

Title: Tall el-Hammam – Fire From Heaven

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DECLARATION

I certify that this ASSIGNMENT is my own work. I have acknowledged all material and sources used in it, and that I have not plagiarised in part or whole the work of others without stating the references.

Introduction

On the Jordan plain sits an imposing mound, towering high above its surroundings – the remains of a large and ancient city, an archaeological site named Tall el-Hammam.



Tall el-Hammam¹

Within the mound lies evidence of a terrible fate. Thick layers of ash and crumbled bricks. Pottery, melted and deformed. Human bones, shattered and charred. The marks of a devastating conflagration that scoured the city out of the Bronze Age.

Fiery doom which ended a thriving settlement in an instant – could this be the site of the Biblical location known as Sodom?

Location & Geography

Tall el-Hammam's coordinates of 31.839125° Lat and 35.672028° Long locate it 12km northeast of the Dead Sea². This area west of the Jordan river is generally known as the Jordan 'valley' (Gen 13:10 ESV) or 'plain' (KJV, NIV).

In this essay, the preferred terminology is 'kikkar' – the Hebrew word³ used to describe the area, but also referring to a flat circular shape⁴ such as for gold (Exo 25:39), bread (Exo 29:23), silver (Exo 38:27) and lead (Zech 5:7). Hence, rather than being a geographical term, kikkar describes the disc-like shape of the area as illustrated by the following maps:

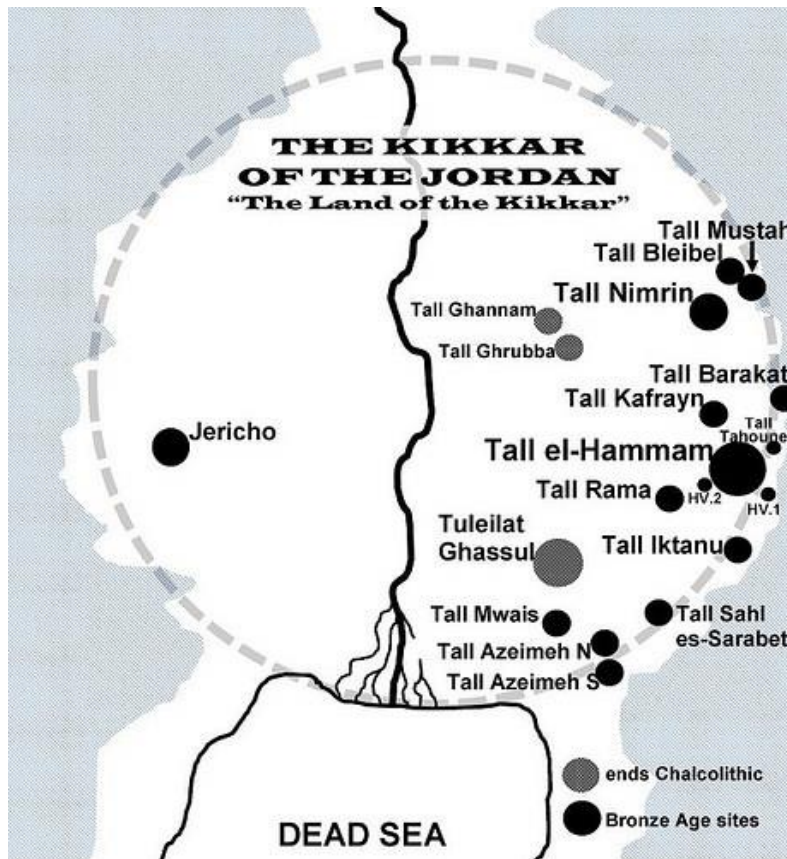
¹ Glenda Austin, "Tall el-Hammam," *Biblical Archaeological Society* (accessed 21-Sep-2021): <https://www.biblicalarchaeology.org/dig/tall-el-hammam-2/>

² Phillip J. Silvia, "The Geography & History of Tall el-Hammam," *Chronology & Catastrophism Workshop* (2014), 33-36, here 1. Available at: https://www.researchgate.net/publication/269930714_The_Geography_History_of_Tall_el-Hammam_1

³ Bible Hub, "Interlinear Genesis 13:10," *Bible Hub* (accessed 21-Sep-2021):

<https://biblehub.com/interlinear/genesis/13-10.htm>

⁴ Bible Hub, "3603. kikkar," *Bible Hub* (accessed 21-Sep-2021): <https://biblehub.com/hebrew/3603.htm>



Map of the Jordan Kikkar with archaeological sites⁵



Google Earth map of the Jordan Kikkar⁶

⁵ Popular Archaeology, “Possible site of ancient Sodom yields more finds,” *Popular Archaeology* (accessed 21-Sep-2021): <https://popular-archaeology.com/article/possible-site-of-ancient-sodom-yields-more-finds/>

⁶ Silvia, *The Geography & History of Tall el-Hammam*, here 5.

The area includes many other archaeological sites⁷ – over a hundred, some from as early as the Late Neolithic Period⁸. It can be identified as the same Jordan Kikkar of the Bible using several markers in the text:

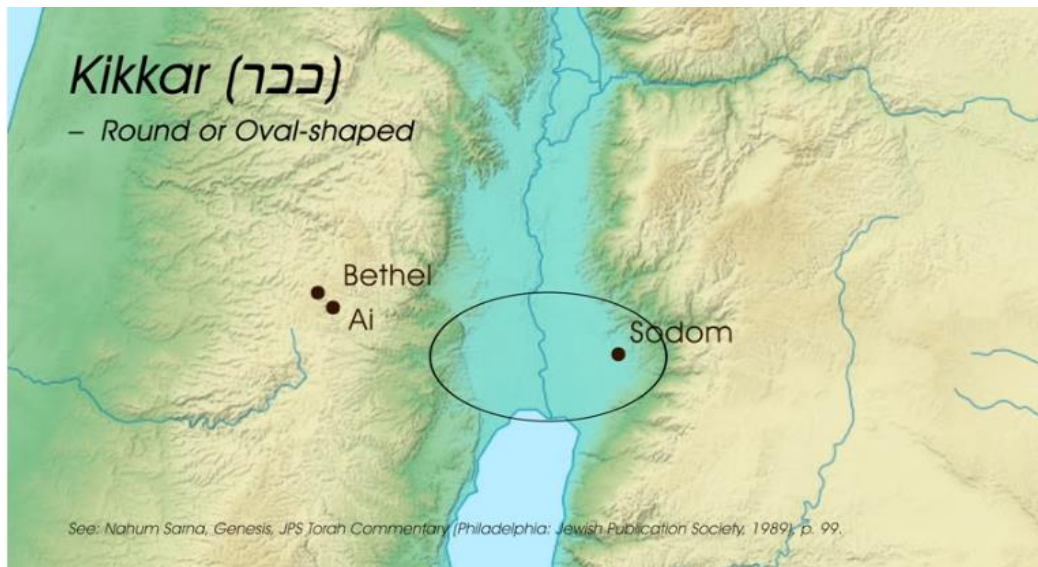
And he journeyed on from the Negeb as far as Bethel to the place where his tent had been at the beginning, between Bethel and Ai ... And Lot lifted up his eyes and saw that the Jordan Valley was well watered everywhere like the garden of the LORD, like the land of Egypt, in the direction of Zoar. (This was before the LORD destroyed Sodom and Gomorrah.) So Lot chose for himself all the Jordan Valley, and Lot journeyed east. Thus they separated from each other. Abram settled in the land of Canaan, while Lot settled among the cities of the valley and moved his tent as far as Sodom. – Genesis 13:3,10-12

