

Description: The migration of 'Saracens' into Mesopotamia from Syria and the damage they caused.

For two successive years we have been afflicted with a shortage of rain and the necessities of life. There has been an influx of Saracens from the south, and the numbers of men and animals is such that they have destroyed and devastated the villages in both plain and mountain. They have ventured to pillage and carry off beasts and men, even in the territory of the Romans. The Romans assembled a large army on the frontier [...] and they demanded satisfaction for the damage done in their country [...].

**Procopius (*History*, I.17.41–44; Parker 1992)**

Date: ca. 529.

Description: The Lakhmids were based at al-Hafra, south of central Mesopotamia. Yet, according to Procopius, a contemporary eyewitness of events on the eastern frontier, they invaded Syria as far as the borders of Antioch and destroyed much in their path.

From the boundaries of Egypt as far as Mesopotamia he (al-Mundhir, the Lakhmid king) plundered the whole country, pillaging one place after another, burning the buildings in his track and making captives of the population by the tens of thousands on each raid, most of whom he killed without consideration, while he gave up the others for great sums of money.

**Procopius (*Aed.* II 6. 15–16; Loeb)**

Date: Late 550s.

Description: Mesopotamian cities were susceptible to nomad raids, but the Emperor Justinian strengthen the walls of several cities.

And there was a certain spot near the larger Thannourios at which the hostile Saracens, after crossing the Aborrhaz River, had complete freedom to resort, and making that their headquarters they would scatter through the thick leafy forest and over the mountain which rises there, and

then they would descend with impunity upon the Romans who lived in the places round about. 16 But now the Emperor Justinian has built a very large tower of hard stone at this point, in which he has established a very considerable garrison, and thus has succeeded completely in checking the inroads of the enemy by devising this bulwark against them.

**Procopius (*Aed.* II 9. 3–4)**

Date: Late 550s.

Description: According to Procopius, Justinian reinforced the defences at Palmyra at Resafa with the Saracen threat in mind.

There is a certain church in Euphratesia, dedicated to Sergius, a famous saint, whom men of former times used to worship and revere, so that they named the place Sergiopolis,<sup>37</sup> and they had surrounded it with a very humble wall, just sufficient to prevent the Saracens of the region from capturing it by storm. For the Saracens are naturally incapable of storming a wall, and the weakest kind of barricade, put together with perhaps nothing but mud, is sufficient to check their assault. 5 At a later time, however, this church, through its acquisition of treasures, came to be powerful and celebrated. 6 And the Emperor Justinian, upon considering this situation, at once gave it careful attention, and he surrounded the church with a most remarkable wall, and he stored up a great quantity of water and thus provided the inhabitants with a bountiful supply. 7 Furthermore, he added to the place houses and stoas and the other buildings which are wont to be the adornments of a city. 8 Besides this he established there a garrison of soldiers who, in case of need, defended the circuit-wall.

**Cyril of Scythopolis (*Vita Sabae* = Prince 1989, 20)**

Date: AD 525–559.

Description: To the monks of the Judaeen desert thought that the raiding ‘Saracens’ were condemnable and evil.

...the wolves of Arabia...

...uncivilized (barbaroi) in conduct; intent on doing evil...

**Cyril of Scythopolis (*Vita Sabae* = Schwarz 1939, 174)**

Date: ca. 530.

Description: In the year 530, Sabas, a monk from Palestine whose deeds as founder of numerous monasteries had earned him empire-wide fame, travelled to Constantinople. The Emperor Justinian received him and promised to grant him any wish, so that the monks of Palestine would pray for Justinian’s reign. Sabas asked Justinian to build a fort in the desert to counter the inroads of the ‘Saracens.’ The emperor granted the money for the fort without hesitation, but Sabas’ disciples decided to spend it on other projects, and, the unprotected monasteries were later devastated by plundering ‘Saracens’ (*passage not found*).

**Piacenza Pilgrim (Jacobs, 36, 39, 40 = CCSL 175: 149; Jacobs 2017)<sup>5</sup>**

Date: ca. AD 570.

Description: The Piacenza Pilgrim describes his journey to the Holy Land. He passed through Petra (Wadi Musa), Mt. Sinai, and Egypt, and describes the ‘Saracens’ as dangerous groups but for the time of their sacred festivals.

<sup>5</sup> Retrieved from: [andrewjacobs.org/rs90/piacenza.html](https://andrewjacobs.org/rs90/piacenza.html), May 2017.

They brought out garlic and roots, whose scent was sweeter than any other smell, and they took nothing. It was forbidden to them because they were celebrating their festival days. The population that moved through that greater desert numbered 12,600.

Since the time of the Saracen festal days had been completed, a messenger went forth; since it was unbearable to return through the desert the way we had come into, some returned to the holy city through Egypt, others through Arabia.

This is the land of Midian; those who dwell in that city are said to be descendants of the household of Jethro, Moses' father-in-law. There are 800 military guards in public service there, with their wives, who receive the supplies and clothing from the Egyptian populace: they do no manual labour, since there is no place for it, since it is all sand; but every day they take each of their Saracen horses, which receive straw for fodder and barley from the public stores, and they go around with them through the desert in order to guard the monasteries and the hermitages against the incursions of Saracens. But they do not shake in fear before the Saracens! When they go out from that city they lock up and take the keys with them. And those who are within do likewise, against the incursions of the Saracens, since they have no place to go outside, apart from the sky and the sand.

#### **Alexander Akoimeites (*Vita of Alexander the Akoimeites 33–34*)**

Date: second half of the fifth century.

Description: This account retells the time when Alexander and his group of monks walked along a series of fortresses built every ten to twenty miles from each other for defense against the barbarians.

And when they had gone off a short distance God sent, as the holy man predicted, Roman tribunes and soldiers carrying goods for them from God. And these asked them to go to their fortresses and give them a blessing, for between the Roman and Persian territories there are fortresses built every ten to twenty milestones from each other for defense against the barbarians. When the brothers who had deserted them observed the soldiers coming from afar, they realized it was happening just as their sainted father said it would and were strengthened in their faith. Some of them cast themselves on the ground and rejoined the brotherhood with contrition. The others who were with him returned to the inner desert and dwelled there to their death. But the blessed Alexander, just as happened in the holy Apostle Peter's case, was commanded by the Holy Spirit to go with [the soldiers], and he followed them without question. As he passed along the entire stretch of frontier he strengthened all in their faith. And he nourished the poor like a father and taught the rich to do good deeds. So stung were they by his words that they brought before him the records they had kept against their debtors and burned them up.

... But afterwards God's wrath fell upon those pestilent ones responsible. For within a few days their children suddenly died, their livestock was seized by barbarians, and their houses were plundered by brigands, so that all were fully convinced that these calamities had befallen them because of the vexations they had caused the holy man.

#### **Sophronius and John Moschus (PL 74: col. 121 = *De Vitis Patrum*, Book X)**

Date: AD 619

Description: Following the Persian occupation of Palestine, Sophronius brought the body of John Moschus from Rome for burial at Mount Sinai but the Agareni ('Saracens') were occupying it.

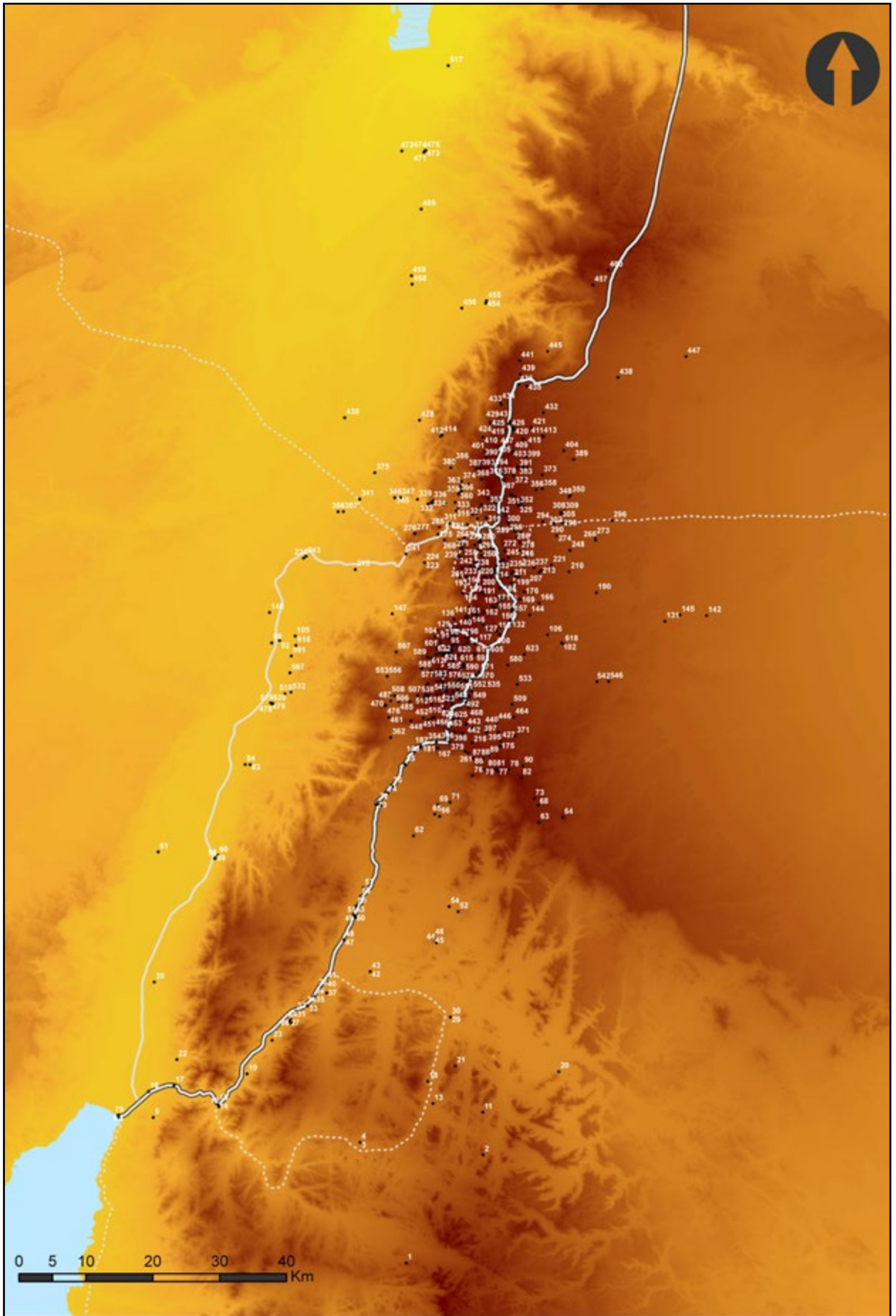
He got as far as Ascalon when he learned that he could go no further towards Mount Sinai because of hostile attacks by the Agareni, so he took blessed John's remains to Jerusalem at the beginning of the octave of the Indiction. [September 1. The beginning of the Byzantine year.]





## **Descriptive Catalogue II**

## **Complete Site Catalogue**



ObjID	Site 1
Site Name	Unnamed Cistern
Site Type	Waterpoint
Latitude	29°20'0.87"N
Longitude	35°23'7.95"E
Start	Unspecified
End	Unspecified
Date Explanation	Thamudic inscription nearby.
References	Mega-Jordan.

ObjID	Site 2
Site Name	Dam
Site Type	Waterpoint
Latitude	29°28'44.26"N
Longitude	35°29'20.18"E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

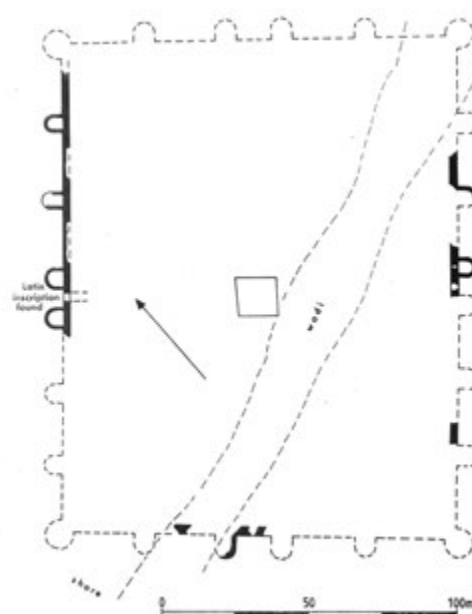
ObjID	Site 3
Site Name	Unnamed Cistern
Site Type	Waterpoint
Latitude	29°29'44.63"N

Longitude	35°19'24.79"E
Start	Nabataean
End	Roman
Relative location	Bir Madkhur (Gluek 1935).
References	Mega-Jordan.

ObjID	Site 4
Site Name	Bir Madkhur
Site Type	Road Station/ Caravansera
Latitude	29°29'44.84"N
Longitude	35°19'24.67"E
Start	Nabataean
End	Roman
References	Mega-Jordan; Gluek (1935).

ObjID	Site 5
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	29°31'45.20"N
Longitude	35°2'43.11"E
Start	Roman
End	Byzantine
References	Mega-Jordan.

ObjID	Site 6
Site Name	Aila
Site Type	Fort
Latitude	29°31'50.44"N
Longitude	34°59'59.72"E
Start	Roman
End	Byzantine





Description	Maybe this is the fort, but the ruins surveyed in western Aqaba are also a good candidate for the settlement and legionary camp (Meloy 1991). The medieval town's plan resembles that of Lejjun, but at a smaller scale. Seven fragments of a dedicatory inscription probably dated to AD 324–6 in the early medieval town (MacAdam 1989).
Garrison	<i>Legio X Fretensis</i> (from early-fourth century, <i>Not. Dig. Or.</i> XXXIV, 30)
References	Whitcomb (1988); MacAdam (1989); Gregory (1997) 412–413; Al Khouri (2003), 67.
Picture	APAAME_20141020_DLK-0014. Photographer: David Kennedy. Courtesy of APAAME. Plan and inscription (MacAdam 1989).

<b>ObjID</b>	<b>Site 7</b>
Site Name	Graf 1997 40
Site Type	Milestone
Latitude	29°31'54.30'N
Longitude	34°59'51.32'E
Start	Roman
End	Roman
Relative location	Aqaba
Description	Enigmatically small; anepigraphic.
References	Graf (1997a).

<b>ObjID</b>	<b>Site 8</b>
Site Name	Graf 1997 41
Site Type	Milestone
Latitude	29°31'54.30'N
Longitude	34°59'51.32'E
Start	Roman
End	Roman
Relative location	Aqaba

Description	Two pieces, pillar 11.30 Ig and base 1.95 Ig; anepigraphic.
References	Graf (1997a).

<b>ObjID</b>	<b>Site 9</b>
Site Name	Graf 1997 42
Site Type	Milestone
Latitude	29°31'54.30'N
Longitude	34°59'51.32'E
Start	Roman
End	Roman
Relative location	Aqaba
Description	Anepigraphic,
References	Graf (1997a).

<b>ObjID</b>	<b>Site 10</b>
Site Name	Aila
Site Type	Settlement
Latitude	29°31'54.30'N
Longitude	34°59'51.32'E
Start	Roman

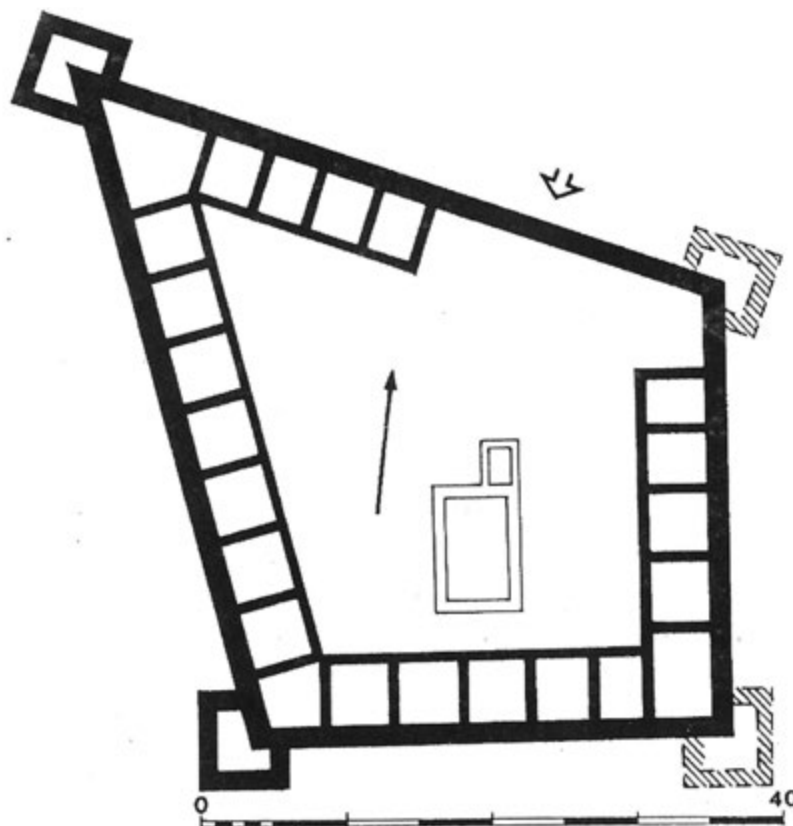


End	Byzantine
Date Explanation	Early Byzantine
References	Mega-Jordan.

Site Type	Waterpoint
Latitude	29°32'10.10"N
Longitude	35°29'19.10"E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 11</b>
Site Name	Dam

<b>ObjID</b>	<b>Site 12</b>
Site Name	Qasr el-Kithara
Site Type	Fort
Latitude	29°32'37.77"N
Longitude	35°8'1.16"E
Start	Nabataean
End	Byzantine
Date Explanation	Predominantly late Byzantine (AD 491-640) sherds (Parker 1976). Probably a Roman building that replaced an earlier Nabataea none (Gregory 1997, 411).
Relative location	ca. 16 km south of Khirbet el-Khalde and ca. 20 km north of Aqaba where the Wadi Yutm, which is followed by the <i>Via Nova Traiana</i> , is joined from the east by Wadi Imtan, forming a spur which provides a good vantage point.
Description	The shape can be seen as a square with one corner pulled out to fit the shape of the spur. The outer wall (1.62 m thick) is built of roughly-shaped and water-worn granite blocks, presumably found locally, with rubble fill. The towers were almost certainly square or rectangular. There was probably a gate on the north wall, internal buildings against the walls, and a gully to the north-east. There was also a freestanding interior building. This fort was strategically located at the intersection of Wadi Yutm and the Wadi Imran leading west towards Wadi Ramm. Guarded the last stages of the Trajanic road. Nabataean pottery was discovered by Savignac, Glueck, Alt, and Graf, but it is noticeably absent from Parker's sample.





Nabataean origin	Nabataea stone dressing marks and inscription (Graf 1983, 650-653).
Dimensions	49x48 or 35x31.6 m.
Associated Features	Spring 100 m to the south.
Modern Disturbance	Stone removed to build the railway which has also destroyed much of the south wall and towers.
References	Gregory (1997) 409-411; Alt (1936), 104-105 (gives description and best plan); Stein, Gregory and Kennedy (1985), 306-308 and 431; Graf (1983), 648-653; Parker (1986), 109-110; Al Khouri (2003), 68.
Picture	APAAME_19980520_DLK-0269. Photographer: David Kennedy. Courtesy of APAAME. Plan (Alt 1936).

ObjID	Site 13
Site Name	Unnamed Cistern
Site Type	Waterpoint
Latitude	29°32'52.70"N
Longitude	35°25'17.86"E
Start	Nabataean
End	Nabataean
References	Mega-Jordan

ObjID	Site 14
Site Name	Graf 1997 38
Site Type	Milestone
Latitude	29°32'53.21"N
Longitude	35°7'56.35"E
Start	Roman
End	Roman
Date Explanation	AD 112
Relative location	At Kithara, 20 km north of Aqaba.
Description	Broken pillar; diagonal dressing on base; Latin inscription, A D. 112.
References	Graf (1997a).

ObjID	Site 15
Site Name	Graf 1997 39
Site Type	Milestone
Latitude	29°32'53.21"N
Longitude	35°7'56.35"E
Start	Roman
End	Roman
Date Explanation	112
Relative location	Kithara, 20 km north of Aqaba.
Description	Latin inscription: probably AD 112; from Kh. al-Kithara.
References	Graf (1997a).

ObjID	Site 16
Site Name	Unnamed Cistern
Site Type	Waterpoint
Latitude	29°33'51.24"N
Longitude	35°2'20.59"E
Start	Unspecified
End	Unspecified
References	Mega-Jordan.

ObjID	Site 17
Site Name	Unnamed Tower
Site Type	Tower
Latitude	29°34'20.26"N
Longitude	35°4'23.92"E
Start	Roman
End	Byzantine
Date Explanation	Roman and Byzantine sherds
References	Mega-Jordan.

ObjID	Site 18
Site Name	Aramaua
Site Type	Settlement
Latitude	29°34'40.43"N
Longitude	35°24'52.44"E
Start	Nabataean
End	Roman
Relative location	Modern Ramm In Wadi Ramm
References	Mega-Jordan.

ObjID	Site 19
Site Name	Royesh al- Mahbub
Site Type	Tower
Latitude	29°35'16.13"N
Longitude	35°10'17.68"E
Start	Byzantine
End	Byzantine
Date Explanation	Byzantine sherds nearby.
Relative location	Peak of a small hill 11 km s of Khalde in the middle of Wadi Yutm.
References	Graf (1997a).

ObjID	Site 20
Site Name	Manshir
Site Type	Waterpoint
Latitude	29°35'27.31"N
Longitude	35°35'27.52"E
Start	Nabataean
End	Nabataean
Date Explanation	Roman pottery nearby.
References	Mega-Jordan.

ObjID	Site 21
Site Name	Umm Ishrim

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Site Type	Waterpoint
Latitude	29°35'54.46'N
Longitude	35°27'5.94'E

Start	Nabataean
End	Nabataean
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 22</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	29°36'25.59'N
Longitude	35°4'38.00'E
Start	Nabataean
End	Roman
Description	“The site consists of four features. Feature 1 is a ruined structure, possibly a watchtower, which appears as a mound of collapsed stones covering an area of ca. 15 x 15 m. Segments of the outer facing of the exterior wall are visible, but these do not allow for an accurate estimation of the overall size or construction of the feature. Adjacent to the south wall, there is evidence for later reuse of the stones, perhaps for local burials. Feature 2 is a ruined structure immediately southwest of Feature 1. Only the foundation stones of its southeast and northeast corners and segments along the east (ca. 7 m in length) and north walls are preserved. The remainder of the surface is littered with stones and cobbles. Several larger stones align along the outside edge of the northeast corner. Feature 3 is a cemetery consisting of a series of burials extending across a saddle between two ridges overlooking Wadi Mulghan. The graves measure between ca. 1 x 8 m to 2 x 1.30 m and most are oriented NW-SE. The graves are oblong stone alignments with cleared centres, although one is circular (ca. 1.30 m in diameter). Two of the oblong graves have capstones. Also, there are additional wall foundations of a structure (Feature 4) at the Site that measure ca. 3.50 x 1.50 m’ Parker and Smith (2014), 209.
References	Parker and Smith (2014); Mega-Jordan.

<b>ObjID</b>	<b>Site 23</b>
Site Name	Rujm al-Jurf
Site Type	Tower
Latitude	29°37'58.63'N
Longitude	35°12'18.33'E

Start	Nabataean
End	Byzantine
Date Explanation	Nabatean to Late Roman pottery.
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 24</b>
Site Name	Kh. el-Khalde
Site Type	Road Station/ Caravanserai
Latitude	29°39'22.66'N
Longitude	35°13'48.33'E
Start	Roman
End	Byzantine
Date Explanation	Surface sherds from the Nabataean to seventh century (Parker 1976).
Relative location	On the <i>Via Nova Traiana</i> , ca.17 km south of el-Quweira and ca. 16 km north of Qasr el-Kithara; on a saddle between the main range of mountains and an outlying hill on the south-east side of Wadi Yutm. Located southwards of the fort.
Dimensions	31.5 x 21.5 m.
Associated Features	Fort

<b>ObjID</b>	<b>Site 25</b>
Site Name	Unnamed Cisterns
Site Type	Waterpoint
Latitude	29°39'23.17'N
Longitude	35°13'50.20'E

Start	Nabataean
End	Roman
Relative location	Khalde
References	Mega-Jordan





<b>ObjID</b>	<b>Site 26</b>
Site Name	Kh. el-Khalde
Site Type	Fort
Latitude	29°39'24.34'N
Longitude	35°13'50.59'E
Start	Roman
End	Byzantine
Date Explanation	Surface sherds from the Nabataea to seventh century (Parker 1976).
Relative location	Situated on the <i>Via Nova Traiana</i> , ca.17 km south of el-Quweira and ca. 16 km north of Qasr el-Kithara; on a saddle between the main range of mountains and an outlying hill on the south-east side of Wadi Yutm.
Description	The first stage from ion the road to Petra is marked on the Peutinger Table as Praesidio, identified with al-Khalde. This is mentioned in the <i>Notitia</i> , in the fragmentary 'Edict from Beer Sheva', and appears on the Madaba map. The fort possibly had two separate courtyards. Built of granite blocks with some reused sandstone tooled in the Nabataean style; there are interior rooms against the walls. There is a water channelled from nearby spring by aqueduct into reservoir.
Nabataean origin	Nabataean stone dressing marks and inscription (Graf 1983, 650–653)
Dimensions	54 x 33 m (Parker), 41x 35 m (Stein).
Associated Features	Mansio.
Modern Disturbance	Damaged by railway construction.
Garrison	<i>Cohors IV Phrygum</i> and/or <i>Ala secunda felix Valentiana</i> .
Similar Sites	Fort at Horvat Uza in the Negev (double courtyard).
References	Gregory (1997) 407-408; Graf (1983), 651-2; Stein, Gregory and Kennedy (1985), 310-312 and 431; Parker (1986), 108-109; Isaac (1989), 252. Stein, Gregory and Kennedy (1985), Fig 32 has the available plan; Al Khouri (2003), 68
Picture	APAAME_20160919_DLK-0037. Photographer: David Kennedy. Courtesy of APAAME.

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ObjID	Site 27
Site Name	Kh. el-Khalde
Site Type	Tower
Latitude	29°39'33.05'N
Longitude	35°13'43.51'E
Start	Roman
End	Byzantine
Date Explanation	Surface sherds from the Nabataean period to seventh century (Parker 1976)
Relative location	On the <i>Via Nova Traiana</i> , ca.17 km south of el-Quweira and ca. 16 km north of Qasr el-Kithara; on a saddle between the main range of mountains and an outlying hill on the south-east side of Wadi Yutm. To the west of the fort on a small granite outcrop.
References	Gregory (1997) 407-408; Graf (1983), 651-2; Stein, Gregory and Kennedy (1985), 310-312 and 431; Parker (1986), 108-109; Isaac (1989), 252.

ObjID	Site 28
Site Name	Unnamed Cisterns
Site Type	Waterpoint
Latitude	29°39'37.54'N
Longitude	35°13'50.72'E
Start	Nabataean
End	Roman
Relative location	Khalde
References	Mega-Jordan

ObjID	Site 29
Site Name	Rum al-Atiq
Site Type	Waterpoint
Latitude	29°39'51.20'N
Longitude	35°26'41.86'E
Start	Nabataean
End	Nabataean
References	Mega-Jordan

ObjID	Site 30
Site Name	Rum al-Atiq
Site Type	Waterpoint
Latitude	29°39'51.99'N
Longitude	35°26'42.35'E
Start	Nabataean
End	Nabataean
References	Mega-Jordan

ObjID	Site 31
Site Name	Graf 1997 36
Site Type	Milestone
Latitude	29°40'18.79'N
Longitude	35°14'13.54'E
Start	Roman
End	Roman
Relative location	16 km South of Quweira.
Description	Anepigraphic (Thomsen No. 175b).
References	Graf (1997a).

ObjID	Site 32
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Site Name	Graf 1997 37
Site Type	Milestone
Latitude	29°40'18.79'N
Longitude	35°14'13.54'E
Start	Roman
End	Roman
Relative location	16 km South of Quweira
Description	Anepigraphic (Thomsen No. 175b).
References	Graf (1997a).

ObjID	Site 33
Site Name	Graf 1997 34
Site Type	Milestone
Latitude	29°40'45.95'N
Longitude	35°15'10.62'E
Start	Roman
End	Roman
Date Explanation	111-114
Relative location	14.5 south Of Quweira
Description	Latin inscription, AD 111-114 (Thomsen No. 175a).
References	Graf (1997a).

ObjID	Site 34
Site Name	Graf 1997 35
Site Type	Milestone
Latitude	29°40'45.95'N
Longitude	35°15'10.62'E
Start	Roman
End	Roman
Date Explanation	111-114
Relative location	14.5 south of Quweira
Description	Latin inscription, AD 111-114 (Thomsen No. 175a).
References	Graf (1997a).

ObjID	Site 35
Site Name	Graf 1997 32
Site Type	Milestone



Latitude	29°41'29.47"N
Longitude	35°15'43.99"E
Start	Byzantine
End	Byzantine
Date Explanation	307-308
Relative location	13 km south of Quweira.
Description	Latin inscription, AD 307-308 (Alt 1936, 100).
References	Graf (1997a).

<b>ObjID</b>	<b>Site 36</b>
Site Name	Graf 1997 33
Site Type	Milestone
Latitude	29°41'29.47"N
Longitude	35°15'43.99"E
Start	Byzantine
End	Byzantine
Date Explanation	307-308
Relative location	13 km south of Quweira.
Description	Latin inscription, AD 307-308 (Alt 1936, 100)
References	Graf (1997a).

<b>ObjID</b>	<b>Site 37</b>
Site Name	Mersed
Site Type	Tower
Latitude	29°41'47.90"N
Longitude	35°16'42.76"E
Start	Nabataean
End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 38</b>
Site Name	Graf 1997 31
Site Type	Milestone
Latitude	29°42'11.81"N
Longitude	35°16'19.23"E
Start	Roman
End	Roman
Date Explanation	Early Roman
Relative location	11.5 km south of Quweira.
Description	Three shattered pieces; anepigraphic.
References	Stein, Gregory and Kennedy (1985), 314; Graf (1997a).

<b>ObjID</b>	<b>Site 39</b>
Site Name	Hadid
Site Type	Tower
Latitude	29°42'40.84"N
Longitude	35°2'48.51"E
Start	Roman
End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 40</b>
Site Name	Graf 1997 30

Site Type	Milestone
Latitude	29°42'42.70"N
Longitude	35°16'40.00"E
Start	Roman
End	Roman
Date Explanation	112
Relative location	10 km South of Quweira.
Description	Diagonal dressing on base; Latin inscriptions: primary, AD 112; secondary, AD 293-305 (Alt 1936, 99-100).
References	Graf (1997a).

<b>ObjID</b>	<b>Site 41</b>
Site Name	Qasr al- Medeifi
Site Type	Tower
Latitude	29°42'44.62"N
Longitude	35°16'41.83"E
Start	Roman
End	Roman
Relative location	Entrance to Wadi Yutm as road descends into Aqaba; past Quweira.
Description	Would have demanded a wooden scaffolding bridge of some kind.
Dimensions	8 sqm.
References	Graf (1997a), 5.

<b>ObjID</b>	<b>Site 42</b>
Site Name	Unnamed Cistern
Site Type	Waterpoint
Latitude	29°43'31.21"N
Longitude	35°20'13.80"E
Start	Roman
End	Roman
Relative location	Near Rakhemtein.
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 43</b>
Site Name	Rakhemtein
Site Type	Tower
Latitude	29°43'31.68"N
Longitude	35°20'14.43"E
Start	Nabataean
End	Byzantine
Date Explanation	Nabataean and Late Roman pottery.
References	Mega-Jordan

<b>ObjID</b>	<b>Site 44</b>
Site Name	Jabel Ratama Cisterns
Site Type	Waterpoint
Latitude	29°45'51.34"N
Longitude	35°25'34.70"E
Start	Nabataean
End	Nabataean
Relative location	At Jabel Ratama.

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References	Mega-Jordan.
<b>ObjID</b>	<b>Site 45</b>
Site Name	Arsah
Site Type	Waterpoint
Latitude	29°46'16.06'N
Longitude	35°25'21.55'E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 46</b>
Site Name	Arsah
Site Type	Waterpoint
Latitude	29°46'16.06'N
Longitude	35°25'21.55'E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 47</b>
Site Name	Graf 1997 28
Site Type	Milestone
Latitude	29°46'5.40'N
Longitude	35°18'6.90'E
Start	Roman
End	Roman
Relative location	4 km south of Quweira.
Description	Red sandstone base and partial column (Stein, Gregory and Kennedy 1985, 315).
References	Graf (1997a).

<b>ObjID</b>	<b>Site 48</b>
Site Name	Graf 1997 29
Site Type	Milestone
Latitude	29°46'5.40'N
Longitude	35°18'6.90'E
Start	Roman
End	Roman
Relative location	4 km south Of Quweira
Description	White sandstone column, without base; anepigraphic (Alt 1936, 99-100; Stein, Gregory and Kennedy 1985, 315)
References	Graf (1997a).

<b>ObjID</b>	<b>Site 49</b>
Site Name	El-Quweira Tower
Site Type	Tower
Latitude	29°47'53.80'N
Longitude	35°19'2.42'E
Start	Roman
End	Roman
Relative location	On the <i>Via Nova Traiana</i> , 18 km N of el-Khalde, on fa rocky hill.
Picture	APAAME_20160919_DLK-0055. Photographer: David Kennedy. Courtesy of APAAME.



