Water management in old Niya Kingdom: A full investigation on the ancient water tanks in Stein’s « modest Pompeii »

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<th>Chronological setting in Niya</th>
<th>Major historical events in Niya</th>
<th>Chinese chronology</th>
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| **Late 4th – Late 3rd BCE**   | Older Settlement north of Old Niya kingdom  
City wall discovered from Chinese archaeological team | Eastern Zhou period  
(1046-256 BCE)  
Warring states Period  
(471-221 BCE)  
Qin Period  
(221-206 BCE) | 329-327 BC  
* Alexander the Great enters Sogdiana, Bactriana  
312-145BC  
* Greek kingdom of Bactriana |
| **2nd – 1st BCE**             | According to the Hanshu  
汉书:  
* 3360 people living on the site  
* 480 dwellings | Former Han Dynasty  
(206 BCE – 9 CE)  
77 BCE Han dynasty conquer Loulan  
60BCE Han Protector general of the Western Regions | Parthian hegemony  
(250 BCE– 227 CE)  
Da Yuezhi progressive arrival in northern Bactriana |
| **1st- 2nd CE**               | Introduction of the Buddhist Mahayana beliefs | Xin Dynasty (9-23 CE)  
Later Han Dynasty (25-220 CE) | Hegemony of the Kushan Empire in Central Asia and northern India |
| **2nd– late 5th C.E**         | « Progressive » Migration of Gandharan speaking people | Jin (265-420 CE)  
Wei dynasty (386-534 CE) | Vasudeva I (ca. 190 – ca. 230)  
Sassanian Empire  
(224 – 651 CE) |
| **Early 6th century**         | Niya deserted | Southern and Northern Dynasties  
(AD 420–589) | |

The table above provides a chronological summary of major historical events in Niya, along with their counterparts in Chinese and Central Asian chronologies. It covers the time periods from the Late 4th century BCE to the Early 6th century CE.
Das Tarimbecken
im 3. Jahrhundert n. Chr.
Kharoṣṭhī documents
ON ANCIENT CENTRAL-ASIAN TRACKS

BRIEF NARRATIVE OF THREE EXPEDITIONS IN INNERMOST ASIA AND NORTH-WESTERN CHINA

BY

SIR AUREL STEIN, K.C.I.E.

WITH NUMEROUS ILLUSTRATIONS, COLOUR PLATES, PANORAMAS AND MAP FROM ORIGINAL SURVEYS

MACMILLAN AND CO., LIMITED
ST. MARTIN’S STREET, LONDON

1933

Graeme Pretty
29.3.61
Zhong-Ri gong tong Jingjue yiji xueshu kaocha dui 中日共同尼雅遺跡學術調考察隊,
Zhong-Ri gong tong Jingjue yiji xueshu 中日共同尼雅遺跡學術調查報告書
(Research report of the joint Sino-Japanese academic investigation of the Niya ruins)
Three different water technologies in Niya...

1. Canals

- “the canals are easy to recognize as they used to be bordered by a double row of fine poplars, the dead trunks of which, massive and imposing even in their splintered and withered condition, lay stretched out in the sand more or less exposed.”

[Aurel Stein: AKH, 2, 380.]
1. Canals

2. Wells

“池中皆空，井中水泉减少，不足以给，人无马////” (N.XIV.ii.14/ T.O.16)

“...the tank is completely empty, water poorly springs inside the well, we cannot take it, man has no more horses for... ”
1. Canals
2. Wells
3. Water tanks
“But a careful inspection of its surroundings, [...] some features of special interest. Only some sixty yards off there still stood a square of dead mulberry trees, raising their trunks up to ten feet and more, which had once cast their shade over a tank still marked by a depression.”

[Aurel Stein: RODC, vol.I.296]
“But more curious than these was the clearness with which the position and arrangement of an ancient tank could be made out about 200 yards to the north-east of the ruin N. viii. The ground there being quite clear of dunes, the embankment of the tank forming a square of about 48 ft. was distinctly traceable. On it were lying the shriveled trunks of the large poplars that had once given shade to the water.

In the center of the tank, which in spite of the drift-sand there accumulated still showed a depth of about 6ft, a small mound of earth, about 5ft in diameter, and rising 2½ ft, above the sand attracted my attention.”

A short distance to the south the outlines of an ancient tank could still clearly be recognized within the oblong enclosure, about thirty-six by twenty-eight feet (11 × 8.5 m), formed by rows of large poplars

[Aurel Stein: SERINDIA, vol.I, 224]
“My labourers at once recognized in it a feature still regularly provided in modern village tanks. When these are being excavated a small bank of earth, known as dömbel is always left standing in the centre.

As explained to me, it is used to mark the level down to which the water of the tank has first to be let out before fresh water is introduced from the feeding canal at the periodical renewals provided for. The latter are obviously necessary, since the tanks are the chief supply of drinking water during the season when irrigation ceases.”

- If this explanation stands correct than we need to understand these tanks as large water reservoirs able to fight the difficult winter period.