From the above, key geographical identifiers for the Jordan Kikkar (and Sodom) are:

- a) Visible from a vantage point around Bethel and Ai
- b) Identified with the Jordan river and disc-shaped
- c) Well watered
- d) In the direction of Zoar from Bethel
- e) East of Bethel and Ai
- f) Multiple cities including Sodom

As described previously, the area surrounding Tall el-Hammam matches identifiers **b** and **f**. Although the precise identification (and thus location) of Zoar is disputed⁹, identifier **d** is not required as the other markers are sufficient.

Regarding identifiers **a** and **e**, the location of Bethel and Ai are generally acknowledged as follows:



A proposed location of Sodom relative to Bethel and Ai¹⁰

⁷ Silvia, *The Geography & History of Tall el-Hammam*, here 3.

⁸ Ted E. Bunch et al, “A Tunguska sized airburst destroyed Tall el-Hammam a Middle Bronze Age city in the Jordan Valley near the Dead Sea,” *Scientific Reports volume 11, Article number: 18632 (2021)*, 3. Available at: <https://www.nature.com/articles/s41598-021-97778-3>

⁹ Biblical Archaeology Society Staff, “Locating Zoar,” *Biblical Archaeological Society* (accessed 21-Sep-2021): <https://www.biblicalarchaeology.org/daily/archaeology-today/biblical-archaeology-topics/locating-zoar/>

¹⁰ Michael Jones, “Sodom and Gomorrah: Biblical Archaeology,” *InspiringPhilosophy* (accessed 21-Sep-2021): <https://www.youtube.com/watch?v=2n-RYzSzSe0> [3:22]

According to William Thomsom’s survey, visibility doesn’t extend to the southern end of the Dead Sea: “And first, it appears to be certain, from Genesis 13:1-13, that at the time of the separation between Abraham and Lot they were at or near Bethel, some twelve or fifteen miles north of Jerusalem, and sixty or seventy miles from the south end of the Dead Sea. Lot, therefore, without a miracle, could not have seen that region at all, however high he “lifted up his eyes.” The distance is too great, there is a haze over the sea which obscures the view, and, finally, high mountains on the western shore entirely intercept the prospect.”¹¹



“Plains of Moab and Tall el-Hammam from the west”¹²

Steven Collins concludes: “This is precisely how the 19th century explorer-scholars—Conder, Thomson, Merrill, and Tristram, to mention a few—located Sodom northeast of the Dead Sea in the area of Tall el-Hammam, paying close attention to the remarkable geographical details preserved in Genesis 13:1-12. It is exactly how—and independently—I came to realize that the correct location of Sodom was, in fact, northeast of the Dead Sea, visible from, and eastward from, Bethel/Ai.”¹³

Finally, as regards identifier *c*, Tall el-Hammam had access to two perennial wadis, six freshwater springs and a hot mineral spring¹⁴ (hammam is the Arabic term for steam bath). The freshwater held by the nearby Kafrein Dam¹⁵ shows that the area was once substantially more irrigated.

¹¹ Steven Collins, “A Late Nineteenth-Century Missionary-Scholar’s Position on the Location of Sodom and Gomorrah: Excerpts from *The Land and the Book*,” *Biblical Research Bulletin, The Academic Journal of Trinity Southwest University*, Volume V, Number 5 (2005): 2. Available at: <http://nebula.wsimg.com/895c6e9c4cd3baf5adcb03e6b7f7e7b4?AccessKeyId=0DC57D8CA671AC05ECA4&diposition=0&alloworigin=1>

¹² Bill Schlegel, “Biblical Problems with Locating Sodom at Tall el-Hammam,” *Biblical Archaeology Society* (accessed 21-Sep-2021): <https://www.biblicalarchaeology.org/wp-content/uploads/2017/10/biblical-problems-with-locating-sodom.html>

¹³ Steven Collins, “Tall el-Hammam Is Still Sodom: Critical Data-Sets Cast Serious Doubt on E.H. Merrill’s Chronological Analysis,” *Biblical Research Bulletin, The Academic Journal of Trinity Southwest University*, Volume XIII, Number 1 (2013): 3. Available at: https://web.archive.org/web/20130927170737/http://www.tallehammam.com/uploads/BRB-2013-1-Collins_Answers_Merrill.pdf

¹⁴ Silvia, *The Geography & History of Tall el-Hammam*, here 2.

¹⁵ Silvia, *The Geography & History of Tall el-Hammam*, here 5.



Google Maps location of the Kafrein Dam with respect to Tall el-Hammam¹⁶

Archaeological Finds at Tall el-Hammam

Amidst tensions between modern Israel and Jordan until 1994 A.D.¹⁷, the Jordan Kikkar remained generally unexcavated – land mines were an actual concern¹⁸. With its elevation ranging from 25-85m above the surrounding plain, Tall el-Hammam was used for artillery emplacements in 1967 A.D.¹⁹. Earnest excavation of the site only began in 2006 A.D. under the direction of Collins and the Jordanian Department of Antiquities²⁰.

Tall el-Hammam comprises upper and lower sections, each with a footprint of around 40 acres – around 5 times larger than Jericho²¹, making it “one of the largest cities at that time in all the ancient Near East.”²² This would fit mentions of Sodom which is formulaically listed first among other cities²³ (e.g. Gen 10:19 & 14:2, Deut 29:23).