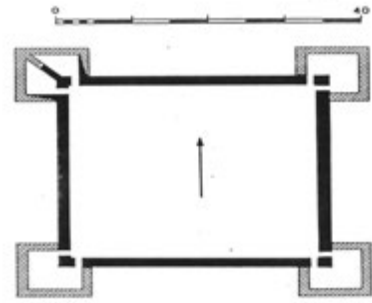
<b>ObjID</b>	<b>Site 50</b>
Site Name	El-Quweira Village
Site Type	Settlement
Latitude	29°47'59.16"N
Longitude	35°18'59.97"E
Start	Nabataean
End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 51</b>
Site Name	Unnamed Cistern
Site Type	Waterpoint
Latitude	29°48'2.80"N
Longitude	35°18'52.73"E

Start	Nabataean
End	Roman
Relative location	El- Quweira
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 52</b>
Site Name	Unnamed Cistern
Site Type	Waterpoint
Latitude	29°48'21.95"N
Longitude	35°27'19.67"E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 53</b>
Site Name	El-Quweira Fort
Site Type	Fort
Latitude	29°48'3.26"N
Longitude	35°18'58.27"E
Start	Roman
End	Byzantine
Date Explanation	Suggestions range from Nabataean to Medieval. Pottery shows 31 datable sherds from AD73 to 450.
Relative location	On the <i>Via Nova Traiana</i> , 18 km N of el-Khalde, on flat ground near a rocky hill with remains of watchtower.
Description	After Alt (1936): walls ca. 1.65 m thick. Dressed sandstone. Some blocks with Nabataean tooling. Internal rooms against the walls (possibly two-storied). The entrances to the towers appear to be special features.
Nabataean origin	Nabataean stone dressing marks and inscription (Graf 1983, 650-653).
Dimensions	31.5 x 32.5 m.



Associated Features	Water was brought in by a conduit into an artificial reservoir 33 x 20 to the SE. Glueck (1935, 57-8) saw the remains of a 'medieval Arab caravanserai with circular corner towers.'
Modern Disturbance	Obliterated in the 1930's.
Similar Sites	Thueaiya (Not Bshir as Stein proposed).
References	Gregory (1997) 404-405; Musil 1926, 62-64 fig21; Glueck (1935), 57-58; Alt (1936) 96-98 fig 2; Stein, Gregory and Kennedy (1985), 315-317, Fig 67a; Graf (1983), 652-3, discusses pottery evidence and Nabataean presence; Lander (1984) 145; Parker (1986) 105-108; Al Khouri (2003), 69.
Picture	APAAME_20160919_RHB-0060. Photographer: Robert Bewley. Courtesy of APAAME. Plan (Alt 1936).

<b>ObjID</b>	<b>Site 54</b>
Site Name	Kharaz
Site Type	Tower
Latitude	29°48'46.04"N
Longitude	35°26'36.13"E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

End	Roman
Relative location	1.5 km north of Quweira.
Description	Anepigraphic (Thomsen 174c).
References	Graf (1997a).

<b>ObjID</b>	<b>Site 55</b>
Site Name	Graf 1997 27
Site Type	Milestone
Latitude	29°48'48.83"N
Longitude	35°19'6.23"E
Start	Roman

<b>ObjID</b>	<b>Site 56</b>
Site Name	Graf 1997 26
Site Type	Milestone
Latitude	29°49'34.71"N
Longitude	35°19'26.21"E
Start	Roman
End	Roman
Relative location	3 km north of Quweira.
Description	Anepigraphic (Thomsen 174b)
References	Graf (1997a).

<b>ObjID</b>	<b>Site 57</b>
Site Name	Graf 1997 25
Site Type	Milestone
Latitude	29°50'16.79'N
Longitude	35°19'41.09'E

Start	Roman
End	Roman
Relative location	4.5 km north of Quweira.
Description	Anepigraphic (Thomsen 174a).
References	Graf (1997a).

<b>ObjID</b>	<b>Site 58</b>
Site Name	Taba
Site Type	Settlement
Latitude	29°52'38.73'N
Longitude	35°7'41.53'E
Start	Nabataean
End	Roman
Description	'This is the village Site of Rujm at Taba located east of the highway and ca. 50 m to the south of Site 153. Much of the Site was destroyed during construction of the modern highway when a large quantity of gravel was removed from the base of the alluvial fan to line the highway bed. Further modification of the area continues with recent bulldozing activity. The project identified two extant structures and several large mounds that may indicate others in the area. One of these structures at the southern end of the Site measures ca. 10 m on a side and it is partitioned into four rooms of equal size. The second structure, which lies ca. 100 m to the north, is similar in design. The walls of both structures are two courses wide and constructed of cobbles and boulders from the fan surface. Located on the steep slope of the alluvial fan above the village, there is a cemetery of ca. 50 tombs' Parker and Smith (2014), 223.
References	Mega-Jordan; Parker and Smith (2014).

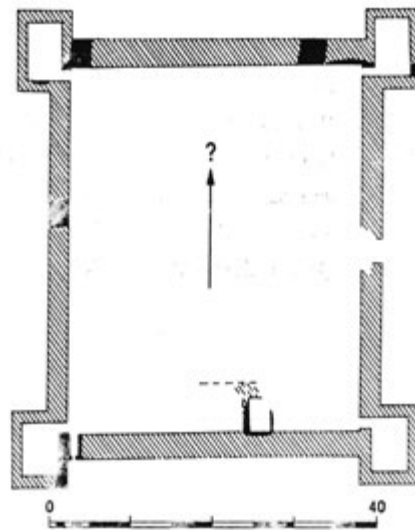
<b>ObjID</b>	<b>Site 59</b>
Site Name	Taba
Site Type	Road Station/ Caravanserai
Latitude	29°52'41.02'N
Longitude	35°7'43.69'E
Start	Nabataean
End	Roman
Description	This is a ruined structure, seemingly a caravanserai, located ca. 20 m west of the highway. The structure measures ca. 21 m on a side. It is partly buried under sand dunes encroaching from the northwest. Much of the structure has been disturbed by localised bulldozing.
Dimensions	25 x 25 m.
References	Parker and Smith (2014), 223; Mega-Jordan.

<b>ObjID</b>	<b>Site 60</b>
Site Name	Unnamed Fortress
Site Type	Fortress
Latitude	29°52'54.90'N

Longitude	35°7'56.76'E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 61</b>
Site Name	Yotvata/Ain Ghadian
Site Type	Fort
Latitude	29°53'10.85'N
Longitude	35°3'7.67'E
Start	Roman
End	Byzantine
Date Explanation	AD 293–306 (Tetrarchic inscription). Two layers of occupation during the 4th century (coin evidence).
Relative location	ca. 40 km almost due north of Aila; on flat ground near the foot of the hills.





Description	Best watered site in the region. Internal evidence suggests it was partially destroyed under Constantius II, but restored in 357/8 and finally destroyed in 363 (by earthquake) or 375 (by Mavia). Built by the agency of Priscus (Praeses). Inscription contains a dedication 'perpetual peace' by the tetrarchs (Maximian's name later erased, as are the last 1 and 1/2 lines. who founded an ala (?) by the 'providence' of Priscus, the Praeses. 2.45 m thick walls, tower 7.7 x 6.4 m external, 5.3 x 4 m internal. Mudbrick and stone base, exterior and interior walls plastered. Nabataean 'tooling' in secondary use.
Dimensions	39.7 x 39.4 m.
Associated Features	Amazing water harvesting network that brought water into the settlement. Water channels and Foggaras/qanats used to irrigate date palm groves (ca. 400 ha). Bathhouse of linear plan with hypocaust of circular tile construction, 100 m to the north. Second fort/khan ca. 30 m square.
Similar Sites	Gharandal (to the north) and Mezar Tamar.
References	Kennedy and Riley (1990), 76; Rothenberg (1971), 218; Evenari et al. (1982), Ch. XI; Gregory (1997), 452-454; Frank (1934), 232, 239; Meshel (1989).
Pictures	Plan (Gregory 1977, Fig. 55.1). Inscription (Meshel and Roll 1987, 249, 257).

ObjID	Site 62
Site Name	Humeima el-Jedideh
Site Type	Waterpoint
Latitude	29°54'29.10"N
Longitude	35°23'43.60"E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

ObjID	Site 63
Site Name	Telajeh
Site Type	Settlement
Latitude	29°55'34.03"N
Longitude	35°33'50.59"E
Start	Nabataean
End	Byzantine
Date Explanation	Nabataean and Byzantine pottery
References	Mega-Jordan.

ObjID	Site 64
Site Name	Al-Batra
Site Type	Tower
Latitude	29°55'58.34"N
Longitude	35°35'47.00"E
Start	Roman
End	Roman
Relative location	ca. 10 km E of Kh. el-Qirana on a flat hilltop overlooking some wells; according to Stein it was visible from the forlet at es-Sadaqa.
Description	ca.12 m x 10.5 m (Stein), ca.13 m square (Musil).
Modern Disturbance	Arab cemetery (sometime between 1926-1939) inside obscured the internal divisions observed by Musil.
References	Gregory (1997) 402-403; Musil (1926), 45, 47; Stein, Gregory, and Kennedy (1985), 333.

ObjID	Site 65
Site Name	Dabbat Hanut 1
Site Type	Waterpoint
Latitude	29°56'13.42"N
Longitude	35°25'26.50"E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

Relative location	S of Petra, on the <i>Via Nova Traiana</i> , ca. 45 km north of Aila.
Description	15 x 11 m outside the town to the south-west.

ObjID	Site 66
Site Name	Dabbat Hanut 2
Site Type	Waterpoint
Latitude	29°56'2.73"N
Longitude	35°25'50.56"E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

ObjID	Site 68
Site Name	Nasara
Site Type	Settlement
Latitude	29°56'57.10"N
Longitude	35°33'47.52"E
Start	Nabataean
End	Byzantine
References	Mega-Jordan.

ObjID	Site 67
Site Name	Humayma Tower
Site Type	Tower
Latitude	29°56'55.52"N
Longitude	35°21'10.73"E
Start	Roman
End	Roman

ObjID	Site 69
Site Name	Graf 1997 24
Site Type	Milestone
Latitude	29°56'59.04"N
Longitude	35°25'42.22"E
Start	Roman
End	Roman
Relative location	Baida', 8 km east of Humayma.
Description	Base broken from pillar; anepigraphic (cf. Musil 1926:28).
References	Graf (1997a).

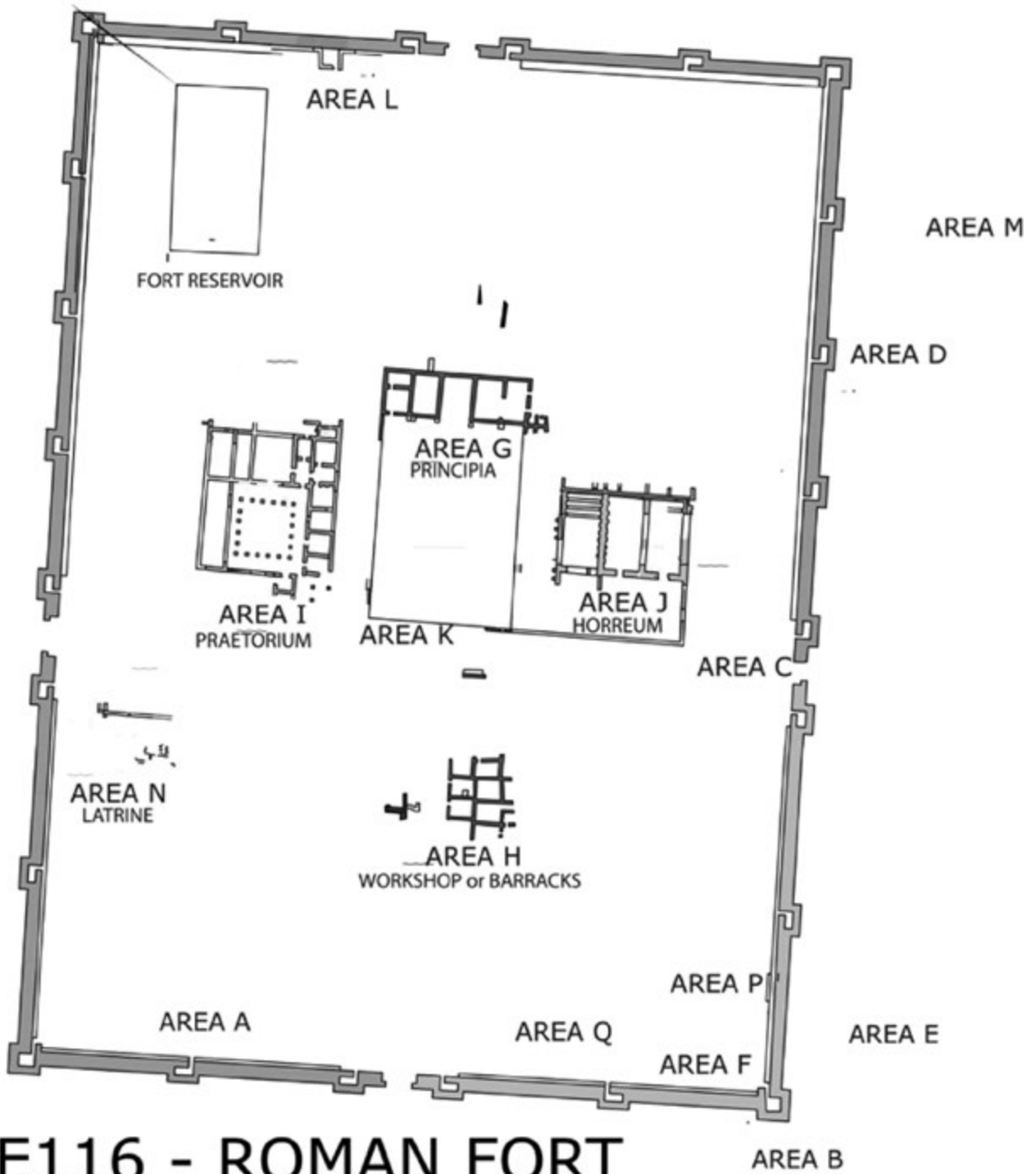
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ObjID	Site 70
Site Name	Humayma/Hauara
Site Type	Caravanserai
Latitude	29°56'59.94'N
Longitude	35°20'45.08'E
Start	Roman
End	Byzantine
Date Explanation	Islamic? (plan)
Relative location	S of Petra, on the <i>Via Nova Traiana</i> , ca. 45 km north of Aila.
Description	Could be a fort or <i>mansio</i> . Substantial structure of 45 x 65 m. Ranges of rooms on all four sides of a courtyard along with a long room at the rear. Reminiscent of military <i>principia</i> with forehall (Kennedy and Riley 1990) but probably coincidental (Gregory 1997, 399)
Associated Features	Extensive water-collection system.
References	Kennedy and Riley (1990), 147-8; Gregory (1997) 398-399; A. Johnson (1983), 104-32; Oleson et al. (2008).

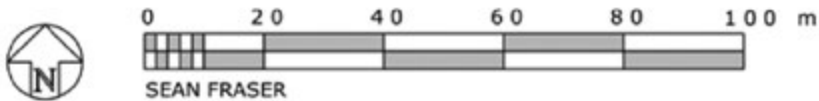
ObjID	Site 71
Site Name	Unnamed Cistern
Site Type	Waterpoint
Latitude	29°57'10.63'N

Longitude	35°26'40.02'E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

ObjID	Site 72
Site Name	Humayma Fort/Hauara
Site Type	Fort
Latitude	29°57'11.15'N
Longitude	35°20'52.98'E
Start	Roman
End	Byzantine
Relative location	S of Petra, on the <i>Via Nova Traiana</i> , ca. 45 km north of Aila.
Description	One large military installation of 204 x 147 m. At the north-west corner is an ancient reservoir (30x15 m). The fort also had a line of buildings inside the east gate. It could have accommodated 2000 infantry or a large cavalry force. The walls were 2.3 m thick. More on Humayma on Kennedy and Riley (1990), 148.
Associated Features	Numerous civil buildings, mainly houses, reservoirs, cisterns and an aqueduct system. Extensive water-collection system. Water tapped from Ain Qana and Ain el Jammam springs, aqueduct carried water from 13 km away.
Garrison	<i>Equites sagittarii indigenae</i> (Not.Dig. Or XXXIV, 25 'Haura').
References	Kennedy and Riley (1990) 147-8; Gregory (1997), 398-399; Ptolemy (5.16) Auara 'a town of Arabia Petraea'; Peut. Tab. 'Haurra'; Beersheba Edict (ca.f. Parker (1986) 104); Musil (1926), 50; Stein, Gregory, and Kennedy (1985), 323; Eadie (1984); Parker (1986), 104-5; Oleson et al. (2008); Al Khouri (2003), 70.
Pictures	Oleson et al. (2008).



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<b>ObjID</b>	<b>Site 73</b>
Site Name	Kh. Al-Khur
Site Type	Settlement
Latitude	29°57'29.47'N
Longitude	35°33'27.30'E
Start	Nabataean
End	Byzantine
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 74</b>
Site Name	Graf 1997 23
Site Type	Milestone
Latitude	29°57'57.28'N
Longitude	35°21'34.33'E
Start	Roman
End	Roman
Relative location	1.8 km NE of Humayma.
Description	Adjacent to aqueduct; badly deteriorated; anepigraphic (Stein, Gregory and Kennedy 1985, 326).
References	Graf (1997a).

<b>ObjID</b>	<b>Site 75</b>
Site Name	Graf 1997 22
Site Type	Milestone
Latitude	29°58'29.26'N

<b>ObjID</b>	<b>Site 78</b>
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	29°59'49.63'N
Longitude	35°31'24.21'E
Start	Roman
End	Byzantine
Description	‘This site, which measures ca. 40 x 40 m, is probably an agricultural village or hamlet. It has two different construction modes and this probably indicates at least two different periods of occupation. One mode of construction is that from unhewn or roughly hewn chert blocks. In this segment of the Site, there are rectilinear structures and circular enclosures. The latter probably served as corrals. Many of the walls of the structures of this mode of construction have walls that still stand over 1 m high and they are ca. 0.75 m wide. There are many other wall lines, some at ground level, throughout this segment of the Site. One area has a flagstone floor. Thus, this area could have been used for winnowing. What may be a cistern is located at the Site’s NE segment. A second mode of construction is seen at a building located in the Site’s SW segment. The stones of one building here are well-hewn, especially on the exterior. The building’s SE-facing wall still stands over 2 m. It shows signs of what appears to be modern cement. Thus, it could be that the building was maintained in modern times. The interior of the building is filled with rubble and, thus, there could be some deposition in this segment of the Site. It is difficult to know its function. There are areas of the Site that have been illicitly dug, but neither sherds nor lithics were noted in the backfill. However, the trenches show deposition at the Site. Thus, it could be a good one for excavation. There are many stone piles and stone fences in the area of the Site and the area appears to have been devoted to agriculture. Harvesters were at work in the wheat fields to the W of the Site, and a Bedouin tent was located to the SW.’ MacDonald (2012)
References	MacDonald (2012).

Longitude	35°21'58.92'E
Start	Roman
End	Roman
Relative location	3 km north of Humayma
Description	Pillar without base; anepigraphic (Stein, Gregory and Kennedy 1985, 327).
References	Graf (1997a).

<b>ObjID</b>	<b>Site 76</b>
Site Name	Naqb esh-Shtar
Site Type	Fortress
Latitude	29°59'22.74'N
Longitude	35°28'30.65'E
Start	Roman
End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 77</b>
Site Name	Shedeiyid
Site Type	Tower
Latitude	29°59'43.09'N
Longitude	35°30'30.84'E
Start	Roman
End	Roman
Date Explanation	Early Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 79</b>
Site Name	Ras en-Naqb
Site Type	Settlement
Latitude	29°59'50.37'N

Longitude	35°29'24.67'E
Start	Nabataean
End	Roman
References	Mega-Jordan.

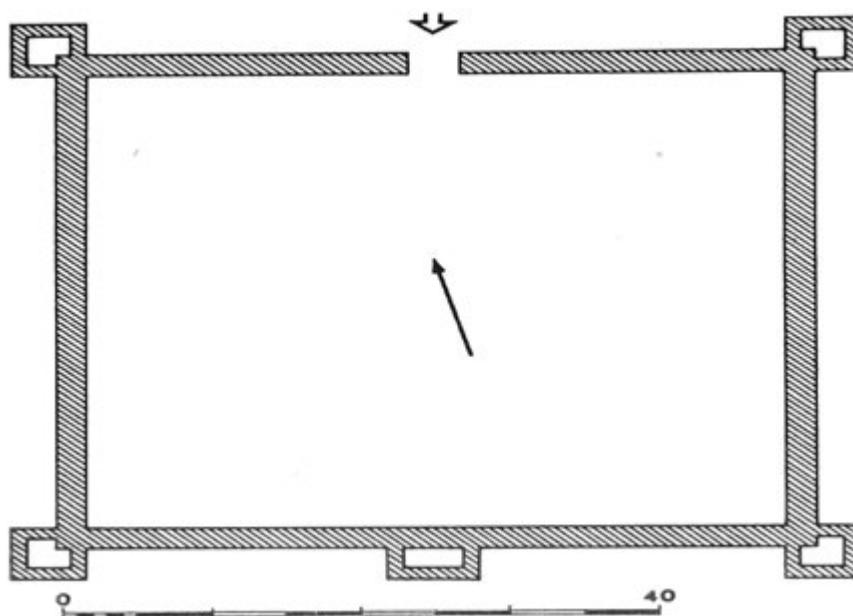
<b>ObjID</b>	<b>Site 80</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	29°59'51.56'N
Longitude	35°29'46.37'E
Start	Roman
End	Roman
Description	'This site is probably a watchtower. It overlooks the plain to the N and NE. The main structure at the Site measures ca. 3 x 3 m and is constructed of large and very roughly-hewn chert blocks. Its interior is filled in, but its wall lines are clearly visible. There is an associated courtyard or enclosure on its NE side. Because of the damage to the structure, it is impossible to say where its entrance was/is. But, because of the courtyard, it would seem that it was located on its NE as well' MacDonal (2012).
References	MacDonal (2012).

<b>ObjID</b>	<b>Site 81</b>
Site Name	Shedeiyid
Site Type	Fort
Latitude	29°59'51.57'N
Longitude	35°30'19.73'E
Start	Roman
End	Byzantine
Description	'This is a massive fort, measuring ca. 75 (N- S) x 154 (E-W) m. It overlooks, from the Ras an-Naqb escarpment, a large portion of the Hisma Valley. The stones, mostly chert blocks, constituting the structure are roughly hewn or unhewn. Although there is a great deal of rubble within and around the structure, the perimeter wall as well as interior partitioning walls are clearly visible. What appears to be a roadway approaches the fort from the NE. The entire structure still stands ca. 3- 4 m above the surrounding ground level. Some bulldozing has removed some of the Site. This activity was probably associated with both road construction and the building of telecommunication towers. A cistern is located on the slope to the Site's NE. Glueck describes the Site as 'a great Edomite border fortress' (1935: 60). It ought to be further investigated' MacDonal (2012).
References	MacDonal (2012); Glueck (1935), 60 (his Site 34), 63, Pl. 12, 174; Graf (1979), 125, (1983), 649; Hart and Falkner (1985), 269; Bisheh (1993), 125.

<b>ObjID</b>	<b>Site 82</b>
Site Name	Kh. el-Qirana
Site Type	Fort
Latitude	29°59'9.96'N
Longitude	35°32'25.43'E
Start	Roman
End	Byzantine
Relative location	ca.10 km SE of <i>Via Nova Traiana</i> , near the southern end of the Shera range, ca.20 km S of es-Sadaqa.



Description	<p>'Site occupied from the Iron Age until the 6th century. Approximately 50 m sq. Difficult to say, because descriptions and plans do not agree. Walls 2 m thick, towers 5.2 x 3.2 m, towers. Gate (2.5 m) in north wall and interval tower in the middle of south wall. Musil's plan adds indistinct remains of rooms against the walls (confirmed by Glueck). MacDonald: 2012 (Al-Qurna): This site is a fort. The entire complex, consisting of two parts, measures ca. 225 (N-S) x 170 (E-W) m. The first part, the fort, measures ca. so (N-S) x 40 (E-W) m. Its exterior walls are impressive and measure ca. 2 m wide, while the entire structure still stands ca. 4 m above the present ground level. What seems to be a central roadway runs NE- SW through it. Despite the fact that there is a great deal of stone tumble within the fort, many partitioning walls are evident. This tumble is also seen along all its sides. What looks like a door socket is associated with what appears to be the S gate of the fort and a lintel stone with the N one. Several structures are located on the fort's NW side. They measure ca. 1.50 m high. There are many corrals, especially along its E side. There are possible ancient structures at this segment of the Site as well. It is difficult to know, without excavation, which segments of the Site are contemporaneous. It would be worth investigating the stones that constitute the fort; some of them may have inscriptions on them. The second part of the Site is located to the SE of the fort, at a distance of ca. 100 m. There is evidence of much illegal digging here. For example, one cleared-out room measures ca. 3.5 (N- S) x 4.5 (E-W) m. The digging reveals different wall construction techniques. Thus, there could be rebuilding in this structure. A modern cemetery was noted at the S edge of the entire Site. There is a dense sherd scatter throughout both parts of the Site. Parker gives the dimensions of the 'castellum' as ca. 50 meters square, 0.25 ha, finds the single entrance in the north wall, and states that the enclosure wall is 2 m thick (1986: 104). He states, 'Four rectangular angle towers (5 x 3 m) project from the corners and a single interval tower (6 x 3 m) projects from the south wall' (1986: 104). The Site ought to be excavated because of its many intriguing features' MacDonald (2012).</p>
Associated Features	Extensive settlement.
Modern Disturbance	Modern cemetery, c.f. <a href="http://eamea.arch.ox.aca.uk/angered-archaeology-as-captured-with-the-aerial-archaeology-in-jordan-project-september-2016-season/">eamea.arch.ox.aca.uk/angered-archaeology-as-captured-with-the-aerial-archaeology-in-jordan-project-september-2016-season/</a> , May 2017.
References	Gregory (1997), 400-401; Musil (1907), 229-30; Glueck (1935), 62, pl 18; Lander (1984), 17-18; Parker (1986), 102-4; MacDonald (2012), 145; Parker (1976), 25, 30; Graf (1983), 648-49; Fiema (1995), 266, Table 2; Kennedy (2002), (2004), 188-90; Al Khouri (2003), 71.
Picture	APAAME_20160919_RHB-0174. Photographer: Robert Bewley. Courtesy of APAAME. Plan (Parker 1986, Fig. 47).





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<b>ObjID</b>	<b>Site 83</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°0'13.56"N

Longitude	35°10'32.45'E
Start	Nabataean
End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 84</b>
Site Name	Road Section
Site Type	Road
Latitude	30°0'14.09"N
Longitude	35°10'8.69"E
Start	Unspecified
End	Unspecified
Relative location	S terminus of the road.
Description	'This is a stone-paved road following roughly a N-S alignment. The road stretches ca. 8 km north from the mouth of Wadi Nukheila to Gharandal. This road was discovered by Niemi and Smith during the 1993 reconnaissance. The road generally keeps ca. 500 m west of the escarpment and follows a straight, N-S route that is interrupted by segments buried beneath advancing sand dunes. In some areas, there are short segments of the road missing. The road is edged with curb stones and has a total width of ca. 3 m. On average, the curb stones measure 0.30 x 0.40 m and are somewhat larger than the cobbles of the pavement. The curb stones and the pavement are of local granite and sedimentary wadi rocks. The only available evidence for dating the road comes from a few ceramic artifacts collected during transects along its length and not more than 50–100 m on either side' Parker and Smith (2014).
References	Parker and Smith (2014).

<b>ObjID</b>	<b>Site 85</b>
Site Name	Graf 1997 21
Site Type	Milestone
Latitude	30°0'14.25"N
Longitude	35°23'2.21"E
Start	Roman
End	Roman
Relative location	6.5 km NE of Humayma.
Description	Badly deteriorated base; anepigraphic.
References	Graf (1997a).

<b>ObjID</b>	<b>Site 86</b>
Site Name	Umm Mansur
Site Type	Tower
Latitude	30°0'43.36"N
Longitude	35°28'32.64"E
Start	Byzantine
End	Byzantine
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 87</b>
Site Name	Umm Mansur
Site Type	Settlement
Latitude	30°0'44.07"N
Longitude	35°28'32.61"E
Start	Roman
End	Byzantine
Description	'This site is located to the W of the modern Desert Highway and down the side of the escarpment from Ras an-Naqb. The Department of Antiquities of Jordan surveyed it in 1992 as part of its investigation of Site s associated with the road alignment from Ras an-Naqb to al-Aqaba (Bisheh 1993, 120- 21). Members of the department excavated it in 1995 (Waheeb 1996, 345). Waheeb, the Site's excavator, described it as being 'characterized by a large number of building remains belonging to a large settlement:' Among the structures he excavated were a 'tower;' 'southern buildings;' and 'terraces' whose 'function was to collect run-o water by using stone walls' (Waheeb 1996, 345). He dated the structures and terraces to the Byzantine period (Waheeb 1996, 345)' MacDonald (2012).
References	Mega-Jordan; MacDonald (2012); Glueck (1935), 65 (his Site 44); Graf (1983), 648-49; Bisheh (1993), 120-21; Waheeb (1996), 345.

ObjID	Site 88
Site Name	Fuweileh el-Gharbiyeh
Site Type	Settlement
Latitude	30°0'44.62'N
Longitude	35°29'20.06'E
Start	Nabataean
End	Roman
References	Mega-Jordan.

ObjID	Site 89
Site Name	Fuweileh esh-Sharqiyeh
Site Type	Settlement
Latitude	30°0'58.25'N
Longitude	35°29'46.77'E
Start	Nabataean
End	Roman
References	Mega-Jordan.

ObjID	Site 90
Site Name	Unnamed Water Catchment Facilities
Site Type	Waterpoint
Latitude	30°0'7.95'N
Longitude	35°32'33.23'E
Start	Unspecified
End	Unspecified
Description	Many cisterns in this area.
References	MacDonald (2012).

ObjID	Site 91
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°10'10.37'N
Longitude	35°25'49.41'E
Start	Roman
End	Byzantine
Date Explanation	Late Roman
References	Mega-Jordan.

ObjID	Site 92
Site Name	Unnamed Fortress
Site Type	Fortress
Latitude	30°10'15.05'N

ObjID	Site 97
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°10'27.71'N
Longitude	35°27'55.55'E
Start	Nabataean
End	Byzantine

Longitude	35°12'54.93'E
Start	Roman
End	Roman
References	Mega-Jordan.

ObjID	Site 93
Site Name	Unnamed Castrum
Site Type	Fortress
Latitude	30°10'17.58'N
Longitude	35°27'3.09'E
Start	Nabataean
End	Roman
References	Mega-Jordan.

ObjID	Site 94
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°10'24.17'N
Longitude	35°28'8.96'E
Start	Nabataean
End	Roman
Associated Features	Rectangular structure
References	Mega-Jordan.

ObjID	Site 95
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°10'25.37'N
Longitude	35°26'36.80'E
Start	Roman
End	Byzantine
References	Mega-Jordan.

ObjID	Site 96
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°10'27.57'N
Longitude	35°26'33.68'E
Start	Roman
End	Roman
References	MacDonald (2012).

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Description	‘This site, which is located on a hilltop and an associated SE-facing slope, measures ca. 75 (N- S) x 60 (E- W) m. On the hilltop, there are many wall lines and what may be a perimeter wall. Most of the walls are subsurface and none stand more than two courses or 0.50 m high. There are winnowing areas at the top of the Site and to its N. Several cup holes were noted in this area. ‘They appear to be recently used, but they also could have been used in antiquity. Corrals are located on the slope. Some of them are probably in use or were used until recently. There is a quarrying area to the W of the Site. Several Bedouin families were living in the area and the wheat harvest was underway’ MacDonald (2012).
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 98</b>
Site Name	Unnamed Cistern
Site Type	Waterpoint
Latitude	30°10'29.76'N
Longitude	35°28'9.78'E
Start	Roman

End	Roman
Relative location	Stretch between Kh. al-Saud and Sadaqa.
Dimensions	16 x 20 m.
References	Graf (1997a).

<b>ObjID</b>	<b>Site 99</b>
Site Name	Qasr as-Saidiyin
Site Type	Fort
Latitude	30°10'3.31'N
Longitude	35°12'16.91'E
Start	Roman
End	Roman
Relative location	Central Wadi Araba.
Description	‘This is a fort in Qasr as-Saidiyin. The fort is in a ruined state with much of its north side stripped away by localized bulldozing activity. The southwest and southeast corners of the fort are visible (plan in Smith et al. 1997: 61, fig. 13). The south wall measures 29 m. The length of the east wall is ca. 32.50 m, but the ill-defined northeast corner makes this measurement speculative. The exposed walls are two courses wide (ca. 0.65 m) and are largely composed of dressed limestone blocks. The structure does not appear to have corner towers, unless the large circular mound (ca. 2 m high) that extends beyond the northwest corner is a tower. However, it is more likely a consequence of the bulldozing. Tracks from the bulldozer were still visible in 1994. The SAAS found a large, dressed lintel stone with a tabula ansata (uninscribed) along the north side suggesting the location of the gateway. There are other rock-cut graffiti on various blocks dispersed across the Site. Disjointed wall alignments within the fort suggest some internal partitioning. There is a mound of ashy soil north of the structure with abundant sherds and a few fragments of bone, glass and corroded metal artifacts. Outlying wall alignments are visible west of the fort, but their nature remains problematic’ Parker and Smith (2014), 269.
References	Fiema (1995) 266; Parker and Smith (2014).

<b>ObjID</b>	<b>Site 100</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°10'3.53'N
Longitude	35°28'2.89'E
Start	Nabataean
End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 102</b>
Site Name	Lake al-Wahida
Site Type	Waterpoint
Latitude	30°10'3.75'N
Longitude	35°35'40.78'E
Start	Unspecified
End	Unspecified
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 101</b>
Site Name	Unnamed Castrum
Site Type	Fortress
Latitude	30°10'3.69'N
Longitude	35°25'53.29'E
Start	Nabataean
End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 103</b>
Site Name	Road Section
Site Type	Road
Latitude	30°10'32.93'N
Longitude	35°26'9.87'E
Start	Nabataean
End	Roman
References	Mega-Jordan.

ObjID	Site 104
Site Name	Rujm Zif
Site Type	Tower
Latitude	30°10'33.16"N
Longitude	35°25'29.78"E
Start	Nabataean
End	Byzantine
References	MacDonald (2012).

ObjID	Site 105
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°10'36.21"N
Longitude	35°14'10.57"E
Start	Byzantine
End	Byzantine
Relative location	Wadi Araba
Description	The Site consists of several un specified structures, wall alignments, stone rings or hut circles, and stone mounds.
References	Parker and Smith (2014), 272.