- Their use is both for irrigation and more possibly, as the idea of cleaning water is essential, for drinking aspects.
Tank near Ruknuddin Mazar, Yotkan (Aurel Stein : RODC, vol. I, fig. 53)
Documents on floods, canal needing repairs or replacement

Documents concerning a need to refill the area from where water is taken

Documents on muddy water and low quality water

Documents relating to administrative matters concerning water irrigation

Documents confirming the good irrigation of crops
“Also in the morning we will break open the water in Kolamte’s tama. Now there is need of more water here.”

Tablet 604, N.xxxvi.vi.1, Oblong tablet

“Also I have heard that you have kept blocked up the water there, and am very pleased”

Tablet 157 N.iv.136, Wedge-shaped tablet
“In the 3rd year, 4th month, 15th day, at this time, it was necessary to go to the sitga potge for the second time. All the work-people came to the bridge [...] the water was very muddy (kha[lu]sa). Owing to that fault the well-born people came to an agreement. We stopped and turned back the magistrates from the sitga potge ”

Tablet 120, N.iv.56, Stick-like tablet
“His majesty, etc... The cozbo Samasena informs us that water in the potge [...] you must inquire whether it is really so.”

N.xv.05, Wedge under-tablet
“. . . . . (is) without water. When this wedge and seal arrive there, you must carefully Inquire whether it is really so.

At present the cozbo Samasena is speedily bringing a letter of command concerning the affairs of the potge […]”

Tablet 347, N.xv.195, Wedge covering-tablet
“In the twentieth year, fifth month, twenty-first day, (?) the people guarding the potge were written down. (Then follows a list of names.)”
Three possible influence in the system

1. From the East via the Han Duntian 屯田 technique
With the duntian method, a mu of land was divided into furrows and the soil plowed up from the trench was piled beside the furrow to form a ridge one chi high.

The seed was planted in the furrow and soil from the ridge was constantly pushed down to surround the root of the plant as it was growing.

Eventually the soil on the ridge was all returned to the trench. The next year, new furrows were made between the old one.
Yixun (伊循) near Miran

- From the Hanshu: 77 BCE: small town, an engaged in new irrigation network in Yixun and built elements there.
- Shuijing zhu, compiled by Li Daoyuan in 526 C.E.
• From the Hanshu: 77BCE: small duntian colon engaged in new irrigation network in Yixun and built settlements there.

• Shuijing zhu 水经注， compiled by Li Daoyuan 郦道元 in 526 C.E.

• chi 池 or xu shuichi 蓄水池
"North-west of the capital about 70 li is the tank of the Naga-raja Elapatra (I-lo-po-to-lo); it is about 100 paces round, the waters are pure and sweet; lotus flowers of various colors [...]."
Darmarajika [Stupa and tank], Taxila (Pakistan)
The Arthashastra prescriptive text, one of the main sources concerning the political stratagems of the Mauryan Empire, written by Kautilya around the year 150 C.E., offers more information on the importance of water tanks.
“A king shall augment his power by promoting the welfare of his people; for power comes from the countryside which is the source of all economic activity:

He shall build forts, because they provide a haven to the people and the king himself; waterworks since tanks make water continuously available for agriculture [...].”

[Arthashatra (1992), 232–233.]
Three possible influence in the system

2. *From Xinjiang?? Why always look abroad??*

MAP 4.1
*Eastern Central Asia*
There was the mark of a small tank, too, not far off; its earth embankment, once hardened by moisture, still rose above the level of the surrounding ground which wind erosion had lowered. Even the little earth-cone known as Dömbel, which the villagers to this day invariably leave in the centre of their tanks, was clearly recognizable.

(Aurel Stein: RODC, vol I, 224).
To Conclude

1. Tanks part of the administrative and economic system in Niya during the use of Kharoṣṭhī script

2. A water technology not provided from the Han military garrison

3 Relation between water tanks and buddhism
North-west of the capital about 70 li is the tank of the Naga-raja Elapatra (I-lo-poto-lo); it is about 100 paces round, the waters are pure and sweet; lotus flowers of various colors, which reflect different tints in their common beauty (garnish the surface);

this Naga was a Bhikshu who anciently, in the time of Kashyapa Buddha, destroyed an Elapatra tree. Hence, at the present time, when the people of that country ask for rain or fine weather, they must go with the Shamans to the side of the tank, and then cracking their fingers (or, in a moment), after praying for the desired object, they obtain it. »

(The Journey to the West, Xiyouji 西游记, 1906, 167)
FRESCO AND STUCCO RELIEF IN SMALL CELLA OF SHRINE D. II, DANDAN-UULIQ.

(See Chap. IX, sec. iii.)
Water Management in Jingjue 精絕 Kingdom:
The Transfer of a Water Tank System from Gandhara to Southern Xinjiang in the Third and Fourth Centuries C.E.

by
Arnaud Bertrand
Thankyou very much!!!

Merci beaucoup

谢谢

спасибо Большое