¹⁶ Google Maps, “Tall al Ḥammām, Jordan directions to Kafrein Dam, Jordan,” *Google Maps* (accessed 21-Sep-2021):

<https://www.google.com/maps/dir/Tall+al+%E1%B8%A8amm%C4%81m,+Jordan/Kafrein+Dam,+Jordan/@31.8511631,35.6715204,4572m/data=!3m1!1e3!4m14!4m13!1m5!1m1!1s0x151cb1693796f841:0xc4faaa77534a1161!2m2!1d35.68!2d31.8394444!1m5!1m1!1s0x151cb117bd028261:0xde3c1489698707dd!2m2!1d35.6765107!2d31.8555528!3e2?hl=en>

¹⁷ Wikipedia, “Israel–Jordan peace treaty,” *Wikipedia* (accessed 21-Sep-2021):

https://en.wikipedia.org/wiki/Israel%E2%80%93Jordan_peace_treaty

¹⁸ Steven Collins and Latayne C. Scott, *Discovering the City of Sodom: The Fascinating, True Account of the Discovery of the Old Testament's Most Infamous City* (N.p: Howard Books, 2016), Kindle Edition: 45.

¹⁹ Silvia, *The Geography & History of Tall el-Hammam*, here 1.

²⁰ Silvia, *The Geography & History of Tall el-Hammam*, here 1.

²¹ Bunch et al, “A Tunguska sized airburst destroyed Tall el-Hammam,” 3.

²² Associates for Biblical Research, “Tall el-Hammam 2008 A Personal Perspective,” *Associates for Biblical Research* (accessed 21-Sep-2021): <https://biblearchaeology.org/research/patriarchal-era/4108-tall-elhammam-2008-a-personal-perspective> [The Early Bronze Age: Tall el-Hammam and the Table of Nations]

²³ Steven Collins, “If You Thought You Knew the Location of Sodom and Gomorrah... Think Again,” *Biblical Research Bulletin, The Academic Journal of Trinity Southwest University*, Volume VII, Number 4 (2007): 4.

Available at:

<http://nebula.wsimg.com/1ebd2d675286d6909607a31c99461da6?AccessKeyId=0DC57D8CA671AC05ECA4&disposition=0&alloworigin=1>

Excavations uncovered Early Bronze Age city walls 18-feet thick and 40-feet high²⁴. Middle Bronze defensive fortifications were built atop these earlier structures, including walls 12-feet thick and 35-feet high, with towers and a 35-degree sloped rampart leading 150 feet out from the wall. A mudbrick rampart around the upper city reached 90-feet above the lower city rooftops²⁵.

Entrance was provided by a Middle Bronze monumental gateway, complete with a 70-foot wide gatehouse flanked by 45-feet tall towers²⁶. This corroborates the Biblical description: ...*Lot was sitting in the gate of Sodom.* – Genesis 19:1.



“TeHEP dig director, Dr. Steve Collins, and the author standing on top of what remains of the Early Bronze city wall, with the Early Bronze roadway in the foreground.”²⁷

Contained within are at least two city squares, a palace structure with red-plastered 6-feet thick walls, a temple with 10-feet thick walls, and a 67x200-foot complex²⁸. Sodom is similarly described: ... “*No; we will spend the night in the town square.*” – Genesis 19:3.



“Catastrophic leveling of the palace at TeH”²⁹

²⁴ Collins and Scott, *Discovering the City of Sodom*, 161.

²⁵ Collins and Scott, *Discovering the City of Sodom*, 167.

²⁶ Collins and Scott, *Discovering the City of Sodom*, 162-163.

²⁷ Gary Byers, “CSI Hammam: The Fifth Season of Investigating a Biblical City,” *Associates for Biblical Research* (accessed 21-Sep-2021): <https://biblearchaeology.org/research/topics/tall-el-hammam-field-reports/3693-csi-hammam-the-fifth-season-of-investigating-a-biblical-city> [The Early Bronze Age Defensive Fortification System]

²⁸ Collins and Scott, *Discovering the City of Sodom*, 163-164.

²⁹ Bunch et al, “A Tunguska sized airburst destroyed Tall el-Hammam,” 4.

A domestic house was also uncovered, surrounded by streets and alleys³⁰. Sodom had space for a large crowd to gather: ...*the people to the last man, surrounded the house.* – *Genesis 19:4*.

Pottery and architectural styles at Tall el-Hammam reveal continuous occupation from the Chalcolithic Age (around 4500B.C.) to a peak in the Middle Bronze Age (around 1700B.C.). There is a mysterious 600-700 year absence through the Late Bronze to Iron 1 ages, leading to minimal occupation during Iron Age 2 to the Roman period³¹. This observation is also seen at other nearby sites: “the LBA gap in the pottery repertoire at Kafrayn is consistent with Tall el-Hammam and Tall Nimrin.”³² From the subsequent Roman and Byzantine times were found other artifacts³³.

Pottery discovered underneath a meter of ash and destruction debris³⁴ were used to date Tall el-Hammam. These include storage jars, a clay-lined storage bin, and piriform juglets of evolving design showing continuous occupation from Early Bronze 3 to the end of Middle Bronze 2. Radiocarbon dating of organic material gave an estimate of 1650B.C ± 50³⁵.



*Some of the pottery fragments recovered from Tall el-Hammam*³⁶

Immediately above the debris with Middle Bronze artifacts are distinctively Iron Age buildings³⁷. This means that Tall el-Hammam was unoccupied through the Late Bronze Age – an unusual break in its history. The suddenness of abandonment is evidenced by a pot containing an uneaten meal of goat³⁸. All signs of occupation are absent through Late Bronze to Iron Age 1,

³⁰ Collins and Scott, *Discovering the City of Sodom*, 162.

³¹ Silvia, *The Geography & History of Tall el-Hammam*, here 1.

³² Phillip J. Silvia, “When Data Defies Demagogy: What We Have Learned from Tall el-Hammam and Its Neighbors,” *Conference: ASOR Annual Meeting (2016)*, 3. Available at: https://www.researchgate.net/publication/310510933_When_Data_Defies_Demagogy_What_We_Have_Learned_from_Tall_el-Hammam_and_Its_Neighbors

³³ Associates for Biblical Research, *Tall el-Hammam 2008 A Personal Perspective*: <https://biblearchaeology.org/research/patriarchal-era/4108-tall-elhammam-2008-a-personal-perspective> [The Greco-Roman Period: The Tall el-Hammam of the New Testament]

³⁴ Collins and Scott, *Discovering the City of Sodom*, 168-169.

³⁵ Bunch et al, “*A Tunguska sized airburst destroyed Tall el-Hammam*,” 8.

³⁶ Victoria Woollaston, “Has the Biblical city of Sodom been found? 'Monstrous' site in Jordan matches the descriptions of the area destroyed by God in the Old Testament,” *MailOnline* (accessed 21-Sep-2021): <https://www.dailymail.co.uk/sciencetech/article-3270999/Has-Biblical-city-Sodom-Monstrous-site-Jordan-matches-descriptions-area-destroyed-God.html>

³⁷ Collins and Scott, *Discovering the City of Sodom*, 171.