ObjID	Site 106
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°10'41.99"N
Longitude	35°34'32.35"E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

ObjID	Site 107
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°10'43.24"N
Longitude	35°27'3.19"E
Start	Nabataean
End	Roman
References	Mega-Jordan.

ObjID	Site 108
Site Name	Unnamed Structure
Site Type	Structure
Latitude	30°10'43.45"N
Longitude	35°30'39.72"E
Start	Roman
End	Byzantine
Description	‘This is an extensively ruined site constructed of mainly hewn or roughly-hewn large stone. The main segment of the Site measures ca. 28 (N- S) x 40 (E-W) m. It appears to consist of one structure that is partitioned into a number of rooms/compartments. However, additional walls were noted ca. 25 m to its W There is a great deal of rock rubble throughout the area of the Site’s main structure. However, the exterior of the E wall of the main structure, comprised of very large stones, still stands ca. 1.50 m. The stones from which the Site was constructed probably came from a ledge nearby to the S. It provides a place from which to monitor activities along the road. The site could have been a military barrack’ MacDonald (2012).
References	Abudana (2004), 66 (his Site no. 264); MacDonald (2012).

ObjID	Site 109
Site Name	Saqri
Site Type	Tower
Latitude	30°10'43.74"N
Longitude	35°26'47.48"E
Start	Roman
End	Byzantine
Date Explanation	Late Roman
References	Mega-Jordan.

ObjID	Site 110
Site Name	Kh. Bir Yabis
Site Type	Settlement
Latitude	30°10'48.15"N
Longitude	35°27'4.10"E

Start	Nabataean
End	Byzantine
References	MacDonald (2012).

ObjID	Site 111
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°10'48.81"N
Longitude	35°26'44.66"E
Start	Nabataean
End	Roman
References	Mega-Jordan.

ObjID	Site 112
Site Name	Unnamed Settlement
Site Type	Settlement



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Latitude	30°10'53.79"N
Longitude	35°27'18.08"E
Start	Nabataean

End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 113</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°10'55.39"N
Longitude	35°28'16.68"E
Start	Roman
End	Byzantine
Description	'This site, which measures ca. 30 x 30 m, is possibly the location of a watchtower and/or farm. The structures at the Site are badly disturbed by field clearance and the use of the stone material for the building of corrals. Nevertheless, there are some wall lines visible; however, they are mostly subsurface. 'Modern' corrals are located all along the site's S side. There may be as much as 1.00–1.50 m of deposition at the Site. A roadway was noted nearby' MacDonald (2012).
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 114</b>
Site Name	Qasr Shaker
Site Type	Settlement
Latitude	30°10'55.79"N

Longitude	35°27'7.43"E
Start	Roman
End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 115</b>
Site Name	Unnamed Fort
Site Type	Fort
Latitude	30°10'59.42"N
Longitude	35°30'26.42"E
Start	Nabataean
End	Byzantine
Description	'This is probably a small fort. It is located on a hilltop to the SW of Kh. al-Fardhakh and overlooks 'Ayn 'Uneiq. It probably monitored traffic along the road immediately to the E, as well as activities at the spring. The main structure at the Site measures ca. 12 (N- S) x 20 (E-W) m. However, an extension on its S side adds another 5 m to its dimensions. The Site is badly destroyed and interior wall lines stand no more than ca. 0.50 high. The walls are comprised of two courses of unhewn stone with rubble as filler. A cave was noted ca. 35 m to the NE of the Site's main feature. It has an elaborately built entrance, and it appears that it is presently used as both a tomb and an animal corral. The Site provides a wonderful view of modern Ayl to the N, Kh. al-Fardhakh to the NE and Rujm as-Sadaqa to the SE' MacDonald (2012).
References	Abudana (2004), 66; Graf (1995), 248; MacDonald (2012).

<b>ObjID</b>	<b>Site 116</b>
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°10'6.12"N
Longitude	35°28'22.64"E
Start	Roman
End	Byzantine
Description	'This site, which measures ca. 32 (N–S) x 44 (E–W) m, is located on a SW-facing slope comprised of three to four terraces. It is probably another agricultural village/hamlet. It is extremely eroded and generally damaged, especially by field clearance on its NE and N sides. However, subsurface walls can be detected. What appears to be a doorway was noted in a NW-facing wall. As a result, parts of the Site are stone piles and for this reason it is impossible to follow wall lines. One depression in the central segment of the Site could be due to 'digging' and/or the location of a cistern. A winnowing area is across the wadi to the SW. It does not appear ancient' MacDonald (2012).
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 117</b>
Site Name	Abu Naqat
Site Type	Settlement
Latitude	30°10'9.05"N

Longitude	35°28'54.09'E
Start	Roman
End	Byzantine
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 118</b>
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°11'0.71"N
Longitude	35°28'52.33'E
Start	Byzantine
End	Byzantine
Description	<p>“This is an extensive site, measuring ca. 90 (N–S) x 105 (E–W) m, in a wheat-growing area. It is now badly eroded and a large number of tombs are built into the ancient structures. Wall lines can be followed. What may be a perimeter wall at the W edge of the Site measures ca. 90 cm wide, and the collapse on both sides of it extends for ca. 4 m. Thus, the wall could have been a large one. There is an embankment at the Site’s SE edge; it may be the remnants of a wall as well. A hill, across a dirt road to the S of the main Site, may be the location of a building that was at one time associated with the Site. It could have been damaged by a bulldozer in the act of field clearance. There are many winnowing areas in the Site’s vicinity. They take advantage of the bedrock and one of them is walled. The Site was probably an agricultural village in antiquity. Bedouin lived in the area (harvest)” MacDonald (2012).</p>
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 119</b>
Site Name	Kh. ar-Ruwayhi
Site Type	Settlement
Latitude	30°11'10.53"N
Longitude	35°29'46.58'E
Start	Nabataean
End	Byzantine
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 120</b>
Site Name	Kh. ar Rakham
Site Type	Settlement
Latitude	30°11'13.28"N
Longitude	35°26'53.75'E
Start	Roman
End	Byzantine
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 121</b>
Site Name	Road Section
Site Type	Road
Latitude	30°11'16.34"N
Longitude	35°27'13.54'E
Start	Nabataean
End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 122</b>
Site Name	Fardhakh
Site Type	Fort
Latitude	30°11'16.92"N
Longitude	35°30'42.65'E
Start	Nabataean
End	Byzantine
Date Explanation	Until the fourth century at least. Nabataean and Roman pottery.
Description	Positioned above the settlement with Rujm Sadaqa visible some five km away.
Dimensions	20 x 12 m
Associated Features	Overlooking the Ain Uneiq.
References	Graf (1997a).

<b>ObjID</b>	<b>Site 123</b>
Site Name	Fardhakh Village
Site Type	Settlement
Latitude	30°11'16.92"N
Longitude	35°30'42.65'E
Start	Nabataean
End	Roman
Associated Features	Several reservoirs, probably Roman date.
References	Graf (1997a).

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<b>ObjID</b>	<b>Site 124</b>
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°11'2.08"N
Longitude	35°28'24.33"E
Start	Roman
End	Byzantine
Description	'This is a badly damaged site, measuring ca. 60 x 60 m, on a hilltop and E- and SE-facing slopes. Wall lines are visible, especially along its edges. However, these walls are mainly subsurface. There is a 5 m stretch of wall at the Site's NE segment. This wall is two courses wide and 1.00-1.50 m high. In general, however, it is hard to trace the remaining wall lines very far. The Site is now the place of a cemetery, with many of its tombs robbed. Human bones were noted in one robbed tomb. Other depressions at the Site may be the location(s) of cistern(s). Down the slopes, there are the remnants of structures, most of which are corrals or have been used for that purpose. A series of caves, some used to pen animals, are located on the SE slope. At one time, there could have been a building to the SW of the main segment of the Site; however, if so, it is now badly damaged by field clearance. There are many terrace walls to the E in the small wadi on which the Site is located. A green area to the W of the Site may be the place where a spring was once located. The Site looks imposing, especially when viewed from the E. There may be 1-2 m of deposition present' MacDonald (2012).
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 125</b>
Site Name	Rajif
Site Type	Settlement
Latitude	30°11'23.74"N
Longitude	35°26'24.44"E
Start	Nabataean
End	Roman
References	Graf (1997a).

<b>ObjID</b>	<b>Site 126</b>
Site Name	Kh. al-Saud
Site Type	Structure
Latitude	30°11'27.49"N
Longitude	35°26'32.14"E
Start	Nabataean
End	Byzantine
Date Explanation	Iron Age, Nabataean, and Byzantine sherds, predominantly Late Roman.
Dimensions	11 x 20 m.
References	Graf (1997a).

<b>ObjID</b>	<b>Site 127</b>
Site Name	Janb al-Bahar
Site Type	Settlement
Latitude	30°11'29.96"N
Longitude	35°29'20.17"E
Start	Nabataean
End	Roman
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 128</b>
Site Name	Unnamed Castrum
Site Type	Fortress
Latitude	30°11'4.64"N
Longitude	35°27'35.97"E

Start	Nabataean
End	Roman
References	Mega-Jordan

<b>ObjID</b>	<b>Site 129</b>
Site Name	Qasr Rajif
Site Type	Settlement
Latitude	30°11'4.85"N
Longitude	35°25'36.51"E
Start	Byzantine
End	Byzantine
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 130</b>
Site Name	Unnamed Castrum
Site Type	Fortress
Latitude	30°11'46.81"N
Longitude	35°29'3.17"E
Start	Nabataean
End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 131</b>
Site Name	Ma'an
Site Type	Settlement
Latitude	30°11'47.32"N
Longitude	35°44'1.06"E
Start	Nabataean
End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 132</b>
Site Name	Road Section
Site Type	Road
Latitude	30°11'49.91"N
Longitude	35°31'33.30"E

Start	Unspecified
End	Unspecified
Description	Paved with curb stones.
References	MacDonald (2012).

ObjID	Site 133
Site Name	Road Section
Site Type	Road
Latitude	30°11'50.49"N
Longitude	35°28'51.95"E
Start	Roman
End	Roman
References	Mega-Jordan.

ObjID	Site 134
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°11'51.11"N
Longitude	35°28'11.43"E
Start	Nabataean
End	Roman
References	Mega-Jordan.

ObjID	Site 135
Site Name	Road Section
Site Type	Road
Latitude	30°11'51.71"N
Longitude	35°28'7.93"E
Start	Nabataean
End	Roman
References	Mega-Jordan.

ObjID	Site 136
Site Name	Kh. adh-Dharwa
Site Type	Settlement
Latitude	30°11'57.89"N
Longitude	35°27'0.30"E
Start	Roman
End	Byzantine
References	MacDonald (2012).

ObjID	Site 137
Site Name	Graf 1997 20
Site Type	Milestone
Latitude	30°1'17.37"N
Longitude	35°23'43.96"E
Start	Roman
End	Roman
Date Explanation	197-200
Relative location	3 km SW of Qana.
Description	Broken pieces of base and centre section of column: Latin inscription of AD 197-200.
References	Graf (1997a).

ObjID	Site 138
Site Name	Jammam
Site Type	Tower
Latitude	30°1'17.73"N
Longitude	35°27'53.93"E
Start	Nabataean
End	Roman
References	Mega-Jordan.

ObjID	Site 139
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°12'1.25"N
Longitude	35°27'58.68"E
Start	Nabataean
End	Roman
Description	'This is a very impressive watchtower high above and immediately to the E of the main at Tayyiba/Rajif highway. The structure, which is comprised of massive stones, is small, measuring only ca. 2 (N-S) x 3 (E-W) m interiorly. The N-facing exterior wall measures 1.70 m wide and, like the other walls, is made from two courses of stone with rubble in between. The exterior and interior faces of the walls are squared. The doorway for the structure appears to be on its E side, where there also seems to be a stairway leading to it. There may be an additional feature to the NE; however, it is difficult to determine its function. A bulldozer did some damage to the Site in this area. The Site, located on a N-facing slope, is above the Roman(?) road and to its SE. Moreover, it is also above and to the SE of a way-station and/or watchtower along the road, and a small fort' MacDonald (2012).
References	Mega-Jordan.

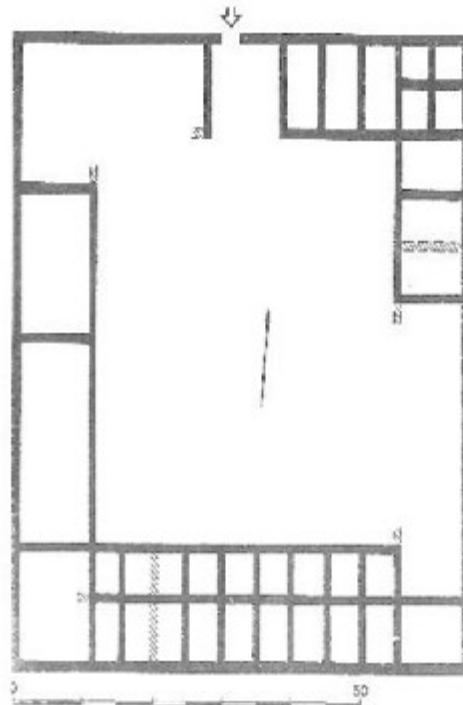
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ObjID	Site 140
Site Name	Unnamed Fort
Site Type	Fort
Latitude	30°12'10.53"N
Longitude	35°27'59.13"E
Start	Nabataean
End	Byzantine
References	MacDonald (2012).

ObjID	Site 141
Site Name	Unnamed Caravanserai
Site Type	Road Station/ Caravanserai
Latitude	30°12'14.08"N
Longitude	35°28'3.38"E
Start	Roman
End	Byzantine
References	MacDonald (2012).

ObjID	Site 142
Site Name	El- Mutrab
Site Type	Fort
Latitude	30°12'15.12"N
Longitude	35°47'22.56"E
Start	Byzantine
End	Byzantine
Date Explanation	Parker (1986) suggests 5th century date based on the absence of towers and pottery evidence (21/30 sherds are early Byzantine). Stein was confident it was not Roman.
Relative location	Three km E of Ma'an on the south edge of a flat-topped spur formed between two wadis. One km to the east at the end of the main spur.
Description	This is an unexcavated site. The walls are 1.2 m thick with a simple opening in the north wall. Better plan and dimensions found in Stein, Gregory and Kennedy (1985) Fig 28b, based on unpublished plan by Stein. Internal buildings: rows of rooms, with varying subdivisions, ranged along the walls around the large courtyard. Water supply by aqueduct.
Dimensions	61 m x 51.5 m (but Parker's plan shows a square 64 x 63 m).
References	Gregory (1997) 392-393; Parker (1986), 100-102; Musil 1926, 247; Stein, Gregory and Kennedy (1985) 295-301; Al Khouri (2003), 73.
Pictures	APAAME_20160919_RHB-0244. Photographer: Robert Bewley. Courtesy of APAAME. Plan (Parker 1986).





<b>ObjID</b>	<b>Site 143</b>
Site Name	Unnamed Castrum
Site Type	Fortress
Latitude	30°12'16.36"N

Longitude	35°28'49.82'E
Start	Nabataean
End	Roman
References	Mega-Jordan.

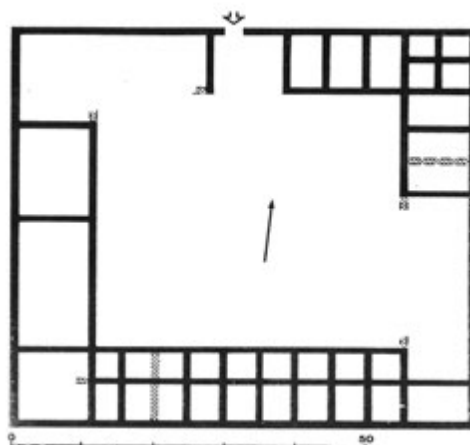
<b>ObjID</b>	<b>Site 144</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°12'18.67"N
Longitude	35°33'5.88"E
Start	Roman
End	Roman
Description	'This site may be the remnants of a watchtower and the circular platform on which it is located. One wall line, now mostly covered by rubble, can be seen at the high point of the Site and it may be one wall of the tower. The platform extends around the structure and there could have been, at one time, more structures on it. Presently, its NW side serves as a dumping ground for construction materials. Much of the pottery in the square could have eroded down the slope and into the square. It overlooks modern agriculture fields and the visibility in all directions is good. For example, modern Ayl is clearly visible to the WNW and the trees at 'Ayn Ayl just to the N. In addition, other watchtowers are clearly visible to the SW and NE' MacDonald (2012).
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 145</b>
Site Name	El-Hammam
Site Type	Fort
Latitude	30°12'18.85"N
Longitude	35°45'13.82"E
Start	Byzantine
End	Byzantine



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Date Explanation	Parker (1986) suggests a fifth-century date based on the absence of towers and pottery evidence. Stein was confident it was not Roman.
Relative location	Two km east of Ma'an on the south edge of a flat-topped spur formed between two wadis, on a subsidiary spur projecting into the wadi.
Description	Extensive complex of ruins, including a reservoir (60 sqm) fed by an aqueduct from the west. Probably the aqueduct continues to el- Mutrab (taken to be a wall by Stein and Domaszewski). The walls are 1.2 m thick. Simple opening in the north wall. Better plan and dimensions found in Stein, Gregory and Kennedy (1985) fig 28b, based on unpublished plan by Stein. Only recorded entrance is in the centre of the east side. Internal buildings: rows of rooms, with varying subdivisions, ranged along the walls around the large courtyard. The water supply was provided by an aqueduct.
Dimension	61 m x 51.5 m (but Parker's plan shows a square 64 m 63 m).
Associated Features	Other buildings along the ridge.
References	Gregory (1997) 392-393; Parker (1986), fig 45 (dimensions), 100-102; Musil (1926), 247; Stein, Gregory and Kennedy (1985) 295-301; Al Khouri (2003), 72.
Picture	APAAME_20030925_RHB-0257. Photographer: Robert Bewley. Courtesy of APAAME. Brünnow and Domaszewski (1905), Fig. 552. Sir M. Aurel Stein Collection ASA3506. Courtesy of the British Academy.





ObjID	Site 146
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°12'23.75'N
Longitude	35°28'33.15'E
Start	Nabataean
End	Roman
References	Mega-Jordan.

ObjID	Site 147
Site Name	Sadeh
Site Type	Settlement
Latitude	30°12'23.80'N
Longitude	35°22'0.83'E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

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<b>ObjID</b>	<b>Site 148</b>
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°12'30.38"N
Longitude	35°12'6.52"E
Start	Roman
End	Roman
Relative location	Wadi Araba
Description	'Feature 1 consists of three stone mounds (ca. 4 x 3 m) spaced ca. 3 m apart along the western edge of the Site. The central mound has been disturbed by clandestine excavation. Feature 2, at the north end of the Site, is a linear stone alignment (trending E-W for ca. 6 m) a single course wide and high. Behind Feature 2 to the south are two small stone mounds recently robbed. Feature 3 designates the unusually dense lithic scatter that covers the entire Site. Feature 4 lies ca. 10 m southeast of Feature 1. It is a figure-8 shaped structure constructed of small stones arranged in a main circle with a smaller circle appended to its southeast end. The structure (10.6 m N-S x 5-4 m E-W), which was probably agricultural (threshing floor?) has a possible entrance on its southeast side. Feature 5 is 10 m west of Feature 4 and due south of Features 1-2. Feature 5 is a curvilinear stone alignment, a single course high and wide (1.30 m), that extends 4.80 m to the southwest (average stone size is 0.23 m on a side). There is a concentration of pottery around this feature. Another linear feature, oriented N-S, lies directly east of Feature 1. This feature is similar in construction and appearance to Feature 2, but it is 10 m long. It seems that Features 1-2 make up a core area, enclosed by some sort of wall alignment, while Features 4-5 are ancillary' Parker and Smith (2014), 285.
References	Parker and Smith (2014), 285.

<b>ObjID</b>	<b>Site 149</b>
Site Name	Unnamed Structure
Site Type	Structure
Latitude	30°12'31.60"N
Longitude	35°28'38.68"E

Start	Roman
End	Roman
Description	Administrative function? Well-built and impressive for its context.
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 150</b>
Site Name	At-Tiyir
Site Type	Fort
Latitude	30°12'31.79"N
Longitude	35°29'58.76"E
Start	Roman
End	Byzantine
Description	'This site, measuring ca. 26 (N-S) x 25 (E-W) m, is located on an E-facing slope with the town of Al-Fardhakh visible to the E. The structures at the Site are built of large, unhewn stones. There appears to have been gateways/doorways in the E and N walls of the Site's main structure, which has clear divisions within it. One 'excavated' structure, at the centre of the main one, shows at least 2 m of deposition. A second one nearby has also been 'excavated.' There are large flat stones associated with both structures, possibly tombs. The N-facing exterior wall of the main structure still stands 2 m high and a well-built wall to the S of the main structure is impressive and is 2 m wide. It is probably the result of field clearances, since there are many stone piles in the area and it does not seem that this wall would have defended much. The Site is probably a fort' MacDonald (2012).
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 151</b>
Site Name	Ail
Site Type	Waterpoint
Latitude	30°12'33.04'N

Longitude	35°31'40.11'E
Start	Roman
End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 152</b>
Site Name	Ras Urayta
Site Type	Settlement
Latitude	30°12'33.75'N
Longitude	35°29'24.73'E
Start	Nabataean
End	Byzantine
Description	'This is another small but impressive Site. It is located on what appears to be a natural terrace on a hilltop overlooking a valley that was devoted to wheat-growing. The Site measures ca. 22 (N- S) x 40 (E-W) m. One structure measures ca. 20 (N- S) x 17 (E-W) m. Wall lines, made of large, unhewn stones. Another structure at the W-central side of the Site measures ca. 4 x 4 m. The perimeter wall on the Site's NE-facing slope still stands ca. 1 m high. There are corrals farther down the slope to the NE. A cave, with a wide entrance, is located on the NE-facing slope and another, across a dirt road, to the SW. Both as-Sadaqa and Rujm as-Sadaqa are clearly visible to the S and SW, respectively. The Site could have functioned as a farmstead and/or a small fort -most probably the latter' MacDonald (2012).
References	MacDonald (2012).

<b>ObjID</b>	<b>Unnamed Settlement</b>
Site Name	Settlement
Site Type	30°12'35.48'N
Latitude	35°28'42.77'E
Longitude	Nabataean
Start	Byzantine
End	Not Roman
Description	MacDonald Site 010.
References	MacDonald (2016).

End	Byzantine
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 156</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°12'43.14'N
Longitude	35°31'41.50'E
Start	Roman
End	Roman
Relative location	Ail
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 154</b>
Site Name	Ail
Site Type	Settlement
Latitude	30°12'42.11'N
Longitude	35°31'44.12'E
Start	Nabataean
End	Roman
Relative location	South of Basta, N of Sadaqa.
References	Graf (1997a).

<b>ObjID</b>	<b>Site 157</b>
Site Name	Graf 1997 1
Site Type	Milestone
Latitude	30°12'45.61'N
Longitude	35°31'44.38'E
Start	Roman
End	Roman
Date Explanation	236-238
Relative location	Kh. el-Ail
Description	Fragmentary uninscribed Painted Latin Text of perhaps AD 236-238 (c.f. Glueck 1935,751).
References	Graf (1997a).

<b>ObjID</b>	<b>Site 155</b>
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°12'42.52'N
Longitude	35°28'45.27'E
Start	Roman

ObjID	Site 158
Site Name	Rujm al-Juththa
Site Type	Tower
Latitude	30°12'52.01'N
Longitude	35°30'18.57'E
Start	Roman
End	Byzantine
Description	'This site, which measures ca. 15 x 15 m, is located on a hilltop from which it is possible to look directly E towards Ayl. The main structure comprising the Site is at its highest point. It is constructed of unhewn or roughly hewn stones. There is a depression in its centre. There is another smaller structure down the slope to the NE. It is built of the same type of material and measures ca. 4 x 6 m. Rujm al-Juththa, was probably a watchtower in antiquity' MacDonald (2012).
References	MacDonald (2012).

ObjID	Site 159
Site Name	Kh. Hubays
Site Type	Settlement
Latitude	30°12'54.24'N
Longitude	35°28'15.45'E
Start	Roman
End	Byzantine
References	MacDonald (2012).

ObjID	Site 160
Site Name	Cistern
Site Type	Waterpoint
Latitude	30°12'57.21'N

Longitude	35°30'59.09'E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

ObjID	Site 161
Site Name	Road Section
Site Type	Road
Latitude	30°12'9.87'N
Longitude	35°27'57.96'E
Start	Roman
End	Roman
References	MacDonald (2012).

ObjID	Site 162
Site Name	Kh. at-Tuliyah
Site Type	Settlement
Latitude	30°13'0.50'N
Longitude	35°30'4.03'E
Start	Roman
End	Byzantine
Description	'Located on an east-facing slope, this settlement is now mostly destroyed. The remnants of many structures are present. One, for example, located at the site's high point, measures ca. 4-5 x 4-5 m. It was possible to follow one wall line, mostly subsurface, for ca. 10 m. A depression, ca. 1.50 m deep, is within a structure measuring ca. 6 x 6 m. A third structure measures ca. 8 x 6 m. It forms a podium-looking feature and is now filled with stone rubble. At the W side of the Site, where bedrock is located, there is a hole that is ca. 1 m in diameter. This is where a cistern was located. There appears to be a road or ramp approaching the Site from the S. A Bedouin tent was located to the Site's NW. The Site was probably an agricultural village in antiquity' MacDonald (2012).
Dimensions	115 x 115 m.
References	MacDonald (2012).

ObjID	Site 163
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°13'0.84'N
Longitude	35°30'5.94'E

Start	Nabataean
End	Byzantine
Description	MacDonald Site 013.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 164</b>
Site Name	Cistern
Site Type	Waterpoint
Latitude	30°13'10.66'N

Longitude	35°30'42.17'E
Start	Nabataean
End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 165</b>
Site Name	Kh. 'Ayn Hasin
Site Type	Settlement
Latitude	30°13'11.26'N
Longitude	35°30'25.92'E
Start	Roman
End	Byzantine
Description	'This site, which measures ca. 40 (N-S) x 125 m (E-W), is located on a SE-facing slope. It looks towards Kh. Ayl to the E. there were two stone-built structures at it. One had two rooms. In one of the rooms, now roofless, there are the remnants of an arch. The other room had a roof and there were two niches in its walls. The second stone-built structure was roofless. Both buildings were probably made from the stones of ancient structures. There are many corrals and stone fences at the Site. They too are probably constructed from materials from ancient buildings. All this, plus field clearance, has resulted in the destruction of most of the Site. The footprints of one structure, in the middle of the Site, measure ca. 4 x 6 m. It is no higher than one course. Other rectilinear structures at the Site are also poorly preserved. Two caves at the N side of the Site have built entrances. Some of the stones from which they are constructed are finely hewn and probably come from older structures. The caves are presently used to pen animals. There are additional caves at the NE side of the Site. They have both large cup holes and a grinding stone with a hole in it associated with them. 'Ayn Hasin is located on the slope to the W of the Site. There are more caves, also with built entrances, at this area of the Site. A series of standing stones are located at the Site's E side. The stones stand more than 1 m high. Others, now fallen over, are as long and large. This site, like many others that we have surveyed, is an agricultural village located in a wheat-growing area' MacDonald (2012).
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 166</b>
Site Name	Rujm
Site Type	Tower
Latitude	30°13'15.47'N
Longitude	35°33'51.33'E
Start	Nabataean
End	Byzantine
Date Explanation	Not Roman
Description	Site 006
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 167</b>
Site Name	Rujm el-Qana
Site Type	Tower
Latitude	30°1'33.97'N
Longitude	35°25'40.42'E
Start	Nabataean
End	Roman
References	Graf (1997a).

<b>ObjID</b>	<b>Site 168</b>
Site Name	Kh. el-Ail
Site Type	Fort
Latitude	30°13'32.93'N
Longitude	35°30'55.88'E
Start	Roman
End	Byzantine
Relative location	Three km north of es-Sadaqa and 15 km south of Udruh on hill above a spring in the wadi of the same name, overlooking <i>Via Nova Traiana</i> from the west.
Description	Only the southeast corner tower is visible, being eight square meters, projects six m southwards. Wall is one m thick. Limestone well-cut blocks. Hill overlooking a spring.
Associated Features	Spring in the Wadi.
Modern Disturbance	Built over



References	Musil (1907), 2.11, 275; II,2, 232 (brief mentions); Glueck (1935), 74–75 (photographs and description of SW corner tower); Parker (1986); 98–99; Gregory (1997) 390–391; Brünnow and Domaszewski (1904) 467 (plan); Al Khouri (2003), 73.
Pictures	Stein, Gregory and Kennedy (1985), Fig 46.

<b>ObjID</b>	<b>Site 169</b>
Site Name	Basta
Site Type	Settlement
Latitude	30°13'34.63'N
Longitude	35°32'20.40'E
Start	Roman
End	Byzantine
Relative location	2 km to the West of modern Basta.
Description	Byzantine centre known as Pentakomia?
References	Graf (1997a).

<b>ObjID</b>	<b>Site 170</b>
Site Name	Unnamed Cistern
Site Type	Waterpoint
Latitude	30°13'39.72'N
Longitude	35°30'43.23'E
Start	Roman
End	Byzantine
Description	MacDonald Site 104.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 171</b>
Site Name	Cistern
Site Type	Waterpoint
Latitude	30°13'43.87'N
Longitude	35°30'22.01'E

<b>ObjID</b>	<b>Site 174</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°1'38.88'N
Longitude	35°23'37.49'E
Start	Roman
End	Roman
Description	'This is a watchtower on an isolated hill in a plain. It measures ca. 3.50 x 3.50 m interiorly and stands ca. 2 m above the surrounding ground surface. Its walls are just over 1 m in width. The interiors of all its walls are clearly visible and ca. 1 m of its W-interior wall is exposed above the rubble that now mostly fills the structure. There is tumble down all its exterior walls. Its entrance faces S or towards Humayma. A gaming stone was noted in the tumble of its E-facing exterior wall' MacDonald (2012).
Dimensions	3.50 x 3.50 m
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 175</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°1'41.45'N
Longitude	35°30'41.77'E
Start	Roman

Start	Nabataean
End	Byzantine
Description	MacDonald Site 071.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 172</b>
Site Name	Beit Qadim (Qasr Tuliya)
Site Type	Fort
Latitude	30°13'58.07'N
Longitude	35°28'6.70'E
Start	Roman
End	Byzantine
Dimensions	75 x 100 m.
References	Graf (1997a).

<b>ObjID</b>	<b>Site 173</b>
Site Name	Graf 1997 19
Site Type	Milestone
Latitude	30°1'38.50'N
Longitude	35°24'17.94'E
Start	Roman
End	Roman
Relative location	Foot of Qana.
Description	Lying just northwest of bridge; probably anepigraphic.
References	Graf (1997a).

End	Byzantine
Description	'This site, in an area of ca. 20 (N-S) x 40 (E-W) m, is located on a hilltop overlooking the modern town of Abu al-Lusun from the E. It looks also towards the ancient Site of Abu al-Lusun. The Site consists of what appears to be a watchtower, a large enclosure, and some wall lines, possibly a perimeter wall. The watchtower (?), located at the high point of the Site, measures ca. 4 x 7 m. The enclosure measures ca. 18 m in diameter. It appears to have a division through its centre. Its upper levels need not be contemporaneous with its lower ones. As well, the various structures at the Site need not be contemporaneous' MacDonald (2012) .
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 176</b>
Site Name	Rujm Basta
Site Type	Tower
Latitude	30°14'10.05'N
Longitude	35°32'38.94'E

Start	Nabataean
End	Nabataean
Description	MacDonald Site 116.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 177</b>
Site Name	Graf 1997 13
Site Type	Milestone
Latitude	30°1'42.89'N
Longitude	35°24'20.12'E
Start	Roman
End	Roman
Relative location	Base of Qana
Description	Nos. 13-18 are six fragmented bases lying in a heap with five fragmented columns nearby; All are anepigraphic.
References	Graf (1997a).

<b>ObjID</b>	<b>Site 178</b>
Site Name	Graf 1997 14
Site Type	Milestone
Latitude	30°1'42.89'N
Longitude	35°24'20.12'E
Start	Roman
End	Roman
Relative location	Base of Qana
Description	Nos. 13-18 are six fragmented bases lying in a heap with five fragmented columns nearby; All are anepigraphic.
References	Graf (1997a).

<b>ObjID</b>	<b>Site 179</b>
Site Name	Graf 1997 15
Site Type	Milestone
Latitude	30°1'42.89'N
Longitude	35°24'20.12'E
Start	Roman
End	Roman
Relative location	Base of Qana
Description	Nos. 13-18 are six fragmented bases lying in a heap with five fragmented columns nearby; All are anepigraphic.
References	Graf (1997a).

<b>ObjID</b>	<b>Site 180</b>
Site Name	Graf 1997 16

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Site Type	Milestone
Latitude	30°1'42.89"N
Longitude	35°24'20.12"E
Start	Roman
End	Roman
Relative location	Base of Qana
Description	Nos. 13– 18 are six fragmented bases lying in a heap with five fragmented columns nearby; All are anepigraphic.
References	Graf (1997a).
<b>ObjID</b>	<b>Site 181</b>
Site Name	Graf 1997 17
Site Type	Milestone
Latitude	30°1'42.89"N
Longitude	35°24'20.12"E
Start	Roman
End	Roman
Relative location	Base of Qana
Description	Nos. 13–18 are six fragmented bases lying in a heap with five fragmented columns nearby; All are anepigraphic.
References	Graf (1997a).
<b>ObjID</b>	<b>Site 182</b>
Site Name	Graf 1997 18
Site Type	Milestone
Latitude	30°1'42.89"N
Longitude	35°24'20.12"E
Start	Roman
End	Roman
Relative location	Base of Qana
Description	Nos. 13–18 are six fragmented bases lying in a heap with five fragmented columns nearby; All are anepigraphic.
References	Graf (1997a).

<b>ObjID</b>	<b>Site 183</b>
Site Name	Tellet Omr
Site Type	Settlement
Latitude	30°14'27.71"N
Longitude	35°30'40.65"E
Start	Nabataean
End	Roman
Date Explanation	Primarily Nabataean pottery.
Relative location	Wadi Jammaleh, west of the road.
References	Graf (1997a).

