



Modeling an ancient Iranian dam system

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In Iran, along the northern and eastern fringes of the Pasargadae plain, five dam remains from the Achaemenid period (550–330 BCE) present an important footprint of the human impact and reshaping of the region. The dams are predominantly found in dry wadi beds. In the framework of the Joint Iranian-French Archaeological Project at Pasargadae, these dam sites were studied and excavated. Located 22 km to the north of Pasargadae in a small wadi, the Sad-i Didegan dam has a watershed of circa 46 square km, small compared with catchments of other known Achaemenid dams. It is an earth built gravity dam of circa 90 m wide, 21 m high and with a crown length of about 150 m. In the lower body of the dam, remains of a feeder canal and an accessible control infrastructure at the downstream flank of the dam were found. To the northwest, the dam site of Sad-i Shahidabad can be found, another large Achaemenid dam, which stored water from the perennial river of the Rud-i Polvar. This dam also had a similar canal and control structure. Close to the Sad-i Didegan area is a large earthwork, found to cross the watershed divide between Didegan and Shahidabad, consisting of a wide V-shaped trench of remarkable size: up to 100 m wide, a total length of at least 900 m and a maximum present day depth of 7.5 m. Even though the construction of the system in this case clearly was left unfinished, the remains echo the major investment of available labor. Given the contemporaneity of both dam sites, it is clear evidence of the more regionally and elaborately planned character of the hydrological endeavors in the Pasargadae area. Only through further study and future fieldwork (also obtaining absolute dating material), this impressive feature will be fully understood. This contribution proposes a possible use of the two dam system using a modern control simulation model. This analysis will also shed light on the question why the system probably never functioned.