³⁸ Phillip J. Silvia, “A Preliminary Estimate of the Timing of Sodom's Destruction,” *Chronology & Catastrophism Review (2015)*, 34-37, here 8-10. Available at:

returning centuries later in Iron Age 2³⁹. From this evidence, Collins concludes: “the date-range of that pottery corpus has begun to solidify between 1750 and 1650 based on several key forms (or lack thereof).”⁴⁰



“Iron Age 2 city wall (A) built directly on top of the Middle Bronze Age mudbrick defensive rampart (B)”⁴¹



“Middle Bronze Age house in a destruction layer, beneath 10 feet of Iron Age strata”⁴²

Tall el-Hammam being uninhabited for an extended period matches various Bible passages describing the fate of Sodom, such as Isaiah 1:9 & 13:19-22, Jeremiah 49:18 & 50:39-40, Zephaniah

https://www.researchgate.net/publication/273459551_A_Preliminary_Estimate_of_the_Timing_of_Sodom%27s_Destruction

³⁹ Collins and Scott, *Discovering the City of Sodom*, 152-153.

⁴⁰ Collins, *Tall el-Hammam Is Still Sodom*, 8.

⁴¹ Collins and Scott, *Discovering the City of Sodom*, 170.

⁴² Associates for Biblical Research, *Tall el-Hammam 2008 A Personal Perspective*:

<https://biblearchaeology.org/research/patriarchal-era/4108-tall-elhammam-2008-a-personal-perspective> [The Middle Bronze Age: Tall el-Hammam in the Days of Abraham and Lot]

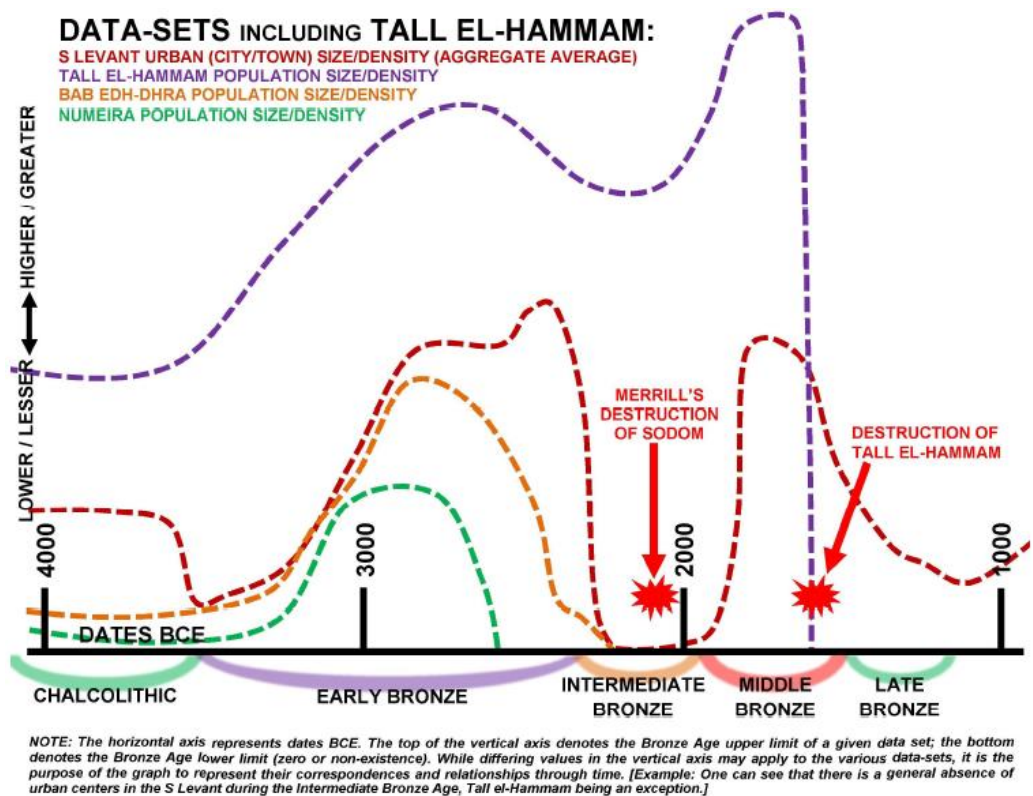
2:9 and 2 Peter 2:6. The suddenness of the devastation is also referenced: ...*Sodom, which was overthrown in a moment* – *Lamentations 4:6*.

A Long, Wide Gap in History

Other settlements nearby Tall el-Hammam experienced similar abandonment: “Toward the end of MB2, civilization throughout the Kikkar came to an abrupt end.”⁴³

Resettlement was absent for centuries: “The sites on the eastern side of the Kikkar remained uninhabited throughout the Late Bronze Age (LB) into the Iron Age (IA). It was not until ca. 1000 BCE (IA2, possibly late IA1) that civilization returned to Hamman, Iktanu, Nimrin, Rama, Bleibel, and Mustah. (None of these sites contain LB pottery. There are only traces of IA1 pottery. The pottery witness resumes with IA2.)”⁴⁴

This seven-century inhabitation gap is known as ‘the Late Bronze gap’⁴⁵. Whatever caused the abandonment of Tall el-Hammam also affected the entire area of the Jordan Kikkar, with the population dropping 100-fold⁴⁶ – but not further afield, with abundant evidence of Late Bronze occupation outside the Jordan Kikkar⁴⁷.



“The event wiped out the sophisticated civilization of the Land of the Kikkar”⁴⁸

⁴³ Silvia, *The Geography & History of Tall el-Hammam*, here 2.

⁴⁴ Silvia, *The Geography & History of Tall el-Hammam*, here 3.

⁴⁵ Collins and Scott, *Discovering the City of Sodom*, 152.

⁴⁶ Bunch et al, “A Tunguska sized airburst destroyed Tall el-Hammam,” 49.

⁴⁷ Collins and Scott, *Discovering the City of Sodom*, 153.

⁴⁸ Collins, *Tall el-Hammam Is Still Sodom*, 5.

The Bible states about Sodom and Gomorrah: ...*And he overthrew those cities, and all the valley, and all the inhabitants of the cities, and what grew on the ground.* – Genesis 19:25.

A Great & Fiery Disaster

The physical evidence uncovered at Tall el-Hammam indicates destruction by high temperatures on a massive scale: “The ash and destruction debris from Tall el-Hammam’s terminal Middle Bronze 2 occupational level ranges from half a meter to two meters thick over both the upper and lower tells. Embedded in those layers are broken and tumbled mudbricks, mashed and charred pottery vessels and other day-to-day objects, and human bones—all violently churned into a telltale, ashy matrix.”⁴⁹ Indeed, the New Testament’s reminiscing on Sodom mentions just that: ...*by turning the cities of Sodom and Gomorrah to ashes he condemned them to extinction* – 2 Peter 2:6.