<b>ObjID</b>	<b>Site 184</b>
Site Name	Kh. Hubays
Site Type	Settlement
Latitude	30°14'3.60"N
Longitude	35°27'41.74"E
Start	Nabataean
End	Byzantine

Description	MacDonald Site 035.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 185</b>
Site Name	Ayn Zaharah
Site Type	Waterpoint
Latitude	30°14'34.42"N
Longitude	35°31'37.44"E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 123. Spring.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 186</b>
Site Name	Kh. Zaharah
Site Type	Settlement
Latitude	30°14'54.53"N
Longitude	35°31'36.36"E
Start	Nabataean

End	Byzantine
Description	MacDonald Site 121.
References	MacDonald (2016).

ObjID	Site 187
Site Name	Kh. Majddal
Site Type	Settlement
Latitude	30°14'55.80"N
Longitude	35°28'40.09"E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 020.
References	MacDonald (2016).

ObjID	Site 188
Site Name	Qasr Wadiat-Tayyiba
Site Type	Fort
Latitude	30°14'56.39"N
Longitude	35°28'2.08"E
Start	Nabataean
End	Roman
Relative location	W of Shera.
References	Fiema (1995), 266.

ObjID	Site 189
Site Name	Unnamed cistern
Site Type	Waterpoint
Latitude	30°14'6.30"N
Longitude	35°29'23.41"E
Start	Nabataean
End	Byzantine
Date Explanation	Not Roman.
Associated Features	Isolated house.
References	Mega-Jordan.

ObjID	Site 190
Site Name	Unnamed Dam
Site Type	Waterpoint
Latitude	30°14'6.66"N
Longitude	35°38'29.45"E
Start	Nabataean
End	Roman
References	Mega-Jordan.

ObjID	Site 195
Site Name	Kh. as-Samra
Site Type	Structure
Latitude	30°15'22.52"N
Longitude	35°29'30.08"E
Start	Nabataean
End	Byzantine
Date Explanation	Not Roman

ObjID	Site 191
Site Name	Kh. al- Mabrak
Site Type	Settlement
Latitude	30°14'8.83"N
Longitude	35°29'10.69"E
Start	Roman
End	Byzantine
Description	MacDonald Site 036.
References	MacDonald (2016).

ObjID	Site 192
Site Name	Kh. Tallat Ali
Site Type	Settlement
Latitude	30°15'21.10"N
Longitude	35°31'18.97"E
Start	Nabataean
End	Byzantine
Date Explanation	Not Roman.
Description	MacDonald Site 120.
References	MacDonald (2016).

ObjID	Site 193
Site Name	Tayyiba
Site Type	Settlement
Latitude	30°15'21.88"N
Longitude	35°27'29.84"E
Start	Nabataean
End	Roman
Relative location	W foothills of Shera Mts.
Description	MacDonald Site 069.
References	Graf (1997a); MacDonald (2016).

ObjID	Site 194
Site Name	Unnamed Cistern
Site Type	Waterpoint
Latitude	30°15'22.33"N
Longitude	35°32'11.79"E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 118.
References	MacDonald (2016).



Description	MacDonald Site 097. Perhaps a way-station for the road connecting Wadi Musa and Ayl or a temple.
References	MacDonald (2016).
Picture	APAAME_20160918_RHB-0270. Photographer: Robert Bewley. Courtesy of APAAME. Sir M. Aurel Stein Collection: ASA/3/664. Courtesy of the British Academy.

ObjID	Site 196
Site Name	Unnamed Cistern
Site Type	Waterpoint
Latitude	30°15'22.66'N
Longitude	35°27'57.38'E
Start	Nabataean
End	Roman
Description	MacDonald Site 028.
References	MacDonald (2016).

ObjID	Site 197
Site Name	Road Section
Site Type	Road
Latitude	30°15'22.95'N
Longitude	35°29'31.20'E
Start	Unspecified
Description	Unpaved road.
References	MacDonald (2016).

ObjID	Site 198
Site Name	Abu Dana
Site Type	Structure
Latitude	30°15'23.35'N
Longitude	35°32'11.34'E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 118. Defensive purpose in relation to the road and water sources nearby.
References	MacDonald (2016).

ObjID	Site 199
Site Name	Abu Dana
Site Type	Fort
Latitude	30°15'25.85'N
Longitude	35°31'59.17'E
Start	Nabataean
End	Roman
References	Mega-Jordan.

Description	MacDonald Site 125. Spring, water channels, and collecting pool.
References	MacDonald (2016).

ObjID	Site 200
Site Name	Kh. Talat Umar
Site Type	Settlement
Latitude	30°15'25.92'N
Longitude	35°29'58.88'E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 098.
References	MacDonald (2016).

ObjID	Site 202
Site Name	Unnamed Caravanserai
Site Type	Road Station/ Caravanserai
Latitude	30°15'36.92'N
Longitude	35°31'38.29'E
Start	Nabataean
End	Byzantine
Date Explanation	Not Roman
Description	MacDonald Site 124.
References	MacDonald (2016).

ObjID	Site 201
Site Name	Ayn Tallat Ali
Site Type	Waterpoint
Latitude	30°15'30.61'N
Longitude	35°31'14.22'E
Start	Nabataean
End	Byzantine

ObjID	Site 203
Site Name	Bitahi Structure A
Site Type	Road Station/ Caravanserai
Latitude	30°15'38.28'N
Longitude	35°30'36.14'E
Start	Nabataean
End	Byzantine
Relative location	Wadi Jammaleh.
Description	Rectangular structure.
Dimensions	12 x 25 m.
References	Graf (1997a).



ObjID	Site 204
Site Name	Bitahi Structure B
Site Type	Road Station/ Caravanserai
Latitude	30°15'38.28"N
Longitude	35°30'36.14"E
Start	Nabataean
End	Byzantine
Date Explanation	Nabataean, Roman and Byzantine surface sherds.
Relative location	Wadi Jammaleh
Description	Irregular shape.
Dimensions	15 x 20 m.
References	Graf (1997a).

ObjID	Site 205
Site Name	Kh. Bitahi/Rujm Batahe
Site Type	Road Station/ Caravanserai
Latitude	30°15'38.28"N
Longitude	35°30'36.14"E
Start	Nabataean
End	Byzantine
Relative location	Wadi Jammaleh
Description	MacDonald Site 347. According to MacDonald (2016), this is a fort or tower. Graf described it as a road station or caravanserai.
References	Graf (1997a); MacDonald (2016).

ObjID	Site 206
Site Name	Unnamed Cistern
Site Type	Waterpoint
Latitude	30°15'41.41"N
Longitude	35°28'0.32"E
Start	Nabataean
End	Roman
References	Mega-Jordan.

ObjID	Site 207
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°15'43.44"N
Longitude	35°33'51.57"E
Start	Nabataean
End	Byzantine
Date Explanation	Not Roman.
Description	MacDonald Site 109.
References	MacDonald (2016).

ObjID	Site 208
Site Name	Unnamed Cistern
Site Type	Waterpoint
Latitude	30°15'43.48"N
Longitude	35°30'21.48"E
Start	Roman

End	Roman
Description	MacDonald Site 090.
References	MacDonald (2016).

ObjID	Site 209
Site Name	Unnamed Structure
Site Type	Structure
Latitude	30°15'43.48"N
Longitude	35°30'21.48"E
Start	Roman
End	Roman
Description	MacDonald Site 090.
References	MacDonald (2016).

ObjID	Site 210
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°15'47.56"N
Longitude	35°36'16.99"E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 114.
References	MacDonald (2016).

ObjID	Site 211
Site Name	Rujm al-Khatabiyya
Site Type	Tower
Latitude	30°15'48.51"N
Longitude	35°31'43.33"E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 126.
Dimensions	15 x 15 m.
References	MacDonald (2016).

ObjID	Site 212
Site Name	Road Section
Site Type	Road
Latitude	30°15'50.22"N
Longitude	35°30'2.31"E
Start	Unspecified
End	Unspecified
Description	MacDonald Site 102.
References	MacDonald (2016).

ObjID	Site 213
Site Name	Cisterns
Site Type	Waterpoint
Latitude	30°15'53.33"N
Longitude	35°34'0.98"E
Start	Nabataean
End	Roman
Description	MacDonald Site 107.
References	MacDonald (2016).

ObjID	Site 214
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°15'56.43"N
Longitude	35°30'12.63"E
Start	Byzantine
End	Byzantine
Description	MacDonald Site 101.
References	MacDonald (2016).

ObjID	Site 215
Site Name	Mukheifeh
Site Type	Tower
Latitude	30°15'58.27"N
Longitude	35°19'1.49"E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

ObjID	Site 216
Site Name	Kh. al-Hayyad
Site Type	Settlement
Latitude	30°1'59.00"N
Longitude	35°28'27.53"E
Start	Nabataean
End	Byzantine
Description	'This is an extremely large and impressive Site measuring ca. 135 (N-S) x 56 (E-W) m. There are remnants of four 'modern' buildings on it. If used at all, they are probably used to store farming equipment and/or to pen animals. The largest of the buildings has three interior arches. It was most probably a dwelling at one time. Part of the Site is fenced in, since it is privately owned. Throughout the Site, there are the remnants of many structures, and wall lines can be easily followed. Some walls stand over 1 m high. There is collapse within some structures and this reveals deposition of at least 1 m. One circular structure is probably used as a corral. Within the fenced area of the Site, there are additional remnants of structures and wall lines. In fact, the Site, which is badly destroyed in this area because of field clearance, may continue to an uncultivated area about 100 m to the SW. It is a good one for excavation because of its size and the preservation of so many remnants of structures' MacDonald (2012).
Modern Disturbance	There is a modern cemetery at the Site's S side, 'Ayn al Hayyad nearby to the E, and a winnowing area to the NE.
References	MacDonald (2012).

ObjID	Site 217
Site Name	Kh. Al-Saidiyyah
Site Type	Waterpoint
Latitude	30°16'14.45"N
Longitude	35°28'20.00"E
Start	Nabataean
End	Roman
Description	MacDonald Site 136. Walled Well.
References	MacDonald (2016).

ObjID	Site 218
Site Name	Unnamed Cistern
Site Type	Waterpoint
Latitude	30°16'15.97"N
Longitude	35°30'25.19"E
Start	Nabataean
End	Roman
References	Mega-Jordan.

ObjID	Site 219
Site Name	Unnamed Road Station
Site Type	Structure
Latitude	30°16'19.02"N
Longitude	35°29'36.26"E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 093. Function related to road?
References	MacDonald (2016).

ObjID	Site 220
Site Name	Mudawrah
Site Type	Settlement
Latitude	30°16'2.24"N
Longitude	35°29'0.73"E
Start	Nabataean
End	Byzantine
References	Graf (1997a).

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ObjID	Site 221
Site Name	Unnamed Caravanserai
Site Type	Road Station/ Caravanserai
Latitude	30°16'20.03'N
Longitude	35°34'51.74'E
Start	Unspecified
End	Unspecified
Date Explanation	No pottery nut according to MacDonald it looks Ottoman
Description	MacDonald Site 112.
References	MacDonald (2016).

ObjID	Site 222
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°16'30.48'N
Longitude	35°31'11.95'E
Start	Byzantine
End	Byzantine
Description	MacDonald Site 133.
References	MacDonald (2016).

ObjID	Site 223
Site Name	Sabra
Site Type	Settlement
Latitude	30°16'31.15'N
Longitude	35°24'36.00'E
Start	Roman
End	Roman
References	Mega-Jordan.

ObjID	Site 224
Site Name	Cistern
Site Type	Waterpoint
Latitude	30°16'31.24'N
Longitude	35°24'37.11'E
Start	Nabataean
End	Nabataean
Relative location	Sabra
References	Mega-Jordan.

ObjID	Site 225
Site Name	Sabra
Site Type	Road Station/ Caravanserai
Latitude	30°16'31.26'N
Longitude	30°16'31.26'N
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

ObjID	Site 226
Site Name	Kh. Diqah
Site Type	Fort
Latitude	30°16'31.89'N

Longitude	35°28'40.13'E
Start	Nabataean
End	Byzantine
Dimensions	12 x 20 m.
References	Graf (1997a).

ObjID	Site 227
Site Name	Bir Salman
Site Type	Structure
Latitude	30°16'32.17'N
Longitude	35°28'41.10'E
Start	Nabataean
End	Byzantine
Dimensions	12 x 20 m.
References	Graf (1997a).

ObjID	Site 228
Site Name	Kh. Mirkab
Site Type	Fort
Latitude	30°16'33.47'N
Longitude	35°28'52.30'E
Start	Nabataean
End	Byzantine
Dimensions	17.4 sqm.
References	Graf (1997a).

ObjID	Site 229
Site Name	Kh. Umm Suwanneh
Site Type	Fort
Latitude	30°16'35.21'N
Longitude	35°30'42.97'E
Start	Nabataean
End	Byzantine
Relative location	Wadi Jammaleh.
Dimensions	12 x 9 m.
References	Graf (1997a).

ObjID	Site 230
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°16'37.47'N
Longitude	35°29'3.29'E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 290.
References	MacDonald (2016).

ObjID	Site 231
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°16'39.81'N
Longitude	35°28'59.30'E
Start	Nabataean
End	Byzantine

Description	MacDonald Site 289.
References	MacDonald (2016).
<b>ObjID</b>	<b>Site 232</b>
Site Name	Khasham Allhud
Site Type	Settlement
Latitude	30°16'4.94'N
Longitude	35°27'39.89'E
Start	Nabataean
End	Roman
Description	MacDonald Site 026.
References	MacDonald (2016).
<b>ObjID</b>	<b>Site 233</b>
Site Name	Kh. Hateh
Site Type	Settlement
Latitude	30°16'45.55'N
Longitude	35°30'58.57'E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 132.
References	MacDonald (2016).
<b>ObjID</b>	<b>Site 234</b>
Site Name	Khashm Al-Had
Site Type	Settlement
Latitude	30°16'5.24'N
Longitude	35°27'39.84'E
Start	Roman
End	Byzantine
Description	MacDonald Site 137.
References	MacDonald (2016).
<b>ObjID</b>	<b>Site 235</b>
Site Name	Wadi Huwar Tower
Site Type	Tower
Latitude	30°16'53.38'N
Longitude	35°14'51.45'E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.
<b>ObjID</b>	<b>Site 236</b>
Site Name	Unnamed forlet
Site Type	Forlet
Latitude	30°16'56.01'N
Longitude	35°31'23.71'E
Start	Roman
End	Byzantine
Description	MacDonald Site 128.
References	MacDonald (2016).
<b>ObjID</b>	<b>Site 237</b>
Site Name	El Qa
Site Type	Settlement

Latitude	30°16'58.27'N
Longitude	35°32'43.59'E
Start	Nabataean
End	Byzantine
Relative location	On the road from Basta to Udruh.
Dimensions	10 sqm.
References	Graf (1997a).
<b>ObjID</b>	<b>Site 238</b>
Site Name	Kh. al-'Abad
Site Type	Tower
Latitude	30°16'6.82'N
Longitude	35°33'26.71'E
Start	Byzantine
End	Byzantine
Description	MacDonald Site 105.
Dimensions	10 x 13 m.
References	MacDonald (2016).
<b>ObjID</b>	<b>Site 239</b>
Site Name	Mikdal
Site Type	Settlement
Latitude	30°16'7.87'N
Longitude	35°28'39.80'E
Start	Nabataean
End	Byzantine
References	Graf (1997a).
<b>ObjID</b>	<b>Site 240</b>
Site Name	Unnamed Cistern
Site Type	Waterpoint
Latitude	30°17'0.51'N
Longitude	35°27'25.44'E
Start	Nabataean
End	Roman
References	Mega-Jordan.
<b>ObjID</b>	<b>Site 241</b>
Site Name	Ayn ed-Dahaha
Site Type	Waterpoint
Latitude	30°17'1.81'N
Longitude	35°29'22.95'E
Start	Nabataean
End	Roman
References	Mega-Jordan.
<b>ObjID</b>	<b>Site 242</b>
Site Name	Abu Khusayba
Site Type	Settlement
Latitude	30°17'12.80'N
Longitude	35°23'6.81'E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

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<b>ObjID</b>	<b>Site 243</b>
Site Name	Unnamed Cistern
Site Type	Waterpoint
Latitude	30°17'2.44"N
Longitude	35°27'18.73"E
Start	Nabataean
End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 244</b>
Site Name	Wadi Huwar Fortress
Site Type	Fortress
Latitude	30°17'2.88"N
Longitude	35°15'3.35"E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 245</b>
Site Name	Unnamed Cistern
Site Type	Waterpoint
Latitude	30°17'20.97"N
Longitude	35°28'28.57"E
Start	Nabataean
End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 246</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°17'28.16"N
Longitude	35°31'5.06"E
Start	Roman
End	Byzantine
Description	MacDonald Site 334.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 247</b>
Site Name	Umm al-Futas
Site Type	Waterpoint
Latitude	30°17'30.01"N
Longitude	35°32'16.43"E
Start	Nabataean
End	Nabataean
Description	MacDonald Site 060. Well.
References	Mega-Jordan; MacDonald (2016).

<b>ObjID</b>	<b>Site 248</b>
Site Name	Ayn el-Hejim
Site Type	Waterpoint
Latitude	30°17'30.57"N
Longitude	35°29'5.60"E
Start	Nabataean
End	Roman

References	Mega-Jordan.
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<b>ObjID</b>	<b>Site 249</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°17'31.40"N
Longitude	35°36'21.53"E
Start	Nabataean
End	Byzantine
Date Explanation	Not Roman
Description	MacDonald Site 051.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 250</b>
Site Name	Rujm Ayn al-Hajim
Site Type	Structure
Latitude	30°17'35.25"N
Longitude	35°28'53.48"E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 085. Probably defensive structures related to the nearby spring.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 251</b>
Site Name	Kh. al- Minyaeh
Site Type	Settlement
Latitude	30°17'4.88"N
Longitude	35°29'11.51"E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 080.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 252</b>
Site Name	Al- Malaqa
Site Type	Settlement
Latitude	30°17'40.28"N
Longitude	35°27'32.98"E
Start	Nabataean
End	Roman
References	Graf (1997a).

<b>ObjID</b>	<b>Site 253</b>
Site Name	Malaqa
Site Type	Waterpoint
Latitude	30°17'40.66"N
Longitude	35°27'38.07"E
Start	Nabataean
End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 254</b>
Site Name	Kh. al-Farqadiyah
Site Type	Structure

Latitude	30°17'43.22"N
Longitude	35°30'4.14"E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 094. Probably defensive purpose in relation to nearby spring.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 255</b>
Site Name	Unnamed Structure
Site Type	Structure
Latitude	30°17'43.85"N
Longitude	35°29'54.96"E
Start	Roman
End	Byzantine
Description	MacDonald Site 086. Probably defensive structures related to the nearby spring.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 256</b>
Site Name	Cistern
Site Type	Waterpoint
Latitude	30°17'48.90"N
Longitude	35°32'45.08"E
Start	Unspecified
End	Unspecified
Description	MacDonald Site 059.
Associated Features	Very large and with water channel running from it.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 257</b>
Site Name	Ayn Amun
Site Type	Waterpoint
Latitude	30°17'50.16"N
Longitude	35°27'41.80"E
Start	Nabataean
End	Roman
References	Mega-Jordan; MacDonald (2016).

<b>ObjID</b>	<b>Site 262</b>
Site Name	Ayn Jammam
Site Type	Tower
Latitude	30°1'8.78"N
Longitude	35°28'8.03"E
Start	Roman
End	Byzantine
Description	'This is a Roman village (?) that the Department of Antiquities excavated in 1995. Bisheh identify the Site as a 'watchtower' (1993: 121), while Waheeb dates the structures to the Late Roman-Early Byzantine period' MacDonald (2012).
References	MacDonald (2012). Bisheh (1993), 121; Waheeb (1996), 344- 45.
Picture	APAAME_20101017_DDB-0062. Photographer: Don Boyer. Courtesy of APAAME.

<b>ObjID</b>	<b>Site 258</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°17'51.20"N
Longitude	35°32'43.45"E
Start	Nabataean
End	Byzantine
Date Explanation	Not Roman
Description	MacDonald Site 059.
Dimensions	20 x 20 m.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 259</b>
Site Name	Dahaha
Site Type	Settlement
Latitude	30°17'51.47"N
Longitude	35°29'37.08"E
Start	Nabataean
End	Byzantine
Date Explanation	Sherds from the Nabataea to Umayyads, but Late Roman and Byzantine predominance.
Associated Features	Ain Hejin Spring.
References	Graf (1997a).

<b>ObjID</b>	<b>Site 260</b>
Site Name	Unnamed Cistern
Site Type	Waterpoint
Latitude	30°17'58.33"N
Longitude	35°28'40.55"E
Start	Nabataean
End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 261</b>
Site Name	Ayn Amun
Site Type	Settlement
Latitude	30°17'59.01"N
Longitude	35°27'38.03"E
Start	Nabataean
End	Roman
References	Graf (1997a).





<b>ObjID</b>	<b>Site 263</b>
Site Name	Enclosed cistern
Site Type	Waterpoint
Latitude	30°18'0.72"N
Longitude	35°31'3.22"E
Start	Nabataean
End	Byzantine
Description	Site 337
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 264</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°18'10.17"N
Longitude	35°27'21.02"E
Start	Nabataean
End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 265</b>
Site Name	Graf 1997 2
Site Type	Milestone
Latitude	30°18'14.24"N
Longitude	35°29'6.83"E
Start	Roman
End	Byzantine

Relative location	At Bir Sarah, 100 m S of the cistern on the slope E of the road
Description	Some traces of white paint, but anepigraphic.
References	Glueck (1935), 77; Graf (1997a).

<b>ObjID</b>	<b>Site 266</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°18'19.67"N
Longitude	35°27'25.07"E
Start	Roman
End	Byzantine
Date Explanation	Late Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 267</b>
Site Name	Kh. al-Faqih
Site Type	Settlement
Latitude	30°18'20.62"N
Longitude	35°38'25.48"E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 143.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 268</b>
Site Name	Bir Sarah

Site Type	Waterpoint
Latitude	30°18'21.62'N
Longitude	35°29'6.76'E
Start	Nabataean
End	Byzantine
Description	Well. MacDonald Site 072.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 269</b>
Site Name	Dam
Site Type	Waterpoint
Latitude	30°18'21.63'N
Longitude	35°26'12.57'E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 270</b>
Site Name	Bir Sarah
Site Type	Road Station/ Caravanserai
Latitude	30°18'21.89'N
Longitude	35°29'7.34'E
Start	Nabataean
End	Byzantine
Relative location	Five km south of Wadi Musa.
Description	MacDonald Site 072.
Associated Features	Cistern.
References	Graf (1997a).

<b>ObjID</b>	<b>Site 271</b>
Site Name	Braq
Site Type	Settlement
Latitude	30°18'30.52'N

Longitude	35°27'49.45'E
Start	Nabataean
End	Roman
References	Graf (1997a).

<b>ObjID</b>	<b>Site 272</b>
Site Name	Braq
Site Type	Waterpoint
Latitude	30°18'32.68'N
Longitude	35°27'48.92'E
Start	Nabataean
End	Nabataean
References	Graf (1997a).

<b>ObjID</b>	<b>Site 273</b>
Site Name	Unnamed Cisterns
Site Type	Waterpoint
Latitude	30°18'33.72'N
Longitude	35°32'4.41'E
Start	Nabataean
End	Byzantine
Date Explanation	Not Roman.
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 274</b>
Site Name	Unnamed Cisterns
Site Type	Waterpoint
Latitude	30°18'37.10'N
Longitude	35°38'22.71'E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 275</b>
Site Name	Tell Abara
Site Type	Temporary camp
Latitude	30°18'42.10'N
Longitude	35°35'17.04'E
Start	Roman
End	Roman
Relative location	On a steep hill 2 km SSW of the fortress of Udruh.
Description	Large enclosure (150 x 120 m). No internal structures. Openings on the east and west walls.
Similar Sites	Western temporary camps and clavicula entrance seen at Masada and Nahal Hever.
References	Kennedy and Riley (1990), 107; Killick (1986) 436.
Pictures	Kennedy and Riley (1990), Fig. 56.



<b>ObjID</b>	<b>Site 276</b>
Site Name	Thugra
Site Type	Settlement
Latitude	30°18'48.60"N
Longitude	35°25'42.43"E
Start	Nabataean
End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 277</b>
Site Name	Unnamed Cisterns
Site Type	Waterpoint
Latitude	30°18'50.91"N
Longitude	35°23'48.85"E
Start	Nabataean
End	Nabataean
Date Explanation	Late Nabataean pottery.
Relative location	Jebel Harun
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 278</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°18'54.64"N
Longitude	35°23'50.91"E
Start	Unspecified

End	Unspecified
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 279</b>
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°18'8.34"N
Longitude	35°32'19.19"E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 057.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 280</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°18'9.67"N
Longitude	35°28'58.24"E
Start	Nabataean
End	Byzantine
Date Explanation	Not Roman
Description	MacDonald Site 076.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 281</b>
Site Name	Bir Sarah
Site Type	Tower

Latitude	30°18'9.68"N
Longitude	35°29'9.10"E
Start	Nabataean
End	Roman
Description	MacDonald Site 072.
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 282</b>
Site Name	Unnamed Fort
Site Type	Fort
Latitude	30°19'1.22"N
Longitude	35°32'22.83"E
Start	Nabataean
End	Roman
Description	MacDonald Site 363.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 283</b>
Site Name	Rujm Bitar
Site Type	Settlement
Latitude	30°19'13.51"N
Longitude	35°31'50.53"E
Start	Nabataean
End	Byzantine
Relative location	On the road from Basta to Udruh.
Dimensions	10 sqm.
References	Graf (1997a).

<b>ObjID</b>	<b>Site 284</b>
Site Name	Road Section
Site Type	Road
Latitude	30°19'19.63"N
Longitude	35°30'48.59"E
Start	Roman
End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 285</b>
Site Name	Unnamed Cistern
Site Type	Waterpoint
Latitude	30°19'21.07"N
Longitude	35°30'48.50"E
Start	Nabataean
End	Roman
Relative location	Rasif.
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 286</b>
Site Name	Abu Olleqa
Site Type	Waterpoint
Latitude	30°19'22.61"N
Longitude	35°25'49.61"E
Start	Nabataean
End	Nabataean

References	Mega-Jordan.
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<b>ObjID</b>	<b>Site 287</b>
Site Name	Umm at-Tiran
Site Type	Waterpoint
Latitude	30°19'3.03"N
Longitude	35°31'55.15"E
Start	Nabataean
End	Byzantine
Description	Many cisterns, qanats, and reservoirs.
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 288</b>
Site Name	Birket as-Zurraba
Site Type	Waterpoint
Latitude	30°19'35.22"N
Longitude	35°28'4.73"E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 289</b>
Site Name	Nawafleh
Site Type	Settlement
Latitude	30°19'36.33"N
Longitude	35°29'14.31"E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 358.
References	Mega-Jordan; MacDonald (2016).

<b>ObjID</b>	<b>Site 290</b>
Site Name	Unnamed Cistern
Site Type	Waterpoint
Latitude	30°19'37.81"N
Longitude	35°31'28.57"E
Start	Unspecified
End	Unspecified
Description	MacDonald Site 140. Spring.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 291</b>
Site Name	Road Section
Site Type	Road
Latitude	30°19'40.47"N
Longitude	35°35'3.43"E
Start	Unspecified
End	Unspecified
Description	MacDonald Site 198.
References	MacDonald (2016).

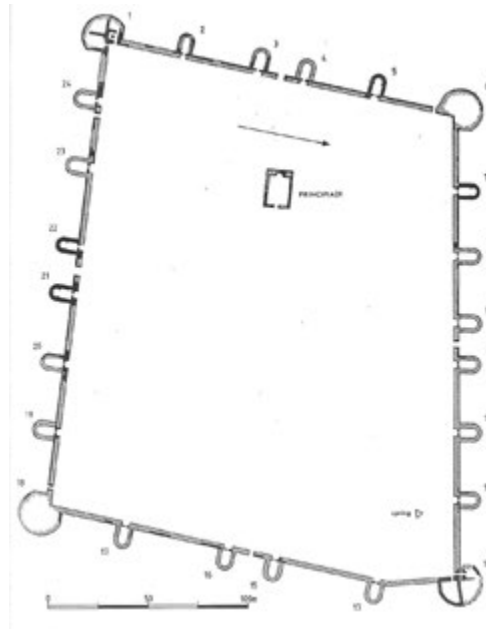
<b>ObjID</b>	<b>Site 292</b>
Site Name	Petra
Site Type	Settlement

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Latitude	30°19'41.47"N
Longitude	35°26'40.06"E
Start	Nabataean
End	Roman
Description	Fortified
Garrison	<i>Equites I Felices Sagittarii Indigenae Palaestini</i> , in Wadi Sabra?
References	Mega-Jordan; see Bibliography.

<b>ObjID</b>	<b>Site 293</b>
Site Name	Udruh
Site Type	Settlement
Latitude	30°19'43.00"N
Longitude	35°36'13.10"E
Start	Nabataean
End	Nabataean
Description	Fortified
References	Mega-Jordan; Killick (1983); Abudanah (2004–2006); Kennedy (2004).

<b>ObjID</b>	<b>Site 294</b>
Site Name	Udruh
Site Type	Fort
Latitude	30°19'44.8"N
Longitude	35°35'43.7"E
Start	Roman
End	Byzantine
Date Explanation	Date is disputed. Suggestions have ranged from Trajanic to Ghassanid (early-second to sixth centuries). Typical of ca. 300 (as Lejjun).
Relative location	ca. 10 km E of Petra, ca. 120 km N of Aila, and 30 km S of Dajaniya. On a gentle east-facing slope above a plain watered by perennial spring.
Description	Ptolemy (V, 16.4) records a town of Adrou in Arabia Petraea (but not recorded under this name in the <i>Notitia</i> ). The Beersheba edict (Alt 1921) puts it at the head of the list of towns in Palaestina Tertia, as paying the largest tax. Udruh was important in the Islamic period. 246 x 248 x 207 x 177. Corner towers have a ca.22 diameter, interval and gate towers ca. 8–9 m wide, projection ca. 10.5 –11.5 m. Limestone ashlar facings, arches and vaults, rubble core. Basalt rock foundations. Possible principia within (later a church). The spring was probably within the walls in Roman times, and a cistern was found near to the principia. See Gregory (1997) 385–387 for very detailed architectural description. 'If Lejjun was, as seems more than likely, a legionary base. Udruh (on the analogy of its plan) must have been one too, but perhaps with an even shorter active military life before being taken over by the civilian population.' Gregory (1997) 389.
Dimensions	246 x 248 x 207 x 177 m.
Associated Features	Town, perennial spring, Iron Age watchtower (Iron Age II) on Tell Udruh, 500 m to the east of the spring. Nabataea pottery kiln excavated to the south of the south wall of the fortress; Church 30 m from the south-west corner of the fortress.
Modern Disturbance	A lot of the stone has been removed for recent building. Exterior walls cleared by Bulldozer to promote tourist interest.
Garrison	<i>Legio VI Ferrata</i> (briefly) or <i>X Fretensis</i>
Similar Sites	Lejjun (size and plan extremely similar, but bigger; quality of construction is also more elaborate, more arches, and vaults, and carved lintels) and Aila.
References	Gregory (1997) 383–387; Killick (1983), (1986); Abudanah (2004–2006); Kennedy (2004); Al Khouri (2003), 75.
Picture	Killick (1983), Fig. 2.



ObjID	Site 295
Site Name	Cistern
Site Type	Waterpoint
Latitude	30°19'50.89"N
Longitude	35°34'9.78"E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

ObjID	Site 296
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°19'50.94"N
Longitude	35°31'20.18"E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 174.
References	MacDonald (2016).

ObjID	Site 297
Site Name	Mataha
Site Type	Waterpoint
Latitude	30°19'55.74"N
Longitude	35°39'44.63"E
Start	Nabataean
End	Nabataean
References	Mega-Jordan

ObjID	Site 298
Site Name	Kh. al-Tiwisi- Muderj
Site Type	Settlement
Latitude	30°19'58.94"N
Longitude	35°30'31.97"E
Start	Nabataean

End	Byzantine
Description	MacDonald Site 321.
References	MacDonald (2016).

ObjID	Site 299
Site Name	Unnamed fort?
Site Type	Fort
Latitude	30°20'11.69"N
Longitude	35°31'28.75"E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 139.
References	MacDonald (2016).

ObjID	Site 300
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°20'19.76"N
Longitude	35°30'37.37"E
Start	Nabataean
End	Roman
Description	MacDonald Site 320.
References	MacDonald (2016).

ObjID	Site 301
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°20'21.98"N
Longitude	35°31'9.50"E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 176.
References	MacDonald (2016).



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ObjID	Site 302
Site Name	Unnamed Watchtower
Site Type	Tower
Latitude	30°20'26.23"N
Longitude	35°28'30.00"E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 145.
References	MacDonald (2016).

ObjID	Site 303
Site Name	Milestone
Site Type	Milestone
Latitude	30°20'29.08"N
Longitude	35°35'37.72"E
Start	Roman
End	Roman
References	Mega-Jordan.

ObjID	Site 304
Site Name	Rujm el-Qana
Site Type	Waterpoint
Latitude	30°20'31.88"N
Longitude	35°28'50.06"E
Start	Unspecified

ObjID	Site 307
Site Name	Wadi et-Tayiba Fortress
Site Type	Fortress
Latitude	30°20'38.36"N
Longitude	35°17'38.45"E
Start	Nabataean
End	Roman
Description	'This is the fort of Qasr Wadi et-Tayyiba. The qasr is a ruined, rectangular structure ca. 24 x 23 m without clear evidence of corner towers. Its walls are ca. 1.15 m wide (two courses with rubble fill). Internal structures are aligned against the curtain walls of the structure and surround a central courtyard. Of interest is a large mound of stone rubble in the centre of the west wall, perhaps a collapsed tower or gateway. The north, south, and west walls of this structure seem to extend ca. 3 m beyond the outer face of the curtain wall. There are other less impressive remains near 'Ain et-Tayyiba. Ca. 20 m southeast of the qasr is a long wall, 0.58 m wide and oriented roughly E-W, that extends in segments for ca. 61 m. Another structure, virtually destroyed by numerous robber pits and due east of the modern well, does not exceed ca. 5 x 5 m, considering the proximity of the spoil dumps and the exposure of the southeast wall. Artefact density is thickest in this area' Parker and Smith (2014), 286.
References	Parker and Smith (2014); Mega-Jordan.

ObjID	Site 308
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°20'38.67"N
Longitude	35°18'3.83"E
Start	Byzantine
End	Byzantine
References	Parker and Smith (2014).

End	Unspecified
References	Mega-Jordan.

ObjID	Site 305
Site Name	Rujm al-Umeiri
Site Type	Tower
Latitude	30°20'31.88"N
Longitude	35°28'50.06"E
Start	Nabataean
End	Byzantine
Relative location	S of el-Hai, N of Wadi Musa
Description	On Road leading into Petra from the North.
Dimensions	6 sqm.
References	Graf (1997a), 5

ObjID	Site 306
Site Name	Milestone
Site Type	Milestone
Latitude	30°20'35.49"N
Longitude	35°35'37.05"E
Start	Roman
End	Roman
Description	MacDonald Site 157.
References	MacDonald (2016).

ObjID	Site 309
Site Name	Temeiah/Jabal Musa al-Ashari
Site Type	Fort
Latitude	30°20'39.23"N
Longitude	35°35'53.34"E
Start	Nabataean
End	Roman
Description	MacDonald Site 154.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 310</b>
Site Name	Temeiah/Jabal Musa al-Ashari
Site Type	Tower
Latitude	30°20'39.50'N
Longitude	35°35'52.51'E
Start	Nabataean
End	Byzantine
Date Explanation	To Late Byzantine
Description	MacDonald Site 154.
References	Mega-Jordan; MacDonald (2016).

<b>ObjID</b>	<b>Site 311</b>
Site Name	Kh. al- Muzayr`a
Site Type	Settlement
Latitude	30°20'4.56'N
Longitude	35°28'53.51'E
Start	Nabataean
End	Roman
Description	MacDonald Site 360.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 312</b>
Site Name	Unnamed Cistern
Site Type	Waterpoint
Latitude	30°20'42.65'N
Longitude	35°27'10.50'E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 313</b>
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°20'50.33'N
Longitude	35°31'4.32'E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 186.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 314</b>
Site Name	Qasr al-Tweisi
Site Type	Road Station/ Caravanserai
Latitude	30°20'54.62'N
Longitude	35°29'1.45'E
Start	Nabataean
End	Byzantine
Relative location	S of el-Hai, N of Wadi Musa.
Description	On Road leading into Petra from the N.
Dimensions	20 x 20 m.
References	Graf (1997a), 5.

<b>ObjID</b>	<b>Site 315</b>
Site Name	Unnamed Settlement

Site Type	Settlement
Latitude	30°20'55.56'N
Longitude	35°31'5.78'E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 187.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 316</b>
Site Name	Unnamed Dam
Site Type	Waterpoint
Latitude	30°20'58.26'N
Longitude	35°27'20.45'E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 317</b>
Site Name	Unnamed Structures
Site Type	Structure
Latitude	30°20'7.82'N
Longitude	35°29'36.69'
Start	Nabataean
End	Roman
Description	MacDonald Site 313. Great observation point and perhaps defensive.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 318</b>
Site Name	Umm Tiran
Site Type	Settlement
Latitude	30°21'1.15'N
Longitude	35°32'41.48'E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 160.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 319</b>
Site Name	El Hai
Site Type	Settlement
Latitude	30°21'11.26'N
Longitude	35°29'11.60'E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 172.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 320</b>
Site Name	Thomsen 169
Site Type	Milestone
Latitude	30°21'11.69'N
Longitude	35°29'12.08'E
Start	Roman

End	Roman
Relative location	El Hai, NE of Wadi Musa
Description	Road leading into Petra from the N.
References	Graf (1997a), 5.

<b>ObjID</b>	<b>Site 321</b>
Site Name	Thomsen 170
Site Type	Milestone
Latitude	30°21'11.69"N
Longitude	35°29'12.08"E
Start	Roman
End	Roman
Relative location	El Hai, NE of Wadi Musa.

Description	Road leading into Petra from the N.
References	Graf (1997a), 5.

<b>ObjID</b>	<b>Site 322</b>
Site Name	Thomsen 171
Site Type	Milestone
Latitude	30°21'11.69"N
Longitude	35°29'12.08"E
Start	Roman
End	Roman
Relative location	El Hai, NE of Wadi Musa.
Description	Road leading into Petra from the N.
References	Graf (1997a), 5.

<b>ObjID</b>	<b>Site 323</b>
Site Name	Road Section
Site Type	Road
Latitude	30°21'11.69"N
Longitude	35°29'12.08"E
Start	Roman
End	Roman
Relative location	El Hai, NE of Wadi Musa
Description	Road leading into Petra from the north, ca. 5.5 m wide with bordered edges and divided by a central ridge (same dimensions and construction as the <i>Via Nova Traiana</i> between Bostra and Amman).
References	Graf (1997a), 5.

<b>ObjID</b>	<b>Site 324</b>
Site Name	Road Section
Site Type	Road
Latitude	30°21'12.05"N
Longitude	35°32'23.69"E
Start	Unspecified
End	Unspecified
Description	MacDonald Site 167.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 325</b>
Site Name	Unnamed Cistern
Site Type	Waterpoint
Latitude	30°21'12.15"N
Longitude	35°26'12.51"E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 326</b>
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°21'14.82"N
Longitude	35°32'9.41"E
Start	Nabataean

End	Byzantine
Description	MacDonald Site 166.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 327</b>
Site Name	Mzeira
Site Type	Tower
Latitude	30°21'16.10"N
Longitude	35°24'53.89"E
Start	Nabataean
End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 328</b>
Site Name	Beqah
Site Type	Tower
Latitude	30°21'17.24"N
Longitude	35°26'17.33"E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 329</b>
Site Name	Sleisel
Site Type	Road Station/ Caravanserai
Latitude	30°21'22.14"N

Longitude	35°25'13.24'E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 330</b>
Site Name	Sleisel
Site Type	Road Station/ Caravanserai
Latitude	30°21'22.71'N
Longitude	35°25'9.18'E
Start	Nabataean
End	Roman
Date Explanation	Structure is Nabataean but Roman sherds are present.
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 331</b>
Site Name	Sleisel
Site Type	Settlement
Latitude	30°21'22.71'N
Longitude	35°25'9.18'E
Start	Nabataean
End	Roman
Date Explanation	Structure is Nabataean but Roman sherds are present.
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 332</b>
Site Name	Sleisel
Site Type	Tower
Latitude	30°21'22.71'N
Longitude	35°25'9.18'E
Start	Nabataean
End	Roman
Date Explanation	Structure is Nabataean but Roman sherds are present.
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 333</b>
Site Name	Sleisel
Site Type	Settlement
Latitude	30°21'23.18'N
Longitude	35°25'8.75'E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 334</b>
Site Name	Sadd el-Kharruba
Site Type	Waterpoint
Latitude	30°21'23.36'N
Longitude	35°27'5.54'E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 335</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°21'24.06'N
Longitude	35°25'11.01'E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 336</b>
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°21'24.91'N
Longitude	35°30'19.48'E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 183.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 337</b>
Site Name	Wadi Sleisel Tower
Site Type	Tower
Latitude	30°21'32.12'N
Longitude	35°25'20.37'E
Start	Nabataean
End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 338</b>
Site Name	Unnamed fort
Site Type	fort
Latitude	30°21'34.62'N
Longitude	35°30'37.37'E
Start	Roman
End	Byzantine
Description	MacDonald Site 179. Complex of structures.
Dimensions	53 x 41 m.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 339</b>
Site Name	Mulghan
Site Type	Fort
Latitude	30°21'34.98'N
Longitude	35°32'30.96'E
Start	Nabataean
End	Roman
Description	MacDonald Site 162.
Dimensions	39 x 48 m
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 340</b>
Site Name	Unnamed Caravanserai
Site Type	Road Station/ Caravanserai

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Latitude	30°21'37.77"N
Longitude	35°24'2.15"E
Start	Nabataean
End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 341</b>
Site Name	Road Section
Site Type	Road
Latitude	30°21'37.81"N
Longitude	35°30'21.88"E
Start	Roman
End	Roman
Description	MacDonald Site 188.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 342</b>
Site Name	Kh. Sufaysif
Site Type	Road Station/ Caravanserai
Latitude	30°21'39.44"N
Longitude	35°19'22.91"E
Start	Nabataean
End	Nabataean
Description	On the Petra-Gaza incense trade road.
References	Smith (2005), (2010).

<b>ObjID</b>	<b>Site 343</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°21'4.17"N
Longitude	35°30'17.65"E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 185.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 344</b>
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°21'40.74"N
Longitude	35°29'44.60"E
Start	Nabataean
End	Roman
Description	MacDonald Site 180.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 345</b>
Site Name	Mulghan
Site Type	Settlement
Latitude	30°21'42.96"N
Longitude	35°32'19.94"E
Start	Roman
End	Byzantine
Description	MacDonald Site 161.

References	MacDonald (2016).
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<b>ObjID</b>	<b>Site 346</b>
Site Name	Qasr Wadi Musa/ar-Ratam
Site Type	Fort
Latitude	30°21'45.74"N
Longitude	35°22'12.77"E
Start	Roman
End	Byzantine
Date Explanation	Until 5th century at least.
Relative location	Wadi Musa into Wadi Araba.
References	Mega-Jordan; Graf (1997a).

<b>ObjID</b>	<b>Site 347</b>
Site Name	Unnamed Cistern
Site Type	Waterpoint
Latitude	30°21'46.24"N
Longitude	35°22'13.04"E
Start	Nabataean
End	Roman
Relative location	Umm Rattam.
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 348</b>
Site Name	Unnamed Caravanserai
Site Type	Road Station/ Caravanserai
Latitude	30°21'46.85"N
Longitude	35°22'39.67"E
Start	Nabataean
End	Roman
References	Mega-Jordan

<b>ObjID</b>	<b>Site 349</b>
Site Name	Al-Jarba
Site Type	Tower
Latitude	30°21'49.49"N
Longitude	35°36'16.68"E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 303.
Dimensions	10 x 12 m.
References	Mega-Jordan.; MacDonald (2016).

<b>ObjID</b>	<b>Site 350</b>
Site Name	Spring
Site Type	Waterpoint
Latitude	30°21'50.06"N
Longitude	35°31'53.33"E
Start	Unspecified
End	Unspecified
Description	MacDonald Site 319.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 351</b>
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Site Name	Al-Jarba
Site Type	Settlement
Latitude	30°21'57.96'N
Longitude	35°36'23.11'E
Start	Byzantine
End	Byzantine
Relative location	5 km N of Udruh
Description	Fortified.
References	Graf (1997a).

<b>ObjID</b>	<b>Site 352</b>
Site Name	Kh. al- Manaseb
Site Type	Settlement
Latitude	30°21'58.70'N
Longitude	35°31'38.16'E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 168.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 353</b>
Site Name	Road Section
Site Type	Road
Latitude	30°21'7.98'N
Longitude	35°32'13.05'E
Start	Unspecified
End	Unspecified
Description	MacDonald Site 165.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 354</b>
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°21'8.73'N
Longitude	35°29'45.78'E
Start	Nabataean
End	Roman
Description	MacDonald Site 173.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 355</b>
Site Name	Graf 1997 12
Site Type	Milestone
Latitude	30°2'2.78'N
Longitude	35°25'34.75'E
Start	Roman
End	Roman
Relative location	Slopes below 'Ain Dana.
Description	Anepigraphic
References	Graf (1997a).

<b>ObjID</b>	<b>Site 356</b>
Site Name	Deire
Site Type	Settlement

Latitude	30°22'17.71'N
Longitude	35°27'35.38'E
Start	Nabataean
End	Byzantine
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 357</b>
Site Name	Rujm Almargh
Site Type	Tower
Latitude	30°22'23.98'N
Longitude	35°33'37.46'E
Start	Nabataean
End	Roman
Description	MacDonald Site 190. The rubble pile stands 8 m above ground level.
Dimensions	33 x 47 m (whole site).
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 358</b>
Site Name	Siq el-Bared
Site Type	Waterpoint
Latitude	30°22'27.07'N
Longitude	35°26'57.76'E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 359</b>
Site Name	Umm Almargh
Site Type	Settlement
Latitude	30°22'29.14'N
Longitude	35°34'6.59'E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 189.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 360</b>
Site Name	Unnamed Cistern
Site Type	Waterpoint
Latitude	30°22'29.84'N
Longitude	35°27'36.07'E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 361</b>
Site Name	Unnamed Cistern
Site Type	Waterpoint
Latitude	30°22'3.32'N
Longitude	35°27'21.68'E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.



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ObjID	Site 362
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°2'24.16'N
Longitude	35°26'21.60'E
Start	Roman
End	Byzantine
Description	'This is a watchtower on a road that leads from the Transjordanian Plateau to Kh. 'Ayn al-Qana, and a plain to the SW. The Site's structure, which measures ca. 3.50 x 3.50 m interiorly, has been 'excavated:' The excavation reveals ca. 2 m of exposed interior wall and shows that the stones of the walls are well-hewn interiorly. The walls of the structure are just over 1 m wide. They are impressive and strongly built of two rows of stones with rubble in between. The Site overlooks a plain. Another watchtower to the SW, and the village of Ath-Thughra to the W are clearly visible. The Site is well worth further investigation' MacDonald (2012).
Dimensions	3.50 x 3.50 m.
References	MacDonald (2012).

ObjID	Site 363
Site Name	Rujm Ath-Thughra
Site Type	Settlement
Latitude	30°2'24.90'N
Longitude	35°21'52.89'E
Start	Byzantine
End	Byzantine
Description	'This is an agricultural village Site measuring ca. 150 x 150 m. It is located on a hill in the modern Bedouin village of Ath-Thughra; thus, its name. There are two farm houses on the Site. The larger of the two is divided into several compartments and is roofless. The smaller one is used as a hen house and has an intact roof. Many foundation walls are visible throughout the Site. Most of them are at ground level, although several still stand a couple of courses high. The walls are generally two courses wide with rubble in between. There are several modern enclosures, used as animal pens, at the Site. Many Bedouin tents are in the immediate vicinity of the farm buildings. In addition, there are many newly-built cement houses/buildings. These are used for storage rather than as dwellings. The villagers prefer to live in their tents, especially during the spring/summer months of the year, then in the newly-constructed houses. They may move into them during the colder months. What appeared to be a modern reservoir is located just up the hill from the Site where several more Bedouin tents are located' MacDonald (2012).
References	MacDonald (2012).

ObjID	Site 364
Site Name	Unnamed Cistern
Site Type	Waterpoint
Latitude	30°22'41.59'N
Longitude	35°27'28.30'E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

ObjID	Site 365
Site Name	Qarn
Site Type	Fort
Latitude	30°22'50.99'N
Longitude	35°28'8.16'E
Start	Nabataean
End	Roman
References	Mega-Jordan.

ObjID	Site 366
Site Name	Unnamed Structures
Site Type	Structure
Latitude	30°22'56.15'N
Longitude	35°31'1.39'E
Start	Roman
End	Byzantine
Description	MacDonald Site 177. Probably defensive site along <i>Via Nova Traiana</i> . Perhaps a forlet (courtyard).
References	MacDonald (2016).

ObjID	Site 367
Site Name	Unnamed Cistern
Site Type	Waterpoint
Latitude	30°22'7.85'N
Longitude	35°27'23.45'E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

ObjID	Site 368
Site Name	Unnamed Caravanserai
Site Type	Road Station/ Caravanserai
Latitude	30°23'13.04"N
Longitude	35°30'57.35"E
Start	Nabataean
End	Roman
Description	MacDonald Site 178.
Dimensions	20 x 20 m.
References	MacDonald (2016).

ObjID	Site 369
Site Name	Unnamed Caravanserai
Site Type	Road Station/ Caravanserai
Latitude	30°23'15.47"N
Longitude	35°29'11.94"E

Start	Nabataean
End	Roman
Description	MacDonald Site 357.
Dimensions	15 x 11 m.
References	MacDonald (2016).

ObjID	Site 370
Site Name	Kh. al-Arja
Site Type	Settlement
Latitude	30°23'18.33"N
Longitude	35°32'39.53"E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 205.
References	MacDonald (2016).

ObjID	Site 371
Site Name	Kh. ar-Rasif
Site Type	Fort
Latitude	30°2'32.07"N
Longitude	35°27'47.58"E
Start	Byzantine
End	Byzantine
Description	'This site appears, from a distance, to be nothing more than a large pile of stones. However, on closer inspection, it is evident that it is a major Site and is quite likely a small fort along a major roadway. There are clear wall lines at the Site's highest levels. One very large wall, at a high level and at the Site's SW corner, is strongly built of roughly-hewn limestone. It measures ca. 1 m wide. Small 'rooms' are attached to its N side and what appear to be animal pens at its sandy sides. Thus, different segments of the Site would have had different functions at various periods. What appears to be a watchtower is located on a hilltop ca. 150 m to the NW while the main structure at the lower level provides viewing to the NE, E, and S, this watchtower, which measures ca. 15 (N-S) x 10 (E- W) m, would have provided a good vantage point from which to view traffic from the N along a nearby roadway, Kh. Shadid/ Shdayd, a major Iron II fortress, is clearly visible to the SE. Thus, the entire complex is probably a fort and watchtower associated with a roadway that runs N-S' MacDonald (2012) .
References	MacDonald (2012).

ObjID	Site 372
Site Name	Kh. ad-Da'uq
Site Type	Settlement
Latitude	30°2'32.76"N
Longitude	35°31'56.67"E
Start	Nabataean
End	Byzantine

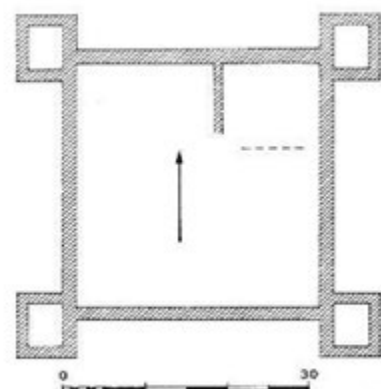
Description	<p>'This is a very large and impressive Site, measuring ca. 400 (N -S) x 140 (E- W) m, located on a N-S-running ridge and its associated E-facing slope high in the hills to the E of the Desert Highway and quite a distance from the military base and telecommunication towers at Ras an-Naqb. It is located just E of the Khatt Shebib which can be clearly seen on a ridge below it. The Site is composed of dozens of structures, probably former dwellings, and it appears that some of them are in "blocks;" that is, they are actually compartments that share, in many cases, common walls. The Site's structures are positioned to take advantage of the sun from the E and SE. Their walls, made from well-hewn and roughly-hewn stone. Some of them still stand 2 m, and at least one indicates that it was arched at one time. One impressive structure, at the southern extremity of the Site, measures ca. 16 (N- S) x 7 (E- W) m. It is built of roughly-hewn stone and its walls measure ca. 0-75 m wide. It has been illicitly 'excavated' in several places and part of its W wall has been removed. A structure at the extreme N of the Site appears to be a watchtower. It has been dug into, and the digging reveals that the stones forming its walls are well-cut. There are many open areas within the Site. This could indicate clearing for pastoral purposes or be common areas in an ancient town/village. In addition, there are many enclosures, especially on the E, that would indicate use of the Site as a place to pen animals. There is also a cave at this part of the Site. It could have been a cistern at one time. 'Roadways' and/or 'streets' can be seen in certain areas of the Site. An ancient cemetery is located at the Site's NE extremity. Many of its graves have been robbed. The Site is located in a cultivated area, barren, and was probably an agricultural village, if not a town, in antiquity. Because of its size, impressiveness, and the fact that it is being looted, it ought to be excavated as soon as possible' MacDonald (2012).</p>
References	MacDonald (2012); Glueck (1935), 63 (his Site no. 42); Kennedy and Bewley (2004), 139.

ObjID	Site 373
Site Name	Arja
Site Type	Settlement
Latitude	30°23'33.35"N
Longitude	35°31'48.06"E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 207.
References	MacDonald (2016).

ObjID	Site 374
Site Name	Rujm Abu Al-Alaq
Site Type	Tower
Latitude	30°23'36.35"N
Longitude	35°34'6.38"E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 200.
References	MacDonald (2016).

ObjID	Site 375
Site Name	Neq'ah
Site Type	Settlement
Latitude	30°23'4.71"N
Longitude	35°27'35.17"E
Start	Nabataean
End	Byzantine
Date Explanation	Not Roman.
References	Mega-Jordan.

ObjID	Site 376
Site Name	Bir Madkhur
Site Type	Fort
Latitude	30°23'46.93"N
Longitude	35°20'36.02"E
Start	Roman
End	Byzantine
Date Explanation	A lot of Nabataea pottery. Roman coins of Constantine I and Constantius II.
Relative location	ca. 15 NW of Petra, ca. 20 km SE of Moyet Awwad, near a well at the entrance to the wadi.



Description	The walls are 1.8 m thick, featuring projecting towers 8 m x 7 m. The most impressive structure at Bir Madkhur is the castellum, a quadriburgium with four corner towers measuring just over 30 x 30 m. The castellum is in an exceedingly collapsed state with much of the north wall destroyed by local bulldozing and robber pits. The walls, of worked limestone blocks, appear to be two courses wide (0.55-0.60 m). Within the castellum, rectangular mounds with depressed centres suggest internal structures against the curtain wall and around a central courtyard. The gateway into the fort could not be located but was probably in the destroyed north wall. Another structure, measuring ca. 30 x 25 m., lies on the bank of a dry wadi ca. 34 m southeast of the fort. Distinct wall alignments and linear mounds along the interior face of the south wall can be seen, suggesting rooms at least s x 5 m. Robber pits along the outer face of the east wall have exposed a large quantity of pottery and evidence of plastering on the exterior face of the wall. There is also a thick mound of ash to the south. The SAAS found four coins (Obj. #3, 23, 40, 41) in the ash and near the robber pits but only one was identifiable, an issue of themid-4th century AD (Obj. #40). This structure may be a large bath complex. In an area of ca. 25 x 25 m west and southwest of the castellum, numerous intersecting wall alignments and mounds suggest a large complex of concentric structures. The nature and purpose of these constructions remains undetermined, but these may represent a domestic quarter. The SAAS recovered two more coins (Objs. #1, 503) in this area, but only one was identifiable, also of themid-4th century AD (Obj. #503). Another smaller structure, situated ca. 18 m south of the castellum, measures ca. 18 x 10 m with roughly cut stone walls measuring ca. 0.80 m wide and an entrance in the west wall. There is evidence of at least 6 internal rooms. Various other wall alignments lie across the Site and on the ridge above the Site to the northwest.
Dimensions	32 x 34 m.
Associated Features	Terraced cultivation. Baths.
Garrison	<i>Cohors I Quitata?</i>
References	Gregory (1997) 448-449; Frank (1934), 228, plan 24; Glueck (1935) 36-37; Parker and Smith (2014), 289.
Picture	APAAME_20151005_DLK-0312. Photographer: David Kennedy. Courtesy of APAAME. Plan (Frank 1934, plan 24).



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ObjID	Site 377
Site Name	Kh. Maktal al-Thoor
Site Type	Fortlet
Latitude	30°23'47.65'N
Longitude	35°31'2.96'E
Start	Roman
End	Byzantine
Description	MacDonald Site 324.
References	MacDonald (2016).

ObjID	Site 378
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°23'49.75'N
Longitude	35°32'42.59'E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 231.
References	MacDonald (2016).

ObjID	Site 379
Site Name	Anabah
Site Type	Settlement
Latitude	30°23'54.18'N
Longitude	35°30'50.01'E
Start	Roman
End	Roman
Description	Site 326.
References	MacDonald (2016).

ObjID	Site 380
Site Name	Graf 1997 11
Site Type	Milestone
Latitude	30°2'4.22'N
Longitude	35°26'37.15'E
Start	Roman
End	Roman
Relative location	Slopes below 'Ain Dana.
Description	Badly weathered; anepigraphic.
References	Graf (1997a).

ObjID	Site 381
Site Name	Unnamed Cisterns
Site Type	Waterpoint
Latitude	30°24'10.98'N
Longitude	35°26'44.10'E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

ObjID	Site 382
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°24'12.77'N

Longitude	35°32'53.96'E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 258.
Dimensions	4 x 5 m.
References	MacDonald (2016).

ObjID	Site 383
Site Name	Kh. Beer al-Remeel
Site Type	Settlement
Latitude	30°24'13.11'N
Longitude	35°32'34.27'E
Start	Nabataean
End	Byzantine
Description	Site 226.
References	MacDonald (2016).

ObjID	Site 384
Site Name	Tall al-Remeel
Site Type	Settlement
Latitude	30°24'16.96'N
Longitude	35°32'8.67'E
Start	Nabataean
End	Byzantine
Description	Site 225.
References	MacDonald (2016).

ObjID	Site 385
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°24'26.19'N
Longitude	35°29'20.81'E
Start	Nabataean
End	Byzantine
Date Explanation	Not Roman
Description	MacDonald Site 353.
References	MacDonald (2016).

ObjID	Site 386
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°24'34.31'N
Longitude	35°30'3.51'E
Start	Nabataean
End	Byzantine
Description	Site 351.
References	MacDonald (2016).

ObjID	Site 387
Site Name	Baja
Site Type	Settlement
Latitude	30°24'39.33'N
Longitude	35°27'1.82'E
Start	Nabataean

End	Byzantine
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 388</b>
Site Name	Al- Heleen
Site Type	Settlement
Latitude	30°24'5.25"N

Longitude	35°28'50.03'E
Start	Nabataean
End	Byzantine
Date Explanation	Not Roman
Description	MacDonald Site 356.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 389</b>
Site Name	Road Section
Site Type	Road
Latitude	30°2'45.44"N
Longitude	35°27'39.19"E
Start	Unspecified
End	Unspecified
Description	'This appears to be a major roadway that runs N- S in what is now a cultivated and wheat growing area. Curb stones are clearly visible for more than 200 m, and the roadway runs immediately to the W of Kh. ar-Rasif, a fort and associated watchtower. The roadway is ca. 4 m wide and some of the paving stones are still in situ. However, it has been heavily damaged by field clearance associated with agriculture' MacDonald (2012).
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 390</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°24'51.25"N
Longitude	35°36'38.21"E
Start	Nabataean
End	Roman
Description	MacDonald Site 269.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 393</b>
Site Name	Abu al-Lasan
Site Type	Settlement
Latitude	30°2'48.51"N
Longitude	35°29'37.57"E
Start	Nabataean
End	Byzantine
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 391</b>
Site Name	Kh. al-Bageedra
Site Type	Settlement
Latitude	30°24'57.56"N
Longitude	35°29'35.40"E
Start	Nabataean
End	Roman
Description	Site 312.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 394</b>
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°24'8.59"N
Longitude	35°29'6.98"E
Start	Nabataean
End	Roman
Description	MacDonald Site 355.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 392</b>
Site Name	Kh. Aswayeh
Site Type	Settlement
Latitude	30°24'8.28"N
Longitude	35°32'8.77"E
Start	Roman
End	Byzantine
Description	MacDonald Site 22.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 395</b>
Site Name	Unnamed Caravanserai
Site Type	Road Station/ Caravanserai
Latitude	30°24'9.36"N
Longitude	35°30'11.73"E
Start	Nabataean
End	Roman
Description	MacDonald Site 346.
Dimensions	8 x 23 m.
References	MacDonald (2016).



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<b>ObjID</b>	<b>Site 396</b>
Site Name	Abu al-Lusun
Site Type	Settlement
Latitude	30°2'49.58'N
Longitude	35°29'38.68'E
Start	Nabataean
End	Byzantine
Description	'This is another large, impressive, and heavily damaged Site on an E-facing slope to the W of the modern village of Abu al-Lusun. The Site measures ca. 200 x 200 m. However, aerial photos and a full survey of the Site are needed to determine its exact dimensions. Many walls and wall lines are clearly visible throughout all segments of the Site. Many of these walls, constructed of roughly-hewn stone, still stand at least 1 m high. Some of the rooms/buildings have been 'cleared.' There appears to be, in the W portion of the Site, a passageway/roadway that cuts through it from N-S. A large, almost square cave is located at the NE segment of the Site. It has been dug into. There could be a spring and a cistern at the Site's W side. The reservoir associated with the spring measures ca. 5 x 5 m. The Site was probably an agricultural village in antiquity. It is a good candidate for excavation' MacDonald (2012).
Picture	APAAME_20151006_RHB-0255. Photographer: Robert Bewley. Courtesy of APAAME.
References	MacDonald (2012); Musil (1908), 230; Glueck (1935), 62-63 (his Site no. 39); Bisheh (1993), 126.



<b>ObjID</b>	<b>Site 397</b>
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°2'5.15'N
Longitude	35°26'37.89'E

Start	Roman
End	Byzantine
Date Explanation	Late Roman and Byzantine sherds.
References	Mega-Jordan.

ObjID	Site 398
Site Name	Kh. al-Ghuzlan
Site Type	Settlement
Latitude	30°2'50.52'N
Longitude	35°30'35.10'E
Start	Nabataean
End	Byzantine
Description	'This site, in an area measuring ca. 75 (N - S) x 100 (E-W) m, is in a mostly damaged condition. There is a farm building on it and the property is owned by a Bedouin who lives in a tent immediately to its N. The building is in two segments. One segment is in the form of an Ottoman farm house, while the other is made of cement. The older building is mostly roofless, but some of the cement and the railway tracks, used as roofbeams, are still in place. There are many wall lines, most at ground level, throughout the Site. They are made from roughly-hewn stone and are two courses thick. Illicit digging indicates deposition of at least 1 m. The modern enclosures and field walls at the Site are probably made from materials of ancient buildings. 'Ayuun al-Ghuzlan is located immediately down the slope to the E. There appears to be an abundant source of water for the present inhabitants of the area. The Site was probably an agricultural village, well-situated to take advantage of the springs in the area' MacDonald (2012).
References	MacDonald (2012).

ObjID	Site 399
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°2'51.55'N
Longitude	35°26'59.58'E
Start	Byzantine
End	Byzantine
Description	'This is probably another agricultural village Site. The structures at it are made from very roughly-hewn chert blocks. In addition, wall lines, running both E-W and N-S, can be followed throughout the Site. A depression in the middle of the Site could be a courtyard and/or open space. Digging at the NW segment of the Site indicates deposition of at least 1 m. It could be a tomb. A stone pile to the W may be an associated watchtower. there was a Bedouin tent nearby to the S' MacDonald (2012).
References	MacDonald (2012).

ObjID	Site 400
Site Name	Kh. Umm Hayyaneh
Site Type	Settlement
Latitude	30°25'2.66'N
Longitude	35°32'47.45'E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 229.
References	MacDonald (2016).

ObjID	Site 402
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°25'28.96'N
Longitude	35°29'28.26'E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 306.
References	MacDonald (2016).

ObjID	Site 401
Site Name	Enclosed cistern
Site Type	Waterpoint
Latitude	30°25'20.32'N
Longitude	35°32'8.27'E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 247.
References	MacDonald (2016).

ObjID	Site 403
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°25'30.77'N
Longitude	35°31'40.68'E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 251.
References	MacDonald (2016).

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ObjID	Site 404
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°25'31.25"N
Longitude	35°31'40.84"E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 251. Fortified settlement.

References	MacDonald (2016).
ObjID	Site 405
Site Name	Arja
Site Type	Settlement
Latitude	30°25'33.82"N
Longitude	35°35'51.60"E
Start	Nabataean
End	Roman
References	Mega-Jordan.

ObjID	Site 406
Site Name	Tahyet Umm al-Qubur
Site Type	Structure
Latitude	30°25'37.31"N
Longitude	35°30'24.88"E
Start	Nabataean
End	Byzantine
Description	Site 262. Complex of structures apparently related to the <i>Via Nova Traiana</i> . Perhaps defensive purposes.
References	MacDonald (2016).

ObjID	Site 407
Site Name	Hayyid
Site Type	Settlement
Latitude	30°2'54.91"N
Longitude	35°28'56.59"E
Start	Roman
End	Byzantine
Description	'This site is located to the W of the modern Desert Highway and down the side of the escarpment from Ras an-Naqb. The Department of Antiquities of Jordan surveyed it in 1992 as part of its investigation of Site s associated with the road alignment from Ras an-Naqb to al-Aqaba (Bisheh (1993), 120- 21). Members of the department excavated it in 1995 (Waheeb (1996), 345). Waheeb, the Site's excavator, described it as being 'characterized by many building remains belonging to a large settlement:' Among the structures he excavated were a 'tower;' 'southern buildings;' and 'terraces' whose 'function was to collect run-o water by using stone walls' (Waheeb (1996), 345). He dated the structures and terraces to the Byzantine period (Waheeb (1996), 345). Despite these previous investigations, ARNAS team members collected sherds at the Site and took GPS readings so that our inventory of the Site s within the survey territory would be as complete as possible' MacDonald (2012).
References	Mega-Jordan; Glueck (1935), 65 (his Site 44); Graf (1983): 648-49; Bisheh (1993), 120-21; Waheeb (1996), 345.

ObjID	Site 408
Site Name	Kh. Maqdesum Suwan
Site Type	Settlement
Latitude	30°25'53.17"N
Longitude	35°30'38.21"E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 261.
References	MacDonald (2016).

ObjID	Site 409
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°26'28.11"N
Longitude	35°29'44.67"E
Start	Nabataean
End	Roman
Description	MacDonald Site 215
References	MacDonald (2016).



<b>ObjID</b>	<b>Site 410</b>
Site Name	Kh. Bir Khidad
Site Type	Settlement
Latitude	30°26'29.80'N
Longitude	35°32'34.01'E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 254. Major town.
References	MacDonald (2016).
Picture	APAAME_20090930_SES-0050. Photographer: Stafford Smith. Courtesy of APAAME.