Regarding the human remains: “the skeletal remains were intrinsic to the ash layer, which dates to the Middle Bronze 2 according to the ceramics”⁵⁰ and “Some of the joints are hyperextended or twisted apart unnaturally ... One is charred off at mid-femur.”⁵¹ Hyper-flexed toes indicate exposure to high temperatures⁵².



*Middle Bronze Age layer of ash and destruction debris*⁵³

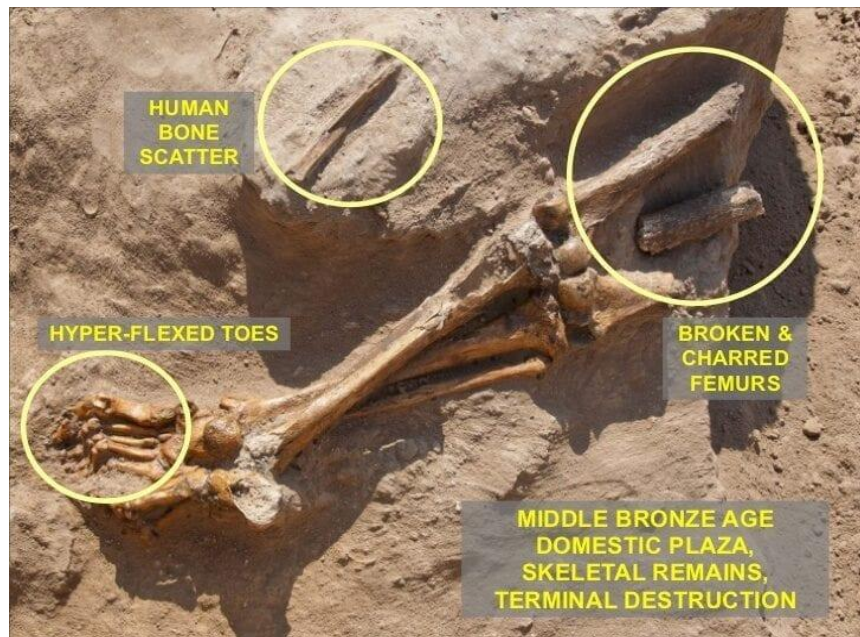
⁴⁹ Collins and Scott, *Discovering the City of Sodom*, 152.

⁵⁰ Collins and Scott, *Discovering the City of Sodom*, 175.

⁵¹ Collins and Scott, *Discovering the City of Sodom*, 176.

⁵² Bunch et al, “A Tunguska sized airburst destroyed Tall el-Hammam,” 45.

⁵³ Brian Nixon, “More Evidence Confirms Tall el-Hammam as Sodom,” *Assist News Service* (accessed 21-Sep-2021): <https://www.assistnews.net/more-evidence-confirms-tall-el-hammam-as-sodom/>



Human remains discovered in the destruction layer⁵⁴

As described earlier, Middle Bronze wall foundations were found in the city perimeter – these were scorched and underneath the ash layer⁵⁵, while large finishing stones show heat fracturing⁵⁶. Melted mudbrick and roofing clay was also found⁵⁷. However, the actual structures are absent except for some pieces mixed into the ash matrix: “millions of mudbricks are missing”⁵⁸. It is as though the buildings were swept clean off their foundations: ...*lest you be swept away in the punishment of the city.* - *Genesis 19:15*. A similar phenomenon is seen at Tall Nimrin⁵⁹ about 5km away – indicating a very large radius.

Among the various artifacts found at Tall el-Hammam, special attention is drawn to pottery sherds that are melted in such a way as to resemble trinitite:

⁵⁴ Gary Baxter, “Sodom found scripture confirmed,” *A Defence of the Bible* (accessed 21-Sep-2021): <https://www.adeffenceofthebible.com/2019/08/29/sodom-found-scripture-confirmed/>

⁵⁵ Biblical Archaeology Society Staff, “Where Is Sodom?” *Biblical Archaeology Society* (accessed 21-Sep-2021): <https://www.biblicalarchaeology.org/daily/biblical-sites-places/biblical-archaeology-sites/where-is-sodom/>

⁵⁶ Bunch et al, “A Tunguska sized airburst destroyed Tall el-Hammam,” 4.

⁵⁷ Bunch et al, “A Tunguska sized airburst destroyed Tall el-Hammam,” 10, 15-18.

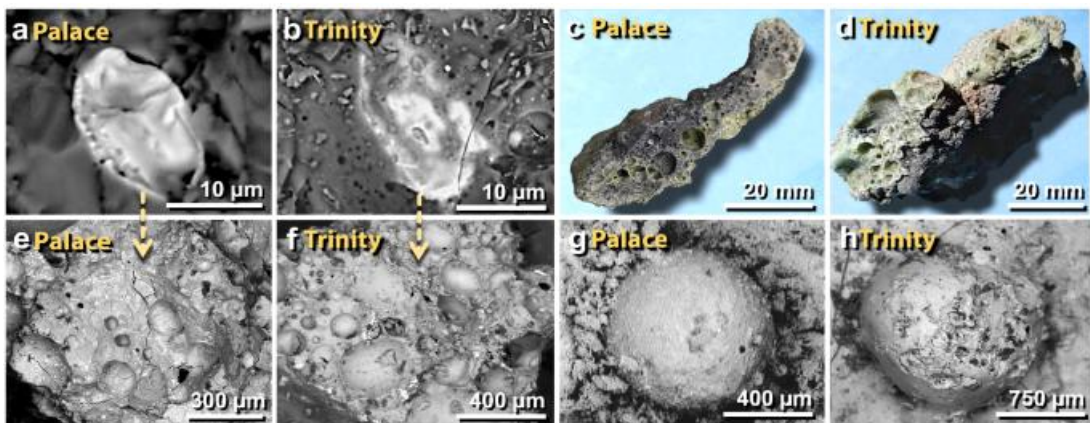
⁵⁸ Bunch et al, “A Tunguska sized airburst destroyed Tall el-Hammam,” 5.

⁵⁹ Collins and Scott, *Discovering the City of Sodom*, 159-160.



“Melted pottery sherd (left), found at Tall el-Hammam, and ‘trinitite’ pieces (right) from ground zero of the Trinity site near Alamogordo”⁶⁰

Trinitite is so named because it was first identified at the Trinity nuclear test site – which should give an indication of the extreme heat required to form this material. It is estimated that during the nuclear test, trinitite formed from sand heated to 1470°C⁶¹.