<b>ObjID</b>	<b>Site 411</b>
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°26'40.18'N
Longitude	35°29'20.48'E
Start	Roman
End	Byzantine
Description	Site 213.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 412</b>
Site Name	Unnamed cistern
Site Type	Waterpoint
Latitude	30°26'42.31'N
Longitude	35°34'13.21'E
Start	Nabataean

End	Byzantine
Description	MacDonald Site 236. Probably defensive.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 413</b>
Site Name	Jebel el-Bakra II
Site Type	Tower
Latitude	30°26'42.99'N
Longitude	35°25'54.04'E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 414</b>
Site Name	Unnamed Structure
Site Type	Structure

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Latitude	30°26'45.36"N
Longitude	35°34'7.01"E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 236. Probably defensive.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 415</b>
Site Name	Jebel el-Bakra
Site Type	Tower
Latitude	30°26'49.80"N
Longitude	35°26'3.10"E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 416</b>
Site Name	Kh. Al-Teen
Site Type	Structure
Latitude	30°26'5.61"N
Longitude	35°32'50.20"E
Start	Nabataean
End	Roman
Description	MacDonald Site 255. Could have provided a defensive function.
Dimensions	41 x 51 m.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 417</b>
Site Name	Kh. Um Suwwana
Site Type	Road Station/ Caravanserai
Latitude	30°26'59.46"N
Longitude	35°30'59.36"E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 295.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 418</b>
Site Name	Road Section <i>Via Nova Traiana</i>
Site Type	Road
Latitude	30°27'11.33"N
Longitude	35°31'6.15"E
Start	Roman
End	Roman
Description	MacDonald Site 295.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 419</b>
Site Name	Road Section <i>Via Nova Traiana</i>
Site Type	Road
Latitude	30°27'14.53"N
Longitude	35°31'47.04"E

Start	Roman
End	Roman
Description	MacDonald Site 298
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 420</b>
Site Name	Kh. al-Kur
Site Type	Settlement
Latitude	30°27'24.07"N
Longitude	35°29'54.85"E
Start	Nabataean
End	Roman
Description	MacDonald Site 215.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 421</b>
Site Name	Road Section <i>Via Nova Traiana</i>
Site Type	Road
Latitude	30°27'24.82"N
Longitude	35°31'48.95"E
Start	Roman
End	Roman
Description	MacDonald Site 297
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 422</b>
Site Name	Kh. al-Rafaha
Site Type	Settlement
Latitude	30°27'26.27"N
Longitude	35°33'13.66"E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 256.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 423</b>
Site Name	Kh. Hawala
Site Type	Settlement
Latitude	30°27'38.62"N
Longitude	35°30'31.74"E
Start	Nabataean
End	Roman
Description	MacDonald Site 293.
References	MacDonald (2016).

<b>ObjID</b>	<b>Site 424</b>
Site Name	Ghnaema
Site Type	Settlement
Latitude	30°27'44.20"N
Longitude	35°31'26.09"E
Start	Roman
End	Byzantine
Description	MacDonald Site 294
References	MacDonald (2016).

ObjID	Site 425
Site Name	Spring
Site Type	Waterpoint
Latitude	30°27'47.67"N
Longitude	35°29'57.22"E
Start	Unspecified
End	Unspecified
Description	MacDonald Site 217.
References	MacDonald (2016).

ObjID	Site 426
Site Name	Kh. al-Iraq Junubiya
Site Type	Settlement
Latitude	30°27'50.77"N
Longitude	35°29'54.54"E

Start	Roman
End	Byzantine
Description	MacDonald Site 274.
References	MacDonald (2016).

ObjID	Site 427
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°27'55.82"N
Longitude	35°31'32.40"E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 296.
References	MacDonald (2016).

ObjID	Site 428
Site Name	Temporary Camp
Site Type	Temporary camp
Latitude	30°2'8.93"N
Longitude	35°30'45.59"E
Start	Roman
End	Roman
Description	'This site is unique in the sense of its size and its constitution. It is an enclosure, which can be clearly seen from a distance coming from the SE. The enclosure itself measures ca. 45 m in diameter. It is 'indented' by four 'niches:' However, only the E-facing 'niche' has an associated 'paved'/ 'raised' platform of several centimetres high. What appears to be a gate or some form of opening was noted in the feature's NE segment. Furthermore, there is a shallow ditch in its SE quadrant. There are other features, which appear to be graves, within the structure. A wall line leads from the enclosure to the S. Was the enclosure a corral and/or a cemetery?' MacDonald (2012).
References	MacDonald (2012).

ObjID	Site 429
Site Name	Qasr enn-Mala
Site Type	Fortress
Latitude	30°28'1.13"N
Longitude	35°24'12.52"E
Start	Nabataean
End	Roman
Description	This fort lies beyond the limits of Wadi Araba in the foothills of the esh-Shera mountain range. The Site is a rectangular structure ca. 16 x 21 m, with massive walls of dressed stone (average stone size is ca. 0.45 x 0.60 x 0.30 m).
References	Mega-Jordan.

ObjID	Site 430
Site Name	Maqdas
Site Type	Settlement
Latitude	30°28'1.43"N
Longitude	35°30'35.92"E

Start	Roman
End	Byzantine
Date Explanation	Late Roman
References	Mega-Jordan.



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ObjID	Site 431
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°28'13.33"N
Longitude	35°18'10.68"E
Start	Roman
End	Byzantine
Relative location	Wadi Araba
Description	"The Site consists of a collapsed tower (ca. 5.50 x 5.50 m) and an L-shaped structure ca. 6 m to the north. The largely ruined tower is mostly buried under sand. Its west and north walls, however, are partially visible, as well as the southwest corner. Its walls are two courses wide (ca. 0.60 m) with rubble fill of dressed limestone blocks. The structure to the north has only its northern (ca. 4.20 m in length) and western (ca. 5.70 m in length) walls partially preserved. These are massive walls measuring three courses wide (ca. 1.30 m). A cemetery of ca. 13 graves lies 66 m northwest of these structures' Parker and Smith (2014).
References	Parker and Smith (2014).

ObjID	Site 432
Site Name	Rujm al- Mentar
Site Type	Tower
Latitude	30°28'2.32"N
Longitude	35°30'31.44"E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 278.
References	MacDonald (2016).

ObjID	Site 433
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°28'37.44"N
Longitude	35°34'12.76"E
Start	Nabataean
End	Byzantine
Description	MacDonald Site 301.
References	MacDonald (2016).

ObjID	Site 434
Site Name	Ishra/Shammakh
Site Type	Settlement
Latitude	30°29'16.09"N
Longitude	35°30'47.92"E
Start	Nabataean
End	Byzantine
Date Explanation	From Iron Age to Modern
Description	MacDonald Site 300.
References	Mega-Jordan.; MacDonald (2016).

ObjID	Site 438
Site Name	Kh. Umm ath-Thiba
Site Type	Settlement
Latitude	30°3'11.50"N
Longitude	35°28'28.12"E
Start	Roman

ObjID	Site 435
Site Name	Ayn Shammakh
Site Type	Waterpoint
Latitude	30°29'29.69"N
Longitude	35°30'44.39"E
Start	Unspecified
End	Unspecified
Description	MacDonald Site 299. Spring
References	MacDonald (2016).

ObjID	Unnamed Cistern
Site Name	Waterpoint
Site Type	30°30'46.50"N
Latitude	35°32'52.24"E
Longitude	Unspecified
Start	Unspecified
Similar Site s	Mega-Jordan.

ObjID	Site 437
Site Name	Negla
Site Type	Settlement
Latitude	30°30'54.51"N
Longitude	35°32'11.97"E
Start	Nabataean
End	Roman
References	Graf (1997a)

End	Byzantine
Description	“This is an extremely large site, measuring ca. 175 (N-S) x 100 (E-W) m, to the S of the modern village of Tasan and immediately W of the main paved road leading from this village to al Muraygha. It is presently divided by a small wadi into a larger segment to the N and a smaller one to the S. There are many ancient structures still standing at the Site. Moreover, there were many subsurface walls noted. Some of them have been rebuilt to serve as corrals and/ or windbreaks. However, they appear to be built on the footprints of the pervious remains. Many of the large stones comprising the remnants of standing structures are chert, while others are limestone. The walls that they constitute are often two courses thick with rubble in between. This is a very common building technique for ancient structures within the survey area. What appears to be a perimeter wall was noted along the Site’s S side. Moreover, there are cleared areas and what seem to be passageways/ roadways. Perhaps the village had a specific design? When the Site is viewed from the S, it appears to be ca. 4 m high. Thus, another impressive Site, an agricultural village Site in antiquity. It ought to be excavated to determine its plan. This could be accomplished without a great deal of stone removal, since there is not a great deal of stone rubble within its structures’ MacDonald (2012).
Modern Disturbance	A modern cinder-block house was built immediately to the NE of the Site. Moreover, the owner/builder lives in a Bedouin tent nearby.
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 439</b>
Site Name	Unnamed Castrum
Site Type	Fortress
Latitude	30°31’27.83’N
Longitude	35°40’13.87’E
Start	Roman
End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 440</b>
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°31’44.87’N
Longitude	35°32’21.61’E
Start	Roman
End	Byzantine
Date Explanation	Late Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 441</b>
Site Name	Unnamed Fort
Site Type	Fort
Latitude	30°3’22.09’N
Longitude	35°29’30.58’E
Start	Roman
End	Byzantine
Description	“This is a large Site, measuring ca. 40 x 40 m, in a low-lying plain in what is now an isolated area. The Site has received damage from bulldozer activity, associated especially with road construction and maintenance. The walls of the Site’s structure are made from chert blocks that are roughly, if at all, hewn. Although there is a great deal of wall tumble, the walls on its S side are ca. 4 m above the present-day roadway and on the E side they are clear of tumble and are several courses high. What appears to be a perimeter wall is located on the N side of the structure. Road construction could have destroyed a great deal of it. In general, the walls measure ca. 0.50- 0.75 m in width and are constructed of two rows of stones. The central area of the structure is clear of rubble and it is possible that there is some good deposition here. What appears to be a large watchtower (?) is located to the S, at ca. 150 m. It may be associated with the main structure, which may, indeed, be a fort. The tower stands ca. 3- 4 m above the surrounding terrain and is at least 10 x 10 m at its base. It has been illicitly excavated. A fragment of a hand-grinding stone was noted. It is not made of the usual basalt but of a white-coloured stone. The Site is a good candidate for excavation because it may save it from more damage and there may be good outlines of what was an Iron Age II fort’ MacDonald (2012).
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 442</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°32’49.25’N
Longitude	35°32’17.49’E

Start	Roman
End	Byzantine
Date Explanation	Late Roman
References	Mega-Jordan.

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<b>ObjID</b>	<b>Site 443</b>
Site Name	Kh. Tasan
Site Type	Settlement
Latitude	30°3'29.22'N
Longitude	35°27'56.51'E
Start	Byzantine
End	Byzantine
Description	'This khirbat is located on an E-facing slope in the modern village of Tasan. The area from which we took our pottery sample measures ca. 30 x 30 m. The ancient Site is almost completely destroyed. The damage has been caused by bulldozing associated with house construction, the modern houses and farm buildings that now are on it, and the activity of illicit digging. It is probable that the modern structures cover any ancient remains. Moreover, it is evident that the farm buildings incorporate materials from more ancient structures. The places of illicit digging at the Site indicate that there is at least 1- 2 m of deposition. Moreover, this digging shows interior walls that are constructed of roughly hewn stone. A fragment of basalt was noted but not collected. 'Ayn Tasan is located down the slope to the NE of the area from which we collected pottery. Moreover, a Bedouin tent was erected immediately to the W of where we surveyed' MacDonald (2012).
References	MacDonald (2012); Glueck (1935), 67 (his Site no. 54; 'Kh. and 'Ain Tasan'); Kirkbride (1948), 152 (map where he designates the location of a spring).
Picture	APAAME_20101017_DDB-0081. Photographer: Don Boyer. Courtesy of APAAME.



<b>ObjID</b>	<b>Site 444</b>
Site Name	Alaweh
Site Type	Tower
Latitude	30°3'30.56'N

Longitude	35°27'58.64'E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 445</b>
Site Name	Kh. 'Alawa
Site Type	Settlement
Latitude	30°3'32.85'N
Longitude	35°25'55.42'E
Start	Roman
End	Byzantine
Description	'This is a very large and impressive Site, measuring ca. 100 (N- S) x 30 (E-W) m, located on an E-facing slope just to the W of a small wadi. There are remnants of many structures, probably former dwellings, on different levels. Their outlines can be easily detected and, thus, the Site is an excellent candidate for excavation. The walls of these structures are made of both finely-hewn and roughly-hewn limestones. Some of their stones are ca. 0.75 m long and 0.25 m wide. There is a 'modern' farm building at the highest level of the Site. It is presently roofless and, if used at all, is probably used for farming purposes. What appears to be a 'roadway' leads up the slope on the S side of the Site. Additionally, there may be 'roadways' along the slope, i.e., going E to W Terrace walls are evident on both the E and W sides of the small wadi down slope from the structures. There is a cultivated field, barren immediately to the S of the Site' MacDonald (2012).
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 446</b>
Site Name	Abu el-Basal
Site Type	Tower
Latitude	30°33'35.07'N
Longitude	35°34'32.99'E

Start	Unspecified
End	Unspecified
Date Explanation	Nabataea pottery.
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 447</b>
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°3'39.33'N
Longitude	35°30'27.12'E
Start	Roman
End	Byzantine
Description	'This is a large site, measuring ca. 200 (N-S) x 150 (E-W) m. A wadi divides it into two parts. The Site is located within the NW quadrant of RS 94, Zone 3- On the E-facing slope of the Site, there are a couple of prominent structures. One measures ca. 5 (N-S) x 9 (E-W) m, while the other measures ca. 6 (N- S) x 7 (E-W) m. Both are made from roughly-hewn or unhewn stones, some of which measure more than 1 m long. Collapse within the structures indicates deposition of at least 1 m. There are two large enclosures up the slope to the SW They too are roughly constructed. On the Site's W-facing slope, the remnants of a number of structures, probably dwellings, are located. They too are made of the same construction technique as those on the opposite slope. One large, mostly-destroyed structure, at the northern extremity of this segment of the Site is made of huge, roughly-hewn blocks as its W wall. Its N wall is formed, for the most part, by bedrock. Its other walls are mostly missing. Up the slope to the E, there is what appears to be a platform whose function was probably for erosion control. Still farther to the NE is a structure, measuring ca. 15 x 15 m, perhaps the best-preserved one at the Site, which appears to be a watchtower. Five courses of its walls are preserved on two sides and one interior wall measures ca. 2.50 m wide. What appears to be a Bedouin animal enclosure is attached to it on the E. There is illicit digging within it. Erosion has likely caused a great deal of the damage to the Site. There is the likelihood that a road in the wadi divided the Site's two segments. The Site was most probably an agricultural village' MacDonald (2012).
Modern Disturbance	Illicit digging, Bedouin animal enclosures.
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 448</b>
Site Name	Dajaniya
Site Type	Fort
Latitude	30°33'9.50'N
Longitude	35°45'42.82'E

Start	Byzantine
End	Byzantine
Date Explanation	300 - 640
Relative location	15 km NE of Al-Jarba

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<b>ObjID</b>	<b>Site 449</b>
Site Name	Umm Nasra
Site Type	Settlement
Latitude	30°3'45.95"N
Longitude	35°23'30.71"E
Start	Roman
End	Byzantine
Description	'This is a very impressive agricultural village. It measures ca. 300 (N- S) x 200 (E-W) m and is constituted of dozens of buildings and the foundations of additional structures. Two modern farm buildings, with doors closed, are on the Site. There is a third modern farm building without a roof. A circular structure is roofless but its walls stand ca. 2 m high. It looks recent. All these structures are made from small to medium-size stones, while the remnants of other and, seemingly, older buildings are constructed of much larger ones. The walls of some of these structures still stand ca. 2 m high and are made from a greyer-coloured stone, while those of the modern buildings are constructed from a sand-coloured limestone. Many enclosures at the Site are used as animal corrals. There are many additional circular structures at the Site that appear to be water catchment and/or winnowing areas. Their floors are bedrock that has been quarried to make a level area. There are many depressions throughout the Site. Some of these are due to illicit digging, while others may be due to collapse. At least one appears to have been a cistern. An impressive quarry is located immediately at the NW segment of the Site. The entrance to the Site may have been from the SE or from the present asphalt road. Here, there is a line of large stones, some standing on end, which could indicate the border of the village. But these stones could also have served to channel water to the water catchment areas and/or to the cistern. This site is a very good candidate for excavation, since it probably represents architecture from several different periods' MacDonald (2012).
Modern Disturbances	Illicit digging.
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 450</b>
Site Name	Kh. Bir Turki
Site Type	Settlement
Latitude	30°3'46.43"N

Longitude	35°26'47.86"E
Start	Byzantine
End	Byzantine
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 451</b>
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°3'49.73"N
Longitude	35°24'55.17"E
Start	Nabataean
End	Byzantine
Description	'This site appears to be another agricultural village/hamlet. It measures ca. 100 (N-S) x 60 (E-W) m and consists of two segments on two small hills, separated by a saddle and a small wadi. The hilltop on the SE has small enclosures, which appear to be too small for animal corrals. They could have been used as windbreaks and/or seasonal living quarters. We were not able to find any pottery associated with them. The structures on the NW hill are much more extensive and they do have associated pottery. Here, the walls of three small contiguous structures still stand over 2 m high. They have doorways and in one instance there is a threshold, in situ, and a lintel, not in situ, in one of them. There is also evidence of mud plaster on the interior walls of one. In addition, there are several enclosures with associated red soil, which appear to be more recent. Several wall lines were noted at the Site and flood-control check dams are located in a small nearby wadi. In addition, a large wadi and 'Ayn Khalil are located to the NE of the Site' MacDonald (2012).
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 452</b>
Site Name	Rujm Khalil
Site Type	Settlement
Latitude	30°3'58.89"N

Longitude	35°25'12.23"E
Start	Roman
End	Roman
References	MacDonald (2012).

ObjID	Site 453
Site Name	Unnamed Fortlet
Site Type	Fortlet
Latitude	30°3'59.23'N
Longitude	35°24'30.92'E
Start	Roman
End	Byzantine
Description	'This site, which measures ca. 30 (N- S) x 20 (E-W) m, is badly destroyed by erosion, field clearance, and the building of animal corrals. It overlooks a deep wadi to the N and 'Ayn Khalil to the NE. Thus, it could have served as a watchtower or small fort associated with the water resources of the area. The main structure at the Site measures ca. 7 (N- S) x 17 (E-W) m. The remnants of its still-intact walls are two courses or 1 m wide. The exterior of its NE-facing walls is exposed to ca. 1.50 m high and some of its stones are ca. 1 m long. There are also circular structures at the Site's W and N sides. They are probably more recent than the above-described structure and are most likely animal pens. Shepherds were in the area and a poor crop of wheat was growing in some of the nearby fields' MacDonald (2012).
References	MacDonald (2012).

ObjID	Site 454
Site Name	Unnamed Caravanserai
Site Type	Road Station/ Caravanserai
Latitude	30°3'6.66'N
Longitude	35°26'28.26'E
Start	Nabataean
End	Byzantine
Description	'This site, in an area of ca. 20 x 20 m, consists of two structures that are separated by a dirt roadway. However, the present road may also be the path of a former one. The structure, on the E side of the road, appears to be used, but it was empty and open. A winnowing area is nearby. The other, on the W side of the road, is mostly destroyed. Its walls still stand ca. 1 m high and it is divided into two segments. Relative to the road, there appears to be paving and curb stones just to the N of the structures. It is not possible to ascertain whether the roadway goes S or SW from the structures. The Site is presently a farm, but it may have served a different function in antiquity. For example, it may have been a way station on an ancient road. Wheat was growing in nearby fields' MacDonald (2012).
References	MacDonald (2012).

ObjID	Site 455
Site Name	Unnamed Cistern
Site Type	Waterpoint
Latitude	30°37'28.02'N
Longitude	35°29'33.72'E
Start	Roman
End	Roman
Relative location	Faynan.
References	Mega-Jordan.

ObjID	Site 456
Site Name	Faynan
Site Type	Settlement
Latitude	30°37'38.65'N
Longitude	35°29'36.78'E
Start	Roman
End	Roman
References	Mega-Jordan.

ObjID	Site 457
Site Name	Hamra
Site Type	Settlement
Latitude	30°37'4.13'N
Longitude	35°27'37.21'E
Start	Nabataean
End	Byzantine
References	Mega-Jordan.

ObjID	Site 458
Site Name	Kh. el Qadeseyeh
Site Type	Fortress
Latitude	30°38'56.11'N
Longitude	35°38'12.66'E
Start	Nabataean
End	Byzantine
References	Mega-Jordan.



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<b>ObjID</b>	<b>Site 459</b>
Site Name	Unnamed Cistern
Site Type	Waterpoint
Latitude	30°38'59.38'N
Longitude	35°23'36.55'E
Start	Unspecified
End	Unspecified
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 460</b>
Site Name	Hamra Ifdan
Site Type	Settlement
Latitude	30°39'41.14'N
Longitude	35°23'33.44'E

Start	Nabataean
End	Byzantine
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 461</b>
Site Name	Ata'ita
Site Type	Fortress
Latitude	30°40'7.82'N
Longitude	35°39'26.61'E
Start	Roman
End	Byzantine
Date Explanation	Late Roman.
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 462</b>
Site Name	Unnamed Caravanserai
Site Type	Road Station/ Caravanserai
Latitude	30°4'2.25'N
Longitude	35°21'43.53'E
Start	Nabataean
End	Byzantine
Date Explanation	Not Roman.
Description	'This site is located on the W side of the road along Wadi Bir Hamad. It is not a very impressive one. However, it consists of at least two small structures on a small hill. One structure at the E side of the Site measures only ca. 2 x 2 m. It is difficult to determine the size of the structure on the Site's W side, but one wall measures ca. 3 m long. The walls of both structures are made from roughly-hewn stone. Up the slope to the W, there is a wall that appears to form a platform. Its function is unknown but may have had something to do with erosion control. The entire Site may have had something to do with the traffic that passed through the wadi' MacDonald (2012).
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 463</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°4'2.72'N
Longitude	35°27'22.93'E
Start	Byzantine
End	Byzantine
Description	'This site, which measures ca. 20 x 20 m, is located on a small rise in an area where there was a Bedouin family living. The main component of the Site is what appears to be a watchtower that measures ca. 12.5 x 12.5 m. It is made from unhewn chert blocks. The highest point of the structure is ca. 3 m above the surrounding ground level and one NE-facing wall, exposed by the construction of a shepherds' windbreak, is exposed for ca. 1.50 m. The interior of the watchtower is now filled with rubble' MacDonald (2012).
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 464</b>
Site Name	Kh. 'Iyal 'Ali
Site Type	Settlement
Latitude	30°4'28.80'N
Longitude	35°27'12.88'E
Start	Nabataean
End	Byzantine

Description	‘This site, on E- and SE-facing slopes and measuring ca. 75 (N-S) x 50 (E-W) m, is badly damaged due to illicit digging and the reuse of building material for the Ottoman-style buildings that are presently its main feature. This is evident from the incorporation of finely-hewn stone into more recent structures that are comprised, for the most part, of roughly-hewn stone. These structures are presently used for storage and the penning of animals, i.e., sheep and goats. An interesting feature was the used of finely-hewn stone as the door frames and lintels of these buildings. Moreover, some of these structures still have in situ arches. The illicit digging is throughout the Site. One ‘excavated’ room, up to a depth of ca. 1 m, had a great deal of broken pottery in its robbed material. We collected ceramics from one such room separately. What appear to be more ancient walls lines and the remnants of buildings - possibly small rooms are in the Site’s southern segment. In fact, throughout the Site, more recent walls are built on the footprints of older structures. Caves are present throughout and one of them appears to be part of a water-catchment system. Basalt fragments were noted but not collected. Finally, a Bedouin family is living at the site’ MacDonald (2012).
Modern Disturbance	Bedouin animal sheds.
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 465</b>
Site Name	Unnamed Caravansera
Site Type	Road Station/ Caravansera
Latitude	30°4’3.08’N
Longitude	35°31’49.78’E
Start	Nabataean
End	Byzantine
Description	‘This site is another rectilinear structure, measuring ca. 10 (N-S) x 5 (E-W) m, along the Khatt Shebib, in fact, it abuts the wall, which can be seen ‘climbing’ the hill to the S, on the W. An enclosure is attached to it on the E. The two need not be contemporaneous. The walls of both features are mostly rubble, as is the Khatt Shebib at this point. There is collapse within the Site’s main structure, which appears to be divided into two compartments, and, therefore, there may be some deposition. The line of the Khatt Shebib is not clearly visible to the N of the Site’ MacDonald (2012).
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 466</b>
Site Name	Kh. Baridiyeh
Site Type	Settlement
Latitude	30°4’36.96’N
Longitude	35°26’34.83’E
Start	Roman
End	Byzantine
Description	‘This is probably another agricultural village. It is located on an E-facing slope in a wheat growing area. The Site has been damaged, especially on its S and W sides, by field clearance. It measures ca. 45 (N-S) x 50 (E-W) m and the depth of deposition may be as much as 1 m. Two stone buildings, abandoned, are at the Site. They are multi-roomed and have farm yards that probably serve as corrals. One of these buildings is roofless in part and the other has well-built arches within. These buildings are probably made from stones, e.g., a lintel, from more ancient structures. The older segments of the Site indicate structures of multi-rooms/compartments. The remnants of buildings are comprised of both hewn and unhewn stones. Their walls are often two courses wide with rubble in between. These walls have squared exteriors and interiors. There are modern circular-built tombs on the Site’s W side. A collapsed cistern is located behind the structures’ MacDonald (2012).
References	Graf (1997a); MacDonald (2012); Glueck (1935), 69.

<b>ObjID</b>	<b>Site 467</b>
Site Name	Kh. Khalil
Site Type	Structure
Latitude	30°4’4.08’N
Longitude	35°25’23.94’E

Start	Byzantine
End	Byzantine
Description	Administrative centre?
References	MacDonald (2012).

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ObjID	Site 468
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°4'47.37'N
Longitude	35°26'13.57'E
Start	Nabataean
End	Byzantine
Description	'This site, which is immediately E of the King's Way and actually borders it, consists of one main structure, which measures ca. 14 (E- W) x 9 (N-S) m, and caves. The walls of the structure are well-built and there appear to be at least three divisions within it. They are ca. 0.75 m wide and their stones are hewn on the exterior. At the structure's NW corner the wall measures over 1 m high. There is a wall extending to the N from the middle of the main structure. Perhaps the entrance to the building was here? Three caves are located immediately to the N. The middle one had a wet floor. There is probably a weak spring here. The Site is possibly a watchtower along a main road going from N -S along the watershed in the mountainous area of the southern part of the Transjordanian Plateau' MacDonald (2012).
References	MacDonald (2012).

ObjID	Site 469
Site Name	Kh. el-Taiyineh
Site Type	Settlement
Latitude	30°4'48.81'N
Longitude	35°28'9.86'E
Start	Nabataean
End	Roman
References	Mega-Jordan.

ObjID	Site 473
Site Name	Dahal
Site Type	Settlement
Latitude	30°49'44.80'N
Longitude	35°22'46.93'E
Start	Nabataean
End	Byzantine
References	Mega-Jordan.

ObjID	Site 470
Site Name	HASSIYA
Site Type	Road Station/ Caravanserai
Latitude	30°45'3.25'N
Longitude	35°24'20.81'E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

ObjID	Site 474
Site Name	Telah
Site Type	Road Station/ Caravanserai
Latitude	30°49'45.80'N
Longitude	35°24'39.79'E
Start	Roman
End	Roman
References	Mega-Jordan.

ObjID	Site 471
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°4'58.02'N
Longitude	35°21'27.44'E
Start	Roman
End	Byzantine
References	MacDonald (2012).

ObjID	Site 475
Site Name	Telah
Site Type	Fortress
Latitude	30°49'46.41'N
Longitude	35°24'42.76'E
Start	Roman
End	Roman
References	Mega-Jordan.

ObjID	Site 472
Site Name	Telah
Site Type	Settlement
Latitude	30°49'38.54'N
Longitude	35°24'33.72'E
Start	Roman
End	Roman
References	Mega-Jordan.

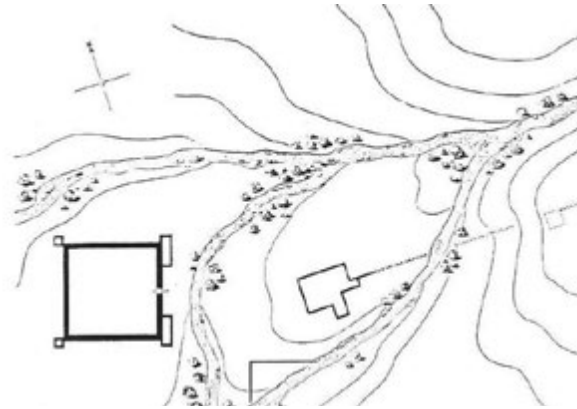
ObjID	Site 476
Site Name	Cisterns
Site Type	Waterpoint
Latitude	30°49'47.16'N
Longitude	35°24'40.72'E
Start	Roman
End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 477</b>
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°5'1.76'N
Longitude	35°21'28.67'E
Start	Roman
End	Byzantine
Description	<p>'This site consists of at least two major segments: 1) This segment, located on a very high hill above and to the W of Wadi Bir Hamad, consists of a series of badly-preserved structures in an area measuring ca. 10 (N-S) x 20 (E- W) m. Some of the structures are circular but appear to be too small for animal pens. Thus, they may have served as windbreaks. Wall lines, at ground level, can be followed at different parts of the Site. Several illicit 'excavations' were noted. This segment of the Site would have been ideal to monitor traffic in Wadi Bir Hamad and especially the water resources nearby. The second segment of the Site is located to the W of the first. It is much more impressive and consists of a large number of structure remnants spread over an area of at least 100 (N - S) x 40 (E- W) m. Here, the architecture is almost monumental because of the large, mostly unhewn stones that constitute many of the remaining walls, some of which still stand 2 m high. The structures are on a slope and at different levels. Their interiors are generally clear of rubble and some of them appear to be used as animal pens. Moreover, additional animal pens have been constructed from their building materials. One large cave, at the SW side of the Site, has evidence of burning within it. There is a second cave, with a well-built entrance, on the slope in the NW segment of the Site. In addition, there are a number of enclosures at the high point of the Site. At least two of them have flagstones for flooring and give the impression that they served as winnowing areas. There are many stone piles in the area surrounding the Site. This is indicative of some agricultural activity. However, the area was devoid of crops. It appears that this was another agricultural village/hamlet in the Wadi Bir Hamad region' MacDonald (2012).</p>
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 478</b>
Site Name	Caravanserai
Site Type	Road Station/ Caravanserai
Latitude	30°5'10.83'N
Longitude	35°12'13.77'E

Start	Unspecified
End	Unspecified
Relative location	Gharandal (?)
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 479</b>
Site Name	Gharandal
Site Type	Fort
Latitude	30°5'11.59'N
Longitude	35°12'12.44'E
Start	Roman
End	Roman
Relative location	ca. 40 km from Petra. The fort stands on the alluvial fan issuing from the mouth of wadi Gharandal.
Description	Alt identified it with the <i>Not. Dig. Arieldela</i> . Square with projecting corner towers.
Dimension	Vary between 35 to 45 sqm.
Associated Features	Spring with palm trees 250 m up Wadi Gharandal. structure on a hill. Late Roman baths. Public buildings. Byzantine church.
Garrison	Cohors II Galatarum
References	Gregory (1997) 450-451; Musil (1907), 195, fig. 142; Frank (1934), 231; Glueck (1935), 39; Kennedy and Riley (1990), 207, figs 159, 160.
Pictures	APAAME_20141019_DLK-0418. Photographer: David Kennedy. Courtesy of APAAME. Plan (Musil 1908).



<b>ObjID</b>	<b>Site 480</b>
Site Name	Cisterns
Site Type	Waterpoint
Latitude	30°5'12.61'N
Longitude	35°12'12.59'E
Start	Nabataean
End	Nabataean
Relative location	Gharandal.
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 481</b>
Site Name	Unnamed Cistern
Site Type	Waterpoint
Latitude	30°5'14.42'N
Longitude	35°28'24.85'E

Start	Nabataean
End	Roman
Relative location	Suwaymirah.
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 482</b>
Site Name	Kh. Sabba
Site Type	Settlement
Latitude	30°5'14.58'N
Longitude	35°27'58.62'E
Start	Nabataean
End	Byzantine
Description	Defensive (?)/agricultural village above Kh. Al-Fardhakh.
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 483</b>
Site Name	Suwaymirah
Site Type	Settlement
Latitude	30°5'16.18"N
Longitude	35°28'26.30"E
Start	Roman
End	Byzantine
Description	'This is a very large Site, measuring ca. 160 (N-S) x 90 (E-W) m, located on a hill to the WSW of the modern village of Qurayn. Thus, it was a major village of the area before the modern one. Bulldozing has extensively damaged the Site. Moreover, it is apparent that the eight Ottoman -style buildings - roofless for the most part - still on the Site have used materials from structures of earlier periods. These buildings are abandoned, although some are still used for storage and the penning of animals. However, evidence of burning on the upper parts of some buildings indicates that they were probably used as camping areas as well. The buildings are of roughly-hewn stone with the incorporation of some finely-hewn stone, probably from earlier structures. One building had a stone spout that would have brought water from the roof to the ground level. This building had finely-cut stone, with latch holes in its doorposts; this material probably came from earlier-period structures. Passage through the village is facilitated by a bulldozer track, which may follow a street or path through the ancient-period habitation. The bulldozing has exposed a cave system. There is a continuous sherd scatter throughout the Site. However, a higher concentration is found at its N end, where there are seemingly recent tombs. It is apparent that there was once a spring below and to the NE of the Site, which is now dried up. The ancient Site, like the modern one, was probably an agricultural village. Material objects such as fragments of grinding stones and fragments of basalt were noted but not collected' MacDonald (2012).
References	Graf (1997a); MacDonald (2012); Glueck (1935),70 (his Site no. 73); Hart (1985).

<b>ObjID</b>	<b>Site 484</b>
Site Name	Kh. al-Juhayr
Site Type	Settlement
Latitude	30°5'17.63"N
Longitude	35°23'26.07"E
Start	Byzantine
End	Byzantine
Description	'This is yet another agricultural village. The Site measures ca. 89 (N-S) x 70 (E-W) m (6230 m2). There are the remnants of many ancient structures spread over a small hill in a valley. Some of the walls of the structures still stand 1 m high. There are doorways evident and one structure was evidently arched. We noted several depressions throughout the Site and thus indications that there is at least 1 m of deposition present. Some of these depressions could be the location of graves that are not necessarily contemporaneous with the structures that are made from medium-sized limestone, the walls of which are ca. 0.50 m wide. Enclosures at the Site indicate its recent (?) use as a place to pen animals. Moreover, there is evidence of former Bedouin encampments nearby and there were shepherds in the area. A deep, SW-flowing wadi is located to the Site's N. There were cultivated fields in the area but very little in the way of a wheat crop' MacDonald (2012).
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 485</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°5'18.51"N
Longitude	35°26'22.59"E

Start	Roman
End	Byzantine
Date Explanation	Late Roman and Byzantine sherds.
References	Mega-Jordan.



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<b>ObjID</b>	<b>Site 486</b>
Site Name	Kh. Abu Ra'id
Site Type	Settlement
Latitude	30°5'19.34'N
Longitude	35°22'31.73'E
Start	Roman
End	Byzantine
Description	'This is another farmstead or agricultural hamlet up a side wadi to the N of Wadi Bir Hamad. The site measures ca. 75 (N-S) x 150 (E-W) m and is located on a hill about mid-slope on the wadi's S side. There is one standing building, roofless. There is also what appears to be the beginning of the building of another structure. In addition, there are many enclosures throughout the Site. They are probably made from materials from older buildings. There is evidence of illicit digging at two places on the Site. This digging reveals a depth of deposition of at least 1 m. A cistern, which contained water, is in the site's NW segment. Channels lead into it. Several walls, at ground level, can be detected throughout the Site' MacDonald (2012).
References	MacDonald (2012).
<b>ObjID</b>	<b>Site 487</b>
Site Name	Rujm ar-Rasif
Site Type	Settlement
Latitude	30°5'19.76'N
Longitude	35°26'20.48'E
Start	Byzantine
End	Byzantine
Description	'This is probably another agricultural village. It measures ca. 70 (N- S) x 40 (E- W) m and is located on an E-facing slope. The Site appears to be divided into southern and northern segments, separated by what appears to be a bulldozer cut. The S segment, which now stands ca. 3 m above the surrounding wheat fields, is now primarily a pile of stones. However, it is possible to trace wall lines, especially along the perimeter of its W portion. The N segment of the Site consists of wall lines running E-W, giving the impression that they form a corridor. The site provides a wonderful view down the wadi to the E' MacDonald (2012).
References	MacDonald (2012); Glueck (1935), 73 (he calls this Site 'Kh. Er-Reseis').
Picture	APAAME_20101017_DDB-0101. Photographer: Don Boyer. Courtesy of APAAME.





<b>ObjID</b>	<b>Site 488</b>
Site Name	Bir Hamad Village
Site Type	Settlement
Latitude	30°5'22.02'N
Longitude	35°21'53.54'E
Start	Roman
End	Byzantine
Description	'This is the village of Abu Raid. The Site, which consists of about 30 structures and measures ca. 30 (N-S) x 120 (E-W) m, is on a slope above the well at Bir Hamad. Amore recent windmill, down the wadi to the N ca. 0.50 km, now pumps and stores water for the Bedouin of the region. There is a more modern building down the slope to the E of the village that used to be a school until the children of the area started to go to school in Dulagha. The structures comprising the village are the traditional farming buildings of southern Jordan. They are built of limestone with mud plaster on the interior walls. Some of the roofs use railway tracks as beams; others use poles. (This is the same for Kh. as-Shalala). Bir Hamad is located in the wadi below the Site. It still contains water that is potable' MacDonald (2012).
References	MacDonald (2012).
<b>ObjID</b>	<b>Site 489</b>
Site Name	Umm Ghanim South
Site Type	Settlement
Latitude	30°5'24.75'N
Longitude	35°26'49.51'E
Start	Byzantine
End	Byzantine



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Description	‘This site, which measures ca. 70 (N-S) x 90 (E-W) m, is located on a hilltop above wadis to the E and the S. The Site is impressive because of the remnants of structures, many of them rectilinear rooms and/or small buildings that measure ca. 3-4 m, still standing. Many of the walls of these structures are up to 1 m wide. Although there is a great deal of damage to the Site, many wall lines, made from stones that are as much as 1 m in length, are clearly visible. For example, one structure, at the Site’s NE corner, measures ca. 3.50 x 3.50 m. It is comprised of large stones and its W-exterior wall still stands over 1 m high. Its walls are comprised of two courses of stone with rubble in between. Both the exterior and the interior faces of the walls are squared to give the impression that the structure was a prominent one. It may have been a watchtower. Another structure, near and to the E of the one just described, has been robbed. The robber trench reveals 2 m of deposition. The bottom of the trench shows that bedrock had been hollowed out; thus, this structure may have been a tomb (?). Two caves were noted. One of these, on the E slope of the site, has a well-built facade, including a possibly reused lintel stone. The cave has been ‘excavated’ to bedrock and is 2 m high. The doorway to the second cave, located on the SE slope of the Site, was locked. It is probably used to store farm equipment. The top fragment of an olive press was noted and photographed. The wheat harvest was in progress. This site is a good candidate for excavation because of its impressive remnants’ MacDonald (2012).
References	MacDonald (2012).
Picture	APAAME_20101017_DLK-0245. Photographer: David Kennedy. Courtesy of APAAME.

<b>ObjID</b>	<b>Site 490</b>
Site Name	Umm Ghanim North
Site Type	Settlement
Latitude	30°5’31.82’N
Longitude	35°26’44.26’E
Start	Roman
End	Byzantine
Description	‘This site, measuring ca. 50 x 50 m, is located on a ridge and a S-facing slope in a wheat growing area. Clear wall lines are present in places on the Site, although there is a great deal of rock tumble. However, these walls are only one course high. There could very well be subsurface walls present. A number of enclosures, probably for penning animals, is located at the lower levels of the site. They are most likely constructed from the material of more ancient buildings. This is probably another agricultural village or hamlet’ MacDonald (2012).
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 491</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°5’34.11’N
Longitude	35°27’28.65’E

Start	Roman
End	Byzantine
Date Explanation	Late Roman and Byzantine sherds.
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 492</b>
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°5’34.41’N
Longitude	35°24’32.43’E
Start	Nabataean
End	Byzantine
Description	‘This is yet another large agricultural village. It is located on a N-facing slope with a spring/ well to its NE that was used by Bedouin of the region. The Site, which measures ca. 150 (N-S) x 75 (E-W) m, is presently comprised of the remains of dozens of structures. It appears that the Site has been damaged on all sides by bulldozing associated with field clearance for the growing of wheat. Many wall lines, some still standing ca. 0.50 m high, can be followed throughout the Site. They are constructed of roughly-hewn limestones that are in some cases ca. 1 m long and ca. 0.50 m wide. Several depressions within the Site indicate a depth of deposition of at least 1 m. Some of these could be tombs that are later than the main structures. At this Site, as is generally the case, there are ‘modern’ animal pens. There are indications that stairs(?) led from the Site down to the wadi to the N. This wadi is terraced, probably to prevent erosion. The Site is cut by a modern farm road, and to the SW of it there is a structure that is ca. 10 x 10 m. It is located in the middle of a cultivated area. A wall line, associated with this structure, is 3-4 courses high. Field clearance has probably destroyed some of it. The wheat crop in the neighbouring fields was poor. This site is a good candidate for excavation’ MacDonald (2012).
References	MacDonald (2012).

ObjID	Site 493
Site Name	Unnamed Structure
Site Type	Road Station/ Caravanserai
Latitude	30°5'36.12"N
Longitude	35°27'51.19"E
Start	Roman
End	Byzantine
Date Explanation	Late Roman and Byzantine pottery.
Relative location	1.5 km N of Suwaymirah.
Dimensions	17 x 45 m.
References	Graf (1997a).

ObjID	Site 494
Site Name	Kh. Sherfan
Site Type	Settlement
Latitude	30°5'37.03"N
Longitude	35°27'39.23"E
Start	Nabataean
End	Roman
References	Mega-Jordan.

ObjID	Site 495
Site Name	Sallam
Site Type	Tower
Latitude	30°5'37.49"N
Longitude	35°26'44.16"E
Start	Roman
End	Byzantine
Date Explanation	Roman and Byzantine sherds.
References	Mega-Jordan.

ObjID	Site 496
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°5'40.71"N
Longitude	35°26'44.05"E
Start	Roman
End	Byzantine
Date Explanation	Late Roman
References	Mega-Jordan.

ObjID	Site 497
Site Name	Qurein
Site Type	Fort
Latitude	30°5'43.60"N
Longitude	35°28'11.42"E
Start	Roman
End	Byzantine
Date Explanation	Late Roman and Byzantine sherds.
References	Graf (1997a).
Picture	APAAME_20081009_FFR-0386. Photographer: Francesca Radcliffe. Courtesy of APAAME.



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<b>ObjID</b>	<b>Site 498</b>
Site Name	Unnamed Cistern
Site Type	Waterpoint
Latitude	30°5'43.73'N

Longitude	35°28'13.73'E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 499</b>
Site Name	Unnamed Caravanserai
Site Type	Road Station/ Caravanserai
Latitude	30°5'43.81'N
Longitude	35°25'0.45'E
Start	Roman
End	Roman
Description	‘This is a badly damaged Site that measures ca. 40 (N-S) x 70 (E- W) mon a S-facing slope leading down to a small wadi. It too could be associated with the roadway mentioned in Site 138 and with its crossing of the wadi immediately below it to the SW It does not appear to be a farmstead and/ or agricultural hamlet. The Site extends to the wadi’s edge where there is evidence of a great deal of erosion. The main features of the Site appear to be divided into two segments. The E segment consists mostly of wall lines and enclosures/ corrals. The W segment consists of enclosures as well, but there are also the remnants of rectilinear structures. There are many wall lines visible. Moreover, many L-shaped stones, possibly associated with door jams, were noted. A few fragments of the remnants of a tabun were collected from the NE segment of this section of the Site. Collapse to the SW associated with the wadi may be the remnants of a bridge. A terraced platform, of which the S-facing, exterior wall still stands ca. 2.50 m high, is up the slope ca. 25 m, to the N of the above described features. It appears to be much more than a terrace wall. However, its function is unknown. Did it serve some function relative to the roadway and its crossing of the wadi? Does the entire Site have anything to do with the roadway?’ MacDonald (2012).
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 500</b>
Site Name	Qurein
Site Type	Settlement
Latitude	30°5'44.72'N
Longitude	35°28'12.13'E
Start	Nabataean
End	Roman
Description	‘This site appears on the Arabic Language 1:50,000 scale maps, Royal Geographic Centre (1997), as a Site. The Site, which measures ca. 20 (N- S) x 15 (E-W) m, consists of a sherd scatter, a roofless stone-built structure with mud brick interiorly, and a couple of wall lines. The one building at the Site measures ca. 3-5 (N- S) x 4-5 (E-W) m. It is built of roughly-hewn stone w1th a great deal of chinking. One wall line at the Site runs in a N- S direction. It could be the same one as the wall that extends to the N of the stone building. There is also a field wall associated with the site’ MacDonald (2012).
Associated Features	Ain Qurein.
References	Graf (1997a); MacDonald (2012).

<b>ObjID</b>	<b>Site 501</b>
Site Name	Road Section
Site Type	Road
Latitude	30°5'44.80'N
Longitude	35°24'57.97'E
Start	Unspecified
End	Unspecified
Description	Curb stones but not paved
References	MacDonald (2012).

Site Type	Milestone
Latitude	30°5'46.93'N
Longitude	35°27'43.86'E
Start	Roman
End	Roman
Relative location	1.5 km north of Suwaymirah.
Description	Broken above base (0.87 high); adjacent column; anepigraphic.
References	Graf (1997a).

<b>ObjID</b>	<b>Site 502</b>
Site Name	Graf 1997 10

<b>ObjID</b>	<b>Site 503</b>
Site Name	Unnamed Tower
Site Type	Tower

Latitude	30°5'47.18"N
Longitude	35°26'43.91"E
Start	Roman
End	Byzantine
References	Mega-Jordan.

ObjID	Site 504
Site Name	Graf 1997 8
Site Type	Milestone
Latitude	30°5'47.60"N
Longitude	35°28'9.85"E
Start	Roman
End	Roman
Relative location	Qurein.

Description	Anepigraphic (Glueck 1935, 701).
References	Graf (1997a)

ObjID	Site 505
Site Name	Graf 1997 9
Site Type	Milestone
Latitude	30°5'47.60"N
Longitude	35°28'9.85"E
Start	Roman
End	Roman
Relative location	Qurein.
Description	Partial column; shattered into pieces; anepigraphic.
References	Graf (1997a).

ObjID	Site 506
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°5'47.73"N
Longitude	35°24'55.75"E
Start	Byzantine
End	Byzantine
Description	'This site, which measures ca. 20 (N-S) x 25 (E-W) m, consists of rectilinear structures wall lines, and an associated (?) roadway. The rectilinear structures may be associated with the latter: They are small! For example, one of them measures ca. 2.5 (N-S) x 2 (E-W) m, while another measures ca. 6 (N-S) x 4 (E-W) m. The nearby roadway measures ca. 3 m interiorly and 3-5 m exteriorly at one point. Stones: many of them standing on end, indicate the sides of the feature. The roadway continues down a S-facing slope and into a wadi where there are two robbed tombs with subsurface wall lines. A water catchment or winnowing area is located immediately to the W of the Site. A Bedouin tent used for entertaining purposes, was erected to the Site's SW. It appeared that it was yet to be used' MacDonald (2012).
References	Mega-Jordan; MacDonald (2012), 149.

ObjID	Site 507
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°5'47.90"N
Longitude	35°22'11.36"E
Start	Nabataean
End	Nabataean
Description	'This site, which measures ca. 35 (N-S) x 70 (E-W) m, is located on a knoll on the E side of the large wadi along which the modern road from Dulagha to Wadi Araba runs. It is the location of a stone-built structure in the midst of ancient remains. The 'modern' structure was roofless and had a wooden lintel. Otherwise, it was basically intact. It could have been used recently as a farm building, since there are indications of ploughing down the Site's W slope. The exterior walls of what appears to be the remnants of the ancient Site can be clearly followed at both its N and S ends. The former is located at the high point of the Site. It has several places where stone rubble has been removed. This is probably due to illicit digging and/ or the placement of burials within this segment. At the S end of the Site, the exterior wall is clean and still stands ca. 1 m above the present ground level. There are two enclosures located between the N and S ends of the Site. They are probably corrals and/ or windbreaks. They need not be contemporaneous with the features at its N and S ends. There is extensive terracing in a small wadi to the immediate E of the Site. The road that now leads up to the Site runs between this wadi and the Site. The Site was probably a watchtower in antiquity and is now the location of a farmstead at which no one lives permanently' MacDonald (2012).
References	MacDonald (2012).

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<b>ObjID</b>	<b>Site 508</b>
Site Name	Unnamed Structure
Site Type	Structure
Latitude	30°5'48.69"N
Longitude	35°24'4.01"E
Start	Nabataean
End	Byzantine
Description	'This site, which measures ca. 44 (N-S) x so (E-W) m, is located on the top of a hill and appears to be too small to be an agricultural village and/or hamlet. Could it have served an administrative function in antiquity relative to the agricultural villages of the region? One wall, measuring ca. 0.50 m wide, runs for ca. 16-18 (E-W) m. All that remains is its footprint, but it appears to have been the W wall of a major building. Several walls run o from it towards the E, thus indicating that it was partitioned. There are several 'modern' corrals at the Site. As is usually the case, they are constructed from the materials of older structures. There is evidence of former Bedouin encampments in the area, and a major spring/well is located to the SE in association with Site 225. What may have been a quarrying area is located to the N of the Site and between it and the main part of the Site is a feature that may have served/serves as a water catchment and/or winnowing area. There was little in the way of wheat growing in the neighbouring cultivated fields' MacDonald (2012).
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 509</b>
Site Name	Kh. Bir Hamad
Site Type	Settlement
Latitude	30°5'49.66"N
Longitude	35°21'50.56"E
Start	Byzantine
End	Byzantine
Description	'This is a major Site at a bend in Wadi Bir Hamad where the wadi turns from a N-flowing to a W-flowing one and where the old Turkish Road from Ma'an to Wadi Araba follows it for some distance. It is presently located on the E side of the wadi, where there is a windmill that pumps water for the Bedouin of the area. It is also at the point where the modern asphalt road heads N and, thus, does not follow the Turkish Road W towards Gharandal. The Site is impressively large, measuring ca. 150 x 150 m. It has suffered from erosion caused by the wadi on its Wand N sides. In addition, road work has probably removed some of its E side. Moreover, there is evidence of a former Bedouin encampment on its N side. Wall lines of structures can be seen throughout the Site. Some of them still stand ca. 0.50 m high. They are constructed of unhewn or, at least, roughly-hewn limestone along with some chert blocks. The best -preserved wall is at the N extremity of the Site. It is made of small and round stones. Thus, it could come from a different period than other walls at the Site. There is a great deal of rubble, due to fallen walls, throughout. Moreover, there are several depressions at the Site. This could be the result of illicit digging and/or collapse. In any case, these depressions show at least 1 m of deposition. There are two 'modern' buildings, associated with the water-pumping facility across the wadi to the SW. The Site could have been both an agricultural village as well as a major stopping point on the Turkish Road, due to its water resource. Moreover, it appears that it has been recently used for military purposes' MacDonald (2012).
References	MacDonald (2012).
Picture	APAAME_20101017_SES-0070. Courtesy of APAAME.





<b>ObjID</b>	<b>Site 510</b>
Site Name	Kh. Umm Qasir
Site Type	Road Station/ Caravanserai
Latitude	30°5'5.14'N
Longitude	35°31'40.67'E
Start	Unspecified
End	Unspecified
Description	'This site consists of two segments, both of which are located immediately E of the Khatt Shebib. The segment on the N, the coordinates of which are given above, is a rectilinear structure that appears to be divided into four compartments. The whole measures ca. 15 (N-S) x 9 (E-W) m. The one on the S, which is separated from the other by ca. 40 m, is also rectilinear, measuring ca. 10 (N-S) x 20 (E-W) m. (The coordinates for this segment are: 743682/3331004, elevation: 1435 m.) It too may have been divided into four compartments. It abuts the Khatt Shebib on the W and there are enclosures, which need not be contemporaneous with it, attached to both its N and E sides. The walls of both structures are ca. 0.75 m wide and are made of roughly-hewn chert blocks. The complexes could be a way station along the Khatt Shebib' MacDonald (2012).
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 511</b>
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°5'5.58'N
Longitude	35°25'10.92'E
Start	Roman
End	Byzantine
References	MacDonald (2012).

Site Type	Road
Latitude	30°5'50.90'N
Longitude	35°24'40.99'E
Start	Roman
End	Roman
Relative location	Nahban.
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 512</b>
Site Name	Road Section

<b>ObjID</b>	<b>Site 513</b>
Site Name	Nahban
Site Type	Tower



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Latitude	30°5'50.90"N
Longitude	35°24'40.99"E
Start	Roman

End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 514</b>
Site Name	Umm Rujm
Site Type	Settlement
Latitude	30°5'52.20"N
Longitude	35°27'11.60"E
Start	Roman
End	Byzantine
Description	‘This is yet another extremely impressive Site, measuring ca. 85 (N -S) x 65 (E-W) m, in the hills to the NW of Qurayn. It is located on a ridge and on both E- and W-facing slopes. It was probably an agricultural village at one time. The stones that constitute the remnants of structures at the Site measure as ca. 1.00 x 0.50 m, and some of them are finely hewn while others are roughly hewn. Many of the walls of the structures are two courses wide with rubble in between. One structure appears to measure ca. 40 x 40 m. Another one, made of finely-hewn large stones, appears to be a robbed tomb. At the NE side of the Site there is what appear to be the remnants of a semi-circular (apse [?]) structure. Its function can probably only be determined by excavation. A very large cave/cistern is located on the Site’s W slope. Interiorly, it measures ca. 4 m high and ca. 5.50 (N-S) m. Its interior is stone lined with plaster. A portion of the cave’s roof is fallen in, and there is no evidence that the feature was ever used to pen animals. The cave/cistern was dry. A winnowing area is located at the Site’s S end. The Site has high priority for excavation’ MacDonald (2012).
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 515</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°5'53.81"N
Longitude	35°25'36.88"E

Start	Roman
End	Byzantine
Date Explanation	Late Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 516</b>
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°5'56.57"N
Longitude	35°13'20.48"E
Start	Nabataean
End	Byzantine
Description	‘The Site consists of an unspecified structure (Feature 1) set within a nomadic encampment (Feature 2) and with various oblong stone features (Feature 3) spread out across the Site. Feature 1 is a structure measuring 4.60 m N-S x 5.80 m E-W It is constructed of large boulders ranging in size from 0.30-0.90 m on a side. There are two courses wide on the north side of the structure. In the northwest corner of the structure is a circular area enclosed by boulders measuring ca. 1.50 min diameter. Ca. 5.70 m southwest of Feature 1 is a hearth, which measures 0.74 x 0,41 m and seems to be part of the nomadic encampment. The hearth is lined with sandstone slabs. Feature 2 is the nomadic encampment along with two stone rings, possibly circular huts. One is 4.70 min diameter and lies at the western edge of Feature 1. The other is roughly 3.50 m in diameter, but is poorly preserved. A small hearth with recent ash deposits lies within this second stone ring. The camp covers the entire Site. There are hearths, clearings, various rock alignments, and small stone enclosures abutting the rock outcrops. Several contemporary items such as clothing fragments and metal objects suggest modern use of the Site. The oblong features that comprise Feature 3 appear to be modern due to their state of preservation. They are constructed of a single course of sandstone boulders and average 2.30 x 1.10 m. Their interiors are cleared of stones’ MacDonald (2012).
References	Parker and Smith (2014), 241.

<b>ObjID</b>	<b>Site 517</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°5'56.95'N
Longitude	35°25'59.17'E

Start	Roman
End	Byzantine
Date Explanation	Late Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 518</b>
Site Name	Qasr el-Feifeh
Site Type	Fort
Latitude	30°56'38.04'N
Longitude	35°26'31.68'E
Start	Roman
End	Byzantine
Date Explanation	Glueck suggested Nabataean-Roman trade, but no evidence.
Relative location	South of the Dead Sea
Description	Square enclosure with central entrances in two opposing sides (no remains of the structures inside). 84 x 84 m. Identified with <i>Prasidium</i> , which is just south of the Dead Sea on the Madaba Mosaic Map. Probably referenced in the Notitia Dignitatum (references to <i>Ala Secunda Felix Valentiana</i> , <i>apud Prasidium</i> and <i>Cohors Quarta Frygum</i> , <i>Praesidia</i> [Or. XXXIV. 35 and 41].)
Associated Features	Aqueduct channel runs from the hills to the easternmost enclosure and then on towards the twin Site on the west.
Modern Disturbance	Fields.
References	Kennedy and Riley (1990) 144-45; Frank (1934, 210, Pl 27 and Plans 11 and 12); Gluek (1937), 20.

<b>ObjID</b>	<b>Site 519</b>
Site Name	Rujm 'Iyal Ghanim
Site Type	Settlement
Latitude	30°5'7.69'N
Longitude	35°26'50.33'E
Start	Byzantine
End	Byzantine
Description	'This is a severely damaged Site measuring ca. 70 x 70 m, located on the top of a hill as well as on NE- and SE-facing slopes in a wheat-growing area. There may be as much as 2 m deposition at the Site, since from some angles it looks to be massive. The Site is now not much more than a large pile of stones and it is almost impossible to make out wall lines. In addition, stones from field clearance presently cover portions of it. The stones that form the Site are unhewn and are of both limestone and chert. Depressions within the Site may indicate the places of illegal digging. However, these depressions are now almost filled with stone rubble. Several corrals were noted down the slopes of the Site; such is understandable, since a Bedouin family lived at the Site. A winnowing area was noted immediately to the Site's NE. Several fragments of grinding stones were noted, especially on the E slope. The Site was probably an agricultural village in antiquity' MacDonal (2012).
References	MacDonal (2012); Glueck (1935), 69 (is this Glueck's 'Kh. Ghanam;' Site no. 63?).

<b>ObjID</b>	<b>Site 520</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°5'8.63'N
Longitude	35°12'23.78'E
Start	Nabataean
End	Roman
Relative location	Gharandal
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 521</b>
Site Name	Road Section
Site Type	Road
Latitude	30°5'8.86'N
Longitude	35°12'16.62'E
Start	Unspecified
End	Unspecified
Relative location	N terminus.
References	Mega-Jordan.

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ObjID	Site 522
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°6'16.33'N
Longitude	35°27'17.59'E
Start	Byzantine
End	Byzantine
Description	'This is an extensively damaged Site measuring ca. 30 x 30 m, on a S-facing slope. Some of the damage is due to erosion and field clearance in what was a barren terrain in which there were both shepherds and their large flocks. However, the harvest could have finished. Some rectilinear structures were discernible. One of these measure ca. 20 x 20 m. The stones which comprise it are both unhewn and roughly hewn. There are depressions, now filled with stone rubble, within it. This was probably another agricultural village Site in antiquity. One Bedouin family lived below the Site to the W' MacDonald (2012).
References	MacDonald (2012).

ObjID	Site 523
Site Name	Birkat ad-Dim
Site Type	Waterpoint
Latitude	30°6'18.25'N
Longitude	35°26'0.77'E
Start	Roman
End	Roman
Description	'This site measures ca. 12 (N-S) x 7 (E-W) m. One of its structure measures 7 (N-S) x 5 (E-W) m interiorly. Bedrock forms its W wall, while its other walls are stone built. We did not note any plaster associated with the walls, but there could be more than 1 m of deposition and excavation could reveal some. There is a bulldozed area to the N of the structure. Stones in this area could come from the remnants of a road and an associated structure. A nearby reservoir appears to be associated with the roadway' MacDonald (2012).
References	MacDonald (2012).

ObjID	Site 524
Site Name	Unnamed Cistern
Site Type	Waterpoint
Latitude	30°6'2.22'N
Longitude	35°27'1.36'E
Start	Unspecified
End	Unspecified
Description	'This is a large cistern and some associated wall lines on an E-facing slope to the W of Qurayn. The cistern is cut into bedrock. It has a built entrance of finely-hewn stone. The doorway measures 85 cm and, due to rock fall, is presently only 1 m high. Interiorly, the cistern has one main pillar and a partitioned area for storage at its back. Illicit digging, to a depth of ca. 1 m, was noted in the centre of the cave and there is ample evidence that the cave has been used as a place to pen animals. the cistern measured ca. 5 (N-S) x 8 (E-W) m and the ceiling was ca. 2 m above the floor level. There are wall lines down the slope, ca. 20 m. They go both across as well as up and down the slope. They appear to be much more than just terracing. They could possibly have had something to do with the cistern at one time' MacDonald (2012).
References	MacDonald (2012).

ObjID	Site 525
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°6'20.78'N
Longitude	35°26'7.76'E
Start	Byzantine
End	Byzantine

Description	'This site, measuring ca. 20 (N-S) x 30 (E-W) m, is located on an E-facing slope in Wadi Barka. It is in a wheat -growing area just above and to the W of Site 107. It is probably a watchtower. The main structure at the Site measures ca. 12 x 12 m. It is comprised of large unhewn stones, some measuring as much as 1 m in length, probably quarried nearby on the slope. There is a winnowing area immediately to the W. The Site has been damaged by this feature as well as by field clearances on all sides. Erosion has also caused considerable damage. A cup hole was noted in bedrock in the Site's SE segment. Large stones, like those that constitute the main feature at the Site, are also used as terrace walls in the Site's vicinity. This terracing is not only across the slope on which the Site is located but also up and down it' MacDonald (2012).
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 526</b>
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°6'21.01'N

Longitude	35°26'11.98'E
Start	Roman
End	Roman
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 527</b>
Site Name	Kh. Juwaybil
Site Type	Settlement
Latitude	30°6'28.31'N
Longitude	35°24'51.02'E
Start	Roman
End	Byzantine
Description	'This is a severely damaged Site, measuring ca. 30 x 30 m, located on a SW-facing slope leading down to Wad1 Araba. There is a stone-built, multi-roomed structure in which there are well-preserved arches in at least two of the rooms that are now used to pen animals. The others were locked. Outside the structure, wall lines are visible; however, they are badly damaged. There is a segment of a roadway, possibly the same one we encountered at Sites 138 and 139, immediately below the Site. It appears to go to Kh. Burq ' and/or Dulagha. This could have been the location of an agricultural village or hamlet in antiquity' MacDonald (2012).
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 528</b>
Site Name	Mansouria
Site Type	Tower
Latitude	30°6'32.66'N
Longitude	35°26'21.84'E
Start	Roman
End	Byzantine
Date Explanation	Late Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 530</b>
Site Name	Road Section
Site Type	Road
Latitude	30°6'32.90'N
Longitude	35°24'44.79'E
Start	Roman
End	Roman
Relative location	Burqah.
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 529</b>
Site Name	Cistern
Site Type	Waterpoint
Latitude	30°6'32.90'N
Longitude	35°24'44.79'E
Start	Roman
End	Roman
Relative location	Burqah.
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 531</b>
Site Name	Burqah
Site Type	Tower
Latitude	30°6'32.90'N
Longitude	35°24'44.79'E
Start	Roman
End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 532</b>
Site Name	Fera 'Dor
Site Type	Settlement
Latitude	30°6'39.88'N

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Longitude	35°25'58.30'E
Start	Roman
End	Byzantine

Date Explanation	Late Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 533</b>
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°6'4.59'N
Longitude	35°13'50.19'E
Start	Nabataean
End	Byzantine
Description	<p>'This is a small settlement on a wadi terrace above Wadi el-Quseib. The SAAS recorded 10 distinct features. Features 1-5 are all structures or perhaps houses. The largest (Feature 1) measures 5.10 m N-S x 3.50 m E-W with walls preserved up to six courses high (1 m). There is an entrance along the southeast wall. This structure is currently being utilized as an animal enclosure. To the northwest and adjacent to the corner of the structure there is an apparent hearth or storage area measuring ca. 0.50 m x 0.50 m. Feature 2 is another structure constructed of local chert and sandstone boulders. The feature is ovoid in shape and measures 3.80 m N-S x 3.20 m E-W This feature shows no signs of modern restoration or reuse. Feature 3 is a structure which is badly disturbed by modern reuse. It measures ca. 4 m N-S x 3.80 m E-W To the north of this structure is a possible rectilinear wall adjoining the structure on its northwest corner. This feature shows signs of use as an animal pen and is constructed of substantial boulders up to 1.20 m long. Feature 4 is an isolated structure like Feature 3. It is preserved up to two courses high (ca. 0-40 m) and appears to have been used recently as an animal pen. In the same area, Feature 5 is like Features 1-4. Feature 6 is a group of hearths and stone piles south and west of the Features 1-5. Feature 7 is a small grave at the western end of the Site. It appears as a small stone mound measuring ca. 2.10 m in diameter. Feature 8 is an isolated structure lying at the far western end of the Site. It measures 2.60 m N-S x 2.50 m E-W Foundation stones for the east wall are visible. One large boulder is built into the northwest corner which measures ca. 0.70-0.80 m on a side. Feature 9 is a small, unspecified structure with two adjacent compartments. The west compartment opens to the south. The structure measures 3.90 x 2.50 m. The compartments are roughly circular with interior dimensions of 0.80 m in diameter. Its walls are a single course wide (ca. 0.30 m) and a single course high. Separating the two compartments are large boulders embedded in the surface. The boulders measure 0.90 m long x 0.30 m wide x 0-48 m high. Dispersed across the Site, Feature 10 consists of a series of small stone-lined pits set into the ground. Three in the west end of the Site have four different coloured stones making up the square: red, black and two shades of grey. These pits are all about the same size, measuring ca. 0.25 m on a side. Their interiors are ca. 0.14 m on a side and 0.10 m deep. Three of the features have larger, flat stones nearby which may have been used to cover the pits. There are many other square soil depressions around the Site which may have been dismantled features of this type. These do not appear to be hearths' MacDonald (2012).</p>
References	Parker and Smith (2014), 244.

<b>ObjID</b>	<b>Site 534</b>
Site Name	Mureighah
Site Type	Fort
Latitude	30°6'41.27'N
Longitude	35°32'5.48'E
Start	Nabataean
End	Byzantine
Description	<p>'This is an extremely impressive site constructed of mostly basalt stones. However, it has been extensively bulldozed in places and this activity has turned up a large number of sherds. Moreover, some segments of the Site have been 'cleared,' probably by illicit activity. Many structures that comprise the Site have walls standing ca. 1- 2 m high. Those that have been 'cleared' show neatly-hewn interior walls. There are some cleared areas within the Site. Several structures are to be found surrounding the main buildings. They are probably to be associated with them. A line of stones, many of them standing on end, approaches the Site from the N and continues S of it. It is a segment of the Khatt Shebib, Site 050. This site ought to be excavated before further damage is done to it.</p>
References	Mega-Jordan.; MacDonald (2012) 196; Glueck (1935), 64, and 175, Pl. 13 (his Site no. 43); Kirkbride 1948: 152, 153; Kennedy 2004: 190; Kennedy and Bewley 2004: 138-39.

ObjID	Site 535
Site Name	Graf 1997 6
Site Type	Milestone
Latitude	30°6'45.30'N
Longitude	35°29'33.05'E
Start	Roman
End	Roman
Relative location	1.7 km SE of Dor.
Description	Mutilated column; anepigraphic.
References	Graf (1997a)

ObjID	Site 536
Site Name	Graf 1997 7
Site Type	Milestone
Latitude	30°6'45.30'N
Longitude	35°29'33.05'E
Start	Roman
End	Roman
Relative location	1.7 km SE of Dor
Description	Splintered base with a column fragment (1.5 lg).
References	Graf (1997a)

ObjID	Site 537
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°6'45.44'N
Longitude	35°27'32.79'E
Start	Roman
End	Byzantine
Date Explanation	Late Roman
References	Mega-Jordan.