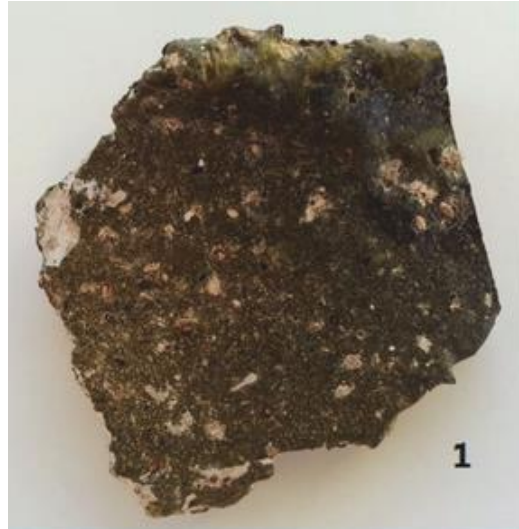
Comparison of melted materials from Tall el-Hammam palace with Trinity nuclear test:
a+b zircon; c+d potsherd; e+f glass; g+h spherule⁶²

⁶⁰ Anne-Marie (Ami) de Grazia, “Sodom annihilated by meteoritic blast,” *Q-mag.org* (accessed 21-Sep-2021): <https://www.q-mag.org/sodom-annihilated-by-meteoritic-blast.html>

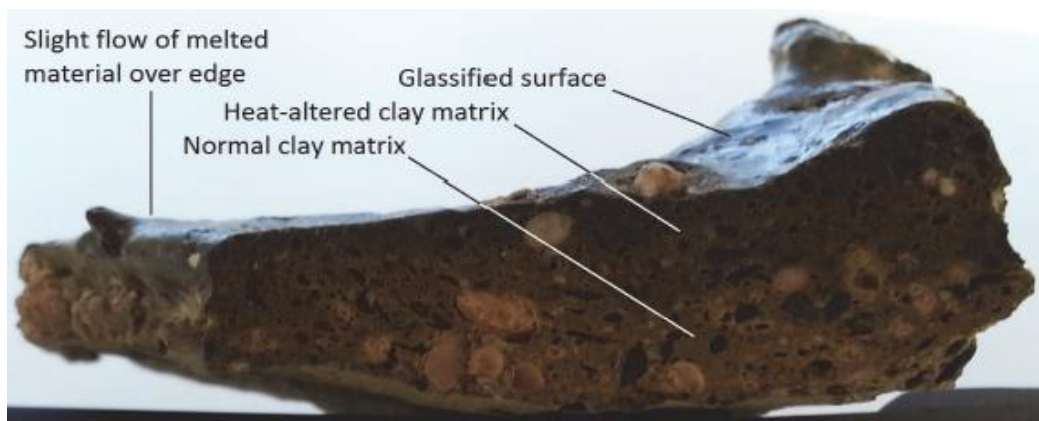
⁶¹ Centers for Disease Control and Prevention, “INTERIM REPORT OF CDC’S LAHDRA PROJECT – Appendix N,” *Centers for Disease Control and Prevention* (2007), 38. Available at: https://web.archive.org/web/20140317164653/http://www.lahdra.org/reports/LAHDRA%20Report%20v5%20007_App%20N_Trinity%20Test.pdf

⁶² Bunch et al, “A Tunguska sized airburst destroyed Tall el-Hammam,” 54.

Furthermore, melted quartz and chromite grains at Tall el-Hammam indicate temperatures of around 1700°C⁶³ and 2265°C respectively⁶⁴. Ancient smelting or pottery techniques could not achieve these temperatures⁶⁵. Furthermore, unusual characteristics of the melted pottery point to brief – not prolonged – exposure to high temperatures. Several pottery sherds have a glassified surface, yet the interiors were only slightly altered by heat and opposite sides of the sherds remained untouched.



“Top 1 mm of 5 mm thick sherd is melted to glass”⁶⁶



“Thermal Impact on Pottery Sherd”⁶⁷

Several sherds contained bubbles of zircon, indicating extremely high temperatures: “Using Scanning Electron Microscopy (SEM) to image the detail of selected sherds, we have identified specific melted zircon crystals that have melting temperatures of 2,200°C which is higher than the melting temperature of the clay (about 1,700°C) that formed the glass. The most recent SEM examination (using a more powerful device than before) identified vesicles within the melted zircon

⁶³ Bunch et al, “A Tunguska sized airburst destroyed Tall el-Hammam,” 27-28.

⁶⁴ Bunch et al, “A Tunguska sized airburst destroyed Tall el-Hammam,” 36.

⁶⁵ Bunch et al, “A Tunguska sized airburst destroyed Tall el-Hammam,” 51.

⁶⁶ Phillip J. Silvia et al, “The 3.7kaBP Middle Ghor Event: Catastrophic Termination of a Bronze Age Civilization,” *Annual Meeting of the American Schools of Oriental Research (ASOR) (2018)*, 5. Available at: https://www.researchgate.net/publication/329755765_The_37kaBP_Middle_Ghor_Event_Catastrophic_Termination_of_a_Bronze_Age_Civilization/

⁶⁷ Silvia, *The 3.7kaBP Middle Ghor Event*, 6.

crystal that indicate boiling of the melted material at 4,000°C.”⁶⁸ Materials analysis concluded that the temperatures were: “hot enough to penetrate the sherd’s surface and boil the zircons, yet of a short enough duration to avoid a complete meltdown. Clearly, this is not a temperature/exposure profile that was within the capability of MBA people!”⁶⁹ Geochemist Nelia Dunbar remarked that it would require temperatures of around 2000°C that quickly subside – concluding that ancient smelting techniques could not achieve this, and suggested either volcanic magma, lightning or nuclear detonation as the cause⁷⁰.

Fire From Heaven

Collins proposed that a meteoric airburst above the Jordan Kikkar⁷¹ meets the conditions observed⁷²: widespread effect; intensely high but brief temperatures; removal of mudbrick structures; and no direct contact with the ground (due to lack of impact crater). Phillip Silvia argues that a meteoric blast fits the observed data best, while conversely there is: “large-scale absence of tumbled mudbrick that would be typical of earthquake damage”⁷³. Bunch et al propose that only a meteoric event matches all 17 lines of destruction evidence⁷⁴.

An atmospheric event would also exactly match the Biblical account in a way: ...*Then the LORD rained on Sodom and Gomorrah sulfur and fire from the LORD out of heaven.* – Genesis 19:24. Meteors, by definition, come to earth from the skies above – atmospheric friction heating them to temperatures exceeding 1600°C⁷⁵.

Regarding the ‘sweeping away’ of mudbrick structures, Silvia notes that he: “observed certain features within the architectural remains that suggest the possible cause of the destruction event being a meteoritic airburst. The event horizon clearly exists at Tall el-Hammam (the MBA destruction layer) and was also observed at Tall Nimrin”⁷⁶.