ObjID	Site 538
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°6'45.96'N
Longitude	35°27'6.48'E
Start	Roman
End	Byzantine

Date Explanation	Late Roman
References	Mega-Jordan.

ObjID	Site 539
Site Name	Kh. Burqah
Site Type	Settlement
Latitude	30°6'46.71'N
Longitude	35°24'54.01'E
Start	Roman
End	Byzantine
References	MacDonald (2012).

ObjID	Site 540
Site Name	Al Mansura West
Site Type	Settlement
Latitude	30°6'47.66'N
Longitude	35°26'47.74'E
Start	Nabataean
End	Byzantine
References	MacDonald (2012).

ObjID	Site 541
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°6'48.85'N
Longitude	35°27'6.63'E
Start	Roman
End	Byzantine
Date Explanation	Late Roman
References	Mega-Jordan.

ObjID	Site 542
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°6'53.03'N
Longitude	35°26'3.81'E
Start	Roman
End	Byzantine
Date Explanation	Late Roman
References	Mega-Jordan.

ObjID	Site 543
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°6'54.66'N
Longitude	35°38'31.84'E
Start	Nabataean
End	Byzantine
Description	'This site, which may have been a watchtower, is located on a NW-SE running ridge. There is a semi-circular structure comprised of stones standing on end on its W side. At its centre is a structure that now serves as a tomb. It has been disturbed. Nearby there are graves. The area of the Site commands an excellent view in all directions' MacDonald (2012).
References	MacDonald (2012).



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<b>ObjID</b>	<b>Site 544</b>
Site Name	Kh. Khilal
Site Type	Settlement
Latitude	30°6'54.72'N
Longitude	35°25'37.09'E
Start	Roman
End	Byzantine
Description	'This is an almost completely destroyed Site in an agricultural, wheat-growing area. The damage to the Site was caused by erosion, bulldozing, and field clearance. A modern stone building, probably constructed from the stone from ancient buildings, is located at its centre. Remnants of some structures, built of roughly hewn stones, are visible throughout the Site. The walls of some of these structures are built of two courses of stone with rubble in between. They measure, in some cases, ca. 1 m wide. From illicit digging at the Site, the depth of deposition appears to be ca. 1 m. The Site was probably an agricultural hamlet in antiquity' MacDonald (2012).
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 545</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°6'55.39'N

Longitude	35°27'14.23'E
Start	Roman
End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 546</b>
Site Name	Kh. Umm Hasa
Site Type	Tower
Latitude	30°6'55.93'N
Longitude	35°28'3.89'E
Start	Roman
End	Roman
Description	'This site is located on a prominent hill to the W of Kh. ad-Dur South, Site 079, and Bayt Abu Tayih/Kh. ad-Dur East, Site 064, and to the NW of the modern village of Qurayn. The Site measures ca. 60 (N- S) x 40 (E- W) m, including the corrals surrounding what is probably a watchtower that measures ca. 25 x 25 m. The exterior wall of the watchtower is made of two courses of stone with rubble in between. It measures a little more than 1 m in thickness. A compartment within the watchtower measures ca. 12 (N- S) x 16 (E- W) m. A tabun fragment was noted at the Site but was not collected. However, a limestone grinding stone was collected as material culture. The location of the Site provides a panorama of the territory to the NE, E, SE, and NW; the view to the W is blocked by another hill' MacDonald (2012).
References	MacDonald (2012), 106; Glueck 193S: 70-71 (his Site no. 77; see his Pl. 14, p. 176 for his plan of the Site).

<b>ObjID</b>	<b>Site 547</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°6'55.99'N
Longitude	35°39'28.42'E
Start	Nabataean
End	Byzantine
Description	'This site could be a watchtower. It measures ca. 3 (N- S) x 2 (E- W) m and still stands ca. 1 m above the present ground level. There are fallen stones around it. The structure is made of large stones and its walls are ca. 0.50 m wide. It is presently dug into, but there are no signs of bones in the soil that was thrown out of the hole. The structure provides an excellent view, especially to the E and S' MacDonald (2012).
References	MacDonald (2012).

ObjID	Site 548
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°6'58.54'N
Longitude	35°25'55.75'E
Start	Roman
End	Byzantine
Date Explanation	Late Roman
References	Mega-Jordan.

ObjID	Site 549
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°6'6.50'N
Longitude	35°26'54.99'E
Start	Roman
End	Byzantine
Date Explanation	Late Roman
References	Mega-Jordan.

ObjID	Site 550
Site Name	Milestone
Site Type	Milestone
Latitude	30°6'7.21'N
Longitude	35°28'25.04'E
Start	Roman
End	Byzantine
Description	The fragment measures 1.20 m in length. The base is 43 cm wide. There was no evidence of the Roman road in association with either the milestone fragment or Site 100. Thus, the fragment could have been removed from its original location along the road.
References	MacDonald (2012); Glueck (1935), 70 associates a Roman milestone with Rujm el-Qrein (his Site no. 74; see ARNAS Site no); Graf (1995), 242.

ObjID	Site 551
Site Name	Kh. Al- Mayz
Site Type	Settlement
Latitude	30°6'8.68'N
Longitude	35°26'24.45'E
Start	Roman
End	Byzantine
References	MacDonald (2012).

Longitude	35°27'49.66'E
Start	Roman
End	Byzantine
References	MacDonald (2012).

ObjID	Site 552
Site Name	Kh. al-Khaskhas
Site Type	Settlement
Latitude	30°7'1.08'N

ObjID	Site 553
Site Name	Umm Ras
Site Type	Settlement
Latitude	30°7'11.38'N
Longitude	35°28'25.82'E
Start	Nabataean
End	Nabataean
References	Mega-Jordan.

ObjID	Site 554
Site Name	Umm Hasa
Site Type	Fort
Latitude	30°7'21.20'N
Longitude	35°21'36.77'E
Start	Byzantine
End	Byzantine
Description	'This is a major site, measuring ca. 15 (N-S) x 20 (E-W) m, along a road, other than the Turkish one, that leads down to Wadi Araba. It is close to a spring in Wadi ash-Shallal to the NE and on a hill in a bend in the wadi. The Site consists mostly of rubble, and the stones from the former structures are dispersed not only on the hill itself but on its slopes. The Site is terraced on its E and W ends. It drops precipitously to the wadi on the S. Many wall lines can be followed throughout the Site. An outer one appears to be a perimeter wall. Within this there is evidence of several partitioning walls. Some of the building material is chert while the remainder is limestone. There are additional structures across a saddle, in which there is an erosion-control wall, to the NE. Access to the Site is easiest from the NW, in which there are additional erosion-control walls. The Site is probably a fort associated with both the road and the spring' MacDonald (2012).
References	MacDonald (2012).

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ObjID	Site 555
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°7'21.33'N
Longitude	35°26'51.82'E
Start	Roman
End	Byzantine
Date Explanation	Late Roman
References	Mega-Jordan.

ObjID	Site 556
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°7'21.43'N
Longitude	35°26'6.94'E
Start	Roman
End	Byzantine
Date Explanation	Late Roman
References	Mega-Jordan.

ObjID	Site 559
Site Name	Dor
Site Type	Fort
Latitude	30°7'26.48'N
Longitude	35°28'46.27'E
Start	Roman
End	Byzantine
Date Explanation	Until the 4th century at least
Relative location	Shera
Description	On a Hill surrounded by a Nabataean-Roman-Byzantine settlement overlooking to the S the spring of Ain Dor. Important intermediary station.
Dimensions	28x24 m.
Associated Features	Ain Dor Spring
References	Graf 1997, 15

ObjID	Site 560
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°7'29.29'N
Longitude	35°25'36.67'E
Start	Nabataean
End	Roman
References	Mega-Jordan.

ObjID	Site 561
Site Name	Rujm Wadi Falah
Site Type	Tower
Latitude	30°7'30.94'N
Longitude	35°27'44.97'E
Start	Byzantine
End	Byzantine

ObjID	Site 557
Site Name	Road Section
Site Type	Road
Latitude	30°7'22.11'N
Longitude	35°21'35.72'E
Start	Unspecified
End	Unspecified
Date Explanation	Not Turkish (that one is to the North).
Description	Leading into Wadi Araba.
References	MacDonald (2012).

ObjID	Site 558
Site Name	Dor
Site Type	Settlement
Latitude	30°7'25.82'N
Longitude	35°28'48.33'E
Start	Nabataean
End	Roman
Relative location	Shera
References	Graf (1997a)

References	MacDonald (2012).
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ObjID	Site 562
Site Name	Ain Mudeilija
Site Type	Fortress
Latitude	30°7'30.97'N
Longitude	35°25'23.43'E
Start	Roman
End	Roman
References	Mega-Jordan.

ObjID	Site 563
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°7'31.05'N
Longitude	35°26'6.94'E
Start	Roman

End	Byzantine
Date Explanation	Late Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 564</b>
Site Name	Road Section
Site Type	Road Station/ Caravanserai
Latitude	30°7'31.99"N
Longitude	35°26'6.96"E
Start	Roman
End	Roman
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 565</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°7'34.66"N
Longitude	35°26'24.20"E
Start	Roman
End	Byzantine
Date Explanation	Late Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 566</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°7'34.72"N
Longitude	35°26'3.11"E
Start	Roman
End	Byzantine
Date Explanation	Late Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 567</b>
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°7'36.07"N
Longitude	35°26'22.89"E
Start	Nabataean
End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 568</b>
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°7'37.69"N
Longitude	35°13'45.39"E
Start	Nabataean
End	Byzantine
Date Explanation	Late Roman
References	Parker and Smith (2014), 249-50.

<b>ObjID</b>	<b>Site 569</b>
Site Name	Unnamed Settlement
Site Type	Settlement

Latitude	30°7'38.41"N
Longitude	35°25'45.90"E
Start	Nabataean
End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 570</b>
Site Name	Graf 1997 3
Site Type	Milestone
Latitude	30°7'41.67"N
Longitude	35°29'2.85"E
Start	Roman
End	Roman
Relative location	0.5 km north of Dor.
Description	Broken column; anepigraphic.
References	Graf (1997a).

<b>ObjID</b>	<b>Site 571</b>
Site Name	Graf 1997 4
Site Type	Milestone
Latitude	30°7'41.67"N
Longitude	35°29'2.85"E
Start	Roman
End	Roman
Relative location	0.5 km north of Dor.
Description	Broken column; anepigraphic.
References	Graf (1997a).

<b>ObjID</b>	<b>Site 572</b>
Site Name	Graf 1997 5
Site Type	Milestone
Latitude	30°7'41.67"N
Longitude	35°29'2.85"E
Start	Byzantine
End	Byzantine
Date Explanation	4th century
Relative location	0.5 km north of Dor.
Description	Broken column; anepigraphic.
References	Graf (1997a).

<b>ObjID</b>	<b>Site 573</b>
Site Name	Rasif
Site Type	Settlement
Latitude	30°7'46.64"N
Longitude	35°25'59.09"E
Start	Roman
End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 574</b>
Site Name	Unnamed Cistern
Site Type	Waterpoint
Latitude	30°7'47.25"N
Longitude	35°25'59.46"E

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Start	Nabataean
End	Roman

References	Mega-Jordan.
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<b>ObjID</b>	<b>Site 575</b>
Site Name	Unnamed Structure
Site Type	Structure
Latitude	30°7'48.95'N
Longitude	35°25'6.28'E
Start	Roman
End	Byzantine
Description	'Although this is a larger site than 219, the density of pottery is lower. The Site, which consists of the remnants of a number of structures, is badly eroded. However, remnants of wall lines can be traced. These walls lines cut N -S across the slope on which most of the Site is located. On the slope, but towards its high point, two walls constructed of well-hewn stones are visible. A number of depressions were noted at the Site. One is certainly a cistern, since it is at least 1 m deep and plaster is exposed on its walls. Others could be graves. One of the depressions gives the impression that it was used as a military installation at one time. There is a rectilinear structure, measuring ca. 10 (N-S) x n (E-W) m, on the S side of the hill on which the Site is located. Flat stones form its floor. Could this installation have been a winnowing area? The Site overlooks the village and spring at Duhigha and provides a good vantage point from which to view the surrounding territory, especially to the S, W, and N. Could the site have served a defensive purpose?' MacDonald (2012).
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 576</b>
Site Name	Rujm Abu Ruman
Site Type	Tower
Latitude	30°7'51.23'N
Longitude	35°25'36.71'E
Start	Nabataean
End	Byzantine
Description	'This is a mostly-destroyed site, measuring ca. 20 x 20 m, overlooking Dulagha to the NW Bulldozing, involved with field clearance, has caused the destruction. Nevertheless, a number of wall lines can be seen throughout the Site. A remnant of one wall, facing N, still stands ca. 1 m high and is made of four courses of stone. In addition, wall lines can be traced, running both E-W and N- S across the Site. They generally just appear above ground level and could be foundation walls for structures and/ or terrace walls. Presently, there is one main animal pen at the Site. Bedrock is exposed on the Site's W side where there appears to be a robbed grave/tomb. There was a poor crop of wheat in the surrounding fields, and pastoralism is practiced in the area. Because of its location, the Site could be a watchtower' MacDonald (2012).
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 577</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°7'57.08'N
Longitude	35°26'44.50'E
Start	Roman
End	Byzantine
Date Explanation	Remand and Byzantine sherds.
References	Mega-Jordan.

Start	Nabataean
End	Roman
Date Explanation	pottery
References	Graf (1997a)

<b>ObjID</b>	<b>Site 578</b>
Site Name	Kh. Bayadab
Site Type	Settlement
Latitude	30°7'58.91'N
Longitude	35°24'23.66'E

<b>ObjID</b>	<b>Site 579</b>
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°7'8.38'N
Longitude	35°27'29.10'E
Start	Roman
End	Byzantine
Date Explanation	Late Roman
References	Mega-Jordan.

ObjID	Site 580
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°8'0.22'N
Longitude	35°27'29.28'E
Start	Roman
End	Byzantine
Date Explanation	Late Roman
References	Mega-Jordan.

ObjID	Site 581
Site Name	Kh. Dusil
Site Type	Settlement
Latitude	30°8'15.85'N
Longitude	35°31'20.33'E
Start	Nabataean
End	Roman
Description	Agricultural village in an oasis.
References	MacDonald (2012).

ObjID	Site 582
Site Name	Road Section
Site Type	Road
Latitude	30°8'19.82'N

ObjID	Site 585
Site Name	Umm Kahmuma
Site Type	Settlement
Latitude	30°8'39.78'N
Longitude	35°26'45.80'E
Start	Nabataean
End	Roman
Description	'This is a severely damaged Site, measuring ca. 30 (N-S) x 50 (E- W) m, on the S-facing slope of a small wadi. The damage to the Site has been caused by agricultural activity, road- building, and illicit digging. A well-built cistern was in the process of being 'excavated.' A new shovel and a pick, along with some buckets, were noted at the place of the digging. The cistern has been 'excavated' to a depth of ca. 3 m. The result is that there is exposed a structure of finely-hewn white limestones. Plaster could be seen at the lower levels of the 'excavation.' The slope on which the Site is located is terraced, but the terracing is in a poor state of preservation due to erosion and bulldozing. For example, one pile of stones that would seem, from a distance, to be the location of a substantial structure, is the result of bulldozing to clear a field for agriculture. The dirt road that cuts the Site continued to a Bedouin tent farther up the wadi to the NE. The Site was probably an agricultural-village in antiquity; now it consists, for the most part, of stone piles' MacDonald (2012).
References	MacDonald (2012).

ObjID	Site 586
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°8'40.14'N
Longitude	35°26'54.59'E

Longitude	35°27'45.70'E
Start	Unspecified
End	Unspecified
Description	Curb stone but unpaved
References	MacDonald (2012).

ObjID	Site 583
Site Name	Kh. al-Hudun
Site Type	Settlement
Latitude	30°8'2.16'N
Longitude	35°27'24.74'E
Start	Roman
End	Byzantine
References	MacDonald (2012).

ObjID	Site 584
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°8'2.64'N
Longitude	35°26'33.96'E
Start	Nabataean
End	Byzantine
References	MacDonald (2012).

Start	Roman
End	Byzantine
Date Explanation	Late roman
References	Mega-Jordan.

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<b>ObjID</b>	<b>Site 587</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°8'42.89'N
Longitude	35°25'24.94'E
Start	Roman
End	Byzantine
Description	'This site appears to be a watchtower measuring ca. 5 x 5 m. It is located on a high hill above the spring at Dulagha. All that is left of it are most of its foundation walls and another course, in some places of large uneven stone. There is not a great deal of rubble around it and perhaps it was never very high. It appears that the stones making up the structure were quarried nearby to the SE. A cement cistern is located immediately to the N of the watchtower (?)' MacDonald (2012).
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 588</b>
Site Name	Unnamed Cistern
Site Type	Waterpoint
Latitude	30°8'44.90'N
Longitude	35°25'25.05'E
Start	Unspecified
End	Unspecified
References	MacDonald (2012).

Start	Nabataean
End	Roman
Relative location	Shera.
References	Graf (1997a).

<b>ObjID</b>	<b>Site 589</b>
Site Name	Ras al-Dilagha
Site Type	Settlement
Latitude	30°8'48.67'N
Longitude	35°25'11.14'E

<b>ObjID</b>	<b>Site 590</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°8'52.93'N
Longitude	35°24'53.65'E
Start	Nabataean
End	Byzantine
Description	Or small fort.
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 591</b>
Site Name	Unnamed Structure
Site Type	Structure
Latitude	30°8'6.06'N
Longitude	35°27'48.71'E
Start	Byzantine
End	Byzantine
Description	'Administrative area? This site, which consists of a number of different structures and/or rooms, is located on a ridge and to the south of a roadway. It is spread over an area of at least 25 (N-S) x so (E-W) m. The walls of some of the structures comprising the Site still stand 1 m high and are made of well-hewn stones, some of which are 1 m long and ca. 0-45 m thick. One impressive building, measuring ca. 11 (N-S) x 6 (E-W) m, seems to be divided into two rooms. What appears to be a courtyard is located immediately to its E. Another structure, measuring ca. 5 x 5 m, has a stairway(?). It has been 'excavated.' Two niches were noted in its W wall. Several caves, along a ridge, were noted on the Site's SW side. There is a possible cemetery in this area as well. Moreover, several modern tombs (?) at the Site. Because of the impressiveness of the structures comprising the Site it does not seem to have been a mere farm and it is not large enough to be a hamlet or village' MacDonald (2012).
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 592</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°9'0.00'N
Longitude	35°13'52.09'E
Start	Nabataean



End	Nabataean
Description	'The site includes the ruins of a probable tower (Feature 1) situated high on an alluvial fan overlooking a broad wadi and Site 238. The ruined tower (ca. 9-40 m diameter) consists primarily of mounded stone tumble of unworked boulders measuring ca. 0.30-0.50 m on a side. This interpretation as a tower is based on its size, general shape, and elevated position (there is excellent visibility to the west). Feature 2 is a wall alignment ca. 18 m W-SW of the tower. It is a single course wide and high and constructed of unworked boulders ca. 0.30-0.50 m on a side. The purpose of this wall alignment remains unclear. Also, 27-40 m W-SW of the tower and 5 m N-NW of Feature 2 is a square stone structure (Feature 3). It measures 2.70 m N-S x 1.90 m E-W Three upright stones measuring ca. 0-40 m on a side remain in situ in the northeast corner of the structure' Parker and Smith (2014).
References	Parker and Smith (2014).

<b>ObjID</b>	<b>Site 593</b>
Site Name	Mufleseh
Site Type	Settlement
Latitude	30°9'10.35"N
Longitude	35°28'41.22"E

Start	Roman
End	Byzantine
Date Explanation	Late Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 594</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°9'11.23"N
Longitude	35°25'49.55"E
Start	Roman
End	Byzantine
Date Explanation	Late Roman
Description	'This appears to be a watchtower and it may be associated with Site 307, Ghurayra. It is located high on a hill to the NE of the above-mentioned Site. Its main structure measures ca. 5 x 5 m and its walls are mostly intact. The exception is the N one, which is badly damaged. The walls themselves measure ca. 0.80 m wide and are made of two rows of stone, quite well-hewn on the exterior. It appears that some digging has taken place at the Site's N segment. Two caves are located down the slope to the N. This is a small but impressive site' MacDonald (2012), 283.
References	Mega-Jordan; MacDonald (2012).

<b>ObjID</b>	<b>Site 595</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°9'11.92"N
Longitude	35°26'14.95"E
Start	Roman
End	Byzantine
Date Explanation	Late Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 596</b>
Site Name	Road Section
Site Type	Road
Latitude	30°9'13.38"N
Longitude	35°26'32.47"E
Start	Nabataean
End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 597</b>
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°9'15.87"N
Longitude	35°26'40.88"E
Start	Nabataean
End	Roman

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Description	'This is yet another badly eroded Site, measuring ca. 40 (N-S) x 30 (E-W) m. It is located on a hilltop and S-facing slope close to the at-Tayyiba/al-Aqaba modern road. The Site is damaged by agricultural activity, e.g., field clearance and ploughing. There are many wall lines clearly visible. They are mostly constructed of unhewn stone. One illicit 'excavation' has probably unearthed what was at one time a tomb, since we collected the remnants of many pottery handles, rims, and body sherds from the robbed material. The Site appears to be terraced. Two caves were noted; one of them was under the N-wall of the Site. We also noted tombs. One olive tree grows at the site, probably another agricultural village in antiquity' MacDonald (2012).
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 598</b>
Site Name	Isman
Site Type	Waterpoint
Latitude	30°9'18.74'N
Longitude	35°22'19.23'E

Start	Unspecified
End	Unspecified
Date Explanation	Nabataean sherds nearby.
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 599</b>
Site Name	Ras al Banat
Site Type	Tower
Latitude	30°9'25.41'N
Longitude	35°26'12.58'E
Start	Roman
End	Byzantine
Description	'This is a watchtower and/or tomb located on a hilltop. The structure measures ca. 10 m diameter. In addition, there are circular enclosures nearby that give the impression that they are ancient. Survey team members noted several other similar structures, many of them robbed, in this area of the survey tern tory. There were two Bedouin families living near the Site. Moreover, many corrals were noted' MacDonald (2012).
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 600</b>
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°9'27.32'N
Longitude	35°26'49.65'E
Start	Nabataean
End	Roman
References	Mega-Jordan.

Start	Roman
End	Byzantine
Date Explanation	Late Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 601</b>
Site Name	Castrum
Site Type	Fortress
Latitude	30°9'30.64'N
Longitude	35°28'10.57'E
Start	Nabataean
End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 603</b>
Site Name	Kh. al- Maghidha
Site Type	Settlement
Latitude	30°9'36.24'N
Longitude	35°28'11.35'E
Start	Roman
End	Byzantine
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 602</b>
Site Name	Mowt al-Binat
Site Type	Tower
Latitude	30°9'32.86'N
Longitude	35°25'36.52'E

<b>ObjID</b>	<b>Site 604</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°9'37.26'N
Longitude	35°26'31.82'E
Start	Nabataean
End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 605</b>
Site Name	Es-Sadaqa / Ancient Zadagatta (Peut. Tab.) / Zodogatha (Not. Dig.)
Site Type	Tower
Latitude	30°9'37.54"N
Longitude	35°29'38.65"E
Start	Roman
End	Roman
Relative location	On the <i>Via Nova Traiana</i> , ca.25 km N of Humayma and ca. 25 km S of Udruh, in the settlement.
Description	Fortification with projecting square towers. 2nd century pottery (Graf).
Garrison	<i>Equites promoti indigenae</i> at Zadocatha (Not. Dig.) This was attributed to the watchtower by everyone but it makes more sense to relate it to the fort in the settlement.
References	Graf (1989).
Pictures	APAAME_20030925_RHB-0263. Photographer: Robert Bewley. Courtesy of APAAME.



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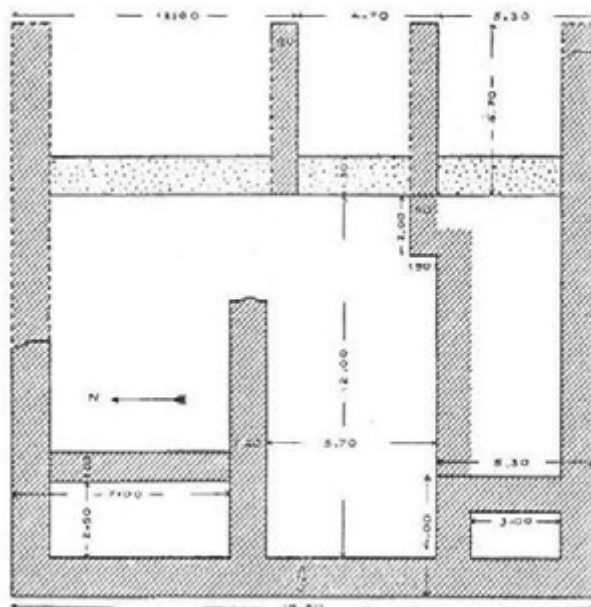
<b>ObjID</b>	<b>Site 606</b>
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°9'38.95"N
Longitude	35°29'48.76"E
Start	Roman
End	Byzantine
Date Explanation	Late Roman
References	Mega-Jordan.

Longitude	35°27'22.17"E
Start	Nabataean
End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 607</b>
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°9'39.08"N

<b>ObjID</b>	<b>Site 608</b>
Site Name	Road Section
Site Type	Road
Latitude	30°9'39.17"N
Longitude	35°27'20.46"E
Start	Nabataean
End	Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 609</b>
Site Name	Es-Sadaqa / Ancient Zadagatta (Peut. Tab.) / Zodogatha (Not. Dig.)
Site Type	Fort
Latitude	30°9'44.45"N
Longitude	35°30'20.84"E
Start	Roman
End	Byzantine
Relative location	On the <i>Via Nova Traiana</i> , ca.25 km N of Humayma and ca. 25 km S of Udruh. The fortlet is on the summit of a conical hill, about one km east of the settlement and spring.
Description	Walls are 1.2 m thick. Perhaps it was a shrine open east side, nearby is a first-century Nabataean tomb to the west (Parker 1986), maybe converted into a watch post later. Late-third century and Byzantine sherds only (Parker) but Graf also found second century.
Dimensions	19.5 x 17.75 m.
Associated Features	Settlement and spring one km west.
References	Gregory (1997) 395-397; Parker (1986), 99 -100; Peut. Tab. Zadagatta; Not. Dig. Or XXXIV, 24, Zodocatha; Musil 1907, 232; Stein, Gregory, and Kennedy (1985), 334; Glueck (1935), 71, Al Khouri (2003), 71.
Picture	APAAME_20081009_DLK-0308. Photographer: David Kennedy. Courtesy of APAAME. Plan (Brünnow and Domaszewski 1904, Fig. 544).





ObjID	Site 610
Site Name	Juweiza
Site Type	Settlement
Latitude	30°9'45.52"N
Longitude	35°26'45.79"E
Start	Roman
End	Byzantine
Date Explanation	Late Roman
References	Mega-Jordan.

ObjID	Site 611
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°9'46.08"N
Longitude	35°26'24.52"E
Start	Nabataean
End	Roman
References	Mega-Jordan.

ObjID	Site 612
Site Name	Castrum
Site Type	Fortress
Latitude	30°9'48.69"N
Longitude	35°27'48.77"E
Start	Nabataean
End	Roman
References	Mega-Jordan.

ObjID	Site 613
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°9'5.37"N
Longitude	35°26'9.03"E
Start	Nabataean
End	Roman
References	Mega-Jordan.

ObjID	Site 614
Site Name	Jenab esh-shems
Site Type	Tower
Latitude	30°9'5.52"N
Longitude	35°26'44.84"E
Start	Roman
End	Byzantine
Date Explanation	Late roman.
References	Mega-Jordan.

ObjID	Site 615
Site Name	Road Section
Site Type	Road
Latitude	30°9'5.87"N
Longitude	35°26'40.21"E
Start	Nabataean
End	Roman
References	Mega-Jordan.

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<b>ObjID</b>	<b>Site 616</b>
Site Name	Kh. at-Taqtaqiyya
Site Type	Settlement
Latitude	30°9'5.87'N

Longitude	35°27'22.45'E
Start	Roman
End	Byzantine
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 617</b>
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°9'50.25'N
Longitude	35°14'14.16'E
Start	Byzantine
End	Byzantine
Description	'This is an apparent habitation Site on a projecting spur (island) in the middle of a drainage cut north of Wadi Abu Barqa. The principal features at this Site are three terraced platforms descending from a 5 x 5 m vertical rock outcrop at the summit of the spur. These platforms are surrounded by walls one-two courses wide. The highest platform is ca. 1.50 x 3.50 m. After a 1 m drop in elevation directly to the south is a second platform ca. 2.50 x 4.50 m. Following a slope to the southeast littered with rubble, and after a 4 m drop in elevation, is a third, oval-shaped, terraced platform ca. 8 x 10 m. Another 100 m farther southeast is a series of terraces descending a secondary drainage. An oval enclosure, ca. 3 x 5.50 m, with walls preserved up to 1.50 m high lies in the middle of the primary drainage. Built against the southwest face of the spur is a well-preserved rectangular structure measuring 3-40 x 8.50 m. Its walls are 0.50 m thick and preserved up to 2.20 m high in the southeast corner. Another ruined structure lies at the base of the hill to the west' Parker and Smith (2014), 259.
References	Parker and Smith (2014).

<b>ObjID</b>	<b>Site 618</b>
Site Name	Juweiza
Site Type	Settlement
Latitude	30°9'55.12'N
Longitude	35°26'57.05'E
Start	Roman
End	Byzantine
Date Explanation	Late Roman
References	Mega-Jordan.

<b>ObjID</b>	<b>Site 619</b>
Site Name	Kh. al-Wahida
Site Type	Structure
Latitude	30°9'55.99'N
Longitude	35°35'50.26'E
Start	Nabataean
End	Byzantine
Description	Defensible.
References	MacDonald (2012).

<b>ObjID</b>	<b>Site 620</b>
Site Name	Unnamed Settlement
Site Type	Settlement
Latitude	30°9'58.50'N
Longitude	35°28'41.71'E
Start	Roman
End	Byzantine
Description	'This is a badly damaged Site, measuring ca. 60 (N-S) x 40 (E- W) m, located on a hilltop and associated S- and SW-facing slopes. It consists of the remnants of a number of structures. One structure measures ca. 4.5 x 4.5 m and there is stone rubble inside it. Its doorway faces E and its interior walls still stand ca. 2 m high. It appears to be rebuilt in the upper levels. What looks like Nabataea dressing was noted on one of its interior stones. Another structure, at the SE corner of the Site, measures ca. 7 (N-S) x 5 (E-W) m. It appears to be partitioned and seems to be partially rebuilt. There are two additional buildings at the Site's NE edge. What could be a courtyard, with a well-built N wall, is located at the N side, while a winnowing area is located at the N edge of the Site. There could be as much as 1.50- 2.00 m of deposition at some segments of the Site. The associated sherd scatter continues ca. 100 m to the E where there is an enclosure. A quarrying area and impressive terracing were noted ca. 45 m to the W of the Site. The Site was probably an agricultural village/hamlet' MacDonald (2012).
References	MacDonald (2012).

ObjID	Site 621
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°9'59.62'N
Longitude	35°27'10.98'E
Start	Nabataean
End	Roman
References	Mega-Jordan.

ObjID	Site 622
Site Name	Road Section
Site Type	Road
Latitude	30°9'6.42'N
Longitude	35°26'6.70'E

Start	Nabataean
End	Roman
References	Mega-Jordan.

ObjID	Site 623
Site Name	Ghurayra
Site Type	Settlement
Latitude	30°9'6.83'N
Longitude	35°25'32.90'E
Start	Roman
End	Byzantine
Description	Hart (1988) excavated this Site in 1986. See his report for its description.
References	MacDonald (2012).

ObjID	Site 624
Site Name	Unnamed Tower
Site Type	Tower
Latitude	30°9'7.88'N
Longitude	35°32'40.04'E
Start	Nabataean
End	Byzantine
Description	'This site consists of a series of structures. The main one, possibly a watchtower, is badly damaged and appears as a true Rujm. Its top is dug into and may have been the place of a tomb at one time. However, the structure was probably not built for such a purpose. The main structure still stands ca. 2 m above the surrounding plain and is visible for kilometres. Its walls, which are constructed of roughly-hewn and unhewn stone, are ca. 0.75 m thick and there is much tumble around them. About 10 m to the W of the main structure is a series of rectilinear structures that share one common wall. They are crudely made and although they now stand only ca. 0.50 m high, there is tumble around them and they were probably much higher in antiquity. Some of them are now made into windbreaks. There is a large enclosure on the N side of the main structure but it may not be contemporaneous with it. Another series of structures is located on the E side of the main structure. They too may have been a series of rectilinear structures but they are now badly damaged. An area to the S of the main structure is clear of ~tones. It may have been the entrance to it. The Khatt Shebib passes immediately to the E of the Site and, although in poor shape at this point, it has stone tumble over an area of ca. 2 m wide. There are graves in the area. Because of the amount of pottery at the Site, it may have been a watchtower and associated barracks (?)'MacDonald (2012).
References	MacDonald (2012).



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Over the last decades, discussions about the functions of the Roman army in frontier areas have contributed to a complex understanding of the military and its interactions with local geographies and peoples throughout the Empire. Nevertheless, in the region of Arabia, there is still little consensus about the purpose of the Roman military presence, its fluctuating functions, or the role of hundreds of fortified buildings scattered across the landscape. So far, these questions have remained unanswered due to a lack of excavation data and the scarcity of ancient accounts directly involving the military in Arabia Petraea. *The Function of the Roman Army in Southern Arabia Petraea* aims to provide a fresh perspective on these issues by employing a landscape approach, paralleling it with the ancient sources which describe the roles of the Roman military in the East. Using a variety of digital resources to contextually map and model the ancient system of fortifications, settlements, and trade routes, we can now better understand the evolving and diverse functions of the Roman army in Arabia from the creation of the province to the end of the Byzantine period.

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