In 1908A.D., the craterless Tunguska Event flattened 2000 square km and charred 100 square km of forest⁷⁷. Hence, a similar meteoric airburst could devastate the Jordan Kikkar’s 500 square km⁷⁸. Shocked quartz – a commonly accepted cosmic impact indicator – was found at Tall el-Hammam⁷⁹. Silvia terms it *The 3.7kaBP Middle Ghor Event*: “a Tunguska-like, cosmic airburst event that obliterated civilization—including the Middle Bronze Age (MBA) city-state anchored by Tall el-Hammam—in the Middle Ghor (the 25 km diameter circular plain immediately north of the Dead Sea) ca. 1700 BCE, or 3700 years before present (3.7kaBP).”⁸⁰

⁶⁸ Silvia, *The 3.7kaBP Middle Ghor Event*, 4.

⁶⁹ Silvia, *The 3.7kaBP Middle Ghor Event*, 5.

⁷⁰ Collins and Scott, *Discovering the City of Sodom*, 206-209.

⁷¹ Collins and Scott, *Discovering the City of Sodom*, 223-229.

⁷² Bunch et al, “*A Tunguska sized airburst destroyed Tall el-Hammam*,” 54-56.

⁷³ Evan Gough, “A Meteor may have Exploded in the Air 3,700 Years Ago, Obliterating Communities Near the Dead Sea,” *Universe Today* (accessed 21-Sep-2021):

<https://www.universetoday.com/140752/a-meteor-may-have-exploded-in-the-air-3700-years-ago-obliterating-communities-near-the-dead-sea/>

⁷⁴ Bunch et al, “*A Tunguska sized airburst destroyed Tall el-Hammam*,” 52-53, 57.

⁷⁵ Space.com Staff, “Meteor showers and shooting stars: Formation, facts and discovery,” *Space.com* (accessed 21-Sep-2021): <https://www.space.com/15353-meteor-showers-facts-shooting-stars-skywatching-sdcmp.html>

⁷⁶ Phillip J. Silvia, “Fire-from-the-Sky Final Report,” N.p. (2018), 4. Available at: https://experiment-uploads.s3.amazonaws.com/file-attachments/user/43030/IXNRLI4TkObmLI117vj3_SkyFire%20Final%20Report.pdf p4

⁷⁷ Edward F. Tedesco, “Tunguska event,” *Encyclopedia Britannica* (accessed 21-Sep-2021): <https://www.britannica.com/event/Tunguska-event>

⁷⁸ Silvia, *The 3.7kaBP Middle Ghor Event*, 1.

⁷⁹ Bunch et al, “*A Tunguska sized airburst destroyed Tall el-Hammam*,” 21-27.

⁸⁰ Silvia, *The 3.7kaBP Middle Ghor Event*, 1.

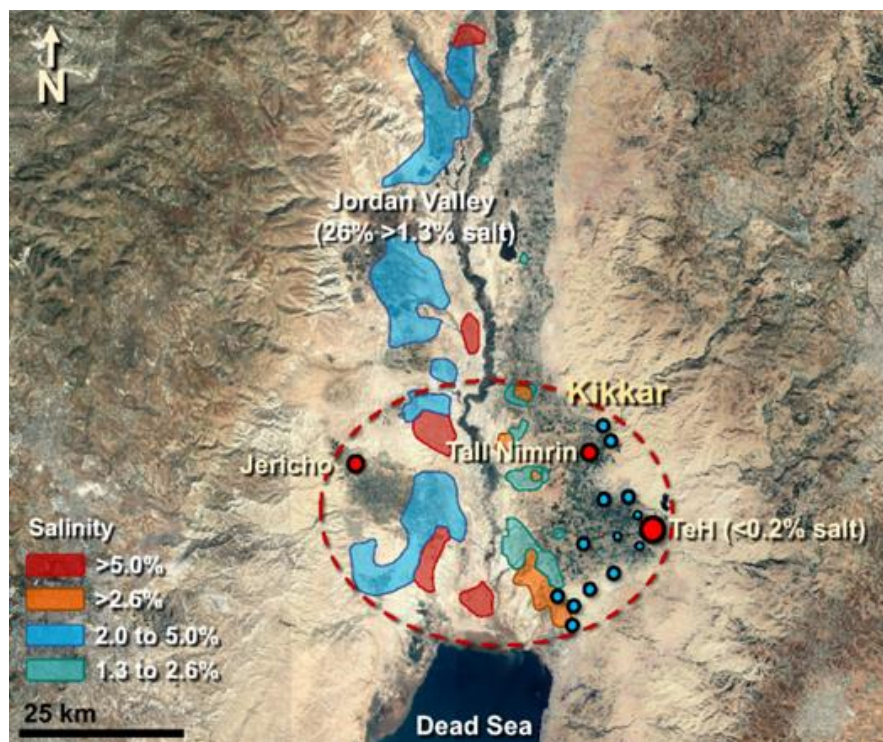
Salting the Earth

It is commonly known that salt is part of the Sodom destruction narrative: *...But Lot's wife, behind him, looked back, and she became a pillar of salt.* – Genesis 19:26.

The Bible indicates that salt was sown across the whole Jordan Kikkar: *...the whole land burned out with brimstone and salt, nothing sown and nothing growing, where no plant can sprout, an overthrow like that of Sodom and Gomorrah, Admah, and Zeboim* – Deuteronomy 29:23.

Additionally: *Moab shall become like Sodom, and the Ammonites like Gomorrah, a land possessed by nettles and salt pits, and a waste forever.* – Zephaniah 2:9.

Tall el-Hammam is riddled with salt crust and crystals⁸¹. Silvia's team conducted a survey: "Six samples from above, through, and below the soil layer from the time of the event were analyzed geochemically. The results showed "salt and sulfate levels > 6% (60,000 ppm) in the ash layer and > 5% (50,000 ppm) in the soil layers immediately above and below the ash layer," ... making it unable to support agriculture for hundreds of years. It only takes a salt content of 12,800 ppm to prevent wheat from germinating, and a salt content of 17,900 ppm to prevent barley from growing."⁸²



"modern-day salinity concentrations of $\geq 1.3\%$, considered lethal for many domestic food crops"⁸³

Silvia proposes: "The soil contamination by Dead Sea salts as well as the directionality indicators observed at Tall el-Hammam suggest that the north end of the Dead Sea was ground zero for the 3.7kaBP Event."⁸⁴ He suggests that this resulted in: "stripping agricultural soils from once-

⁸¹ Bunch et al, "A Tunguska sized airburst destroyed Tall el-Hammam," 48.

⁸² Evan Gough, *A Meteor may have Exploded in the Air 3,700 Years Ago*: <https://www.universetoday.com/140752/a-meteor-may-have-exploded-in-the-air-3700-years-ago-obliterating-communities-near-the-dead-sea/>

⁸³ Bunch et al, "A Tunguska sized airburst destroyed Tall el-Hammam," 50.

⁸⁴ Silvia, *The 3.7kaBP Middle Ghor Event*, 7.

fertile fields and covering the eastern Middle Ghor with a super-heated brine of Dead Sea anhydride salts pushed over the landscape by the Event's frontal shockwaves."⁸⁵

Hence, plant growth around Tall el-Hammam was prevented by large amounts of salt in the soil – just as the Bible describes of Sodom.

Counter-arguments – Tall el-Hammam is not Sodom

Several objections have been raised against the identification of Tall el-Hammam as Sodom, often based on assumptions about the timeframe of Abraham (who was alive at the time of Sodom's destruction).

Simon Turpin of Answers Research Journal argues that the size⁸⁶ and Iron Age reoccupation⁸⁷ don't match Biblical descriptions of Sodom, but mainly objects due to chronology: "the biblical record strongly indicates that Abraham's life falls between 2166–1991 BC, which means Tall el-Hammam cannot be Sodom as it was destroyed between 1750–1650 BC"⁸⁸. However, Turpin concedes that the general geographical area can fit the Biblical data⁸⁹.

Todd Bolen of Biblical Archaeology Review similarly argues that the chronology doesn't match, as well as the geography⁹⁰. He references Eugene Merrill, Professor of Old Testament Studies at Dallas Theological Seminary who insists the Biblical dates cannot fit⁹¹ – but otherwise does find the location and size suitable⁹². Bolen also references Bill Schlegel of The Master's College, Israel Bible Extension whose view is that Sodom is in a more southern area⁹³.

Collins responded in reply that Merrill's chronology is rejected by scholars like Albright, Wright, Freedman, Millard and Kitchen⁹⁴. An alternate Biblical chronology supported by the Septuagint, Samaritan Pentateuch, Josephus and Galatians 3:16-17 puts Abraham's lifetime around the 19th-century B.C⁹⁵. Moreover, Collins argues: "every available line of evidence from ANE archaeology, history, culture, literature, climatology, and socio-economics demonstrates that the patriarchs fit best in the period following 1800 BCE, which also conforms to the terminal MB2 destruction of Hammam/Sodom."⁹⁶ He goes on to cite similar conclusions by Kenneth Kitchen⁹⁷ (Collins had already cited Kitchen's dating in *Discovering the City of Sodom*⁹⁸).

⁸⁵ Phillip J. Silvia et al, "9E. Environmental Archaeology of the Ancient Near East," *2018 ASOR Abstract Book (2018)*, 151-152. Available at: http://www.asor.org/wp-content/uploads/2018/10/2018-Abstract-Book_updated_10-15-18.pdf

⁸⁶ Simon Turpin, "Biblical Problems with Identifying Tall el-Hammam as Sodom," *Answers Research Journal* 14 (2021): 45–59, here 46, footnote 10. Available at: www.answersingenesis.org/arj/v14/tall-el-hammam_sodom.pdf.

⁸⁷ Turpin, *Biblical Problems with Identifying Tall el-Hammam as Sodom*, 56-57.

⁸⁸ Turpin, *Biblical Problems with Identifying Tall el-Hammam as Sodom* 47.

⁸⁹ Turpin, *Biblical Problems with Identifying Tall el-Hammam as Sodom* 45.

⁹⁰ Todd Bolen, "Arguments Against Locating Sodom at Tall el-Hammam," *Biblical Archaeology Society* (accessed 21-Sep-2021): <https://www.biblicalarchaeology.org/daily/biblical-sites-places/biblical-archaeology-sites/arguments-against-locating-sodom-at-tall-el-hammam/>

⁹¹ Eugene H. Merrill, "Texts, Talls, and Old Testament Chronology: Tall Hammam as a Case Study," *N.p.* (N.d.), 2-5. Available at: <http://www.radioscribe.com/MerrillRebuttal.pdf>

⁹² Merrill, *Texts, Talls, and Old Testament Chronology*, 1.

⁹³ Todd Bolen, "Biblical Problems with Locating Sodom at Tall el-Hammam," *BiblePlaces Blog* (accessed 22-Sep-2021):

<https://www.bibleplaces.com/2012/01/biblical-problems-with-locating-sodom/>

⁹⁴ Collins, *Tall el-Hammam Is Still Sodom*, 7.

⁹⁵ Collins, *Tall el-Hammam Is Still Sodom*, 8.

⁹⁶ Collins, *Tall el-Hammam Is Still Sodom*, Abstract.

⁹⁷ Collins, *Tall el-Hammam Is Still Sodom*, 12.

⁹⁸ Collins and Scott, *Discovering the City of Sodom*, 247-249 [Appendix B].

Michael Jones of InspiringPhilosophy agrees with Collins' identification of Tall el-Hammam⁹⁹. Jones maintains that the Bible doesn't preclude the area from being reoccupied, explaining that the prophets often used hyperbole – and even if they were being literal, the actual city named Sodom was never rebuilt¹⁰⁰.

Conclusion

The position that Tall el-Hammam is the site of Biblical Sodom has been gaining ground among scholars such as Silvia¹⁰¹, Craig Olson and David Graves¹⁰². In my opinion, the physical evidence at Tall el-Hammam matches well: located in the Jordan Kikkar east of Canaan; a large city with gates and a square; utterly destroyed by fire along with the other cities of the area; the soil contaminated by salt. The main objection to identifying Tall el-Hammam as Sodom is certain interpretations of Biblical chronology – to which there are solid rebuttals.

If Tall el-Hammam is really Sodom, then it represents a spectacular and foundational corroboration of the Bible's veracity. Spectacular, because the fiery destruction of Sodom is one of the most dramatic Bible narratives. Foundational, because if something as 'unbelievable' as total obliteration from heaven really did occur, then how much more so the more mundane accounts in the Bible!

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⁹⁹ Jones, *Sodom and Gomorrah: Biblical Archaeology*: <https://www.youtube.com/watch?v=r-teJabFF90>

¹⁰⁰ Michael Jones, "Yes, Tall el-Hammam is Sodom," *InspiringPhilosophy* (accessed 22-Sep-2021): <https://inspiringphilosophy.wordpress.com/2021/07/16/yes-tall-el-hammam-is-sodom/>

¹⁰¹ Silvia, *When Data Defies Demagogy*, 3.

¹⁰² Turpin, *Biblical Problems with Identifying Tall el-Hammam as Sodom*: here 46.

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